DCN 556

ARNOLD	Total	AV	A/W	EC	OTHR
SPACE Facility Test Complex	60	0	0	0	60
Rocket Propulsion Altitude TC	95	0	90	0	5
Air Breathing Engine TF	51	51	0	0	0
Von Karman Facility	70	2	6	0	62
Propulsion Wind Tunnel	46	36	10	0	0

Donald R. Jeanblanc 8-12-94

Dan D. Young 8/12/94

Robert S. [illegible] 8/12/94

Document Separator

Arnold AFB TN
(Space Facility Test Complex)

2.1.A.1 *What amount of workload have you performed each year from FY86-93?*

See attached Historical Workload Form.

2.1.B.2 *What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?*

FISCAL YEAR	AIR VEHICLES	ELECT COMBAT	ARM/ WEAPONS	OTHER T&E	OTHER
92	0	0	0	28.6	0
93	0	0	0	23.3	0

NOTE: AEDC workyear equals 1810 manhours as defined in the current technical support contract.

2.2.A *Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.). Provide your response by filling out the Determination of Unconstrained Capacity Form in accordance with the instructions in Appendix A.*

See attached Determination of Unconstrained Capacity Form.

2.2.B *Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?*

Yes, the facility is limited by physical characteristics. Primarily by limits on the refrigeration systems. Reference the Unconstrained Capacity Worksheet.

3.1.A.1 *What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.*

Zero percent (0%) of the FY93 workload involved real time or near real time data exchange with another facility.

3.1.A.2 *If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.*

Not being connected, there would be no impact on any other facility.

3.1.B *Current and planned status of the T&E facilities for supporting assigned test missions. Fill out the Facility Condition Form in Appendix A in accordance with the instructions.*

See attached Facility Condition Form.

3.1.D.1 *Do you have specialized facilities are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.*

Yes. Cryogenic systems, instrumentation and data processing facilities, vacuum pumping capabilities, calibration labs, machine shops, and clean rooms.

3.1.D.2 *Are specialized targets required to support this facility? Yes/no. If yes explain.*

No specialized targets are required to support this facility.

3.1.D.2A *Have the specialized targets been validated? Yes/no. If yes, by whom?*

Since no specialized targets are required to support this facility, No target validation requirements are needed.

3.1.E.1 *Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.*

Yes. Investments in I&M and technology can be leveraged to improve test article throughput and/or data acquisition/reduction times. These investments can have a significant impact on capacity/expandability within the functional area of *T&E Other*.

3.1.E.1.A *Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.*

Yes. Computational assets can be used to support digital models and computer simulations. Computational capabilities can be linked with test chamber and/or flight hardware to address hardware-in-the-loop test requirements for *Air Vehicle* sensor development, *Electronic Combat* threat warning issues, and *Armament/Weapons* guidance and control tests.

3.1.E.3 *Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?*

DECADE is being design to accommodate Special Access Required programs. The rest of the space test chambers can accommodate Secret operations and can be upgraded to Special Access Required.

3.1.E.4 *Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.*

Yes. The 10V Sensor Chamber Upgrade, the Focal Plane Array Test Chamber (FPATC), and the DECADE NWE facility are underway and included in the FY95 FYDP. NOTE: The 10V, FPATC, and DECADE are being funded by SMC, OSD, and DNA respectively, and as such have not been included as an AEDC capital equipment investment expenditure on the ADDITIONAL INFORMATION FORM.

3.1.F.1 *Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.*

The Focal Plane Characterization Chamber (FPCC), 7V, and 10V Sensor Chambers are unique low background (<20K) sensor test chambers. Focal Plane Array Test Chamber (FPATC) and the Direct Write Scene Generator (DWSG) are unique focal plane array test chambers in that they support complex mission simulation test requirements in open and closed (FY95) loop test modes. The DECADE NWE facility is the world's largest NWE x-ray facility designed to have 10 times the test area of existing facilities. The BRDF test chamber is the only test chamber in the DoD that can make BRDF measurements at cryovacuum conditions. The size of the Mark 1 Test Chamber makes it uniquely suitable for small space thruster and electric propulsion testing.

3.1.F.1.A *Is this a one-of-a-kind facility within the US Government? Yes/no. If yes, describe.*

The Focal Plane Characterization Chamber (FPCC), 7V, and 10V Sensor Chambers are unique low background (<20K) sensor test chambers. Focal Plane Array Test Chamber (FPATC) and the Direct Write Scene Generator (DWSG) are unique focal plane array test chambers in that they support complex mission simulation test requirements in open and closed (FY95) loop test modes. The DECADE NWE facility is the world's largest NWE x-ray facility designed to have 10 times the test area of existing facilities. The BRDF test chamber is the only test chamber in the US government that can make BRDF measurements at cryovacuum conditions. The size of the Mark 1 Test Chamber makes it uniquely suitable for small space thruster and electric propulsion testing.

3.1.F.1.B *Is this a one-of-a-kind facility within the US? Yes/no. If yes, describe.*

The Focal Plane Characterization Chamber (FPCC), 7V, and 10V Sensor Chambers are unique low background (<20K) sensor test chambers. Focal Plane Array Test Chamber (FPATC) and the Direct Write Scene Generator (DWSG) are unique focal plane array test chambers in that they support complex mission simulation test requirements in open and closed (FY95) loop test modes. The DECADE NWE facility is the world's largest NWE x-ray facility designed to have 10 times the test area of existing facilities. The BRDF test chamber is the only test chamber in the US that can measure the BRDF properties of space materials at cryovacuum conditions.. The size of the Mark 1 Test Chamber makes it uniquely suitable for small space thruster and electric propulsion testing.

3.1.F.2 *Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.*

Yes. Acquisition of the 7V and 10V Sensor Chambers for BMDO. Acquisition of the Focal Plane Array Test Chamber for OSD. Testing of focal plane arrays for USA/SSDC. Outside DoD we have support for the acquisition of the DNA DECADE

NWE facility and test support for NASA and commercial customers. Workload percentage follow:

Fiscal Year	Air Force	DNA	BMDO	Commercial	Army	NASA
93	49%	12%	16%	21%	2%	0%
92	63%	20%	0%	2%	0%	15%

3.3.A.1 *What is the number of threats simulated?*

The FPATC/DWSG test chambers can simulate a virtually unlimited number of simultaneous dynamic threats. Using the CRISP, the 7V/10V test chambers can simulate up to 400 threats.

3.3.A.2 *How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?*

The FPATC/DWSG test chambers can simulate a virtually unlimited number of simultaneous dynamic threats (reentry vehicles, decoys, replicas, ballistic missiles, tactical missiles, etc). Using the CRISP, the 7V/10V test chambers can simulate up to 400 threats.
Type: The FPATC/DWSG/CRISP can be programmed to simulate any type of threat for which appropriate phenomenological data exists. The FPATC/DWSG can simulate both above-the-horizon (ATH) and below-the-horizon (BTH) threats scenarios; the CRISP is will primarily be used to project ATH scenarios (limited BTH applications are possible).
Maximum signal density: N/A
Average Density: N/A
Power Level: N/A
Band: Visible (0.4 μm) to Long Waveband Infrared (25 μm)
Radiated or injected: Radiated (spectral/broadband)

3.3.A.3 *Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?*

Validation of threat models is currently in progress. The USN Naval Research Lab is the agency overseeing the validation effort for the OSD.

3.3.A.4 *Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.*

Open loop: Yes (FPATC/DWSG/7V/10V)
Reactive: Limited capability available first quarter FY95 (FPATC/DWSG only)
Closed loop: Limited capability available first quarter FY95 (FPATC/DWSG only)

3.3.A.5 *What is the threat representation (fidelity) and density?*

Threat fidelity:	Spectral: 0.4 - 25 μm	Spatial: 2 μrad
Threat density:	FPATC/DWSG: Unlimited	7V/10V: 400 targets

3.3.A.6 *Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.*

Yes, the FPATC/DWSG can project unlimited land/sea or combined threats.

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3.3.A.7 *What geographic dispersion can be simulated?*

The FPATC/DWSG test chambers can provide unlimited threat lay down dispersions. Threat lay down dispersions in the 7V/10V are limited by the target system field of view (1.5 deg).

3.3.A.7.A *What threat lay down can be simulated?*

The FPATC/DWSG test chambers can provide scenes with unlimited geographic dispersions. Geographic dispersions in the 7V/10V are limited by the target system field of view (1.5 deg).

3.3.A.7.B *What representative distance can be simulated?*

The FPATC/DWSG/7V/10V test chambers can provide unlimited representative threat distances for example satellite in near earth orbit to geosynchronous with viewing aspects from hard earth to earth limb to full space.

3.3.A.8 *Are the threats moveable (i.e.dynamic) within a test scenario? relocatable to new scenarios? yes/no*

Yes, the threats are moveable within a test scenario and relocatable to new scenarios.

3.3.A.9 *Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?*

Not currently interlinked with off-site threats, however provisions for off-site linkage are being made.

3.3.A.10 *Is there a limit on simultaneous users? Yes/no. If no, explain.*

Yes, the FPATC/DWSG/7V/10V test chambers all have limits on the number of simultaneous users that can be supported.

3.3.B.1 *Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.*

7V Sensor Chamber- Sensors with up to 50 cm apertures.
10V Sensor Chamber- Sensors with up to 60 cm apertures.
FPCC and FPATC- Focal plane arrays with pixel dimensions on the order of 512x512 (20 - 100 μm spacing depending on wavelength).
Mark 1 Chamber- Full scale satellites , including GPS size and weight.
DECADE- 1 square meter test area.

The above listed limitations are adequate to meet forecast requirements.

3.3.B.2 *What is the number of simultaneous countermeasures that can be evaluated?*

The FPATC/DWSG test chambers can simulate a virtually unlimited number of simultaneous dynamic threats or countermeasures (decoys, replicas, balloons, etc). Using the CRISP, the 7V/10V test chambers can simulate up to 400 countermeasures. Penetration aid tests (chaff deployment) have been performed in the Mark I Test Chamber.

3.3.B.3 *What range of spectra can be tested and evaluated?*

The FPATC/DWSG test chambers can provide simulated targets at discrete wave bands from visible to 10.6 μm. The 7V/10 test chambers can provide simulated broad band targets in the visible and infrared.

3.3.B.4 *What are the available spectra?*

The FPATC/DWSG test chambers can provide simulated targets at discrete wave bands from visible to 10.6 μm. The 7V/10 test chambers can provide simulated broad band targets in the visible and infrared.

3.3.B.5 *Do you have a scene generation capability? Yes/no. If yes, describe.*

Yes, the SSGM, fractal scene generation techniques, and access to the BMDO data centers (plume, midcourse, nuclear, and hardbody).

Arnold AFB TN
(Main, this worksheet applies to all test facility areas)

2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/support in your Military Department (by functional area) for FY92, FY93, and FY95 FYDP.

See attached spreadsheets.

2.3.A Does the facility have a specified war-time or contingency role established in approved war plans?

No.

2.3.B Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes.

2.3.B.1 On the test mission of any other activity?

Yes.

2.3.B.2 On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes.

3.1.C.1 Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

There are several limiting environmental characteristics associated with AEDC operations. To sustain the continued operation of some AEDC test capabilities will require MILCON projects that are now programmed out through 1997. The most significant projects are related to replacement of systems containing Ozone Depleting Compounds (ODC). There are limitations imposed on air pollutant sources in terms of the number of overall hours that various test facilities can be

operated, but such terms can be renegotiated provided that there are not astronomic increases in the annual emission rate for key air quality pollutants. The AEDC Hazardous Waste Storage Facility is limited in terms of the number of drum that can be stored but work-arounds are available such as "just-in-time" procurements to limit HAZMAT quantities. Also, a hazardous material/hazardous waste storage building is currently included in the FY 95 environmental MILCON.

3.1.C.2 How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Data available from FY92 indicates workload could grow 62% before reaching permt levels.

3.1.C.3 Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deals with the environment? If so, when do they expire? Please describe.

AEDC does not operate under the provisions of any permits which are temporary in nature. AEDC operates under the interim status provisions of the Resource Conservation and Recovery Act. AEDC submitted its permit application in 1984 and has since revised it a number of times. A permit was issued in September 1990, but was appealed by AEDC. Since the regulatory agencies have not acted upon the appeal, AEDC is defined as being under "Interim Status". The EPA is willing to issue the permit. Resolution of the issue is expected within the next 12 months.

AEDC has volunteered to apply for an early permit under the provisions of the Clean Air Act Amendments of 1990 and will be issued permits during 1995 that will last for up to five years. These permits will replace the existing AEDC air pollution permits. AEDC is in an 'attainment zone" for the National Ambient Air Quality Standards but is considered a "major source" by the Tennessee Department of Environment and Conservation. AEDC's National Pollutant Discharge Elimination System (sewage) discharge permit will expire in 1997.

3.1.C.4 What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

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Population within: 50 miles - 70,000
100 miles - 790,000
150 miles - 955,000
200 miles - 2,405,000

3.1.C.5 Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space?

No commercial air, land or sea traffic routes exist. No public use of air, land or sea space. Testing operations are not affected. Mission accomplishment is not affected.

3.1.C.5.A How many test missions per year are canceled due to commercial or public use?

None.

3.1.C.6 What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

3.1.E.2 Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

No.

3.1.G.1 How many square miles of air, land, and sea space are available to support test operations?

Air: None, AEDC does not manage or control any airspace.
Sea: None, AEDC does not manage or control any seaspace.
Land: Approximately 12,000 acres (18.75 sq miles) of Arnold AFB's total of 39,081 acres (61.06 sq miles) is currently used to support test operations.

3.1.G.1 TO 3.1.H.1 (3.1.G.2, 3.1.G.3, 3.1.G.4, 3.1.G.5, 3.1.G.6, 3.1.G.7, 3.1.G.8, and 3.1.H.1)
All questions deal with types, limits, characteristics and problems associated with airspace managed, controlled or

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used by an installation.

All listed questions are not applicable (NA) to Arnold AFB. We do not own, manage, control or use any airspace.

3.1.H.2 Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

No known geologies or soil conditions affect any types of current or planned testing at AEDC.

3.1.H.3 Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No. AEDC is in the business of simulated flight testing. Test facilities are ground based and are not subject to competition for air, land or sea space. Neither do they require specific ambient conditions in order to meet test points.

3.1.H.4 What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

NOAA only reports average temperature deviations.
Average days per year mean temp below 32 degrees F: zero
between 32 and 95 degrees F: 365
above 95 degrees F: zero

From May 93 thru Apr 94, there were 61 days when the actual temperature dropped below 32 degrees F, and there were 10 days when the actual temperature rose above 95 degrees F.

3.1.H.5 What is the number of days per year the average relative humidity is below 30%? Between 30 and 80 %? Above 80%?

Average relative humidity is unknown. NOAA tables do not cover relative humidity. For May 93 thru Apr 94, AEDC EMCS reported actual relative humidity below 30 % for 53 days, between 30% and 80% for 74 days and above 80% for 238 days. Again, these are not daily average relative humidities.

3.1.H.6 What is the number of test missions per year (1985 - 1993) canceled due to weather? and question

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3.1.H.7	What is the number of test days per year (1985 - 1993) canceled due to weather? None. AEDC test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of climate or weather.
3.1.H.8	What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles? Prevailing visibility records do not exist. No weather station, no operating control tower. Data not tracked at AEDC or Tullahoma Regional. AEDC simulated flight test mission not impacted by varying visibility conditions.
3.1.H.9	What is the average number of flying days available per year for flight test? Provide historical average from the past eight years. Question is NA. We do not conduct flight testing at Arnold AFB.
3.1.H.10	What percentage of the time are your test operations restricted due to weather? Test operations are almost never restricted due to weather. Quantitatively, the percentage is much less than 1 percent of the time. AEDC's test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of weather.
3.2.A.1 TO A.6	(3.2.A.1, 3.2.A.2, 3.2.A.3, 3.2.A.4 and 3.2.A.5 and 3.2.A.6): All questions have to do with supersonic corridors. No supersonic corridors exist within (a reasonable distance). We do not conduct actual flight test from Arnold AFB, therefore, questions are not applicable.
3.2.B.1	Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area , construction material, load capacity, and hangar space.

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The airfield at Arnold AFB is a level 1 facility: unmanned, uncontrolled airfield with no control tower.
Number of runways: One
Azimuth of runway: 02/20
Field elevation: 1,067 Ft
Runway Length (excluding overrun): 6,000 Ft
Overrun Length: No overrun
Terminal and/or landing aids: VOR, LOC DME, VASI
Arresting Gear: None
Per Air Staff Validation
Ramp Area: ~~112,500 square feet~~ 113,778 Sq Ft
Construction material: Runway-reinforced concrete, ramp-asphalt
Load capacity: Runway - Weakest point PCN 18; Ramp - Weakest point PCN 26
Hangar space: None

3.2.B.2 How close and how many emergency runways or airfields are in your area of operation?

Three airfields are in our area of operation.
William Northern Field, Tullahoma TN - 15 miles
Smyrna TN - 40 miles
Nashville TN - 65 miles

3.2.B.3 Where is your airfield situated relative to working areas (airspace) for supporting test operations?

We do not have a flight test mission. We do not conduct actual flight test operations from the airfield at Arnold AFB. We have no assigned aircraft. We are not in close proximity to any special use airspace (working areas).

3.2.B.4 What makes your airfield unique or at least suited for supporting test operations?

Airfield is not suited for supporting flight test operations. The primary purpose of the airfield at AEDC is to launch and recover logistic flights in support of the simulated flight test mission. The airfield infrastructure required to support the actual flight test mission does not exist at Arnold AFB.

3.2.B.5 Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation (s). and question

3.2.B.6	Including hangars and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles? We have no flight test mission at Arnold AFB, therefore there is zero flight test mission support capability. The airfield has several limitations that would effect flight test operations. Among them are, runway length (6,000'), no overrun, no parallel taxiway, very small ramp, no operating control tower, no restricted airspace in close proximity suitable for test operations, no organic aircraft operations or maintenance facilities or aircraft operations or maintenance workforce. Cannot support flight test operations from the airfield at Arnold AFB.
3.2.C.1 TO C.8	(3.2.C.1, 3.2.C.2, 3.2.C.3, 3.2.C.4, 3.2.C.5, 3.2.C.6, 3.2.C.7, and 3.2.C.8) Listed questions address the extent of T&E operations that the airspace can accommodate. Cannot support actual flight testing of air vehicles. No test airspace available. Inadequate airfield facilities (no control tower). No actual flight test mission.
3.4.A.1	Do you currently test directed energy weapon systems. Yes/no. No.
3.4.B.1.A TO B.2.D	(3.4.B.1.A, 3.4.B.1.B, 3.4.B.1.C, 3.4.B.2.A, 3.4.B.2.B, 3.4.B.2.C, 3.4.B.2.D) Questions pertain to test areas capable of handling live weapons systems tests. NA. AEDC can conduct live rocket motor and missile motor firings at simulated flight conditions in ground based propulsion test facilities. We can also conduct subscale aerodynamic stores integration and separation tests at simulated flight conditions using wind tunnels; however, we have no land or water ranges to support actual flight tests of live rocket, missile, or bomb systems. Since the questions listed above apply to range support of weapons system test requirements, they are not applicable to AEDC.

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TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
Air Vehicle	05117E Total	8,540		16	2,949	2,171	1,899		
	53631E Total		4,817	1,880	829	74	70	1,966	1,887
	62201F Total			113					
	62203F Total	2	797						
	63216F Total	2,665					1,302	2,395	2,299
	63231F Total	200							
	63269F Total	5,531	511	1,077	75				
	63363F Total	10							
	64218F Total	12							
	64223F Total	1,690				2,864			
	64239F Total	30,149	25,966	22,341	17,082	16,834	13,730	10,909	10,473
	64268F Total	4,155	6,391	9,564	7,922	10,118	12,381	15,543	14,921
	64313F Total				949				
	921A11 Total	903	4,522	1,818	4,835	2,768	2,701	2,292	2,200
	921A12 Total	5							
	921B10 Total			1,387					
	921B14 Total			2,214					
	921B19 Total		1,646			8,927			
	921B21 Total	16		7,461	8,509		3,904		
	921F01 Total		185		150	460	300	729	700
	921Z37 Total	422							
	UNKN Total	23,950	33,870	38,754	30,693	26,715	29,896	26,207	25,159
AIR VEHICLE TOTAL		**78,250**	**78,705**	**86,625**	**73,993**	**70,931**	**66,183**	**60,041**	**57,639**
Armament/Weapon	05117E Total			375	764	2,725	2,910	4,165	3,998
	11215F Total		784	2,038	1,921	894	3,484	2,717	2,608
	21009F Total	329							
	27163F Total	1,400							
	27590F Total	3,350	2,166	11,714	5,357	1,998	1,133	1,191	1,143
	31310F Total	150		260					
	35119F Total	120							

AEDC XR ARNOLD AFB

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	52102F Total	612							
	53631F Total					654	654	654	628
	61102F Total	230			130	130			
	62102F Total	16							
	62602F Total	15							
	63216C Total		2,927	785	497	1,043	1,365	515	494
	63269F Total	2,700			1,857	2,083	2,160	1,830	1,757
	63311F Total	1,138							
	63364F Total	261							
	63370F Total			24	18	16	14	14	13
	64212F Total	130	129	42	222	233		257	247
	64218F Total				2,849				
	64240F Total	1,479							
	64312F Total	940	98						
	64327F Total		504						
	64618F Total				3,624				
	65502F Total	185	537		509	399	540	520	499
	73806F Total			805					
	921A06 Total	8							
	921A20 Total	19	42						
	921A22 Total			23					
	921A31 Total		350	410					
	921C16 Total		50	50	100	75	75	75	72
	921F01 Total		1,492	808					
	921Z30 Total		587		149	156	218	287	276
	921Z40 Total	15							
	UNKN Total	1,177	129	383	63	9,514	2,956	2,890	2,774
ARMAMENT/WEAPON TOTAL		**14,274**	**9,793**	**17,717**	**18,060**	**19,920**	**15,509**	**15,115**	**14,510**
Other	12431F Total	555							
	27426F Total				11	23	47	72	69

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TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	31310F Total	150	222	100	85	100	100	100	96
	35905F Total		411	169	400				
	602715H Tota		447	2,851	3,026	954	1,700	2,800	2,688
	61102F Total			310					
	62102F Total	180	110						
	62201F Total	394	337	268	470	484	836	1,310	1,258
	62203F Total	97	25	110	225				
	62601F Total		423	23	72	50	50	50	48
	63203F Total	9	23		80	100	100	100	96
	63214C Total	365							
	63215C Total	350	11,003	1,223	2,950	1,750	3,936	4,601	4,417
	63215F Total		214		600	550	1,075	575	552
	63216C Total	1,893							
	63269F Total	51							
	63363F Total	477							
	63605F Total		18	16					
	64231F Total		252						
	64239F Total		75						
	65502F Total			345		130		80	77
	78026F Total		1,000	700					
	921A06 Total	131							
	921A11 Total	125	140	140	140	140	140	140	134
	921A27 Total			493					
	921A50 Total		34	50	50	50	75	75	72
	921B22 Total		32	50	50	50	50	50	48
	921C12 Total	490	651	180	200	250	300	350	336
	921C15 Total	262							
	921C24 Total	100							
	921E02 Total	212							
	921E05 Total	7							
	921E08 Total	49							

AEDC XE ARNOLD AFB

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	921F01 Total	3,858	4,523	4,184	5,857	9,020	8,839	8,765	8,414
	921H07 Total		200	400	500	500			
	921Z30 Total				248	156			
	941C02 Total		573	100	100		95	120	115
	UNKN Total	1,608	1,914	2,339	7,789	9,027	10,053	13,434	12,897
OTHER TOTAL		11,363	22,626	14,051	22,853	23,334	27,396	32,622	31,317
GRAND TOTAL		103,887	111,124	118,393	114,906	114,185	109,088	107,778	103,467

AEDC XP ARNOLD AFB

GENERAL INFORMATION

Facility/Capability Title: Space DT&E for Sensor/Nuclear Weapons Effects/Space Simulation/Laboratory Support

Origin Date: 22 Apr 1994

Service: AF **Org/Activity:** Arnold Engineering Development Center (AEDC) **Location:** Arnold Air Force Base, TN

T&E Functional Area: Other

UIC: USN USE ONLY

T&E Facility Category: MF and IL

	T&E	S&T	DE	IE	T&D	Other	
PERCENTAGE USE:	60	20	20				= 100

BREAKOUT BY T&E FUNCTIONAL AREA (%):

Air Vehicles						
Armament/Weapons						
Electronic Combat						
Other	60	20	20			

Total in Breakout Must Equal "Percentage Use" On First Line

TECHNICAL INFORMATION

Facility/Capability Title: Space DT&E for Sensor/Nuclear Weapons Effects/Space Simulation/Laboratory Support

Facility Description; Including Mission Statement: Provide customers with space system and subsystem test and evaluation (T&E) facilities and services, maintain facilities that simulate flight conditions, and conduct in-house technology programs to develop advanced test techniques and instrumentation. Provide radiometric characterization, calibration, and mission performance facilities and services. Provide nuclear weapons effect (NWE) facilities and services. Provide thermal-vacuum, solar simulation, dynamic separation, propulsion, electromagnetic susceptibility, contamination, material properties, and specialized laboratory support facilities and services. Mission Statement: Provide timely and economical state-of-the-art test services including technical evaluations and data analysis for systems and subsystems in support USAF and national space development programs.

Interconnectivity/Multi-Use of T&E Facility: None.

Types of Tests Supported: IR sensor calibration and mission performance, NWE, thermal vacuum, solar simulation, dynamic separation, contamination, bi-directional reflectance distribution function (BRDF) measurement, permeability measurement, electromagnetic susceptibility, electric propulsion, and material outgassing.

Summary of Technical Capabilities: Space Environmental Simulation including thermal vacuum, space dynamics, infared signatures, and space thrusters. Space sensor and focal plane array calibration and characterization. Sensor and focal plane array mission performance. Dynamic scene generation. Spacecraft contamination, including bi-directional reflectance distribution function (BRDF). Nuclear weapons effects.

Key Words: Developmental Test & Evaluation, Surveillance sensor, Seeker, Focal Plane Array, Calibration, Scene Generation, Mission Performance, Nuclear Weapon Effects, X-rays, Thermal Vacuum, Solar Simulation, Dynamic Separation, Contamination, Outgassing, BRDF, Permeability, Electromagnetic Susceptibility, Electric Propulsion

ADDITIONAL INFORMATION

Facility/Capability Title: Space DT&E for Sensor/Nuclear Weapons Effects/Space Simulation/Laboratory Support

PERSONNEL	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	3	3	3	3	3	3	3
Enlisted	0	0	0	0	0	0	0
Civilian	3	3	3	3	3	3	3
Contractor	136	136	130	135	134	129	124
Total	142	142	136	141	140	135	130

Total Square Footage:	130,154		
Test Area Suare Footage:	114,136	Office Space Square Footage:	16,018
Tonnage of Equipment:	1,006	Volume of Equipment:	518,000
Annnual Maintenance Cost:	$2M	Estimated Moving Cost:	$278M

CAPITAL EQUIPMENT INVESTMENT

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$0.3M	$0.33M	$1.69M	$0.12M	$0.16M	$0.0M	$0.0M

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FACILITY CONDITION

Facility/Capability Title: Space DT&E for Sensor/Nuclear Weapons Effects/Space Simulation/Laboratory Support

Age: 30 Years **Replacement Value:** $278M (includes equipment replacement)

Maintenance and Repair Backlog: $4M

Date of Last Upgrade: March 1994

Nature of Last Upgrade: Addition of an infrared sensor calibration and mission performance test facility/capability for space surveillance satellites and interceptor systems. ($21M)

Major Upgrades Programmed:

1. Upgrade Title: Focal Plane Array Test Chamber
Total Programmed Amount: $13.7M (Funded by OSD)
Summary Description: Infared scene simulator and test chamber for space assets

2. Upgrade Title: DECADE
Total Programmed Amount: $63 M (Funded by DNA)
Summary Description: Nuclear Weapon Effects Simulator

3. Upgrade Title: 10V
Total Programmed Amount: $25M (Currently funded by SMC)
Summary Description: Surveillance Sensor Test Chamber

N

HISTORICAL WORKLOAD

Facility/Capability Title: Space DT&E for Sensor/Nuclear Weapons Effects/Space Simulation/Laboratory Support

T&E FUNCTIONAL AREA		FICSAL YEAR							
		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ELECTRONIC COMBAT	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR	133797	155200	81825	28545	76501	47360	51830	42161
	TEST HOURS	4672	10344	6554	2916	5153	6680	6446	11493
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

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DETERMINATION OF UNCONSTRAINED CAPACITY

Facility/Capability Title: Space DT&E for Sensor/Nuclear Weapons Effects/Space Simulation/Laboratory Support

ANNUAL HOURS OF DOWNTIME	**1**	816
AVERAGE DOWNTIME PER DAY (LINE 1 / 365)	**2**	2.24
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	**3**	21.76

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL SIGMA)
4	**5**	**6**	**7**	**8** 718
Sensors	2	6	12	
NWE	1	10	10	
Space Sim	1	7	7	**ANNUAL UNCONSTRAINED CAPACITY**
Laboratory	2	2	4	
				9 262.070
"TYPICAL"	0	0	0	
	$\Sigma = 6$	**TOTAL SIGMA**	33	

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Document Separator

Arnold AFB, TN
(Rocket Test Complex)

2.1.A.1 What amount of workload have you performed each year from FY86-93? Use the Historical Workload Form provided in Appendix A of this package.

Average Workload (FY86-FY93):

	MHRS	Test Hours (Defined as cell occupancy time)
Armament/Weapons:	99,670	3,191
Other:	59,676	1,037

2.1.B.1 See P 1 of attached Main Worksheet

2.1.B.2 What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

FUNCTIONAL AREA	FY92 MAN-YEARS	FY93 MAN-YEARS
AIR VEHICLES	0	0
ELECTRONIC COMBAT	0	0
ARMAMENT/WEAPONS	12.51	9.31
OTHER TESTS	0	4.78
OTHER	0	0

AEDC Workyear equals 1810 manhours as defined in current Technical Support Contract.

2.2.A Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.). Provide your response by filling out the Determination of Unconstrained Capacity Form in accordance with the instructions in A.

Annual Unconstrained Capacity of AEDC Rocket Propulsion Test Operations is approximately 676,801 Manhours.

2.2.B Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

Yes. Constraints because of shared Engine Test Facility (ETF) Exhaust Plant usage wih turbine engine test operations, shared use of rocket test facility

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control room, maintainance activities and safety constraints imposed on simultaneous operations in Test Cells J-5, J-4 and J-6.

3.1.A.1 To document answer to question: **-3.1.A.1** What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

100%. All facilities are internal to the AEDC site.

FACILITIES	CELL J3	CELL J4	CELL J5	CELL J6
EXHAUST PLANT	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS
STEAM PLANT	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS
DATA RECORDING	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS
DATA PROCESSING	POST TEST	POST TEST	POST TEST	POST TEST
POWER CONTROL	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS
CELL J6	-------	SIMULTANEOUS	SIMULTANEOUS	-----
CELL J5	-----	SIMULTANEOUS	-----	SIMULTANEOUS
CELL J4	-------	---------	SIMULTANEOUS	SIMULTANEOUS
RPA 1, 2, 3, 4	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS
XRAY LAB	-----	-----	PRE TEST	PRE TEST
CHEM LAB	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS
CAL LAB	PRE TEST	PRE TEST	PRE TEST	PRE TEST

3.1.A.2 To document answer to question: **-3.1.A.2** If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Yes.

FACILITY	IF CLOSED	IMPACT
J3 CELL		NONE
J4 CELL		YES - J5, J6 OPERATION DUE TO J4 BEING BAROMETRIC WELL AND STEAM ACCUMULATION POINT, AND PROVIDING BASE LN2/GN2 OPERATIONS
J5 CELL		NONE
J6 CELL		NONE

TOTAL ROCKET CAPABILITY		YES - J4 CELL PROVIDING BASE LN2/GN2 OPERATIONS

3.1.B Measure of merit: *Current and planned status of the T&E facilities for supporting assigned test missions.* Fill out the Facility Condition Form in Appendix A in accordance with the instructions.

Reference Facility Condition Form (Attached).

3.1.D.1 To document answer to question: **-3.1.D.1** Do you have specialized facilities are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes.

FACILITIES	DESCRIPTION
EXHAUST PLANT	Multi-stage rotating exhaust compressor machinery for providing low back pressure and altitude simulation to rocket propulsion test cells.
STEAM PLANT	High pressure steam accumulators for operation of steam driven ejector systems to augment altitude operation and cooling of rocket exhaust gas.
CONTROL ROOM, TEST SEQUENCER, AND DATA RECORDING BUNKER	Dedicated Vax based high speed digital data recording systems, computer sequence systems, and bunkered control rooms for automated test operation, limited real time data processing and secure personnel safety zone.
DATA PROCESSING	Base wide CONVEX and CRAY data processing facility. ETF Dynamic Data Analysis Laboratory (DDAL). Facilities process engine and motor performance data per standard algorithms and formats.
POWER CONTROL	Electric power monitoring and controlling station for operation of the rotating exhaust compressor system.
RPA 1, 2, 3, 4	Explosive sited Rocket Preparation Areas for buildup, weighing, and instrumentation of test articles.
XRAY LAB	Explosive sited area for the X-ray of solid rocket motors for mechanical, transportation, and fabrication defects
PLUME DATA CENTER	Recognized center for rocket exhaust plume measurements, analysis, and archiving of diagnostic data.

CHEM LAB	Extensive chemical laboratory for the analysis of propellant and exhaust samples.
CAL LAB	Calibration laboratory for the calibration of all instrumentation to national standards.

3.1.D.2 To document answer to question: **-3.1.D.2** Are specialized targets required to support this facility? Yes/no. If yes, explain.

No.

3.1.D.2.A To document answer to question: **-3.1.D.2.A** Have the specialized targets been validated? Yes/no. If yes, by whom?

No.

3.1.E.1 To document answer to question: **-3.1.E.1** Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes.

ARMAMENT /WEAPONS/OTHER TESTS/OTHER
Standardized mechanical motor interfaces for specific types of rockets for similar test application to cells J4, J5, J6.
Standardized instrumentation and controls interfaces for similar test applications in cells J4, J5, J6.
Multiple Rocket Preparation Areas to support simultaneous test article operations.
Facility situated on large land area to support growth and additions of rocket test capabilities.
Facility situated next to an extensive lake system water source (Woods Reservoir) to support system and exhaust cooling operations.
Multiple data acquisition systems for simultaneous setup, checkout, and test preparations.
Facility situated on the AEDC site with complete analysis, design, fabrication, and installation capabilities available. Key resources are shared with a wide range of aerodynamic and propulsion test capabilities.
Portions of facility are uniquely sited to minimize explosive and safety exposure and conflicts with base-wide operations.

3.1.E.1.A To document answer to question: **-3.1.E.1.A** Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes.

ARMAMENT /WEAPONS/OTHER TESTS/OTHER
Solid, Liquid, Hybrid rocket systems.
Component Tests or complete systems tests.
Altitude simulation and firing of small tactical systems to large Space Shuttle Main Engine Class systems.
Space power generating systems
Complete upper stage altitude soak, coast, command & control testing
Electric propulsion

3.1.E.3 To document answer to question: **-3.1.E.3** Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Top Secret, Special Access.

3.1.E.4 To document answer to question: **-3.1.E.4** Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes. Reestablishment of cryogenic propellant test capability for medium class liquid rocket engines in Test Facility J-4. Activation and validation of Test Facility J-6. Data Acquisition and Processing System (DAPS) upgrade for rocket test operations.

3.1.F.1 To document answer to question: **-3.1.F.1** Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.

Yes. The AEDC rocket test capability is unique because of its physical size and its connection to the Engine Test Facility (ETF) Exhaust Plant. The facilities are the largest of their kind in the world which provides the only altitude test capability for medium to large class liquid and solid rocket propulsion systems. The connection to the Exhaust Plant provides for the only safe test capability of rocket propulsion systems utilizing high performance (high area ratio) nozzles because of its unique way of attenuating damaging facility pressure transients during engine ignition and shutdown. Connection to the Exhaust Plant also provides for extended run times at altitude conditions required for many propulsion systems used for orbital transfer operations.

3.1.F.1.A To document answer to question: **-3.1.F.1.A** Within the US Government? Yes/no.

Yes. The AEDC rocket test capability is unique because of its physical size and its connection to the Engine Test Facility (ETF) Exhaust Plant. The facilities are the largest of their kind in the world which provides the only altitude test capability for medium to large class liquid and solid rocket propulsion systems. The connection to the Exhaust Plant provides for the only safe test capability of rocket propulsion systems utilizing high performance (high area ratio) nozzles because of its unique way of attenuating damaging facility pressure transients during engine ignition and shutdown. Connection to the Exhaust Plant also provides for extended run times at altitude conditions required for many propulsion systems used for orbital transfer operations.

3.1.F.1.B To document answer to question: **-3.1.F.1.B** Within the US? Yes/no.

Yes. The AEDC rocket test capability is unique because of its physical size and its connection to the Engine Test Facility (ETF) Exhaust Plant. The facilities are the largest of their kind in the world which provides the only altitude test capability for medium to large class liquid and solid rocket propulsion systems. The connection to the Exhaust Plant provides for the only safe test capability of rocket propulsion systems utilizing high performance (high area ratio) nozzles because of its unique way of attenuating damaging facility pressure transients during engine ignition and shutdown. Connection to the Exhaust Plant also provides for extended run times at altitude conditions required for many propulsion systems used for orbital transfer operations.

3.1.F.2 To document answer to question: **-3.1.F.2** Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

	FY-92	FY-93
Army	0.58%	2.32%
NASA	2.50%	2.56%

3.3.A.1-A.10 Electronic Combat - Threat Environment.

NA. Electronic Combat testing is not supported by the Rocket Propulsion Test Functional Area.

3.3.B.1-B.5 Electronic Combat - Threat Environment.

NA. Electronic Combat testing is not supported by the Rocket Propulsion Test Functional Area.

TECHNICAL CAPABILITIES FACT SHEET (ROCKET TEST FACILITIES)

J-6 Test Facility

The J-6 Test Facility is located on an 80 acre site remote from other AEDC test facilities in order to safely test high energy rocket motors with propellant explosive equivalents up to 100,000 lbm TNT (80,000 lbm of Class 1.1 propellant). The test facility is sized to test motors up to 750,000 lbf of thrust at simulated pressure altitudes of 100,000 ft. This is accomplished in a horizontally oriented test cell 26 ft in diameter by 62 ft long that can accommodate rocket motors up to 12.5 ft in diameter by 42 ft long.

Exhaust gases from the rocket motor are pumped through a 31 ft diameter saturation cooler exhaust train into a 4,900,000 cubic foot volume dehumidification chamber. Exhaust gas pumping is accomplished by a 3000 lbm/sec flow annular steam ejector system in conjunction with three available rocket diffusers dependent on rocket size. The combined process of both the saturation cooler and dehumidification chamber provides for both extended test run times and environmental scrubbing of the exhaust gases. This scrubbing process is accomplished by the application of approximately 1,000,000 gallons of water per minute from the 3,000,000 gallon overhead water storage tank.

The temperature conditioning system can maintain test cell air temperature at a prescribed temperature between 15 deg and 110 deg Farenheit (F) with a tolerance of +/- 5 deg F from motor installation to test. A multicomponent thrust measuring system provides precision ballistic data capability up to 750,000 lbf axial, 150,000 lbf yaw and 300,000 lbf pitch.

J-5 Test Facility

Test Cell J-5 is a horizontally oriented test chamber designed for static testing solid propellant rockets up to 125,000 lbf thrust (300,000 lbf thrust for short durations) at simulated pressure altitudes of approximately 100,000 ft. The test cell is a cylindrical section 16ft in diameter and 50 ft long with a 10ft by 30ft top loading hatch. A 102 in diameter diffuser is used to capture the rocket exhaust gases which are pumped to a saturation cooler by a 500 lbm/sec flow annular steam ejector system providing extended run times and environmental scrubbing.

The temperature conditioning system can maintain test cell air temperature at a prescribed temperature between 10 deg F and 110 deg F with a tolerance of +/- 5 deg F from motor installation to test. A multicomponent thrust measuring system provides precision ballistic data capability up to 127,000 lbf axial, 22,000 lbf yaw and 75,000 lbf pitch. A flexure mounted spin fixture can be installed (both in Test Cells J-5 and J-6) to spin test motors up to 92in in diameter at up to 250 rev/min, depending on motor weight.

TECHNICAL CAPABILITIES FACT SHEET (ROCKET TEST FACILITIES)

J-4 Test Facility

Test Cell J-4 is a verically oriented test chamber designed for static testing of large liquid and solid propellant rocket engines and entire propulsion systems at simulated pressure altitudes of approximately 100,000 ft. The test cell is 48ft in diameter with a height of 82ft in its present configuration. A 20ft diameter diffuser is used to capture exhaust gases which are pumped to a 100ft diameter by 250ft deep underground dehumidification chamber providing for environmental scrubbing and extending engine run times. An annular steam ejector system located at the diffuser inlet is used to bring the test chamber to the desired preignition altitude and is utilized to attenuate the blowback pressure transient during engine shutdown.

The temperature conditioning system can maintain test cell air temperature at a prescribed temperature between 50 deg F and 110 deg F with a tolerance of +/- 5 deg F from installation to firing. The existing six-component thrust stand provides precision ballistic data capability up to 500,000 lbf axial and up to 50,000 lbf yaw and pitch. Reconfiguraton of the thrust stand can accomodate propulsion systems up to 1,500,000 lbf thrust.

J-3 Test Facility

Test Cell J-3 is a vertically oriented test chamber designed for static testing of small and medium class solid and liquid propellant rocket engines at simulated pressure altitudes of approximately 100.000 ft. Nominal maximum allowable thrust is 200,000 lbf. Located approximately 55 ft above ground level, the cell can be configured with 17 ft diameter interchangable cylindrical sections to provide cell heights from 10 ft to 40 ft. A 110 in diameter rocket diffuser is used to capture exhaust gases and provide test cell aspiration. A continuous operating steam ejector system provides for higher altitude pressure simulation over very long test periods.

The temperature conditioning system utilizes an ethylene glycol to steam/liquid nitrogen heat exchanger to provide test cell temperatures from 15 deg F to 130 deg F up to engine firing.

INSTRUMENTATION/ASSETS:

Integrated Computer Control Systems

- Test Countdown Sequencer
  - -- Over 3000 Commands
  - -- Simulate Flight Commands
  - -- Activate On-Board Ordnance Systems
- Automated Facility Systems Controls

Instrumentation

- 504 Channels Of Digital Data
  -- 250,000 Samples/Sec Aggrogate Digital Data Sampling Rate
  -- Sample Rates From 10 To 10,000 Samples/Sec/Channel
- Up To 72 Channels Of Analog (FM) Data, Bandwidth DC To 32 Khz
- Up To 16 Channels Of O-Graph Data, Bandwidth DC To 5 Khz

TECHNICAL CAPABILITIES FACT SHEET (ROCKET TEST FACILITIES - CONT.)

- Modern Dynamic Data Analysis Laboratory
- Motion Picture Film Up To 10,000 Frames/Sec

Assets (Support Infrastructure)

- Computer Facility

  -- Amdahl 5860
  -- Cray XMP/18 And XMP/14SE
  -- Convex C3840
  -- Extensive Compter Code Facility
- Plume Diagnostics
  -- High Spatially, Spectrally And Temporally Resolved Radiometric Measurements
    --- Continuous Spectral Coverage Vacuum Ultraviolet Through Long Wave Infrared
- Chemical/ Radiographic Laboratories
- Real-Time Radiography
- Real-Time Acoustic Monitoring And Evaluation
- Fabrication And Machine Shops
- Rocket Preparation Areas (Secured And Temperatured Conditioned)

Arnold AFB TN
(Main, this worksheet applies to all test facility areas)

2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/support in your Military Department (by functional area) for FY92, FY93, and FY95 FYDP.

See attached spreadsheets. →

2.3.A Does the facility have a specified war-time or contingency role established in approved war plans?

No.

2.3.B Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes.

2.3.B.1 On the test mission of any other activity?

Yes.

2.3.B.2 On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes.

3.1.C.1 Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

There are several limiting environmental characteristics associated with AEDC operations. To sustain the continued operation of some AEDC test capabilities will require MILCON projects that are now programmed out through 1997. The most significant projects are related to replacement of systems containing Ozone Depleting Compounds (ODC). There are limitations imposed on air pollutant sources in terms of the number of overall hours that various test facilities can be

operated, but such terms can be renegotiated provided that there are not astronomic increases in the annual emission rate for key air quality pollutants. The AEDC Hazardous Waste Storage Facility is limited in terms of the number of drum that can be stored but work-arounds are available such as "just-in-time" procurements to limit HAZMAT quantities. Also, a hazardous material/hazardous waste storage building is currently included in the FY 95 environmental MILCON.

3.1.C.2 How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Data available from FY92 indicates workload could grow 62% before reaching permt levels.

3.1.C.3 Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deals with the environment? If so, when do they expire? Please describe.

AEDC does not operate under the provisions of any permits which are temporary in nature. AEDC operates under the interim status provisions of the Resource Conservation and Recovery Act. AEDC submitted its permit application in 1984 and has since revised it a number of times. A permit was issued in September 1990, but was appealed by AEDC. Since the regulatory agencies have not acted upon the appeal, AEDC is defined as being under "Interim Status". The EPA is willing to issue the permit. Resolution of the issue is expected within the next 12 months.

AEDC has volunteered to apply for an early permit under the provisions of the Clean Air Act Amendments of 1990 and will be issued permits during 1995 that will last for up to five years. These permits will replace the existing AEDC air pollution permits. AEDC is in an 'attainment zone" for the National Ambient Air Quality Standards but is considered a "major source" by the Tennessee Department of Environment and Conservation. AEDC's National Pollutant Discharge Elimination System (sewage) discharge permit will expire in 1997.

3.1.C.4 What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

Population within: 50 miles - 70,000
100 miles - 790,000
150 miles - 955,000
200 miles - 2,405,000

3.1.C.5 Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space?

No commercial air, land or sea traffic routes exist. No public use of air, land or sea space. Testing operations are not affected. Mission accomplishment is not affected.

3.1.C.5.A How many test missions per year are canceled due to commercial or public use?

None.

3.1.C.6 What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

3.1.E.2 Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

No.

3.1.G.1 How many square miles of air, land, and sea space are available to support test operations?

Air: None, AEDC does not manage or control any airspace.
Sea: None, AEDC does not manage or control any seaspace.
Land: Approximately 12,000 acres (18.75 sq miles) of Arnold AFB's total of 39,081 acres (61.06 sq miles) is currently used to support test operations.

3.1.G.1 TO 3.1.H.1 (3.1.G.2, 3.1.G.3, 3.1.G.4, 3.1.G.5, 3.1.G.6, 3.1.G.7, 3.1.G.8, and 3.1.H.1)
All questions deal with types, limits, characteristics and problems associated with airspace managed, controlled or

used by an installation.

All listed questions are not applicable (NA) to Arnold AFB. We do not own, manage, control or use any airspace.

3.1.H.2 Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

No known geologies or soil conditions affect any types of current or planned testing at AEDC.

3.1.H.3 Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No. AEDC is in the business of simulated flight testing. Test facilities are ground based and are not subject to competition for air, land or sea space. Neither do they require specific ambient conditions in order to meet test points.

3.1.H.4 What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

NOAA only reports average temperature deviations.
Average days per year mean temp below 32 degrees F: zero
between 32 and 95 degrees F: 365
above 95 degrees F: zero

From May 93 thru Apr 94, there were 61 days when the actual temperature dropped below 32 degrees F, and there were 10 days when the actual temperature rose above 95 degrees F.

3.1.H.5 What is the number of days per year the average relative humidity is below 30%? Between 30 and 80 %? Above 80%?

Average relative humidity is unknown. NOAA tables do not cover relative humidity. For May 93 thru Apr 94, AEDC EMCS reported actual relative humidity below 30 % for 53 days, between 30% and 80% for 74 days and above 80% for 238 days. Again, these are not daily average relative humidities.

3.1.H.6 What is the number of test missions per year (1985 - 1993) canceled due to weather? and question

3.1.H.7	What is the number of test days per year (1985 - 1993) canceled due to weather? None. AEDC test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of climate or weather.
3.1.H.8	What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles? Prevailing visibility records do not exist. No weather station, no operating control tower. Data not tracked at AEDC or Tullahoma Regional. AEDC simulated flight test mission not impacted by varying visibility conditions.
3.1.H.9	What is the average number of flying days available per year for flight test? Provide historical average from the past eight years. Question is NA. We do not conduct flight testing at Arnold AFB.
3.1.H.10	What percentage of the time are your test operations restricted due to weather? Test operations are almost never restricted due to weather. Quantitatively, the percentage is much less than 1 percent of the time. AEDC's test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of weather.
3.2.A.1 TO A.6	(3.2.A.1, 3.2.A.2, 3.2.A.3, 3.2.A.4 and 3.2.A.5 and 3.2.A.6): All questions have to do with supersonic corridors. No supersonic corridors exist within (a reasonable distance). We do not conduct actual flight test from Arnold AFB, therefore, questions are not applicable.
3.2.B.1	Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area , construction material, load capacity, and hangar space.

The airfield at Arnold AFB is a level 1 facility: unmanned, uncontrolled airfield with no control tower.
Number of runways: One
Azimuth of runway: 02/20
Field elevation: 1,067 Ft
Runway Length (excluding overrun): 6,000 Ft
Overrun Length: No overrun
Terminal and/or landing aids: VOR, LOC DME, VASI
Arresting Gear: None
Ramp Area: ~~112,500 square feet~~ 113,778 sq ft Per Air Stat validation
Construction material: Runway-reinforced concrete, ramp-asphalt
Load capacity: Runway - Weakest point PCN 18; Ramp - Weakest point PCN 26
Hangar space: None

3.2.B.2 How close and how many emergency runways or airfields are in your area of operation?

Three airfields are in our area of operation.
William Northern Field, Tullahoma TN - 15 miles
Smyrna TN - 40 miles
Nashville TN - 65 miles

3.2.B.3 Where is your airfield situated relative to working areas (airspace) for supporting test operations?

We do not have a flight test mission. We do not conduct actual flight test operations from the airfield at Arnold AFB. We have no assigned aircraft. We are not in close proximity to any special use airspace (working areas).

3.2.B.4 What makes your airfield unique or at least suited for supporting test operations?

Airfield is not suited for supporting flight test operations. The primary purpose of the airfield at AEDC is to launch and recover logistic flights in support of the simulated flight test mission. The airfield infrastructure required to support the actual flight test mission does not exist at Arnold AFB.

3.2.B.5 Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation (s). and question

3.2.B.6	Including hangars and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?
	We have no flight test mission at Arnold AFB, therefore there is zero flight test mission support capability. The airfield has several limitations that would effect flight test operations. Among them are, runway length (6,000'), no overrun, no parallel taxiway, very small ramp, no operating control tower, no restricted airspace in close proximity suitable for test operations, no organic aircraft operations or maintenance facilities or aircraft operations or maintenance workforce. Cannot support flight test operations from the airfield at Arnold AFB.
3.2.C.1 TO C.8	(3.2.C.1, 3.2.C.2, 3.2.C.3, 3.2.C.4, 3.2.C.5, 3.2.C.6, 3.2.C.7, and 3.2.C.8) Listed questions address the extent of T&E operations that the airspace can accommodate.
	Cannot support actual flight testing of air vehicles. No test airspace available. Inadequate airfield facilities (no control tower). No actual flight test mission.
3.4.A.1	Do you currently test directed energy weapon systems. Yes/no.
	No.
3.4.B.1.A TO B.2.D	(3.4.B.1.A, 3.4.B.1.B, 3.4.B.1.C, 3.4.B.2.A, 3.4.B.2.B, 3.4.B.2.C, 3.4.B.2.D) Questions pertain to test areas capable of handling live weapons systems tests.
	NA. AEDC can conduct live rocket motor and missile motor firings at simulated flight conditions in ground based propulsion test facilities. We can also conduct subscale aerodynamic stores integration and separation tests at simulated flight conditions using wind tunnels; however, we have no land or water ranges to support actual flight tests of live rocket, missile, or bomb systems. Since the questions listed above apply to range support of weapons system test requirements, they are not applicable to AEDC.

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
Air Vehicle	05117E Total	8,540		16	2,949	2,171	1,899		
	53631E Total		4,817	1,880	829	74	70	1,966	1,887
	62201F Total			113					
	62203F Total	2	797						
	63216F Total	2,665					1,302	2,395	2,299
	63231F Total	200							
	63269F Total	5,531	511	1,077	75				
	63363F Total	10							
	64218F Total	12							
	64223F Total	1,690				2,864			
	64239F Total	30,149	25,966	22,341	17,082	16,834	13,730	10,909	10,473
	64268F Total	4,155	6,391	9,564	7,922	10,118	12,381	15,543	14,921
	64313F Total				949				
	921A11 Total	903	4,522	1,818	4,835	2,768	2,701	2,292	2,200
	921A12 Total	5							
	921B10 Total			1,387					
	921B14 Total			2,214					
	921B19 Total		1,646			8,927			
	921B21 Total	16		7,461	8,509		3,904		
	921F01 Total		185		150	460	300	729	700
	921Z37 Total	422							
	UNKN Total	23,950	33,870	38,754	30,693	26,715	29,896	26,207	25,159
AIR VEHICLE TOTAL		**78,250**	**78,705**	**86,625**	**73,993**	**70,931**	**66,183**	**60,041**	**57,639**
Armament/Weapon	05117E Total			375	764	2,725	2,910	4,165	3,998
	11215F Total		784	2,038	1,921	894	3,484	2,717	2,608
	21009F Total	329							
	27163F Total	1,400							
	27590F Total	3,350	2,166	11,714	5,357	1,998	1,133	1,191	1,143
	31310F Total	150		260					
	35119F Total	120							

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	52102F Total	612							
	53631F Total					654	654	654	628
	61102F Total	230			130	130			
	62102F Total	16							
	62602F Total	15							
	63216C Total		2,927	785	497	1,043	1,365	515	494
	63269F Total	2,700			1,857	2,083	2,160	1,830	1,757
	63311F Total	1,138							
	63364F Total	261							
	63370F Total			24	18	16	14	14	13
	64212F Total	130	129	42	222	233		257	247
	64218F Total				2,849				
	64240F Total	1,479							
	64312F Total	940	98						
	64327F Total		504						
	64618F Total				3,624				
	65502F Total	185	537		509	399	540	520	499
	73806F Total			805					
	921A06 Total	8							
	921A20 Total	19	42						
	921A22 Total			23					
	921A31 Total		350	410					
	921C16 Total		50	50	100	75	75	75	72
	921F01 Total		1,492	808					
	921Z30 Total		587		149	156	218	287	276
	921Z40 Total	15							
	UNKN Total	1,177	129	383	63	9,514	2,956	2,890	2,774
ARMAMENT/WEAPON TOTAL		14,274	9,793	17,717	18,060	19,920	15,509	15,115	14,510
Other	12431F Total	555							
	27426F Total				11	23	47	72	69

AEDC XR ARNOLD AFB

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	/FY 99
	31310F Total	150	222	100	85	100	100	100	96
	35905F Total		411	169	400				
	60271511 Tota		447	2,851	3,026	954	1,700	2,800	2,688
	61102F Total			310					
	62102F Total	180	110						
	62201F Total	394	337	268	470	484	836	1,310	1,258
	62203F Total	97	25	110	225				
	62601F Total		423	23	72	50	50	50	48
	63203F Total	9	23		80	100	100	100	96
	63214C Total	365							
	63215C Total	350	11,003	1,223	2,950	1,750	3,936	4,601	4,417
	63215F Total		214		600	550	1,075	575	552
	63216C Total	1,893							
	63269F Total	51							
	63363F Total	477							
	63605F Total		18	16					
	64231F Total		252						
	64239F Total		75						
	65502F Total			345		130		80	77
	78026F Total		1,000	700					
	921A06 Total	131							
	921A11 Total	125	140	140	140	140	140	140	134
	921A27 Total			493					
	921A50 Total		34	50	50	50	75	75	72
	921B22 Total		32	50	50	50	50	50	48
	921C12 Total	490	651	180	200	250	300	350	336
	921C15 Total	.262							
	921C24 Total	100							
	921E02 Total	212							
	921E05 Total	7							
	921E08 Total	49							

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	921F01 Total	3,858	4,523	4,184	5,857	9,020	8,839	8,765	8,414
	921H07 Total		200	400	500	500			
	921Z30 Total				248	156			
	941C02 Total		573	100	100		95	120	115
	UNKN Total	1,608	1,914	2,339	7,789	9,027	10,053	13,434	12,897
OTHER TOTAL		11,363	22,626	14,051	22,853	23,334	27,396	32,622	31,317
GRAND TOTAL		103,887	111,124	118,393	114,906	114,185	109,088	107,778	103,467

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HISTORICAL WORKLOAD

Facility/Capability Title: Rocket Propulsion Altitude Test Capability

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ELECTRONIC COMBAT	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	173,534	146,102	192,184	163,013	38,185	44,855	22,639	16,845
	TEST HOURS	4,407	4,292	5,598	5,785	1,489	2,435	889	635
	MISSIONS								
OTHER T&E	DIRECT LABOR		67,770	37,996		124,286			8,652
	TEST HOURS		1,008	336		2,424			381
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Test Hours are defined as time of test article cell occupancy.

TECHNICAL INFORMATION

Facility/Capability Title: Rocket Propulsion Altitude Test Capability

Facility Description; Including Mission Statement: Facility Description: Two horizontally oriented test chambers (designated J-5 and J-6) for simulated altitude test firings of medium and large solid propellant rocket motors respectively and two vertically oriented test chambers (designated J-3 and J-4) for simulated altitude test firings of medium and large liquid propellant rocket engines respectively. An additional horizontal oriented test chamber, designated J-2A, is currently in mothball storage. **Mission Statement:** To provide timely and economical state-of-the-art testing, technical evaluations and engineering analysis of rocket propulsion systems and subsystems in support of the United States Air Force and National Aerospace Programs.

Interconnectivity/Multi-Use of T&E Facility: All four test chambers (J-3,J-4, J-5 and J-6) utilize the Engine Test Facility's (ETF) Basic and Addition mechanical pumping systems (designated B-Plant and A-Plant respectively) to achieve and maintain simulated altitude pressure conditions and provide for exhaust gas evacuation during test firings. ETF's B and A Plant also supports all turbine engine testing at AEDC except for turbine test programs utilizing Test Cells C-1 and C-2 of Aeropropulsion Systems Test Facility (ASTF). Test chambers J-4, J-5 and J-6 utilize the same facility control room and data acquisition system. Test chamber J-3 shares the use of a data acquisition system with turbine engine test chambers J-1 and J-2.

Types of Tests Supported: Complete Acquisition Life Cycle test support including Development, Qualification, Flight Proof Test, Production Quality Assurance, Aging and Surveillance and Anomaly Investigation.

Summary of Technical Capabilities: Reference attached fact sheet.

Key Words: Rocket Test, Simulated Altitude, Solid Rocket Motor, Liquid Rocket Engine.

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GENERAL INFORMATION

Facility/Capability Title: Rocket Propulsion Altitude Test Capability

Origin Date: 25 April 1994

Service: AF Organizaton/Activity: Arnold Engineering Development Center (AEDC) Location: Arnold AFB, TN

T&E Functional Area: Armament/Weapons UIC: N/A

T&E Facility Category: Measurement Facilities (MF)

	T&E	S&T	DE	IE	T&D	Other	= 100
PERCENTAGE USE:	95	5					

BREAKOUT BY T&E FUNCTIONAL AREA (%):

Air Vehicles							
Armament/Weapons	90	5					$\frac{90}{95} = 95\%$
Electronic Combat							
Other	5						

Total in Breakout Must Equal "Percentage Use" On First Line

DETERMINATION OF UNCONSTRAINED CAPACITY

Facility/Capability Title: Rocket Propulsion Altitude Test Capability

ANNUAL HOURS OF DOWNTIME	1 1680
AVERAGE DOWNTIME PER DAY (LINE 1 / 365)	2 4.6
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3 19.4

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL SIGMA)
4	5	6	7	8 1854.25
Solid Rocket Motor	2	17.30	34.60	
Liquid Rocket Engine	2	30.49	60.98	
				ANNUAL UNCONSTRAINED CAPACITY
				9 676.801
"TYPICAL" *	0	0	0	

* Only Rocket Test Operations Performed

'AL SIGMA 95.58

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ADDITIONAL INFORMATION

Facility/Capability Title: Rocket Propulsion Altitude Test Capability

PERSONNEL	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	4	4	4	4	4	4	3
Enlisted	1	1	1	1	1	0	0
Civilian	5	5	5	4	4	4	4
Contractor	193	193	185	178	171	164	157
Total	203	203	195	187	180	172	164

Total Square Footage: 167,244 Sq Ft
Test Area Square Footage: 42,960 Sq Ft
Tonnage of Equipment: 563,500 Tons
Annual Maintenance Cost: $ 1.334M

Office Space Square Footage: 9,000 Sq Ft
Volume of Equipment: 13,325,460 Cu Ft
Estimated Moving Cost: $ 1.1B

CAPITAL EQUIPMENT INVESTMENT ($M)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0.139	4.188	2.789	0	0	3.100	0

FACILITY CONDITION

Facility/Capability Title: Rocket Propulsion Altitude Test Capability

Age: J-3 (34 Yrs), J-4 (31 Yrs), J-5 (28 Yrs), J-6 (1 Yr)

Replacement Value: $1.0B (Equipment and Plant Included)

Maintenance and Repair Backlog: $464K

Date of Last Upgrade: August 1993

Nature of Last Upgrade: Aquisition of Rocket Test Facility J-6 provides for the safe testing of large detonable solid propellant rocket motors of 100,000 lbm TNT equivalent explosive yeild. Available June 1994.

Major Upgrades Programmed:

1. Upgrade Tilte: J-6 Activation/Validation

Total Programmed Amount: $4.688M

Summary Description: Rocket motor test supporting J-6 Facility operational activation and validation.

2. Upgrade Tilte: Cryogenic Liquid Rocket Test Capability (J-4) And DAPS Upgrade

Total Programmed Amount: $5.528M

Summary Description: Reestablish cryogenic liquid rocket propellant systems and Data Acquisition and Processing System upgrade for Test Facility J-4

Document Separator

Arnold AFB TN
Air Breathing Engine (ABE) Test Facilities

2.1.A.1 What amount of workload have you performed each year from FY86-93? Use the Historical Workload Form provided in Appendix A of this package.

The Historical Workload Form provided in Appendix A has been completed.

2.1.B.2 What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?.

In previous studies, (T&E Reliance and BoD Capstone Tasking), ABE testing was grouped in the Functional Area of Other Tests (Propulsion). For the purposes of this data call, ABE testing is grouped in the Functional Area: Air Vehicles; Major Sub-System: Air Breathing Engine Testing. The amount of ABE test work performed at AEDC in FY 92 and FY 93 was 300 workyears and 285 workyears, respectively. An AEDC workyear equals 1810 manhours as defined in the current technical support contract.

2.2.A Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.). Provide your response by filling out the Determination of Unconstrained Capacity Form in accordance with the instructions in Appendix A.

The Determination of Unconstrained Capacity Form has been completed.

2.2.B Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?.

The capacity limitations come from the physical characteristics of the ABE test facility and the sharing of utilities with other AEDC test facilities. The ABE test facilities consist of a series of test cells supported by two major industrial plants. The Engine Test Facility (ETF) plant currently supports eight ABE test cells, four rocket cells, and several research test cells. The Aeropropulsion Systems Test Facility (ASTF) plant currently supports two ABE test cells. Only one test cell can be supported by each plant at a given time. The number of test cells and the time required to switch test articles in the cells is the physical constraint on capacity. Total electrical power is limited to the base. Normal operations allow for scheduling to prevent any testing from being precluded. It is not expected to be a limiting factor even in surge years. Cooling water can also be a limiting factor depending on

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concurrent running of high water consumption facilities during hot weather.

3.1.A.1 What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

Approximately 75 % of the testing in the Air Breathing Engine (ABE) Test Facilities requires the near real time exchange of data with customer facilities. The majority of the data exchange in FY94 has been to the Pratt & Whitney Facilities in East Hartford CT and West Palm Beach FL, and the Naval Air Warfare Center Aircraft Division (NAWC AD) , Trenton NJ. The facilities that are interconnected during air breathing engine testing are the vonKarman Facility for high pressure air, and the Propulsion Wind Tunnel (PWT) Facility for exhauster support to achieve high altitude conditions. Support is provided to the Rocket Test Facilities for chamber evacuation and altitude sustainment, PWT for dry air support and exhauster support. All four of the planned BRAC 93 cells relocated from NAWC AD Trenton will rely on the ABE test facilities for support. Our typical operation does not allow for manpower to conduct simultaneous activities. There is a possibility for operating the PWT and ABE facilities at the same time depending on the ABE cells to be operated, and the conditions required from both facilities during the testing.

3.1.A.2 If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain..

Yes. The four BRAC 93 test cells relocated from NAWC AD Trenton would not be supported, exhauster support to the rocket test cells would not be possible, and both dry air support and exhauster support to the PWT facility would not be possible. No facilities external to AEDC would be prevented from operation.

3.1.B Fill out the Facility Condition Form in Appendix A in accordance with the instructions.

The Facility Condition Form from Appendix A has been completed.

3.1.D.1 Do you have specialized facilities that are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load buildup facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems mission planning facilities; corrosion control, painting, washing facilities; and

specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe..

Yes. Major industrial plants and computing centers. The industrial plants provide air to and remove air and exhaust products from the test cells at the appropriate flow rate, pressure and temperature simulating flight conditions, both steady state and transient, from sea level to 100,000 feet and from 0 to Mach 3.8. The computer center is used in analyzing the steady state and transient data. Test support also is provided by the calibration laboratory, the chemical analysis laboratory, the model shop, and the machine shop. Maintenance support is provided by the AEDC Mission Support contractor.

3.1.D.2 Are specialized targets required to support this facility? Yes/no. If yes, explain..

No. Specialized targets are not required to support this facility.

3.1.D.2A Have the specialized targets been validated? Yes/no. If yes, by whom?

No. There are no specialized targets required to support this facility therefore there is no target validation required..

3.1.E.1 Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. More test cells can be added, more flow capability can be added, and component testing facilities can be incorporated. Additionally, alternate propulsion devices can be tested such as slush hydrogen burning engines.

3.1.E.1.A Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes identify by T&E functional area and test type.

Yes. Using the functional area definition in paragraph 1.1.A.2 of the questionaire, the primary function area is propulsion, but the facilities can accept new T&E in the Air Vehicles, Land Vehicles, Space Vehicles, Armaments/Weapons, and Environmental Effects areas. The new Air Vehicle testing could be scale model testing of air vehicles in a free jet mode. The new Land Vehicle testing could be aerodynamic testing of land vehicles. The new Space Vehicle T&E workload could include hydrogen burning single stage to orbit propulsive devices for atmosphere/space application. Maneuvering rocket motor testing and rocket engine component testing could also be performed. The new

Armaments/Weapons testing could be sub-scale or full-size testing of missiles in a free jet mode and missile engine development testing. The environmental effects testing can include simulation of rain, icing, salt spray, temperature extremes, and altitude effects on all the above mentioned functional areas.

3.1.E.3 Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Special Access Required.

3.1.E.4 Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain..

Yes. The replication of two sea-level environmental cells and the relocation of two small altitude cells from NAWC AD Trenton, an upgrade to be able to develop the next generation fighter engine, productivity improvements that increase capacity, and the data acquisition and processing system upgrade that improves our capability.

3.1.F.1 Is this a one-of-a kind facility within the DoD? Yes/no. If yes, describe..

Yes. ASTF is the only facility within DoD that can perform altitude testing or altitude development of large air breathing engines. The air flow capacity and size of the test cells give it this distinction. When NAWC AD Trenton closes, ASTF and ETF will be the only DoD facilities with this capability for any air breathing engines.

3.1.F.1.A Is this a one-of-a-kind facility within the US Government? Yes/no. If yes describe.

Yes. ASTF is the only facility within the government that can perform altitude testing or altitude development of large air breathing engines. The air flow capacity and size of the test cells give it this distinction. NASA Lewis has two medium size altitude test cells comparable to ETF cells.

3.1.F.1.B Is this a one-of-a-kind facility within the US.? Yes/no. If yes, describe.

Yes. ASTF has more air flow capacity than any other engine facility. The state of the art engines have outgrown engine manufacturer's facilities and the expense of altitude test/development facilities preclude each manufacturer from building their own. Engine manufacturers test facilities have varying degrees of limitations.

3.1.F.2 Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department..

Yes. FY92 0%, FY93 2% for the Department of the Navy. With the implementation of ABE T&E Reliance, Navy test workload increased to 32% in FY94 of the total AEDC ABE workload. Due to the BRAC 93 decision to close the Navy ABE test facility in Trenton NJ by FY98, the percentage of Navy ABE test workload at AEDC is projected to increase in future years. Additionally, Department of the Army ABE test workload, currently conducted in the Navy Trenton Facility, will be accomplished at AEDC

3.3.A.1-3.3.A.10 Testing of stand-alone electronic combat systems and electronic combat sub-systems that are normally integrated into other weapon systems.

The ABE Test Facilities are measurement facilities for air breathing propulsion systems and have no capability to perform the threat simulation for the electronic combat systems or electronic combat sub-systems.

3.3.B.1-3.3.B.5 Test Article Support for Electronic Combat Systems and electronic combat subsystems.

The ABE Test Facilities are measurement facilities for air breathing propulsion systems. There is no Test Article Support testing capability.

Arnold AFB TN
(Main, this worksheet applies to all test facility areas)

2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/support in your Military Department (by functional area) for FY92, FY93, and FY95 FYDP.

See attached spreadsheets.

2.3.A Does the facility have a specified war-time or contingency role established in approved war plans?

No.

2.3.B Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes.

2.3.B.1 On the test mission of any other activity?

Yes.

2.3.B.2 On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes.

3.1.C.1 Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

There are several limiting environmental characteristics associated with AEDC operations. To sustain the continued operation of some AEDC test capabilities will require MILCON projects that are now programmed out through 1997. The most significant projects are related to replacement of systems containing Ozone Depleting Compounds (ODC). There are limitations imposed on air pollutant sources in terms of the number of overall hours that various test facilities can be

operated, but such terms can be renegotiated provided that there are not astronomic increases in the annual emission rate for key air quality pollutants. The AEDC Hazardous Waste Storage Facility is limited in terms of the number of drum that can be stored but work-arounds are available such as "just-in-time" procurements to limit HAZMAT quantities. Also, a hazardous material/hazardous waste storage building is currently included in the FY 95 environmental MILCON.

3.1.C.2 How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Data available from FY92 indicates workload could grow 62% before reaching permt levels.

3.1.C.3 Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deals with the environment? If so, when do they expire? Please describe.

AEDC does not operate under the provisions of any permits which are temporary in nature. AEDC operates under the interim status provisions of the Resource Conservation and Recovery Act. AEDC submitted its permit application in 1984 and has since revised it a number of times. A permit was issued in September 1990, but was appealed by AEDC. Since the regulatory agencies have not acted upon the appeal, AEDC is defined as being under "Interim Status". The EPA is willing to issue the permit. Resolution of the issue is expected within the next 12 months.

AEDC has volunteered to apply for an early permit under the provisions of the Clean Air Act Amendments of 1990 and will be issued permits during 1995 that will last for up to five years. These permits will replace the existing AEDC air pollution permits. AEDC is in an 'attainment zone" for the National Ambient Air Quality Standards but is considered a "major source" by the Tennessee Department of Environment and Conservation. AEDC's National Pollutant Discharge Elimination System (sewage) discharge permit will expire in 1997.

3.1.C.4 What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

Population within: 50 miles - 70,000
100 miles - 790,000
150 miles - 955,000
200 miles - 2,405,000

3.1.C.5 Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space?

No commercial air, land or sea traffic routes exist. No public use of air, land or sea space. Testing operations are not affected. Mission accomplishment is not affected.

3.1.C.5.A How many test missions per year are canceled due to commercial or public use?

None.

3.1.C.6 What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

3.1.E.2 Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

No.

3.1.G.1 How many square miles of air, land, and sea space are available to support test operations?

Air: None, AEDC does not manage or control any airspace.
Sea: None, AEDC does not manage or control any seaspace.
Land: Approximately 12,000 acres (18.75 sq miles) of Arnold AFB's total of 39,081 acres (61.06 sq miles) is currently used to support test operations.

3.1.G.1 TO 3.1.H.1 (3.1.G.2, 3.1.G.3, 3.1.G.4, 3.1.G.5, 3.1.G.6, 3.1.G.7, 3.1.G.8, and 3.1.H.1)
All questions deal with types, limits, characteristics and problems associated with airspace managed, controlled or

used by an installation.

All listed questions are not applicable (NA) to Arnold AFB. We do not own, manage, control or use any airspace.

3.1.H.2 Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

No known geologies or soil conditions affect any types of current or planned testing at AEDC.

3.1.H.3 Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No. AEDC is in the business of simulated flight testing. Test facilities are ground based and are not subject to competition for air, land or sea space. Neither do they require specific ambient conditions in order to meet test points.

3.1.H.4 What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

NOAA only reports average temperature deviations.
Average days per year mean temp below 32 degrees F: zero
between 32 and 95 degrees F: 365
above 95 degrees F: zero

From May 93 thru Apr 94, there were 61 days when the actual temperature dropped below 32 degrees F, and there were 10 days when the actual temperature rose above 95 degrees F.

3.1.H.5 What is the number of days per year the average relative humidity is below 30%? Between 30 and 80 %? Above 80%?

Average relative humidity is unknown. NOAA tables do not cover relative humidity. For May 93 thru Apr 94, AEDC EMCS reported actual relative humidity below 30 % for 53 days, between 30% and 80% for 74 days and above 80% for 238 days. Again, these are not daily average relative humidities.

3.1.H.6 What is the number of test missions per year (1985 - 1993) canceled due to weather? and question

3.1.H.7	What is the number of test days per year (1985 - 1993) canceled due to weather? None. AEDC test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of climate or weather.
3.1.H.8	What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles? Prevailing visibility records do not exist. No weather station, no operating control tower. Data not tracked at AEDC or Tullahoma Regional. AEDC simulated flight test mission not impacted by varying visibility conditions.
3.1.H.9	What is the average number of flying days available per year for flight test? Provide historical average from the past eight years. Question is NA. We do not conduct flight testing at Arnold AFB.
3.1.H.10	What percentage of the time are your test operations restricted due to weather? Test operations are almost never restricted due to weather. Quantitatively, the percentage is much less than 1 percent of the time. AEDC's test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of weather.
3.2.A.1 TO A.6	(3.2.A.1, 3.2.A.2, 3.2.A.3, 3.2.A.4 and 3.2.A.5 and 3.2.A.6): All questions have to do with supersonic corridors. No supersonic corridors exist within (a reasonable distance). We do not conduct actual flight test from Arnold AFB, therefore, questions are not applicable.
3.2.B.1	Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area , construction material, load capacity, and hangar space.

The airfield at Arnold AFB is a level 1 facility: unmanned, uncontrolled airfield with no control tower.
Number of runways: One
Azimuth of runway: 02/20
Field elevation: 1,067 Ft
Runway Length (excluding overrun): 6,000 Ft
Overrun Length: No overrun
Terminal and/or landing aids: VOR, LOC DME, VASI
Arresting Gear: None
Ramp Area: ~~112,500 square feet~~ 113,778 Sq ft Per Air Staff Validation
Construction material: Runway-reinforced concrete, ramp-asphalt
Load capacity: Runway - Weakest point PCN 18; Ramp - Weakest point PCN 26
Hangar space: None

3.2.B.2 How close and how many emergency runways or airfields are in your area of operation?

Three airfields are in our area of operation.
William Northern Field, Tullahoma TN - 15 miles
Smyrna TN - 40 miles
Nashville TN - 65 miles

3.2.B.3 Where is your airfield situated relative to working areas (airspace) for supporting test operations?

We do not have a flight test mission. We do not conduct actual flight test operations from the airfield at Arnold AFB. We have no assigned aircraft. We are not in close proximity to any special use airspace (working areas).

3.2.B.4 What makes your airfield unique or at least suited for supporting test operations?

Airfield is not suited for supporting flight test operations. The primary purpose of the airfield at AEDC is to launch and recover logistic flights in support of the simulated flight test mission. The airfield infrastructure required to support the actual flight test mission does not exist at Arnold AFB.

3.2.B.5 Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation (s). and question

3.2.B.6	Including hangars and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles? We have no flight test mission at Arnold AFB, therefore there is zero flight test mission support capability. The airfield has several limitations that would effect flight test operations. Among them are, runway length (6,000'), no overrun, no parallel taxiway, very small ramp, no operating control tower, no restricted airspace in close proximity suitable for test operations, no organic aircraft operations or maintenance facilities or aircraft operations or maintenance workforce. Cannot support flight test operations from the airfield at Arnold AFB.
3.2.C.1 TO C.8	(3.2.C.1, 3.2.C.2, 3.2.C.3, 3.2.C.4, 3.2.C.5, 3.2.C.6, 3.2.C.7, and 3.2.C.8) Listed questions address the extent of T&E operations that the airspace can accommodate. Cannot support actual flight testing of air vehicles. No test airspace available. Inadequate airfield facilities (no control tower). No actual flight test mission.
3.4.A.1	Do you currently test directed energy weapon systems. Yes/no. No.
3.4.B.1.A TO B.2.D	(3.4.B.1.A, 3.4.B.1.B, 3.4.B.1.C, 3.4.B.2.A, 3.4.B.2.B, 3.4.B.2.C, 3.4.B.2.D) Questions pertain to test areas capable of handling live weapons systems tests. NA. AEDC can conduct live rocket motor and missile motor firings at simulated flight conditions in ground based propulsion test facilities. We can also conduct subscale aerodynamic stores integration and separation tests at simulated flight conditions using wind tunnels; however, we have no land or water ranges to support actual flight tests of live rocket, missile, or bomb systems. Since the questions listed above apply to range support of weapons system test requirements, they are not applicable to AEDC.

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
Air Vehicle	05117E Total	8,540		16	2,949	2,171	1,899		
	53631E Total		4,817	1,880	829	74	70	1,966	1,887
	62201F Total			113					
	62203F Total	2	797						
	63216F Total	2,665					1,302	2,395	2,299
	63231F Total	200							
	63269F Total	5,531	511	1,077	75				
	63363F Total	10							
	64218F Total	12							
	64223F Total	1,690				2,864			
	64239F Total	30,149	25,966	22,341	17,082	16,834	13,730	10,909	10,473
	64268F Total	4,155	6,391	9,564	7,922	10,118	12,381	15,543	14,921
	64313F Total				949				
	921A11 Total	903	4,522	1,818	4,835	2,768	2,701	2,292	2,200
	921A12 Total	5							
	921B10 Total			1,387					
	921B14 Total			2,214					
	921B19 Total		1,646			8,927			
	921B21 Total	16		7,461	8,509		3,904		
	921F01 Total		185		150	460	300	729	700
	921Z37 Total	422							
	UNKN Total	23,950	33,870	38,754	30,693	26,715	29,896	26,207	25,159
AIR VEHICLE TOTAL		**78,250**	**78,705**	**86,625**	**73,993**	**70,931**	**66,183**	**60,041**	**57,639**
Armament/Weapon	05117E Total			375	764	2,725	2,910	4,165	3,998
	11215F Total		784	2,038	1,921	894	3,484	2,717	2,608
	21009F Total	329							
	27163F Total	1,400							
	27590F Total	3,350	2,166	11,714	5,357	1,998	1,133	1,191	1,143
	31310F Total	150		260					
	35119F Total	120							

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TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	52102F Total	612							
	53631F Total					654	654	654	628
	61102F Total	230			130	130			
	62102F Total	16							
	62602F Total	15							
	63216C Total		2,927	785	497	1,043	1,365	515	494
	63269F Total	2,700			1,857	2,083	2,160	1,830	1,757
	63311F Total	1,138							
	63364F Total	261							
	63370F Total			24	18	16	14	14	13
	64212F Total	130	129	42	222	233		257	247
	64218F Total				2,849				
	64240F Total	1,479							
	64312F Total	940	98						
	64327F Total		504						
	64618F Total				3,624				
	65502F Total	185	537		509	399	540	520	499
	73806F Total			805					
	921A06 Total	8							
	921A20 Total	19	42						
	921A22 Total			23					
	921A31 Total		350	410					
	921C16 Total		50	50	100	75	75	75	72
	921F01 Total		1,492	808					
	921Z30 Total		587		149	156	218	287	276
	921Z40 Total	15							
	UNKN Total	1,177	129	383	63	9,514	2,956	2,890	2,774
ARMAMENT/WEAPON TOTAL		**14,274**	**9,793**	**17,717**	**18,060**	**19,920**	**15,509**	**15,115**	**14,510**
Other	12431F Total	555							
	27426F Total				11	23	47	72	69

AEDC XB ARNOLD AFB

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	/FY 99
	31310F Total	150	222	100	85	100	100	100	96
	35905F Total		411	169	400				
	602715H Tota		447	2,851	3,026	954	1,700	2,800	2,688
	61102F Total			310					
	62102F Total	180	110						
	62201F Total	394	337	268	470	484	836	1,310	1,258
	62203F Total	97	25	110	225				
	62601F Total		423	23	72	50	50	50	48
	63203F Total	9	23		80	100	100	100	96
	63214C Total	365							
	63215C Total	350	11,003	1,223	2,950	1,750	3,936	4,601	4,417
	63215F Total		214		600	550	1,075	575	552
	63216C Total	1,893							
	63269F Total	51							
	63363F Total	477							
	63605F Total		18	16					
	64231F Total		252						
	64239F Total		75						
	65502F Total			345		130		80	77
	78026F Total		1,000	700					
	921A06 Total	131							
	921A11 Total	125	140	140	140	140	140	140	134
	921A27 Total			493					
	921A50 Total		34	50	50	50	75	75	72
	921B22 Total		32	50	50	50	50	50	48
	921C12 Total	490	651	180	200	250	300	350	336
	921C15 Total	262							
	921C24 Total	100							
	921E02 Total	212							
	921E05 Total	7							
	921E08 Total	49							

AEDC AE ARNOLD AFB

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	921F01 Total	3,858	4,523	4,184	5,857	9,020	8,839	8,765	8,414
	921H07 Total		200	400	500	500			
	921Z30 Total				248	156			
	941C02 Total		573	100	100		95	120	115
	UNKN Total	1,608	1,914	2,339	7,789	9,027	10,053	13,434	12,897
OTHER TOTAL		11,363	22,626	14,051	22,853	23,334	27,396	32,622	31,317
GRAND TOTAL		103,887	111,124	118,393	114,906	114,185	109,088	107,778	103,467

AEDC KF ARNOLD AFB

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HISTORICAL WORKLOAD

Facility/Capability Title: Air Breathing Engine Test Facilities

NOTE: TEST HOURS DEFINED AS AIR-ON HOURS

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	730,000	891,000	844,000	885,000	828,000	487,000	543,000	516,000
	TEST HOURS	2194	2193	2312	2043	1763	1059	830	1630
	MISSIONS								
ELECTRONIC COMBAT	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

TECHNICAL INFORMATION

Facility/Capability Title: AIR BREATHING ENGINE (ABE) TEST FACILITIES

Facility Description; Including Mission Statement: The facilities consist of major industrial complexes that compress ambient air and condition the air for temperature, absolute humidity, and pressure. The air is then provided to a test area with instrumentation, control, and test fixtures used to extract test information. A computer center handles the engine data. Compressors are used to extract the air and exhaust products from the test area at appropriate flow rates. Control rooms for the test article and facility are used to monitor and control the testing. The mission of the facilities is to provide altitude and Mach number simulation for the testing and development of Air Breathing Propulsion Systems.
Interconnectivity/Multi-Use of T&E Facility: The facilities that are interconnected during air breathing engine testing are the vonKarman Facility, the Propulsion Wind Tunnel Facility, and the Rocket Test Facilities. The ABE Test Facilities are used primarily on Air Vehicles with some Munitions support.
Types of Tests Supported: Performance, operability, and endurance testing of air breathing propulsion systems under simulated altitude conditions.,
Summary of Technical Capabilities:The Facilities provide altitude and Mach number simulation for air breathing propulsion system testing. Propulsion systems can be tested in free jet or direct connect configuration. Operability, performance and endurance are tested. The flow range is up to 2,200 pounds per second up to Mach 3.8. Altitude is to 100,000 feet. Various environmental conditions can be simulated. Over 2000 channels of instrumentation are available to monitor a test article. Each plant can only support one test cell at a given time.
Key Words: Air Breathing Propulsion Systems, Altitude Simulation, Performance Operability, Endurance

GENERAL INFORMATION

Facility/Capability Title: AIR BREATHING ENGINE TEST FACILITY

Origin Date: 05/13/94

Service: AF

Organization/Activity: ARNOLD ENGINEERING DEVELOPMENT CENTER (AEDC)

Location: ARNOLD AFB, TN

T&E Functional Area: Air Vehicle (Air Breathing Propulsion Systems)

UIC: _USN USE ONLY_____

T&E Facility Category: MEASUREMENT FACILITY (MF)

	T&E	S&T	DE	IE	T&D	Other	= 100
PERCENTAGE USE:	51	1	39	2	0	7	

BREAKOUT BY T&E FUNCTIONAL AREA (%):

Air Vehicles	51	1	39	2	0	7
Armament/Weapons						
Electronic Combat						
Other						

Total In Breakout Must Equal "Percentage Use" On First Line

DETERMINATION OF UNCONSTRAINED CAPACITY

Facility/Capability Title: Air Breathing Engine Test Facilities

ANNUAL HOURS OF DOWNTIME	1	3960
AVERAGE DOWNTIME PER DAY (LINE 1 / 365)	2	10.8
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	13.2

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
4	5	6	7
ABE (ASTF)	1	116	116
ABE (ETF)	1	169	169
"TYPICAL"	0	0	0

TOTAL SIGMA 285

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL SIGMA)

8 3,762

ANNUAL UNCONSTRAINED CAPACITY

9 1,373,130

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ADDITIONAL INFORMATION

Facility/Capability Title: Air Breathing Engine Test Facilities

PERSONNEL	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	24	24	23	22	21	20	19
Enlisted	3	3	3	3	3	3	3
Civilian	27	27	26	25	24	23	22
Contractor	1067	1067	1024	983	944	906	870
Total	1121	1121	1076	1033	992	952	914

Total Square Footage: _706,640_
Test Area Square Footage: _641,293_
Tonnage of Equipment: 200,000+
Annual Maintenance Cost: _$9.6M__

Office Space Square Footage: 65,347
Volume of Equipment: See Photos
Estimated Moving Cost: $4.2 B

CAPITAL EQUIPMENT INVESTMENT ($M)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
3.9	6.4	8.4	39.5	18.1	11.7	1.1

FACILITY CONDITION

Facility/Capability Title: Air Breathing Engine Test Facilities (ETF)

Age: 40 years

Replacement Value: $265 M

Maintenance and Repair Backlog: $2,655K

Date of Last Upgrade: FY94

Nature of Last Upgrade: Fighter Engine Test Capability. Improve ETF Test Capability to be able to test current development engines for future fighter aircraft.

Major Upgrades Programmed:

1. Upgrade Title: Data Acquisition and Processing System

Total Programmed Amount: $24,128,000 (ASTF and ETF)
Summary Description: Upgrade data acquisition and processing system. 7 year effort.

2. Upgrade Title: Fighter Engine Test Capability

Total Programmed Amount: $1,918,000
Summary Description: Allow E[illegible] test development engines for future fi[illegible] aircraft

FACILITY CONDITION

Facility/Capability Title: Air Breathing Engine Test Facilities (ASTF)

Age: 10 years

Replacement Value: $1,453 million

Maintenance and Repair Backlog: $1,880K

Date of Last Upgrade: FY94

Nature of Last Upgrade: Test Unit Support System. Test Article (engine) control, monitor and display system upgrade.

Major Upgrades Programmed:

1. Upgrade Title: Data Acquisition and Processing System

Total Programmed Amount: $24,128,000 (ASTF and ETF)
Summary Description: Upgrade data acquisition and processing system. 7 year effort.

2. Upgrade Title: Relocate/replicate NAWC AD Trenton Facilities at AEDC

Total Programmed Amount: $62.9 M (ASTF & ETF)
Summary Description: Establish sea-level environmental and small/shaft engine test capability at AEDC.

Document Separator

Arnold AFB TN
(VonKarman Facility (VKF) Supersonic/Hypersonic Complex)

2.1.A.1 What amount of workload have you performed each year from FY86-93?

The attached Historical Workload Form documents the answer.

2.1.B.2 What amount of test work was performed at your facility by functional areas in FY92 & FY93?

FUNCTIONAL AREA	FY92 MAN-YEARS	FY93 MAN-YEARS
AIR VEHICLES	2	3
ELECTRONIC COMBAT	0	0
ARMAMENT/WEAPONS	4	0
OTHER TESTS	122	114
OTHER	0	0

AEDC Workyear equals 1810 manhours as defined in current Technical Support Contract.

2.2.A Unconstrained capacity is the maximum capacity of this facility, assuming manpow utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.). Provide your response by filling out the Determination of Unconstrained Capacity Form in accordance with the instructions in A.

See attached Unconstrained Capacity Form

2.2.B Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commericial utility availability, etc?

Physical characteristics of the VKF facilities requires preventive maintenance, and scheduling with other AEDC complexs such as ETF and PWT. These are the two principle characteristics which limit capacity. The VKF-plant is typically down for 6 weeks of maintenance per-year. The plant is required to supply high-pressure air to both ETF and PWT which results in significant scheduling conflicts with the operations of the VKF wind tunnels (A, B, and C), APTU, and arc heaters (H1, HR, and H2). The physical operational characteristics of the VKF-plant (the supply of conditioned air to the test cell) will not allow for concurrent operation of wind tunnels A, B, or C. Electrical power from the 60-MW DC power supply can only be supply to one arc heaters (H1,

HR, and H2) at a time. Safety constrains of loading gun powder and the driver gas (Hydrogen) will not allow for the concurrent operation of the impact/lethality ballistic ranges.

3.1.A.1 What percentage of total test workload in FY93 involved the real-time or near-real time exchange of data or control with another facility. List the facilities you interconnect to for test and identify how many are simultaneous activities.

No real-time or near real time data is transferred outside of the VKF test infrastructure. The VKF plant supplies high-pressure air to all test facilities within AEDC.

FACILITIES	ARC HEATERS	TUNNELS A,B,C	APTU	RANGE
VKF PLANT	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS	
ETF EXHAUST	SIMULT (H2)			
VKF DATA ACQ		SIMULTANEOUS	SIMULTANEOUS	
DATA PROCESS				
POWER CONTROL	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS	
FUEL FARM		SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS
CAL LAB	PRE-TEST	PRE-TEST	PRE-TEST	PRE-TEST
CHEM LAB	PRE/POST-TEST	PRE/POST-TEST	PRE/POST-TEST	PRE/POST-TEST
ARC HEATERS	N/A	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS
TUNNELS A,B,C	SIMULTANEOUS	N/A	SIMULTANEOUS	SIMULTANEOUS
APTU	SIMULTANEOUS		N/A	SIMULTANEOUS
RANGES	SIMULTANEOUS	SIMULTANEOUS	SIMULTANEOUS	N/A

3.1.A.2 If the facility is closed, would there be an impact on other facilities to which you are connected?

FACILITY	IMPACT IF CLOSED
ARC HEATERS	NONE
TUNNELS A,B,C	V-PLANT PROVIDES HIGH PRESSURE AIR TO OTHER FACILITIES (PWT AND ETF)
APTU	NONE
RANGES	NONE

3.1.B Curent and planned status of the T&E facilities for supporting assigned test missions.

See attached Facility Condition Form.

3.1.D.1 Specialized Facilities Required to Support Test Operations.

Listed below are the facilities required to support operation of the VKF Supersonic/Hypersonic Test Complex:

1. ETF EXHAUST PLANT: Multi-stage rotating exhaust compressor machinery for providing low back pressure and altitude simulation to H2 Arc Heater Test Unit.

operated, but such terms can be renegotiated provided that there are not astronomic increases in the annual emission rate for key air quality pollutants. The AEDC Hazardous Waste Storage Facility is limited in terms of the number of drum that can be stored but work-arounds are available such as "just-in-time" procurements to limit HAZMAT quantities. Also, a hazardous material/hazardous waste storage building is currently included in the FY 95 environmental MILCON.

3.1.C.2 How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Data available from FY92 indicates workload could grow 62% before reaching permt levels.

3.1.C.3 Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deals with the environment? If so, when do they expire? Please describe.

AEDC does not operate under the provisions of any permits which are temporary in nature. AEDC operates under the interim status provisions of the Resource Conservation and Recovery Act. AEDC submitted its permit application in 1984 and has since revised it a number of times. A permit was issued in September 1990, but was appealed by AEDC. Since the regulatory agencies have not acted upon the appeal, AEDC is defined as being under "Interim Status". The EPA is willing to issue the permit. Resolution of the issue is expected within the next 12 months.

AEDC has volunteered to apply for an early permit under the provisions of the Clean Air Act Amendments of 1990 and will be issued permits during 1995 that will last for up to five years. These permits will replace the existing AEDC air pollution permits. AEDC is in an 'attainment zone" for the National Ambient Air Quality Standards but is considered a "major source" by the Tennessee Department of Environment and Conservation. AEDC's National Pollutant Discharge Elimination System (sewage) discharge permit will expire in 1997.

3.1.C.4 What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

Population within: 50 miles - 70,000
100 miles - 790,000
150 miles - 955,000
200 miles - 2,405,000

3.1.C.5 Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space?

No commercial air, land or sea traffic routes exist. No public use of air, land or sea space. Testing operations are not affected. Mission accomplishment is not affected.

3.1.C.5.A How many test missions per year are canceled due to commercial or public use?

None.

3.1.C.6 What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

3.1.E.2 Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

No.

3.1.G.1 How many square miles of air, land, and sea space are available to support test operations?

Air: None, AEDC does not manage or control any airspace.
Sea: None, AEDC does not manage or control any seaspace.
Land: Approximately 12,000 acres (18.75 sq miles) of Arnold AFB's total of 39,081 acres (61.06 sq miles) is currently used to support test operations.

3.1.G.1 TO 3.1.H.1 (3.1.G.2, 3.1.G.3, 3.1.G.4, 3.1.G.5, 3.1.G.6, 3.1.G.7, 3.1.G.8, and 3.1.H.1)
All questions deal with types, limits, characteristics and problems associated with airspace managed, controlled or

2. VKF PLANT: Air is supplied at the desired pressures and mass flows from selected stages of the compressor system and heaters to the VKF supersonic and hypersonic continuous flow wind tunnels A,B,C, APTU, and arc heaters. For the wind tunnels air then passes through the diffuser and through a cooler before re-entering the compressor system (see attached drawing).
3. VKF DATA ACQUISITION: Data reduction and analysis services for the VKF wind tunnels, APTU, and arc heaters are provided by two DEC VAX 8650 computers. These computers are connected through-out VKF. In addition, each computer can also communicate with the AEDC Central Computer and an Apollo Graphics system over a Network.
4. AEDC Data Processing: Base wide CONVEX and CRAY data processing facility for further data reduction system and analysis capabilities.
5. POWER CONTROL: Electrical power monitoring and controlling station for operation of VKF Plant and 60-MW DC Power Supply for arc heaters.
6. CALIBRATION LAB: Laboratory for the calibration of all instrumentation to national standards.
7. CHEMICAL LAB: Extensive laboratory for the analysis of exhaust samples.

3.1.D.2 Are specialized targets required to support this facility?

Special targets are not required to support ground testing in the VKF Supersonic/Hypersonic Test Complex.

3.1.D.2.A Have the specialized targets been validated

N/A

3.1.E.1 Are there special aspects of this facility (VKF Supersonic/Hypersonic Test Capability) that enhance its ability to expand output within each functional area?

No, reasonabile modifications would expand the role of the facilities. However, the I&M projects: improved Ballistic Range Capability, Data Acquisition Processing System, ABC Roll Pitch, ABC Inject, and Hi-Temp Test described in the attached Appendix A "Facility Conditions" form will increase the productivity and through-put by reducing the amount of down-time. This will result in reduced O&M and test cost, and for the Range and Arc Heater Complex.

3.1.E.1.A Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes, AEDC capabilities could be expanded in the areas of environmental effects which includes: integrated DT&E and OT&E, and hardware component and system level performance against various weather and erosion environments.

3.1.E.3 Is the facility equipped to support secure operations?

Yes, we can support test articles and data classified to the Confidential, Secret, Top Secret, and SAR levels.

3.1.E.4 Are there any capital improvements underway or programmed in the 95 FYDP that would change your capacity/ capability?

Yes, Capital Improvements are approved in the current FYDP. The attached Appendix A - Additional Information Form contains the funding profile for Capital Equipment Investment.

3.1.F.1 Is this a one-of-a-kind facility within the DoD

Yes, the unique capabilities of the VKF Supersonic/Hypersonic Complex are summarized below:

- ARC HEATERS (Aerothermal/Materials): only capability within DoD to simulate the aerodynamic heating environment above Mach 4.
  - Only capability within the country to make Aerodynamically Hot RF Window transmission measurements
- Ballistic Range Complex (Impact/Lethality): 3.3" launcher is the softest big-gun in the country. Also, the range has the only full-length track for guiding test articles. Only capability to measure RF/PLASMA (Ionization/Blackout Effects) interactions on vehicle operating at high speeds
- VKF Supersonic/Hypersonic Wind Tunnels: Only continuous flow hypersonic wind tunnels in the world. Only practical facilities to support the development of high-speed systems.

3.1.F.1.A Within the US Government?

Yes, the unique capabilities of the VKF Supersonic/Hypersonic Complex are summarized below:

- Only High-Pressure (above 80 atm) arc heater capability in the government.
  - Only capability within the country to make Aerodynamically Hot RF Window transmission measurements
- Ballistic Range Complex (Impact/Lethality): 3.3" launcher is the softest big-gun in the country. Also, the range has the only full-length track for guiding test articles. Only capability to measure RF/PLASMA (Ionization/Blackout Effects) interactions on vehicle operating at high speeds
- VKF Supersonic/Hypersonic Wind Tunnels: Only continuous flow hypersonic wind tunnels in the world. Only practical facilities to support the development of high-speed systems.

3.1.F.1.B Within the U.S.?

used by an installation.

All listed questions are not applicable (NA) to Arnold AFB. We do not own, manage, control or use any airspace.

3.1.H.2 Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

No known geologies or soil conditions affect any types of current or planned testing at AEDC.

3.1.H.3 Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No. AEDC is in the business of simulated flight testing. Test facilities are ground based and are not subject to competition for air, land or sea space. Neither do they require specific ambient conditions in order to meet test points.

3.1.H.4 What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

NOAA only reports average temperature deviations.
Average days per year mean temp below 32 degrees F: zero
between 32 and 95 degrees F: 365
above 95 degrees F: zero

From May 93 thru Apr 94, there were 61 days when the actual temperature dropped below 32 degrees F, and there were 10 days when the actual temperature rose above 95 degrees F.

3.1.H.5 What is the number of days per year the average relative humidity is below 30%? Between 30 and 80 %? Above 80%?

Average relative humidity is unknown. NOAA tables do not cover relative humidity. For May 93 thru Apr 94, AEDC EMCS reported actual relative humidity below 30 % for 53 days, between 30% and 80% for 74 days and above 80% for 238 days. Again, these are not daily average relative humidities.

3.1.H.6 What is the number of test missions per year (1985 - 1993) canceled due to weather? and question

3.1.H.7	What is the number of test days per year (1985 - 1993) canceled due to weather? None. AEDC test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of climate or weather.
3.1.H.8	What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles? Prevailing visibility records do not exist. No weather station, no operating control tower. Data not tracked at AEDC or Tullahoma Regional. AEDC simulated flight test mission not impacted by varying visibility conditions.
3.1.H.9	What is the average number of flying days available per year for flight test? Provide historical average from the past eight years. Question is NA. We do not conduct flight testing at Arnold AFB.
3.1.H.10	What percentage of the time are your test operations restricted due to weather? Test operations are almost never restricted due to weather. Quantitatively, the percentage is much less than 1 percent of the time. AEDC's test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of weather.
3.2.A.1 TO A.6	(3.2.A.1, 3.2.A.2, 3.2.A.3, 3.2.A.4 and 3.2.A.5 and 3.2.A.6): All questions have to do with supersonic corridors. No supersonic corridors exist within (a reasonable distance). We do not conduct actual flight test from Arnold AFB, therefore, questions are not applicable.
3.2.B.1	Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area , construction material, load capacity, and hangar space.

Yes, the unique capabilities of the VKF Supersonic/Hypersonic Complex are summarized below:

- Only Large (above 10MW), High-Pressure (above 80 atm) and High- performance arc heater capability in the country
  - Only capability within the country to make Aerodynamically Hot RF Window transmission measurements
- Ballistic Range Complex (Impact/Lethality): 3.3" launcher is the softest big-gun in the country. Also, the range has the only full-length track for guiding test articles. Only capability to measure RF/PLASMA (Ionization/Blackout Effects) interactions on vehicle operating at high speeds
- VKF Supersonic/Hypersonic Wind Tunnels: Only continuous flow hypersonic wind tunnels in the world. Only practical facilities to support the development of high-speed systems.

3.1.F.2 Are you currently providing support to DoD users outside your Military Department?

Yes, about 40% of our workload from the period of FY92-FY93 came from the Army and Navy.

3.3.A.1 - 3.3.A.10 Electronic Combat - Threat Environment.

N/A

3.3.B.1-3.3.B.5 Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them., 3.3.B.2 What is the number of simultaneous countermeasures that can be evaluated?, 3.3.B.3 What range of spectra can be tested and evaluated? 3.3.B.4 What are the available spectra?, and 3.3.B.5 Do you have a scene generation capability? Yes/no. If yes, describe.

N/A

Arnold AFB TN
(Main, this worksheet applies to all test facility areas)

2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/support in your Military Department (by functional area) for FY92, FY93, and FY95 FYDP.

See attached spreadsheets.

2.3.A Does the facility have a specified war-time or contingency role established in approved war plans?

No.

2.3.B Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes.

2.3.B.1 On the test mission of any other activity?

Yes.

2.3.B.2 On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes.

3.1.C.1 Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

There are several limiting environmental characteristics associated with AEDC operations. To sustain the continued operation of some AEDC test capabilities will require MILCON projects that are now programmed out through 1997. The most significant projects are related to replacement of systems containing Ozone Depleting Compounds (ODC). There are limitations imposed on air pollutant sources in terms of the number of overall hours that various test facilities can be

The airfield at Arnold AFB is a level 1 facility: unmanned, uncontrolled airfield with no control tower.
Number of runways: One
Azimuth of runway: 02/20
Field elevation: 1,067 Ft
Runway Length (excluding overrun): 6,000 Ft
Overrun Length: No overrun
Terminal and/or landing aids: VOR, LOC DME, VASI
Arresting Gear: None
Ramp Area: ~~112,500 square feet~~ 113,778 Sq ft Per Air Staff Validation
Construction material: Runway-reinforced concrete, ramp-asphalt
Load capacity: Runway - Weakest point PCN 18; Ramp - Weakest point PCN 26
Hangar space: None

3.2.B.2 How close and how many emergency runways or airfields are in your area of operation?

Three airfields are in our area of operation.
William Northern Field, Tullahoma TN - 15 miles
Smyrna TN - 40 miles
Nashville TN - 65 miles

3.2.B.3 Where is your airfield situated relative to working areas (airspace) for supporting test operations?

We do not have a flight test mission. We do not conduct actual flight test operations from the airfield at Arnold AFB. We have no assigned aircraft. We are not in close proximity to any special use airspace (working areas).

3.2.B.4 What makes your airfield unique or at least suited for supporting test operations?

Airfield is not suited for supporting flight test operations. The primary purpose of the airfield at AEDC is to launch and recover logistic flights in support of the simulated flight test mission. The airfield infrastructure required to support the actual flight test mission does not exist at Arnold AFB.

3.2.B.5 Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation (s). and question

3.2.B.6	Including hangars and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?
	We have no flight test mission at Arnold AFB, therefore there is zero flight test mission support capability. The airfield has several limitations that would effect flight test operations. Among them are, runway length (6,000'), no overrun, no parallel taxiway, very small ramp, no operating control tower, no restricted airspace in close proximity suitable for test operations, no organic aircraft operations or maintenance facilities or aircraft operations or maintenance workforce. Cannot support flight test operations from the airfield at Arnold AFB.
3.2.C.1 TO C.8	(3.2.C.1, 3.2.C.2, 3.2.C.3, 3.2.C.4, 3.2.C.5, 3.2.C.6, 3.2.C.7, and 3.2.C.8) Listed questions address the extent of T&E operations that the airspace can accommodate.
	Cannot support actual flight testing of air vehicles. No test airspace available. Inadequate airfield facilities (no control tower). No actual flight test mission.
3.4.A.1	Do you currently test directed energy weapon systems. Yes/no.
	No.
3.4.B.1.A TO B.2.D	(3.4.B.1.A, 3.4.B.1.B, 3.4.B.1.C, 3.4.B.2.A, 3.4.B.2.B, 3.4.B.2.C, 3.4.B.2.D) Questions pertain to test areas capable of handling live weapons systems tests.
	NA. AEDC can conduct live rocket motor and missile motor firings at simulated flight conditions in ground based propulsion test facilities. We can also conduct subscale aerodynamic stores integration and separation tests at simulated flight conditions using wind tunnels; however, we have no land or water ranges to support actual flight tests of live rocket, missile, or bomb systems. Since the questions listed above apply to range support of weapons system test requirements, they are not applicable to AEDC.

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TEST REQUIREMENTS . PROGRAM ELEMENT

RELIANCE AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
Air Vehicle	05117E Total	8,540		16	2,949	2,171	1,899		
	53631E Total		4,817	1,880	829	74	70	1,966	1,887
	62201F Total			113					
	62203F Total	2	797						
	63216F Total	2,665					1,302	2,395	2,299
	63231F Total	200							
	63269F Total	5,531	511	1,077	75				
	63363F Total	10							
	64218F Total	12							
	64223F Total	1,690				2,864			
	64239F Total	30,149	25,966	22,341	17,082	16,834	13,730	10,909	10,473
	64268F Total	4,155	6,391	9,564	7,922	10,118	12,381	15,543	14,921
	64313F Total				949				
	921A11 Total	903	4,522	1,818	4,835	2,768	2,701	2,292	2,200
	921A12 Total	5							
	921B10 Total			1,387					
	921B14 Total			2,214					
	921B19 Total		1,646			8,927			
	921B21 Total	16		7,461	8,509		3,904		
	921F01 Total		185		150	460	300	729	700
	921Z37 Total	422							
	UNKN Total	23,950	33,870	38,754	30,693	26,715	29,896	26,207	25,159
AIR VEHICLE TOTAL		**78,250**	**78,705**	**86,625**	**73,993**	**70,931**	**66,183**	**60,041**	**57,639**
Armament/Weapon	05117E Total			375	764	2,725	2,910	4,165	3,998
	11215F Total		784	2,038	1,921	894	3,484	2,717	2,608
	21009F Total	329							
	27163F Total	1,400							
	27590F Total	3,350	2,166	11,714	5,357	1,998	1,133	1,191	1,143
	31310F Total	150		260					
	35119F Total	120							
	52102F Total	612							
	53631F Total					654	654	654	628
	61102F Total	230			130	130			
	62102F Total	16							
	62602F Total	15							
	63216C Total		2,927	785	497	1,043	1,365	515	494
	63269F Total	2,700			1,857	2,083	2,160	1,830	1,757
	63311F Total	1,138							
	63364F Total	261							
	63370F Total			24	18	16	14	14	13
	64212F Total	130	129	42	222	233		257	247
	64218F Total				2,849				

TEST REQUIREMENTS . PROGRAM ELEMENT

RELIANCE AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	64240F Total	1,479							
	64312F Total	940	98						
	64327F Total		504						
	64618F Total				3,624				
	65502F Total	185	537		509	399	540	520	499
	73806F Total			805					
	921A06 Total	8							
	921A20 Total	19	42						
	921A22 Total			23					
	921A31 Total		350	410					
	921C16 Total		50	50	100	75	75	75	72
	921F01 Total		1,492	808					
	921Z30 Total		587		149	156	218	287	276
	921Z40 Total	15							
	UNKN Total	1,177	129	383	63	9,514	2,956	2,890	2,774
ARMAMENT/WEAPON TOTAL		**14,274**	**9,793**	**17,717**	**18,060**	**19,920**	**15,509**	**15,115**	**14,510**
Other	12431F Total	555							
	27426F Total				11	23	47	72	69
	31310F Total	150	222	100	85	100	100	100	96
	35905F Total		411	169	400				
	602715H Total		447	2,851	3,026	954	1,700	2,800	2,688
	61102F Total			310					
	62102F Total	180	110						
	62201F Total	394	337	268	470	484	836	1,310	1,258
	62203F Total	97	25	110	225				
	62601F Total		423	23	72	50	50	50	48
	63203F Total	9	23		80	100	100	100	96
	63214C Total	365							
	63215C Total	350	11,003	1,223	2,950	1,750	3,936	4,601	4,417
	63215F Total		214		600	550	1,075	575	552
	63216C Total	1,893							
	63269F Total	51							
	63363F Total	477							
	63605F Total		18	16					
	64231F Total		252						
	64239F Total		75						
	65502F Total			345		130		80	77
	78026F Total		1,000	700					
	921A06 Total	131							
	921A11 Total	125	140	140	140	140	140	140	134
	921A27 Total			493					
	921A50 Total		34	50	50	50	75	75	72

TEST REQUIREMENTS . PROGRAM ELEMENT

RELIANCE AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	921B22 Total		32	50	50	50	50	50	48
	921C12 Total	490	651	180	200	250	300	350	336
	921C15 Total	262							
	921C24 Total	100							
	921E02 Total	212							
	921E05 Total	7							
	921E08 Total	49							
	921F01 Total	3,858	4,523	4,184	5,857	9,020	8,839	8,765	8,414
	921H07 Total		200	400	500	500			
	921Z30 Total				248	156			
	941C02 Total		573	100	100		95	120	115
	UNKN Total	1,608	1,914	2,339	7,789	9,027	10,053	13,434	12,897
OTHER TOTAL		**11,363**	**22,626**	**14,051**	**22,853**	**23,334**	**27,396**	**32,622**	**31,317**
GRAND TOTAL		**103,887**	**111,124**	**118,393**	**114,906**	**114,185**	**109,088**	**107,778**	**103,467**

A2

HISTORICAL WORKLOAD

Facility/Capability Title: AEDC VKF SUPERSONIC/HYPERSONIC COMPLEX

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	3500	14200	7100	6200	2500	7200	3700	5071
	TEST HOURS	438	1055	588	373	147	571	269	380
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	29149	0	26000	25900	10400	40400	7200	0
	TEST HOURS	180	0	307	337	122	333	133	0
	MISSIONS								
OTHER T&E	DIRECT LABOR	217600	354600	327500	338300	268900	190000	175900	159800
	TEST HOURS	5679	6453	7595	8231	5232	4242	4189	4874
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

NOTE: TEST HOURS EQAULS TO SCHEDULE TIME IN A FACILITY AND SHOULD NOT BE USED TO CORRELATED WORKLOAD WITH OTHER TEST FACILITIES.

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TECHNICAL INFORMATION

Facility/Capability Title: AEDC VKF SUPERSONIC/HYPERSONIC COMPLEX

Facility Description; Including Mission Statement:

The principal ground test facilities for the development of supersonic/hypersonic systems are located within the VKF complex. The VKF aerospace facilities and equipment permit testing of relatively large-scale models of defensive systems such as interceptors and missiles, high speed aircraft, and launch vehicles in a Mach number range extending from 1.5 to 20. The test units, or facilities, include conventional continuous-flow wind tunnels, an intermittent blowdown tunnel, a shock tunnel, continuous-flow arc-heated facilities, and ballistic ranges. The AEDC supersonic/hypersonic aerodynamic facilities consist of continuous-flow Wind Tunnels A,B, and C, Aerodynamic and Propulsion Test Unit (APTU), and Free Piston Shock Tunnel (FPST). The AEDC aerothermal facilities include the arc-heated test units H1, HR, and H2, Wind Tunnels B and C, and APTU. The AEDC facilities with weather/erosion test capabilities include Hypervelocity Range/Track G, Tunnel C, and H1. The Range G is a facility for testing subscale models at supersonic to hypersonic speeds (up to 25,000 kft/sec) at environmental conditions. AEDC has a long history of conducting hypervelocity impact research and testing in the Ranges G and S1. Both ranges use two-stage, Light-gas launchers to propel projectiles to velocities up to 8 km/s.

Interconnectivity/Multi-Use of T&E Facility:

The Supersonic/Hypersonic Wind Tunnels (A/B/C) are supplied with air at the desired pressures and mass flows from selected stages of the compressor system. High-pressure air system provides air at pressures up to 3,800 psia to the wind tunnels, APTU, and the arc heaters along with ETF and PWT. The wind tunnels and APTU are connected to the VKF facility computer. Data are transmitted to the facility computer as they are acquired and returned for near real-time display. The arc heaters share a common electrical relay junction with PWT.

Types of Tests Supported:

- Airframe Aerodynamics - Force & Moment, Booster/Shroud Separation, Jet Interaction, Component Performance, Inlet Integration
- Aerothermal/Structures - Material Screening and Evaluation, Component Survivability and Performance, Thermal Structures Evaluation, Aerothermal Heating Code Validation
- Warhead Performance (Impact/Lethality) - Kill Assessment, Space Debris, Impact Phenomenology, Detonation
- Propulsion Performance - Air-Breathing (Liquid and Solid Ramjets)
- Environments (Weather/Erosion) - Material Screening/Survivability and Component/Structures Survivability and Performance

Summary of Technical Capabilities:

See Next Page

Key Words:

Ground Testing, Ground Simulation, Aerodynamics, Aerothermodynamics, Weather, Erosion, Lethality, Electromagnetics

TECHNICAL INFORMATION
(CONT.)

Facility/Capability Title: AEDC VKF SUPERSONIC/HYPERSONIC COMPLEX

SUPERSONIC/HYPERSONIC AERODYNAMICS

The typical aerodynamic test methodologies employed to determine vehicle performance include: static/dynamic stability and control properties, booster and shroud separation characteristics, jet interaction and control effectiveness, inlet performance, aeroheating and surface pressure distribution, and validation of aerodynamic and aerothermal computations. For static stability and control properties, booster and shroud separation characteristics, jet interaction and control effectiveness test methodologies, the measurement of static force and moments are the critical paramters. The force and moment measurement technique uses a multiple degree-of-freedom static balance. Force and moment data can be obtained either as individual points in the flight envelope (pitch pause) or in a continuous sweep mode. A variety of measurement techniques have been developed and applied to the aeroheating and surface pressure distribution, and the code validation test methodologies. Intrusive and nonintrusive flow-field measurements are an integral part of these two test methodologies.

AEROTHERMAL/STRUCTURES

The aerothermal test methodology is a two-phase approach: 1) define the vehicle's thermal flight environment, and 2) demonstrate material, component, and structural survivability and performance. The aeroheating test technique developed to approximate the vehicle aerothermal flight environment is provided in aerodynamic facilities. The results are used for code verification and defining local heat transfer rates around complex geometries like control surfaces, window apertures, and other protuberances. The test techniques developed for material screening involve placing material samples into specially designed wedges or nosetip holder and inserting the test article into the flow. To match or vary the local surface conditions the wedge or nosetip pitch angle and model axial location relative to the nozzle exit can be varied. Typically, instrumented models are used to measure the local environment (pressure, surface temperature, and heating rates) before the test article is injected. Test techniques for component and structure performance and survivability make use of the same type of instrumentation. The primary test data for any material test is the posttest model appearance i.e. survivability and ablation response.

WEATHER/EROSION

The weather/erosion test methodology is similar to that of aerothermal in that ground testing starts at the material level and progresses to the component and structural level. Two common test techniques for evaluating and comparing material, component, and structural response are the exposure of the test article to a single impact or multiple impacts. The development of a weather/erosion test capability at AEDC has focused on the multiple impact techniques which have been developed for all three facilities. A series of diagnostics techniques such as a double-pulsed holography system, laser doppler velocimeter, and other laser screen system have been developed to characterize the particle fields.

TECHNICAL INFORMATION
(CONT.)

Facility/Capability Title: AEDC VKF SUPERSONIC/HYPERSONIC COMPLEX

IMPACT/LETHALITY

The general objectives of impact/lethality test are to characterize effects of hypervelocity impacts on materials, components, and structures. Current test programs fall into two classes, assessment of the lethality of kinetic energy weapons and assessment of space debris impacting space systems. For lethality assessment, scaled projectiles and full and subscale targets (including flight hardware) are used. Projectiles which have been successfully launched include standard models such as spheres, long-rods, and slugs as well as complex models such as fragmented projectiles, fluid models, and segmented rods. For assessment of space-debris impact effects, targets range from flat plates to full-scale hardware such as satellites. One of the key objectives of both lethality and space-debris testing is assessment of make-up and propagation rate of the debris cloud which results from high speed impacts. To support a wide range of test objectives, diagnostic systems have been developed for application in both ranges. These diagnostic systems include: photography (X-Rays (hard and soft), laser, and high-speed framing cameras), impact signatures (spectrometers and radiometers), target instrumentation (pressure, shock, and strain gages), and soft-catch of debris fragments and use of witness plates to examine damage caused by debris particles.

PROPULSION PERFORMANCE

The APTU is the primary hypersonic propulsion test facility located at AEDC. The facility is capable of testing both liquid and solid fueled ramjets. The facility can test up to the critical transition point for rocket/ramjets. A broad capability of pressure (static and dynamic), temperature, and thrust stand measurements allows very detailed measurements to be made on a test article.

ANALYSIS AND COMPUTATIONAL CAPABILITIES

A broad range of analysis and computational capabilities are available which include Computational Fluid Dynamics (CFD), aerodynamic math models, hypersonic wake signatures, ablation/recession, thermal and structures analysis, and impact analysis. CFD is used routinely in flow regimes ranging from subsonic through hypersonic with all appropriate flow physics included in the analyses. A large collection of computer codes is operational, including time-dependent and space-matching Navier-Stokes solvers (viscous) and very efficient Euler (inviscous) solvers and boundary layer codes. In the hypersonic regime, CFD tools are available to determine gas jet effects, control surface effectiveness, and ablated nose effects as well as overall vehicle aerodynamics and heating. Aerodynamic math models can be developed to calculate aerodynamic coefficients using a database. Hypersonic wake analysis capabilities have been developed to predict and interpret the optical and radar signatures. Codes such a ABRES Shape Change Code (ASCC-86) are available for prediction of axisymmetric shape change phenomenology and material response to the aeroheating environment. AEDC has a wide range of thermal analysis and structural analysis methods. Examples of types of thermal analysis which are routinely performed are aerodynamic heating, radiant heat exchange, internal heat conduction, and cooling systems. Examples of types of structural analysis which can be performed are stress analysis, thermal stress analysis, vibrational dynamic analysis, and fracture mechanics. The impact analysis capability makes use of hydrocodes to provide prediction of the hypervelocity-impact events.

GENERAL INFORMATION

Facility/Capability Title: AEDC VKF SUPERSONIC/HYPERSONIC COMPLEX_

Origin Date: 3 MAY 94

Service: AF Organization/Activity: ARNOLD ENGINEERING DEVELOPMENT CENTER (AEDC) Location:ARNOLD AFB, TN

T&E Functional Area: OTHER UIC: USN USE ONLY

T&E Facility Category: MEASUREMENT FACILITY (MF)

	T&E	S&T	DE	IE	T&D	Other	= 100
PERCENTAGE USE:	70	30					

BREAKOUT BY T&E FUNCTIONAL AREA (%):

Air Vehicles	2					
Armament/Weapons	6					
Electronic Combat						
Other	62	30				

Total in Breakout Must Equal "Percentage Use" On First Line

DETERMINATION OF UNCONSTRAINED CAPACITY

Facility/Capability Title: AEDC VKF SUPERSONIC/HYPERSONIC COMPLEX

ANNUAL HOURS OF DOWNTIME	2880.0
AVERAGE DOWNTIME PER DAY (LINE 1 / 365)	8.0
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	16.0

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL SIGMA)
				1600
AERODYNAMIC	1	35	35	
AEROTHERMAL	1	19	19	
IMPACT/LETHALITY	1	30	30	ANNUAL UNCONSTRAINED CAPACITY
PROPULSION	1	16	16	
				584,000
"TYPICAL"	0	0	0	
		TOTAL SIGMA	100	

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ADDITIONAL INFORMATION

Facility/Capability Title: AEDC VKF SUPERSONIC/HYPERSONIC COMPLEX

PERSONNEL	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	12	12	11	11	10	10	10
Enlisted	2	2	2	1	1	1	1
Civilian	14	14	13	12	12	11	11
Contractor	539	539	517	492	470	451	433
Total	567	567	543	516	493	473	455

Total Square Footage: 200,000
Test Area Square Footage: 165,000
Tonnage of Equipment: _____
Annual Maintenance Cost: 11,273K

Office Space Square Footage: 35,000
Volume of Equipment: N/A
Estimated Moving Cost: 595,000K

CAPITAL EQUIPMENT INVESTMENT ($K)

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
ABC&APTU	980	1424	1382	1087	2456	2429	4669
ARC HEATERS	870	792	1287	173	168	267	923
RANGE COMPLEX	1363	1471	0	0	0	0	0

FACILITY CONDITION

Facility/Capability Title: AEDC VKF SUPERSONIC/HYPERSONIC COMPLEX

Age: 20-30 YEARS

Replacement Value: 500,000K

Maintenance and Repair Backlog: TBD

Date of Last Upgrade: APRIL 1994

Nature of Last Upgrade: Improved Ballistic Range Capability: consist of 1) a large 3.3-in. bore two-stage light-gas launcher providing soft launch of models into the existing 930ft long Range G; 2) a 2.5-in. bore two-stage light-gas launcher as dedicated Impact Range: and 3) a high-performance free-piston shock tunnel capable of stagnation pressure of 10,000 atm and stagnation temperatures of 10,000 K.

Major Upgrades Programmed:

1. **Upgrade Tilte:** VKF Portion of Data Acquisition Processing System
Total Programmed Amount: 2,100,000
Summary Description: The H-DDAS and G-DDAS acquires data and controls the model sequencing and health monitoring for the Arc Heater and Ballistic Range Complexes. The existing equipment is being maintained by cannibalizing parts from equipment replaced in Mark I ten years ago. There is increasing concern for its reliability. It is just a matter of time until a failure will curtail operations.

2. **Upgrade Tilte:** ABC Roll Pitch
Total Programmed Amount: 3,229,000
Summary Description: VKF Hypersonic/Supersonic Wind Tunnels A,B,C are equipped with model support systems which consist of several structurally-integrated subsystems used for injecting aerodynamic models into the test section. This project is required to improve performance and operational safety. The pitch system drive motor and position feedback sensors will be replaced totally new standard roll and in-line roll mechanisms will be provided, and archaic contorl system will be replaced.

FACILITY CONDITION
(CONT.)

Facility/Capability Title: AEDC VKF SUPERSONIC/HYPERSONIC COMPLEX

Major Upgrades Programmed: (CONT.)

3. Upgrade Tilte: ABC Inject
Total Programmed Amount: 4,900,000
Summary Description: VKF Hypersonic/Supersonic Wind Tunnels A,B,C are equipped with complex mechanisms which inject test articles into the wind tunnel flow, then retract the test article as required to change its configuration, change test conditions, or terminate the test. This project will improve the mechanisms and their controls, standardize controls for the three tunnels, and improve test article and personnel safety features. the system will be automated to improve operating efficiencies and to decrease dependence on human operators.

4. Upgrade Tilte: Hi-Temp. Test
Total Programmed Amount: 5,535,000
Summary Description: In the VKF Arc Heater Complex to satisfy thermal customer requirements relative to larger test models and propulsion customers relative to high mass floww and flow quality, the H2 Upgrade is needed to move the state-of-the-art H3 heater to the H2 test stand.

Document Separator

Arnold AFB TN
PROPULSION WIND TUNNEL COMPLEX

2.1.A.1 *What amount of workload have you performed each year from FY 86-93? Use the Historical Workload Form provided in Appendix A of this package.*

See attached Historical Workload Form.

2.1.B.2 *What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?*

PROPULSION WIND TUNNEL COMPLEX TEST WORKLOAD (WORKYEARS)

FUNCTIONAL AREA	FY92	FY93
AIR VEHICLE	137	153
ARMAMENT/WEAPONS	68	40
TOTAL	205	193

Note: AEDC workyear equals 1810 manhours as defined in current Technical Support Contract.

2.2.A *Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.) Provide your response by filling our the Determination of Unconstrained Capacity Form in accordance with instructions in Appendix A.*

See attached Determination of Unconstrained Capacity Form.
NOTE: Wind tunnels 16T and 16S are coupled by a common motor drive system and cannot be operated simultaneously. Tunnel 4T is also coupled to 16T/S, but does have a capability for independent operation.

2.2B *Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?*

Yes, the facility is limited by physical characteristics. Primary operating limits are high pressure air, dry air support, and exhauster support supplied from other plants , such as VKF and ETF plants. Therefore, there is a waiting period that is required before the system may be able to come on line. This is however, taken into account in the downtime for calculating the capacity. Wind tunnels 16T and 16S are coupled by a common motor drive system and cannot be operated simultaneously. Tunnel 4T is also coupled to 16T/S, but does have a capability for independent operation.

3.1.A.1 *What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.*

Excluding major power and water requirements, the AEDC Propulsion Wind Tunnel Complex is presently conected to the main frame computer complex for near real time data storage and reduction. Also, this wind tunnel complex depends upon the real time support for high pressure air, dry air support, and exhauster air support from other complexes (VKF and ETF plants) depending upon the time of year as testing requirements dictate. This interconnectivity would be needed if the facility were to be moved since they are not part of the PWT complex. These facilities are internal to the AEDC site. Within the PWT complex, wind tunnels 16T and 16S are coupled by a common motor drive system. The wind tunnel 4T does have an Independent Drive System (IDS), but for higher Mach number test requirements is also coupled with the Plenum Evacuation System (PES) motors of the 16T/S wind tunnels - thus rendering 16T/S inoperative for such tests. **One-hundred percent** (100%) of the FY93 workload involved real time or near real time data exchange with another facility. See attached chart.

3.1.A.2 *If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.*

Yes, the P-plant does provide some plenum evacuation support to the other plants at AEDC when required. See attached chart.

3.1.B *Current and planned status of the T&E facilities for supporting assigned test missions. Fill out the Facility Condition Form in Appendix A in accordance with the instructions.*

The condition of the PWT complex is a 38 year old system that has been maintained as well as any large facility can be given the budgited resources. Planned programs for upgrading the Tunnel 16S for improving flow quality as well as data acquisition system for the entire PWT complex will be submitted for programming this forthcoming year. See Facility Condition Form.

3.1.D.1 *Do you have specialized facilities are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.*

Yes. Within the PWT complex, the model installation building provides test model buildup in the test section before the test is installed into tunnel 16T or tunnel 16S for testing. This allows for model buildup, prep, installation, and checkout while other tests are ongoing in the tunnels. This process allows for high productivity within tunnels 16T and 16S. Also, plant support is required from VKF and ETF plants for high pressure air, dry air support, and exhauster support depending on test requirements. See attached chart.

3.1.D.2 *Are specialized targets required to support this facility? Yes/no. If yes explain.*

No specialized targets are required to support this facility.

3.1.D.2.A *Have the specialized targets been validated? Yes/no. If yes, by whom?*

98

Since no specialized targets are required to support this facility, No target validation requirements are needed.

3.1.E.1 *Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.*

Yes. Investments in I&M and technology can be leveraged to improve test article throughput and/or data acquisition/reduction times. These investments can have an impact on capacity/expandability.

3.1.E.1.A *Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.*

Yes. Computational assets can be used to support digital models and computer simulations for Integrated T&E testing. These computational capabilities can be linked with the tunnel test facility as well as the type of test to be performed. This can open the door on other types of tests performed in the PWT complex.

3.1.E.3 *Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?*

Yes, all levels of classification can be run in the PWT complex (Confidential, Secret, Top Secret, Special Access Required).

3.1.E.4 *Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.*

No. No improvements are currently programmed in the 95 FYDP.

3.1.F.1 *Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.*

Yes. The Propulsion Wind Tunnel (PWT) complex is unique within DoD because it can perform full-scale engine inlet forebody wind tunnel compatibility, integration, and verification testing. Tunnel 16S is the largest continuous flow supersonic wind tunnel within DoD and the United States with a Mach number range from 1.6 to 4.75. The 16T/S complex has tested all major military aircraft, space, and missile systems over the last 38 years. Both 16T and 4T tunnels perform most of the store separation and certification wind tunnel testing within the DoD complex.

3.1.F.1.A *Is this a one-of-a-kind facility within the US Government? Yes/no. If yes, describe.*

Yes. The Propulsion Wind Tunnel (PWT) complex is unique within the US Government because it can perform full-scale engine inlet forebody wind tunnel compatibility, integration, and verification testing. Tunnel 16S is the largest continuous flow supersonic wind tunnel within DoD and the US Government with a Mach number range from 1.6 to 4.75. The 16T/S complex has tested all major military aircraft, space, and missile systems over the last 38 years. Both 16T and 4T tunnels perform most of the store separation and certification wind tunnel testing within the DoD complex.

3.1.F.1.B *Is this a one-of-a-kind facility within the US? Yes/no. If yes, describe.*

Yes. The Propulsion Wind Tunnel (PWT) complex is unique within the US because it can perform full-scale engine inlet forebody wind tunnel compatibility, integration, and verification testing. Tunnel 16S is the largest continuous flow supersonic wind tunnel within DoD and the United States with a Mach number range from 1.6 to 4.75. The 16T/S complex has tested all major military aircraft, space, and missile systems over the last 38 years. Both 16T and 4T tunnels perform most of the store separation and certification wind tunnel testing within the US DoD complex.

3.1.F.2 *Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.*

Yes.

PWT COMPLEX WORKLOAD (PERCENT)

FISCAL YEAR	AF	NAVY	NASA	COMMERICAL
FY92	89	10	1	0
FY93	78	19	1	2
FY94	79	18	1	2

3.3A.1-3.3.A.10 *Electronic Combat.*

All answers concerning *Electronic Combat* are N/A.

3.3.B.1-3.3.B.5 *Electronic Combat.*

All answers concerning *Electronic Combat* are N/A.

Arnold AFB TN
(Main, this worksheet applies to all test facility areas)

2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/support in your Military Department (by functional area) for FY92, FY93, and FY95 FYDP.

See attached spreadsheets.

2.3.A Does the facility have a specified war-time or contingency role established in approved war plans?

No.

2.3.B Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes.

2.3.B.1 On the test mission of any other activity?

Yes.

2.3.B.2 On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes.

3.1.C.1 Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

There are several limiting environmental characteristics associated with AEDC operations. To sustain the continued operation of some AEDC test capabilities will require MILCON projects that are now programmed out through 1997. The most significant projects are related to replacement of systems containing Ozone Depleting Compounds (ODC). There are limitations imposed on air pollutant sources in terms of the number of overall hours that various test facilities can be

operated, but such terms can be renegotiated provided that there are not astronomic increases in the annual emission rate for key air quality pollutants. The AEDC Hazardous Waste Storage Facility is limited in terms of the number of drum that can be stored but work-arounds are available such as "just-in-time" procurements to limit HAZMAT quantities. Also, a hazardous material/hazardous waste storage building is currently included in the FY 95 environmental MILCON.

3.1.C.2 How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Data available from FY92 indicates workload could grow 62% before reaching permt levels.

3.1.C.3 Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deals with the environment? If so, when do they expire? Please describe.

AEDC does not operate under the provisions of any permits which are temporary in nature. AEDC operates under the interim status provisions of the Resource Conservation and Recovery Act. AEDC submitted its permit application in 1984 and has since revised it a number of times. A permit was issued in September 1990, but was appealed by AEDC. Since the regulatory agencies have not acted upon the appeal, AEDC is defined as being under "Interim Status". The EPA is willing to issue the permit. Resolution of the issue is expected within the next 12 months.

AEDC has volunteered to apply for an early permit under the provisions of the Clean Air Act Amendments of 1990 and will be issued permits during 1995 that will last for up to five years. These permits will replace the existing AEDC air pollution permits. AEDC is in an 'attainment zone" for the National Ambient Air Quality Standards but is considered a "major source" by the Tennessee Department of Environment and Conservation. AEDC's National Pollutant Discharge Elimination System (sewage) discharge permit will expire in 1997.

3.1.C.4 What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

Population within: 50 miles - 70,000
100 miles - 790,000
150 miles - 955,000
200 miles - 2,405,000

3.1.C.5 Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space?

No commercial air, land or sea traffic routes exist. No public use of air, land or sea space. Testing operations are not affected. Mission accomplishment is not affected.

3.1.C.5.A How many test missions per year are canceled due to commercial or public use?

None.

3.1.C.6 What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

3.1.E.2 Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

No.

3.1.G.1 How many square miles of air, land, and sea space are available to support test operations?

Air: None, AEDC does not manage or control any airspace.
Sea: None, AEDC does not manage or control any seaspace.
Land: Approximately 12,000 acres (18.75 sq miles) of Arnold AFB's total of 39,081 acres (61.06 sq miles) is currently used to support test operations.

3.1.G.1 TO 3.1.H.1 (3.1.G.2, 3.1.G.3, 3.1.G.4, 3.1.G.5, 3.1.G.6, 3.1.G.7, 3.1.G.8, and 3.1.H.1)
All questions deal with types, limits, characteristics and problems associated with airspace managed, controlled or

used by an installation.

All listed questions are not applicable (NA) to Arnold AFB. We do not own, manage, control or use any airspace.

3.1.H.2 Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

No known geologies or soil conditions affect any types of current or planned testing at AEDC.

3.1.H.3 Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No. AEDC is in the business of simulated flight testing. Test facilities are ground based and are not subject to competition for air, land or sea space. Neither do they require specific ambient conditions in order to meet test points.

3.1.H.4 What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

NOAA only reports average temperature deviations.
Average days per year mean temp below 32 degrees F: zero
between 32 and 95 degrees F: 365
above 95 degrees F: zero

From May 93 thru Apr 94, there were 61 days when the actual temperature dropped below 32 degrees F, and there were 10 days when the actual temperature rose above 95 degrees F.

3.1.H.5 What is the number of days per year the average relative humidity is below 30%? Between 30 and 80 %? Above 80%?

Average relative humidity is unknown. NOAA tables do not cover relative humidity. For May 93 thru Apr 94, AEDC EMCS reported actual relative humidity below 30 % for 53 days, between 30% and 80% for 74 days and above 80% for 238 days. Again, these are not daily average relative humidities.

3.1.H.6 What is the number of test missions per year (1985 - 1993) canceled due to weather? and question

3.1.H.7	What is the number of test days per year (1985 - 1993) canceled due to weather? None. AEDC test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of climate or weather.
3.1.H.8	What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles? Prevailing visibility records do not exist. No weather station, no operating control tower. Data not tracked at AEDC or Tullahoma Regional. AEDC simulated flight test mission not impacted by varying visibility conditions.
3.1.H.9	What is the average number of flying days available per year for flight test? Provide historical average from the past eight years. Question is NA. We do not conduct flight testing at Arnold AFB.
3.1.H.10	What percentage of the time are your test operations restricted due to weather? Test operations are almost never restricted due to weather. Quantitatively, the percentage is much less than 1 percent of the time. AEDC's test facilities are ground based. They simulate flight conditions. They aren't subject to the vagaries of weather.
3.2.A.1 TO A.6	(3.2.A.1, 3.2.A.2, 3.2.A.3, 3.2.A.4 and 3.2.A.5 and 3.2.A.6): All questions have to do with supersonic corridors. No supersonic corridors exist within (a reasonable distance). We do not conduct actual flight test from Arnold AFB, therefore, questions are not applicable.
3.2.B.1	Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area , construction material, load capacity, and hangar space.

The airfield at Arnold AFB is a level 1 facility: unmanned, uncontrolled airfield with no control tower.
Number of runways: One
Azimuth of runway: 02/20
Field elevation: 1,067 Ft
Runway Length (excluding overrun): 6,000 Ft
Overrun Length: No overrun
Terminal and/or landing aids: VOR, LOC DME, VASI
Arresting Gear: None
per Air Staff Validation
Ramp Area: 11~~2,500 square feet.~~ 113,778 sq Ft
Construction material: Runway-reinforced concrete, ramp-asphalt
Load capacity: Runway - Weakest point PCN 18; Ramp - Weakest point PCN 26
Hangar space: None

3.2.B.2 How close and how many emergency runways or airfields are in your area of operation?

Three airfields are in our area of operation.
William Northern Field, Tullahoma TN - 15 miles
Smyrna TN - 40 miles
Nashville TN - 65 miles

3.2.B.3 Where is your airfield situated relative to working areas (airspace) for supporting test operations?

We do not have a flight test mission. We do not conduct actual flight test operations from the airfield at Arnold AFB. We have no assigned aircraft. We are not in close proximity to any special use airspace (working areas).

3.2.B.4 What makes your airfield unique or at least suited for supporting test operations?

Airfield is not suited for supporting flight test operations. The primary purpose of the airfield at AEDC is to launch and recover logistic flights in support of the simulated flight test mission. The airfield infrastructure required to support the actual flight test mission does not exist at Arnold AFB.

3.2.B.5 Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation (s). and question

3.2.B.6	Including hangars and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles? We have no flight test mission at Arnold AFB, therefore there is zero flight test mission support capability. The airfield has several limitations that would effect flight test operations. Among them are, runway length (6,000'), no overrun, no parallel taxiway, very small ramp, no operating control tower, no restricted airspace in close proximity suitable for test operations, no organic aircraft operations or maintenance facilities or aircraft operations or maintenance workforce. Cannot support flight test operations from the airfield at Arnold AFB.
3.2.C.1 TO C.8	(3.2.C.1, 3.2.C.2, 3.2.C.3, 3.2.C.4, 3.2.C.5, 3.2.C.6, 3.2.C.7, and 3.2.C.8) Listed questions address the extent of T&E operations that the airspace can accommodate. Cannot support actual flight testing of air vehicles. No test airspace available. Inadequate airfield facilities (no control tower). No actual flight test mission.
3.4.A.1	Do you currently test directed energy weapon systems. Yes/no. No.
3.4.B.1.A TO B.2.D	(3.4.B.1.A, 3.4.B.1.B, 3.4.B.1.C, 3.4.B.2.A, 3.4.B.2.B, 3.4.B.2.C, 3.4.B.2.D) Questions pertain to test areas capable of handling live weapons systems tests. NA. AEDC can conduct live rocket motor and missile motor firings at simulated flight conditions in ground based propulsion test facilities. We can also conduct subscale aerodynamic stores integration and separation tests at simulated flight conditions using wind tunnels; however, we have no land or water ranges to support actual flight tests of live rocket, missile, or bomb systems. Since the questions listed above apply to range support of weapons system test requirements, they are not applicable to AEDC.

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
Air Vehicle	05117E Total	8,540		16	2,949	2,171	1,899		
	53631E Total		4,817	1,880	829	74	70	1,966	1,887
	62201F Total			113					
	62203F Total	2	797						
	63216F Total	2,665					1,302	2,395	2,299
	63231F Total	200							
	63269F Total	5,531	511	1,077	75				
	63363F Total	10							
	64218F Total	12							
	64223F Total	1,690				2,864			
	64239F Total	30,149	25,966	22,341	17,082	16,834	13,730	10,909	10,473
	64268F Total	4,155	6,391	9,564	7,922	10,118	12,381	15,543	14,921
	64313F Total				949				
	921A11 Total	903	4,522	1,818	4,835	2,768	2,701	2,292	2,200
	921A12 Total	5							
	921B10 Total			1,387					
	921B14 Total			2,214					
	921B19 Total		1,646			8,927			
	921B21 Total	16		7,461	8,509		3,904		
	921F01 Total		185		150	460	300	729	700
	921Z37 Total	422							
	UNKN Total	23,950	33,870	38,754	30,693	26,715	29,896	26,207	25,159
AIR VEHICLE TOTAL		**78,250**	**78,705**	**86,625**	**73,993**	**70,931**	**66,183**	**60,041**	**57,639**
Armament/Weapon	05117E Total			375	764	2,725	2,910	4,165	3,998
	11215F Total		784	2,038	1,921	894	3,484	2,717	2,608
	21009F Total	329							
	27163F Total	1,400							
	27590F Total	3,350	2,166	11,714	5,357	1,998	1,133	1,191	1,143
	31310F Total	150		260					
	35119F Total	120							

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	52102F Total	612							
	53631F Total					654	654	654	628
	61102F Total	230			130	130			
	62102F Total	16							
	62602F Total	15							
	63216C Total		2,927	785	497	1,043	1,365	515	494
	63269F Total	2,700			1,857	2,083	2,160	1,830	1,757
	63311F Total	1,138							
	63364F Total	261							
	63370F Total			24	18	16	14	14	13
	64212F Total	130	129	42	222	233		257	247
	64218F Total				2,849				
	64240F Total	1,479							
	64312F Total	940	98						
	64327F Total		504						
	64618F Total				3,624				
	65502F Total	185	537		509	399	540	520	499
	73806F Total			805					
	921A06 Total	8							
	921A20 Total	19	42						
	921A22 Total			23					
	921A31 Total		350	410					
	921C16 Total		50	50	100	75	75	75	72
	921F01 Total		1,492	808					
	921Z30 Total		587		149	156	218	287	276
	921Z40 Total	15							
	UNKN Total	1,177	129	383	63	9,514	2,956	2,890	2,774
ARMAMENT/WEAPON TOTAL		14,274	9,793	17,717	18,060	19,920	15,509	15,115	14,510
Other	12431F Total	555							
	27426F Total				11	23	47	72	69

AEDC XR ARNOLD AFB

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	/FY 99
	31310F Total	150	222	100	85	100	100	100	96
	35905F Total		411	169	400				
	602715H Tota		447	2,851	3,026	954	1,700	2,800	2,688
	61102F Total			310					
	62102F Total	180	110						
	62201F Total	394	337	268	470	484	836	1,310	1,258
	62203F Total	97	25	110	225				
	62601F Total		423	23	72	50	50	50	48
	63203F Total	9	23		80	100	100	100	96
	63214C Total	365							
	63215C Total	350	11,003	1,223	2,950	1,750	3,936	4,601	4,417
	63215F Total		214		600	550	1,075	575	552
	63216C Total	1,893							
	63269F Total	51							
	63363F Total	477							
	63605F Total		18	16					
	64231F Total		252						
	64239F Total		75						
	65502F Total			345		130		80	77
	78026F Total		1,000	700					
	921A06 Total	131							
	921A11 Total	125	140	140	140	140	140	140	134
	921A27 Total			493					
	921A50 Total		34	50	50	50	75	75	72
	921B22 Total		32	50	50	50	50	50	48
	921C12 Total	490	651	180	200	250	300	350	336
	921C15 Total	.262							
	921C24 Total	100							
	921E02 Total	212							
	921E05 Total	7							
	921E08 Total	49							

AEDC XR ARNOLD AFB

TEST REQUIREMENTS BY PROGRAM ELEMENT

AREA	PE#	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
	921F01 Total	3,858	4,523	4,184	5,857	9,020	8,839	8,765	8,414
	921H07 Total		200	400	500	500			
	921Z30 Total				248	156			
	941C02 Total		573	100	100		95	120	115
	UNKN Total	1,608	1,914	2,339	7,789	9,027	10,053	13,434	12,897
OTHER TOTAL		11,363	22,626	14,051	22,853	23,334	27,396	32,622	31,317
GRAND TOTAL		103,887	111,124	118,393	114,906	114,185	109,088	107,778	103,467

AEDC AF AERNOLD AFB

HISTORICAL WORKLOAD

Facility/Capability Title: Propulsion Wind Tunnel Complex - 16T/S, 4T

NOTE: TEST HOURS DEFINED AS OPERATING SHIFT HOURS (OSH)

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	259800	312515	258346	350687	308462	246099	247760	276780
	TEST HOURS	5016	6619	6019	7675	6912	4378	5496	6924
	MISSIONS								
ELECTRONIC COMBAT	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	190001	155255	184429	108931	153742	146466	122587	73114
	TEST HOURS	4635	3749	5240	5331	5385	3632	3867	2427
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

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TECHNICAL INFORMATION

Facility/Capability Title: Propulsion Wind Tunnel Complex - 16T/S, 4T

Facility Description; Including Mission Statement: The Propulsion Wind Tunnel (PWT) Complex includes Propulsion Wind Tunnel 16T, Propulsion Wind Tunnel 16S, and Aerodynamic Wind Tunnel 4T. The PWT 16-ft tunnels are intended primarily for testing the aerodynamic performance of full-scale engine installations, large aircraft models, or large and full-scale missiles. The 4-ft transonic tunnel is used primarily for store separation testing, but can be used for sting-mounted force and pressure tests of aerodynamic models or dynamic stability testing.
Interconnectivity/Multi-Use of T&E Facility: The PWT Complex wind tunnels are all linked for near real-time data analysis in the performance of test requirements and on-line test modifications. There are requirements for on-line support from the VKF plant for high pressure air and the ETF plant for dry air support, as well as exhauster support. Wind tunnels 16T and 16S are coupled by a common motor drive system and cannot be operated simultaneously. Tunnel 4T is also coupled with the PES motors on 16T/S, but can also operate independently.
Types of Tests Supported: The PWT Complex is used for force and moment, captive trajectory store separation, pressure, dynamic stability, internal duct flow, jet effects, and buffet tests. Full-scale tests of aircraft propulsion systems permit investigations of engine operations in conjunction with inlet controls.
Summary of Technical Capabilities: Mach Number Range - 0.06 to 4.75; Pressure Altitude - sea level to 155,000 ft Reynolds Number Range - 0.2 million to 6.0 million
Key Words: propulsion, aerodynamic, store separation, store integration, pressure, dynamic stability, internal duct flow, nozzle aft body, jet effects, buffet, store free drop, deceleration systems tests

GENERAL INFORMATION

Facility/Capability Title: Propulsion Wind Tunnel Complex - 16T/S,4T

Origin Date: 05/02/94

Service: AF

Organization/Activity: ARNOLD ENGINEERING DEVELOPMENT CENTER (AEDC)

Location: ARNOLD AFB, TN

T&E Functional Area: AIR VEHICLES & ARMAMENT/WEAPONS

UIC: USN USE ONLY

T&E Facility Category: MEASUREMENT FACILITIES

	T&E	S&T	DE	IE	T&D	Other	= 100
PERCENTAGE USE:	46	1	53				

BREAKOUT BY T&E FUNCTIONAL AREA (%):

AW 084

Air Vehicles	36		40			
Armament/Weapons	10 32	1	13			
Electronic Combat						
Other						

10/24

32/46 = 70%

Total in Breakout Must Equal "Percentage Use" On First Line

DETERMINATION OF UNCONSTRAINED CAPACITY

Facility/Capability Title: Propulsion Wind Tunnel Complex - 16T/S, 4T

ANNUAL HOURS OF DOWNTIME	1	1973
AVERAGE DOWNTIME PER DAY (LINE 1 / 365)	2	5.4
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	18.6

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL SIGMA)
4	5	6	7	8 1471.3
AIR VEHICLES	1	46.0	46.0	
ARMAMENT/ WEAPONS	1	33.1	33.1	
				ANNUAL UNCONSTRAINED CAPACITY
				9 537,025
"TYPICAL"	0	0	0.0	
		TOTAL SIGMA	79.1	

ADDITIONAL INFORMATION

Facility/Capability Title: Propulsion Wind Tunnel Complex - 16T/S, 4T

PERSONNEL	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	16	16	16	15	14	14	13
Enlisted	2	2	2	2	2	2	2
Civilian	19	19	18	17	16	16	15
Contractor	748	748	718	684	654	628	603
Total	785	785	754	718	687	659	633

Total Square Footage: 900,000
Test Area Square Footage: 1324
Tonnage of Equipment: 60,000+
Annual Maintenance Cost: $8.7 million

Office Space Square Footage: 194,000 SQ FT
Volume of Equipment: 1.5 M cubic ft
Estimated Moving Cost: $2.5 billion

CAPITAL EQUIPMENT INVESTMENT

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	0	0	0	0	0	0

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FACILITY CONDITION

Facility/Capability Title: Propulsion Wind Tunnel Complex - 16T/S, 4T

Age: 38 YEARS

Replacement Value: $2,500 million

Maintenance and Repair Backlog: $2.5 million

Date of Last Upgrade: 1993

Nature of Last Upgrade:
Independent Drive System for 4T wind tunnel; Computerized nozzle for 16S wind tunnel

Major Upgrades Programmed: No major upgrades programmed in POM as of 05/02/94

1. Upgrade Title: N/A

Total Programmed Amount: N/A
Summary Description: N/A

2. Upgrade Title: N/A

Total Programmed Amount: N/A
Summary Description: N/A

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BASE AND INSTALLATION SECURITY SYSTEM (BISS) TEST FACILITY... 15.0

GUN TEST FACILITY..... 16.0

Document Separator

T&E PERCENTAGES

SITE/ACTIVITY: AFDTC @ EGLIN AFB, FL

FACILITY	TOTAL % T&E	AV	EC	A/W	OTHER	
DIGITAL MODELING AND SIM	100	0	3.5	96.5	0	A/W DMS
McKINLEY CLIMATIC LAB	100	58	9	0	33	AV MF
MULTISPECTRAL SIG MSMT	100	8	7	50	35	A/W MF
EGLIN SLED TRACK	100	0	2	92	6	A/W MF
WARHEAD ARENA	100	1	0	99	0	A/W MF
FUZE TEST FACILITY	100	0	0	99	1	A/W MF
GUN TEST FACILITY	96	0	0	93	3	A/W MF
GWEF	90.44	0.49	1.81	80.06	8.08	A/W HITL
AFEWES	100	0	100	0	0	EC HITL
REDCAP	100	0	100	0	0	EC HITL
TIMES	100	0	53	31	16	A/W ISTF
ASTE	80	3	5	40	32	A/W OAR
EMTE	98	1	57	9	31	EC OAR
GULF TEST FACILITY	33	1	3	7	22	A/W OAR
HELLFIRE TEST FACILITY	100	0	0	100	0	A/W OAR
BISS	95.8	1.3	0.5	3.1	90.9	OTHER OAR

Doug Nation 12 Aug 94
SIGNATURE DATE

12 Aug 94
SIGNATURE DATE

12 Aug 94
SIGNATURE DATE

FACILITY/CAPABILITY: MULTISPECTRAL SIG MSMT @ EGLIN AFB

TEST FACILITY CATEGORY: MF

% T&E - OVERALL: 100

AV: 8

EC: 7

A/W: 50

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 5 + 8 = 13

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	4	FY93	245
EC:	FY92	728	FY93	215
A/W:	FY92	1,187	FY93	1,579

Nation 12 Aug 94
Jcomblare 17 Aug 94

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FACILITY/CAPABILITY: DIGITAL M+S @ EGLIN AFB

TEST FACILITY CATEGORY: DMS

% T&E - OVERALL: 100

AV: 0

EC: 3.5

A/W: 96.5

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 300

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	0	FY93	0
EC:	FY92	1,664	FY93	2,080
A/W:	FY92	51,412	FY93	57,820

Nation 12 Aug 94

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
61102F	X		X		
62602F			X		
63723F				X	
ARMY			X		

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
11113F			X		
11128F			X		
21001F	X				
27130F		X			
27133F	X	X			
27134F		X	X		
27163F			X		
27590F	X		X		
28015F		X			
28030F			X		
35887F		X			
61102F	X		X		
63601F				X	
63723F				X	
64211F	X	X			
64270F		X			

Historical, FY 93 (Continued)

Program Element	AV	EC	A/W	OT	OTHER
64604F			X		
64607F			X		
64617F					
64733F	X	X	X		
64735F				X	
64754F		X		X	
64771D		X		X	
65130D				X	
65807F	X	X		X	
72806F	X	X	X	X	
B6404	X	X	X	X	
ARMY			X		

Future Years

Program Element	AV	EC	A/W	OT	OTHER
11113F			X		
11128F			X		
27133F	X				
27160F			X		
27163F			X		
27590F	X		X		
28030F			X		
28060F			X		
62602F			X		
63601F				X	
63723F				X	
64226F			X		
64270F		X			
64604F			X		
64617F				X	
64618F			X		
64727F			X		
64733F	X	X	X		

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
64735F				X	
64771D		X		X	
65807F		X		X	
72806F	X	X	X	X	
207431F				X	
305158F				X	
207414F				X	
604321F				X	
ARMY			X		

Note: Due to the methodology used to identify program elements versus mission areas "Air Vehicle" and "Other Test" repeatedly appear. However, virtually all of the DMS work is in the Electronic Combat and Armament/Weapons areas.

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92	FY93
AV	0	0
EC	.94	1.18
AW	29.08	32.70
OT	0	0
Other	0	0

Note: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package. The primary resource for this facility is a Cray Y-MP supercomputer and a Cray T3D scaleable Parallel supercomputer. It is a planned upgrade for FY95 and will provide a 128 processor scaleable parallel supercomputer.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

No.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. The Cray is also used to support general testing. Loss of digital modeling and simulation assets would irreparably harm other testing activities.

(2.3.B.1) On the test mission of any other activity?

Yes. Wright Labs Armament Directorate and Aeronautical Systems Center, and Air Warfare Center activities.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. Air Force Special Operations Command and Air Combat Command activities. For example, the Aircraft Compatibility Modeling And Simulation Facility was used extensively in the development of the GBU-28 in support of DESERT STORM.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

The flutter and loads simulations are used in near-real-time in the conduct of these types of airborne missions. The simulations are used to evaluate recently collected data and advise the test aircrew on the next maneuvers to be conducted. This testing is conducted on the Gulf Test Facility. This activity represents a small part (less than 5%) of our total DMS workload.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Yes. The Electromagnetic Test Environment would be severely impacted by the loss of missile flyout models. Also, digital modeling and simulation capability is central to the real time control of SEEK EAGLE aircraft compatibility missions in the CCF.

(3.1.B) Facility Condition (MV II)

See Facility Condition Form at the end of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

Encroachment:

No. There are NO limiting encroachment characteristics associated with this facility.

Environmental:

No. None of the Modeling and Simulation Facilities are currently limited by any environmental constraints. As mentioned in the response to question 3.1.H.2, these facilities are sensitive to noise and vibration. However, due to the excellent acoustic isolation designed into the facilities coupled with the abating characteristics of local soils, testing could continue unconstrained even with increases in ambient noise levels.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Encroachment:

Not Applicable. Encroachment (current or future) is not a limiting factor in determining facility workload.

Environmental:

Not Applicable. Testing could continue unconstrained even with increases in ambient noise.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

None of the modeling & simulation facilities are currently operating under any temporary permits or voluntary agreements of an environmental nature.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	253,144
100 Mile Radius:	952,650
150 Mile Radius:	1,211,688
200 Mile Radius:	1,966,382

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Not Applicable.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

No.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

Not Applicable.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Not Applicable.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. The CRAY supercomputer capability with its planned upgrade and new 36,000 square foot computer center facility can easily expand output. The workstations and PC networks are inherently expandable.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes. The computers and personnel in DMS can be used to support testing in all functional areas. Typical examples include aircraft performance, antenna pattern prediction, and command and control systems.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DOD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-N/A; Water-N/A; Land-Yes, this capability is located in various government owned buildings and can be expanded on existing DOD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Top Secret/Special Access Required.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes, the Cray supercomputer will be upgraded by adding a Cray T3D scaleable parallel supercomputer that will increase the computational capability from 1 GIGAFLOP to 20 GIGAFLOPS of computational power.

(3.1.F.1) Is this a one-of-a-kind facility within the DOD? Yes/no. If yes, describe.

Yes, this is a special, one-of-a-kind capability within DOD. The upgrade of the Cray supercomputer with the Cray T3D scaleable parallel supercomputer will provide a 20 GIGAFLOP computational capability that will be one of the largest supercomputers and the ONLY Cray T3D supercomputer in DOD's inventory.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

No.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

No.

(3.1.F.2) Are you currently providing support to DOD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY	
FY92	FY93	FY92	FY93
20.4%	16.6%	1.7%	1.4%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Not Applicable.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

Not Applicable.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

Not Applicable.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Not Applicable.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

Not Applicable.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

Not Applicable.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Not Applicable.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Not Applicable.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

Local soil conditions enhance the ability of the Digital Modeling and Simulation (DMS) Capability to conduct HITL tests. DMS benefits from area soils which consist of ocean-washed sediments from the Piedmont region. Most of the colloidal material is removed, leaving a notedly loose soil composed largely of quartz crystals. These soils are poor transmitters of seismic energy making them ideal for isolating extremely sensitive instrumentation from ambient vibrations. This is extremely important if hardware-in-the-loop testing is to take place in the same geographic area as open air munitions testing.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Not Applicable.

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Not Applicable.

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

Not Applicable.

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Not Applicable.

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

Not Applicable.

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Not Applicable.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

Not Applicable.

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Not Applicable.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Not Applicable.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

Not Applicable.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

Not Applicable.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

Not Applicable.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?
Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(3.3.A.1) What is the number of threats simulated?

Eight missile/gun flyout models have been developed and provided to the open air range (EMTE) for incorporation into their capabilities/facilities.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

Not Applicable.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Two models have been validated with the USAF SIMVAL process.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Models are used to support open loop and closed loop tests in conjunction with threat simulators in EMTE.

(3.3.A.5) What is the threat representation (fidelity) and density?

The threat representation is full fidelity supported by intell baseline. The density part of this question does not apply to fly-out models.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Yes. Currently, land threats only. However this is only because of our historic mission. Digital modeling and simulation can readily expand to include sea threats.

(3.3.A.7) What geographic dispersion can be simulated?

Not Applicable.

(3.3.A.7.A) Threat lay down?

Not Applicable.

(3.3.A.7.B) Representative distance?

Not Applicable.

(3.3.A.8) Are the threats moveable (i.e., dynamic) within a test scenario? relocatable to new scenarios? yes/no

Not Applicable.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

No. DMS has no real time link with electronic combat threats.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Not Applicable. DMS has no real time link with electronic combat threats.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

Not Applicable.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

Not Applicable.

(3.3.B.3) What range of spectra can be tested and evaluated?

Not Applicable.

(3.3.B.4) What are the available spectra?

Not Applicable.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Yes. FCSC maintains extensive image databases that are used for scene generation in a wide range of simulations. Also, Chicken Little simulations include a display capability for viewing scenes that are generated.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

Not Applicable.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Not Applicable.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Not Applicable.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: DIGITAL MODELING AND SIMULATION

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	0	0	0	0	0	0	0	0
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS	0	0	0	0	0	0	0	0
EC	DIRECT LABOR	12,480	12,480	12,480	12,480	12,480	12,480	8,320	10,400
	TEST HOURS	2,496	2,496	2,496	2,496	2,496	2,496	1,664	2,080
	MISSIONS	0	0	0	0	0	0	0	0
ARMAMENT/WEAPONS	DIRECT LABOR	44,920	67,800	72,840	67,000	70,920	120,610	155,940	183,760
	TEST HOURS	15,616	24,768	27,164	23,388	25,152	40,570	51,412	57,820
	MISSIONS	0	0	0	0	0	0	0	0
OTHER T&E	DIRECT LABOR	0	0	0	0	0	0	0	0
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS	0	0	0	0	0	0	0	0
OTHER	DIRECT LABOR	0	0	0	0	0	0	0	0
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS	0	0	0	0	0	0	0	0

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: DIGITAL MODELING AND SIMULATION

ANNUAL HOURS OF DOWNTIME	182.5
AVERAGE DOWNTIME PER DAY	.5
AVERAGE HOURS AVAILABLE PER DAY	23.5

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY
Validation/ Verification	30	3.2	96	22,560
TYPICAL	270	3.2	864	ANNUAL UNCONSTRAINED CAPACITY
			TOTAL 960	8,234,400

Note: "Typical" represents additional tests that could be accomplished if manpower were unconstrained.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: COMPUTER LAB (FAC 380) **Freeman Computer Science Center**

AGE: 25 Years

REPLACEMENT VALUE: $18,500,000*

MAINTENANCE AND REPAIR BACKLOG: None

DATES OF LAST UPGRADES: 1993**

NATURE OF LAST UPGRADES: FY 90 MILCON completed in FY 93 that added 36,000 Sq Ft to process classified data

MAJOR UPGRADES PROGRAMMED: ***

1. **UPGRADE TITLE:** Upgrade Cray supercomputer
   TOTAL PROGRAMMED AMOUNT: $12.0M
   SUMMARY DESCRIPTION: The Cray supercomputer capability will be augmented by adding a Cray T3D 128 processor scaleable parallel system.

Note: Additional equipment is located in various offices throughout AFDTC.

***Replacement cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.**

**** Upgrade is interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on Additional Information Chart.**

*****Upgrade is not MILCON funded. Instrumentation/equipment upgrades are in I&M capital investment on Additional Information Chart.**

GENERAL INFORMATION

Facility/Capability Title: DIGITAL MODELING AND SIMULATION

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46th Test Wing

Location: Eglin AFB FL

T&E Functional Area: Armament/Weapons

UIC: Not Available

T&E Test Facility Category: Digital Modeling and Computer Simulation

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	100	0	0	0	0	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	0	0	0	0	0	0	0
Armament/Weapons	96.5	0	0	0	0	0	96.5
EC	3.5	0	0	0	0	0	3.5
Other	0	0	0	0	0	0	0

TECHNICAL INFORMATION

Facility/Capability Title: DIGITAL AND MODELING SIMULATION

Facility Description; Including mission statement: Eglin provides a complete Digital Modeling and Computer Simulation capability. Mission: The Freeman Computer Science Center (FCSC) provides a computation and visualization system for modeling and simulation efforts. The FCSC has supercomputer capabilities that are used by R&D offices in the early stages of weapon system development. The simulations used by these offices cover all portions of development. In the area of lethality/effectiveness and vulnerability these simulations provide for the evaluation of the lethal potential for existing and conceptual kill mechanisms and establish the vulnerability of enemy targets to conventional weapon damage mechanisms. The simulations provide for air, ground mobile and fixed hardened targets, with target descriptions for use in analyzing weapon lethality and target vulnerability. The FCSC also develops missile flyout models for use in Electronic Combat testing. After the systems have passed the conceptual stage and hardware has been delivered another phase of simulations begins. 46th Test Wing engineers/analysts use simulations to determine safe operational carriage and employment envelopes. After the compatibility characteristics are determined, other engineers use separate simulations to help analyze exterior ballistics to support stores delivery optimization. Computational Fluid Dynamics (CFD) model the aerodynamics of aircraft and their ordnance. These models are used to predict anomalies to be studied during the test of a development item. Another phase of the simulations tests includes electromagnetic testing of the system. The FCSC aids digital modeling and simulation by closing the loop with open air tests. Processed data from real world tests are played into simulations for CFD, flutter and loads, free stream ballistics, and electromagnetic tests to further verify the simulations. The computer facility also is responsible for image databases that are used for scene generation in other simulation efforts. The Chicken Little Joint Program Office maintains an extensive capability for modeling, simulation, and evaluation of the probability of hit combined with the probability of kill given a hit for conventional smart munitions. Capabilities include the modeling and simulation of seeker/sensor systems, warhead lethality, and kill mechanism through one-on-one and many-on-many simulations. Hardware utilized include Silicon Graphics, Macintosh, Sun, and MicroVAX workstations and PCs, all with connectivity with the FCSC for increased complexity and computing ability.

TECHNICAL INFORMATION (Continued)

Facility/Capability Title: DIGITAL AND MODELING SIMULATION

Interconnectivity/Multi-Use of T&E Facility: The FCSC is a general purpose computer center that supports all phases of digital models and computer simulations. The center has a CRAY YMP supercomputer and a visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN) for the transfer of supercomputer data. There is also connectivity to DDN, AFNET, and DSI. The FCSC also has connectivity to the workstations and PCs in the Chicken Little Joint Program Office. Chicken Little has a node on the Defense Research Engineering Network.
Type of Test Supported: All areas of digital modeling and computer simulations. Numerous digital models and computer simulations are utilized to evaluate stores and aircraft/store combinations to determine flight test requirements, establish safe operational flight limitations and restrictions, and assess weapon and OFP effectiveness. The Test Wing operates models for performance evaluation of weapon systems. The simulation software and models include 3 and 6 Degree of Freedom simulations, GPS simulations, data link simulations, terrain models, target and environmental modeling software and detailed seeker models. Specific test areas include: aircraft/stores physical fit, loads, flutter, vibrations, stability and control, handling qualities, separations, electromagnetic compatibility/interference, ballistics accuracy, and electronic combat missile flyout simulations. Chicken Little specifically supports all areas of digital modeling and computer simulations for conventional smart muntions and ground target threat vehicle systems. Numerous digital target geometry models (TGMs) and computer simulations are utilized to evaluate seeker performance, warhead lethality and vehicle degraded performance. Simulation software and models include the Point-burst Damage Assessment Model (PDAM) Suite--a suite of programs used to evaluate probability of kill given a hit; Seeker/Sensor Data Acquisition Analysis software--developed for analysis and simulation of MMW instrumentation radars, data acquisition and analysis; IR Sensor Software for processing and analysis of IR Digital Data; the Video Aimpoint Scoring and Effectiveness system for scoring munitions aimpoints and one-on-one effectiveness analysis; the Terminal Aimpoint Video Assessment System which assesses trackpoint wander; and the Computer Seeker Analysis Workstation used to perform feature analysis of signature data.
Summary of Technical Capabilities: CRAY YMP; T3D; Silicon Graphics Macintosh, MicroVAX, and Sun workstations; 1 Gigabit network; CRAY YMP-EL file server.
Keywords: supercomputer, visualization capability, high speed network, open air test data feedback to simulation improvement, Point-burst Damage Assessment Model (PDAM), target geometry model (TGM), probability of kill, Terminal Aimpoint Video Assessment, vehicle degraded performance, warhead lethality, Seeker/Sensor Data Acquisition Analysis, and Video Aimpoint and Effectiveness.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: DIGITAL MODELING AND SIMULATION

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	1	1	1	1	1	1	1
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	26	27	26	23	22	21	21
CONTRACTOR	88	97	97	97	97	97	97
TOTAL	115	125	124	121	120	119	119

*Note: FY95 and beyond are subject to additional manpower reductions.

TOTAL SQUARE FOOTAGE 90,000 SF
TEST AREA SQUARE FOOTAGE 80,000 SF
TONNAGE OF EQUIPMENT 50
ANNUAL MAINTENANCE COST $420K
*Operation & Maintenance

OFFICE SPACE SQ. FOOTAGE 15,000 SF
VOLUME OF EQUIPMENT 21,000 CF
ESTIMATED MOVING COST $4M

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	$12M	0	0	0	0	0

Document Separator

FACILITY/CAPABILITY: McKINLEY CLIMATIC @ EGLIN AFB

TEST FACILITY CATEGORY: MF

% T&E - OVERALL: 100

AV: 58

EC: 9

A/W: 0

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 6

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	6,816	FY93	6,576
EC:	FY92	4,656	FY93	1,040
A/W:	FY92	0	FY93	0

Nation 12 Aug 94

Donald Cadillac 17 Aug 94

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
63601F		X			
65807F	X				
ARMY	X				
NAVY	X				

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
35114F		X			
65807F	X			X	
ARMY				X	
NAVY				X	

Future Years

Program Element	AV	EC	A/W	OT	OTHER
27160F			X		
28060FD			X		
35114F		X			
63601F		X			
64618F			X		
64703F					
64727F			X		
65807F	X				
ARMY	X		X	X	
NAVY	X		X	X	
OTHER					X

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	3.86	3.72
Electronic Combat	2.63	.59
Armament/Weapons	0	0
Other Test	2.61	2.16
Other	0	0

Note: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

Yes. The capacity is limited by the number of testing chambers available.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. The McKinley Climatic Laboratory (MCL) is a unique facility capable of providing any type of climatic condition to test all types of weapon systems.

(2.3.B.1) On the test mission of any other activity?

Yes. The McKinley Climatic Laboratory (MCL) is used by all of the DoD to test aircraft, helicopters, hovercraft, tanks, missile systems, shelters, etc.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. The McKinley Climatic Laboratory (MCL) is used by all of the DoD to test aircraft, helicopters, hovercraft, tanks, missile systems, shelters, etc. Quick reaction support was provided to Special Operations for evaluation of gloves subjected to low temperature, chemical/biological gear, and specialized containers were tested for the Gulf War.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

0%.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Not Applicable.

(3.1.B) Facility Condition (MV II).

Reference the Facility Condition Form provided in Appendix A of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

Encroachment:
No. There are NO limiting encroachment characteristics associated with this facility.

Environmental:
No. None of the Climatic Lab's facilities are currently limited or expected to be limited in the future by any environmental constraints.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Encroachment:
Not Applicable. Encroachment (current or future) is not a limiting factor in determining facility workload.

Environmental:
Not Applicable. There are no environmental constraints to increased workload.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

The Climatic Lab does not currently operate under any temporary permits or voluntary agreements of an environmental nature.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	**253,144**
100 Mile Radius:	**952,650**
150 Mile Radius:	**1,211,688**
200 Mile Radius:	**1,966,382**

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Not Applicable.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. The following facilities are currently required to support the McKinley Climatic Laboratory mission or are potentially required to support future test mission activities:

AFDTC
- Freeman Computer Science Center
  - Test and Analysis
  - System Technology
- Safety
- Avionics
- Precision Measurement Equipment Lab (PMEL)
- Precision Measurement Facility - Site III Mass Properties
- Munitions Build-Up
- Munitions Storage and Handling
- Armament Maintenance Section
- Alternate Mission Equipment Section
- Aircraft Repair Element
- Egress
- Fuels
- Propulsion
- Machine Shop
- Structural Maintenance
- Metals Processing
- Corrosion Control
- Non-Destructive Inspection
- Electro-Environmental
- Pneudraulic
- Survival Equipment
- Inspection Element
- Wheel and Tire Element
- Aerospace Ground Equipment

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.
The CCF is designed for commonalty/compatibility with DoD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DoD services and US Allies on a regular basis.

Systems Technology

Designs, develops, implements, operates and maintains the AFDTC Scientific Computer Center and its networks. Provides a broad base of expert computer and system engineering consultants. Provides software engineering support for the Eglin scientific and engineering community including development, customization and adaptation of graphics, applications, and system software products. Develops software products for the simulation and/or control of weapon or related systems as required for RDT&E. Operates and maintains the Eglin Decision Support System and the CRAY YMP Supercomputer.

The computer center has a CRAY YMP supercomputer and visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN).

This is a general purpose computer center that supports all phases of digital models and computer simulations. It is available to all DoD agencies. The largest current user is the Aeronautical Systems Center.

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources [radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

AVIONICS

Mission Statement: The F-16 AIS Shop is responsible for off-equipment Intermediate level maintenance and support of F-16 Line Replaceable Units (LRUs). Does software loading of Operational Flight Programs, TCTOs, modifications, calibrations, and testing of F-16 LRUs. Responsible for testing weapons, instruments, and ALR-69 systems using AIS test equipment. Maintains four test stations and ancillary equipment by performing inspections, modifications and repairs.

The F-15 AIS is responsible for testing F-15 LRUs including weapon control radar, inertial navigation, heads-up display, automatic flight control, instrument, and communication and navigation systems. Uses, maintains, and calibrates avionics intermediate shop test stations used to repair F-15 LRUs. Performs off-equipment maintenance and line delivery of AXQ-14 and Improved Data Link pods.

The Conventional Avionics Shop is responsible for intermediate and organizational level maintenance on avionics systems installed on UH-1N helicopters and transient aircraft. Performs intermediate level maintenance of CommNav, Guidance, and ECM systems on assigned aircraft. Modifies, repairs, loads, and operationally checks ECM pods on F-15, F-16 and F-111 aircraft to support test missions. Repairs and modifies communication ground cords, headsets, and emergency survival radio/beacons for Eglin units.

AVIONICS (Continued)

Maintains, installs, and repairs radio ground mount adapters for emergency and operations vehicles on Eglin. Operationally checks all UHF, VHF, and RWR antennas for serviceability.

The Sensor Test Shop is responsible for on-equipment and off-equipment maintenance of all assigned and transient sensor systems. Performs intermediate and organizational level maintenance on LANTIRN targeting and navigation and PAVE TACK Laser Target

Designation pods. Maintains intermediate level test equipment including the LANTIRN mobility shelter set. Performs intermediate level maintenance on Airborne Video Tape Recorders and Cockpit Television Systems, to include phase inspection work cards. Assists field engineers in the kit proofing, validating and fielding of new systems and/or upgrades to current systems.

The Radar Test Shop provides intermediate level repair of F-15 and F-16 radar and other avionics and components. Reprograms various avionics and other computers. Refurbishes F-15 and F-16 flight control and INU batteries. Performs operational checks for serviceability of F-15 and F-16 radar LRU's. Provides repair and functional checks of F-16 ARC-164, ARC-186, and ARN-118 receiver/transmitters, throttle grips, side stick controllers, GPS receivers and numerous F-16 control units. Repairs various circuit card assemblies by troubleshooting and replacing electronic components as required. Provides software testing to Test Wing agencies on Eglin AFB.

Unique Capabilities: Maintains full F-16 and F-15 radar mockups with capability to troubleshoot and repair parts in concert with associated avionics intermediate stations (AIS). A Huntron Tracker is on hand to repair circuit cards. A LANTIRN Mobile Support Shelter and a PAVE-TACK repair test set are also available.

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd FW (ACC)
4. 9th Special Operations Squadron
5. 728th Tactical Control Squadron

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB

Mission Statement: Responsible for the maintenance, calibration and certification test, measurement and diagnostic equipment designated Type II, Type III and Type IV PMEL support. Responsible for the calibration and repair of signal generating, waveform measuring, and frequency counting, voltage, current, resistance, inductance, and power measuring instruments, mechanical, electro-

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB (Continued)

mechanical, dimensional and radiation measuring equipment. Responsible for the calibration and repair of F-15 and F-16 Avionics Intermediate Stations

Unique Capabilities: One of the largest PMELs in the Air Force and the regional facility servicing Northwest Florida. Has an active program currently developing automated calibration testing of equipment.

Outside Customer Supported:

1. 919th Special Operations Wing
2. OSD JADO Program
3. USAF AWC
4. AFOTEC
5. Naval EOD School
6. Vitro Services

PRECISION MEASUREMENT FACILITY
SITE III MASS PROPERTIES

Mission Statement: Performs the weight, center of gravity, and moments of inertia measurements on munition and non munition items. Performs reballast procedures on munition and non munition items to provide the test engineers with a reliable product. Performs maintenance and operation of the portable mass properties machine. Used for the world wide field review measurement of stores (FRMS) operation. Mass properties data collected at various bases is put into the mass properties data program for updating the stores technical and mass properties data bank (STAMP), This ensures the project engineers have the proper mass properties data. Performs assembly/disassembly of munitions items for the purpose of adapting the items to the test set. Develops procedures for efficiency and safety of operations on new prototype test items.

MUNITIONS BUILD-UP

Mission Statement: Operates six indoor maintenance/build-up facilities totaling 54,000 square feet and 2 outdoor holding /build-up areas totaling 27,000 square feet. The missile section performs build-up of Air-to-Air, AIM-4, 7, 9, and 120 missiles and Air-to-Ground, AGM-45, 65, and 88 missiles. The conventional munitions maintenance shops perform build-up of expendable aircraft countermeasures, cannon ammunitions, GBU-10, 12, 15, 16, 24 and 28 guided bombs, CBU-58, 87 89 and 97 cluster bombs, MK-82, 83,

84, M-117 and 118 general purpose bombs, MC-1 and TMU-28 chemical weapons, nuclear training shapes and BLU-107 cratering bombs.

MUNITIONS STORAGE AND HANDLING

Mission Statement: Provides the capability for storing and handling over 2,000 different types of munitions used to support DoD and foreign allies test and development projects, and 50 tenant unit munitions supply points. Responsible for inspection, minor maintenance and house keeping on 35 facilities within the 297 acre munitions storage area. Ensures correct storage and compatibility of munitions are maintained in strict compliance with all explosive safety standards. Total munitions storage capacity is 121,729 sq. ft. and total sited net explosive weight (NEW) authorized is 2,287,900 pounds. Capable of storing various sizes of munitions ranging from small arms ammunition to the Tomahawk cruise missile; maximum size of any one item to fit into storage structures would be no greater than 15,000 NEW and a dimension of approximately 18' x 10' x 10'. Provides logistical support to 500 test projects and five different maintenance sites within the munitions storage area. Directly supports several off-base test ranges on the 464,000 acre Eglin test complex. On a yearly basis, moves or delivers over 500 tons net explosive weight/1250 tons total weight of munitions covering more than 15,000 miles.

Unique Capabilities: Receipt, inspection, storage, maintenance, buildup, shipping and delivery capability is provided for any US or foreign munition used or tested at Eglin AFB. Major munitions categories include both current inventory and prototype general purpose and cluster bombs; precision guided munitions; air-to-air and air-to-ground missiles, nuclear trainers, Navy cruise missiles, Army Hellfire missiles, expendable aircraft countermeasures and small arm/cannon ammunition. Additional items include various British, Norwegian, Israeli, and former Soviet Bloc munitions. A technical data library with preliminary handling/maintenance data and interim hazard classification is maintained for prototype, modified and foreign munitions.

ARMAMENT MAINTENANCE SECTION

Mission Statement: Inspects and maintains all munition suspension equipment for the 46th Test Wing and the Air Warfare Center aircraft. To include pylons, bomb racks, launchers and adapters for weapons carriage on the F-15, F-16, and F-111 aircraft. Inspects and maintains guns and gun systems on the F-15 and F-16 aircraft, including removal and installation.

Unique Capabilities: Supports Ammo/Gun Test Range 22/C-64/C-74L with gun maintenance and support personnel on a daily basis. Advises test project personnel on modification requirements for AME. Maintains modified equipment for various test projects. Provides maintenance, repair and/or inspection for armament systems components owned by various military and civilian test agencies.

ALTERNATE MISSION EQUIPMENT SECTION

Mission Statement: Stores, controls and accounts for all munition suspension equipment for the 46th Test Wing and Air Warfare Center aircraft. Tracks all in-use equipment and schedules inspections through the maintenance section.

AIRCRAFT REPAIR ELEMENT

Mission Statement: Performs organizational, intermediate, and limited depot-level maintenance beyond the capability of other assigned maintenance activities. Accomplishes troubleshooting analysis, repairs, replacement, rigging, and operational and functional checkout of flight control systems, landing gears, air induction equipment, and canopy and windscreen assemblies. Provides capability for the recovery and reclamation of damaged and crashed aircraft. Maintains, inspects, and repairs all associated equipment required to accomplish the above mission.

Unique Capabilities: Performs flight control, landing gear, and canopy maintenance on any fighter aircraft in the USAF inventory. They are multi-aircraft qualified and perform intermediate and limited depot-level maintenance, tow target maintenance, and provide crash recovery services on any military or civilian aircraft without exception. Performs aircraft reclamation services on any type of aircraft and provide emergency response/crash recovery service to any aircraft over a three state area. Respond to all ground or inflight emergencies on Eglin and the Fort Walton Beach Regional Airport. Uniquely qualified to work with engineers performing class II modifications on aircraft and systems. Experience includes T-37, T-38, T-39, A-10, F-4, F-5, F-15, F-16, F-111, and UH-1 aircraft maintenance.

EGRESS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on F-15, F-16 and F-111, Aircrew Egress Systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies egress systems and components. Replaces transparencies and rigs canopies on F-16 aircraft. Provides egress system familiarization training as required for, life support, fire department, and personal working within the Test Wing. Provides support on transient aircraft, as well as support to the 33 FW (ACC) under the host tenant support agreement. Provides support to the Eglin Armament Museum as required.

Unique Capabilities: Due to the knowledge of civilians, the shop has the repair capability for F-15, F-16, F-111, F-4 and A-10 egress systems.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing

FUELS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on aircraft fuel and in-flight refueling systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, seals, and modifies systems and components. Performs systems maintenance and servicing of Hydrazine tanks. Provides qualified support for emergency Hydrazine response teams. Maintains proficiency in detection of Hydrazine.

Unique Capabilities: The fuel system repair hangar is a state-of-the-art building and designed for that purpose. It has multi aircraft capability. It has indoor space for two, F-111/F-15 size aircraft, three F-16 size aircraft, of five UH-1N helicopters. The fuel hangar has indoor external fuel tank work area with a lifting hoist. This flight also has the regional hydrazine resource responsibility.

Outside Customers Supported:

1. USAF AWC
2. 187th Tactical Fighter Group, Montgomery, AL, Hydrazine Tank Servicing
3. 926th Fighter Group/XP, Naval Air Station, New Orleans, LA, Hydrazine Tank Servicing

PROPULSION

Mission Statement: Responsible for jet engine intermediate maintenance (JEIM) on General Electric F100-GE-100/129, J79-15, J85-100, Pratt and Whitney TF30-111 and 109, and FW100-PW-100/200/220 engines. Responsible for assembly and disassembly of F100 modular engines and sub-components. Responsible for JEIM on F-15 starting systems and secondary power system components to include testing after maintenance. Responsible for JEIM on GTCP-397 gas turbine compressors used in AM32A-60B auxiliary power units. Responsible for acquisition, modification and testing of surplus and time-expired engines to the J85-100 configuration for use in the BQM-34S target drone. Provides modified J85-100 engines to the BQM-34S manufacturer for installation into new target drones used by both the Air Force and Navy organizations. Operates the engine test cell which is used for troubleshooting and testing of the above mentioned engines as well as aircraft noise suppression systems and other engine test facilities. Maintains engine support trailers for engine removal/installation and transportation. Ensures adequate spare level to support flying mission of various types and models of F-15 and F-16 aircraft assigned.

Unique Capabilities: Provides full JEIM on F100-100/200/220/220A/220E, J79 and J85 engines. Hush House and twin test cells are available to test all engines. Currently modifying J85 engines for both Air Force and Navy to be used in BQM-34S target drones. Has a steam and citrus-based parts cleaner to minimize hazardous waste.

PROPULSION (Continued)

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd Fighter Wing (ACC)
4. 9th Special Operations Squadron
5. 475th Weapons System Evaluation Group (ACC)
6. Naval Air Warfare Center

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop is equipped with modern conventional tool room and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

STRUCTURAL MAINTENANCE

Mission Statement: Provides a Structural Repair Shop for design, manufacture, modification, and repair of RDT&E test items required to support the AFDTC test program of a non-repetitive nature. Manufactures items and works with sheet metal and fiberglass in modifying bombs, missiles, rockets, robots, etc. Manufactures and installs class II modifications parts and kits on aircraft and missiles to include CNC production required by AFDTC engineers, scientists and contractors for development of the test projects. Provides an intermediate maintenance capability to support all AFDTC assigned, transient and associate tenant aircraft.

Unique Capabilities: Maintains operational support of multiple aircraft to include F-111's, F-16's, F-15's, UN-1H and full manufacturing capability for all aircraft tubing assemblies (to include Depot level lines).

Outside Customers Supported:

1. 9 SOS
2. Eglin AFB. 33 FW (ACC)
3. Tyndall AFB.
4. Hurlburt AFB.

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS
3 Manufactured Sleds for Holloman AFB
4. Provide welding and manufacture for 728 ACS

METALS PROCESSING (Continued)

5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

CORROSION CONTROL

Mission Statement: Inspects and treats corrosion on aircraft, missiles, armament and other related equipment. Provides wash rack facilities to wash aircraft and aircraft parts. Provides a corrosion capability for performing intermediate maintenance and painting on assigned aircraft, age, and class II modification items. Provide RDT&E experimental coating for test engineers on tasks, drones, missiles, and radomes etc.

Outside Customers Supported:

1. Wright Laboratory - Armament Division
2. Navy EOD School
3. 9th SOS
4. Seek Eagle Program Office
5. Navy Coastal System Laboratory
6. 919 SOS
7. Mill Star Program

NON-DESTRUCTIVE INSPECTION

Mission Statement: Provides a capability to accomplish optical, penetrant, magnetic particles, ultra sound, eddy current, and radiographic inspections to determine component integrity and serviceability. Conducts experimental tests as to the integrity of RDT&E test designs and specifications. Provides oil analysis to determine wear metal effects on aircraft engines and oil wetted components.

Unique Capabilities: Multi-use facility, equipment, manpower, materials and training are shared equally with the 33rd Fighter Wing (ACC). The only known field level shop with two film processors.

NON-DESTRUCTIVE INSPECTION (Continued)

Outside Customers Supported:

1. Air Warfare Center
2. 33d Fighter Wing
3. Wright Laboratory
4. 919 Special Operations

ELECTRO-ENVIRONMENTAL

Mission Statement: Responsible for off-equipment maintenance on aircraft electrical and environmental control systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies systems and components. Provides battery servicing for assigned aircraft, associate tenant aircraft and ground support equipment. Responsible for field maintenance of all aircraft ground support equipment, (AGE), gaseous and liquid oxygen and nitrogen systems. Services life raft cylinders and emergency oxygen bottles, (Life Support Equipment), for all assigned and associate tenant aircraft.

Unique Capabilities: Possesses one of only three K400 generator test stands at field level, and will be only one of two sites in the world capable of running both F-111 and F-15 parts.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing
2. 9th Special Operations Squadron
3. 728th Tactical Control Squadron

PNEUDRAULIC

Mission Statement: Responsible for off-equipment maintenance of pneudraulic components. Inspects, troubleshoots, bench checks, tests, repairs, services, and modifies components. Provides local manufacture and testing of flexible hoses and testing of rigid tubing. Maintains associated Test Stands and support equipment.

Unique Capabilities: Possess two state-of-the-art pneudraulic test stands which allow check-out and repair of all current and projected pneudraulic systems. Because of this capability, depots have authorized depot-level repairs on a case-by-case basis. A citrus-based parts cleaner is used to minimize hazardous waste.

Outside Customers Supported:

1. Air Force Armament Museum
2. 33rd Tactical Fighter Wing
3. 9th Special Operations Squadron

SURVIVAL EQUIPMENT

Mission Statement: Provides a parachute and survival equipment shop to manufacture, modify, repair, and design item constructed of fabric in support of RDT&E test projects of a non-repetitive nature. Provides an extended intermediate maintenance capability to support aeronautical equipment, parachutes, and other aircraft maintenance requirements for support of AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop has the capability of servicing all personnel parachutes in the Department of Defense inventory. Capable of servicing the Advance Concept Ejection Seat (ACES II) employed on the A-10, B-52, F-16, and F-15 aircraft. Also currently the focal point for the Universal Water Activator Release System.

Outside Customers Supported:

1. U. S. Customs
2. U. S. Army
3. U. S. Navy
4. U. S. Marine Corps
5. AMRAAM Program Office
6. Turkish Air Force

INSPECTION ELEMENT

Mission Statement: Performs maintenance on modified test aircraft undergoing various inspections such as phase, periodic, major, minor, hourly post-flight, and special inspections. Also performs scheduled and unscheduled maintenance. Removes, disassembles, inspects, repairs, reassembles, installs, and operationally checks all assigned aircraft. Determines the condition of airframe and engines and all associated equipment. Performs maintenance on specialized systems such as flight control surfaces, landing gear, and engines. Performs time changes, Time Compliance Technical Orders and special inspections as required by the mission. Performs pre-dock and post-dock meetings to coordinate requirements while in the inspection process.

INSPECTION ELEMENT (Continued)

Unique Capabilities: Capable of performing any of the inspections cited above on any model of F-111, F-16, F-15, F-4, T-38, F-5, UH-1N, or A-10 aircraft. Additionally, given the equipment, they are capable of performing the same inspections on any other Air Force, separate service, or foreign national aircraft. Performs consolidated maintenance with the Aircraft Modification Element. Recently completed phase inspections and minor aircraft modifications simultaneously, saving an average of six complete days of aircraft downtime on each occurrence. Concurrently perform Time Compliance Technical Orders and special/one time inspections during their phase inspections.

Given the personnel and equipment, six aircraft could be inspected simultaneously on a three shift operation. Unique to the Inspection Element are custom built dock boxes centrally located at the head of each dock within the hangar floor area. These dock boxes enable supervisors to have complete control over every aspect of the inspection/maintenance process. They are wired with telephones, CAMS computers, and electrical power.

WHEEL AND TIRE ELEMENT

Mission Statement: Performs turnaround maintenance on all wheel assemblies to directly support all AFDTC, AWC, and Air Rescue aircraft. Performs teardown, inspection, and buildup of all wheel assemblies to include cleaning and inspection of wheels and bearings, seals, and retainers. Ensures ample spare wheels and tires are on hand to accomplish missions requirements. Inspects and maintains all shop equipment associated with the wheel and tire element.

Unique Capabilities: Capable of performing tear down and/or buildup of wheel and tire assemblies on any A-6, A-7, F-4, F-5, F-16, F-15, F-111, C-130, T-38, T-39, H-60, H-53, Tornado, or Harrier aircraft. If given the equipment, capable of performing the same maintenance on any weapon system. Being a forward supply point enables them to interface directly with supply, thus facilitating a positive wheel and tire acquisition process. Works directly with the 46th EMS Corrosion Element when stripping of wheels is required.

Outside Customers Supported:

1. 33rd FW (ACC)
2. Duke Field
3. Hurlburt AFB
4. USAF AWC
5. British Aircraft

AEROSPACE GROUND EQUIPMENT

Mission Statement: Provides field maintenance, periodic inspections, special inspections, servicing, refueling and dispatch as well as technical order modifications on over 500 pieces of powered and non-powered AGE assigned to AFDTC. Provides supervision, production control, quality assurance and supply support for AGE activities. Performs engine teardown, buildup (overhaul) and repair of components, i.e. starters, generators, motors, relays, etc. Responds to trouble calls on equipment in use. Provides equipment operator training to customers. Performs servicing of aircraft oil and hydraulic carts. Collects and recycles waste petroleum products generated by aircraft maintenance. The equipment is, for the most part, the newest and latest designs in the Air Force inventory today.

Unique Capabilities: AGE has supported the latest aircraft in the inventory. For example: F-117A, C-17, RC-135, B-1 and B-2 bombers, E-3A AWACS as well as NATO aircraft such as the Harrier and Tornado. The capability also extends to all other services DoD wide which AGE will be able to support well into the year 2000. Provides test support to Army and Navy aircraft such as helicopters and Navy sea launch cruise missile tests. Provides specialized equipment to contractors and base facilities in support of new and state of the art munitions and electronic warfare testing.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

No.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Not Applicable.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

No.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes. In addition to our main function of climatic testing of air vehicles, we have also conducted climatic testing of armament/weapons and EC systems. Climatic testing of land vehicles, sea transportable systems, small components/systems utilized for space systems, and increased integration lab testing can be accommodated.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-N/A; Water-N/A; Land-Yes, this facility can be expanded on existing DoD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Secret/Special Access Required.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes. A $62M MILCON Program is currently underway to renovate the two largest chambers and to provide additional conditioned air during engine operation. With increased conditioned air, the aircraft can operate engines at higher power settings for longer periods of time. Also, a $10M in-house project is underway to replace the three large refrigeration units used to cool the two largest chambers. The new units will have a 30% higher capacity than the old units. These units will enable us to reach target conditions more rapidly and test more frequently.

(3.1.F.1) Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.

Yes, The McKinley Climatic Laboratory Main Chamber is the largest climatic chamber in the world. Any aircraft in existence today can fit inside this chamber and do climatic testing, including operating engines. The aircraft is suspended up off of the ground and held in place with a tie-down system. Therefore, all parts of the aircraft can be tested, including engines up to full power, landing gear, flight controls, bomb systems and guns.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

Yes, The McKinley Climatic Laboratory Main Chamber is the largest climatic chamber in the world. Any aircraft in existence today can fit inside this chamber and do climatic testing, including operating engines. The aircraft is suspended up off of the ground and held in place with a tie-down system. Therefore, all parts of the aircraft can be tested, including engines up to full power, landing gear, flight controls, bomb systems and guns.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

Yes, The McKinley Climatic Laboratory Main Chamber is the largest climatic chamber in the world. Any aircraft in existence today can fit inside this chamber and do climatic testing, including operating engines. The aircraft is suspended up off of the ground and held in place with a tie-down system. Therefore, all parts of the aircraft can be tested, including engines up to full power, landing gear, flight controls, bomb systems and guns.

(3.1.F.2) Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
25.26%	2.71%	19.88%	3.13%	2.99%	0.63%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Not Applicable.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

Not Applicable.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

Not Applicable.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Not Applicable.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

Not Applicable.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

Not Applicable.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Not Applicable.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Not Applicable.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

There are no known features of local geology or soil conditions that enhance or inhibit any types of test at this facility.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Not Applicable.

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Not Applicable.

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

Not Applicable.

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 5 (2 days as a result of a Hurricane, and an additional 3 days because the main chamber was used to store aircraft and equipment.)

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Not Applicable.

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

Not Applicable.

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Not Applicable.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

1. **Number and Azimuth of Runways - 2 Runways:**
   a. **Runway 12/30 (Main Base)**
   b. **Runway 01/19 (Main Base)**

2. **Elevation:**
   a. **Runway 12/30 = 85' MSL**
   b. **Runway 01/19 = 85' MSL**

(3.2.B.1) (Continued)

3. Runway Length (Excluding Overrun):
   a. Runway 12/30 = 12,000'
   b. Runway 01/19 = 10,000'

4. Overrun Length (Departure End):
   a. Runway 12 = 1,000'
   b. Runway 30 = 1,000'
   c. Runway 01 = 550'
   d. Runway 19 = 1,000'

5. Terminal/Landing Aids:
   Main Base - TACAN, ILS, VASI, ASR

6. Arresting Cable:
   a. Main Base - YES
      (1) Runway 12/30 - BAK-9, BAK-12
      (2) Runway 01/19 - BAK-12

7. Ramp Area:
   a. Main Base = 4,723,758 SF (does not include 1,681,021 SF of transient ramp)

8. Construction Material:
   a. Runway 12/30 (Main Base) - First 2,000 feet on each end is concrete. All other is asphalt.
   b. Runway 01/19 (Main Base) - All asphalt.
   c. Ramps - All concrete.

9. Load Capability - The runways will support any aircraft in the DoD inventory in their present condition.

10. Hangar Space:

MAIN BASE FACILITY #	ENCLOSED SPACE (SF)	
72	31,552	
102	38,440	
103	38,340	
110	57,546	
130	129,766	
138	14,866	
421	43,322	
422	43,322	(Currently being used for storage, contains internal temporary dividers)
920	2,583	
1318	57,408	
1339	18,807	
1343	33,998	
1345	36,968	
1385	11,050	
1386	11,050	
	569,018	SF Total Enclosed Area

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Adjacent to main runways.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Aircraft can land on main runways and taxi directly to the facility.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

No limitation on aircraft size.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

All of the listed categories of vehicles and types of testing have been and continue to be supported.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

Not Applicable.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(3.3.A.1) What is the number of threats simulated?

Not Applicable.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

Not Applicable.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Not Applicable.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Not Applicable.

(3.3.A.5) What is the threat representation (fidelity) and density?

Not Applicable.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Not Applicable.

(3.3.A.7) What geographic dispersion can be simulated?

Not Applicable.

(3.3.A.7.A) Threat lay down?

Not Applicable.

(3.3.A.7.B) Representative distance?

Not Applicable.

(3.3.A.8) Are the threats moveable (i.e., dynamic) within a test scenario? relocatable to new scenarios? yes/no

Not Applicable.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

Not Applicable.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Not Applicable.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

Not Applicable.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

Not Applicable.

(3.3.B.3) What range of spectra can be tested and evaluated?

Not Applicable.

(3.3.B.4) What are the available spectra?

Not Applicable.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Not Applicable.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no. If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Not Applicable.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Not Applicable.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: MCKINLEY CLIMATIC LABORATORY

		FISCAL YEAR								
T&E FUNCTIONAL AREA		86*	87*	88	89	90**	91**	92	93	
AIR VEHICLES	DIRECT LABOR	NA	NA	17,515	20,826	0	0	30,331	29,263	
	TEST HOURS	NA	NA	3,936	4,680	0	0	6,816	6,576	22,008
	MISSIONS	NA	NA	164	195	0	0	283	274	
EC	DIRECT LABOR	NA	NA	2,670	7,796	0	17,942	20,719	4,628	
	TEST HOURS	NA	NA	600	1,752	0	4,032	4,656	1,040	12,080
	MISSIONS	NA	NA	25	73	0	168	194	46	
ARMAMENT/WEAPONS	DIRECT LABOR	NA	NA	6,088	1,495	5,233	641	0	0	
	TEST HOURS	NA	NA	1,368	336	1,176	144	0	0	3,024
	MISSIONS	NA	NA	57	14	49	6	0	0	
OTHER T&E	DIRECT LABOR	NA	NA	17,942	23,870	26,593	10,787	20,506	16,981	
	TEST HOURS	NA	NA	4,032	5,364	5,976	2,424	4,608	3,816	26,220
	MISSIONS	NA	NA	167	224	249	101	192	159	
OTHER	DIRECT LABOR	NA	NA	0	0	0	0	0	0	
	TEST HOURS	NA	NA	0	0	0	0	0	0	63,328
	MISSIONS	NA	NA	0	0	0	0	0	0	

*Data not kept for this time period.
**Main chamber closed for repair of floor.

Note: Direct Labor Hours are estimated using the "Workload Per Test Per Facility Test Hour" factor from the Unconstrained Capacity Form.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: MCKINLEY CLIMATIC LABORATORY

ANNUAL HOURS OF DOWNTIME	240
AVERAGE DOWNTIME PER DAY	0.66
AVERAGE HOURS AVAILABLE PER DAY	23.34

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY 623
Main Chamber	1	6.67	6.67	
Small Chambers	2	3.33	6.67	ANNUAL UNCONSTRAINED CAPACITY (Labor Hours) 227,375
TYPICAL	3	4.45	13.35	
			TOTAL 26.69	

Note: "Typical" represents additional tests that could be accomplished if manpower were unconstrained.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: MCKINLEY CLIMATIC LABORATORY

AGE: 47 Years

REPLACEMENT VALUE: $229,980,000*

MAINTENANCE AND REPAIR BACKLOG: None

DATES OF LAST UPGRADES: FY90-FY91 **

NATURE OF LAST UPGRADES: Upgrade the Air Make-Up (AMU) system. The AMU provides conditioned air for jet engine operation.

MAJOR UPGRADES PROGRAMMED: **

1. **UPGRADE TITLE:** Major Upgrade of Climatic Test Chamber
   TOTAL PROGRAMMED AMOUNT: $62M
   SUMMARY DESCRIPTION: Major renovation of the two largest chambers and additional AMU capability.

2. **UPGRADE TITLE:** Refrigeration Upgrade
   TOTAL PROGRAMMED AMOUNT: $10M
   SUMMARY DESCRIPTION: Replacement of the three main refrigeration units.

*Replacement cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.

**Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on Additional Information Chart.

FACILITY CONDITION (Continued)

FACILITY/CAPABILITY TITLE: MCKINLEY CLIMATIC LAB

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M&R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
440	47	$199,169,000	0	UNKNOWN	UNDERWAY (See Pg 37)
430	55	$7,981,000	0	UNKNOWN	NONE
486	60	$135,000	0	UNKNOWN	NONE
438	47	$812,000	0	UNKNOWN	NONE
441	47	$7,489,000	0	UNKNOWN	NONE
445	48	$57,000	0	UNKNOWN	NONE
446	51	$48,000	0	UNKNOWN	NONE
450	75	$199,000	0	UNKNOWN	NONE
466	71	$5,509,000	0	UNKNOWN	NONE
Aircraft Ramp	47	$8,581,000	0	UNKNOWN	NONE
TOTAL $229,980,000					

GENERAL INFORMATION

Facility/Capability Title: MCKINLEY CLIMATIC LABORATORY

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46 Test Wing

Location: Eglin AFB, FL

T&E Functional Area: Air Vehicles

UIC: Not Available

T&E Test Facility Category: Measurement Facility (MF)

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	100	0	0	0	0	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	58	0	0	0	0	0	58
Armament/Weapons	0	0	0	0	0	0	0
EC	9	0	0	0	0	0	9
Other	33	0	0	0	0	0	33

TECHNICAL INFORMATION

Facility/Capability Title: MCKINLEY CLIMATIC LABORATORY

Facility Description; Including mission statement: The McKinley Climatic Laboratory Main Chamber (200 x 250 x 70 ft) is the world's largest environmental test chamber. Its mission is to support climatic environmental testing, including high temperature, low temperature, high humidity, snow, rain, sand, dust, salt fog, icing, altitude, solar radiation, and fog. It can accommodate any aircraft in the DoD inventory and provide a full range of climatic test conditions while permitting jet engine operation. In addition to the main chamber, the McKinley Climatic Laboratory also has an equipment test chamber (30 x 130 x 25 ft), again with full climatic ranges and jet engine operation; an all-weather room (22 x 42 x 14 ft), a sun, wind, rain, and dust chamber (50 x 50 x 30 ft), a salt fog chamber (16 x 54 x 16 ft), and a temperature altitude chamber (13.5 x 9 x 7 ft). The laboratory is responsible for simulation of extreme environmental conditions for full scale testing of DoD weapons systems. The six chambers in the facility are able to simulate a wide variety of climatic extremes including low temperature, high temperature, rain, snow, icing, fog, solar radiation, wind, humidity, salt fog, sand, dust, and altitude.
Interconnectivity/Multi-Use of T&E Facility: None
Type of Test Supported: Climatic environmental testing - high temperature, low temperature, high humidity, snow, rain, sand, dust, salt fog, icing, altitude, solar radiation, fog.
Summary of Technical Capabilities: Temperature range from -65 to +165 degrees Fahrenheit. Simulated rainfall from mist to 15 inches per hour. Simulation equipment includes solar radiation frames (5,300 sq ft), icing frames (5,300 sq ft), wind machines (60 mph), and snow machines. Instrumentation includes multiple remote control cameras, A-to-D conversion utilizing either PCM commutation or current loop transmitters, multiple PCM stream decommutation, data reduction equipment, real-time displays, analog, digital, and video tape recording.
Keywords: Climatic, Environment, Chamber, Aircraft, Icing

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: MCKINLEY CLIMATIC LABORATORY

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	0	0	0	0	0	0	0
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	6	9	9	8	7	7	7
CONTRACTOR	29	36	36	36	36	36	36
TOTAL	45	45	45	44	43	43	43

*Note: FY95 and beyond are subject to additional manpower reductions.

TOTAL SQUARE FOOTAGE	136,400 SF		
TEST AREA SQUARE FOOTAGE	64,000 SF	OFFICE SPACE SQ FOOTAGE	5,000 SF
TONNAGE OF EQUIPMENT	500 TONS	VOLUME OF EQUIPMENT	100,000 CF
ANNUAL MAINTENANCE COST	$300K EQUIPMENT $2.0M MANPOWER	ESTIMATED MOVING COST	$20M

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$580K	$600K	$700K	0	0	0	$800K

Document Separator

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
27134F			X		
27162F			X		
27217F	X				
27313F			X		
27417F		X		X	
27590F			X		
28015F		X	X		
35887F		X			
62602F			X		
63601F			X		
63737D			X		
64211F		X			
64270F		X			
64604F		X	X		
64770F				X	
65130D			X		
65712F			X	X	
65807F			X	X	
72806F			X		
ARMY		X	X		
NAVY		X	X		

(2.1.B.1) Continued

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
27133F	X		X		
27134F			X		
27165F			X		
27217F	X				
27249F	X				
27313F			X		
27590F			X		
28015F			X		
28030F			X		
62101F			X		
62602F			X		
63270F	X				
63307F		X			
63601F			X		
64239F	X				
64270F		X	X		
64602F			X		
64604F			X		
64607F			X		
64770F				X	
65130D			X		
65712F		X	X		
65804D	X				
65807F			X	X	
72806F			X		
ARMY			X		
B6404D			X		
NAVY			X		X

(2.1.B.1) Continued

Future Years

Program Element	AV	EC	A/W	OT	OTHER
27133F	X		X		
27134F			X		
27160F	X		X		
27162F			X		
27165F			X		
27217F	X				
27249F	X				
27313F			X		
27417F		X		X	
27590F			X		
28015F		X	X		
28030F			X		
28060F	X		X		
35887F		X			
62101F			X		
62602F			X		
63270F	X				
63307F		X			
63601F			X		
63737D			X		
64239F	X				
64270F		X	X		
64602F			X		
64604F		X	X		
64618F			X		
64727F			X		
64770F				X	
65130D			X		
65712F		X	X	X	

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
65804D	X				
65807F			X	X	
72806F			X		
ARMY		X	X		
B6404D			X		
NAVY			X		

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 and FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	0	.14
Electronic Combat	.41	.12
Armament/Weapons	.67	.89
Other Test	.22	.54
Other	0	.09

NOTE: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc.?

Yes. Multispectral Signature Measurement is composed of many sub-capabilities that are one-of-a-kind systems. Capacity is therefore physically limited to the amount of work each system can individually perform.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a TandE product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. Multispectral Signature Measurement provides one-of-a-kind test systems and test capabilities that are not duplicated anywhere else in DoD. Loss of these systems would do irreparable harm to the test mission of Eglin; for example, the Sensor Fuzed Weapon test program could not have been conducted without the direct support of the ASETS NC-130 aircraft providing the only known overhead coverage capability available in the United States.

(2.3.B.1) On the test mission of any other activity?

Yes. These systems and resources support the field test requirements for the Air Force Laboratories as well as other AF, Army, and Navy test organizations; for example, the ASETS supported the Joint Army/Air Force Smart Weapons Operability Program at Grayling, Michigan and Yuma Proving Grounds, Arizona in FY92-94.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. These systems and resources are used to measure the signatures of friendly and threat weapon systems, and the effectiveness of weapons, countermeasures, and counter-countermeasures. Loss of these systems would be critical to the development of effective operational systems, and result in a considerable loss of effectiveness of the Armed Forces of the United States; for example, the ASIMS and Seeker Test Van support of NATO test, Trial Embow VI, is scheduled for September 1994.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

0%.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Not Applicable.

(3.1.B) Facility Condition (MV II)

Reference the Facility Condition Form provided at the end of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

<u>Encroachment:</u>

No. There are NO limiting encroachment characteristics associated with this facility.

<u>Environmental:</u>

No. None of the Multispectral Signature Measurement Facilities are currently limited or expected to be limited in the future by any environmental constraints.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

<u>Encroachment:</u>

Not Applicable.

<u>Environmental:</u>

Not Applicable. There are no environmental constraints to increased workload.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

None of Eglin's Multispectral Signature Measurement Facilities are currently operating under any temporary permits or voluntary agreements of an environmental nature.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	253,144
100 Mile Radius:	952,650
150 Mile Radius:	1,211,688
200 Mile Radius:	1,966,382

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Jet airway J58-86 and Gulf Route 26: routes are used on a daily basis. State highways 85 and 285: used on a daily basis. Sea area under warning areas W-151 and W-470 is in international waters. Air routes may be closed for up to four hours for test activities. State highways may be closed for duration of test activities. Sea area is sufficiently large to permit positioning the test activity to avoid surface traffic.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. The following facilities are currently required to support the Airborne/Surface Multispectral Signature Measurement Facility mission or are potentially required to support future test mission activities:

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

SUPPORT FACILITIES LIST

WRIGHT LABORATORIES

- Radio Frequency/Millimeter Wave (RF/MMW) Facility
- Electro-Optical Research Facility
- LADAR Development and Evaluation Research Facility (LDERF)
- Model Fabrication Facility
- Inertial Navigation Facility

AFDTC

- Freeman Computer Science Center
  - Test and Analysis
  - System Technology
- Safety
- Instrumented Airborne Platforms (C-130, F-111, F-15, F-16, UH-1)
- Avionics
- Multilateration Systems & GPS
- Electro-Optical/Millimeter Wave Instrumentation
- Airborne Systems/Instrumentation
- Meteorological Instrumentation
- "Specialized" Electronic Systems Flight
- Electronic Design and Development Flight
- Aircraft Systems/Design and Modification
- Precision Measurement Equipment Lab (PMEL)
- Precision Measurement Facility - Site III Mass Properties
- Armament Maintenance Section
- Alternate Mission Equipment Section
- Aircraft Repair Element
- Egress
- Fuels
- Propulsion

AFDTC (Continued)

- **Machine Shop**
- **Structural Maintenance**
- **Metals Processing**
- **Corrosion Control**
- **Non-Destructive Inspection**
- **Electro-Environmental**
- **Pneudraulic**
- **Patterns and Plastics**
- **Survival Equipment**
- **Inspection Element**
- **Wheel and Tire Element**
- **Aerospace Ground Equipment**

WRIGHT LABORATORIES (WL/MN)

Radio Frequency/Millimeter Wave (RF/MMW) Facility

Main Lab: Calibration and measurement test benches; 94 GHz monopulse radar; X-band pulse doppler fire control radar.

Penthouse: Roof level room with sliding windows allowing sensors to view area outside building; includes instrumentation and communication with main lab and tower.

Tower: 3 X 3 meter room 10.6 meters above bldg. 13A roof; Elevator; 360 degree field of view; instrumentation and communication lines with main lab. Areas available to view include Eglin flightline and runways, intercoastal waterway in Choctawhatchee Bay, Eglin tank farm, various buildings and associated structure.

Electro-Optical Research Facility

Main Lab : (1232 ft^2) Vibration isolated optics benches and computer workstations, Laser Polarimeter.

WRIGHT LABORATORIES (WL/MN) (Continued)

Make measurements of the electro- and magneto-optic constants of optical and infrared materials, optical processing experiments and simulation.

LADAR Development and Evaluation Research Facility (LDERF)

Optics Labs: Four optical work/test benches on isolated slabs of cement in 2 separate 20' X 40' rooms; 1064 NM Nd: Yag diode pumped laser radar system; Laser Imaging Radar System; two Tunable Ti-sapphire lasers; three Nd: YV04; Janis dewar for material characterization down to 2° K; 80' darkened indoor range for conducting LADAR tests in a controlled environment. Garage door provides access to a 1.5 km outdoor range.

Electronics Lab: 1600 ft^2 room with PCB assembly area; four general purpose electronics work benches; LADAR Video/data display and processing station; Computer Aided Design (CAD) System including schematic capture, circuit simulation, PCB layout, and mechanical drawing packages.

UAV Operations: Air conditioned hanger space for modification, sensor integration and storage of unmanned aerial vehicles (UAV). A 16' X 12' tall hanger door opens to roughly 1600 ft^2 of hanger floor space. 30 ft^2 of workbench space is complemented by a complete selection of hand tools and light machine tools. A 2000 ft^2 cement pad is adjacent to the hanger door.

Model Fabrication Facility

Produce, assemble, and modify both full and sub-scale aeroballistic, aerodynamic and aeromechanical assemblies and components for experimental munitions applications.

Inertial Navigation Facility

Test and evaluate tactical inertial navigation hardware and imbedded GPS/inertial systems.

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.

The CCF is designed for commonalty/compatibility with ODD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DoD services and US Allies on a regular basis.

Systems Technology

Designs, develops, implements, operates and maintains the AFDTC Scientific Computer Center and its networks. Provides a broad base of expert computer and system engineering consultants. Provides software engineering support for the Eglin scientific and engineering community including development, customization and adaptation of graphics, applications, and system software products. Develops software products for the simulation and/or control of weapon or related systems as required for RDT&E. Operates and maintains the Eglin Decision Support System and the CRAY YMP Supercomputer.

The computer center has a CRAY YMP supercomputer and visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN).

This is a general purpose computer center that supports all phases of digital models and computer simulations. It is available to all DoD agencies. The largest current user is the Aeronautical Systems Center.

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and safety control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources [radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

INSTRUMENTED AIRBORNE PLATFORMS

Mission Statement: Instrumented aircraft are required to support the test and evaluation of munitions, electronic combat, communications computers command control and intelligence (C4I) systems, and inertial navigation/guidance systems in the Open Air Arena.

Unique Capabilities: Aircraft instrumentation provides time, space, position information (TSPI), platform specific information (avionics/weapons data), and test specific information (environmental/infrared/separation data). Instrumentation data can be provided real time (via telemetry (TM) transmitters and/or data links) and/or post mission (via analog data tape recorders, video tape recorders and film cameras). The TM stream is usually the PCM (pulse code modulation) output of a data acquisition system which collects and conditions the various analog and digital signals. The oldest data systems are the programmable Data Acquisition System (pDAS) and

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

the Airborne Test Instrumentation System (ATIS). Until the Common Airborne Instrumentation System (CAIS) is available, the Advanced ATIS system (AATIS) is presently being installed. The main sources of digital data are the aircraft's busses, avionics, weapons, ECM, and display. This data can be recorded selectively or totally. Cockpit displays (HUD/VSD/TEWS/RWR/MFD/etc.) are recorded on video tape recorders (video cameras may be required if display signal is not TV (RS-170) formatted). 1553 bus data or other PCM information may be formatted/conditioned (Merlin system) to a TV format for video tape recording. Analog tape recorders are the MARS 1400 (14 track, 14" reel), MARS 2000 (14 track, 10" reel), and the MARS 2028 (28 tracks, 10" reel); video tape recorders are the NAC (VHS) and the new TEAC (Hi 8 mm); digital recorder is the MARS II. A Time Code Generator (TCG) provides IRIG (Interrange Instrumentation Group) time for time correlation of analog, digital, film and video data. Store separation data is provided by 16 mm film cameras which are installed in aircraft fairings and/or carried on store stations. Airborne TSPI sources are a radar transponder (beacon), user GPS, or RAJPO GPS. The GPS data can be recorded or it can be transmitted via the MTACS (Multilateration Tracking and Control System) data link. Telemetry and video streams are encrypted before transmission.

Various types of instrumented pods/shapes are carried on the platform's store stations. Power and control wiring is either installed or standard aircraft wiring is utilized. The Golden Bird Missile is an instrumented AIM-7; the ARTIS pod contains an instrumentation radar for relative TSPI; I-HAWK and SADS VI M/1 are threat simulator pods; the BASES, SAIMS, and ASIMS are infrared (IR) pods; GPS/MTACS pods contain the RAJPO HDIS receiver combined with the MTACS data link. Two F-15B aircraft have an instrumentation 1553 bus specifically installed to control instrumentation pods. ACES II, ITV, and IMV are instrumented AMRAAM shapes/pods.

Listed below are the 46TW and AWC aircraft already modified, in process of being modified, or will begin modification this FY.

C-130

C-130A 55-0022: Airborne platform for DT&E of air-to-ground and air-to-air seekers and sensors (visible, IR, MMW), stabilized turret, beacon, GPS

F-111

F-111E 67-0118: Film cameras, cockpit video camera, VTR (Hi 8 mm), TCG, beacon F-111F 70-2379: Flutter instrumentation, film cameras w/FDRS, video cameras for separation, ATIS, MARS 2000, TCG, Beacon, VTR (Hi 8 mm)

F-111F 70-2400: Film cameras w/FDRS, AATIS, TCG, user GPS w/MTACS, Beacon, MARS 2028, TM

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-15

F-15A 76-0101: JTIDS, HUD/VSD/MPCD VTRs(Std TEAC, NAC), TCG, MARS 2000, pDAS, Beacon, TM

F-15C 84-0011: JTIDS, HUD/VSD VTRs(8 mm), MPCD VTR(NAC), TCG, MARS 2000, pDAS, TM, Beacon

F-15A 77-0064: Film cameras, HUD/VSD Video Cameras & VTRs(8 mm), TCG, MARS 2000, pDAS, Beacon, TM, partial Golden Bird

F-15A 76-0116: High Speed Radar Buffer Box, ITV Pod, TCG, Beacon, MARS 2000, pDAS, VTR(NAC), TM

F-15B 73-0114: MSIP B FOT&E, HUD/VSD/MPCD/RWR VTRs (Hi 8 mm), TCG, pDAS, Beacon, TM

F-15B 75-0080/84: 1553 Instrumentation Bus, HUD/VSD/MFD VTRs (NACs), TCG, pDAS, MARS 2000, Beacon, TM, Pods: ARTIS, I-HAWK, SADS VI M/1, BASES, SAIMS, ASIMS, Golden Bird

F-15B 77-0161: High Speed Radar Buffer Box, PSP/RSP Radar, TCG, pDAS, HUD/VSD cameras, VTRs (Hi 8 mm), TM, Beacon, Film Cameras on Station Adaptors, pods: Golden Bird, ARTIS

F-15C 84-0018: AMRAAM Instrumentation, TCG, pDAS, MARS 1400, TM, Film Cameras, Beacon, HUD/VSD VTRs (8 mm), pods: ACE II, ITV, IMV, partial Golden Bird.

F-15C 85-0126: AMRAAM/TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (8 mm & NAC), Film Cameras, pDAS, TCG, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, Beacon, pods: ACE II, IMV, partial Golden Bird.

F-15C 80-0022: AMRAAM/TEWS/JTIDS instrumentation, AATIS, MARS 2028, MARS II, TCG, TM, Beacon, pods: partial Golden Bird (In design)

F-15C 78-0542: TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (NACs), TCG, pDAS, TM, Beacon, MARS 2028, pod: partial Golden Bird

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-15 (Continued)

F-15D 84-0045: AMRAAM Instrumentation, Film Cameras, HUD/VSD Video Cameras & VTR (NAC), High Speed Radar Buffer Box, pDAS, TCG, TM, Beacon, pods: ACE II, ITV, DMV

F-15E 86-0185/0188: SEEK EAGLE/TEWS/AMRAAM Instrumentation, Film Cameras, MPDP VTRs (Hi 8 mm), TCG, pDAS, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, beacon, video TM

F-16

F-16A 80-0609: AMRAAM Instrumentation, Film Cameras, Hud/REO Video cameras & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Dual HUD capability, partial OCU, Beacon, Total A&W bus recording, pods: ATLIS II, RDIP, RUBIS, ASRAAM (In Design)

F-16A 80-0761: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Camera & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Beacon, ADF capable, pods: ACE II, Musketeer Lee, ASRAAM (In design)

F-16B 78-0104: INS Fighter test bed.

F-16B 82-1037: Film Cameras, TCG, Beacon

F-16B 83-1123/88-0353: Flutter & Loads, Flutter Exciter Panel, Film Cameras, pDAS, TCG, TM, MARS 2000, HUD/RMFD or LMFD VTRs (NACs), Beacon, pods: RDIP (123 only)

F-16C 83-1163: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Cameras & VTRs(NACs), pDAS, TCG, MARS 1400 or 2000, Beacon, TM, pod: ACE II

F-16C 84-1280/1285: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR Video Cameras & VTRs(NACs), MARS 1400, pDAS, TCG, TM, Beacon, chaff/ flare monitor, pod: ACE II

F-16C 88-0441: AMRAAM Instrumentation, Film Cameras, RWR video camera, Total Bus recording, HUD/LMFD/RMFD/RWR VTRs (Hi 8 mm), TCG, pDAS, TM, ALE-47 instrumentation, Beacon, pods: IMV, DMV, JSOW, ACE II

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-16 (Continued)

F-16C 89-2070: ALE-47 Instrumentation, RWR video camera, HUD/LMFD/RMFD/RWR VTRs(NACs), TCG, pDAS, TM, Total Bus recording, Beacon, pods: ACE II

F-16C 90-0726: ALQ-126B

F-16D 80-0844/0848: HUD/MFD/RWR VTRs(Hi 8 mm), Total bus recording A/B/C/D/EW/W busses (Merlin, Hi 8 mm), HARM & ALIC PCM recording (Merlin, Hi 8 mm), TCG, Beacon (In design)

F-16D 88-0469: NAC Recorders

F-16D 90-0835: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR/HELMET/HAND-HELD VTRs (Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS 422 monitor, user GPS w/MTACS, encrypted video, beacon, TM, pods: ACE II, RDIP

F-16D 80-0836: HARM Instrumentation, Film Cameras, HUD/MFD/RWR VTRs(Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS
422 monitor, user GPS w/MTACS, encrypted video, TM, beacon, pods: RDIP, ACE II

UH-1

UH-1N 69-6617/6626: BASES Pod, Aerial Ignition Device, beacon

AVIONICS

Mission Statement: The F-16 AIS Shop is responsible for off-equipment Intermediate level maintenance and support of F-16 Line Replaceable Units (LRUs). Does software loading of Operational Flight Programs, TCTOs, modifications, calibrations, and testing of F-16 LRUs. Responsible for testing weapons, instruments, and ALR-69 systems using AIS test equipment. Maintains four test stations and ancillary equipment by performing inspections, modifications and repairs.

AVIONICS (Continued)

The F-15 AIS is responsible for testing F-15 LRUs including weapon control radar, inertial navigation, heads-up display, automatic flight control, instrument, and communication and navigation systems. Uses, maintains, and calibrates avionics intermediate shop test stations used to repair F-15 LRUs. Performs off-equipment maintenance and line delivery of AXQ-14 and Improved Data Link pods.

The Conventional Avionics Shop is responsible for intermediate and organizational level maintenance on avionics systems installed on UH-1N helicopters and transient aircraft. Performs intermediate level maintenance of CommNav, Guidance, and ECM systems on assigned aircraft. Modifies, repairs, loads, and operationally checks ECM pods on F-15, F-16 and F-111 aircraft to support test missions. Repairs and modifies communication ground cords, headsets, and emergency survival radio/beacons for Eglin units. Maintains, installs, and repairs radio ground mount adapters for emergency and operations vehicles on Eglin. Operationally checks all UHF, VHF, and RWR antennas for serviceability.

The Sensor Test Shop is responsible for on-equipment and off-equipment maintenance of all assigned and transient sensor systems. Performs intermediate and organizational level maintenance on LANTIRN targeting and navigation and PAVE TACK Laser Target Designation pods. Maintains intermediate level test equipment including the LANTIRN mobility shelter set. Performs intermediate level maintenance on Airborne Video Tape Recorders and Cockpit Television Systems, to include phase inspection work cards. Assists field engineers in the kit proofing, validating and fielding of new systems and/or upgrades to current systems.

The Radar Test Shop provides intermediate level repair of F-15 and F-16 radar and other avionics and components. Reprograms various avionics and other computers. Refurbishes F-15 and F-16 flight control and INU batteries. Performs operational checks for serviceability of F-15 and F-16 radar LRU's. Provides repair and functional checks of F-16 ARC-164, ARC-186, and ARN-118 receiver/transmitters, throttle grips, side stick controllers, GPS receivers and numerous F-16 control units. Repairs various circuit card assemblies by troubleshooting and replacing electronic components as required. Provides software testing to Test Wing agencies on Eglin AFB.

Unique Capabilities: Maintains full F-16 and F-15 radar mockups with capability to troubleshoot and repair parts in concert with associated avionics intermediate stations (AIS). A Huntron Tracker is on hand to repair circuit cards. A LANTIRN Mobile Support Shelter and a PAVE-TACK repair test set are also available.

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd FW (ACC)

AVIONICS (Continued)

Outside Customers Supported: (Continued)

4. 9th Special Operations Squadron
5. 728th Tactical Control Squadron

MULTILATERATION SYSTEMS & GPS

Mission Statement: Provides a time-space-position-information (TSPI) capability to support customer needs. While providing TSPI of up to 20 aircraft or ground vehicles, up to 6 vehicles can be remotely controlled. Airborne pods provide TSPI from multilateration and/or GPS/inertial reference. A synchronized A/C and remote controlled target test capability is provided at a central control facility (CCF).

Unique Capabilities: Uses the resources of the Gulf Range Drone Control Upgrade System (GRDCUS) to provide a wide area test arena, including over-the-horizon, over Eglin, Tyndall and the South East Test and Training Area (SETTA). IFF radar data can also be shared with MTACS. Two data link frequencies are available for simultaneous missions each having the number of participants mentioned in the above statement.

Outside Customers Supported:

1. AFOTEC
2. USAF AWC
3. U. S. Navy
4. U. S. Army
5. Various foreign governments

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION

Mission Statement: Provides design, development, and operation of airborne and surface EO/MMW instrumentation systems. Provides multispectral targets and targets in back-ground including target expendables. Provides captive carry operation and test of air-to-air, surface-to-air, and surface-to-surface domestic and threat missile seeker guidance, and control units operating in a real and CM environment. Provides quick look and field data reduction and analysis of all collected signature data.

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION (Continued)

Unique Capabilities: Multispectral signature measurement and captive flight testing capability residing in a cadre of highly qualified technical and range personnel and customized and standard sophisticated EO/MMW instrumentation operating in A-A, A-S, S-S, S-A, and tower/turntable scenarios. Spectral range includes ultra-violet, visible, mid and long wavelength infrared, laser, millimeter wave, seismic, acoustic, and magnetic. Measurement disciplines include temporal, radiometric, spatial, spectral, phase, range, polarization, frequency, and cross section. State-of-the-art sensitivity, resolution, and bandwidth, data rate/recording and seeker/sensor performance measurements are maintained. A suite of targets for target and target in clutter signature measurement and seeker/sensor evaluation are maintained. Archiving of collected data is provided by the Targets and Background Information Library System (TABILS). The capability is uniquely connected to modeling and simulation facilities such as the Guided Weapons Evaluation Facility (GWEF) as a source of data required to drive HITL scene generators and to validate models. The capability is built upon many years of T&E research and engineering expertise and experience.

Outside Customers Supported:

1. **ASC**
2. **USAF AWC**
3. **AFSOC**
4. **U. S. ARMY**
5. **U. S. NAVY**

AIRBORNE SYSTEMS/INSTRUMENTATION

Mission Statement: Designs, develops and procures airborne instrumentation systems for installation on aerospace vehicles and airborne threat simulators. Performs T-2 (Class II) modification support and post modification calibration and checkout. Provides pre/postflight instrumentation support for test missions.

Unique Capabilities: The unique capability provided is the design, procurement, installation and support of aircraft instrumentation systems, i.e. the requirement-to-requirement support of highly instrumented T&E aircraft. Based on the given requirements, the system engineers design instrumentation systems utilizing standard instrumentation subsystems, where possible, for quick turnaround and best maintenance support. Procurement of the system components is then initiated. This may entail contacting potential vendors, writing specifications and Justification Review Documents, and evaluating bids. Next is the creation of the instrumentation modification

AIRBORNE SYSTEMS/INSTRUMENTATION (Concluded)

package, it's installation, and it's checkout. "Standard Operating Procedures" detailing instrumentation operation during pre/postflight checkout are written and the aircrew is aided in writing the Partial Flight Manual Supplement. Instrumentation systems collect various types of data for real time transmission (after encryption) and/or onboard recording. One type includes avionics/weapons/electronic warfare/display buss information and sensor data (strain gauges, accelerometers, etc.). Aircraft displays (Hud, VSD, RWR, etc.) are tape recorded and transmitted, if desired. Film cameras record store separation and a radar transponder enhances radar tracking. All data and events are time correlated with IRIG time. Engineers and electronic "bench" technicians maintain, calibrate, and repair the various instrumentation subsystems utilizing special "hot" benches. System engineers and electronic "preflight" technicians also checkout and setup the instrumentation before flight and download tape recorders and pods after flight.

METEOROLOGICAL INSTRUMENTATION

Mission Statement: Meteorological support for AFDTC is provided through the 46th Test Wing Weather Squadron which provides 24-hour weather forecasting services including preflight weather briefings, pilot-to-forecaster services to aircraft in the area, and weather warnings and advisories.

Unique Capabilities: Provides specialized weather services to both host and tenant units. The Test Meteorological Office provides consultation on the meteorological environment consisting of physics, chemistry and the dynamics of the atmosphere. Provides ME instrumentation at permanent, semi-permanent, and temporary sites, using mobile equipment when necessary. A full range of ME data are gathered to measure the following: wind vector, atmospheric temperature/pressure, relative humidity, dew point, rainfall amount/rates, visibility, visual range, cloud bases, solar radiation, particle size distribution, rainfall size distribution, extinction coefficient, density, defractivity, height, atmospheric electric field, etc.

SPECIALIZED" ELECTRONIC SYSTEMS FLIGHT

Mission Statement: Provides AFDTC with a complete in-house capability for developing unique TSPI and remote-controlled systems.

Unique Capabilities: Provides electrical and mechanical engineering, design and fabrication services for simple to very complex one-of-a-kind systems. The functions of the flight include:

1. Electrical and Mechanical design, prototyping, and end-product fabrication of the various sub-systems involved.
2. System integration and testing

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

Yes. Multispectral Signature Measurement is composed of many one-of-a-kind measurement systems that provide a unique all scenario (i.e., air-to-air, air-to-surface, surface-to-air, and surface-to-surface) test capability. BASES, SAIMS, and ASIMS are supersonic airborne instrumentation pods designed to perform different EO/IR related functions. All are continually upgraded to be able to accurately and efficiently test the latest EO/IR weapons technologies. ASETS is a C-130A aircraft equipped with a large stabilized turret which is optimized to perform air-to-surface EO/IR test functions. Ground instrumentation vans include TIPS, and Seeker Test Van, and MMW. Instrumentation systems such as CIGARS, ASIMS, and UVIS are interchangeable between airborne and ground platforms maximizing their utility. The 300 foot tower/turntable system is a one-of-a-kind EO/IR test facility that can perform complete multispectral measurements of full sized threat and friendly armored vehicles.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

Yes. Multispectral Signature Measurement is composed of many one-of-a-kind measurement systems that provide a unique all scenario (i.e., air-to-air, air-to-surface, surface-to-air, and surface-to-surface) test capability. BASES, SAIMS, and ASIMS are supersonic airborne instrumentation pods designed to perform different EO/IR related functions. All are continually upgraded to be able to accurately and efficiently test the latest EO/IR weapons technologies. ASETS is a C-130A aircraft equipped with a large stabilized turret which is optimized to perform air-to-surface EO/IR test functions. Ground instrumentation vans include TIPS, and Seeker Test Van, and MMW. Instrumentation systems such as CIGARS, ASIMS, and UVIS are interchangeable between airborne and ground platforms maximizing their utility. The 300 foot tower/turntable system is a one-of-a-kind EO/IR test facility that can perform complete multispectral measurements of full sized threat and friendly armored vehicles.

(3.1.F.2) Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
30.40%	9.05%	0.24%	0.61%	0.00%	4.74%

SPECIALIZED" ELECTRONIC SYSTEMS FLIGHT (Concluded)

Unique Capabilities: (Concluded)

3. Preparation of technical specifications and engineering evaluation reports
4. Engineering consultation to AFDTC agencies as well as outside agencies on TSPI, remote control, TM, RF and antennas
5. Personnel expertise and equipment to perform the mission

Outside Customers Supported:

1. ASC
2. Tyndall AFB
3. WSMR

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Mission Statement: Provides AFDTC with a system level capability for developing, integrating, and testing the specialized instrumentation and control systems required in support of all types of ground and flight testing. This in-house capability spans the entire process of acquiring such systems: from "development of requirements" to "design" to "build-up" to "testing" to "installation and training."

Unique Capabilities: The uniqueness of the Electronic Design and Development Flight is its broad based expertise which allows it to perform its mission (in-house development) in a quick response mode without outside support. Equally important is its capability to remain flexible to changes in requirements during the development process with minimal impact on schedule.

Outside Customers Supported:

1. USAF AWC
2. Aeronautical Systems Center
3. AFOTEC
4. U. S. Army
5. U. S. Navy
6. Various foreign governments

AIRCRAFT SYSTEMS/DESIGN AND MODIFICATION

Mission Statement: Designs, installs, and documents the buildup of aerospace vehicle T-2 modifications and airborne threat simulators. Maintains configuration management records on these modifications.

Unique Capabilities: The 46 Test Wing has the capability and the facilities necessary to perform the entire T-2 modification process. The aero-engineering section has all the various skills required: aero-engineers, mechanical engineers, electrical engineers, aero-technicians, and electronic technicians. These personnel (working with an assigned systems engineer) perform the aero/mech/elec design of all in-house T-2 modifications and approve/review all contractor provided T-2 modifications. In conjunction with the system engineer, a cost/man-hours estimate is provided to the customer. Aircraft technical orders, military standards and specifications, equipment manuals are researched. The aircraft to be modified is examined for available space for installing instrumentation and detailed measurements are taken. Then, utilizing engineering workstations with computer aided design (CAD) and computer aided engineering (CAE) software, structural and electrical drawings are created. Aerodynamic/structural analyses are performed. All material, mechanical and electrical, are researched for part numbers and other ordering information and a list is provided for procurement. Work orders are generated and sent for mechanical fabrication and then returned for electrical wiring and component installation. Electrical engineers approve the electrical drawings and perform an electrical loads analysis to prevent overloading any portion of the aircraft's power generation and distribution system. The modification engineer provides written instructions, guidance, and other pertinent documentation which constitute the T-2 modification package. With shop support (sheet metal, machine shop, etc.) and electricians, dock chiefs direct the T-2 modification installation. The installation is monitored throughout by the modification and system engineers.

Outside Customers Supported:

1. **USAF AWC**

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB

Mission Statement: Responsible for the maintenance, calibration and certification test, measurement and diagnostic equipment designated Type II, Type III and Type IV PMEL support. Responsible for the calibration and repair of signal generating, waveform measuring, and frequency counting, voltage, current, resistance, inductance, and power measuring instruments, mechanical, electro-mechanical, dimensional and radiation measuring equipment. Responsible for the calibration and repair of F-15 and F-16 Avionics Intermediate Stations

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB (Continued)

Unique Capabilities: One of the largest PMELs in the Air Force and the regional facility servicing Northwest Florida. Has an active program currently developing automated calibration testing of equipment.

Outside Customer Supported:

1. **919th Special Operations Wing**
2. **OSD JADO Program**
3. **USAF AWC**
4. **AFOTEC**
5. **Naval EOD School**
6. **Vitro Services**

PRECISION MEASUREMENT FACILITY
SITE III MASS PROPERTIES

Mission Statement: Performs the weight, center of gravity, and moments of inertia measurements on munition and non munition items. Performs reballast procedures on munition and non munition items to provide the test engineers with a reliable product. Performs maintenance and operation of the portable mass properties machine. Used for the world wide field review measurement of stores (FRMS) operation. Mass properties data collected at various bases is put into the mass properties data program for updating the stores technical and mass properties data bank (STAMP), This ensures the project engineers have the proper mass properties data. Performs assembly/disassembly of munitions items for the purpose of adapting the items to the test set. Develops procedures for efficiency and safety of operations on new prototype test items.

ARMAMENT MAINTENANCE SECTION

Mission Statement: Inspects and maintains all munition suspension equipment for the 46th Test Wing and the Air Warfare Center aircraft. To include pylons, bomb racks, launchers and adapters for weapons carriage on the F-15, F-16, and F-111 aircraft. Inspects and maintains guns and gun systems on the F-15 and F-16 aircraft, including removal and installation.

ARMAMENT MAINTENANCE SECTION (Continued)

Unique Capabilities: Supports Ammo/Gun Test Range 22/C-64/C-74L with gun maintenance and support personnel on a daily basis. Advises test project personnel on modification requirements for AME. Maintains modified equipment for various test projects. Provides maintenance, repair and/or inspection for armament systems components owned by various military and civilian test agencies.

ALTERNATE MISSION EQUIPMENT SECTION

Mission Statement: Stores, controls and accounts for all munition suspension equipment for the 46th Test Wing and Air Warfare Center aircraft. Tracks all in-use equipment and schedules inspections through the maintenance section.

AIRCRAFT REPAIR ELEMENT

Mission Statement: Performs organizational, intermediate, and limited depot-level maintenance beyond the capability of other assigned maintenance activities. Accomplishes troubleshooting analysis, repairs, replacement, rigging, and operational and functional checkout of flight control systems, landing gears, air induction equipment, and canopy and windscreen assemblies. Provides capability for the recovery and reclamation of damaged and crashed aircraft. Maintains, inspects, and repairs all associated equipment required to accomplish the above mission.

Unique Capabilities: Performs flight control, landing gear, and canopy maintenance on any fighter aircraft in the USAF inventory. They are multi-aircraft qualified and perform intermediate and limited depot-level maintenance, tow target maintenance, and provide crash recovery services on any military or civilian aircraft without exception. Performs aircraft reclamation services on any type of aircraft and provide emergency response/crash recovery service to any aircraft over a three state area. Respond to all ground or inflight emergencies on Eglin and the Fort Walton Beach Regional Airport. Uniquely qualified to work with engineers performing class II modifications on aircraft and systems. Experience includes T-37, T-38, T-39, A-10, F-4, F-5, F-15, F-16, F-111, and UH-1 aircraft maintenance.

EGRESS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on F-15, F-16 and F-111, Aircrew Egress Systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies egress systems and components. Replaces transparencies and rigs canopies on F-16 aircraft. Provides egress system familiarization training as required for, life support, fire department, and personal working within the Test Wing. Provides support on transient aircraft, as well as support to the 33 FW (ACC) under the host tenant support agreement. Provides support to the Eglin Armament Museum as required.

Unique Capabilities: Due to the knowledge of civilians, the shop has the repair capability for F-15, F-16, F-111, F-4 and A-10 egress systems.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing

FUELS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on aircraft fuel and in-flight refueling systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, seals, and modifies systems and components. Performs systems maintenance and servicing of Hydrazine tanks. Provides qualified support for emergency Hydrazine response teams. Maintains proficiency in detection of Hydrazine.

Unique Capabilities: The fuel system repair hangar is a state-of-the-art building and designed for that purpose. It has multi aircraft capability. It has indoor space for two, F-111/F-15 size aircraft, three F-16 size aircraft, of five UH-1N helicopters. The fuel hangar has indoor external fuel tank work area with a lifting hoist. This flight also has the regional hydrazine resource responsibility.

Outside Customers Supported:

1. USAF AWC
2. 187th Tactical Fighter Group, Montgomery, AL, Hydrazine Tank Servicing
3. 926th Fighter Group/XP, Naval Air Station, New Orleans, LA, Hydrazine Tank Servicing

PROPULSION

Mission Statement: Responsible for jet engine intermediate maintenance (JEIM) on General Electric F100-GE-100/129, J79-15, J85-100, Pratt and Whitney TF30-111 and 109, and FW100-PW-100/200/220 engines. Responsible for assembly and disassembly of F100 modular engines and sub-components. Responsible for JEIM on F-15 starting systems and secondary power system components to include testing after maintenance. Responsible for JEIM on GTCP-397 gas turbine compressors used in AM32A-60B auxiliary power units. Responsible for acquisition, modification and testing of surplus and time-expired engines to the J85-100 configuration for use in the BQM-34S target drone. Provides modified J85-100 engines to the BQM-34S manufacturer for installation into new target drones used by both the Air Force and Navy organizations. Operates the engine test cell which is used for troubleshooting and testing of the above mentioned engines as well as aircraft noise suppression systems and other engine test facilities. Maintains engine support trailers for engine removal/installation and transportation. Ensures adequate spare level to support flying mission of various types and models of F-15 and F-16 aircraft assigned.

Unique Capabilities: Provides full JEIM on F100-100/200/220/220A/220E, J79 and J85 engines. Hush House and twin test cells are available to test all engines. Currently modifying J85 engines for both Air Force and Navy to be used in BQM-34S target drones. Has a steam and citrus-based parts cleaner to minimize hazardous waste.

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd Fighter Wing (ACC)
4. 9th Special Operations Squadron
5. 475th Weapons System Evaluation Group (ACC)
6. Naval Air Warfare Center

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC

MACHINE SHOP (Continued)

engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop is equipped with modern conventional tool room and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

STRUCTURAL MAINTENANCE

Mission Statement: Provides a Structural Repair Shop for design, manufacture, modification, and repair of RDT&E test items required to support the AFDTC test program of a non-repetitive nature. Manufactures items and works with sheet metal and fiberglass in modifying bombs, missiles, rockets, robots, etc. Manufactures and installs class II modifications parts and kits on aircraft and missiles to include CNC production required by AFDTC engineers, scientists and contractors for development of the test projects. Provides an intermediate maintenance capability to support all AFDTC assigned, transient and associate tenant aircraft.

Unique Capabilities: Maintains operational support of multiple aircraft to include F-111's, F-16's, F-15's, UN-1H and full manufacturing capability for all aircraft tubing assemblies (to include Depot level lines).

Outside Customers Supported:

1. 9 SOS
2. Eglin AFB. 33 FW (ACC)
3. Tyndall AFB.
4. Hurlburt AFB.

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS
3 Manufactured Sleds for Holloman AFB
4. Provide welding and manufacture for 728 ACS
5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

CORROSION CONTROL

Mission Statement: Inspects and treats corrosion on aircraft, missiles, armament and other related equipment. Provides wash rack facilities to wash aircraft and aircraft parts. Provides a corrosion capability for performing intermediate maintenance and painting on assigned aircraft, age, and class II modification items. Provide RDT&E experimental coating for test engineers on tasks, drones, missiles, and radomes etc.

Outside Customers Supported:

1. Wright Laboratory - Armament Division
2. Navy EOD School
3. 9th SOS

CORROSION CONTROL (Continued)

Outside Customers Supported: (Continued)

4. Seek Eagle Program Office
5. Navy Coastal System Laboratory
6. 919 SOS
7. Mill Star Program

NON-DESTRUCTIVE INSPECTION

Mission Statement: Provides a capability to accomplish optical, penetrant, magnetic particles, ultra sound, eddy current, and radiographic inspections to determine component integrity and serviceability. Conducts experimental tests as to the integrity of RDT&E test designs and specifications. Provides oil analysis to determine wear metal effects on aircraft engines and oil wetted components.

Unique Capabilities: Multi-use facility, equipment, manpower, materials and training are shared equally with the 33rd Fighter Wing (ACC). The only known field level shop with two film processors.

Outside Customers Supported:

1. Air Warfare Center
2. 33d Fighter Wing
3. Wright Laboratory
4. 919 Special Operations

ELECTRO-ENVIRONMENTAL

Mission Statement: Responsible for off-equipment maintenance on aircraft electrical and environmental control systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies systems and components. Provides battery servicing for assigned aircraft, associate tenant aircraft and ground support equipment. Responsible for field maintenance of all aircraft ground support equipment, (AGE), gaseous and liquid oxygen and nitrogen systems. Services life raft cylinders and emergency oxygen bottles, (Life Support Equipment), for all assigned and associate tenant aircraft.

ELECTRO-ENVIRONMENTAL (Continued)

Unique Capabilities: Possesses one of only three K400 generator test stands at field level, and will be only one of two sites in the world capable of running both F-111 and F-15 parts.

Outside Customers Supported:
1. 33rd Tactical Fighter Wing
2. 9th Special Operations Squadron
3. 728th Tactical Control Squadron

PNEUDRAULIC

Mission Statement: Responsible for off-equipment maintenance of pneudraulic components. Inspects, troubleshoots, bench checks, tests, repairs, services, and modifies components. Provides local manufacture and testing of flexible hoses and testing of rigid tubing. Maintains associated Test Stands and support equipment.

Unique Capabilities: Possess two state-of-the-art pneudraulic test stands which allow check-out and repair of all current and projected pneudraulic systems. Because of this capability, depots have authorized depot-level repairs on a case-by-case basis. A citrus-based parts cleaner is used to minimize hazardous waste.

Outside Customers Supported:
1. Air Force Armament Museum
2. 33rd Tactical Fighter Wing
3. 9th Special Operations Squadron

PATTERNS AND PLASTIC

Mission Statement: Provides a Pattern and Plastic Shop for design, manufacture, modification, and repair of RDT&E test items required to support the test program of a non-repetitive nature. Manufactures items and works with fiberglass, advanced composites, wood, and plastics in modifying bombs, missiles, rockets, etc. Manufactures Class II modification parts and kits on aircraft and missiles. Provides an intermediate maintenance capability to support all AFDTC assigned, transient, and associate tenant aircraft.

PATTERNS AND PLASTIC (Continued)

Unique Capabilities: Capable of manufacturing and repairing shock mitigation system under the container development program. This operation facilitates a fully equipped Wood Shop with unlimited support of hardware for finished wood products. Also supports manufacturing of form blocks for aircraft parts in support of class II modification and repair of assigned aircraft. Manufactures various airborne radomes for missiles, rockets and aircraft components using engineer specifications. Fully capable of supporting all DoD aircraft operations.

Outside Customers Supported:

1. **Drone Projects**
2. **Contractors VITRO, Raytheon, etc.**

SURVIVAL EQUIPMENT

Mission Statement: Provides a parachute and survival equipment shop to manufacture, modify, repair, and design item constructed of fabric in support of RDT&E test projects of a non-repetitive nature. Provides an extended intermediate maintenance capability to support aeronautical equipment, parachutes, and other aircraft maintenance requirements for support of AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop has the capability of servicing all personnel parachutes in the Department of Defense inventory. Capable of servicing the Advance Concept Ejection Seat (ACES II) employed on the A-10, B-52, F-16, and F-15 aircraft. Also currently the focal point for the Universal Water Activator Release System.

Outside Customers Supported:

1. **U. S. Customs**
2. **U. S. Army**
3. **U. S. Navy**
4. **U. S. Marine Corps**
5. **AMRAAM Program Office**
6. **Turkish Air Force**

INSPECTION ELEMENT

Mission Statement: Performs maintenance on modified test aircraft undergoing various inspections such as phase, periodic, major, minor, hourly post-flight, and special inspections. Also performs scheduled and unscheduled maintenance. Removes, disassembles, inspects, repairs, reassembles, installs, and operationally checks all assigned aircraft. Determines the condition of airframe and engines and all associated equipment. Performs maintenance on specialized systems such as flight control surfaces, landing gear, and engines. Performs time changes, Time Compliance Technical Orders and special inspections as required by the mission. Performs pre-dock and post-dock meetings to coordinate requirements while in the inspection process.

Unique Capabilities: Capable of performing any of the inspections cited above on any model of F-111, F-16, F-15, F-4, T-38, F-5, UH-1N, or A-10 aircraft. Additionally, given the equipment, they are capable of performing the same inspections on any other Air Force, separate service, or foreign national aircraft. Performs consolidated maintenance with the Aircraft Modification Element. Recently completed phase inspections and minor aircraft modifications simultaneously, saving an average of six complete days of aircraft downtime on each occurrence. Concurrently perform Time Compliance Technical Orders and special/one time inspections during their phase inspections.

Given the personnel and equipment, six aircraft could be inspected simultaneously on a three shift operation. Unique to the Inspection Element are custom built dock boxes centrally located at the head of each dock within the hangar floor area. These dock boxes enable supervisors to have complete control over every aspect of the inspection/maintenance process. They are wired with telephones, CAMS computers, and electrical power.

WHEEL AND TIRE ELEMENT

Mission Statement: Performs turnaround maintenance on all wheel assemblies to directly support all AFDTC, AWC, and Air Rescue aircraft. Performs teardown, inspection, and buildup of all wheel assemblies to include cleaning and inspection of wheels and bearings, seals, and retainers. Ensures ample spare wheels and tires are on hand to accomplish missions requirements. Inspects and maintains all shop equipment associated with the wheel and tire element.

Unique Capabilities: Capable of performing tear down and/or buildup of wheel and tire assemblies on any A-6, A-7, F-4, F-5, F-16, F-15, F-111, C-130, T-38, T-39, H-60, H-53, Tornado, or Harrier aircraft. If given the equipment, capable of performing the same maintenance on any weapon system. Being a forward supply point enables them to interface directly with supply, thus facilitating a positive wheel and tire acquisition process. Works directly with the 46th EMS Corrosion Element when stripping of wheels is required.

WHEEL AND TIRE ELEMENT (Continued)

Outside Customers Supported:

1. 33rd FW (ACC)
2. Duke Field
3. Hurlburt AFB
4. USAF AWC
4. British Aircraft

AEROSPACE GROUND EQUIPMENT

Mission Statement: Provides field maintenance, periodic inspections, special inspections, servicing, refueling and dispatch as well as technical order modifications on over 500 pieces of powered and non-powered AGE assigned to AFDTC. Provides supervision, production control, quality assurance and supply support for AGE activities. Performs engine teardown, buildup (overhaul) and repair of components, i.e. starters, generators, motors, relays, etc. Responds to trouble calls on equipment in use. Provides equipment operator training to customers. Performs servicing of aircraft oil and hydraulic carts. Collects and recycles waste petroleum products generated by aircraft maintenance. The equipment is, for the most part, the newest and latest designs in the Air Force inventory today.

Unique Capabilities: AGE has supported the latest aircraft in the inventory. For example: F-117A, C-17, RC-135, B-1 and B-2 bombers, E-3A AWACS as well as NATO aircraft such as the Harrier and Tornado. The capability also extends to all other services DoD wide which AGE will be able to support well into the year 2000. Provides test support to Army and Navy aircraft such as helicopters and Navy sea launch cruise missile tests. Provides specialized equipment to contractors and base facilities in support of new and state of the art munitions and electronic warfare testing.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

Yes. CHICKEN LITTLE requires specialized targets to support customer requirements for measurements of specific signatures on specific targets in various backgrounds. The specialized targets are not required to support the facility; the facility is used to collect data on the targets. The specialized targets are generally simulants, surrogates, etc., of real world targets. Range C-52 contains a 300 foot tower platform which allows multispectral measurement testing of various sensor systems against real and surrogate targets in a controlled environment. Targets can be moved into various positions via a railroad tracked system relative to the sensor platform. Targets used come from the inventory of CHICKEN LITTLE targets, but may also come from various intelligence sources.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Yes. Targets are validated by the Army Project Manager Instrumentation Targets & Threat Simulation (PM-ITTS) office for Army programs and other appropriate intelligence agencies.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. Multispectral Signature Measurement is composed of many one-of-a-kind instrumentation and measurement systems which are designed to be interchangeable and reconfigurable, permitting widest possible use of existing equipment. In addition, systems are designed to accept test equipment from other sources, permitting continuous support of new programs, cost-effective testing of the latest seeker/sensor technology developments, and upgrading of test equipment to current technologies. MMW radar systems RF band coverage can be expanded for target signature measurements, ECM, and simulations.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes.

<u>AIR VEHICLES</u>:

Air-to-Air and Surface-to-Air EO/IR/MMW Target in Background Signature Measurement
Air-to-Air and Surface-to-Air Countermeasure Evaluation
Air-to-Air and Surface-to-Air Target Tracking and Monitoring
Air-to-Air and Surface-to-Air RCS Measruements

(3.1.E.1.A) (Continued)

ARMAMENT AND MUNITIONS

Air-to-Air, Air-to-Surface, Surface-to-Surface and Surface-to-Air Seeker Evaluation
Air-to-Air, Air-to-Surface, Surface-to-Surface and Surface-to-Air Countermeasure Evaluation
Air-to-Air, Air-to-Surface, Surface-to-Surface and Surface-to-Air EO/IR/MMW Target in Background Signature Measurement
Air-to-Air and Air-to-Surface Captive Flight Testing
Air-to-Air, Air-to-Surface, Surface-to-Surface and Surface-to-Air RCS Measurements

ELECTRONIC COMBAT

Air-to-Air, Air-to-Surface Captive Flight Testing
Air-to-Air, Air-to-Surface, Surface-to-Surface, and Surface-to-Air RCS Measurements
Air-to-Air, Air-to-Surface and Surface-to-Surface Atmospheric and Weather Measurements
Air-to-Air, Air-to-Surface, Surface-to-Surface and Surface-to-Air Countermeasure Evaluation

OTHER

Air-to-Surface and Surface-to-Surface Vehicle EO/IR/MMW Signature Measurements (e.g., IHVS)
Air-to-Surface and Surface-to-Surface Seeker and Sensor Evaluation (e.g., IHVS)
Air-to-Surface and Surface-to-Surface RCS Measurements (e.g., IHVS)

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-Yes. Additional airspace within the Eglin reservation can be made available to Multispectral Signature Measurement. Also, airborne testing can frequently use over-water or non-instrumented Military Operating Area (MOA) airspace, both of which Eglin has located nearby; Water-N/A; Land-Yes, this facility can be expanded on existing DoD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Secret.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes. A second BASES type supersonic instrumentation pod called SATIRS will be completed by the end of FY95. This pod is capable of carriage on F-15 or UH-1N aircraft, and will expand capabilities for EO/IR/MMW air-to-air and air-to-surface testing. Two mono-pulse MMW tracking radar systems are in final stages of development which will be completed by FY97. These radars will enhance capability for air dropped submunition dispensing weapons.

(3.1.F.1) Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.

Yes. Multispectral Signature Measurement is composed of many one-of-a-kind measurement systems that provide a unique all scenario (i.e., air-to-air, air-to-surface, surface-to-air, and surface-to-surface) test capability. BASES, SAIMS, and ASIMS are supersonic airborne instrumentation pods designed to perform different EO/IR related functions. All are continually upgraded to be able to accurately and efficiently test the latest EO/IR weapons technologies. ASETS is a C-130A aircraft equipped with a large stabilized turret which is optimized to perform air-to-surface EO/IR test functions. Ground instrumentation vans include TIPS, and Seeker Test Van, and MMW. Instrumentation systems such as CIGARS, ASIMS, and UVIS are interchangeable between airborne and ground platforms maximizing their utility. The 300 foot tower/turntable system is a one-of-a-kind EO/IR test facility that can perform complete multispectral measurements of full sized threat and friendly armored vehicles.

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Air is 135,313 square miles (101,842 square miles are under direct control); land is 874 square miles (724 square miles are Government owned); and sea is 92,988 square miles, the Gulf Test Facility.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

U.S. government owns 724 square miles (83%), remaining 150 square miles are privately owned (17%).

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

R-2914A	Surface to unlimited, excluding R-2917	518
R-2914B	8,500 feet to MSL unlimited	83
R-2915A	Surface to unlimited	274
R-2915B	Surface to unlimited	61
R-2915C	8,500 feet to MSL unlimited	48
R-2917	No fly zone.	23
R-2918	Surface to unlimited	25
R-2919A	Surface to unlimited	71
R-2919B	8,500 feet to MSL unlimited	65
		1,168

Note: See 3.1.G.4 for airspace dimensions.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Yes. Testing of conventional air armament and electronic combat systems, launch of surface-to-air, air-to-air, air-to-surface, and surface-to-surface munitions. Dimensions are listed below. Yes, it will support simultaneous users.

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

(3.1.G.4) (Continued)

RESTRICTED

SUA	Area (Sq NM)	Altitude
R-2914A	518	Surface to unlimited
R-2914B	83	8,500 feet to MSL unlimited
R-2915A	274	Surface to unlimited
R-2915B	61	Surface to unlimited
R-2915C	48	8,500 feet to MSL unlimited
R-2917	23	No fly zone
R-2918	25	Surface to unlimited
R-2919A	71	Surface to unlimited
R-2919B	65	8,500 feet to MSL unlimited
Eglin MOA A	87	1,000 feet AGL to but not including FL 180
Eglin MOA B	222	1,000 feet AGL to but not including FL 180
Eglin MOA C	145	1,000 feet AGL to but not including FL 180
Eglin MOA D	126	1,000 feet AGL to 3,000 feet AGL
Eglin MOA F	8	Surface to but not including FL 180
Moody MOA	1407	8, 000 feet AGL to FL 230
Camden Ridge MOA	3039	500 feet AGL to 10,000 MSL
Tyndal MOA	2960	500 feet AGL to 2,000 feet AGL; 9,000 feet AGL to 17,000 feet AGL
Rose Hill MOA	736	8,000 feet MSL to FL 230
W-151	11,140	Surface to unlimited
W-155	5,498	Surface to unlimited
W-470	6,010	Surface to unlimited
W-168	9,970	Surface to unlimited
EWTA-1	9,250	Surface to unlimited
EWTA-2	18,385	Surface to unlimited
EWTA-3	16,735	Surface to unlimited
EWTA-4	9,970	Surface to unlimited
EWTA-5	5,040	Surface to unlimited

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

SUA	Over land (Sq NM)	Over water (Sq NM)
R-2914A	518	
R-2914B	31	52
R-2915A	274	
R-2915B	61	
R-2915C		48
R-2918	25	
R-2919A	71	
R-2919B	26	39
Eglin MOA A	87	
Eglin MOA B	222	
Eglin MOA C	145	
Eglin MOA D	126	
Eglin MOA F	8	
Moody MOA	1,407	
Camden Ridge MOA	3,039	
Tyndall MOA	2,960	
Rose Hill MOA	736	
W-151		11,140
W-155		5,498
W-470		6,010
W-168		9,970
EWTA-1		9,250
EWTA-2		18,385
EWTA-3		16,735
EWTA-4		9.970
EWTA-5		5,040
	9,736	~~92,135~~ 91,998

OVER WATER BUT NOT COUNTED AS SEA

SEA SPACE = 91998

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

There are no known or projected airspace problems.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Maximum straight line segment in Eglin <u>controlled</u> airspace is:

385 NM

(This is computed as a straight line from the southeast corner of EWTA-5 to the northwest corner of R-2915A)

Maximum straight line segment in Eglin <u>available</u> airspace is:

478 NM

(This is computed as a straight line from the southeastern boundary of warning area W-174B to the northwest corner of warning area W-155.)

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Airways: J58-86, Gulf Route 26, A509 and A758 in the Gulf of Mexico. Tests conducted are: Cruise missile, long range missile and high speed targets. This airspace should be available for similar tests in the future.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

The topography and ground cover/vegetation is shared with the EMTE and ASTE facilities. The EMTE complex consists of numerous ground based radars and airborne systems which operate in different frequency bands and modes to provide a flexible test capability. The ground based radar systems are primarily located on Santa Rosa Island. AFDTC controls approximately 17 miles of this barrier island which consists of dune ecosystems. Elevations range from sea level to approximately 30 feet at the crest of the tallest sand dunes.

Vegetative cover consists largely of sea oats and beach grasses. Test Airspace associated with EMTE is assumed to mirror airspace associated with the Armament Systems Test Environment (ASTE). The ASTE consists of 724 square miles of land area with over 45 test areas. The terrain of the ASTE is gently rolling and about equally divided by two watersheds. The northern and western portion of the reservation drains to Pensacola Bay, while the southern and eastern portion drains to Choctawhatchee Bay. Elevations vary from sea level at both bays to a maximum of 280 feet in the extreme northeast portion of the reservation. Approximately 14% or 101 square miles of ASTE consists of cleared test range areas, 70% or 507 square miles of the ASTE is comprised of Sandhills Forest consisting primarily of longleaf pine and scrub oak, 2% or 15 square miles is rolling upland, 4% or 30 square miles is Flatwoods Forests with Dry Pocosins (isolated marsh), with the remaining 10% or 73 square miles consisting of Bays and Wet Pocosins, and stream bottoms.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

There are no known features of local geology or soil conditions that enhance or inhibit any types of test at this facility.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

Yes. Other geographical locations are used to satisfy test requirements when the need for specific background and climatic conditions dictate. The following data is the percentage of workload by year conducted off base and is the total, not broken down by facility workload or functional (Reliance) areas:

1986	Not Available	1990	5%
1987	4%	1991	7%
1988	6%	1992	7%
1989	4%	1993	4%

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Below 32 degrees F:	1 day
Between 32 and 95 degrees:	364 days
Above 95 degrees:	0 days

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Below 30%:	5 days
Between 30 and 80%:	330 days
Above 80%:	30 days

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

FY		FY		FY	
85	1	88	20	91	56
86	8	89	59	92	65
87	32	90	46	93	55

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(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Less than 1 mile:	0 days
Between 1 and 3 miles:	7 days
Greater than 3 miles:	358 days

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

355. This assumes ceiling and/or visibility are at least 1500/3 at some point during daylight (0600 to 1800L).

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Mission cancellation rates due to weather were 10.09% for FY92 and 7.19% for FY93.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Yes. The ASTE and Gulf Test Facility are the only supersonic air-to-surface test ranges east of the Mississippi River.

(3.2.A.2) Where are they located relative to your airfield?

Area	Distance from Eglin
B-70	10 NM
W-151	22 NM
W-155	26 NM
W-170	114 NM
EWTA 1-5	117 NM
W-168	222 NM
W-174	317 NM

(3.2.A.3) At what altitude (upper and lower altitude)?

Over land supersonic corridor: 200 feet AGL to unlimited. Over water supersonic areas: Surface to unlimited. (By local regulation, supersonic flights surface to 10,000 feet are conducted at least 25 NM offshore; supersonic flights above 10,000 feet are conducted at least 15 NM offshore.)

(3.2.A.4) Over land or water? What size and shape (length and width)?

Over land: 13 NM long by 1.25 NM wide. Over water: All airspace within the Gulf Test Facility. (By local regulation, supersonic flights surface to 10,000 feet are conducted at least 25 NM offshore; supersonic flights above 10,000 feet are conducted at least 15 NM offshore.)

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Yes. Over land: Sonic boom over pressures shall not exceed 3.5 pounds per square foot outside of five statute miles either side of the aircraft ground track. Aircraft conducting supersonic flights shall reduce from supersonic speed in level flight to ensure sonic boom is kept within defined limits. These restrictions have not inhibited aircraft/test operations. Over water: There are no FAA restrictions (by

local regulations, supersonic flights surface to 10,000 feet are conducted at least 25 NM off shore; supersonic flights above 10,000 feet are conducted at least 15 NM off shore.

(3.2.A.6) What is the maximum number of simultaneous users?

Undetermined: 92,998 square miles of supersonic range over water can accommodate multiple users simultaneously.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

1. **Number and Azimuth of Runways - 3 Runways:**
   a. **Runway 12/30 (Main Base)**
   b. **Runway 01/19 (Main Base)**
   c. **Runway 18/36 (Duke Field)**

2. **Elevation:**
   a. **Runway 12/30 = 85' MSL**
   b. **Runway 01/19 = 85' MSL**
   c. **Runway 18/36 = 193' MSL**

3. **Runway Length (Excluding Overrun):**
   a. **Runway 12/30 = 12,000'**
   b. **Runway 01/19 = 10,000'**
   c. **Runway 18/36 = 8,000'**

4. **Overrun Length (Departure End):**
   a. **Runway 12 = 1,000'**
   b. **Runway 30 = 1,000'**

(3.2.B.1) (Continued)

c. Runway 01 = 550'
d. Runway 19 = 1,000'
e. Runway 18 = 555'
f. Runway 36 = 552'

5. Terminal/Landing Aids:
   a. Main Base - TACAN, ILS, VASI, ASR
   b. Duke Field - TACAN, ILS, VASI, ASR

6. Arresting Cable:
   a. Main Base - YES
      (1) Runway 12/30 - BAK-9, BAK-12
      (2) Runway 01/19 - BAK-12
   b. Duke Field - YES
      (1) Runway 18/36 - MA-1A

7. Ramp Area:
   a. Main Base = 4,723,758 SF (does not include 1,681,021 SF of transient ramp)
   b. Duke Field = 1,908,360 SF (does not include 182,074 SF of transient ramp)

8. Construction Material:
   a. Runway 12/30 (Main Base) - First 2,000 feet on each end is concrete. All other is asphalt.
   b. Runway 01/19 (Main Base) - All asphalt.
   c. Runway 18/36 (Duke Field) - All asphalt.
   d. Ramps - All concrete.

9. Load Capability - The runways will support any aircraft in the DoD inventory in their present condition.

10. Hangar Space:

MAIN BASE

FACILITY #	ENCLOSED SPACE (SF)	
72	31,552	
102	38,440	
103	38,340	
110	57,546	
130	129,766	
138	14,866	
421	43,322	
422	43,322	(Currently being used for storage, contains internal temporary dividers)
920	2,583	
1318	57,408	
1339	18,807	
1343	33,998	
1345	36,968	
1385	11,050	
1386	11,050	
	569,018	SF Total Enclosed Area

DUKE FIELD

FACILITY #	ENCLOSED SPACE (SF)
3020	23,876
3025	58,846
3029	22,373
3057	33,834
3087	23,409
3150	37,488
	199,826 SF Total Enclosed Area

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Airfield	Distance (NM)
Hurlburt Field, FL	9
Duke Field, FL	10
Sikes Airport, FL	17
NAS Pensacola, FL	42
NAS Whiting Field, FL	30
Pensacola Regional, FL	34
Panama City-Bay Co Intl., FL	48
Tyndall AFB, FL	56
Mobile Regional, AL	80
Keesler AFB, MS	124
Gulfport-Biloxi Regional, MS	132
Danelly Field, AL	110
Maxwell AFB, AL	116
Lawson AAF, GA	138
Tallahassee Regional, FL	115

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Eglin AFB is located 7 NM from restricted areas, 9 NM from warning area W-151, and 100 NM from warning area W-470.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Eglin AFB is centrally located between two major restricted areas (R-2914A and R-2915A), distance is less than 7 NM to each. Restricted areas contain both Armament Systems Test Environment (ASTE) and Electromagnetic Test Environment (EMTE) sites which are used for testing. The vast water range is located immediately to the south with the warning airspace (over-water testing areas) located less than 10 NM away.

Eglin's two runways are capable of handling all known military aircraft.

Eglin's location provides easy access to numerous low level military training routes.

Climate is sub-tropical and the vast majority of the time flying conditions are Visual Meteorological Conditions (VMC).

There is limited commercial air traffic in the area to impact testing.

There are seven emergency airfields within 55 NM of Eglin.

(3.2.B.5) Is there a size, weight, maintenance, or mission limitation that would affect test operations? If so, describe the limitation(s).

No.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

1. Fighter Type Aircraft (F-15), Criteria From AFM 86-2:
F-15 requirement, (42.8' x 63.8') x 4.4 = 12,015 SF

Main Base Ramp = 4,723,758 SF/12,015 = 393 F-15 aircraft

Hangars

Bldg.	Aircraft	
72	2	
102	3	
103	3	
110	4	
130	10	
138	1	
421	3	
422	3	(Currently being used for temporary storage)
1318	4	
1339	1	
13432		
1345	3	
TOTAL	39	

Main Base Total = 393 + 39 = 432 F-15's maximum capacity

Duke Field Ramp = 1,908,360 SF/12,015 = 158 F-15 aircraft

Hangars

Bldg.	Aircraft
3020	1
3025	4
3029	1
3057	2
3087	1
3150	3
TOTAL	12

Duke Field Total = 158 + 12 = 170 F-15's maximum capacity

TOTAL FIGHTER AIRCRAFT CAPACITY = 432 + 170 = 602

2. Large Multi-Engine Type Aircraft
   a. KC-135, Criteria From AFM 86-2:

KC-135 requirement, (130.8' x 136.2') x 3.5 = 62,352 SF
Main Base Ramp = 4,723,758 SF/62,352 = 75 KC-135 aircraft

Hangars

Bldg.	Aircraft
130	2
TOTAL	2

Main Base Total = 75 + 2 = 77 KC-135's maximum capacity
Duke Field Ramp = 1,908,360 SF/62,352 = 30 KC-135 aircraft

No Hangars

(3.2.B.6) (Continued)

Duke Field Total = 30 KC-135's maximum capacity

TOTAL KC-135 AIRCRAFT CAPACITY = 77 + 30 = 107

b. C-130, Criteria From AFM 86-2:

C-130 requirement, (132.6' x 99.5') x 3.5 = 46,177 SF

Main Base Ramp = 4,723,758 SF/46,177 = 102 C-130 aircraft

Hangars

Bldg.	Aircraft
110	1
130	2
1318	1
TOTAL	4

Main Base Total = 102 + 4 = 106 C-130's maximum capacity

Duke Field Ramp = 1,908,360 SF/46,177 = 41 C-130 aircraft

Hangars

Bldg.	Aircraft
3025	1
TOTAL	1

Duke Field Total = 41 + 1 = 42 C-130's maximum capacity

TOTAL C-130 AIRCRAFT CAPACITY = 106 + 42 = 148

(3.2.B.6) (Continued)

3. Rotary Wing Type Aircraft (H-53), Criteria From AFM 86-2:
H-53 requirement, (88.3' x (72.3') x 3.5 = 22,344 SF

Main Base Ramp = 4,723,758 SF/22,344 = 211 H-53 aircraft

Hangars

Bldg.	Aircraft
72	1
102	1
103	1
110	2
130	5
421	1
422	1
1318	2
1343	1
1345	1
TOTAL	16

Main Base Total = 211 + 16 = 227 H-53's maximum capacity
Duke Field Ramp = 1,908,360 SF/22,344 = 85 H-53 aircraft

Hangars

Bldg.	Aircraft
3020	1
3025	2
3029	1
3057	1
3087	1
3150	3
TOTAL	9

(3.2.B.6) (Continued)

Duke Field Total = 85 + 9 = 94 H-53's maximum capacity

TOTAL ROTARY AIRCRAFT CAPACITY = 226 + 94 = 320

4. UAV Type Aircraft - Pioneer - UAV-SR, Criteria from PEO for Cruise Missile and UAV Joint Project UAV requirement, 125.7 SF x 3.5 = 440 SF per UAV in its shipping container.

Main Base Ramp = 4,723,758 SF/440 = 10,735 UAV aircraft

Hangars

Bldg.	UAV	
72	71	
102	87	
103	87	
110	130	
130	294	
138	33	
421	98	
422	98	(currently being used for temporary storage)
920	5	
1318	130	
1339	42	
1343	77	
1345	84	
1385	25	
1386	25	
TOTAL	1286	

Main Base Total = 10,735+1286=12,021 UAV's maximum capacity
Duke Field Ramp = 1,908,360 SF/440 = 4337 UAV aircraft

(3.2.B.6) (Continued)

Hangars Bldg.	UAV
3020	54
3025	133
3029	50
3057	76
3087	53
3150	85
TOTAL	451

Duke Field Total = 4337+ 451 = 4788 UAV's maximum capacity

TOTAL UAV CAPACITY = 12,021+4788=16,809

5. Cruise Missiles Type Aircraft AGM-86B/C:
AGM-86 requirement, (20.75' x 12') x 3.5 = 872 SF

Main Base Ramp = 4,723,758 SF/872 = 5,417 AGM-86 aircraft

Hangars Bldg.	Cruise Missiles
72	36
102	44
103	43
110	66
130	148
138	17
421	49
422	49

(3.2.B.6) (Continued)

Hangars Bldg.	Cruise Missiles
920	2
1318	65
1339	21
1343	38
1345	42
1385	12
1386	12
TOTAL	644

Main Base Total = 5,417 +644 = 6,061 AGM-86's maximum capacity
Duke Field Ramp = 1,908,360 SF/872 = 2,188 AGM-86 aircraft

Hangars Bldg.	Cruise Missiles
3020	27
3025	67
3029	25
3057	38
3087	26
3150	43
TOTAL	226

Duke Field Total = 2,188 + 226 = 2414 AGM-86's maximum capacity

TOTAL CRUISE MISSILE CAPACITY = 6,012 + 2,414 = 8,475

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

The Air Force Development Test Center (AFDTC) at Eglin Air Force Base has the natural and technical resources as well as the expertise to conduct a full range of air vehicle testing. Eglin's airspace and ground test facilities are used for USAF, joint service, and foreign military sales tests on an assortment of systems, including fixed and rotary wing aircraft, unmanned vehicles, cruise missiles, munitions and electronic combat systems. Eglin's primary mission is the developmental and operational test and evaluation of air armament and electronic combat weapons systems; in addition, AFDTC test resources have been utilized on a variety of air vehicle test programs. Specifically, test planning, execution, analysis and reporting capabilities exist at the AFDTC for the following types of air vehicle testing: performance, handling qualities, wheels and brakes, flutter, loads, aeroservoelasticity, dynamic response, heavy stores oscillation, munitions, life-cycle, operational flight program software, sensors (radar, infrared, electro-optical), avionics integration, stores compatibility, and physical integration with external stores or avionics.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

A full complement of ground support facilities for preflight checkout or rehearsal of test missions exists at Eglin AFB. Notable examples are:

The Guided Weapons Evaluation Facility (GWEF) and Preflight Integration of Munitions and Electronic Systems (PRIMES) facilities are linked and provide open and closed loop simulation of realistic scenarios. These unique simulation facilities can take a weapon system from target acquisition through launch and mid-course flight in a dense electronic combat environment to terminal engagement with a target.

Flightline preflight of instrumented aircraft and weapons to include exercising telemetry, command destruct, operational flight program software, weapon system data link, and offensive and defensive systems.

Installed and uninstalled aircraft gun firing and boresighting, ballistics, dispersion pattern, accuracy, feed systems and projectile testing at a fully instrumented ground test range.

In addition to the off-equipment repair of Line Replaceable Units (LRU) removed from F-15 and F-16 aircraft, Avionics Intermediate Shops (AIS) perform software loading of operational flight programs, modifications, calibrations and testing for those aircraft. This includes weapons control radars, internal navigation units, head-up displays, automatic flight control, instrument, communication, and navigation systems.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

The Airborne Seeker & Evaluation Test System (ASETS) C-130 contains multispectral measurement sensors in "turret" arrangement in the belly of the C-130 which can deploy anywhere for the purpose of conducting spectral measurement testing of various sensors against ground targets. There are 2 UH-1Ns and 2 F-15Bs (all owned by the 46th Test Wing), which carry Multispectral Signature Measurement instrumentation.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

No.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Mission capability includes: Air-to-air, air-to-surface, surface-to-air, surface-to-surface, cruise missile, drone, laser, air drops, air refueling, and ground detonations.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

AFDTC telemetry can receive/record/display up to 20 simultaneous streams of telemetry data.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Largest number of simultaneous air test <u>missions</u> scheduled was 19 (FY90).

Largest number of simultaneous air test <u>sorties</u> scheduled was 32 (FY90).

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Type Aircraft	Number	Owner
UH-IN	2	46th Test Wing
F-111E/F	5	46th Test Wing
EF-111	1	46th Test Wing
F-15A/B/C/D/E	9	46th Test Wing
F-15A/B/C	11	USAFAWC
F-16A/B/C/D	11	46th Test Wing
F-16A/C/D	12	USAFAWC
F-15C/D	61	33rd Fighter Wing
HC-130	12	9th Special Operations Squadron
NC-130A	1	46th Test Wing
AC-130A	10	919th Special Operations Wing
C-130H	2	919th Special Operations Wing

(3.3.A.1) What is the number of threats simulated?

NOTE: These are special EO/IR and MMW radar threat simulators used to collect multispectral signature data and validate various countermeasure/counter-countermeasure systems. They are in addition to the threat simulators described in the EMTE package.

4. Radar threats are composed of specialized MMW open-air jammers and threat emitters. Also possesses capability to collect data on real threat systems that can be used to validate threat system simulators. Supports a wide variety of EO/IR and MMW threat simulators.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

NOTE: These are special EO/IR and MMW radar threat simulators used to collect multispectral signature data and validate various countermeasure/counter-countermeasure systems. They are in addition to the threat simulators described in the EMTE package.

3 to 4 radiated simulators of SAM, AAA, and battlefield surveillance radars. Bands and power levels are classified.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

NOTE: These are special EO/IR and MMW radar threat simulators used to collect multispectral signature data and validate various countermeasure/counter-countermeasure systems. They are in addition to the threat simulators described in the EMTE package.

Partially. Validations by OTD, FSTC and FASTIC to the level necessary to support primarily R&D efforts.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

NOTE: These are special EO/IR and MMW radar threat simulators used to collect multispectral signature data and validate various countermeasure/counter-countermeasure systems. They are in addition to the threat simulators described in the EMTE package.

Open Loop: Yes; Reactive: No; Closed Loop: No

(3.3.A.5) What is the threat representation (fidelity) and density?

NOTE: These are special EO/IR and MMW radar threat simulators used to collect multispectral signature data and validate various countermeasure/counter-countermeasure systems. They are in addition to the threat simulators described in the EMTE package.

High fidelity. Density of 4 simultaneous systems.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Yes. Approximately 90 real land threats are owned and operated to provide data for EO/IR simulator development and for testing of systems in a realistic environment. Land radar threats include two fire control radars and several SAMs.
No: Sea Threats.
No: Combined Land/Sea Threats.

(3.3.A.7) What geographic dispersion can be simulated?

Real dispersion can be replicated limited only by the size of the range and threat availability.

(3.3.A.7.A) Threat lay down?

Real threat laydown can be replicated.

(3.3.A.7.B) Representative distance?

Actual distances can be replicated.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? relocatable to new scenarios? yes/no

Yes. Real threats and measurement systems can be deployed to any test location as required.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

No.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Yes. Simultaneous users may be limited by the number of threat and measurement systems available.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

No.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

Two Total: One Each EO/IR and MMW.

(3.3.B.3) What range of spectra can be tested and evaluated?

UV, visible, IR, RF, MMW (X to W band), seismic , Acoustic and magnetic.

(3.3.B.4) What are the available spectra?

UV, visible, IR, RF, MMW (X to W band), seismic , Acoustic and magnetic.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Yes. Multispectral Signature Measurement capability collects data on real targets required to develop and drive scene generators.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No. However, the capability for non-destructive measurement of directed energy exists in present systems.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Not Applicable.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Not Applicable.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT

		FISCAL YEAR								
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93	
AIR VEHICLES	DIRECT LABOR	NA	318	132	12	69	207	12	735	
	TEST HOURS	NA	106	44	4	23	69	4	245	
	MISSIONS	45	84	17	2	13	18	2	108	289
EC	DIRECT LABOR	NA	366	444	1,419	351	384	2,184	645	
	TEST HOURS	NA	122	148	473	117	128	728	215	
	MISSIONS	0	56	84	191	44	39	150	60	624
ARMAMENT/WEAPONS	DIRECT LABOR	NA	372	6,015	2,205	8,757	3,285	3,561	4,737	
	TEST HOURS	NA	124	2,005	735	2,919	1,095	1,187	1,579	
	MISSIONS	123	108	335	276	557	411	428	419	2657
OTHER T&E	DIRECT LABOR	NA	0	138	549	372	633	1,188	2,859	
	TEST HOURS	NA	0	46	183	124	211	396	953	
	MISSIONS	19	0	17	21	39	55	64	162	377
OTHER	DIRECT LABOR	NA	777	126	15	0	78	0	456	
	TEST HOURS	NA	259	42	5	0	26	0	152	
	MISSIONS	28	84	10	1	0	2	0	16	141

NOTE 1: Direct Labor Hours are estimated using the "Workload Per Test Per Facility Hour" factor from the Unconstrained Capacity Form. 4088

NOTE 2: NA = Not Available

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

DETERMINATION OF AIRBORNE UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT

			ANNUAL HOURS OF DOWNTIME	3042
			AVERAGE DOWNTIME PER DAY	8.33
			AVERAGE HOURS AVAILABLE PER DAY	15.67
TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY
				360
ASETS	1	3	3	ANNUAL UNCONSTRAINED CAPACITY
BASES	1	5	5	
Typical	3	5	15	131,550
			TOTAL: 23	

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

DETERMINATION OF GROUND UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT

			ANNUAL HOURS OF DOWNTIME	3042
			AVERAGE DOWNTIME PER DAY	8.33
			AVERAGE HOURS AVAILABLE PER DAY	15.67
TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY
				6,932
Surface	4	55.3	221.2	ANNUAL UNCONSTRAINED CAPACITY
Tower	1	55.3	55.3	
Typical	3	55.3	165.9	2,530,329
			TOTAL: 442.4	

NOTE: Typical represents additional tests that could be accomplished if manpower were unconstrained.

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT

AGE: 9-37 Years

REPLACEMENT VALUE: $12,280,000 TOTAL*
u
MAINTENANCE AND REPAIR BACKLOG: $55,000

DATES OF LAST UPGRADES: UNKNOWN**

NATURE OF LAST UPGRADES: See attached for complete list of buildings.

MAJOR UPGRADES PROGRAMMED: None**

1. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

*Replacement Cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.

**Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on additional information chart.

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

FACILITY CONDITION (Continued)

FACILITY/CAPABILITY TITLE: AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M&R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
8771	68	$117,000	0	UNKNOWN	NONE
8775	57	$423,000	0	UNKNOWN	NONE
8777	57	$2,926,000	$55,000	UNKNOWN	NONE
8778	57	$31,000	0	UNKNOWN	NONE
8803	79	$5,000	0	UNKNOWN	NONE
8772	70	$262,000	0	UNKNOWN	NONE
8779	64	$75,000	0	UNKNOWN	NONE
8784	85	$20,000	0	UNKNOWN	NONE
22	69	$8,421,000	0	UNKNOWN	NONE
	TOTAL:	$12,280,000	$55,000		

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

GENERAL INFORMATION

Facility/Capability Title: AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT

Service: USAF

Origin Date: 08/04/94

Organization/Activity: AFDTC

Location: Eglin AFB, FL

T&E Functional Area: Armament/Weapons

UIC: Not Available

T&E Test Facility Category:
PRIMARY: Measurement Facility (MF)
SECONDARY: Integration Testing

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	100	0	0	0	0	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	8	0	0	0	0	0	8
Armament/Weapons	50	0	0	0	0	0	50
EC	7	0	0	0	0	0	7
Other	35	0	0	0	0	0	35

50 = 100%

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

TECHNICAL INFORMATION

Facility/Capability Title: AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT

Facility Description; Including mission statement: The mission of this facility is to provide a multispectral signature measurement and captive flight testing capability for air-to-air, air-to-ground, ground-to-ground, ground-to-air, and tower/turntable measurement scenarios.. The capability to accomplish extensive integration testing, at both the component and system levels, is available. This capability resides in a cadre of highly qualified technical personnel and sophisticated electro-optical instrumentation systems. The measurable spectral range includes ultraviolet, visible, mid and long wavelength infrared, laser, millimeter wave, seismic, acoustic, and magnetic. Data collection and recording capabilities include temporal, radiometric, spatial, spectral, phase, range, polarization, and frequency. All measurement systems maintain state-of- the-art sensitivity, resolution and bandwidth, featuring high data rate recording and seeker/sensor performance measurement. All systems are capable of providing target-in-clutter signature measurements. Collected data can be processed in the field and provided to the customer and/or placed in archival database (Target and Background Information Library System [TABILS]).
Interconnectivity/Multi-Use of T&E Facility: Uniquely connected to modeling and simulation facilities such as GWEF as a source of data required to drive HITL scene generators and to validate models. This mobile capability allows performance in program defined environment and time with field rated data processing and analysis. Capability is a state-of-the-art level. Customer accessible, active data base.
Type of Test Supported: All scenario multispectral target and background signature measurement and seeker/sensor CM and CCM test and evaluation; algorithm/technology/CM/seeker/sensor/alternate target performance assessment.
Summary of Technical Capabilities: EO/IR pods carried by modified F-15s; large highly stabilized turret in C-130A platform; EO/IR/MMW instrumented mobile vans; stable ground tracking mounts; radiometers, spectrometers, image cameras, MMW radars, 300' Tower/turntable, high density digital recorders, video recorders, computerized data reduction with workstations, filed and laboratory calibration including blackbody, corner reflectors, collimators, optical tables, and database.
Keywords: Infrared; electro-optical; laser, millimeter wave; phase, frequency and polarization agile; Fourier Transform Spectroscopy; airborne; surface; signature measurement; co-bore-sighted; mobile; airborne/surface interchangeability; algorithm, validation; simulation; integration testing.

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

INSTRUMENTATION/ASSETS FACT SHEET

AIRBORNE SYSTEMS:

ASETS (Airborne Seeker Evaluation and Test System) is a C-130A with a highly stabilized turret designed to perform A-A and A-G seeker evaluation, surface and airborne target EO/IR signature measurement, video scoring of terminal end weapons, terrain mapping, surveillance, target tracking and atmospheric transmission studies.

ASIMS (Airborne Spectral Infrared Measurement System) is an IR pod carried on an F-15, that provides high quality, calibrated IR spectral radiometric data on airborne targets and countermeasures, as well as captive flight test for one or two guidance control units (GCUs).

BASES (Beam Approach Seeker Evaluation System) is an airborne pod, carried on F-15 or UH-1N, that can house EO/IR imagers, CIGARS (Calibrated Infrared Ground/Air Radiometric Spectrometer) in a stabilized 3-axis turret to collect signature data of airborne and ground targets, as well as evaluate terminal guidance characteristics of up to 4 GCUs.

SATIRS (Supersonic Airborne Tri-gimbal Infrared System) is an airborne pod, carried on F-15 or UH-1N, that can house EO/IR imagers, CIGARS (Calibrated Infrared Ground/Air Radiometric Spectrometer) in a stablized 3-axis turret to collect signature data of airborne and ground targets, as well as evaluate terminal guidance characteristics of up to 4 GCUs. SATIRS is a new upgraded version of BASES under construction, with an IOC of July 95.

SURFACE SYSTEMS:

MMW RADARS High resolution imaging radars, fully coherent and polarization agile, designed for RCS measurement of full scale vehicles in a field environment, using modular front ends (10, 35, 95, and 145 GHz) with respective bandwidths of 1 GHz. 35 and 95 GHz instrumentation radars consisting of two high power (1KW 35 and 95) and two low power non-coherent radar systems designed for attenuation and backscatter measurement of aerosols.

MMW JAMMING SYSTEMS AND RADAR SIMULATORS support captive flight testing of seekers/sensors in the MMW regions. Jamming frequencies are 8-18 GHz, 26-40 GHz, and 93-96 GHz while simulators operate in the Ka and W bands.

MMW MATERIALS MEASUREMENT is a laboratory facility used to measure the reflectivity and effectiveness of radar absorbing materials, RCS models, antennas, and horns.

MMW DIGITAL COMMUNICATION LINKS are secure communication links used to measure the effects of battlefield smokes, dust, and chaff on C3I type system. 95-SAMS tracks and measures the signatures of low RCS airborne targets utilizing dual high power extended interaction amplifiers and a 2' diameter monopulse antenna system.

STV (Seeker Test Van) is designed to support development and exploitation of S-A and A-A seekers , development of countermeasures (CM) and CM effectiveness assessment, and development of CM techniques and tactics. Modular design permits a variety of IR/UV/MMW signature instrumentation to be added for expanded capability.

INSTRUMENTATION/ASSETS FACT SHEET (Continued)

TIPS (Thermal Image Processing System) provides high resolution dual-band IR imagery on ground targets and background in support of A-S and S-S IR weapons, ground target simulators, and ground truth documentation.
IRRTS (Infrared Radiation Target System) is a 26' square mobile IR energy source used to determine minimum resolvable temperatures and baseline calibration data for flight testing airborne IR (8-14 micron) imaging systems.
IRSS (Infrared Support System) is used to measure emissivity, radiant intensity and irradiance of environmental elements, static and dynamic tactical and airborne targets. IRSS also serves to measure resolution and sensitivity of IR sensors.
MET VANS are two mobile meteorological vans that collect detailed surface weather parameters which affect the performance of EO/IR guided munitions and seeker/sensors systems.
RAWS (Remote Automated Weather Stations) is comprised of 6 meteorological stations which monitor and collect weather data and send the information via VHF radio link to the MET vans.
LOW LEVEL SOUNDER VANS are two deployable, mobile vans working with the MET vans which utilize a digital microsonde and weather balloon in conjunction with LORAN C to provide meteorological data from sea level to 40K ft.
STEF (Seeker Test and Evaluation Facility) is used for non-release testing of airborne IR weapon systems and ground testing of IR instrumentation. Testing utilizes a 300' instrumentation tower and 450' rail and track mounted turntable.
C-1 TIPS (Thermal Image Processing System) is a mobile van employing dual IR imaging cameras to radiometrically measure and characterize ground target and background signatures.
LASER LAB provides complete depot level laser system maintenance and the facility contains only equipment approved by the NIST. The lab also provides lasers for test and measurements such as target designation alignment and holography.
LSV 1 AND 2 (Laser Support Vans #1 AND #2) characterize target laser designation spots by providing video of the target, laser energy, laser code, laser spot position, target reflectivity, and laser radiance.
OTHER ASSETS:
TEST SITES: Test site C-1 is the center for range support of all IR tests; Test site C-52 with a 300' tower/turntable supports ground testing of EO/IR guided munitions and sensors against fixed and moving targets. Seismic/acoustic/magnetic (SAM) signature measurement capability on Red/Blue threat systems including ground vehicles and rotary wing aircraft.
CHICKEN LITTLE PROGRAM OFFICE - 46 OG/OGML Supports multi-service programs in captive flight test, target/clutter multispectral signature measurement, database capability achieved with a cadre of highly qualified technical and support personnel. Active archiving of data into multi-user data bases supports algorithm development and evaluation, modeling and model validation, target/clutter scene generation. Databases also provide compiled signature statistics to support seeker/sensor design, target recognition development/validation, and countermeasure development. Operates full fleet of ground threat vehicles supported by resource managed maintenance facilities.

INSTRUMENTATION/ASSETS FACT SHEET (Continued)

SYSTEM TEST/PROGRAM ENGINEERING - 46 ECTS/OGEE is a skilled cadre of personnel that manages and accomplishes DT&E for weapon systems with emphasis on EO/IR including countermeasure/counter-countermeasure (CM/CCM) evaluation, reporting and overall management for 46 TW supported programs. Responsible for data analysis and report leading to technical program document.

AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: AIRBORNE/SURFACE MULTISPECTRAL SIGNATURE MEASUREMENT FACILITY

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	10	10	10	10	10	10	10
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	87	87	84	76	72	66	66
CONTRACTOR	89	89	89	89	89	89	89
TOTAL	186	186	183	175	171	165	165

*Note: FY95 and beyond are subject to manpower reductions.

TOTAL SQUARE FOOTAGE 77,000 SF
TEST AREA SQUARE FOOTAGE 49,000 SF
TONNAGE OF EQUIPMENT 542 TONS
ANNUAL MAINTENANCE COST $11.1M

OFFICE SPACE QS FOOTAGE 28,000 SF
VOLUME OF EQUIPMENT 140,000 CF
ESTIMATED MOVING COST $225K

CAPITAL EQUIPMENT INVESTMENT:

PROGRAM ELEMENT	FY93	FY94	FY95	FY96	FY97	FY98	FY99
PE64759F	$3,232K	$1,120K	$1,205K	0	0	0	0

Document Separator

T&E PERCENTAGES

SITE/ACTIVITY: AFDTC @ EGLIN AFB, FL

FACILITY	TOTAL % T&E	AV	EC	A/W	OTHER	
DIGITAL MODELING AND SIM	100	0	3.5	96.5	0	A/W DMS
McKINLEY CLIMATIC LAB	100	58	9	0	33	AV MF
MULTISPECTRAL SIG MSMT	100	8	7	50	35	A/W MF
EGLIN SLED TRACK	100	0	2	92	6	A/W MF
WARHEAD ARENA	100	1	0	99	0	A/W MF
FUZE TEST FACILITY	100	0	0	99	1	A/W MF
GUN TEST FACILITY	96	0	0	93	3	A/W MF
GWEF	90.44	0.49	1.81	80.06	8.08	A/W HITL
AFEWES	100	0	100	0	0	EC HITL
REDCAP	100	0	100	0	0	EC HITL
RIMES	100	0	53	31	16	A/W ISTF
ASTE	80	3	5	40	32	A/W OAR
EMTE	98	1	57	9	31	EC OAR
GULF TEST FACILITY	33	1	3	7	22	A/W OAR
HELLFIRE TEST FACILITY	100	0	0	100	0	A/W OAR
BISS	95.8	1.3	0.5	3.1	90.9	OTHER OAR

Doug Nation 12 Aug 94
SIGNATURE DATE

Don Conklare 12 Aug 94
SIGNATURE DATE

Don DeYoung 12 Aug 94
SIGNATURE DATE

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TOTAL PAGES

113

FACILITY/CAPABILITY: EGLIN SLED TRACK @ EGLIN AFB

TEST FACILITY CATEGORY: MF

% T&E - OVERALL: 100

AV: 0

EC: 2

A/W: 92

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 2

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	0	FY93	0
EC:	FY92	91	FY93	54
A/W:	FY92	1,996	FY93	2,146

Nation 12 Aug 94

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY92

Program Element	AV	EC	A/W	OT	OTHER
11113F			X		
27134F			X		
27313F			X		
27590F			X		
28015F			X		
28030F			X		
62602F			X		
63601F			X		
64327F			X		
64602F			X		
64604F			X		
64733F			X		
65130D			X		
72806F			X		
ARMY		X	X		
NAVY			X		

Historical, FY93

Program Element	AV	EC	A/W	OT	OTHER
21001F		X			
27134F		X	X		
27162F			X		
27313F			X		

(2.1.B.1) Continued

Historical, FY93 (Continued)

Program Element	AV	EC	A/W	OT	OTHER
27590F			X		
28015F		X	X		
28030F			X		
35887F		X			
62602F			X	X	
63601F			X		
64270F		X			
64327F			X		
64602F			X		
64607F			X		
64733F			X		
65130D			X		
65712F		X	X		
72806F			X		
ARMY			X		
B6404D			X		
NAVY			X		

Future Years

Program Element	AV	EC	A/W	OT	OTHER
11113F			X		
27134F		X	X		
27160F			X		
27162F			X		
27313F			X		
27590F			X		
28015F		X	X		
28030F			X		
35887F		X			
62602F			X	X	

(2.1.B.1) Continued

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
63601F			X		
64270F		X			
64602F			X		
64604F			X		
64607F			X		
64618F			X		
64727F			X		
64733F			X		
65130D			X		
65712F		X	X		
72806F			X		
ARMY		X	X		
B6404D			X		

NOTE: Due to the methodology used, program elements are not identified in the mission area of "other." Virtually all of the Sled Track work is in the Electronic Combat (EC) and Armament/Weapon (A/W) areas.

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	0	0
Electronic Combat	.05	.03
Armament/Weapons	1.13	1.21
Other Test	0	0
Other	.20	.07

NOTE: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

Yes. The Sled Track is physically limited because only one sled can be traveling on the track at a time and there is only one track at the facility.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. AFDTC has the capability to develop and test munitions from cradle to grave. Without the Sled Track the disruption of the synergism with the co-location of munition developing agencies and other facilities that support weapon system testing would be lost.

(2.3.B.1) On the test mission of any other activity?

Yes. We also conduct quick reaction tests if a safety concern is addressed that could be answered by conducting a Sled Test. (Ex. Bomb on bomb impacts during air drops).

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. One of the main reasons programs choose to conduct sled test at AFDTC is because of our capability to provide a target that is the same as what would be encountered in an operational environment. The Desert Storm GBU-28 munition is an example of the types of critical testing conducted that directly support the operational forces of the United States.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

None.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Not Applicable.

(3.1.B) Facility Condition (MV II)

Reference the Facility Condition Form provided in Appendix A of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.
<u>Encroachment:</u>

There are NO limiting encroachment characteristics associated with this facility.

<u>Environmental:</u>

No. It is anticipated that any environmental impacts could be mitigated.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.
<u>Encroachment:</u>

Not Applicable.

<u>Environmental:</u>

Not applicable. It is anticipated that environmental impacts from workload increases could be mitigated.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

None of Eglin's Sled Track Facilities are currently operating under any temporary permits or voluntary agreements of an environmental nature. However, any unexploded ordnance or waste munitions which require disposal are treated at one of Eglin's Open Burn/Open Detonation (OB/OD) sites. Eglin currently holds a formal RCRA Part B Permit but is operating its OB/OD thermal treatment sites under RCRA interim status. A Subpart X Permit application is undergoing final review following a request for additional information. It is anticipated that a Subpart X Permit will be granted late in CY94.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	253,144
100 Mile Radius:	952,650
150 Mile Radius:	1,211,688
200 Mile Radius:	1,966,382

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Not applicable for air and sea. State highways 280 and 285 are used on a daily basis but can be closed for the duration of test activities.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. Test Area C-74, Eglin Sled Track, has the on-site facilities to build up test items, modify sleds, environmentally condition test items, saw test items, and fabricate large targets. Additionally, the following facilities are currently required to support the Eglin Sled Track mission, or are potentially required to support future test mission activities.

SUPPORT FACILITIES LIST

WRIGHT LABORATORIES

- Advanced Warhead Experimentation Facility
- Environmental Sciences Facility
- Hypervelocity Research Facility
- Fuzes Research and Development Facility
- Ballistics Experimentation Facility (BEF)
- Aeroballistics Research Facility (ARF)
- Advanced Guidance Research Facility
- Kinetic Kill Vehicle HWIL Simulation Facility (KHILS)
- Model Fabrication Facility
- High Explosive Research and Development Facility
- Instrumentation Technology Research Facility

NAVAL EXPLOSIVE ORDNANCE DISPOSAL SCHOOL

AFDTC

- Freeman Computer Science Center
  - Test and Analysis
  - System Technology
- Safety
- Static Test Facility

AFDTC (Continued)

- Electro-Optical/Millimeter Wave Instrumentation
- Meteorological Instrumentation
- Electronic Design and Development Flight
- Air-to-Air Missile Maintenance Facility
- Air-to-Ground Missile Maintenance Facility
- Precision Measurement Facility - Site III Mass Properties
- Munitions Build-Up
- Munitions Storage and Handling
- Armament Maintenance Section
- Alternate Mission Equipment Section
- Machine Shop
- Structural Maintenance
- Metals Processing
- Corrosion Control
- Electro-Environmental
- Patterns and Plastics
- Survival Equipment

WRIGHT LABORATORIES (WL/MN)

The laboratories provide numerous capabilities that are an integral part of the cradle-to-grave munitions development process which is uniquely located on one installation (the complete Wright Laboratories facilities/capabilities are provided under another data call.):

Advanced Warhead Experimentation Facility

Conduct R&D of warheads and warhead technologies; fabricate test and characterize ordnance items constructed of various conventional and heavy metals.

Research items include warheads, projectiles and associated components such as penetrators, shaped charge liners, explosives and fuzes.

Above items manufactured and tested while toxic effects of potentially hazardous materials contained and air filtered before reaching the outside environment

WRIGHT LABORATORIES (WL/MN) (Continued)

Environmental Sciences Facility

Environmental Analysis and research in support of conventional munitions technology development.

Quantitative determination of contaminants in chemicals, explosives, fuels, soils, or water including on-the-spot analysis to determine residual metal contaminate levels.

Automated image analysis for material and particle studies.

Document preparation to insure compliance with all local, state and federal regulations and laws.

Hypervelocity Research Facility

Contains a dedicated laboratory for performing research and development on Advanced Oxidation Techniques (i.e. non-thermal silent-discharge plasma processing) for potential use in (1) the destruction of environmental contaminants extracted from ground water; (2) the disposal of munitions; (3) the destruction of hazardous compounds generated by weapons; (4) the reduction of NO_X Emissions from power plant smoke stacks and advanced aircraft engines.

Fuzes Research and Development Facility

Research and development of fuzes, sensors and associated signal processing circuitry for targets of interest.

Electronic lab, explosive test bays, laser lab, aerosol chamber, printed circuit board fabrication equipment.

Ballistics Experimentation Facility (BEF)

6500 feet by 1500 feet outdoor firing range, 300 feet indoor range, machine shop, electronics repair shop, munitions storage area, equipment storage compound, and over 450 air and powder launchers.

Development of launch and flight verification for nonstandard munitions and projectiles scheduled for testing in the Aeroballistics Research Facility.

WRIGHT LABORATORIES (WL/MN) (Continued)

Test capability for developmental munitions to include data gathering and analysis of free-flight and impact phenomena.

Aeroballistics Research Facility (ARF)

Enclosed, instrumented concrete range (207 m instrumented section with 3.66 m square test area for first 69 m and 4.88 m square test area for remaining; length) designed for studying free-flight characteristics of munitions and projectiles (both axisymmetric and asymmetric configurations).

Atmospherically controlled at 22 ± 1 degrees Celsius and less than 50 percent relative humidity.

Advanced Guidance Research Facility

Develop signal processing software for guided weapons through computer simulation, develop and validate target detection algorithms through simulation and captive flight test results.

Analyze E/O and RF characteristics through image processing and simulation.

Kinetic Kill Vehicle Hardware-in-the-Loop (HWIL)
Simulation Facility (KHILS)

Digital and HWIL simulators to realistically simulate launch-to-impact scenarios for guided weapons.

High frame rate/high fidelity UV, visible, and IR scene projections. Color (5.6, 9.28, 10.6 micrometer), 400 Hz update, resolution of 96x96 pixels, wideband 128x128 pixel, 400 Hz resistor array.

Digital scene generation of boost , post boost, and RV targets; high speed signal injection with seeker effects and line-of-sight motion modeled in real-time.

High bandwidth flight motion simulator, 60 Hz, 25 lb payload, +/- 10 degree pitch and yaw, +/- 120 degree roll, 17 microradian pointing accuracy.

WRIGHT LABORATORIES (WL/MN) (Continued)

Model Fabrication Facility

Produce, assemble, and modify both full and sub-scale aeroballistic, aerodynamic and aeromechanical assemblies and components for experimental munitions applications.

High Explosive Research and Development Facility

Load experimental munitions up to 1000 lbs of explosives.
Develop processing techniques for loading air Force Munitions.
Provide quality control x-ray capability up to 6 MeV.
Formulation and processing of melt cast, cure cast PBX, and pressed explosives.
Accelerated aging and environmental testing.
Performance and sensitivity testing up to 20 lbs TNT equivalent explosive.

Instrumentation Technology Research Facility

Modern 3000 sq ft laboratory dedicated specifically to developing, fabricating, and testing advanced instrumentation systems for explosive, guidance, and flight systems test.

Verify the performance of electronic and opto-electronic instrumentation used during the development and testing of airborne munition acquisition programs.

Electronic/Optic design and fabrication to support the prototyping and analysis of advanced instrumentation technology concepts.

NAVAL EXPLOSIVE ORDNANCE DISPOSAL SCHOOL

Mission Statement: A jointly-staffed (Army, Navy, Air Force, Marine Corps) school providing specialized Explosive Ordnance Disposal training to officer and enlisted personnel of all services, both U. S. and foreign, and to selected civilian officials, in the best methods and procedures for the detection, identification, render safe, recovery, evaluation, and disposal of explosive ordnance, surface and underwater, conventional and nuclear, employed by the U. S. and other nations.

NAVAL EXPLOSIVE ORDNANCE DISPOSAL SCHOOL (Continued)

Unique Capabilities: The EOD School supports test activities by rendering safe or removing unexploded ordnance from various land and water test ranges.

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.

The CCF is designed for commonalty/compatibility with DOD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DOD services and US Allies on a regular basis.

Systems Technology

Designs, develops, implements, operates and maintains the AFDTC Scientific Computer Center and its networks. Provides a broad base of expert computer and system engineering consultants. Provides software engineering support for the Eglin scientific and engineering community including development, customization and adaptation of graphics, applications, and system software products. Develops software products for the simulation and/or control of weapon or related systems as required for RDT&E. Operates and maintains the Eglin Decision Support System and the CRAY YMP Supercomputer.

The computer center has a CRAY YMP supercomputer and visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN).

FREEMAN COMPUTER SCIENCE CENTER (Continued)

This is a general purpose computer center that supports all phases of digital models and computer simulations. It is available to all DOD agencies. The largest current user is the Aeronautical Systems Center.

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and safety control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

STATIC TEST FACILITY

Mission Statement: Provides the capability to test the strength of external stores and suspension equipment

Unique Capabilities:. Through the use of hydraulic cylinders, loads are exerted on test articles to simulate actual loads which may be encountered by the item during flight conditions. Currently, the force exerted by the cylinders is measured by load cells and the operators regulate the hydraulic pressure to each cylinder to adjust the load. The facility is being upgraded to incorporate an automatic feedback control system using input from the load cells to regulate hydraulic pressure. In addition, the capability exists to measure the displacements resulting from the forces exerted on the test item.

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION

Mission Statement: Provides design, development, and operation of airborne and surface EO/MMW instrumentation systems. Provides multispectral targets and targets in back-ground including target expendables. Provides captive carry operation and test of air-to-air, surface-to-air, and surface-to-surface domestic and threat missile seeker guidance, and control units operating in a real and CM environment. Provides quick look and field data reduction and analysis of all collected signature data.

Unique Capabilities: Multispectral signature measurement and captive flight testing capability residing in a cadre of highly qualified technical and range personnel and customized and standard sophisticated EO/MMW instrumentation operating in A-A, A-S, S-S, S-A, and tower/turntable scenarios. Spectral range includes ultra-violet, visible, mid and long wavelength infrared, laser, millimeter wave, seismic, acoustic, and magnetic. Measurement disciplines include temporal, radiometric, spatial, spectral, phase, range, polarization, frequency, and cross section. State-of-the-art sensitivity, resolution, and bandwidth, data rate/recording and seeker/sensor performance measurements are maintained. A suite of targets for target and target in clutter signature measurement and seeker/sensor evaluation are maintained. Archiving of collected data is provided by the Targets and Background Information Library System (TABILS). The capability is uniquely connected to modeling and simulation facilities such as the Guided Weapons Evaluation Facility (GWEF) as a source of data required to drive HITL scene generators and to validate models. The capability is built upon many years of T&E research and engineering expertise and experience.

Outside Customers Supported:

1. **ASC**
2. **USAF AWC**
3. **AFSOC**
4. **U. S. ARMY**
5. **U. S. NAVY**

METEOROLOGICAL INSTRUMENTATION

Mission Statement: Meteorological support for AFDTC is provided through the 46th Test Wing Weather Squadron which provides 24-hour weather forecasting services including preflight weather briefings, pilot-to-forecaster services to aircraft in the area, and weather warnings and advisories.

Unique Capabilities: Provides specialized weather services to both host and tenant units. The Test Meteorological Office provides consultation on the meteorological environment consisting of physics, chemistry and the dynamics of the atmosphere. Provides ME instrumentation at permanent, semi-permanent, and temporary sites, using mobile equipment when necessary. A full range of ME data are gathered to measure the following: wind vector, atmospheric temperature/pressure, relative humidity, dew point, rainfall

METEOROLOGICAL INSTRUMENTATION (Continued)

amount/rates, visibility, visual range, cloud bases, solar radiation, particle size distribution, rainfall size distribution, extinction coefficient, density, defractivity, height, atmospheric electric field, etc.

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Mission Statement: Provides AFDTC with a system level capability for developing, integrating, and testing the specialized instrumentation and control systems required in support of all types of ground and flight testing. This in-house capability spans the entire process of acquiring such systems: from "development of requirements" to "design" to "build-up" to "testing" to "installation and training".

Unique Capabilities: The uniqueness of the Electronic Design and Development Flight is its broad based expertise which allows it to perform its mission (in-house development) in a quick response mode without outside support. Equally important is its capability to remain flexible to changes in requirements during the development process with minimal impact on schedule.

Outside Customers Supported:

1. USAF AWC
2. Aeronautical Systems Center
3. AFOTEC
4. U. S. Army
5. U. S. Navy
6. Various foreign governments

AIR-TO-AIR MISSILE MAINTENANCE FACILITY

Mission Statement: Provides the necessary expertise and direction for all missile related activities. Coordinates between Weapons System Evaluation Group (WSEP), Advanced Medium Range Air-to-Air Missile (AMRAAM), and numerous other test and development projects to provide work space, equipment, and technical knowledge, enabling continuous operations. Provides in-depth training to all assigned personnel to ensure management of seven missile systems(AIM-7, AIM-9, AIM-120, AGM-45, AGM-65, AGM-84, AGM-88). Ensures proper management of the Tactical Missile Reporting System (TMRS). Provides periodic maintenance and management of over 70 pieces of missile support equipment. Performs periodic safety inspections ensuring all safety practices are enforced. Provides a quality product to the customer. Provides essential on-the-job- training to assigned personnel.

AIR-TO-AIR MISSILE MAINTENANCE FACILITY

Unique Capabilities: Performs maintenance and inspection on telemetry units of AIM-9L/M and AIM-7M. Completed action on unpublished Time Compliance Technical Order on AIM-120 Advanced Medium Range Air-to-Air Missile.

Outside Customers Supported:

1. **Air Warfare Center**
2. **Weapons System Evaluation Program (WSEP)**
3. **Hughes Corporation**
4. **Raytheon Corporation**
5. **China Lake Depot**
6. **Georgia Tech Research Institute**
7. **Harris Corporation**
8. **Atlantic City Air National Guard**

AIR-TO-GROUND MISSILE MAINTENANCE FACILITY

Mission Statement: Used for the assembly, final integration testing, and inspection of guided weapons prior to flight testing. The facility is fully staffed and equipped to support the T&E of the integration of fuzes, warheads, actuators, data links, IMU/GPS, propulsion, airframes/structures, hardware/software, guidance/control, weapons sensors, and flight termination systems. Additionally, build-up and modification of bombs/missiles, as well as integrated systems tests, are performed at this facility. The test chambers in building 999 are rated for Category 1 explosives.

PRECISION MEASUREMENT FACILITY
SITE III MASS PROPERTIES

Mission Statement: Performs the weight, center of gravity, and moments of inertia measurements on munition and non munition items. Performs reballast procedures on munition and non munition items to provide the test engineers with a reliable product. Performs maintenance and operation of the portable mass properties machine. Used for the world wide field review measurement of stores (FRMS) operation. Mass properties data collected at various bases is put into the mass properties data program for updating the stores technical and mass properties data bank (STAMP), This ensures the project engineers have the proper mass properties data. Performs assembly/disassembly of munitions items for the purpose of adapting the items to the test set. Develops procedures for efficiency and safety of operations on new prototype test items.

MUNITIONS BUILD-UP

Mission Statement: Operates six indoor maintenance/build-up facilities totaling 54,000 square feet and 2 outdoor holding /build-up areas totaling 27,000 square feet. The missile section performs build-up of Air-to-Air, AIM-4, 7, 9, and 120 missiles and Air-to-Ground, AGM-45, 65, and 88 missiles. The conventional munitions maintenance shops perform build-up of expendable aircraft countermeasures, canon ammunitions, GBU-10, 12, 15, 16, 24 and 28 guided bombs, CBU-58, 87 89 and 97 cluster bombs, MK-82, 83, 84, M-117 and 118 general purpose bombs, MC-1 and TMU-28 chemical weapons, nuclear training shapes and BLU-107 cratering bombs.

MUNITIONS STORAGE AND HANDLING

Mission Statement: Provides the capability for storing and handling over 2,000 different types of munitions used to support DOD and foreign allies test and development projects, and 50 tenant unit munitions supply points. Responsible for inspection, minor maintenance and house keeping on 35 facilities within the 297 acre munitions storage area. Ensures correct storage and compatibility of munitions are maintained in strict compliance with all explosive safety standards. Total munitions storage capacity is 121,729 sq. ft. and total sited net explosive weight (NEW) authorized is 2,287,900 pounds. Capable of storing various sizes of munitions ranging from small arms ammunition to the Tomahawk cruise missile; maximum size of any one item to fit into storage structures would be no greater than 15,000 NEW and a dimension of approximately 18' x 10' x 10'. Provides logistical support to 500 test projects and five different maintenance sites within the munitions storage area. Directly supports several off-base test ranges on the 464,000 acre Eglin test complex. On a yearly basis, moves or delivers over 500 tons net explosive weight/1250 tons total weight of munitions covering more than 15,000 miles.

MUNITIONS STORAGE AND HANDLING (Continued)

Unique Capabilities: Receipt, inspection, storage, maintenance, buildup, shipping and delivery capability is provided for any US or foreign munition used or tested at Eglin AFB. Major munitions categories include both current inventory and prototype general purpose and cluster bombs; precision guided munitions; air-to-air and air-to-ground missiles, nuclear trainers, Navy cruise missiles, Army Hellfire missiles, expendable aircraft countermeasures and small arm/cannon ammunition. Additional items include various British, Norwegian, Israeli, and former-Soviet Block munitions. A technical data library with preliminary handling/maintenance data and interim hazard classification is maintained for prototype, modified and foreign munitions.

ARMAMENT MAINTENANCE SECTION

Mission Statement: Inspects and maintains all munition suspension equipment for the 46th Test Wing and the Air Warfare Center aircraft. To include pylons, bomb racks, launchers and adapters for weapons carriage on the F-15, F-16, and F-111 aircraft. Inspects and maintains guns and gun systems on the F-15 and F-16 aircraft, including removal and installation.

Unique Capabilities: Supports Ammo/Gun Test Range 22/C-64/C-74L with gun maintenance and support personnel on a daily basis. Advises test project personnel on modification requirements for AME. Maintains modified equipment for various test projects. Provides maintenance, repair and/or inspection for armament systems components owned by various military and civilian test agencies.

ALTERNATE MISSION EQUIPMENT SECTION

Mission Statement: Stores, controls and accounts for all munition suspension equipment for the 46th Test Wing and Air Warfare Center aircraft. Tracks all in-use equipment and schedules inspections through the maintenance section.

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

MACHINE SHOP (Continued)

Unique Capabilities: This shop is equipped with modern conventional tool room and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

STRUCTURAL MAINTENANCE

Mission Statement: Provides a Structural Repair Shop for design, manufacture, modification, and repair of RDT&E test items required to support the AFDTC test program of a non-repetitive nature. Manufactures items and works with sheet metal and fiberglass in modifying bombs, missiles, rockets, robots, etc. Manufactures and installs class II modifications parts and kits on aircraft and missiles to include CNC production required by AFDTC engineers, scientists and contractors for development of the test projects. Provides an intermediate maintenance capability to support all AFDTC assigned, transient and associate tenant aircraft.

Unique Capabilities: Maintains operational support of multiple aircraft to include F-111's, F-16's, F-15's, UN-1H and full manufacturing capability for all aircraft tubing assemblies (to include Depot level lines).

Outside Customers Supported:

1. 9 SOS
2. Eglin AFB. 33 FW (ACC)
3. Tyndall AFB.
4. Hurlburt AFB.

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS
3 Manufactured Sleds for Holloman AFB
4. Provide welding and manufacture for 728 ACS
5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

CORROSION CONTROL

Mission Statement: Inspects and treats corrosion on aircraft, missiles, armament and other related equipment. Provides wash rack facilities to wash aircraft and aircraft parts. Provides a corrosion capability for performing intermediate maintenance and painting on assigned aircraft, age, and class II modification items. Provide RDT&E experimental coating for test engineers on tasks, drones, missiles, and radomes etc.

Outside Customers Supported:

1. Wright Laboratory - Armament Division
2. Navy EOD School
3. 9th SOS
4. Seek Eagle Program Office
5. Navy Coastal System Laboratory

CORROSION CONTROL

Outside Customers Supported: (Continued)

6. 919 SOS
7. Mill Star Program

ELECTRO-ENVIRONMENTAL

Mission Statement: Responsible for off-equipment maintenance on aircraft electrical and environmental control systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies systems and components. Provides battery servicing for assigned aircraft, associate tenant aircraft and ground support equipment. Responsible for field maintenance of all aircraft ground support equipment, (AGE), gaseous and liquid oxygen and nitrogen systems. Services life raft cylinders and emergency oxygen bottles, (Life Support Equipment), for all assigned and associate tenant aircraft.

Unique Capabilities: Possesses one of only three K400 generator test stands at field level, and will be only one of two sites in the world capable of running both F-111 and F-15 parts.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing
2. 9th Special Operations Squadron
3. 728th Tactical Control Squadron

PATTERNS AND PLASTIC

Mission Statement: Provides a Pattern and Plastic Shop for design, manufacture, modification, and repair of RDT&E test items required to support the test program of a non-repetitive nature. Manufactures items and works with fiberglass, advanced composites, wood, and plastics in modifying bombs, missiles, rockets, etc. Manufactures Class II modification parts and kits on aircraft and missiles. Provides an intermediate maintenance capability to support all AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: Capable of manufacturing and repairing shock mitigation system under the container development program. This operation facilitates a fully equipped Wood Shop with unlimited support of hardware for finished wood products. Also supports manufacturing of form blocks for aircraft parts in support of class II modification and repair of assigned aircraft. Manufactures various

PATTERNS AND PLASTIC (Continued)

airborne radomes for missiles, rockets and aircraft components using engineer specifications. Fully capable of supporting all DOD aircraft operations.

Outside Customers Supported:

1. Drone Projects
2. Contractors VITRO, Raytheon, etc.

SURVIVAL EQUIPMENT

Mission Statement: Provides a parachute and survival equipment shop to manufacture, modify, repair, and design item constructed of fabric in support of RDT&E test projects of a non-repetitive nature. Provides an extended intermediate maintenance capability to support aeronautical equipment, parachutes, and other aircraft maintenance requirements for support of AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop has the capability of servicing all personnel parachutes in the Department of Defense inventory. Capable of servicing the Advance Concept Ejection Seat (ACES II) employed on the A-10, B-52, F-16, and F-15 aircraft. Also currently the focal point for the Universal Water Activator Release System.

Outside Customers Supported:

1. U. S. Customs
2. U. S. Army
3. U. S. Navy
4. U. S. Marine Corps
5. AMRAAM Program Office
6. Turkish Air Force

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

Yes. Concrete targets cured to specific hardness qualities, as well as steel targets to specific hardness are used. Other targets may be fabricated to customer specification as required.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Yes. Targets are routinely validated against required specs. Specs are derived by/through the T&E community in conjunction with appropriate intelligence agencies.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. The fact that we can conduct a test traveling in either direction allows us to conduct a target set-up on either end of the track simultaneously and with our large crane and casting yard, our ability to build numerous large targets in a short time frame is enhanced.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes.

T&E FUNCTIONAL AREA	TEST TYPES
Other	Commercial Ventures Requiring Velocity Testing

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DOD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace -N/A; Water-N/A; Land-Yes, this facility can be expanded on existing DOD property to support higher speed test capability.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Secret.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

No.

(3.1.F.1) Is this a one-of-a-kind facility within the DOD? Yes/no. If yes, describe.

No.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

No.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

No.

(3.1.F.2) Are you currently providing support to DOD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
35.17%	31.87%	0.90%	6.24%	0.00%	0.00%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

This facility is located on the Armament Systems Test Environment (ASTE) Range. Refer to the ASTE answer to this question for details.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

This facility is located on the Armament Systems Test Environment (ASTE) Range. Refer to the ASTE answer to this question for details.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

This facility is located on the Armament Systems Test Environment (ASTE) Range. Refer to the ASTE answer to this question for details.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

This facility is located on the Armament Systems Test Environment (ASTE) Range. Refer to the ASTE answer to this question for details.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

This facility is located on the Armament Systems Test Environment (ASTE) Range. Refer to the ASTE answer to this question for details.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

This facility is located on the Armament Systems Test Environment (ASTE) Range. Refer to the ASTE answer to this question for details.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

This facility is located on the Armament Systems Test Environment (ASTE) Range. Refer to the ASTE answer to this question for details.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

This facility is located on the Armament Systems Test Environment (ASTE) Range. Refer to the ASTE answer to this question for details.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

There are no known features of local geology or soil conditions that enhance or inhibit any types of test at this facility.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No. All mission test requirements could be met with the capabilities of the Sled Track.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Below 32 degrees F:	1 day
Between 32 and 95 degrees:	364 days
Above 95 degrees:	0 days

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Below 30%:	5 days
Between 30 and 80%:	330 days
Above 80%:	30 days

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

FY		FY	
85	14	90	24
86	10	91	8
87	16	92	18
88	4	93	4
89	18		

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Less than 1 mile:	0 days
Between 1 and 3 miles:	7 days
Greater than 3 miles:	358 days

(This table represents the best conditions that can be expected to occur at sometime during daylight hours (0600 to 1800L))

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

Not applicable.

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Mission cancellation rates due to weather were 4.8% for FY92 and 1.4% for FY93.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

Not Applicable.

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Not Applicable.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Not Applicable.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

Not Applicable.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

Not Applicable.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

Not Applicable.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(3.3.A.1) What is the number of threats simulated?

Not Applicable.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

Not Applicable.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Not Applicable.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Not Applicable.

(3.3.A.5) What is the threat representation (fidelity) and density?

Not Applicable.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Not Applicable.

(3.3.A.7) What geographic dispersion can be simulated?

Not Applicable.

(3.3.A.7.A) Threat lay down?

Not Applicable.

(3.3.A.7.B) Representative distance?

Not Applicable.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? relocatable to new scenarios? yes/no

Not Applicable.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

Not Applicable.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Not Applicable.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

Not Applicable.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

Not Applicable.

(3.3.B.3) What range of spectra can be tested and evaluated?

Not Applicable.

(3.3.B.4) What are the available spectra?

Not Applicable.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Not Applicable.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Test Area C-74 resides on 1.4 Square Miles of land.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Test Area C-74 900 acres

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Seven nautical miles maximum for all type weapons

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

The safety footprint around the target for a live bomb launched from the sled track is typically a maximum radius of 7,000 feet.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

EGLIN SLED TRACK

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: EGLIN SLED TRACK

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	0	0	0	0	0	0	0	0
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS	0	0	0	0	0	0	0	0
EC	DIRECT LABOR	NA	0	0	0	0	0	1,365	810
	TEST HOURS	NA	0	0	0	0	0	91	54
	MISSIONS	0	0	0	0	0	0	23	14
ARMAMENT/WEAPONS	DIRECT LABOR	NA	19,065	45,015	30,975	51,075	56,460	29,940	32,190
	TEST HOURS	NA	1,271	3,001	2,065	3,405	3,764	1,996	2,146
	MISSIONS	280	325	330	348	442	460	308	255
OTHER T&E	DIRECT LABOR	NA	0	1,530	3,330	3,150	0	0	60
	TEST HOURS	NA	0	102	222	210	0	0	4
	MISSIONS	6	0	7	17	29	0	0	2
OTHER	DIRECT LABOR	NA	5,295	2,865	2,355	3,420	5,850	5,415	1,950
	TEST HOURS	NA	353	191	157	228	390	361	130
	MISSIONS	33	75	26	21	30	49	46	17

NOTE 1: Direct Labor hours are estimated using the "Workload per Test Hour per Facility Hour" factor from the Unconstrained Capacity Form.

NOTE 2: NA = Not available.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: EGLIN SLED TRACK

			ANNUAL HOURS OF DOWNTIME	135
			AVERAGE DOWNTIME PER DAY	0.37
			AVERAGE HOURS AVAILABLE PER DAY	23.63
TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY 709
UNITARY WARHEAD/ FUZE/HARD TARGET/ MULTI-LAYERED DISPENSER	1	15	15	ANNUAL UNCONSTRAINED CAPACITY
TYPICAL	1	15	15	258,749
		TOTAL SUM	30	

NOTE: Typical represents additional tests that could be accomplished if manpower were unconstrained.

EGLIN SLED TRACK

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: EGLIN SLED TRACK

AGE: 37 Years

REPLACEMENT VALUE: $5,314,000*

MAINTENANCE AND REPAIR BACKLOG: $0

DATES OF LAST UPGRADES: Unknown**

NATURE OF LAST UPGRADES: See attached for complete list of buildings.

MAJOR UPGRADES PROGRAMMED: None**

1. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:

*Replacement Cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.

**Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on Additional Information chart.

EGLIN SLED TRACK

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: EGLIN SLED TRACK

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M & R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
9350	89	$31,000	0	UNKNOWN	NONE
9351	57	$4,055,000	0	UNKNOWN	NONE
9354	57	$300,000	0	UNKNOWN	NONE
9355	65	$9,000	0	UNKNOWN	NONE
9356	57	$16,000	0	UNKNOWN	NONE
9357	67	$110,000	0	UNKNOWN	NONE
9358	57	$16,000	0	UNKNOWN	NONE
9359	57	$16,000	0	UNKNOWN	NONE
9360	57	$16,000	0	UNKNOWN	NONE
9361	57	$16,000	0	UNKNOWN	NONE
9363	68	$68,000	0	UNKNOWN	NONE
9364	68	$68,000	0	UNKNOWN	NONE
9365	68	$24,000	0	UNKNOWN	NONE
9367	72	$49,000	0	UNKNOWN	NONE
9371	72	$148,000	0	UNKNOWN	NONE
9374	74	$256,000	0	UNKNOWN	NONE
9506	54	$5,000	0	UNKNOWN	NONE
9507	54	$5,000	0	UNKNOWN	NONE
9508	54	$5,000	0	UNKNOWN	NONE
9370	57	$101,000	0	UNKNOWN	NONE
		TOTAL $5,314,000			

EGLIN SLED TRACK

GENERAL INFORMATION

Facility/Capability Title: EGLIN SLED TRACK

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46 Test Wing

Location: Eglin AFB, FL

T&E Functional Area: Armament/Weapons

UIC: Not Available.

T&E Test Facility Category: Measurement Facilities

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	100	0	0	0	0	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	0	0	0	0	0	0	0
Armament/Weapons	92	0	0	0	0	0	92
EC	2	0	0	0	0	0	2
Other	6	0	0	0	0	0	6

TECHNICAL INFORMATION

Facility/Capability Title: EGLIN SLED TRACK

Facility Description; Including Mission Statement: The Test Area (TA) C-74 Sled Test Track is designed as a damage potential test facility and is used to measure the terminal ballistics and damage capability of inert and live munitions. The track is a 2,000-foot continuous welded dual-rail facility that can also be used as a monorail facility. It is capable of launches in either direction by using primary and secondary control buildings. A capability to conduct full scale hardened structures testing is provided by on-site fabrication, lift and transport of up to 180-ton reinforced concrete targets. Additionally, sled preparation, storage/office buildings and munitions analysis facilities are located on range to support the munitions sled test mission. Achievable test velocities are: 3,000 fps for gross weight up to 10 lbs; greater than 2,000 fps for gross weight of up to 2000 lbs; and up to 1,420 fps for gross weight up to 5000 lbs. Net explosive weight in excess of 3000 lbs can be tested. 200 shots/year have been demonstrated.
Interconnectivity/Multi-Use of T&E Facility: TA C-74 Sled Track facility unique capabilities include: On-site fabrication of reinforced concrete targets (weighing up to 180 tons); 200-ton capacity crane to position these large concrete targets; a fixed 80-foot instrumentation tower for close-in data collection and observation; a mobile Thermatron unit for environmentally conditioning test items to temperatures ranging from -65 degrees F to 165 degrees F; mobile instrumentation can be linked to existing instrumentation.
Type of Test Supported: Dynamic testing of live and inert munitions against a large variety of targets: tests of experimental and insensitive explosives; test and recovery of live test items; dynamic fragmentation arenas; moving target intercept; spin launch and sensor research development; dispenser submunition tests; environmentally conditioned munition tests; chemical simulant dispersion tests; and reverse ballistic tests.
Summary of Technical Capabilities: The TA C-74 Track is managed and technically supported by government personnel. It has provided test and test support for all branches of the military services, industry, and foreign countries. The TA C-74 sled track facility has the capability to construct highly sophisticated targets to meet the requirements of existing and developmental munitions and their systems. The instrumentation/assets include: Programmable control system, magnetic pick-up velocity measuring system, CCTV system for monitoring test launch and impact arenas, sled performance analysis, data processing system, magnetic tape recorders, oscillographs, hydraulic system, 230-ton capacity crane, 230-ton transport trailer, and a D-7 bulldozer.

EGLIN SLED TRACK

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: EGLIN SLED TRACK

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	0	0	0	0	0	0	0
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	1	1	1	1	1	1	1
CONTRACTOR	10	10	10	10	10	10	10
TOTAL	11	11	11	11	11	11	11
*NOTE: FY95 and beyond are subject to manpower reductions.							

TOTAL SQUARE FOOTAGE 8,100 SF

TEST AREA SQUARE FOOTAGE 7,500 SF

OFFICE SPACE SQ. FOOTAGE 600 SF

TONNAGE OF EQUIPMENT 425 TONS

VOLUME OF EQUIPMENT 60,000 CF

ANNUAL MAINTENANCE COST $25,000

ESTIMATED MOVING COST $180,000

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	$85K	$200K	0	0	$100K	$100K

Document Separator

FACILITY/CAPABILITY: WARHEAD ARENA @ EGLIN AFB

TEST FACILITY CATEGORY: MF

% T&E - OVERALL: 100 DRS

AV: 1

EC: 0

A/W: 99 DRS

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 8 DRS

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	40	FY93	17
EC:	FY92	4	FY93	0
A/W:	FY92	2,545 DRS	FY93	2,016 DRS

Nation 12 Aug 94

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
11113F			X		
21001F			X		
27134F			X		
27313F			X		
27590F			X		
28015F			X		
35887F		X			
62101F			X		
62602F			X	X	
63203F			X		
63307F			X		
63601F			X	X	
64211F	X				
64270F		X			
64602F			X		
64604F			X		
64617F			X		
64733F			X		
65130D			X		
72806F			X		
ARMY			X		
B6404D			X		

(2.1.B.1) Continued

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
21001F			X		
27134F			X		
27313F			X		
28015F			X		
28030F			X		
62101F			X		
62602F			X	X	
63307F			X		
63601F			X	X	
64602F			X		
64617F			X		
64733F			X		
65130D			X		
65712F			X		
72806F			X		
ARMY			X		
B6404D			X		
NAVY			X		

Future Years

Program Element	AV	EC	A/W	OT	OTHER
11113F			X		
27134F		X	X		
27160F			X		
27313F			X		
27590F			X		
28015F		X	X		
28030F			X		

(2.1.B.1) Continued

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
28060F			X		
35887F		X			
62101F			X		
62602F			X	X	
63203F			X		
63307F			X		
63601F			X	X	
64270F		X			
64602F			X		
64604F			X		
64617F			X		
64618F			X		
64727F			X		
64733F			X		
65712F			X		
72806F			X		
ARMY			X		
B6404D			X		

NOTE: Due to the methodology used, program elements are not identified in the mission areas of "Other " and "AV." Virtually all of the Warhead Arena work is in the Armament/Weapon (A/W) area.

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(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	.02	.01
Electronic Combat	0	0
Armament/Weapons	1.44	1.14
Other Test	.05	0
Other	0	0

NOTE: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

No.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. AFDTC has the capability to develop and test munitions from cradle to grave. Without the Warhead Arenas the disruption of the synergism with the co-location of munition developing agencies and other facilities that support weapon system testing would be lost.

(2.3.B.1) On the test mission of any other activity?

No.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. Arena Tests are conducted so Fragment Dispersion/Mass Data can be collected. This data is input into a model and item frag patterns are generated. These patterns are utilized to determine delivery requirements for weapons and safe escape and aircraft survivability during operational conditions.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

None.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Not Applicable.

(3.1.B) Facility Condition (MV II)

Reference the Facility Condition Form provided at the end of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.
<u>Encroachment:</u>

There are NO limiting encroachment characteristics associated with this facility.

<u>Environmental:</u>

No. None of the Warhead Arenas are currently limited by any environmental constraints.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Encroachment:

Not Applicable.

Environmental:

Not Applicable.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

No.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	253,144
100 Mile Radius:	952,650
150 Mile Radius:	1,211,688
200 Mile Radius:	1,966,382

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Not applicable for air and sea. State highway 285 is used on a daily basis but can be closed for duration of test activities.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. The following facilities are currently required to support the Warhead Arenas mission or are potentially required to support future test mission activities:

SUPPORT FACILITIES LIST

WRIGHT LABORATORIES

- **Model Fabrication Facility**
- **High Explosive Research and Development Facility**

AFDTC

- **Freeman Computer Science Center**
  - **Test and Analysis**
- **Safety**
- **Meteorological Instrumentation**
- **Electronic Design and Development Flight**
- **Precision Measurement Equipment Lab (PMEL)**
- **Precision Measurement Facility - Site III Mass Properties**
- **Munitions Build-Up**
- **Munitions Storage and Handling**
- **Armament Maintenance Section**
- **Machine Shop**
- **Metals Processing**

AFDTC (Continued)
- Non-Destructive Inspection
- Patterns and Plastics
- Aerospace Ground Equipment

WRIGHT LABORATORIES (WL/MN)

The laboratories provide numerous capabilities that are an integral part of the cradle-to-grave munitions development process which is uniquely located on one installation (the complete Wright Laboratories facilities/capabilities are provided under another data call.):

Model Fabrication Facility

Produce, assemble, and modify both full and sub-scale aeroballistic, aerodynamic and aeromechanical assemblies and components for experimental munitions applications.

High Explosive Research and Development Facility

Load experimental munitions up to 1000 lbs of explosives.
Develop processing techniques for loading air Force Munitions.
Provide quality control x-ray capability up to 6 MeV.
Formulation and processing of melt cast, cure cast PBX, and pressed explosives.
Accelerated aging and environmental testing.
Performance and sensitivity testing up to 20 lbs TNT equivalent explosive.

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

FREEMAN COMPUTER SCIENCE CENTER (Continued)

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.

The CCF is designed for commonalty/compatibility with DOD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DOD services and US Allies on a regular basis.

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources [radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

METEOROLOGICAL INSTRUMENTATION

Mission Statement: Meteorological support for AFDTC is provided through the 46th Test Wing Weather Squadron which provides 24-hour weather forecasting services including preflight weather briefings, pilot-to-forecaster services to aircraft in the area, and weather warnings and advisories.

METEOROLOGICAL INSTRUMENTATION (Continued)

Unique Capabilities: Provides specialized weather services to both host and tenant units. The Test Meteorological Office provides consultation on the meteorological environment consisting of physics, chemistry and the dynamics of the atmosphere. Provides ME instrumentation at permanent, semi-permanent, and temporary sites, using mobile equipment when necessary. A full range of ME data are gathered to measure the following: wind vector, atmospheric temperature/pressure, relative humidity, dew point, rainfall amount/rates, visibility, visual range, cloud bases, solar radiation, particle size distribution, rainfall size distribution, extinction coefficient, density, defractivity, height, atmospheric electric field, etc.

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Mission Statement: Provides AFDTC with a system level capability for developing, integrating, and testing the specialized instrumentation and control systems required in support of all types of ground and flight testing. This in-house capability spans the entire process of acquiring such systems: from "development of requirements" to "design" to "build-up" to "testing" to "installation and training".

Unique Capabilities: The uniqueness of the Electronic Design and Development Flight is its broad based expertise which allows it to perform its mission (in-house development) in a quick response mode without outside support. Equally important is its capability to remain flexible to changes in requirements during the development process with minimal impact on schedule.

Outside Customers Supported:

1. USAF AWC
2. Aeronautical Systems Center
3. AFOTEC
4. U. S. Army
5. U. S. Navy
6. Various foreign governments

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB

Mission Statement: Responsible for the maintenance, calibration and certification test, measurement and diagnostic equipment designated Type II, Type III and Type IV PMEL support. Responsible for the calibration and repair of signal generating, waveform measuring, and frequency counting, voltage, current, resistance, inductance, and power measuring instruments, mechanical, electro-mechanical, dimensional and radiation measuring equipment. Responsible for the calibration and repair of F-15 and F-16 Avionics Intermediate Stations

Unique Capabilities: One of the largest PMELs in the Air Force and the regional facility servicing Northwest Florida. Has an active program currently developing automated calibration testing of equipment.

Outside Customer Supported:

1. **919th Special Operations Wing**
2. **OSD JADO Program**
3. **USAF AWC**
4. **AFOTEC**
5. **Naval EOD School**
6. **Vitro Services**

PRECISION MEASUREMENT FACILITY
SITE III MASS PROPERTIES

Mission Statement: Performs the weight, center of gravity, and moments of inertia measurements on munition and non munition items. Performs reballast procedures on munition and non munition items to provide the test engineers with a reliable product. Performs maintenance and operation of the portable mass properties machine. Used for the world wide field review measurement of stores (FRMS) operation. Mass properties data collected at various bases is put into the mass properties data program for updating the stores technical and mass properties data bank (STAMP), This ensures the project engineers have the proper mass properties data. Performs assembly/disassembly of munitions items for the purpose of adapting the items to the test set. Develops procedures for efficiency and safety of operations on new prototype test items.

MUNITIONS BUILD-UP

Mission Statement: Operates six indoor maintenance/build-up facilities totaling 54,000 square feet and 2 outdoor holding /build-up areas totaling 27,000 square feet. The missile section performs build-up of Air-to-Air, AIM-4, 7, 9, and 120 missiles and Air-to-Ground, AGM-45, 65, and 88 missiles. The conventional munitions maintenance shops perform build-up of expendable aircraft countermeasures, cannon ammunitions, GBU-10, 12, 15, 16, 24 and 28 guided bombs, CBU-58, 87 89 and 97 cluster bombs, MK-82, 83, 84, M-117 and 118 general purpose bombs, MC-1 and TMU-28 chemical weapons, nuclear training shapes and BLU-107 cratoring bombs.

MUNITIONS STORAGE AND HANDLING

Mission Statement: Provides the capability for storing and handling over 2,000 different types of munitions used to support DOD and foreign allies test and development projects, and 50 tenant unit munitions supply points. Responsible for inspection, minor maintenance and house keeping on 35 facilities within the 297 acre munitions storage area. Ensures correct storage and compatibility of munitions are maintained in strict compliance with all explosive safety standards. Total munitions storage capacity is 121,729 sq. ft. and total sited net explosive weight (NEW) authorized is 2,287,900 pounds. Capable of storing various sizes of munitions ranging from small arms ammunition to the Tomahawk cruise missile; maximum size of any one item to fit into storage structures would be no greater than 15,000 NEW and a dimension of approximately 18' x 10' x 10'. Provides logistical support to 500 test projects and five different maintenance sites within the munitions storage area. Directly supports several off-base test ranges on the 464,000 acre Eglin test complex. On a yearly basis, moves or delivers over 500 tons net explosive weight/1250 tons total weight of munitions covering more than 15,000 miles.

Unique Capabilities: Receipt, inspection, storage, maintenance, buildup, shipping and delivery capability is provided for any US or foreign munition used or tested at Eglin AFB. Major munitions categories include both current inventory and prototype general purpose and cluster bombs; precision guided munitions; air-to-air and air-to-ground missiles, nuclear trainers, Navy cruise missiles, Army Hellfire missiles, expendable aircraft countermeasures and small arm/cannon ammunition. Additional items include various British, Norwegian, Israeli, and former-Soviet Bloc munitions. A technical data library with preliminary handling/maintenance data and interim hazard classification is maintained for prototype, modified and foreign munitions.

ARMAMENT MAINTENANCE SECTION

Mission Statement: Inspects and maintains all munition suspension equipment for the 46th Test Wing and the Air Warfare Center aircraft. To include pylons, bomb racks, launchers and adapters for weapons carriage on the F-15, F-16, and F-111 aircraft. Inspects and maintains guns and gun systems on the F-15 and F-16 aircraft, including removal and installation.

Unique Capabilities: Supports Ammo/Gun Test Range 22/C-64/C-74L with gun maintenance and support personnel on a daily basis. Advises test project personnel on modification requirements for AME. Maintains modified equipment for various test projects. Provides maintenance, repair and/or inspection for armament systems components owned by various military and civilian test agencies.

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop is equipped with modern conventional toolroom and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS
3 Manufactured Sleds for Holloman AFB
4. Provide welding and manufacture for 728 ACS
5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

NON-DESTRUCTIVE INSPECTION

Mission Statement: Provides a capability to accomplish optical, penetrant, magnetic particles, ultra sound, eddy current, and radiographic inspections to determine component integrity and serviceability. Conducts experimental tests as to the integrity of RDT&E test designs and specifications. Provides oil analysis to determine wear metal effects on aircraft engines and oil wetted components.

Unique Capabilities: Multi-use facility, equipment, manpower, materials and training are shared equally with the 33rd Fighter Wing (ACC). The only known field level shop with two film processors.

Outside Customers Supported:

1. Air Warfare Center
2. 33d Fighter Wing
3. Wright Laboratory
4. 919 Special Operations

PATTERNS AND PLASTIC

Mission Statement: Provides a Pattern and Plastic Shop for design, manufacture, modification, and repair of RDT&E test items required to support the test program of a non-repetitive nature. Manufactures items and works with fiberglass, advanced composites, wood, and plastics in modifying bombs, missiles, rockets, etc. Manufactures Class II modification parts and kits on aircraft and missiles. Provides an intermediate maintenance capability to support all AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: Capable of manufacturing and repairing shock mitigation system under the container development program. This operation facilitates a fully equipped Wood Shop with unlimited support of hardware for finished wood products. Also supports manufacturing of form blocks for aircraft parts in support of class II modification and repair of assigned aircraft. Manufactures various airborne radomes for missiles, rockets and aircraft components using engineer specifications. Fully capable of supporting all DOD aircraft operations.

Outside Customers Supported:

1. Drone Projects
2. Contractors VITRO, Raytheon, etc.

AEROSPACE GROUND EQUIPMENT

Mission Statement: Provides field maintenance, periodic inspections, special inspections, servicing, refueling and dispatch as well as technical order modifications on over 500 pieces of powered and non-powered AGE assigned to AFDTC. Provides supervision, production control, quality assurance and supply support for AGE activities. Performs engine teardown, buildup (overhaul) and repair of components, i.e. starters, generators, motors, relays, etc. Responds to trouble calls on equipment in use. Provides equipment operator training to customers. Performs servicing of aircraft oil and hydraulic carts. Collects and recycles waste petroleum products generated by aircraft maintenance. The equipment is, for the most part, the newest and latest designs in the Air Force inventory today.

Unique Capabilities: AGE has supported the latest aircraft in the inventory. For example: F-117A, C-17, RC-135, B-1 and B-2 bombers, E-3A AWACS as well as NATO aircraft such as the Harrier and Tornado. The capability also extends to all other services DOD wide which AGE will be able to support well into the year 2000. Provides test support to Army and Navy aircraft such as helicopters and Navy sea launch cruise missile tests. Provides specialized equipment to contractors and base facilities in support of new and state of the art munitions and electronic warfare testing.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

Yes. Fragmentation collection bundles for lethality determination are required. Thickness of bundles is based on size, velocity of bomb fragments. Real (live) targets such as armored vehicles, trucks, jeeps, aircraft fuselages, wings and other aircraft structures have been used to evaluate vulnerability of the target in question.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Yes. Through the use of test design criteria and customer requirements.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. Our mobile data collection systems allow us to conduct tests anywhere in the world.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes.

T&E Functional Area	Test Type
Others	Commercial testing.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DOD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-Yes. Additional airspace within the Eglin reservation can be made available to Warhead Arena testing; Water-N/A; Land-Yes. This facility can be expanded on existing DOD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Secret.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

No.

(3.1.F.1) Is this a one-of-a-kind facility within the DOD? Yes/no. If yes, describe.

No

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

No

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

No.

(3.1.F.2) Are you currently providing support to DOD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
20.00%	14.62%	0.00%	1.73%	0.00%	0.00%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

This facility is located on the Armament Systems Test Environment (ASTE) range. Refer to the ASTE answer to this question for details.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

This facility is located on the Armament Systems Test Environment (ASTE) range. Refer to the ASTE answer to this question for details.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

This facility is located on the Armament Systems Test Environment (ASTE) range. Refer to the ASTE answer to this question for details.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

This facility is located on the Armament Systems Test Environment (ASTE) range. Refer to the ASTE answer to this question for details.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

This facility is located on the Armament Systems Test Environment (ASTE) range. Refer to the ASTE answer to this question for details.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

This facility is located on the Armament Systems Test Environment (ASTE) range. Refer to the ASTE answer to this question for details.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

This facility is located on the Armament Systems Test Environment (ASTE) range. Refer to the ASTE answer to this question for details.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

This facility is located on the Armament Systems Test Environment (ASTE) range. Refer to the ASTE answer to this question for details.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

Open Air Munitions Testing Facilities benefit from area soils which consist ocean-washed sediments from the Piedmont region. Most of the colloidal material is removed, leaving a notably loose soil composed largely of quartz crystals. These soils are poor transmitters of seismic energy and serve to abate propagation of seismic vibrations which could otherwise be damaging to military and civilian infrastructure (i.e. well casing, pipelines, and other structures.) This is an extremely important mitigating factor to take into consideration when designing open air munitions tests. Eglin's soils have allowed AFDTC to conduct extensive munitions test over the last fifty years with minimal impact due to associated seismic noise.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Below 32 degrees F:	1 day
Between 32 and 95 degrees:	364 days
Above 95 degrees:	0 days

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Below 30%:	5 days
Between 30 and 80%:	330 days
Above 80%:	30 days

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

FY		FY		FY	
85	20	89	23	93	6
86	14	90	28		
87	33	91	9		
88	7	92	22		

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Less than 1 mile:	0 days
Between 1 and 3 miles:	7 days
Greater than 3 miles:	358 days

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

Not applicable.

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Mission cancellation rates due to weather were 5.29% for FY92 and 2.20% for FY93.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

Not Applicable.

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Not Applicable.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Not Applicable.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

Not Applicable.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

Not Applicable.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

Not Applicable.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(3.3.A.1) What is the number of threats simulated?

Not Applicable.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

Not Applicable.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Not Applicable.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Not Applicable.

(3.3.A.5) What is the threat representation (fidelity) and density?

Not Applicable.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Not Applicable.

(3.3.A.7) What geographic dispersion can be simulated?

Not Applicable.

(3.3.A.7.A) Threat lay down?

Not Applicable.

(3.3.A.7.B) Representative distance?

Not Applicable.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? Relocatable to new scenarios? Yes/no

Not Applicable.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

Not Applicable.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Not Applicable.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

Not Applicable.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

Not Applicable.

(3.3.B.3) What range of spectra can be tested and evaluated?

Not Applicable.

(3.3.B.4) What are the available spectra?

Not Applicable.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Not Applicable.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Test Area C-80	
Installed Systems	**.17 square miles**
Mobile Systems	**55.4 square miles**

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Area	Acres
C-72	3,840
C-52	16,000
B-70	10,400
B-75	3,360
B-71	374
B-82	551
C-62	1,290
C-64	37
C-74	900
C-80,	66

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

WARHEAD ARENAS

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: WARHEAD ARENAS

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	NA	1,168	0	0	392	808	320	136
	TEST HOURS	NA	146	0	0	49	101	40	17
	MISSIONS	60	161	0	0	4	10	5	2
EC	DIRECT LABOR	0	0	0	0	0	0	32	0
	TEST HOURS	0	0	0	0	0	0	4	0
	MISSIONS	0	0	0	0	0	0	1	0
ARMAMENT/WEAPONS	DIRECT LABOR	NA	17,560	20,512	38,600	44,040	20,832	20,360	16,128
	TEST HOURS	NA	2,195	2,564	4,825	5,505	2,604	2,545	2,016
	MISSIONS	535	425	364	582	679	372	396	270
OTHER T&E	DIRECT LABOR	NA	NA	3,176	16	840	264	760	64
	TEST HOURS	NA	NA	397	2	105	33	95	8
	MISSIONS	65	19	37	2	22	18	14	1
OTHER	DIRECT LABOR	0	0	0	0	0	0	0	0
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS	0	0	0	0	0	0	0	0

NOTE 1: Direct Labor hours are estimated using the "Workload Per Test Per Facility Hour" factor from the Unconstrained Capacity Form.

NOTE 2: NA = Not available.

WARHEAD ARENAS

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: WARHEAD ARENAS

ANNUAL HOURS OF DOWNTIME	739
AVERAGE DOWNTIME PER DAY	2.0
AVERAGE HOURS AVAILABLE PER DAY	22.0

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY
BLAST/FRAGMENTATION/ HAZARD CLASS/ FOREIGN EXPLOITATION/ COOK-OFF	4	8	32	1,408
TYPICAL	4	8	32	ANNUAL UNCONSTRAINED CAPACITY
			TOTAL 64	513,920

NOTE: Typical represents additional tests that could be accomplished if manpower were unconstrained.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: WARHEAD ARENA

AGE: 27 Years

REPLACEMENT VALUE: $1,984,000 TOTAL*

MAINTENANCE AND REPAIR BACKLOG: None

DATES OF LAST UPGRADES: Unknown**

NATURE OF LAST UPGRADES: See attached for complete list of buildings.

MAJOR UPGRADES PROGRAMMED: None**

1. **UPGRADE TITLE:**
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. **UPGRADE TITLE:**
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

*** Replacement Cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.**

****Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on Additional Information chart.**

WARHEAD ARENAS

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: WARHEAD ARENA

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M & R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
9462	68	$225,000	0	UNKNOWN	NONE
9463	68	$77,000	0	UNKNOWN	NONE
9464	68	$110,000	0	UNKNOWN	NONE
9466	68	$4,000	0	UNKNOWN	NONE
9465	66	$86,000	0	UNKNOWN	NONE
9468	68	$77,000	0	UNKNOWN	NONE
9469	68	$229,000	0	UNKNOWN	NONE
9470	68	$101,000	0	UNKNOWN	NONE
9473	68	$77,000	0	UNKNOWN	NONE
9474	68	$229,000	0	UNKNOWN	NONE
9475	68	$110,000	0	UNKNOWN	NONE
4011	71	$24,000	0	UNKNOWN	DISPOSAL F/95
9461	68	$384,000	0	UNKNOWN	NONE
9467	80	$99,000	0	UNKNOWN	NONE
9480	71	$110,000	0	UNKNOWN	NONE
9569	67	$42,000	0	UNKNOWN	NONE
		TOTAL $1,984,000			

WARH ARENAS

GENERAL INFORMATION

Facility/Capability Title: WARHEAD ARENA

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46 Test Wing

Location: Eglin AFB, FL

T&E Functional Area: Armament/Weapons

UIC: Not Available.

T&E Test Facility Category: Measurement Facilities

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	100	0	0	0	0	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	1	0	0	0	0	0	1
Armament/Weapons	99/99 = 100%	0	0	0	0	0	99
EC	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0

WARHEAD ARENAS

TECHNICAL INFORMATION

Facility/Capability Title: WARHEAD ARENA

Facility Description; Including Mission Statement: The Warhead Arena has the infrastructure, real estate, communications, and specialized data collection and reduction instrumentation needed to safely conduct a wide variety of static arena tests of munitions with up to 3,000 pounds net explosive weight. Resources are available to conduct three simultaneous arena tests. Types of tests conducted include conventional munitions and submunitions, warheads, lethality and vulnerability, heating, bullet impacts, fragment velocity and dispersion, airblast and pressure profile, sympathetic detonation, booster efficiency, fuel air explosives, and insensitive explosives. This resource provides the capability to perform fragment and blast pressure characterization tests, collect the data, automatically sort and catalog fragment and pressure data with computer systems, incorporate reduced data into effectiveness models, and publish detailed technical reports. Another resource that performs warhead test and evaluation is the Smart Weapon Test and Analysis facility located at TA C-64. This facility is equipped to support actual and simulated static firings of shaped charge warheads against combinations of targets, armor, and ballistic countermeasures. An 800-ft dynamic test area supports direct and top-attack dynamic testing of missile and projectile warheads. A tower facility is used for static top-attack warhead tests against vehicles. The facility is also capable of performing controlled vulnerability testing in support of LIVE FIRE testing. This LIVE FIRE test and analysis capability includes the management and analysis capability to perform predictive studies, conduct necessary testing, evaluate the results and report in an iterative process to meet all requirements of the LIVE FIRE legislation. Other resources include a unique network of unequaled computer platforms, running different operating systems and applications software capable of a full spectrum lethality/vulnerability evaluation and effectiveness analysis. Using aimpoint and hit point data from seeker/sensor analysis and target geometry models, either developed in-house or through JTCG, supports full systems analysis to include one-on-one effectiveness analyses and many-on-many analyses.
Interconnectivity/Multi-Use of T&E Facility: This facility is a unique, dedicated resource containing permanently installed control systems and embedded state-of-the-art instrumentation. It is the only facility of its type that has for over twenty years used an electronic screen/data system for collecting fragment velocity data. Two mobile data vans are used to support off-site tests where the net explosive weight exceeds 3,000 pounds. Warhead tests up to 5,000 lbs Net Explosive Weight (NEW) have been conducted on B-71 and B-75. Complementary facilities include the High Explosive Research and Development Facility (HERD), the Advanced Warhead Experimentation Facility (AWEF), the Fuze Test Facility (FTF), and the Smart Weapon Test and Analysis Facility which can operate as a stand-alone facility or can be used as one of several resources simultaneously supporting a test.
Type of Test Supported: Lethality and Vulnerability, Heat Soak, Booster Efficiency, Sympathetic Detonation, Air Blast and Pressure Profile, Fragment Velocity and Dispersion, Warhead Characterization.

TECHNICAL INFORMATION (Continued)

Facility/Capability Title: WARHEAD ARENA

Summary of Technical Capabilities: Fragment velocity and dispersion systems including high-speed photography and electronic screen systems, air blast pressure profile, strain, acceleration, and temperature measurement instrumentation using analog and digital systems, programmable sequencer, fragment recovery and mass distribution, partial recovery using fiberboard, total recovery using water tank, automatic fragment weight classifier, temperature measurement and control to support heat soak tests, radio remote control firing systems, flame spray facility to fabricate velocity screens, laboratory type transducer calibration and evaluation facility, and two 20-ft diameter water tanks for total recovery tests. At the Smart Weapon and Analysis Facility the assets include a dynamic warhead test facility, shaped charge jet characterization test area, and a LIVE FIRE test area. Instrumentation includes 150 KeV, 450 KeV and 1 MeV x-ray systems, pressure recorders, high speed cameras, an automated fragment weighing system for behind-the-armor debris, and a unique Spall Panel Evaluation with Digital Imagery (SPEDI) computer based spall panel scoring system. SPEDI provides the capability to automatically score and analyze the spall panels, cutting the manual scoring process ten-fold. Computer assets include Silicon Graphics personal IRIS, INDIGO, and GTX multi-processing workstations, Macintosh systems, Digital VAX computers, DOS personal computers, and SUN workstations, all with interconnectivity to the Eglin computer network.

Keywords: Lethality, Fragment, Blast Arena Tests, Warhead, Vulnerability, Dispersion, LIVE FIRE.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: ARENA TEST FACILITY

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	0	0	0	0	0	0	0
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	3	3	3	3	2	2	2
CONTRACTOR	16	16	16	16	16	16	16
TOTAL	19	19	19	19	18	18	18
*Note: FY95 and beyond are subject to manpower reductions.							

TOTAL SQUARE FOOTAGE	15,700 SF		
TEST AREA SQUARE FOOTAGE	15,000 SF	OFFICE SPACE QS FOOTAGE	700 SF
TONNAGE OF EQUIPMENT	950 TONS	VOLUME OF EQUIPMENT	85,000 CF
ANNUAL MAINTENANCE COST	$66,850	ESTIMATED MOVING COST	$200,000

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$100K	$75K	$50K	0	0	$50K	$100K

Document Separator

FACILITY/CAPABILITY: FUZE TEST FACILITY @ EGLIN AFB

TEST FACILITY CATEGORY: MF

% T&E - OVERALL: 100 DRS

AV: 0

EC: 0

A/W: 99 DRS

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 8 DRS

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	0	FY93	0
EC:	FY92	87	FY93	0
A/W:	FY92	3,753 DRS	FY93	11,126 DRS

Notion 12 Aug 94

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
11113F			X		
11128F			X		
27133F			X		
27162F			X		
27165F			X		
27313F			X		
27590F			X		
28030F			X		
62602F			X	X	
63203F			X		
63601F			X	X	
64270F		X			
64327F			X		
64602F			X		
64604F			X		
64607F			X		
64733F			X		
65130D			X		
65807F			X		
ARMY			X		
B6404D			X		

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
27133F			X		
27134F			X		
27162F			X		
27165F			X		
27313F			X		
27590F			X		
28030F			X		
62602F			X		
63203F			X		
63307F			X		
63601F			X		
64602F			X		
64604F			X		
64617F			X		
65130D			X		
65807F			X		
78026F				X	
ARMY			X		
B6404D			X		

Future Years

Program Element	AV	EC	A/W	OT	OTHER
11113F			X		
11128F			X		
24727F			X		
27133F			X		
27134F			X		
27160F			X		
27162F			X		
27165F			X		

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
27313F			X		
27590F			X		
28030F			X		
62602F			X	X	
63203F			X		
63307F			X		
63601F			X	X	
64270F		X			
64602F			X		
64604F			X		
64617F			X		
64618F			X		
64733F			X		
65130D			X		
65807F			X		
78026F				X	
ARMY			X		
B6404D			X		

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	0	0
Electronic Combat	.05	0
Armament/Weapons	2.12	6.29
Other Test	0	.08
Other	0	0

NOTE: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

The only limitations are the building size and the amount of test hardware available. The Net Explosive Weight (NEW) limit of Bldg 432 is 100 pounds of 1.1 class ammunition.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. Provides environmental testing of small ordnance, fuzes, and ammunition. Additionally, modifies fuzes and ammunition for specific tests. Supports integration tests such as lanyard pull, bomb rack release and static ejection of stores. It is currently supporting the 30 MM and 40 MM ammunition life cycle program and recently supported the F-15 Ripple Release program.

(2.3.B.1) On the test mission of any other activity?

Yes. The collocated Wright Laboratories fuze design function and weapon development System Program Offices (SPOs). Supports integration tests such as lanyard pull, bomb rack release and static ejection of stores. The facility is currently supporting the Wright Laboratory's BLU 97A/B ageing test.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. The Fuze Test Facility is an integral part of the munitions development process supporting the release of a flight clearance by the collocated AF Seek Eagle Office. The facility is integral to the life cycle testing of ammunition (such as 30 MM and 40MM discussed in 2.3.B) that ensures that the operational forces have viable ammunition.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

None.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Not Applicable.

(3.1.B) Facility Condition (MV II)

Reference the Facility Condition Form provided in Appendix A of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.
Encroachment:

No. There are NO known (current or future) limiting encroachment characteristics associated with this facility.

Environmental:

No. There are no known (current or future) limiting environmental characteristics associated with this facility.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.
Encroachment:

Not Applicable.

Environmental:

Not Applicable. There are no environmental constraints to increased workload.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

None of Eglin's Fuze Test Facilities are currently operating under any temporary permits or voluntary agreements of an environmental nature.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	253,144
100 Mile Radius:	952,650
150 Mile Radius:	1,211,688
200 Mile Radius:	1,966,382

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

None.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. The following facilities are currently required to support the Fuze Test Facility mission or are potentially required to support future test mission activities.

FUZE TEST FACILITY

SUPPORT FACILITIES LIST

WRIGHT LABORATORIES

Environmental Sciences Facility
Fuzes Research and Development Facility
Ballistics Experimentation Facility (BEF)
High Explosive Research and Development Facility
Instrumentation Technology Research Facility

AFDTC

Freeman Computer Science Center
- Test and Analysis
- System Technology

Safety
Static Test Facility
Meteorological Instrumentation
Electronic Design and Development Flight
Precision Measurement Equipment Lab (PMEL)
Precision Measurement Facility - Site III Mass Properties
Munitions Build-Up
Munitions Storage and Handling
Armament Maintenance Section
Alternate Mission Equipment Section
Machine Shop
Metals Processing
Corrosion Control
Non-Destructive Inspection
Patterns and Plastics

WRIGHT LABORATORIES (WL/MN)

The laboratories provide numerous capabilities that are an integral part of the cradle-to-grave munitions development process which is uniquely located on one installation (the complete Wright Laboratories facilities/capabilities are provided under another data call.):

Environmental Sciences Facility

Environmental Analysis and research in support of conventional munitions technology development.

Quantitative determination of contaminants in chemicals, explosives, fuels, soils, or water including on-the-spot analysis to determine residual metal contaminate levels.

Automated image analysis for material and particle studies.

Document preparation to insure compliance with all local, state and federal regulations and laws.

Fuzes Research and Development Facility

Research and development of fuzes, sensors and associated signal processing circuitry for targets of interest.

Electronic lab, explosive test bays, laser lab, aerosol chamber, printed circuit board fabrication equipment.

Ballistics Experimentation Facility (BEF)

6500 feet by 1500 feet outdoor firing range, 300 feet indoor range, machine shop, electronics repair shop, munitions storage area, equipment storage compound, and over 450 air and powder launchers.

Development of launch and flight verification for nonstandard munitions and projectiles scheduled for testing in the Aeroballistics Research Facility.

Test capability for developmental munitions to include data gathering and analysis of free-flight and impact phenomena.

WRIGHT LABORATORIES (WL/MN) (Conintued)

High Explosive Research and Development Facility

Load experimental munitions up to 1000 lbs of explosives.
Develop processing techniques for loading air Force Munitions.
Provide quality control x-ray capability up to 6 MeV.
Formulation and processing of melt cast, cure cast PBX, and pressed explosives.
Accelerated aging and environmental testing.
Performance and sensitivity testing up to 20 lbs TNT equivalent explosive.

Instrumentation Technology Research Facility

Modern 3000 sq ft laboratory dedicated specifically to developing, fabricating, and testing advanced instrumentation systems for explosive, guidance, and flight systems test.

Verify the performance of electronic and opto-electronic instrumentation used during the development and testing of airborne munition acquisition programs.

Electronic/Optic design and fabrication to support the prototyping and analysis of advanced instrumentation technology concepts.

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.

The CCF is designed for commonalty/compatibility with DOD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DOD services and US Allies on a regular basis.

Systems Technology

Designs, develops, implements, operates and maintains the AFDTC Scientific Computer Center and its networks. Provides a broad base of expert computer and system engineering consultants. Provides software engineering support for the Eglin scientific and engineering community including development, customization and adaptation of graphics, applications, and system software products. Develops software products for the simulation and/or control of weapon or related systems as required for RDT&E. Operates and maintains the Eglin Decision Support System and the CRAY YMP Supercomputer.

The computer center has a CRAY YMP supercomputer and visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN).

This is a general purpose computer center that supports all phases of digital models and computer simulations. It is available to all DOD agencies. The largest current user is the Aeronautical Systems Center.

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources [radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

STATIC TEST FACILITY

Mission Statement: Provides the capability to test the strength of external stores and suspension equipment

Unique Capabilities:. Through the use of hydraulic cylinders, loads are exerted on test articles to simulate actual loads which may be encountered by the item during flight conditions. Currently, the force exerted by the cylinders is measured by load cells and the operators regulate the hydraulic pressure to each cylinder to adjust the load. The facility is being upgraded to incorporate an automatic feedback control system using input from the load cells to regulate hydraulic pressure. In addition, the capability exists to measure the displacements resulting from the forces exerted on the test item.

METEOROLOGICAL INSTRUMENTATION

Mission Statement: Meteorological support for AFDTC is provided through the 46th Test Wing Weather Squadron which provides 24-hour weather forecasting services including preflight weather briefings, pilot-to-forecaster services to aircraft in the area, and weather warnings and advisories.

Unique Capabilities: Provides specialized weather services to both host and tenant units. The Test Meteorological Office provides consultation on the meteorological environment consisting of physics, chemistry and the dynamics of the atmosphere. Provides ME instrumentation at permanent, semi-permanent, and temporary sites, using mobile equipment when necessary. A full range of ME data are gathered to measure the following: wind vector, atmospheric temperature/pressure, relative humidity, dew point, rainfall amount/rates, visibility, visual range, cloud bases, solar radiation, particle size distribution, rainfall size distribution, extinction coefficient, density, defractivity, height, atmospheric electric field, etc.

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Mission Statement: Provides AFDTC with a system level capability for developing, integrating, and testing the specialized instrumentation and control systems required in support of all types of ground and flight testing. This in-house capability spans the entire process of acquiring such systems: from "development of requirements" to "design" to "build-up" to "testing" to "installation and training".

Unique Capabilities: The uniqueness of the Electronic Design and Development Flight is its broad based expertise which allows it to perform its mission (in-house development) in a quick response mode without outside support. Equally important is its capability to remain flexible to changes in requirements during the development process with minimal impact on schedule.

Outside Customers Supported:

1. **USAF AWC**
2. **Aeronautical Systems Center**
3. **AFOTEC**
4. **U. S. Army**
5. **U. S. Navy**
6. **Various foreign governments**

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB

Mission Statement: Responsible for the maintenance, calibration and certification test, measurement and diagnostic equipment designated Type II, Type III and Type IV PMEL support. Responsible for the calibration and repair of signal generating, waveform measuring, and frequency counting, voltage, current, resistance, inductance, and power measuring instruments, mechanical, electro-mechanical, dimensional and radiation measuring equipment. Responsible for the calibration and repair of F-15 and F-16 Avionics Intermediate Stations

Unique Capabilities: One of the largest PMELs in the Air Force and the regional facility servicing Northwest Florida. Has an active program currently developing automated calibration testing of equipment.

Outside Customer Supported:

1. 919th Special Operations Wing
2. OSD JADO Program
3. USAF AWC
4. AFOTEC
5. Naval EOD School
6. Vitro Services

PRECISION MEASUREMENT FACILITY
SITE III MASS PROPERTIES

Mission Statement: Performs the weight, center of gravity, and moments of inertia measurements on munition and non munition items. Performs reballast procedures on munition and non munition items to provide the test engineers with a reliable product. Performs maintenance and operation of the portable mass properties machine. Used for the world wide field review measurement of stores (FRMS) operation. Mass properties data collected at various bases is put into the mass properties data program for updating the stores technical and mass properties data bank (STAMP), This ensures the project engineers have the proper mass properties data. Performs assembly/disassembly of munitions items for the purpose of adapting the items to the test set. Develops procedures for efficiency and safety of operations on new prototype test items.

MUNITIONS BUILD-UP

Mission Statement: Operates six indoor maintenance/build-up facilities totaling 54,000 square feet and 2 outdoor holding /build-up areas totaling 27,000 square feet. The missile section performs build-up of Air-to-Air, AIM-4, 7, 9, and 120 missiles and Air-to-Ground, AGM-45, 65, and 88 missiles. The conventional munitions maintenance shops perform build-up of expendable aircraft countermeasures, cannon ammunitions, GBU-10, 12, 15, 16, 24 and 28 guided bombs, CBU-58, 87 89 and 97 cluster bombs, MK-82, 83, 84, M-117 and 118 general purpose bombs, MC-1 and TMU-28 chemical weapons, nuclear training shapes and BLU-107 cratering bombs.

MUNITIONS STORAGE AND HANDLING

Mission Statement: Provides the capability for storing and handling over 2,000 different types of munitions used to support DOD and foreign allies test and development projects, and 50 tenant unit munitions supply points. Responsible for inspection, minor maintenance and house keeping on 35 facilities within the 297 acre munitions storage area. Ensures correct storage and compatibility of munitions

are maintained in strict compliance with all explosive safety standards. Total munitions storage capacity is 121,729 sq. ft. and total sited net explosive weight (NEW) authorized is 2,287,900 pounds. Capable of storing various sizes of munitions ranging from small arms ammunition to the Tomahawk cruise missile; maximum size of any one item to fit into storage structures would be no greater than 15,000 NEW and a dimension of approximately 18' x 10' x 10'. Provides logistical support to 500 test projects and five different maintenance sites within the munitions storage area. Directly supports several off-base test ranges on the 464,000 acre Eglin test complex. On a yearly basis, moves or delivers over 500 tons net explosive weight/1250 tons total weight of munitions covering more than 15,000 miles.

Unique Capabilities: Receipt, inspection, storage, maintenance, buildup, shipping and delivery capability is provided for any US or foreign munition used or tested at Eglin AFB. Major munitions categories include both current inventory and prototype general purpose and cluster bombs; precision guided munitions; air-to-air and air-to-ground missiles, nuclear trainers, Navy cruise missiles, Army Hellfire missiles, expendable aircraft countermeasures and small arm/cannon ammunition. Additional items include various British, Norwegian, Israeli, and former-Soviet Bloc munitions. A technical data library with preliminary handling/maintenance data and interim hazard classification is maintained for prototype, modified and foreign munitions.

ARMAMENT MAINTENANCE SECTION

Mission Statement: Inspects and maintains all munition suspension equipment for the 46th Test Wing and the Air Warfare Center aircraft. To include pylons, bomb racks, launchers and adapters for weapons carriage on the F-15, F-16, and F-111 aircraft. Inspects and maintains guns and gun systems on the F-15 and F-16 aircraft, including removal and installation.

Unique Capabilities: Supports Ammo/Gun Test Range 22/C-64/C-74L with gun maintenance and support personnel on a daily basis. Advises test project personnel on modification requirements for AME. Maintains modified equipment for various test projects. Provides maintenance, repair and/or inspection for armament systems components owned by various military and civilian test agencies.

Mission Statement: Stores, controls and accounts for all munition suspension equipment for the 46th Test Wing and Air Warfare Center aircraft. Tracks all in-use equipment and schedules inspections through the maintenance section.

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC

engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop is equipped with modern conventional tool room and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS
3 Manufactured Sleds for Holloman AFB
4. Provide welding and manufacture for 728 ACS
5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

CORROSION CONTROL

Mission Statement: Inspects and treats corrosion on aircraft, missiles, armament and other related equipment. Provides wash rack facilities to wash aircraft and aircraft parts. Provides a corrosion capability for performing intermediate maintenance and painting on assigned aircraft, age, and class II modification items. Provide RDT&E experimental coating for test engineers on tasks, drones, missiles, and radomes etc.

Outside Customers Supported:

1. Wright Laboratory - Armament Division
2. Navy EOD School
3. 9th SOS
4. Seek Eagle Program Office
5. Navy Coastal System Laboratory
6. 919 SOS
7. Mill Star Program

NON-DESTRUCTIVE INSPECTION

Mission Statement: Provides a capability to accomplish optical, penetrant, magnetic particles, ultra sound, eddy current, and radiographic inspections to determine component integrity and serviceability. Conducts experimental tests as to the integrity of RDT&E test designs and specifications. Provides oil analysis to determine wear metal effects on aircraft engines and oil wetted components.

Unique Capabilities: Multi-use facility, equipment, manpower, materials and training are shared equally with the 33rd Fighter Wing (ACC). The only known field level shop with two film processors.

Outside Customers Supported:

1. Air Warfare Center
2. 33d Fighter Wing
3. Wright Laboratory
4. 919 Special Operations

PATTERNS AND PLASTIC

Mission Statement: Provides a Pattern and Plastic Shop for design, manufacture, modification, and repair of RDT&E test items required to support the test program of a non-repetitive nature. Manufactures items and works with fiberglass, advanced composites, wood, and plastics in modifying bombs, missiles, rockets, etc. Manufactures Class II modification parts and kits on aircraft and missiles. Provides an intermediate maintenance capability to support all AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: Capable of manufacturing and repairing shock mitigation system under the container development program. This operation facilitates a fully equipped Wood Shop with unlimited support of hardware for finished wood products. Also supports manufacturing of form blocks for aircraft parts in support of class II modification and repair of assigned aircraft. Manufactures various airborne radomes for missiles, rockets and aircraft components using engineer specifications. Fully capable of supporting all DOD aircraft operations.

Outside Customers Supported:

1. Drone Projects
2. Contractors VITRO, Raytheon, etc.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

No.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Not Applicable.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

No.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

No.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DOD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-N/A; Water-N/A; Land-Yes, this facility can be expanded on existing DOD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Secret.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

No.

(3.1.F.1) Is this a one-of-a-kind facility within the DOD? Yes/no. If yes, describe.

No.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

No.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

No.

(3.1.F.2) Are you currently providing support to DOD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
3.07%	0.21%	0.00%	0.00%	0.00%	0.00%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Not Applicable.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

Not Applicable.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

Not Applicable.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Not Applicable.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

Not Applicable.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

Not Applicable.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Not Applicable.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Not Applicable.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

There are no known features of local geology or soil conditions that enhance or inhibit any types of test at this facility.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No. All test requirements can be met with this facility's capability.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Not Applicable.

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Not Applicable.

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

Not Applicable.

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Not Applicable.

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

Not Applicable.

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Not Applicable.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

Not Applicable.

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Not Applicable.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Not Applicable.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

Not Applicable.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

Not Applicable.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

Not Applicable.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(3.3.A.1) What is the number of threats simulated?

Not Applicable.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

Not Applicable.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Not Applicable.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Not Applicable.

(3.3.A.5) What is the threat representation (fidelity) and density?

Not Applicable.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Not Applicable.

(3.3.A.7) What geographic dispersion can be simulated?

Not Applicable.

(3.3.A.7.A) Threat lay down?

Not Applicable.

(3.3.A.7.B) Representative distance?

Not Applicable.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? Relocatable to new scenarios? Yes/no

Not Applicable.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

Not Applicable.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Not Applicable.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

Yes. Temperature/altitude/humidity testing are limited to a working space of 4 ft x 4 ft x 3 ft. Vibration testing is limited to 6,000 force pounds, i.e., a 100 pound mass can be accelerated to 60 g's. The capability is sufficient to test all major subsystems/components of current, nonnuclear munitions. No plans underway to increase the limits of this capability.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

Not Applicable.

(3.3.B.3) What range of spectra can be tested and evaluated?

Not Applicable.

(3.3.B.4) What are the available spectra?

Not Applicable.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Not Applicable.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Not Applicable.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Not Applicable.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

FUZE TEST FACILITY

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: FUZE TEST FACILITY

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	NA	0	0	0	4	0	0	0
	TEST HOURS	NA	0	0	0	2	0	0	0
	MISSIONS	0	0	0	0	1	0	0	0
EC	DIRECT LABOR	NA	0	0	0	14	0	174	0
	TEST HOURS	NA	0	0	0	7	0	87	0
	MISSIONS	3	0	0	0	1	0	17	0
ARMAMENT/WEAPONS	DIRECT LABOR	NA	10,360	6,526	6,056	3,904	9,908	7,506	22,252
	TEST HOURS	NA	5,180	3,263	3,028	1,952	4,954	3,753	11,126
	MISSIONS	680	491	340	288	254	432	263	580
OTHER T&E	DIRECT LABOR	NA	0	48	1,386	92	48	8	272
	TEST HOURS	NA	0	24	693	46	24	4	136
	MISSIONS	3	0	3	49	5	3	1	7
OTHER	DIRECT LABOR	NA	0	66	122	136	112	0	0
	TEST HOURS	NA	0	33	61	68	56	0	0
	MISSIONS	9	0	10	24	30	24	0	0

NOTE 1: Direct Labor Hours are estimated using the "Workload Per Test Per Facility Hour" factor from the Unconstrained Capacity Form.

NOTE 2: NA = Not available.

FUZE TEST FACILITY

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: FUZE TEST FACILITY

ANNUAL HOURS OF DOWNTIME	16
AVERAGE DOWNTIME PER DAY	.04
AVERAGE HOURS AVAILABLE PER DAY	23.96

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY
VIBRATION/ ENVIRONMENTAL/ AMMO DOWNLOADING/ RADIOGRAPHIC EVAL	6	3	18	527
TYPICAL	2	2	4	ANNUAL UNCONSTRAINED CAPACITY 192,398
			TOTAL: 22	

NOTE: Typical represents additional tests that could be accomplished if manpower were unconstrained.

30/03

FUZE TEST FACILITY

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: GUN TEST FACILITY

AGE: 23-37 Years

REPLACEMENT VALUE: $1,326,000*

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: Unknown**

NATURE OF LAST UPGRADE: See attached for complete list of buildings.

MAJOR UPGRADES PROGRAMMED: NONE**

1. UPGRADE TITLE:
TOTAL PROGRAMMED AMOUNT:
SUMMARY DESCRIPTION:

2. UPGRADE TITLE:
TOTAL PROGRAMMED AMOUNT:
SUMMARY DESCRIPTION:

* Replacement Cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.

**Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on additional information chart.

FUZE TEST FACILITY

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: FUZE TEST FACILITY

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M & R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
431	57	$15,000	0	UNKNOWN	NONE
433	57	$163,000	0	UNKNOWN	NONE
434	57	$629,000	0	UNKNOWN	NONE
436	58	$46,000	0	UNKNOWN	NONE
453	71	$434,000	0	UNKNOWN	NONE
457	71	$13,000	0	UNKNOWN	NONE
458	71	$13,000	0	UNKNOWN	NONE
459	71	$13,000	0	UNKNOWN	NONE
TOTAL		1,326,000			

FUZE TEST FACILITY

GENERAL INFORMATION

Facility/Capability Title: FUZE TEST FACILITY

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46 Test Wing

Location: Eglin AFB, FL

T&E Functional Area: Armament/Weapons

UIC: Not Available.

T&E Test Facility Category:
PRIMARY: Measurement Facility
SECONDARY: Integration Lab

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	100	0	0	0	0	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	0	0	0	0	0	0	0
Armament/Weapons	99/99 = 100	0	0	0	0	0	99
EC	0	0	0	0	0	0	0
Other	1	0	0	0	0	0	1

FUZE TEST FACILITY

TECHNICAL INFORMATION

Facility/Capability Title: FUZE TEST FACILITY

Facility Description; Including Mission Statement: This resource is used for extensive environmental T&E (including specification compliance) of prototype and production models of fuzes and associated ordnance as well as ammunition. The capability to accomplish extensive integration testing, at both the component and system levels, is also available. The available facilities and instrumentation cover simulated, induced and natural environments, separately or in combinations, to determine that fuzes and associated ordnance devices are safe and will function as intended. This facility provides both climatic and operational environments. The Fuze Test Facility also conducts integration testing of fuzes, munitions and aircraft and bomb racks.
Interconnectivity/Multi-Use of T&E Facility: This facility is the only facility in the AF equipped for extensive environmental and safety testing, ground functional performance testing, and engineering evaluation of developmental models of fuzes for conventional munitions and associated ordnance devices. The proximity of this resource to the hot-gun line and flight test areas facilitates sequential testing of an ordnance article from development to production. Although used primarily for fuze testing, this facility is also used in environmental tests of electronic boxes, circuit boards, other small assemblies, and also it is used for environmental testing of ammunition.
Functional Test Areas: Vibration, jolt, jumble, leak, salt fog, fungus, ejection, drop, explosive atmosphere, altitude, temperature, radiographic inspection, acceleration, shock, impact, humidity, sand/dust, physical fit.
Summary of Technical Capabilities: Fourteen environmental chambers (heat, cool, humidity, high/low temperature, thermal shock, salt fog, sand and dust, immersion, explosive atmosphere, fungus, temperature vibration), two electrodynamic vibration machines, 80 foot drop tower, vacuum acceleration tube, two static ejection systems, the high "g" impact shock machines, jolt/jumble machine, 100g centrifuge, munitions disassembly areas, instrumented hydraulic press, and remotely operated machine shop for munition disassembly. The facility has two industrial X-ray systems for fuze and munition examination. One is an on site 350 kV fluoroscopy system and the other is a remotely located 320 kV film system. A mobile 8-channel 150 kV flash X-ray system is provided for super high speed stop motion shadowgraphy.
Keywords: Fuze Test, Environment Test, Ejection Tests, Munitions Integration, Integration Testing.

FUZE TEST FACILITY

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: FUZE TEST FACILITY

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	0	0	0	0	0	0	0
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	1	1	1	1	1	1	1
CONTRACTOR	4	4	4	4	4	4	4
TOTAL	5	5	5	5	5	5	5
*Note: FY95 and beyond are subject to manpower reductions.							

TOTAL SQUARE FOOTAGE 13,225 SF
TEST AREA SQUARE FOOTAGE 13,043 SF
TONNAGE OF EQUIPMENT 152 TONS
ANNUAL MAINTENANCE COST $64,976

OFFICE SPACE SQ. FOOTAGE 182 SF
VOLUME OF EQUIPMENT 13,280 CF
ESTIMATED MOVING COST $350,000

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$200K	0	$50K	0	0	$25K	$50K

Document Separator

T&E PERCENTAGES

SITE/ACTIVITY: AFDTC @ EGLIN AFB, FL

FACILITY	TOTAL % T&E	AV	EC	A/W	OTHER	
DIGITAL MODELING AND SIM	100	0	3.5	96.5	0	A/W DMS
McKINLEY CLIMATIC LAB	100	58	9	0	33	AV MF
MULTISPECTRAL SIG MSMT	100	8	7	50	35	A/W MF
EGLIN SLED TRACK	100	0	2	92	6	A/W MF
WARHEAD ARENA	100	1	0	99	0	A/W MF
FUZE TEST FACILITY	100	0	0	99	1	A/W MF
GUN TEST FACILITY	96	0	0	93	3	A/W MF
GWEF	90.44	0.49	1.81	80.06	8.08	A/W HITL
AFEWES	100	0	100	0	0	EC HITL
EDCAP	100	0	100	0	0	EC HITL
RIMES	100	0	53	31	16	A/W ISTF
ASTE	80	3	5	40	32	A/W OAR
EMTE	98	1	57	9	31	EC OAR
GULF TEST FACILITY	33	1	3	7	22	A/W OAR
HELLFIRE TEST FACILITY	100	0	0	100	0	A/W OAR
BISS	95.8	1.3	0.5	3.1	90.9	OTHER OAR

Doug Nation 12 Aug 94
SIGNATURE DATE

12 AUG 94
SIGNATURE DATE

12 Aug 94
SIGNATURE DATE

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FACILITY/CAPABILITY: GUN TEST FACILITY @ EGLIN AFB

TEST FACILITY CATEGORY: MF

% T&E - OVERALL: 96 DRS

AV: 0

EC: 0

A/W: 93 DRS

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 5 DRS

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	0	FY93	17
EC:	FY92	75	FY93	0
A/W:	FY92	5,156 DRS	FY93	5,009 DRS

Nation 12 Aug 94

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
21001F			X		
27134F			X		
27162F			X		
27313F			X		
28015F			X		
28030F			X		
61011F			X		
62602F			X	X	
63203F			X	X	
63601F			X		
64327F			X		
64602F			X		
64604F			X		
64733F			X		
65807F			X		
72806F			X		
ARMY		X	X		
B6404D			X		

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
21001F			X		
27134F			X		
27162F			X		
27313F			X		
27590F			X		
28015F			X		
28030F			X		
61011F			X		
62602F			X	X	
63203F			X		
63601F			X		
64327F			X		
64602F			X		
64604F			X		
64607F			X		
64733F			X		
65130D			X		
65807F			X	X	
72806F			X		
ARMY			X		
B6404D			X		

Future Years

Program Element	AV	EC	A/W	OT	OTHER
27134F			X		
27162F			X		
27313F			X		
27590F			X		
28015F			X		
28030F			X		

(2.1.B.1) Continued

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
62602F			X	X	
63203F			X	X	
63601F			X		
64602F			X		
64604F			X		
64733F			X		
65130D			X		
65807F			X	X	
72806F			X		
ARMY		X	X		
B6404D			X		

Note: Due to the methodology used, program elements are not identified in the mission area of "Other." Virtually all of the Gun Test work is in the A/W area.

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Gun Test Facilities:

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	0	.01
Electronic Combat	.04	0
Armament/Weapons	2.92	2.83
Other Test	.81	.08
Other	.27	.12

Note: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc.?

The only constraints are related to the safety aspects of the test.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. The Gun Test Facility is an integral part of the cradle-to-grave munitions test process at AFDTC. Loss of the facility would destroy the synergistic process whereby munitions are locally designed, developed, tested, produced, and then operationally verified, all at one location.

(2.3.B.1) On the test mission of any other activity?

Yes. The following activities would be severely affected: munitions design - Wright Laboratories; munitions development - Munitions SPO; munitions development testing - Wright Laboratories and Munitions SPO; munitions production testing - Munitions SPO; operational testing - AFOTEC, Munitions SPO, Air Warfare Center, and 33rd Fighter Wing. All of these activities/organizations are located at the Air Force Development Test Center, Eglin AFB FL.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. Currently supporting Life Cycle Testing of GAU-8 Ammunition and Malfunction Investigation of both 20mm and 30mm ammunition. Loss of Capability would critically impact the A-10, A-7, F-15, F-16, and AC-130 aircraft programs.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

None.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Not Applicable.

(3.1.B) Facility Condition (MV II)

Reference the Facility Condition Form provided in Appendix A of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.
Encroachment:

There are NO limiting encroachment characteristics associated with this facility.

Environmental:

No. None of the Gun Test Facilities are currently limited or expected to be limited in the future by any environmental constraints.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.
Encroachment:

Not Applicable.

Environmental:

No. There are no environmental constraints to increased workload.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

None of Eglin's Gun Test Facilities are currently operating under any temporary permits or voluntary agreements of an environmental nature.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	253,144
100 Mile Radius:	952,650
150 Mile Radius:	1,211,688
200 Mile Radius:	1,966,382

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

None, except that the road in front of the TA-22 is closed for 5-10 minutes when a test aircraft is pulled to the site.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. Test Area A-24, Fuze Test Facility, provides environmental and physical conditioning of ammunition. Additionally, the following facilities are currently required to support the Gun Test Facility mission or are potentially required to support future test mission activities.

SUPPORT FACILITIES LIST

WRIGHT LABORATORIES

- Environmental Sciences Facility
- Hypervelocity Research Facility
- Fuzes Research and Development Facility
- Ballistics Experimentation Facility (BEF)
- Aeroballistics Research Facility (ARF)
- Model Fabrication Facility
- High Explosive Research and Development Facility
- Instrumentation Technology Research Facility

NAVAL EXPLOSIVE ORDNANCE DISPOSAL SCHOOL

AFDTC

- Freeman Computer Science Center
  - Test and Analysis
  - System Technology
- Safety
- Instrumented Airborne Platforms (C-130, F-111, F-15, F-16, UH-1)
- Avionics
- Static Test Facility
- Airborne Systems/Instrumentation
- Meteorological Instrumentation
- "Specialized" Electronic Systems Flight
- Electronic Design and Development Flight
- Aircraft Systems/Design and Modification

AFDTC (Continued)

- Precision Measurement Equipment Lab (PMEL)
- Precision Measurement Facility - Site III Mass Properties
- Munitions Build-Up
- Munitions Storage and Handling
- Armament Maintenance Section
- Alternate Mission Equipment Section
- Machine Shop
- Structural Maintenance
- Metals Processing
- Corrosion Control
- Non-Destructive Inspection
- Pneudraulic
- Patterns and Plastics
- Aerospace Ground Equipment

WRIGHT LABORATORIES (WL/MN)

The laboratories provide numerous capabilities that are an integral part of the cradle-to-grave munitions development process which is uniquely located on one installation (the complete Wright Laboratories facilities/capabilities are provided under another data call.):

Environmental Sciences Facility

Environmental Analysis and research in support of conventional munitions technology development.

Quantitative determination of contaminants in chemicals, explosives, fuels, soils, or water including on-the-spot analysis to determine residual metal contaminate levels.

Automated image analysis for material and particle studies.

Document preparation to insure compliance with all local, state and federal regulations and laws.

WRIGHT LABORATORIES (WL/MN) (Continued)

Hypervelocity Research Facility

Contains a dedicated laboratory for performing research and development on Advanced Oxidation Techniques (i.e. non-thermal silent-discharge plasma processing) for potential use in (1) the destruction of environmental contaminants extracted from ground water; (2) the disposal of munitions; (3) the destruction of hazardous compounds generated by weapons; (4) the reduction of NO_X Emissions from power plant smoke stacks and advanced aircraft engines.

Fuzes Research and Development Facility

Research and development of fuzes, sensors and associated signal processing circuitry for targets of interest.

Electronic lab, explosive test bays, laser lab, aerosol chamber, printed circuit board fabrication equipment.

Ballistics Experimentation Facility (BEF)

6500 feet by 1500 feet outdoor firing range, 300 feet indoor range, machine shop, electronics repair shop, munitions storage area, equipment storage compound, and over 450 air and powder launchers.

Development of launch and flight verification for nonstandard munitions and projectiles scheduled for testing in the Aeroballistics Research Facility.

Test capability for developmental munitions to include data gathering and analysis of free-flight and impact phenomena.

Aeroballistics Research Facility (ARF)

Enclosed, instrumented concrete range (207 m instrumented section with 3.66 m square test area for first 69 m and 4.88 m square test area for remaining; length) designed for studying free-flight characteristics of munitions and projectiles (both axisymmetric and asymmetric configurations).

Atmospherically controlled at 22 $\pm$ 1 degrees Celsius and less than 50 percent relative humidity.

WRIGHT LABORATORIES (WL/MN) (Continued)

Model Fabrication Facility

Produce, assemble, and modify both full and sub-scale aeroballistic, aerodynamic and aeromechanical assemblies and components for experimental munitions applications.

High Explosive Research and Development Facility

Load experimental munitions up to 1000 lbs of explosives.
Develop processing techniques for loading air Force Munitions.
Provide quality control x-ray capability up to 6 MeV.
Formulation and processing of melt cast, cure cast PBX, and pressed explosives.
Accelerated aging and environmental testing.
Performance and sensitivity testing up to 20 lbs TNT equivalent explosive.

Instrumentation Technology Research Facility

Modern 3000 sq ft laboratory dedicated specifically to developing, fabricating, and testing advanced instrumentation systems for explosive, guidance, and flight systems test.

Verify the performance of electronic and opto-electronic instrumentation used during the development and testing of airborne munition acquisition programs.

NAVAL EXPLOSIVE ORDNANCE DISPOSAL SCHOOL

Mission Statement: A jointly-staffed (Army, Navy, Air Force, Marine Corps) school providing specialized Explosive Ordnance Disposal training to officer and enlisted personnel of all services, both U. S. and foreign, and to selected civilian officials, in the best methods and procedures for the detection, identification, render safe, recovery, evaluation, and disposal of explosive ordnance, surface and underwater, conventional and nuclear, employed by the U. S. and other nations.

Unique Capabilities: The EOD School supports test activities by rendering safe or removing unexploded ordnance from various land and water test ranges.

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.

The CCF is designed for commonalty/compatibility with DOD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DOD services and US Allies on a regular basis.

Systems Technology

Designs, develops, implements, operates and maintains the AFDTC Scientific Computer Center and its networks. Provides a broad base of expert computer and system engineering consultants. Provides software engineering support for the Eglin scientific and engineering community including development, customization and adaptation of graphics, applications, and system software products. Develops software products for the simulation and/or control of weapon or related systems as required for RDT&E. Operates and maintains the Eglin Decision Support System and the CRAY YMP Supercomputer.

The computer center has a CRAY YMP supercomputer and visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN).

This is a general purpose computer center that supports all phases of digital models and computer simulations. It is available to all DOD agencies. The largest current user is the Aeronautical Systems Center.

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources [radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

INSTRUMENTED AIRBORNE PLATFORMS

Mission Statement: Instrumented aircraft are required to support the test and evaluation of munitions, electronic combat, communications computers command control and intelligence (C4I) systems, and inertial navigation/guidance systems in the Open Air Arena.

Unique Capabilities: Aircraft instrumentation provides time, space, position information (TSPI), platform specific information (avionics/weapons data), and test specific information (environmental/infrared/separation data). Instrumentation data can be provided real time (via telemetry (TM) transmitters and/or data links) and/or post mission (via analog data tape recorders, video tape recorders and film cameras). The TM stream is usually the PCM (pulse code modulation) output of a data acquisition system which collects and conditions the various analog and digital signals. The oldest data systems are the programmable Data Acquisition System (pDAS) and the Airborne Test Instrumentation System (ATIS). Until the Common Airborne Instrumentation System (CAIS) is available, the Advanced ATIS system (AATIS) is presently being installed. The main sources of digital data are the aircraft's buses, avionics, weapons, ECM, and display. This data can be recorded selectively or totally. Cockpit displays (HUD/VSD/TEWS/RWR/MFD/etc) are

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

recorded on video tape recorders (video cameras may be required if display signal is not TV (RS-170) formatted). 1553 bus data or other PCM information may be formatted/conditioned (Merlin system) to a TV format for video tape recording. Analog tape recorders are the MARS 1400 (14 track, 14" reel), MARS 2000 (14 track, 10" reel), and the MARS 2028 (28 tracks, 10" reel); video tape recorders are the NAC (VHS) and the new TEAC (Hi 8 mm); digital recorder is the MARS II. A Time Code Generator (TCG) provides IRIG (Interrange Instrumentation Group) time for time correlation of analog, digital, film and video data. Store separation data is provided by 16 mm film cameras which are installed in aircraft fairings and/or carried on store stations. Airborne TSPI sources are a radar transponder (beacon), user GPS, or RAJPO GPS. The GPS data can be recorded or it can be transmitted via the MTACS (Multilateration Tracking and Control System) data link. Telemetry and video streams are encrypted before transmission.

Various types of instrumented pods/shapes are carried on the platform's store stations. Power and control wiring is either installed or standard aircraft wiring is utilized. The Golden Bird Missile is an instrumented AIM-7; the ARTIS pod contains an instrumentation radar for relative TSPI; I-HAWK and SADS VI M/1 are threat simulator pods; the BASES, SAIMS, and ASIMS are infrared (IR) pods; GPS/MTACS pods contain the RAJPO HDIS receiver combined with the MTACS data link. Two F-15B aircraft have an instrumentation 1553 bus specifically installed to control instrumentation pods. ACES II, ITV, and IMV are instrumented AMRAAM shapes/pods.

Listed below are the 46TW and AWC aircraft already modified, in process of being modified, or will begin modification this FY.

C-130

C-130A 55-0022: Airborne platform for DT&E of air-to-ground and air-to-air seekers and sensors (visible, IR, MMW), stabilized turret, beacon, GPS

F-111

F-111E 67-0118: Film cameras, cockpit video camera, VTR (Hi 8 mm), TCG, beacon F-111F 70-2379: Flutter instrumentation, film cameras w/FDRS, video cameras for separation, ATIS, MARS 2000, TCG, Beacon, VTR (Hi 8 mm)

F-111F 70-2400: Film cameras w/FDRS, AATIS, TCG, user GPS w/MTACS, Beacon, MARS 2028, TM

F-15

F-15A 76-0101: JTIDS, HUD/VSD/MPCD VTRs(Std TEAC, NAC), TCG, MARS 2000, pDAS, Beacon, TM

F-15C 84-0011: JTIDS, HUD/VSD VTRs(8 mm), MPCD VTR(NAC), TCG, MARS 2000, pDAS, TM, Beacon

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-15A 77-0064: Film cameras, HUD/VSD Video Cameras & VTRs(8 mm), TCG, MARS 2000, pDAS, Beacon, TM, partial Golden Bird

F-15A 76-0116: High Speed Radar Buffer Box, ITV Pod, TCG, Beacon, MARS 2000, pDAS, VTR(NAC), TM

F-15B 73-0114: MSIP B FOT&E, HUD/VSD/MPCD/RWR VTRs (Hi 8 mm), TCG, pDAS, Beacon, TM

F-15B 75-0080/84: 1553 Instrumentation Bus, HUD/VSD/MFD VTRs (NACs), TCG, pDAS, MARS 2000, Beacon, TM, Pods: ARTIS, I-HAWK, SADS VI M/1, BASES, SAIMS, ASIMS, Golden Bird

F-15B 77-0161: High Speed Radar Buffer Box, PSP/RSP Radar, TCG, pDAS, HUD/VSD cameras, VTRs (Hi 8 mm), TM, Beacon, Film Cameras on Station Adaptors, pods: Golden Bird, ARTIS

F-15C 84-0018: AMRAAM Instrumentation, TCG, pDAS, MARS 1400, TM, Film Cameras, Beacon, HUD/VSD VTRs (8 mm), pods: ACE II, ITV, IMV, partial Golden Bird.

F-15C 85-0126: AMRAAM/TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (8 mm & NAC), Film Cameras, pDAS, TCG, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, Beacon, pods: ACE II, IMV, partial Golden Bird.

F-15C 80-0022: AMRAAM/TEWS/JTIDS instrumentation, AATIS, MARS 2028, MARS II, TCG, TM, Beacon, pods: partial Golden Bird (In design)

F-15C 78-0542: TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (NACs), TCG, pDAS, TM, Beacon, MARS 2028, pod: partial Golden Bird

F-15D 84-0045: AMRAAM Instrumentation, Film Cameras, HUD/VSD Video Cameras & VTR (NAC), High Speed Radar Buffer Box, pDAS, TCG, TM, Beacon, pods: ACE II, ITV, DMV

F-15E 86-0185/0188: SEEK EAGLE/TEWS/AMRAAM Instrumentation, Film Cameras, MPDP VTRs (Hi 8 mm), TCG, pDAS, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, beacon, video TM

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-16

F-16A 80-0609: AMRAAM Instrumentation, Film Cameras, Hud/REO Video cameras & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Dual HUD capability, partial OCU, Beacon, Total A&W bus recording, pods: ATLIS II, RDIP, RUBIS, ASRAAM (In Design)

F-16A 80-0761: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Camera & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Beacon, ADF capable, pods: ACE II, Musketeer Lee, ASRAAM (In design)

F-16B 78-0104: INS Fighter test bed.

F-16B 82-1037: Film Cameras, TCG, Beacon

F-16B 83-1123/88-0353: Flutter & Loads, Flutter Exciter Panel, Film Cameras, pDAS, TCG, TM, MARS 2000, HUD/RMFD or LMFD VTRs (NACs), Beacon, pods: RDIP (123 only)

F-16C 83-1163: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Cameras & VTRs(NACs), pDAS, TCG, MARS 1400 or 2000, Beacon, TM, pod: ACE II

F-16C 84-1280/1285: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR Video Cameras & VTRs(NACs), MARS 1400, pDAS, TCG, TM, Beacon, chaff/ flare monitor, pod: ACE II

F-16C 88-0441: AMRAAM Instrumentation, Film Cameras, RWR video camera, Total Bus recording, HUD/LMFD/RMFD/RWR VTRs (Hi 8 mm), TCG, pDAS, TM, ALE-47 instrumentation, Beacon, pods: IMV, DMV, JSOW, ACE II

F-16C 89-2070: ALE-47 Instrumentation, RWR video camera, HUD/LMFD/RMFD/RWR VTRs(NACs), TCG, pDAS, TM, Total Bus recording, Beacon, pods: ACE II

F-16C 90-0726: ALQ-126B

F-16D 80-0844/0848: HUD/MFD/RWR VTRs(Hi 8 mm), Total bus recording A/B/C/D/EW/W busses (Merlin, Hi 8 mm), HARM & ALIC PCM recording (Merlin, Hi 8 mm), TCG, Beacon (In design)

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INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-16 (Continued)

F-16D 88-0469: NAC Recorders

F-16D 90-0835: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR/HELMET/HAND-HELD VTRs (Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS 422 monitor, user GPS w/MTACS, encrypted video, beacon, TM, pods: ACE II, RDIP

F-16D 80-0836: HARM Instrumentation, Film Cameras, HUD/MFD/RWR VTRs(Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS
422 monitor, user GPS w/MTACS, encrypted video, TM, beacon, pods: RDIP, ACE II

UH-1

UH-1N 69-6617/6626: BASES Pod, Aerial Ignition Device, beacon

AVIONICS

Mission Statement: The F-16 AIS Shop is responsible for off-equipment Intermediate level maintenance and support of F-16 Line Replaceable Units (LRUs). Does software loading of Operational Flight Programs, TCTOs, modifications, calibrations, and testing of F-16 LRUs. Responsible for testing weapons, instruments, and ALR-69 systems using AIS test equipment. Maintains four test stations and ancillary equipment by performing inspections, modifications and repairs.

The F-15 AIS is responsible for testing F-15 LRUs including weapon control radar, inertial navigation, heads-up display, automatic flight control, instrument, and communication and navigation systems. Uses, maintains, and calibrates avionics intermediate shop test stations used to repair F-15 LRUs. Performs off-equipment maintenance and line delivery of AXQ-14 and Improved Data Link pods.

The Conventional Avionics Shop is responsible for intermediate and organizational level maintenance on avionics systems installed on UH-1N helicopters and transient aircraft. Performs intermediate level maintenance of CommNav, Guidance, and ECM systems on assigned aircraft. Modifies, repairs, loads, and operationally checks ECM pods on F-15, F-16 and F-111 aircraft to support test missions. Repairs and modifies communication ground cords, headsets, and emergency survival radio/beacons for Eglin units. Maintains, installs, and repairs radio ground mount adapters for emergency and operations vehicles on Eglin. Operationally checks all UHF, VHF, and RWR antennas for serviceability.

The Sensor Test Shop is responsible for on-equipment and off-equipment maintenance of all assigned and transient sensor systems. Performs intermediate and organizational level maintenance on LANTIRN targeting and navigation and PAVE TACK Laser Target Designation pods. Maintains intermediate level test equipment including the LANTIRN mobility shelter set. Performs intermediate level maintenance on Airborne Video Tape Recorders and Cockpit Television Systems, to include phase inspection work cards. Assists field engineers in the kit proofing, validating and fielding of new systems and/or upgrades to current systems.

The Radar Test Shop provides intermediate level repair of F-15 and F-16 radar and other avionics and components. Reprograms various avionics and other computers. Refurbishes F-15 and F-16 flight control and INU batteries. Performs operational checks for serviceability of F-15 and F-16 radar LRU's. Provides repair and functional checks of F-16 ARC-164, ARC-186, and ARN-118 receiver/transmitters, throttle grips, side stick controllers, GPS receivers and numerous F-16 control units. Repairs various circuit card assemblies by troubleshooting and replacing electronic components as required. Provides software testing to Test Wing agencies on Eglin AFB.

Unique Capabilities: Maintains full F-16 and F-15 radar mockups with capability to troubleshoot and repair parts in concert with associated avionics intermediate stations (AIS). A Huntron Tracker is on hand to repair circuit cards. A LANTIRN Mobile Support Shelter and a PAVE-TACK repair test set are also available.

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd FW (ACC)
4. 9th Special Operations Squadron
5. 728th Tactical Control Squadron

STATIC TEST FACILITY

Mission Statement: Provides the capability to test the strength of external stores and suspension equipment

Unique Capabilities:. Through the use of hydraulic cylinders, loads are exerted on test articles to simulate actual loads which may be encountered by the item during flight conditions. Currently, the force exerted by the cylinders is measured by load cells and the operators regulate the hydraulic pressure to each cylinder to adjust the load. The facility is being upgraded to incorporate an automatic feedback control system using input from the load cells to regulate hydraulic pressure. In addition, the capability exists to measure the displacements resulting from the forces exerted on the test item.

AIRBORNE SYSTEMS/INSTRUMENTATION

Mission Statement: Designs, develops and procures airborne instrumentation systems for installation on aerospace vehicles and airborne threat simulators. Performs T-2 (Class II) modification support and post modification calibration and checkout. Provides pre/postflight instrumentation support for test missions.

Unique Capabilities: The unique capability provided is the design, procurement, installation and support of aircraft instrumentation systems, i.e. the requirement-to-requirement support of highly instrumented T&E aircraft. Based on the given requirements, the system engineers design instrumentation systems utilizing standard instrumentation subsystems, where possible, for quick turnaround and best maintenance support. Procurement of the system components is then initiated. This may entail contacting potential vendors, writing specifications and Justification Review Documents, and evaluating bids. Next is the creation of the instrumentation modification package, it's installation, and it's checkout. "Standard Operating Procedures" detailing instrumentation operation during pre/postflight checkout are written and the aircrew is aided in writing the Partial Flight Manual Supplement. Instrumentation systems collect various types of data for real time transmission (after encryption) and/or onboard recording. One type includes avionics/weapons/electronic warfare/display buss information and sensor data (strain gauges, accelerometers, etc). Aircraft displays (Hud, VSD, RWR, etc) are tape recorded and transmitted, if desired. Film cameras record store separation and a radar transponder enhances radar tracking. All data and events are time correlated with IRIG time. Engineers and electronic "bench" technicians maintain, calibrate, and repair the various instrumentation subsystems utilizing special "hot" benches. System engineers and electronic "preflight" technicians also checkout and setup the instrumentation before flight and download tape recorders and pods after flight.

METEOROLOGICAL INSTRUMENTATION

Mission Statement: Meteorological support for AFDTC is provided through the 46th Test Wing Weather Squadron which provides 24-hour weather forecasting services including preflight weather briefings, pilot-to-forecaster services to aircraft in the area, and weather warnings and advisories.

Unique Capabilities: Provides specialized weather services to both host and tenant units. The Test Meteorological Office provides consultation on the meteorological environment consisting of physics, chemistry and the dynamics of the atmosphere. Provides ME instrumentation at permanent, semi-permanent, and temporary sites, using mobile equipment when necessary. A full range of ME data are gathered to measure the following: wind vector, atmospheric temperature/pressure, relative humidity, dew point, rainfall amount/rates, visibility, visual range, cloud bases, solar radiation, particle size distribution, rainfall size distribution, extinction coefficient, density, defractivity, height, atmospheric electric field, etc.

"SPECIALIZED" ELECTRONIC SYSTEMS FLIGHT

Mission Statement: Provides AFDTC with a complete in-house capability for developing unique TSPI and remote-controlled systems.

Unique Capabilities: Provides electrical and mechanical engineering, design and fabrication services for simple to very complex one-of-a-kind systems. The functions of the flight include:

1. **Electrical and Mechanical design, prototyping, and end-product fabrication of the various sub-systems involved.**
2. **System integration and testing**
3. **Preparation of technical specifications and engineering evaluation reports**
4. **Engineering consultation to AFDTC agencies as well as outside agencies on TSPI, remote control, TM, RF and antennas**
5. **Personnel expertise and equipment to perform the mission**

Outside Customers Supported:

1. **ASC**
2. **Tyndall AFB**
3. **WSMR**

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Mission Statement: Provides AFDTC with a system level capability for developing, integrating, and testing the specialized instrumentation and control systems required in support of all types of ground and flight testing. This in-house capability spans the entire process of acquiring such systems: from "development of requirements" to "design" to "build-up" to "testing" to "installation and training".

Unique Capabilities: The uniqueness of the Electronic Design and Development Flight is its broad based expertise which allows it to perform its mission (in-house development) in a quick response mode without outside support. Equally important is its capability to remain flexible to changes in requirements during the development process with minimal impact on schedule.

Outside Customers Supported:

1. **USAF AWC**
2. **Aeronautical Systems Center**
3. **AFOTEC**
4. **U. S. Army**
5. **U. S. Navy**
6. **Various foreign governments**

AIRCRAFT SYSTEMS/DESIGN AND MODIFICATION

Mission Statement: Designs, installs, and documents the buildup of aerospace vehicle T-2 modifications and airborne threat simulators. Maintains configuration management records on these modifications.

Unique Capabilities: The 46 Test Wing has the capability and the facilities necessary to perform the entire T-2 modification process. The aero-engineering section has all the various skills required: aero-engineers, mechanical engineers, electrical engineers, aero-technicians, and electronic technicians. These personnel (working with an assigned systems engineer) perform the aero/mech/elec design of all in-house T-2 modifications and approve/review all contractor provided T-2 modifications. In conjunction with the system engineer, a cost/man-hours estimate is provided to the customer. Aircraft technical orders, military standards and specifications, equipment manuals are researched. The aircraft to be modified is examined for available space for installing instrumentation and detailed measurements are taken. Then, utilizing engineering workstations with computer aided design (CAD) and computer aided engineering (CAE) software, structural and electrical drawings are created. Aerodynamic/structural analyses are performed. All material, mechanical and electrical, are researched for part numbers and other ordering information and a list is provided for procurement. Work orders are generated and sent for mechanical fabrication and then returned for electrical wiring and component installation. Electrical engineers approve the electrical drawings and perform an electrical loads analysis to prevent overloading any portion of the aircraft's power generation and distribution system. The modification engineer provides written instructions, guidance, and other pertinent documentation which constitute the T-2 modification package. With shop support (sheet metal, machine shop, etc) and electricians, dock chiefs direct the T-2 modification installation. The installation is monitored throughout by the modification and system engineers.

Outside Customers Supported:

1. USAF AWC

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB

Mission Statement: Responsible for the maintenance, calibration and certification test, measurement and diagnostic equipment designated Type II, Type III and Type IV PMEL support. Responsible for the calibration and repair of signal generating, waveform measuring, and frequency counting, voltage, current, resistance, inductance, and power measuring instruments, mechanical, electro-mechanical, dimensional and radiation measuring equipment. Responsible for the calibration and repair of F-15 and F-16 Avionics Intermediate Stations

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB (Continued)

Unique Capabilities: One of the largest PMELs in the Air Force and the regional facility servicing Northwest Florida. Has an active program currently developing automated calibration testing of equipment.

Outside Customer Supported:

1. 919th Special Operations Wing
2. OSD JADO Program
3. USAF AWC
4. AFOTEC
5. Naval EOD School
6. Vitro Services

PRECISION MEASUREMENT FACILITY
SITE III MASS PROPERTIES

Mission Statement: Performs the weight, center of gravity, and moments of inertia measurements on munition and non munition items. Performs reballast procedures on munition and non munition items to provide the test engineers with a reliable product. Performs maintenance and operation of the portable mass properties machine. Used for the world wide field review measurement of stores (FRMS) operation. Mass properties data collected at various bases is put into the mass properties data program for updating the stores technical and mass properties data bank (STAMP), This ensures the project engineers have the proper mass properties data. Performs assembly/disassembly of munitions items for the purpose of adapting the items to the test set. Develops procedures for efficiency and safety of operations on new prototype test items.

MUNITIONS BUILD-UP

Mission Statement: Operates six indoor maintenance/build-up facilities totaling 54,000 square feet and 2 outdoor holding /build-up areas totaling 27,000 square feet. The missile section performs build-up of Air-to-Air, AIM-4, 7, 9, and 120 missiles and Air-to-Ground, AGM-45,65,and 88 missiles. The conventional munitions maintenance shops perform build-up of expendable aircraft countermeasures, cannon ammunitions, GBU-10, 12, 15, 16, 24 and 28 guided bombs, CBU-58, 87 89 and 97 cluster bombs, MK-82, 83, 84, M-117 and 118 general purpose bombs, MC-1 and TMU-28 chemical weapons, nuclear training shapes and BLU-107 cratering bombs.

MUNITIONS STORAGE AND HANDLING

Mission Statement: Provides the capability for storing and handling over 2,000 different types of munitions used to support DOD and foreign allies test and development projects, and 50 tenant unit munitions supply points. Responsible for inspection, minor maintenance and house keeping on 35 facilities within the 297 acre munitions storage area. Ensures correct storage and compatibility of munitions are maintained in strict compliance with all explosive safety standards. Total munitions storage capacity is 121,729 sq. ft. and total sited net explosive weight (NEW) authorized is 2,287,900 pounds. Capable of storing various sizes of munitions ranging from small arms ammunition to the Tomahawk cruise missile; maximum size of any one item to fit into storage structures would be no greater than 15,000 NEW and a dimension of approximately 18' x 10' x 10'. Provides logistical support to 500 test projects and five different maintenance sites within the munitions storage area. Directly supports several off-base test ranges on the 464,000 acre Eglin test complex. On a yearly basis, moves or delivers over 500 tons net explosive weight/1250 tons total weight of munitions covering more than 15,000 miles.

Unique Capabilities: Receipt, inspection, storage, maintenance, buildup, shipping and delivery capability is provided for any US or foreign munition used or tested at Eglin AFB. Major munitions categories include both current inventory and prototype general purpose and cluster bombs; precision guided munitions; air-to-air and air-to-ground missiles, nuclear trainers, Navy cruise missiles, Army Hellfire missiles, expendable aircraft countermeasures and small arm/cannon ammunition. Additional items include various British, Norwegian, Israeli, and former Soviet Bloc munitions. A technical data library with preliminary handling/maintenance data and interim hazard classification is maintained for prototype, modified and foreign munitions.

ARMAMENT MAINTENANCE SECTION

Mission Statement: Inspects and maintains all munition suspension equipment for the 46th Test Wing and the Air Warfare Center aircraft. To include pylons, bomb racks, launchers and adapters for weapons carriage on the F-15, F-16, and F-111 aircraft. Inspects and maintains guns and gun systems on the F-15 and F-16 aircraft, including removal and installation.

Unique Capabilities: Supports Ammo/Gun Test Range 22/C-64/C-74L with gun maintenance and support personnel on a daily basis. Advises test project personnel on modification requirements for AME. Maintains modified equipment for various test projects. Provides maintenance, repair and/or inspection for armament systems components owned by various military and civilian test agencies.

ALTERNATE MISSION EQUIPMENT SECTION

Mission Statement: Stores, controls and accounts for all munition suspension equipment for the 46th Test Wing and Air Warfare Center aircraft. Tracks all in-use equipment and schedules inspections through the maintenance section.

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop is equipped with modern conventional tool room and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

STRUCTURAL MAINTENANCE

Mission Statement: Provides a Structural Repair Shop for design, manufacture, modification, and repair of RDT&E test items required to support the AFDTC test program of a non-repetitive nature. Manufactures items and works with sheet metal and fiberglass in modifying bombs, missiles, rockets, robots, etc. Manufactures and installs class II modifications parts and kits on aircraft and missiles to include CNC production required by AFDTC engineers, scientists and contractors for development of the test projects. Provides an intermediate maintenance capability to support all AFDTC assigned, transient and associate tenant aircraft.

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STRUCTURAL MAINTENANCE (Continued)

Unique Capabilities: Maintains operational support of multiple aircraft to include F-111's, F-16's, F-15's, UN-1H and full manufacturing capability for all aircraft tubing assemblies (to include Depot level lines).

Outside Customers Supported:

1. 9 SOS
2. Eglin AFB. 33 FW (ACC)
3. Tyndall AFB.
4. Hurlburt AFB.

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS
3 Manufactured Sleds for Holloman AFB
4. Provide welding and manufacture for 728 ACS
5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

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CORROSION CONTROL

Mission Statement: Inspects and treats corrosion on aircraft, missiles, armament and other related equipment. Provides wash rack facilities to wash aircraft and aircraft parts. Provides a corrosion capability for performing intermediate maintenance and painting on assigned aircraft, age, and class II modification items. Provide RDT&E experimental coating for test engineers on tasks, drones, missiles, and radomes etc.

Outside Customers Supported:

1. **Wright Laboratory - Armament Division**
2. **Navy EOD School**
3. **9th SOS**
4. **Seek Eagle Program Office**
5. **Navy Coastal System Laboratory**
6. **919 SOS**
7. **Mill Star Program**

NON-DESTRUCTIVE INSPECTION

Mission Statement: Provides a capability to accomplish optical, penetrant, magnetic particles, ultra sound, eddy current, and radiographic inspections to determine component integrity and serviceability. Conducts experimental tests as to the integrity of RDT&E test designs and specifications. Provides oil analysis to determine wear metal effects on aircraft engines and oil wetted components.

Unique Capabilities: Multi-use facility, equipment, manpower, materials and training are shared equally with the 33rd Fighter Wing (ACC). The only known field level shop with two film processors.

Outside Customers Supported:

1. **Air Warfare Center**
2. **33d Fighter Wing**
3. **Wright Laboratory**
4. **919 Special Operations**

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PNEUDRAULIC

Mission Statement: Responsible for off-equipment maintenance of pneudraulic components. Inspects, troubleshoots, bench checks, tests, repairs, services, and modifies components. Provides local manufacture and testing of flexible hoses and testing of rigid tubing. Maintains associated Test Stands and support equipment.

Unique Capabilities: Possess two state-of-the-art pneudraulic test stands which allow check-out and repair of all current and projected pneudraulic systems. Because of this capability, depots have authorized depot-level repairs on a case-by-case basis. A citrus-based parts cleaner is used to minimize hazardous waste.

Outside Customers Supported:

1. Air Force Armament Museum
2. 33rd Tactical Fighter Wing
3. 9th Special Operations Squadron

PATTERNS AND PLASTIC

Mission Statement: Provides a Pattern and Plastic Shop for design, manufacture, modification, and repair of RDT&E test items required to support the test program of a non-repetitive nature. Manufactures items and works with fiberglass, advanced composites, wood, and plastics in modifying bombs, missiles, rockets, etc. Manufactures Class II modification parts and kits on aircraft and missiles. Provides an intermediate maintenance capability to support all AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: Capable of manufacturing and repairing shock mitigation system under the container development program. This operation facilitates a fully equipped Wood Shop with unlimited support of hardware for finished wood products. Also supports manufacturing of form blocks for aircraft parts in support of class II modification and repair of assigned aircraft. Manufactures various airborne radomes for missiles, rockets and aircraft components using engineer specifications. Fully capable of supporting all DOD aircraft operations.

Outside Customers Supported:

1. Drone Projects
2. Contractors VITRO, Raytheon, etc.

AEROSPACE GROUND EQUIPMENT

Mission Statement: Provides field maintenance, periodic inspections, special inspections, servicing, refueling and dispatch as well as technical order modifications on over 500 pieces of powered and non-powered AGE assigned to AFDTC. Provides supervision, production control, quality assurance and supply support for AGE activities. Performs engine teardown, buildup (overhaul) and repair of components, i.e. starters, generators, motors, relays, etc. Responds to trouble calls on equipment in use. Provides equipment operator training to customers. Performs servicing of aircraft oil and hydraulic carts. Collects and recycles waste petroleum products generated by aircraft maintenance. The equipment is, for the most part, the newest and latest designs in the Air Force inventory today.

Unique Capabilities: AGE has supported the latest aircraft in the inventory. For example: F-117A, C-17, RC-135, B-1 and B-2 bombers, E-3A AWACS as well as NATO aircraft such as the Harrier and Tornado. The capability also extends to all other services DOD wide which AGE will be able to support well into the year 2000. Provides test support to Army and Navy aircraft such as helicopters and Navy sea launch cruise missile tests. Provides specialized equipment to contractors and base facilities in support of new and state of the art munitions and electronic warfare testing.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

Yes. A licensed depleted uranium (DU) gun butt "catchbox" is required as a "target" when testing DU rounds.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Yes. The DU gun butt is licensed by the Nuclear Regulatory Commission (NRC).

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. Land availability is unconstrained so plant facilities can be expanded to meet workload requirements.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes. Man portable systems (ARMY/MARINES)

Armored vehicles with integrated gun system(s) < 208mm.

T&E FUNCTIONAL AREA	TEST TYPE
Armament/Weapon	Any gun test workload from 7.62 to 40 mm including side arm and shoulder fired.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-Yes. Additional airspace within the Eglin reservation can be made available to gun/ammunition testing; Water-N/A; Land-Yes, this facility can be expanded on existing DoD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Secret.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes. Funding will be utilized to improve accuracy and reliability of the X-Y position, projectile velocity, exit time, and barrel counter subsystems.

(3.1.F.1) Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.

Yes. The facility is the only facility licensed to fire depleted uranium ammunition in auto-guns; additionally, it is the only DoD facility that can accomplish gun sighting and harmonization of aircraft mounted guns.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

Yes. The facility is the only facility licensed to fire depleted uranium ammunition in auto-guns; additionally, it is the only DoD facility that can accomplish gun sighting and harmonization of aircraft mounted guns.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

Yes. The facility is the only facility licensed to fire depleted uranium ammunition in auto-guns; additionally, it is the only DoD facility that can accomplish gun sighting and harmonization of aircraft mounted guns.

3.1.F.2) Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
1.01%	2.68%	0.00%	0.00%	0.00%	0.00%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

This facility is located on the Armament Systems Test Environment (ASTE). Refer to the ASTE answer to this question for details.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

This facility is located on the Armament Systems Test Environment (ASTE). Refer to the ASTE answer to this question for details.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

This facility is located on the Armament Systems Test Environment (ASTE). Refer to the ASTE answer to this question for details.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

This facility is located on the Armament Systems Test Environment (ASTE). Refer to the ASTE answer to this question for details.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

This facility is located on the Armament Systems Test Environment (ASTE). Refer to the ASTE answer to this question for details.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

This facility is located on the Armament Systems Test Environment (ASTE). Refer to the ASTE answer to this question for details.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

This facility is located on the Armament Systems Test Environment (ASTE). Refer to the ASTE answer to this question for details.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

This facility is located on the Armament Systems Test Environment (ASTE). Refer to the ASTE answer to this question for details.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

There are no known features of local geology or soil conditions that enhance or inhibit any types of test at this facility.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Below 32 degrees F:	1 day
Between 32 and 95 degrees:	364 days
Above 95 degrees:	0 days

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Below 30%:	5 days
Between 30 and 80%:	330 days
Above 80%:	30 days

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

FY		FY	
85	16	90	17
86	18	91	6
87	27	92	21
88	12	93	12
89	22		

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Less than 1 mile:	0 days
Between 1 and 3 miles:	7 days
Greater than 3 miles:	358 days

(This table represents the best conditions that can be expected to occur at sometime during daylight hours (0600 to 1800L))

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

355. This assumes ceiling and/or visibility are at least 1500/3 at some point during daylight (0600 to 1800L).

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Mission cancellation rates due to weather were 2.18 percent for FY 92 and 1.92 percent for FY 93.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

1. **Number and Azimuth of Runways - 3 Runways:**
   a. **Runway 12/30 (Main Base)**
   b. **Runway 01/19 (Main Base)**
   c. **Runway 18/36 (Duke Field)**

AFDTC also has 10 auxiliary airfields which could be upgraded to support aircraft operations or used to support test mission activity.

2. **Elevation:**
   a. **Runway 12/30 = 85' MSL**
   b. **Runway 01/19 = 85' MSL**
   c. **Runway 18/36 = 193' MSL**

3. **Runway Length (Excluding Overrun):**
   a. **Runway 12/30 = 12,000'**
   b. **Runway 01/19 = 10,000'**
   c. **Runway 18/36 = 8,000'**

4. **Overrun Length (Departure End):**
   a. **Runway 12 = 1,000'**
   b. **Runway 30 = 1,000'**
   c. **Runway 01 = 550'**
   d. **Runway 19 = 1,000'**
   e. **Runway 18 = 555'**
   f. **Runway 36 = 552'**

5. **Terminal/Landing Aids:**
   a. **Main Base - TACAN, ILS, VASI, ASR**
   b. **Duke Field - TACAN, ILS, VASI, ASR**

6. Arresting Cable:
   a. Main Base - YES
      (1) Runway 12/30 - BAK-9, BAK-12
      (2) Runway 01/19 - BAK-12
   b. Duke Field - YES
      (1) Runway 18/36 - MA-1A

7. Ramp Area:
   a. Main Base = 4,723,758 SF (does not include 1,681,021 SF of transient ramp)
   b. Duke Field = 1,908,360 SF (does not include 182,074 SF of transient ramp)

8. Construction Material:
   a. Runway 12/30 (Main Base) - First 2,000 feet on each end is concrete. All other is asphalt.
   b. Runway 01/19 (Main Base) - All asphalt.
   c. Runway 18/36 (Duke Field) - All asphalt.
   d. Ramps - All concrete.

9. Load Capability - The runways will support any aircraft in the DoD inventory in their present condition.

10. Hangar Space:

MAIN BASE FACILITY #	ENCLOSED SPACE (SF)	
72	31,552	
102	38,440	
103	38,340	
110	57,546	
130	129,766	
138	14,866	
421	43,322	
422	43,322	(Currently being used for storage, contains internal temporary dividers)
920	2,583	
1318	57,408	

1339	18,807
1343	33,998
1345	36,968
1385	11,050
1386	11,050
	569,018 SF Total Enclosed Area

DUKE FIELD FACILITY #	ENCLOSED SPACE (SF)
3020	23,876
3025	58,846
3029	22,373
3057	33,834
3087	23,409
3150	37,488
	199,826 SF Total Enclosed Area

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Not Applicable.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Not Applicable.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

Not Applicable.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

Not Applicable.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

Not Applicable.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(3.3.A.1) What is the number of threats simulated?

Not Applicable.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

Not Applicable.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Not Applicable.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Not Applicable.

(3.3.A.5) What is the threat representation (fidelity) and density?

Not Applicable.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Not Applicable.

(3.3.A.7) What geographic dispersion can be simulated?

Not Applicable.

(3.3.A.7.A) Threat lay down?

Not Applicable.

(3.3.A.7.B) Representative distance?

Not Applicable.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? Relocatable to new scenarios? Yes/no

Not Applicable.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

Not Applicable.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Not Applicable.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

Not Applicable.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

Not Applicable.

(3.3.B.3) What range of spectra can be tested and evaluated?

Not Applicable.

(3.3.B.4) What are the available spectra?

Not Applicable.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Not Applicable.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Not Applicable.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Not Applicable.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?

Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: GUN TEST FACILITY

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	NA	20,512	0	0	32	0	0	272
	TEST HOURS	NA	1,282	0	0	2	0	0	17
	MISSIONS	354	364	0	0	1	0	0	2
EC	DIRECT LABOR	NA	432	592	0	0	0	1,200	0
	TEST HOURS	NA	27	37	0	0	0	75	0
	MISSIONS	0	6	5	0	0	0	15	0
ARMAMENT/WEAPONS	DIRECT LABOR	NA	48,208	117,840	117,152	115,200	109,168	82,496	80,096
	TEST HOURS	NA	3,013	7,365	7,322	7,200	6,823	5,156	5,009
	MISSIONS	658	640	949	1,032	940	820	689	572
OTHER T&E	DIRECT LABOR	NA	128	0	960	272	2,208	22,832	2,352
	TEST HOURS	NA	8	0	60	17	138	1,427	147
	MISSIONS	15	16	0	8	2	18	177	20
OTHER	DIRECT LABOR	NA	10,736	5,936	7,824	8,544	10,784	7,680	3,296
	TEST HOURS	NA	671	371	489	534	674	480	206
	MISSIONS	114	121	64	63	88	102	82	32

Note: Direct Labor hours are estimated using Test Hours multiplied by the "Workload Per Test Hour Per Facility Hour" factor from the Unconstrained Capacity Form.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: GUN TEST FACILITY

			ANNUAL HOURS OF DOWNTIME	720
			AVERAGE DOWNTIME PER DAY	1.97
			AVERAGE HOURS AVAILABLE PER DAY	22.03
TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY 1,586
GUN and/or AMMO	2	16	32	
EFP WARHEAD	1	8	8	ANNUAL UNCONSTRAINED CAPACITY
TYPICAL	2	16	32	
			TOTAL 72	578,948

Note: "Typical" represents additional tests that could be accomplished if manpower were unconstrained.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: GUN TEST FACILITY

AGE: 5 - 51 Years

REPLACEMENT VALUE: $29,712,000 TOTAL*

MAINTENANCE AND REPAIR BACKLOG: $10,000

DATES OF LAST UPGRADES: Unknown**

NATURE OF LAST UPGRADES: See attached for complete list of buildings.

MAJOR UPGRADES PROGRAMMED: None**

1. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

* Replacement cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.

** Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on Additional Information Chart.

FACILITY CONDITION (Continued)

FACILITY/CAPABILITY TITLE: GUN TEST FACILITY

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M&R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
9565	89	$137,000	0	UNKNOWN	NONE
9566	67	$1,428,000	0	UNKNOWN	NONE
9567	67	$41,000	0	UNKNOWN	NONE
9568	67	$70,000	0	UNKNOWN	NONE
9570	67	95,000	0	UNKNOWN	NONE
9571	67	$3,000	0	UNKNOWN	NONE
9572	67	$41,000	0	UNKNOWN	NONE
9573	67	$6,000	0	UNKNOWN	NONE
9574	67	$6,000	0	UNKNOWN	NONE
9575	67	$6,000	0	UNKNOWN	NONE
9576	67	$6,000	0	UNKNOWN	NONE
9577	78	$53,000	0	UNKNOWN	NONE
9578	78	$66,000	0	UNKNOWN	NONE
9583	78	$3,000	0	UNKNOWN	NONE
9370	57	$55,000	0	UNKNOWN	NONE
9372	57	$953,000	0	UNKNOWN	NONE
9376	73	$14,000	0	UNKNOWN	NONE
406	43	$19,000	0	UNKNOWN	NONE
407	43	$9,000	0	UNKNOWN	NONE
410	43	$5,479,000	$10,000	UNKNOWN	NONE
417	82	$120,000	0	UNKNOWN	NONE
420	57	$672	0	UNKNOWN	NONE
9579	73	$11,000	0	UNKNOWN	NONE
9580	69	$297,000	0	UNKNOWN	NONE
9581	69	$103,000	0	UNKNOWN	NONE
9582	69	$51,000	0	UNKNOWN	NONE
9584	76	$593,000	0	UNKNOWN	NONE
9585	89	$33,000	0	UNKNOWN	NONE

FACILITY CONDITION (Continued)

FACILITY/CAPABILITY TITLE: GUN TEST FACILITY (CONTINUED)

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M&R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
9620	88	$339,000	0	UNKNOWN	NONE
9621	88	$126,000	0	UNKNOWN	NONE
9922	88	$2,320,000	0	UNKNOWN	NONE
9623	88	$828,000	0	UNKNOWN	NONE
9624	88	$1,237,000	0	UNKNOWN	NONE
9625	88	$784,000	0	UNKNOWN	NONE
9626	88	$99,000	0	UNKNOWN	NONE
9627	88	$198,000	0	UNKNOWN	NONE
9628	88	$232,000	0	UNKNOWN	NONE
9629	88	$233,000	0	UNKNOWN	NONE
9630	88	$34,000	0	UNKNOWN	NONE
		Total $29,712,000	10,000		

GENERAL INFORMATION

Facility/Capability Title: GUN TEST FACILITY

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46 Test Wing

Location: Eglin AFB, FL

T&E Functional Area: Armament/Weapons

UIC: Not Available

T&E Test Facility Category:
Primary: Measurement Facility
Secondary: Integration Testing

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	96	0	0	0	0	4	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	0	0	0	0	0	0	0
Armament/Weapons	93 ~~93~~ 100	0	0	0	0	0	93
EC	0	0	0	0	0	0	0
Other	3	0	0	0	0	4	7

TECHNICAL INFORMATION

Facility/Capability Title: GUN TEST FACILITIES

Facility Description; Including Mission Statement: The Gun Test Facility provides a capability for testing ammunition, gun systems, and the interface between the gun system and the gun platform. The capability to accomplish extensive integration testing, at both the component and system level, is available. Ground testing of gun systems is conducted at three test areas within the Eglin Complex. The type ammunition and/or the type target determines which test area will be used. The types of ammunition normally tested include nonexplosive target practice, armor piercing incendiary (contains a depleted uranium penetrator), and high explosive incendiary. Each test area has a permanently installed instrumented GAU-8/A 30mm gun system and single shot Mann barrels in a variety of calibers. Other gun systems can also be mounted at any of the test areas for specific tests. Each area has the capability to mount and instrument several systems simultaneously. Ammunition and gun systems can be environmentally conditioned on site from -65F to +165F.
Interconnectivity/Multi-Use of T&E Facility: TA A-22 offers the unique capability to taxi an aircraft up to the firing line to conduct wet and dry onboard aircraft gun system boresight and harmonization tests at distances between 2,500 and 7K feet on a fully instrumented range. TA C-64 has the unique capability of firing ammunition containing depleted uranium. Ammunition can be fired for terminal effects studies as well as ballistic performance inside a fully contained facility thus eliminating any potential for environmental contamination. A single mobile van containing state-of-the-art instrumentation data systems is used to serve both TAs C-64 and C-74L. TA C-74L is dedicated to tests involving high explosive incendiary projectiles or large caliber rounds (40mm or higher). Test Area C-64 has been instrumented to provide tests associated with explosively formed penetrators (EFP) and is equipped to conduct both EFP warhead tests as well as EFP simulant tests launched from a Smooth Bore Cannon.
Type of Test Supported: Malfunction investigations: (hangfire, low order/improper function, case neck separation, and propellant/primer); surveillance/life-cycle testing; gun-system and ammo DT&E; aircraft and gun system harmonizations; and gun barrel tests. Gun and ammunition performance, gun firing demonstrations, depleted uranium projectile tests, armor plate penetration, projectile fuze characterization, internal, external, and terminal ballistics studies, aircraft mounted gun, gun and ammunition dispersion, incendiary projectile evaluations, target and component vulnerability studies. Explosively Formed Penetrator Munition Function Test.
Summary of Technical Capabilities: Instrumentation/data system at TA A-22 and a mobile van mounted system to serve both C-64 and C-74L. The advanced instrumentation/data systems enable the collection of the following type data in near real-time: muzzle velocity, projectile yaw, chamber pressure, relative action time, dispersion, barrel-temperature, projectile effectiveness, and meteorological conditions. High speed photography is available with camera speeds up to 10,000 frames per second. A CCTV system is used to monitor and record each ground mounted gun firing, detailing gun performance or gun malfunction if it occurs. Flash x-ray photography can be used to obtain internal and external external ballistics data while the projectile is in the gun or is in flight, and terminal effects information during projectile/target impact, using 150 KEV, 450 KEV, and 1 MEV flash x-ray systems. Smooth Bore Launchers up to 120mm.
Keywords: HE, Ammunition, Guns, Gun Tests, Depleted Uranium, EFP, Integration Testing

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: GUN TEST FACILITY

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	1	1	1	1	1	1	1
ENLISTED	2	2	2	2	2	2	2
CIVILIAN	5	5	5	4	4	4	4
CONTRACTOR	5	5	5	5	5	5	5
TOTAL	13	13	13	12	12	12	12

*Note: FY95 and beyond are subject to additional manpower reductions.

TOTAL SQUARE FOOTAGE	38,362 SF		
TEST AREA SQUARE FOOTAGE	37,134 SF	OFFICE SPACE SQ FOOTAGE	1,228 SF
TONNAGE OF EQUIPMENT	49.5 TONS	VOLUME OF EQUIPMENT	750 CF
ANNUAL MAINTENANCE COST	$36,615	ESTIMATED MOVING COST	$250,000

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$225K	$110K	$100K	0	0	$50K	$50K

Document Separator

FACILITY/CAPABILITY: GWEF @ EGLIN AFB

TEST FACILITY CATEGORY: HITL

% T&E - OVERALL: 90.44 DRS

AV: 0.49

EC: 1.81

A/W: 80.06 DRS

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 41 DRS

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	79	FY93	113
EC:	FY92	296	FY93	428
A/W:	FY92	16,808 DRS	FY93	20,911 DRS

Nation 12 Aug 94

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Special Note: It should be noted that the EC functional area work supported by GWEF was associated with weapon systems countermeasure tests.
Special Note: It should be noted that the Air Vehicles (AV) functional area work supported by GWEF was associated with AV tests supported in PRIMES, as well as small effort special requests.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
11113F			X	X	
11127F				X	
21001F		X		X	
27133F			X		
27134F		X		X	
27163F			X	X	
27217F				X	
27589F				X	
27590F			X		
28015F		X		X	
31310F				X	
35887F		X		X	
62602F			X	X	
63011F			X		
63203F			X	X	
63215C			X		
63217C			X		
63228D				X	
63601F			X	X	

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

(2.1.B.1) Continued

Historical, FY 92 (Continued)

Program Element	AV	EC	A/W	OT	OTHER
63737D			X		
64211F		X		X	
64270F		X	X	X	
64602F			X	X	
64604F			X		
64733F			X	X	
65807F			X		
72806F				X	
ARMY		X	X	X	X
B6404D			X	X	
NAVY				X	

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
11113F			X		
11127F				X	
27133F			X	X	
27163F			X	X	
27217F				X	
27589F				X	
27590F			X	X	
31310F				X	
35887F				X	
62602F			X	X	
63003F		X			
63011F			X		
63203F			X		
63215C			X	X	
63216C			X	X	

(2.1.B.1) Continued
Historical, FY 93 (Continued)

Program Element	AV	EC	A/W	OT	OTHER
63217C			X	X	
63222C			X	X	
63228D				X	
63270F	X				
63307F		X		X	
63601F			X	X	
63714F				X	
63737D			X		
64239F	X				
64270F		X	X	X	
64602F			X		
64604F			X	X	
64733F			X	X	
65130D			X		
65804D	X				
65807F			X	X	
72806F				X	
78019F			X	X	
ARMY			X	X	
B6404D			X		
NAVY				X	

Future Years

Program Element	AV	EC	A/W	OT	OTHER
11113F			X	X	
11127F				X	
21001F		X		X	
27133F			X	X	
27134F		X		X	
27160F		X	X	X	

(2.1.B.1) Continued

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
27163F			X	X	
27217F				X	
27589F				X	
27590F			X	X	
28015F		X		X	
28060F			X	X	
31310F				X	
35887F		X		X	
62602F			X	X	
63003F		X			
63011F			X		
63203F			X	X	
63215C			X	X	
63216C			X	X	
63217C			X	X	
63222C			X	X	
63228D				X	
63270F	X				
63307F		X		X	
63601F			X	X	
63714F				X	
63737D			X		
64211F		X		X	
64239F	X				
64270F		X	X	X	
64602F			X	X	
64604F			X	X	
64618F		X	X	X	
64727F		X	X	X	
64733F			X	X	

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
65130D			X		
65804D	X				
65807F			X	X	
72806F				X	
78019F			X	X	
ARMY		X	X	X	
B6404D			X	X	
NAVY				X	

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	.04	.06
Electronic Combat	.17	.24
Armament/Weapons	9.51	11.83
Other Test	1.73	1.07
Other	.02	0.00

NOTE: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc.?

No.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. AFDTC supports six major munitions areas (Radio Frequency, Millimeter Wave, Electro-optic (Visible), Infrared, Laser and Midcourse) of which three are extensively supported within the GWEF. GWEF utilization is integral to the future Air Force munitions testing. Without the GWEF, AFDTC would not be able to perform controlled, repeatable seeker/sensor testing for development of new weapons such as the AIM-9X, JDAM, Wind Compensated Munition, etc.

(2.3.B.1) On the test mission of any other activity?

Yes. The GWEF provides T&E products and services to the Air Logistics Centers and System Program Offices. GWEF provides performance data and engineering investigations for production, post production, and P3I efforts. Current and planned SPO and ALC programs will be highly dependent on ground test facilities (e.g., GWEF) to substantially keep weapons tests costs down as weapons complexity steadily increases. The GWEF is currently providing such test support to weapons such as AMRAAM, AGM-65, LLLGB, GBU-15, AGM-130, AIM-9, etc. throughout their complete life cycle.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. GWEF's use in quick response performance assessment of production weapons (shelf life/sustainment testing) is critical to maintaining weapon's operational reliability as well as determining counter measures to ever increasing battlefield threat vulnerabilities. GWEF's unique multifunctional test resources support testing/evaluation of weapon systems (such as TSSAM, JDAM, GBU-28, F-22 weaponization, etc.) at the systems level to include mission planning, prelaunch, postlaunch/midcourse, and terminal accuracy for "total" aircraft/weapon system performance assessment.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

0% in FY93. However, in FY93, the GWEF/Primes Link (GPL) "extended umbilical" (Phase I Development) was completed and demonstrated. This was used to prove that all prelaunch/launch testing between Block 40 and 50 F-16 A/C (PRIMES) and AMRAAM (GWEF) could be accomplished using GPL interconnectivity. In FY94, the "Total" launch to intercept weapon systems testing (Phase II) capability will be completed to support "Integrated A/C and Weapons System Testing." Actual customer test workload for the GPL should ramp up beginning 4th quarter FY94 and continue thereafter.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Yes. The overall combined synergistic capabilities of the GWEF-PRIMES facility interconnection could not be employed for current and future total weapons systems testing.

(3.1.B) Facility Condition (MV II)

Reference the Facility Condition Form provided at the end of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

Encroachment:

There are NO known (current or future) limiting encroachment characteristics associated with this facility.

Environmental:

No. There are no known (current or future) limiting environmental characteristics associated with this facility..

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Encroachment:

Not Applicable.

Environmental:

Not applicable.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

The Guided Weapons Evaluation Facility (GWEF) is currently operating without any temporary permits or voluntary agreements of an environmental nature.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	253,144
100 Mile Radius:	952,650
150 Mile Radius:	1,211,688
200 Mile Radius:	1,966,382

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Not Applicable.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. The following facilities are currently required to support the GWEF mission or are potentially required to support future test mission activities:

SUPPORT FACILITIES LIST

WRIGHT LABORATORIES

- Instrumentation Technology Research Facility

AFDTC

- Freeman Computer Science Center
  - Test and Analysis
  - System Technology
- Safety
- Instrumented Airborne Platforms (C-130, F-111, F-15, F-16, UH-1)
- Avionics
- Multilateration Systems & GPS
- Electro-Optical/Millimeter Wave Instrumentation
- Meteorological Instrumentation
- "Specialized" Electronic Systems Flight
- Electronic Design and Development Flight
- Air-to-Air Missile Maintenance Facility
- Air-to-Ground Missile Maintenance Facility
- Precision Measurement Equipment Lab (PMEL)
- Munitions Build-Up
- Munitions Storage and Handling
- Aircraft Repair Element
- Egress
- Fuels

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

AFDTC (Continued)
- Propulsion
- Machine Shop
- Structural Maintenance
- Metals Processing
- Electro-Environmental
- Pneudraulic
- Patterns and Plastics
- Survival Equipment
- Inspection Element
- Wheel and Tire Element
- Aerospace Ground Equipment

WRIGHT LABORATORIES (WL/MN)

The laboratories provide numerous capabilities that are an integral part of the cradle-to-grave munitions development process which is uniquely located on one installation (the complete Wright Laboratories facilities/capabilities are provided under another data call.):

Instrumentation Technology Research Facility

Modern 3000 sq ft laboratory dedicated specifically to developing, fabricating, and testing advanced instrumentation systems for explosive, guidance, and flight systems test.

Verify the performance of electronic and opto-electronic instrumentation used during the development and testing of airborne munition acquisition programs.

Electronic/Optic design and fabrication to support the prototyping and analysis of advanced instrumentation technology concepts.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.

The CCF is designed for commonalty/compatibility with DoD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DoD services and US Allies on a regular basis.

Systems Technology

Designs, develops, implements, operates and maintains the AFDTC Scientific Computer Center and its networks. Provides a broad base of expert computer and system engineering consultants. Provides software engineering support for the Eglin scientific and engineering community including development, customization and adaptation of graphics, applications, and system software products. Develops software products for the simulation and/or control of weapon or related systems as required for RDT&E. Operates and maintains the Eglin Decision Support System and the CRAY YMP Supercomputer.

The computer center has a CRAY YMP supercomputer and visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN).

This is a general purpose computer center that supports all phases of digital models and computer simulations. It is available to all DoD agencies. The largest current user is the Aeronautical Systems Center.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

INSTRUMENTED AIRBORNE PLATFORMS

Mission Statement: Instrumented aircraft are required to support the test and evaluation of munitions, electronic combat, communications computers command control and intelligence (C4I) systems, and inertial navigation/guidance systems in the Open Air Arena.

Unique Capabilities: Aircraft instrumentation provides time, space, position information (TSPI), platform specific information (avionics/weapons data), and test specific information (environmental/infrared/separation data). Instrumentation data can be provided real time (via telemetry (TM) transmitters and/or data links) and/or post mission (via analog data tape recorders, video tape recorders and film cameras). The TM stream is usually the PCM (pulse code modulation) output of a data acquisition system which collects and conditions the various analog and digital signals. The oldest data systems are the programmable Data Acquisition System (pDAS) and the Airborne Test Instrumentation System (ATIS). Until the Common Airborne Instrumentation System (CAIS) is available, the

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

Advanced ATIS system (AATIS) is presently being installed. The main sources of digital data are the aircraft's busses, avionics, weapons, ECM, and display. This data can be recorded selectively or totally. Cockpit displays (HUD/VSD/TEWS/RWR/MFD/etc.) are recorded on video tape recorders (video cameras may be required if display signal is not TV (RS-170) formatted). 1553 buss data or other PCM information may be formatted/conditioned (Merlin system) to a TV format for video tape recording. Analog tape recorders are the MARS 1400 (14 track, 14" reel), MARS 2000 (14 track, 10" reel), and the MARS 2028 (28 tracks, 10" reel); video tape recorders are the NAC (VHS) and the new TEAC (Hi 8 mm); digital recorder is the MARS II. A Time Code Generator (TCG) provides IRIG (Interrange Instrumentation Group) time for time correlation of analog, digital, film and video data. Store separation data is provided by 16 mm film cameras which are installed in aircraft fairings and/or carried on store stations. Airborne TSPI sources are a radar transponder (beacon), user GPS, or RAJPO GPS. The GPS data can be recorded or it can be transmitted via the MTACS (Multilateration Tracking and Control System) data link. Telemetry and video streams are encrypted before transmission.

Various types of instrumented pods/shapes are carried on the platform's store stations. Power and control wiring is either installed or standard aircraft wiring is utilized. The Golden Bird Missile is an instrumented AIM-7; the ARTIS pod contains an instrumentation radar for relative TSPI; I-HAWK and SADS VI M/1 are threat simulator pods; the BASES, SAIMS, and ASIMS are infrared (IR) pods; GPS/MTACS pods contain the RAJPO HDIS receiver combined with the MTACS data link. Two F-15B aircraft have an instrumentation 1553 buss specifically installed to control instrumentation pods. ACES II, ITV, and IMV are instrumented AMRAAM shapes/pods.

Listed below are the 46TW and AWC aircraft already modified, in process of being modified, or will begin modification this FY.

C-130

C-130A 55-0022: Airborne platform for DT&E of air-to-ground and air-to-air seekers and sensors (visible, IR, MMW), stabilized turret, beacon, GPS

F-111

F-111E 67-0118: Film cameras, cockpit video camera, VTR (Hi 8 mm), TCG, beacon F-111F 70-2379: Flutter instrumentation, film cameras w/FDRS, video cameras for separation, ATIS, MARS 2000, TCG, Beacon, VTR (Hi 8 mm)

F-111F 70-2400: Film cameras w/FDRS, AATIS, TCG, user GPS w/MTACS, Beacon, MARS 2028, TM

F-15

F-15A 76-0101: JTIDS, HUD/VSD/MPCD VTRs(Std TEAC, NAC), TCG, MARS 2000, pDAS, Beacon, TM

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-15 (Continued)

F-15C 84-0011: JTIDS, HUD/VSD VTRs(8 mm), MPCD VTR(NAC), TCG, MARS 2000, pDAS, TM, Beacon

F-15A 77-0064: Film cameras, HUD/VSD Video Cameras & VTRs(8 mm), TCG, MARS 2000, pDAS, Beacon, TM, partial Golden Bird

F-15A 76-0116: High Speed Radar Buffer Box, ITV Pod, TCG, Beacon, MARS 2000, pDAS, VTR(NAC), TM

F-15B 73-0114: MSIP B FOT&E, HUD/VSD/MPCD/RWR VTRs (Hi 8 mm), TCG, pDAS, Beacon, TM

F-15B 75-0080/84: 1553 Instrumentation Bus, HUD/VSD/MFD VTRs (NACs), TCG, pDAS, MARS 2000, Beacon, TM, Pods: ARTIS, I-HAWK, SADS VI M/1, BASES, SAIMS, ASIMS, Golden Bird

F-15B 77-0161: High Speed Radar Buffer Box, PSP/RSP Radar, TCG, pDAS, HUD/VSD cameras, VTRs (Hi 8 mm), TM, Beacon, Film Cameras on Station Adaptors, pods: Golden Bird, ARTIS

F-15C 84-0018: AMRAAM Instrumentation, TCG, pDAS, MARS 1400, TM, Film Cameras, Beacon, HUD/VSD VTRs (8 mm), pods: ACE II, ITV, IMV, partial Golden Bird.

F-15C 85-0126: AMRAAM/TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (8 mm & NAC), Film Cameras, pDAS, TCG, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, Beacon, pods: ACE II, IMV, partial Golden Bird.

F-15C 80-0022: AMRAAM/TEWS/JTIDS instrumentation, AATIS, MARS 2028, MARS II, TCG, TM, Beacon, pods: partial Golden Bird (In design)

F-15C 78-0542: TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (NACs), TCG, pDAS, TM, Beacon, MARS 2028, pod: partial Golden Bird

F-15D 84-0045: AMRAAM Instrumentation, Film Cameras, HUD/VSD Video Cameras & VTR (NAC), High Speed Radar Buffer Box, pDAS, TCG, TM, Beacon, pods: ACE II, ITV, DMV

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-15 (Continued)

F-15E 86-0185/0188: SEEK EAGLE/TEWS/AMRAAM Instrumentation, Film Cameras, MPDP VTRs (Hi 8 mm), TCG, pDAS, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, beacon, video TM

F-16

F-16A 80-0609: AMRAAM Instrumentation, Film Cameras, Hud/REO Video cameras & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Dual HUD capability, partial OCU, Beacon, Total A&W bus recording, pods: ATLIS II, RDIP, RUBIS, ASRAAM (In Design)

F-16A 80-0761: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Camera & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Beacon, ADF capable, pods: ACE II, Musketeer Lee, ASRAAM (In design)

F-16B 78-0104: INS Fighter test bed.

F-16B 82-1037: Film Cameras, TCG, Beacon

F-16B 83-1123/88-0353: Flutter & Loads, Flutter Exciter Panel, Film Cameras, pDAS, TCG, TM, MARS 2000, HUD/RMFD or LMFD VTRs (NACs), Beacon, pods: RDIP (123 only)

F-16C 83-1163: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Cameras & VTRs(NACs), pDAS, TCG, MARS 1400 or 2000, Beacon, TM, pod: ACE II

F-16C 84-1280/1285: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR Video Cameras & VTRs(NACs), MARS 1400, pDAS, TCG, TM, Beacon, chaff/ flare monitor, pod: ACE II

F-16C 88-0441: AMRAAM Instrumentation, Film Cameras, RWR video camera, Total Bus recording, HUD/LMFD/RMFD/RWR VTRs (Hi 8 mm), TCG, pDAS, TM, ALE-47 instrumentation, Beacon, pods: IMV, DMV, JSOW, ACE II

F-16C 89-2070: ALE-47 Instrumentation, RWR video camera, HUD/LMFD/RMFD/RWR VTRs(NACs), TCG, pDAS, TM, Total Bus recording, Beacon, pods: ACE II

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-16C 90-0726: ALQ-126B

F-16D 80-0844/0848: HUD/MFD/RWR VTRs(Hi 8 mm), Total bus recording A/B/C/D/EW/W busses (Merlin, Hi 8 mm), HARM & ALIC PCM recording (Merlin, Hi 8 mm), TCG, Beacon (In design)

F-16D 88-0469: NAC Recorders

F-16D 90-0835: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR/HELMET/HAND-HELD VTRs (Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS 422 monitor, user GPS w/MTACS, encrypted video, beacon, TM, pods: ACE II, RDIP

F-16D 80-0836: HARM Instrumentation, Film Cameras, HUD/MFD/RWR VTRs(Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS
422 monitor, user GPS w/MTACS, encrypted video, TM, beacon, pods: RDIP, ACE II

UH-1

UH-1N 69-6617/6626: BASES Pod, Aerial Ignition Device, beacon

AVIONICS

Mission Statement: The F-16 AIS Shop is responsible for off-equipment Intermediate level maintenance and support of F-16 Line Replaceable Units (LRUs). Does software loading of Operational Flight Programs, TCTOs, modifications, calibrations, and testing of F-16 LRUs. Responsible for testing weapons, instruments, and ALR-69 systems using AIS test equipment. Maintains four test stations and ancillary equipment by performing inspections, modifications and repairs.

The F-15 AIS is responsible for testing F-15 LRUs including weapon control radar, inertial navigation, heads-up display, automatic flight control, instrument, and communication and navigation systems. Uses, maintains, and calibrates avionics intermediate shop test stations used to repair F-15 LRUs. Performs off-equipment maintenance and line delivery of AXQ-14 and Improved Data Link pods.

The Conventional Avionics Shop is responsible for intermediate and organizational level maintenance on avionics systems installed on UH-1N helicopters and transient aircraft. Performs intermediate level maintenance of CommNav, Guidance, and ECM systems on assigned aircraft. Modifies, repairs, loads, and operationally checks ECM pods on F-15, F-16 and F-111 aircraft to support test missions.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

AVIONICS (Continued)

Repairs and modifies communication ground cords, headsets, and emergency survival radio/beacons for Eglin units. Maintains, installs, and repairs radio ground mount adapters for emergency and operations vehicles on Eglin. Operationally checks all UHF, VHF, and RWR antennas for serviceability.

The Sensor Test Shop is responsible for on-equipment and off-equipment maintenance of all assigned and transient sensor systems. Performs intermediate and organizational level maintenance on LANTIRN targeting and navigation and PAVE TACK Laser Target Designation pods. Maintains intermediate level test equipment including the LANTIRN mobility shelter set. Performs intermediate level maintenance on Airborne Video Tape Recorders and Cockpit Television Systems, to include phase inspection work cards. Assists field engineers in the kit proofing, validating and fielding of new systems and/or upgrades to current systems.

The Radar Test Shop provides intermediate level repair of F-15 and F-16 radar and other avionics and components. Reprograms various avionics and other computers. Refurbishes F-15 and F-16 flight control and INU batteries. Performs operational checks for serviceability of F-15 and F-16 radar LRU's. Provides repair and functional checks of F-16 ARC-164, ARC-186, and ARN-118 receiver/transmitters, throttle grips, side stick controllers, GPS receivers and numerous F-16 control units. Repairs various circuit card assemblies by troubleshooting and replacing electronic components as required. Provides software testing to Test Wing agencies on Eglin AFB.

Unique Capabilities: Maintains full F-16 and F-15 radar mockups with capability to troubleshoot and repair parts in concert with associated avionics intermediate stations (AIS). A Huntron Tracker is on hand to repair circuit cards. A LANTIRN Mobile Support Shelter and a PAVE-TACK repair test set are also available.

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd FW (ACC)
4. 9th Special Operations Squadron
5. 728th Tactical Control Squadron

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

MULTILATERATION SYSTEMS & GPS

Mission Statement: Provides a time-space-position-information (TSPI) capability to support customer needs. While providing TSPI of up to 20 aircraft or ground vehicles, up to 6 vehicles can be remotely controlled. Airborne pods provide TSPI from multilateration and/or GPS/inertial reference. A synchronized A/C and remote controlled target test capability is provided at a central control facility (CCF).

Unique Capabilities: Uses the resources of the Gulf Range Drone Control Upgrade System (GRDCUS) to provide a wide area test arena, including over-the-horizon, over Eglin, Tyndall and the South East Test and Training Area (SETTA). IFF radar data can also be shared with MTACS. Two data link frequencies are available for simultaneous missions each having the number of participants mentioned in the above statement.

Outside Customers Supported:

1. AFOTEC
2. USAF AWC
3. U. S. Navy
4. U. S. Army
5. Various foreign governments

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION

Mission Statement: Provides design, development, and operation of airborne and surface EO/MMW instrumentation systems. Provides multispectral targets and targets in back-ground including target expendables. Provides captive carry operation and test of air-to-air, surface-to-air, and surface-to-surface domestic and threat missile seeker guidance, and control units operating in a real and CM environment. Provides quick look and field data reduction and analysis of all collected signature data.

Unique Capabilities: Multispectral signature measurement and captive flight testing capability residing in a cadre of highly qualified technical and range personnel and customized and standard sophisticated EO/MMW instrumentation operating in A-A, A-S, S-S, S-A, and tower/turntable scenarios. Spectral range includes ultra-violet, visible, mid and long wavelength infrared, laser, millimeter wave, seismic, acoustic, and magnetic. Measurement disciplines include temporal, radiometric, spatial, spectral, phase, range, polarization, frequency, and cross section. State-of-the-art sensitivity, resolution, and bandwidth, data rate/recording and seeker/sensor performance

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION (Continued)

measurements are maintained. A suite of targets for target and target in clutter signature measurement and seeker/sensor evaluation are maintained. Archiving of collected data is provided by the Targets and Background Information Library System (TABILS). The capability is uniquely connected to modeling and simulation facilities such as the Guided Weapons Evaluation Facility (GWEF) as a source of data required to drive HITL scene generators and to validate models. The capability is built upon many years of T&E research and engineering expertise and experience.

Outside Customers Supported:

1. ASC
2. USAF AWC
3. AFSOC
4. U. S. ARMY
5. U. S. NAVY

METEOROLOGICAL INSTRUMENTATION

Mission Statement: Meteorological support for AFDTC is provided through the 46th Test Wing Weather Squadron which provides 24-hour weather forecasting services including preflight weather briefings, pilot-to-forecaster services to aircraft in the area, and weather warnings and advisories.

Unique Capabilities: Provides specialized weather services to both host and tenant units. The Test Meteorological Office provides consultation on the meteorological environment consisting of physics, chemistry and the dynamics of the atmosphere. Provides ME instrumentation at permanent, semi-permanent, and temporary sites, using mobile equipment when necessary. A full range of ME data are gathered to measure the following: wind vector, atmospheric temperature/pressure, relative humidity, dew point, rainfall amount/rates, visibility, visual range, cloud bases, solar radiation, particle size distribution, rainfall size distribution, extinction coefficient, density, defractivity, height, atmospheric electric field, etc.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

"SPECIALIZED" ELECTRONIC SYSTEMS FLIGHT

Mission Statement: Provides AFDTC with a complete in-house capability for developing unique TSPI and remote-controlled systems.

Unique Capabilities: Provides electrical and mechanical engineering, design and fabrication services for simple to very complex one-of-a-kind systems. The functions of the flight include:

1. Electrical and Mechanical design, prototyping, and end-product fabrication of the various sub-systems involved.
2. System integration and testing
3. Preparation of technical specifications and engineering evaluation reports
4. Engineering consultation to AFDTC agencies as well as outside agencies on TSPI, remote control, TM, RF and antennas
5. Personnel expertise and equipment to perform the mission

Outside Customers Supported:

1. ASC
2. Tyndall AFB
3. WSMR

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Mission Statement: Provides AFDTC with a system level capability for developing, integrating, and testing the specialized instrumentation and control systems required in support of all types of ground and flight testing. This in-house capability spans the entire process of acquiring such systems: from "development of requirements" to "design" to "build-up" to "testing" to "installation and training".

Unique Capabilities: The uniqueness of the Electronic Design and Development Flight is its broad based expertise which allows it to perform its mission (in-house development) in a quick response mode without outside support. Equally important is its capability to remain flexible to changes in requirements during the development process with minimal impact on schedule.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT (Continued)

Outside Customers Supported:

1. USAF AWC
2. Aeronautical Systems Center
3. AFOTEC
4. U. S. Army
5. U. S. Navy
6. Various foreign governments

AIR-TO-AIR MISSILE MAINTENANCE FACILITY

Mission Statement: Provides the necessary expertise and direction for all missile related activities. Coordinates between Weapons System Evaluation Group (WSEP), Advanced Medium Range Air-to-Air Missile (AMRAAM), and numerous other test and development projects to provide work space, equipment, and technical knowledge, enabling continuous operations. Provides in-depth training to all assigned personnel to ensure management of seven missile systems(AIM-7, AIM-9, AIM-120, AGM-45, AGM-65, AGM-84, AGM-88). Ensures proper management of the Tactical Missile Reporting System (TMRS). Provides periodic maintenance and management of over 70 pieces of missile support equipment. Performs periodic safety inspections ensuring all safety practices are enforced. Provides a quality product to the customer. Provides essential on-the-job- training to assigned personnel.

Unique Capabilities: Performs maintenance and inspection on telemetry units of AIM-9L/M and AIM-7M. Completed action on unpublished Time Compliance Technical Order on AIM-120 Advanced Medium Range Air-to-Air Missile.

Outside Customers Supported:

1. Air Warfare Center
2. Weapons System Evaluation Program (WSEP)
3. Hughes Corporation
4. Raytheon Corporation
5. China Lake Depot
6. Georgia Tech Research Institute
7. Harris Corporation
8. Atlantic City Air National Guard

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

AIR-TO-GROUND MISSILE MAINTENANCE FACILITY

Mission Statement: Used for the assembly, final integration testing, and inspection of guided weapons prior to flight testing. The facility is fully staffed and equipped to support the T&E of the integration of fuzes, warheads, actuators, data links, IMU/GPS, propulsion, airframes/structures, hardware/software, guidance/control, weapons sensors, and flight termination systems. Additionally, build-up and modification of bombs/missiles, as well as integrated systems tests, are performed at this facility. The test chambers in building 999 are rated for Category 1 explosives.

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB

Mission Statement: Responsible for the maintenance, calibration and certification test, measurement and diagnostic equipment designated Type II, Type III and Type IV PMEL support. Responsible for the calibration and repair of signal generating, waveform measuring, and frequency counting, voltage, current, resistance, inductance, and power measuring instruments, mechanical, electro-mechanical, dimensional and radiation measuring equipment. Responsible for the calibration and repair of F-15 and F-16 Avionics Intermediate Stations

Unique Capabilities: One of the largest PMELs in the Air Force and the regional facility servicing Northwest Florida. Has an active program currently developing automated calibration testing of equipment.

Outside Customer Supported:

1. **919th Special Operations Wing**
2. **OSD JADO Program**
3. **USAF AWC**
4. **AFOTEC**
5. **Naval EOD School**
6. **Vitro Services**

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

MUNITIONS BUILD-UP

Mission Statement: Operates six indoor maintenance/build-up facilities totaling 54,000 square feet and 2 outdoor holding /build-up areas totaling 27,000 square feet. The missile section performs build-up of Air-to-Air, AIM-4, 7, 9, and 120 missiles and Air-to-Ground, AGM-45, 65, and 88 missiles. The conventional munitions maintenance shops perform build-up of expendable aircraft countermeasures, cannon ammunitions, GBU-10, 12, 15, 16, 24 and 28 guided bombs, CBU-58, 87 89 and 97 cluster bombs, MK-82, 83, 84, M-117 and 118 general purpose bombs, MC-1 and TMU-28 chemical weapons, nuclear training shapes and BLU-107 cratering bombs.

MUNITIONS STORAGE AND HANDLING

Mission Statement: Provides the capability for storing and handling over 2,000 different types of munitions used to support DoD and foreign allies test and development projects, and 50 tenant unit munitions supply points. Responsible for inspection, minor maintenance and house keeping on 35 facilities within the 297 acre munitions storage area. Ensures correct storage and compatibility of munitions are maintained in strict compliance with all explosive safety standards. Total munitions storage capacity is 121,729 sq. ft. and total sited net explosive weight (NEW) authorized is 2,287,900 pounds. Capable of storing various sizes of munitions ranging from small arms ammunition to the Tomahawk cruise missile; maximum size of any one item to fit into storage structures would be no greater than 15,000 NEW and a dimension of approximately 18' x 10' x 10'. Provides logistical support to 500 test projects and five different maintenance sites within the munitions storage area. Directly supports several off-base test ranges on the 464,000 acre Eglin test complex. On a yearly basis, moves or delivers over 500 tons net explosive weight/1250 tons total weight of munitions covering more than 15,000 miles.

Unique Capabilities: Receipt, inspection, storage, maintenance, buildup, shipping and delivery capability is provided for any US or foreign munition used or tested at Eglin AFB. Major munitions categories include both current inventory and prototype general purpose and cluster bombs; precision guided munitions; air-to-air and air-to-ground missiles, nuclear trainers, Navy cruise missiles, Army Hellfire missiles, expendable aircraft countermeasures and small arm/cannon ammunition. Additional items include various British, Norwegian, Israeli, and former-Soviet Block munitions. A technical data library with preliminary handling/maintenance data and interim hazard classification is maintained for prototype, modified and foreign munitions.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

AIRCRAFT REPAIR ELEMENT

Mission Statement: Performs organizational, intermediate, and limited depot-level maintenance beyond the capability of other assigned maintenance activities. Accomplishes troubleshooting analysis, repairs, replacement, rigging, and operational and functional checkout of flight control systems, landing gears, air induction equipment, and canopy and windscreen assemblies. Provides capability for the recovery and reclamation of damaged and crashed aircraft. Maintains, inspects, and repairs all associated equipment required to accomplish the above mission.

Unique Capabilities: Performs flight control, landing gear, and canopy maintenance on any fighter aircraft in the USAF inventory. They are multi-aircraft qualified and perform intermediate and limited depot-level maintenance, tow target maintenance, and provide crash recovery services on any military or civilian aircraft without exception. Performs aircraft reclamation services on any type of aircraft and provide emergency response/crash recovery service to any aircraft over a three state area. Respond to all ground or inflight emergencies on Eglin and the Fort Walton Beach Regional Airport. Uniquely qualified to work with engineers performing class II modifications on aircraft and systems. Experience includes T-37, T-38, T-39, A-10, F-4, F-5, F-15, F-16, F-111, and UH-1 aircraft maintenance.

EGRESS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on F-15, F-16 and F-111, Aircrew Egress Systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies egress systems and components. Replaces transparencies and rigs canopies on F-16 aircraft. Provides egress system familiarization training as required for, life support, fire department, and personal working within the Test Wing. Provides support on transient aircraft, as well as support to the 33 FW (ACC) under the host tenant support agreement. Provides support to the Eglin Armament Museum as required.

Unique Capabilities: Due to the knowledge of civilians, the shop has the repair capability for F-15, F-16, F-111, F-4 and A-10 egress systems.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing

FUELS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on aircraft fuel and in-flight refueling systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, seals, and modifies systems and components. Performs systems maintenance and servicing of Hydrazine tanks. Provides qualified support for emergency Hydrazine response teams. Maintains proficiency in detection of Hydrazine.

Unique Capabilities: The fuel system repair hangar is a state-of-the-art building and designed for that purpose. It has multi aircraft capability. It has indoor space for two, F-111/F-15 size aircraft, three F-16 size aircraft, of five UH-1N helicopters. The fuel hangar has indoor external fuel tank work area with a lifting hoist. This flight also has the regional hydrazine resource responsibility.

Outside Customers Supported:

1. USAF AWC
2. 187th Tactical Fighter Group, Montgomery, AL, Hydrazine Tank Servicing
3. 926th Fighter Group/XP, Naval Air Station, New Orleans, LA, Hydrazine Tank Servicing

PROPULSION

Mission Statement: Responsible for jet engine intermediate maintenance (JEIM) on General Electric F100-GE-100/129, J79-15, J85-100, Pratt and Whitney TF30-111 and 109, and FW100-PW-100/200/220 engines. Responsible for assembly and disassembly of F100 modular engines and sub-components. Responsible for JEIM on F-15 starting systems and secondary power system components to include testing after maintenance. Responsible for JEIM on GTCP-397 gas turbine compressors used in AM32A-60B auxiliary power units. Responsible for acquisition, modification and testing of surplus and time-expired engines to the J85-100 configuration for use in the BQM-34S target drone. Provides modified J85-100 engines to the BQM-34S manufacturer for installation into new target drones used by both the Air Force and Navy organizations. Operates the engine test cell which is used for troubleshooting and testing of the above mentioned engines as well as aircraft noise suppression systems and other engine test facilities. Maintains engine support trailers for engine removal/installation and transportation. Ensures adequate spare level to support flying mission of various types and models of F-15 and F-16 aircraft assigned.

Unique Capabilities: Provides full JEIM on F100-100/200/220/220A/220E, J79 and J85 engines. Hush House and twin test cells are available to test all engines. Currently modifying J85 engines for both Air Force and Navy to be used in BQM-34S target drones. Has a steam and citrus-based parts cleaner to minimize hazardous waste.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

PROPULSION (Continued)

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd Fighter Wing (ACC)
4. 9th Special Operations Squadron
5. 475th Weapons System Evaluation Group (ACC)
6. Naval Air Warfare Center

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop is equipped with modern conventional tool room and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

STRUCTURAL MAINTENANCE

Mission Statement: Provides a Structural Repair Shop for design, manufacture, modification, and repair of RDT&E test items required to support the AFDTC test program of a non-repetitive nature. Manufactures items and works with sheet metal and fiberglass in modifying bombs, missiles, rockets, robots, etc. Manufactures and installs class II modifications parts and kits on aircraft and missiles to include CNC production required by AFDTC engineers, scientists and contractors for development of the test projects. Provides an intermediate maintenance capability to support all AFDTC assigned, transient and associate tenant aircraft.

Unique Capabilities: Maintains operational support of multiple aircraft to include F-111's, F-16's, F-15's, UN-1H and full manufacturing capability for all aircraft tubing assemblies (to include Depot level lines).

Outside Customers Supported:

1. 9 SOS
2. Eglin AFB. 33 FW (ACC)
3. Tyndall AFB.
4. Hurlburt AFB.

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS

METALS PROCESSING (Continued)

Outside Customers Supported: (Continued)

3 Manufactured Sleds for Holloman AFB
4. Provide welding and manufacture for 728 ACS
5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

ELECTRO-ENVIRONMENTAL

Mission Statement: Responsible for off-equipment maintenance on aircraft electrical and environmental control systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies systems and components. Provides battery servicing for assigned aircraft, associate tenant aircraft and ground support equipment. Responsible for field maintenance of all aircraft ground support equipment, (AGE), gaseous and liquid oxygen and nitrogen systems. Services life raft cylinders and emergency oxygen bottles, (Life Support Equipment), for all assigned and associate tenant aircraft.

Unique Capabilities: Possesses one of only three K400 generator test stands at field level, and will be only one of two sites in the world capable of running both F-111 and F-15 parts.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing
2. 9th Special Operations Squadron
3. 728th Tactical Control Squadron

PNEUDRAULIC

Mission Statement: Responsible for off-equipment maintenance of pneudraulic components. Inspects, troubleshoots, bench checks, tests, repairs, services, and modifies components. Provides local manufacture and testing of flexible hoses and testing of rigid tubing. Maintains associated Test Stands and support equipment.

Unique Capabilities: Possess two state-of-the-art pneudraulic test stands which allow check-out and repair of all current and projected pneudraulic systems. Because of this capability, depots have authorized depot-level repairs on a case-by-case basis. A citrus-based parts cleaner is used to minimize hazardous waste.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

PNEUDRAULIC (Continued)

Outside Customers Supported:

1. Air Force Armament Museum
2. 33rd Tactical Fighter Wing
3. 9th Special Operations Squadron

PATTERNS AND PLASTIC

Mission Statement: Provides a Pattern and Plastic Shop for design, manufacture, modification, and repair of RDT&E test items required to support the test program of a non-repetitive nature. Manufactures items and works with fiberglass, advanced composites, wood, and plastics in modifying bombs, missiles, rockets, etc. Manufactures Class II modification parts and kits on aircraft and missiles. Provides an intermediate maintenance capability to support all AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: Capable of manufacturing and repairing shock mitigation system under the container development program. This operation facilitates a fully equipped Wood Shop with unlimited support of hardware for finished wood products. Also supports manufacturing of form blocks for aircraft parts in support of class II modification and repair of assigned aircraft. Manufactures various airborne radomes for missiles, rockets and aircraft components using engineer specifications. Fully capable of supporting all DoD aircraft operations.

Outside Customers Supported:

1. Drone Projects
2. Contractors VITRO, Raytheon, etc.

SURVIVAL EQUIPMENT

Mission Statement: Provides a parachute and survival equipment shop to manufacture, modify, repair, and design item constructed of fabric in support of RDT&E test projects of a non-repetitive nature. Provides an extended intermediate maintenance capability to support aeronautical equipment, parachutes, and other aircraft maintenance requirements for support of AFDTC assigned, transient, and associate tenant aircraft.

SURVIVAL EQUIPMENT (Continued)

Unique Capabilities: This shop has the capability of servicing all personnel parachutes in the Department of Defense inventory. Capable of servicing the Advance Concept Ejection Seat (ACES II) employed on the A-10, B-52, F-16, and F-15 aircraft. Also currently the focal point for the Universal Water Activator Release System.

Outside Customers Supported:

1. U. S. Customs
2. U. S. Army
3. U. S. Navy
4. U. S. Marine Corps
5. AMRAAM Program Office
6. Turkish Air Force

INSPECTION ELEMENT

Mission Statement: Performs maintenance on modified test aircraft undergoing various inspections such as phase, periodic, major, minor, hourly post-flight, and special inspections. Also performs scheduled and unscheduled maintenance. Removes, disassembles, inspects, repairs, reassembles, installs, and operationally checks all assigned aircraft. Determines the condition of airframe and engines and all associated equipment. Performs maintenance on specialized systems such as flight control surfaces, landing gear, and engines. Performs time changes, Time Compliance Technical Orders and special inspections as required by the mission. Performs pre-dock and post-dock meetings to coordinate requirements while in the inspection process.

Unique Capabilities: Capable of performing any of the inspections cited above on any model of F-111, F-16, F-15, F-4, T-38, F-5, UH-1N, or A-10 aircraft. Additionally, given the equipment, they are capable of performing the same inspections on any other Air Force, separate service, or foreign national aircraft. Performs consolidated maintenance with the Aircraft Modification Element. Recently completed phase inspections and minor aircraft modifications simultaneously, saving an average of six complete days of aircraft downtime on each occurrence. Concurrently perform Time Compliance Technical Orders and special/one time inspections during their phase inspections.

INSPECTION ELEMENT (Continued)

Given the personnel and equipment, six aircraft could be inspected simultaneously on a three shift operation. Unique to the Inspection Element are custom built dock boxes centrally located at the head of each dock within the hangar floor area. These dock boxes enable supervisors to have complete control over every aspect of the inspection/maintenance process. They are wired with telephones, CAMS computers, and electrical power.

WHEEL AND TIRE ELEMENT

Mission Statement: Performs turnaround maintenance on all wheel assemblies to directly support all AFDTC, AWC, and Air Rescue aircraft. Performs teardown, inspection, and buildup of all wheel assemblies to include cleaning and inspection of wheels and bearings, seals, and retainers. Ensures ample spare wheels and tires are on hand to accomplish missions requirements. Inspects and maintains all shop equipment associated with the wheel and tire element.

Unique Capabilities: Capable of performing tear down and/or buildup of wheel and tire assemblies on any A-6, A-7, F-4, F-5, F-16, F-15, F-111, C-130, T-38, T-39, H-60, H-53, Tornado, or Harrier aircraft. If given the equipment, capable of performing the same maintenance on any weapon system. Being a forward supply point enables them to interface directly with supply, thus facilitating a positive wheel and tire acquisition process. Works directly with the 46th EMS Corrosion Element when stripping of wheels is required.

Outside Customers Supported:

1. 33rd FW (ACC)
2. Duke Field
3. Hurlburt AFB
4. USAF AWC
5. British Aircraft

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

AEROSPACE GROUND EQUIPMENT

Mission Statement: Provides field maintenance, periodic inspections, special inspections, servicing, refueling and dispatch as well as technical order modifications on over 500 pieces of powered and non-powered AGE assigned to AFDTC. Provides supervision, production control, quality assurance and supply support for AGE activities. Performs engine teardown, buildup (overhaul) and repair of components, i.e. starters, generators, motors, relays, etc. Responds to trouble calls on equipment in use. Provides equipment operator training to customers. Performs servicing of aircraft oil and hydraulic carts. Collects and recycles waste petroleum products generated by aircraft maintenance. The equipment is, for the most part, the newest and latest designs in the Air Force inventory today.

Unique Capabilities: AGE has supported the latest aircraft in the inventory. For example: F-117A, C-17, RC-135, B-1 and B-2 bombers, E-3A AWACS as well as NATO aircraft such as the Harrier and Tornado. The capability also extends to all other services DoD wide which AGE will be able to support well into the year 2000. Provides test support to Army and Navy aircraft such as helicopters and Navy sea launch cruise missile tests. Provides specialized equipment to contractors and base facilities in support of new and state of the art munitions and electronic warfare testing.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

No. GWEF does not use actual, physical targets. However, data gathered from actual targets is utilized to electronically replicate the targets/background scenes which provide the stimuli for GWEF's seeker/sensor testing.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Yes. The validation of targets/background software models and simulators is an ongoing process.

The FTD SIMVAL process has been followed for RF simulator's application against munitions. In the absence of a SIMVAL process for validating EO models and simulators, our validation process in these bands is accomplished by utilizing intelligence data in coordination with operational users.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. GWEF provides an unprecedented synergistic capability (all frequencies being exploited for advanced weapons systems are under one roof) which allows Test and Evaluation technologies to be easily transitioned within the facility. GWEF's extensive fiber-optic

internal connectivity enables all 6 major test areas to respond to increased computational workload resulting from multiple shift (non-stop testing) operations.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes. Testing (DT/OT) can be performed in functional areas beyond those identified in the historical workload (i.e., EC, AV, etc.). Example areas are Space Systems, Air Traffic Control, drug enforcement and commercial systems. Some specific examples are: Space - infrared (IR) and inertial sensors, RF sensors - acquisition/tracking and earth to/from satellite communications; MMW sensors - mapping and satellite communication, GPS receivers after Jan 95; commercial aircraft - RF sensors - air traffic control and weather; MMW sensors - navigation, adverse weather aircraft tracking and landing; automobiles - IR spectroscopy of emissions, railroad crossing stalled vehicle sensors; drug enforcement - IR, RF, laser, and MMW surveillance sensors; ground communications - RF and MMW sensors - point to point; distance measurement equipment - RF and laser sensors.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-N/A; Water-N/A; Land-Yes, this facility can be expanded on existing DoD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Top Secret/Special Access Required.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes. Major upgrades programmed are listed by title with a summary description of each as follows:

a. RADIO FREQUENCY SIMULATOR (RFS) (ON CONTRACT) Summary Description: RFS. The current RFS in MISILAB (Bldg 13) is based on 15-year old technology. The field of view, number of targets, and stand-off jammer angles which can be simulated are limited by the hardware and the anechoic chamber size. A new RFS is required to expand the frequency, add antennas to increase the

(3.1.E.4) (Continued)

field of view, generate multiple targets, and increase the stand-off jammer angles required by AMRAAM. The specific parameters have been coordinated with the AMRAAM program office. The anechoic chamber in GWEF has been physically sized to accommodate more than enough antennas to satisfy these more complex scenarios (IOC 2 Q FY95).

b. IR TARGET GENERATOR: Summary Description: IR Target Generator Software, hardware, and interfaces to provide the capability to present a target/background. Scene projection for hardware-in-the-loop (HIL) testing of long wave IR Guided Weapons (IOC 2Q FY95).

c. GPS SATELLITE CONSTELLATION SIMULATOR: Summary Description: GPS Constellation Simulator Hardware and software configuration items that can generate 10 channels of L1 and 10 channels L2 frequencies and simulate up to 32 satellites. SCS to be integrated into GWEF's real-time HIL simulations to support GPS and INS/GPS and INS/GPS Guided Weapons testing. Signal processing time will be significantly less than existing GPS simulations. (IOC 2Q FY95)

d. MULTIMODE: Summary Description: Software and hardware (including interfaces) fabrication and implementation to provide multimode targets for HIL testing. Increase EO Spectrum Digital Target data base. Provide improvement to multimode target generation/presentation fidelity.

e. EXPANDED RADAR SIMULATOR: Summary Description: Additional channels, frequency upconverter antennas, and associated software/hardware to provide expanded MMW/RF Simulation capability in the GWEF. Upgrade MMW system to provide increased FOV/Field of Regard and to allow coherent procession.

f. MULTI-SPECTRAL MAN-IN-THE-LOOP: Summary Description: This will consist of a first order cockpit simulator, to include pilot interaction with seeker and sensors under test in the GWEF. This will require the development of multi-spectral target models and software/hardware to stimulate the item under test.

g. ENVIRONMENTAL GENERATOR: Summary Description: Provides a realistic battlefield test environment including inclement operational conditions degraded by a broad range of obscurants, temperature, and humidity variations. This environment will be employed to test multispectral weapons.

(3.1.E.4) (Continued)

h. ACTIVE LASER SIMULATOR: Summary Description: Combines recently acquired Laser Radar (LADAR) reflectivity measurement capability and projection to provide high fidelity active laser target scenes. Test technology required to conduct HIL testing of future LADAR seekers/sensors.

i. ENHANCE LASER ELECTRONIC COUNTER-COUNTER-MEASURES (ECCM): Summary Description: As the threat weapon systems will face changes, the laser test capability to replicate the threat signal in the laboratory must be upgraded. A baseline capability is in place. These upgrades will typically consist of additional threat laser sources, modifications to software, and a modification to the calibration system.

(3.1.F.1) Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.

Yes. The following are the "unique test capabilities" of GWEF:

a. Integrated aircraft/munition (GWEF-PRIMES Link) total system testing (prelaunch, launch, and post launch).

b. Multimode seeker (MultiSpectral Test Areas Interconnect) test capability resources.

c. In-house MMW field and flight test expertise available for customer support and GWEF MMW test technology design/development.

d. Threat laser test capability.

e. Test area with isolated pad (inertial grade gyro and accelerometer tests) collocated/connected with terminal guidance HIL test areas.

f. GWEF has successfully provided processor-in-the-loop (PIL) simulated GPS and sensor inputs for the Air Force's Operational Concept Demonstration (OCD). With the acquisition of its GPS satellite constellation simulator in FY94 (FY93 and FY94 funds committed), GWEF will be able to conduct full-blown PIL/HIL testing for munitions such as JDAM having both inertial (midcourse) and seeker (terminal) guidance.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

Yes. The following are the "unique test capabilities" of GWEF:

a. Integrated aircraft/munition (GWEF-PRIMES Link) total system testing (prelaunch, launch, and post launch).

b. Multimode seeker (MultiSpectral Test Areas Interconnect) test capability resources.

c. In-house MMW field and flight test expertise available for customer support and GWEF MMW test technology design/development.

d. Threat laser test capability.

e. Test area with isolated pad (inertial grade gyro and accelerometer tests) collocated/connected with terminal guidance HIL test areas.

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(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

Yes. Limited knowledge of capabilities outside of DoD/US Government. However, we believe (a-e) above (-3.1.F.1) are US "Unique". In (f) above industrial contractors may have limited-to-total capabilities, with the possible exception being Processor-in-the-loop (PIL) testing.

(3.1.F.2) Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

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ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
0.35%	4.82%	0.40%	0.00%	1.18%	1.67%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Not Applicable.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

Not Applicable.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

Not Applicable.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Not Applicable.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

Not Applicable.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

Not Applicable.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Not Applicable.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Not Applicable.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

Local soil conditions enhance the ability of the GWEF to conduct HITL tests. GWEF benefits from area soils which consist ocean-washed sediments from the Piedmont region. Most of the colloidal material is removed, leaving a notedly loose soil composed largely of quartz crystals. These soils are poor transmitters of seismic energy making them ideal for isolating extremely sensitive instrumentation from ambient vibrations. This is extremely important if hardware-in-the-loop testing is to take place in the same geographic area as open air munitions testing

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Not Applicable.

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Not Applicable.

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

Not Applicable.

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Not Applicable.

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

Not Applicable.

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Not Applicable.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

Not Applicable.

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Not Applicable.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Not Applicable.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

Not Applicable.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

Not applicable.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

A full complement of ground support facilities for preflight checkout or rehearsal of test missions exists at Eglin AFB. Notable examples are:

The Guided Weapons Evaluation Facility (GWEF) and Preflight Integration of Munitions and Electronic Systems (PRIMES) facilities are linked and provide open and closed loop simulation of realistic scenarios. These unique simulation facilities can take a weapon system from target acquisition through launch and mid-course flight in a dense electronic combat environment to terminal engagement with a target.

Flightline preflight of instrumented aircraft and weapons to include exercising telemetry, command destruct, operational flight program software, weapon system data link, and offensive and defensive systems.

Installed and uninstalled aircraft gun firing and boresighting, ballistics, dispersion pattern, accuracy, feed systems and projectile testing at a fully instrumented ground test range.

In addition to the off-equipment repair of Line Replaceable Units (LRU) removed from F-15 and F-16 aircraft, Avionics Intermediate Shops (AIS) perform software loading of operational flight programs, modifications, calibrations and testing for those aircraft. This includes weapons control radars, internal navigation units, head-up displays, automatic flight control, instrument, communication, and navigation systems.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(Documentation for Answers of Questions 3.3A and 3.3B)

The mission of the GWEF is to provide simulation test support for developing precision-guided weapon technology and to evaluate the performance of those weapons which evolve from the acquisition process. The tests conducted are parametric/characterization, counter-countermeasures (CCM), digital 6-degrees-of-freedom (6-DOF), and Hardware-in-the-Loop (HIL) simulation. CCM testing is conducted to measure a weapon system's capability to acquire a target and execute correct guidance commands in the presence of a countermeasure threat. The Air Force Armament Munitions Test Process requires the CCM testing to be done in validated EC environments.

(Documentation for Answers of Questions 3.3A and 3.3B) (Continued)

GWEF's overall area of EC involvement is accomplished by testing munition systems' "susceptibility" to various countermeasures. This involves determining any inherent weakness in the system by producing "multispectral" threats across the entire electromagnetic spectrum based upon waveform, power, and position as opposed to emulating "specific" threat hardware. Overall software models are developed to represent specific engagement sensors.

The following definitions apply throughout section 3.3:

Electro Optical (EO) includes testing in the visible, infrared, laser, and ultraviolet bands.

Radio Frequency (RF) includes testing across the microwave and millimeter wave band.

The ability of the GWEF to produce high fidelity EC tests scenarios for munitions testing results in a capability to produce high fidelity test scenarios for "many" EC systems. The difference in whether a munition system is under test in an EC environment or an EC system is under test against a munition system sensor is often only in the question that was asked.

The process for munition testing called out in AFMAN 99-104 (Air Force Armament/Munitions Test Process) and the process for EW testing called out in AFMAN 00-112 (Electronic Warfare Test and Evaluation Process) are implementations of the Air Force Test and Evaluation Process described in AFI 99-103.

(3.3.A.1) What is the number of threats simulated?

Majority of known or postulated threats (in the hundreds) in the Electro Optical (EO) and Radio Frequency (RF) bands can be simulated.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

a. Tens of threats can be simulated in the EO band and 100s of threats in the RF band.

b. All types of threats can be simulated.

c. The maximum signal density is up to 100,000 pps in the EO band and over 1,000,000 pps in the RF band.

(3.3.A.2) (Continued)

d. The average density is 1,000 pps for EO and 500,000 pps for RF.

e. The typical jammer to signal power level ratio for EO band is 30 dB and 50 dB for the RF band.

f. GWEF operates in the following bands of the electromagnetic spectrum: RF (2-18 GHZ and 92-96 GHZ), visible, near IR, mid IR, long wave IR, and laser (UV to long wave IR).

g. Both radiated and injected methods are used as appropriate to meet testing requirements.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Yes. The validation of threat software models and simulators is an ongoing process.

The FTD SIMVAL process has been followed for RF simulator's application against munitions. In the absence of a SIMVAL process for validating EO models and simulators, our validation process in these bands is accomplished by utilizing intelligence data in coordination with operational users.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

a. Yes. GWEF conducts open loop testing.

b. Yes. GWEF conducts reactive testing.

c. Yes. GWEF conducts closed loop testing.

(3.3.A.5) What is the threat representation (fidelity) and density?

The fidelity and density represented exceeds the requirements of the unit under test. Refer to question 3.3.A.2 above for specifics.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Yes. All of our threats are basically a waveform/power/position software model representation of the actual physical threat. As such -- land, sea, or combinations thereof can be generated.

(3.3.A.7) What geographic dispersion can be simulated?
(3.3.A.7.A) Threat lay down?
(3.3.A.7.B) Representative distance?

GWEF test resources can simulate geographic dispersion necessary to support Level 1, 2, and 3, analysis as described in the Air Force Electronic Combat Test Process Guide:

Level 1 (Engineering) EC System Performance
Level 2 (Platform) Weapon System Engagement Effectiveness
Level 3 (Mission) Weapon System Employment Effectiveness

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? Relocatable to new scenarios? Yes/no

Yes. Threats are moveable within specific test scenarios and are relocatable to new scenarios.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

Yes. GWEF simulations can be interlinked to off-site threats through two basic routes or approaches. The first utilized the fiber optic link to the Preflight Integration of Munition and Electronic Systems (PRIMES) Facility which can facilitate interfacing of large EC Threats to an article under test within GWEF. The second method utilized is to locate any specific threat generator as near as possible to the GWEF test area and through specially developed/project dependent interface, link the threat to the specific GWEF Simulator.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Yes, based on signal generation equipment and an average signal density per user, the capacity for EC testing is approximately 46 users.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

No. When the physical size or weight of a specific physical threat pose limitations, we are able to integrate that threat into our test environment by stationing them immediately outside our facility and linking them to our simulators. The same can be accomplished for remote sites as discussed in question 3.3.A.9. above.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

GWEF is actually not in the business of evaluating countermeasures but rather uses specially developed/generated countermeasures to determine the susceptibility of the munitions under test. Refer to question 3.3.A.2 for the number of simultaneous countermeasure threats which can be generated within the GWEF Simulators.

(3.3.B.3) What range of spectra can be tested and evaluated?

GWEF operates in the following bands of the electromagnetic spectrum: RF (2-18GHz and 92-96GHz), visible, Near IR, Mid IR, Long Wave IR, and Laser (UV to Long Wave IR).

(3.3.B.4) What are the available spectra?

GWEF operated in the multispectral bands described in 3.3.B.3 above. In addition threats/countermeasures can be introduced into the test environment.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Yes. In GWEF "scene generation" is accomplished in all areas of the electromagnetic spectrum by using special purpose signal generation equipment to produce "realistic" target and background scenes for Infrared, RF, MMW, Laser and EO/Visible seeker/sensor testing.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Not Applicable.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Not Applicable.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:
Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: GUIDED WEAPONS EVALUATION FACILITY (GWEF)

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86*	87*	88*	89*	90*	91	92	93
AIR VEHICLES	DIRECT LABOR	NA	NA	NA	NA	NA	590	393	566
	TEST HOURS	NA	NA	NA	NA	NA	118	79	113
	MISSIONS	NA	NA	NA	NA	NA			
EC	DIRECT LABOR	NA	NA	NA	NA	NA	2,252	1,478	2,142
	TEST HOURS	NA	NA	NA	NA	NA	450	296	428
	MISSIONS	NA	NA	NA	NA	NA			
ARMAMENT/WEAPONS	DIRECT LABOR	NA	NA	NA	NA	NA	75,099	84,039	104,557
	TEST HOURS	NA	NA	NA	NA	NA	15,020	16,808	20,911
	MISSIONS	NA	NA	NA	NA	NA			
OTHER T&E	DIRECT LABOR	NA	NA	NA	NA	NA	5,820	15,314	9,425
	TEST HOURS	NA	NA	NA	NA	NA	1,164	3,063	1,885
	MISSIONS	NA	NA	NA	NA	NA			
OTHER	DIRECT LABOR	NA	NA	NA	NA	NA	31	216	0
	TEST HOURS	NA	NA	NA	NA	NA	6	43	0
	MISSIONS	NA	NA	NA	NA	NA			

*The GWEF Facility was opened in 1991.

Note: NA = Not available.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: GUIDED WEAPONS EVALUATION FACILITY (GWEF)

ANNUAL HOURS OF DOWNTIME	680
AVERAGE DOWNTIME PER DAY	1.86
AVERAGE HOURS AVAILABLE PER DAY	22.14

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY)
HIL	3	11.33*	34.0	3400.7
MF	5	3.40	17.0	
DMS	4	2.25	9.0	
				ANNUAL UNCONSTRAINED CAPACITY
TYPICAL HIL	5	7.0*	35.0	
TYPICAL MF	4	3.40	13.6	
TYPICAL DMS	20	2.25	45.0	
				1,241,256.9
			TOTAL 153.6	

NOTE: Typical represents additional tests that could be accomplished if manpower were unconstrained.
*Historical HIL workload is heavily weighted with large HIL efforts(i.e., AMRAAM) whereas typical HIL workload represents an average of total unconstrained HIL workload.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Guided Weapons Evaluation Facility (GWEF)

AGE: 3 years

REPLACEMENT VALUE: $157.5M*

MAJOR UPGRADES PROGRAMMED: NONE**
MAINTENANCE AND REPAIR BACKLOG: NONE

DATES OF LAST UPGRADE: NONE**

NATURE OF LAST UPGRADES: NONE

*Actual cost of building and equipment at Eglin (cost factor of 0.73)

**Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on additional information chart.

GUIDED WEAPONS EVA ATION FACILITY (GWEF)

GENERAL INFORMATION

Facility/Capability Title: GUIDED WEAPONS EVALUATION FACILITY (GWEF)

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46th Test Wing

Location: Eglin AFB, FL

T&E Functional Area: Armament/Weapons

UIC: Not Available.

T&E Test Facility Category:
PRIMARY: Hardware-in-the-Loop (HIL)
SECONDARY: Measurement Facility (MF)
TERTIARY: Digital Models and Computer Simulations (DMS)

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	90.44	5.35	2.27	0	0	1.94	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	.49	0	0	0	0	0	0.49
Armament/Weapons	80.06 ~89.6	5.35 =89%	2.25	0	0	1.94	89.60
EC	1.81	0	.02	0	0	0	1.83
Other	8.08	0	0	0	0	0	8.08

Note: Percentage use is based on FY93 Historical Workload. Starting in FY95 in FY95 the GWEF/PRIMES link (integrated systems test capability) utilization will increase "Air Vehicles" testing category to an estimated 8% (versus the 0.49% conducted in FY93).

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

TECHNICAL INFORMATION

Facility/Capability Title: GUIDED WEAPONS EVALUATION FACILITY (GWEF)/HARDWARE-IN-THE-LOOP (HITL)

Facility Description; Including MissionStatement: The GWEF is a $21.5M dollar, 100,365 (includes MISILAB) square foot facility hosting eight test areas with $136M dollars of test equipment. The test areas are configured to conduct Hardware-In-the-Loop (HIL) simulations, measurements and digital computer simulations to evaluate precision guided weapons performance. The GWEF has the resources to evaluate (through measurement and simulation) Imaging and Non-Imaging Electro-Optic (IR, Laser, Visible), Radio Frequency (RF), Millimeter Wave (MMW), Inertial and Global Positioning Satellite (GPS) system technologies. A shared computer memory system connects all test areas to facilitate interconnectivity and multiple use of resources. The GWEF is connected to the Preflight Integration of Munitions and Electronic Systems (PRIMES) facility through a high speed data link. Together these form a unique DoD Total Weapon System Test Complex that can verify the functions and performance of guided munitions when integrated with a launch platform. MISSION: Provides Guided Weapons Systems and Subsystems Engineering support. Develops and maintains engineering expertise, facilities, equipment, and software to conduct and serve as focal point for Hardware-in-the-Loop and Digital Simulation, Counter-Countermeasures Testing, and Characterization/Parametric Testing. Conducts simulation required for performance, sensitivity and stability analysis, trajectory and accuracy predictions, pre- and post-flight analysis. Provides support in the areas of Laser, Threat Laser, IR, Counter-Countermeasures, Radio Frequency, Millimeter Wave, and EO/Visible.

Interconnectivity/Multi-Use of T&E Facility: GWEF is a highly integrated test facility with internal and external connectivity. All internal and external elements are connected over Fiber Optic (F/O) paths. GWEF nodes are connected in a star configuration, each containing 72 multi-mode and 36 single mode fibers. This backbone hosts video, audio, standard facility data LANs and two unique LANs, and a unique Multi-Spectral Test Area Interconnect (MSTAI) system connecting all 8 test areas. The MSTAI passes information over a shared memory system providing 80 MB/sec throughput with a latency of less than 25 microseconds. The second specialized LAN provides 1 ms resolution time synchronization based on the GPS timing reference. These last two LANs facilitate multi-spectral and multi-mode guided weapon simulations. Externally, the GWEF and PRIMES are connected via a high speed F/O cable. This unique GWEF/PRIMES Link provides the means to include the launch platform and guided munitions in the simulation. This new test environment (Total Weapon System Complex) provides an end-to-end integrated weapons simulation.

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

TECHNICAL INFORMATION (Continued)

Facility/Capability Title: GUIDED WEAPONS EVALUATION FACILITY (GWEF) (CONTINUED)

Type of Test Supported: The GWEF has HIL chambers for RF, MMW, IR, Laser, Visible, Inertial and GPS simulations and measurements. These test areas are configurable to measure Air-to-Air, Surface-to-Air and Air-to-Surface weapons. GWEF simulations provide data for guided weapons system performance analyses; trajectory and accuracy predictions; and pre/post-flight analyses. The simulators provide realistic targets and background signatures (in both benign and countermeasure environments) to the weapon system or subsystem under test. The GWEF has separate test areas for RF, MMW, Visible, IR, Laser, Midcourse and Digital Simulation T&E. The RF and EO test areas have the capability to measure RF, MMW and Optical cross sections.

Summary of Technical Capabilities: The GWEF hosts $136M worth of test, measurement and simulation equipment. Major target simulators include two RF Target Simulators, a MMW Target Simulator, a Laser Target Simulator, IR Target Simulators, and a Multi-Spectral Scene Generator. The GWEF has six large capacity flight motion simulators with an average value of $1.0M each. The GWEF has three anechoic chambers with in-band RF shielding to 100 dB. The GWEF has a full suite of lab equipment and instrumentation required to measure weapon spatial, spectral and temporal characteristics. The GWEF measurement equipment includes a wide range of calibrated sources, specialized instrumentation and data capture equipment. The GWEF HIL simulators are equipped with advanced, sophisticated instrumentation necessary for supporting highly accurate, real time operation of the simulators, detailed off-line diagnostics of one-of-a-kind electronic and optic devices, and for complete system and component level calibration. Each simulator has a complete set of instrumentation to allow for stand-alone operation. The GWEF/PRIMES link provides a unique DoD capability to include the launch platform and the guided munition in the simulation. In addition, the GWEF has a highly trained technical staff knowledgeable in the operation of all of its test resources.

Keywords: GWEF HIL PIL MMW Laser IR Visible Midcourse GPS

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

TECHNICAL INFORMATION (Continued)

Facility/Capability Title: GUIDED WEAPONS EVALUATION FACILITY (GWEF)/MEASUREMENT FACILITY

Facility Description; Including Mission Statement: The Guided Weapons Evaluation Facility (GWEF) is a $21.5M dollar, 100,365 (includes MISILAB) square foot facility hosting eight test areas with $136M dollars of test equipment. The capability to accomplish extensive integration testing, at both the component and system levels, is available. The test areas are configured to measure seeker and sensor characteristics. The GWEF has the resources to measure seekers and sensors incorporating Imaging and Non-Imaging EO (IR, Laser, Visible), RF, MMW, Inertial and Global Positioning Satellite System technologies. A shared computer memory system connects all test areas to facilitate the recording, storage and retrieval of test data. For additional resource information see GWEF (Hardware-in-the-Loop). MISSION: Provides Guided Weapons Systems and Subsystems Engineering support. Develops and maintains engineering expertise, facilities, equipment, and software to conduct and serve as focal point for Hardware-in-the-Loop and Digital Simulation, Counter-Countermeasures Testing, and Characterization/Parametric Testing. Conducts simulation required for performance, sensitivity and stability analysis, trajectory and accuracy predictions, pre- and post-flight analysis. Provides support in the areas of Laser, Threat Laser, IR, Counter-Countermeasures, Radio Frequency, Millimeter Wave, and EO/Visible.
Interconnectivity/Multi-Use of T&E Facility: GWEF is a highly integrated test facility with internal and external connectivity. Internally the eight test areas are connected by the Multispectral Test Area Interconnect (MSTAI) system. The MSTAI operates over a shared memory system providing 80 Megabytes/second throughput with a data latency of less than 25 microseconds. Additionally, a fiber optics based communications backbone is in place within the GWEF providing classified and unclassified F/O paths. Each F/O system contains 72 multimode and 36 single mode fibers connecting the test areas in a star configuration. The total aggregate bandwidth of the F/O backbone exceeds 100 Gigabits/second. The F/O backbone supports MSTAI, video, audio, and facility LANs. It also supports a 1 microsecond resolution GPS based time network for time correlation and synchronization, with external facilities. Externally, the GWEF and PRIMES are connected via a high speed F/O cable. The GWEF/PRIMES link provides a unique means to measure system level metrics.
Type of Test Supported: The GWEF has HIL chambers for RF, MMW, IR, Laser, Visible, Inertial and GPS measurements. These test areas are configurable to measure Air-to-Air, Surface-to-Air and Air-to-Surface weapons. GWEF functional areas provide precision, calibrated measurements of sensor and seeker spatial, spectral and temporal characteristics. The GWEF has Inertial, RF, EO (Visible, IR, Laser) test areas. The RF and EO test areas have the capability to measure RF, MMW and Optical cross sections.
Summary of Technical Capabilities: The Guided Weapons Evaluation Facility hosts a $136M worth of test, measurement and simulation equipment. The GWEF has a full suite of lab equipment and instrumentation required to measure weapon spatial, spectral and temporal characteristics. The GWEF measurement equipment includes a wide range of calibrated sources, specialized instrumentation and data capture equipment. The GWEF has the capability to record analog and digital data and to convert analog signals to digital information for storage and analysis.
Keywords: GWEF; Calibrate; Parametric; RF; MMW; IR; Laser; Visible; Midcourse; GPS; Integration Testing

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

TECHNICAL INFORMATION (Concluded)

Facility/Capability Title: GUIDED WEAPONS EVALUATION FACILITY (GWEF)/DIGITAL MODELING & COMPUTER SIMULATION (DMS) FACILITY

Facility Description; Including Mission Statement: The Guided Weapons Evaluation Facility (GWEF) provides digital modeling and computer simulations for munitions testing. The primary resource within the GWEF for performing these simulations is the Digital Simulation Area. This is an electromagnetically shielded, vault-class secure area with state-of-the-art digital computers providing digital simulation expertise for munitions testing. The Guided Weapons Evaluation Facility (GWEF) provides digital modeling and computer simulations for munitions ns test and evaluation. For additional resource information see GWEF (Hardware-in-the-Loop). MISSION: Provides Guided Weapons Systems and Subsystems Engineering support. Develops and maintains engineering expertise, facilities, equipment, and software to conduct and serve as focal point for Hardware-in-the-Loop and Digital Simulation, Counter-Countermeasures Testing, and Characterization/Parametric Testing. Conducts simulation required for performance, sensitivity and stability analysis, trajectory and accuracy predictions, pre- and post-flight analysis. Provides support in the areas of Laser, Threat Laser, IR, Counter-Countermeasures, Radio Frequency, Millimeter Wave, and EO/Visible.
Interconnectivity/Multi-Use of T&E Facility: The Digital Simulation Area is interconnected to the rest of the GWEF test areas through the Multi-Spectral Test Area Interconnect (MSTAI). See the GWEF technical information sheet for description. The Digital Simulation Area is also used to support Processor-in-the-Loop (PIL) testing of guided weapon systems. The area also supports software development for Hardware-in-the-Loop (HIL) simulations within the GWEF. The natural progression is for all digital simulations to be converted to PIL and HIL simulations as the weapon system progresses in development. Externally, the GWEF and PRIMES are connected via a high-speed F/O cable. The GWEF/PRIMES link provides a unique means to conduct distributed digital simulations.
Type of Test Supported: The GWEF operates models for performance evaluation of weapon systems, pre and post flight test support and range safety. The simulation software and models include 3 and 6-Degree of Freedom (3-DOF, 6-DOF), simulations, GPS simulations, data link simulations, terrain models, target and environmental modeling software and detailed seeker models. The models cover select air-to-air, surface -to-air, air-to-surface and surface-to-surface weapon systems in the US and other inventories.
Summary of Technical Capabilities: The Guided Weapons Evaluation Facility has high end PC's, state of the are workstations and minicomputers to support digital modeling and computer simulations. Additionally, the GWEF has simulation and analysis software to support computer simulations. Through the use of the Multi-Spectral Test Area Interconnect, the GWEF can share computer resources associated with the real time hardware-in-the-Loop (HIL) simulation areas. The GWEF simulation computers have a variety of digital and analog interfaces to support PIL testing and simulation.
Keywords: GWEF Modeling RF MMW IR Simulation Laser Midcourse 6-DOF 3-DOF

GUIDED WEAPONS EVALUATION FACILITY (GWEF)

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: GUIDED WEAPONS EVALUATION FACILITY (GWEF)

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	3	3	3	3	3	3	3
ENLISTED	3	3	3	3	3	3	3
CIVILIAN	32	32	31	28	27	24	24
CONTRACTOR	77	87	87	87	87	87	87
TOTAL	115	125	124	121	120	117	117

*Note: FY95 and beyond are subject to manpower reductions.

TOTAL SQUARE FOOTAGE: 100,365 SF (Includes MISILAB)
TEST AREA SQUARE FOOTAGE: 57,553 SF
OFFICE SPACE SQUARE FOOTAGE: 11,171 SF
TONNAGE OF EQUIPMENT: 245.0 TONS
VOLUME OF EQUIPMENT: 75,320 CF
ANNUAL MAINTENANCE COST: $600K
ESTIMATED MOVING COST: $7.75M

CAPITAL EQUIPMENT INVESTMENT:

PROGRAM ELEMENT	FY93	FY94	FY95	FY96	FY97	FY98	FY99
PE64759F	$1,547K	$1,350K	$1,875K	$3,627K	$3,097K	$3,538K	$3,200K
PE64256F	$795K	$715K	$475K	$1,837K	$952K	$166K	
PE27163F	$16,820K	$9,200K	$1,300K				
PE27313F	$1,000K						
TOTAL	$20,162K	$11,265K	$3,650K	$5,464K	$4,049K	$3,704K	$3,200K

Document Separator

FACILITY/CAPABILITY: AFEWES (EGLIN AFB)

TEST FACILITY CATEGORY: HITL

% T&E - OVERALL: 100

AV: 0

EC: 100

A/W: 0

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 9

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92 0	FY93 0
EC:	FY92 2,405	FY93 4,605
A/W:	FY92 0	FY93 0

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
64270F		X			
64735F		X			

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
64735F		X			

Future Years

Program Element	AV	EC	A/W	OT	OTHER
64735F		X			
64270F		X			
NAVY		X			
ARMY		X			

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	0	0
Electronic Combat	1.36	2.60
Armament/Weapons	0	0
Other Test	0	0
Other	0	0

Note: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

No.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. AFEWES is a major USAF indoor, ground test facility whose mission is to test and evaluate the effectiveness of Electronic Combat Systems in a hardware-in-the-loop simulated IR and RF threat environment. AFEWES has been used by all services and allies in every phase of the EC system life cycle from concept definition through operational changes.

(2.3.B.1) On the test mission of any other activity?

Yes. Without AFEWES DOD agencies and friendly foreign countries would not have a hardware-in-the-loop test capability for most terminal threat systems.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. AFEWES has provided support to other missions critical to the operational effectiveness of the Armed Forces such as training, threat analysis, mission planning systems, etc.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

No tests in FY93 involved the real-time or near real-time exchange of data or control with another facility. Feasibility test demonstrations have been conducted, however, with real-time interconnections between AFEWES, the Lockheed Flight Simulation Laboratory, the Eglin Test Range, and REDCAP through the Lockheed Fort Worth Company Tactical Warfare Simulation (TACWARS) master scenario controller. Tests have also been run in the past with AFEWES connected to the Lockheed Flight Simulation Laboratory.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Yes. None of the tests described in paragraph 3.1.A.1 could be conducted.

(3.1.B) Facility Condition (MV II).

Reference the Facility Condition Form provided in Appendix A of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

No.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Not Applicable.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

No.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

Population figures are as follows:

Within 50 Miles - 2,906,000
Within 100 Miles - 3,711,000
Within 150 Miles - 5,697,000
Within 200 Miles - 7, 813,000

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Not Applicable.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

Not Applicable.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

No.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

No.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Not applicable.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

No.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes. AFEWES can support the training and doctrine functional area by providing mission rehearsal capability.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DOD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-N/A; Water-N/A; Land-Yes, this facility can be expanded on existing DOD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Secret/Sensitive Compartmented Information.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes: The reconfigurable airborne interceptor (RAI) will be delivered in FY95. It is a reconfigurable simulator of the Fulcrum, Flanker, or Foxhound aircraft and consists of the following subsystems: Radar, cockpit/controls and displays, interceptor airframe, air-to-air missiles, IRST and laser range finder, IFF, and C3. This simulation will provide a significant test capability to AFEWES and should provide increased utilization of the facility. It will be capable of being operated RF only, IR only, with/without C3 and IFF, or full up.

RSAM C: Provides for the simulation of one track-radar and missile within the SA-6, SA-11, and SA-12 technology class.

Angle of Arrival (AOA) Adapter: The AOA Adapter allows the Multiple Emitter Generator (MEG) to evaluate radar warning receivers and jammers that determine threat location by means of phase comparison.

A new test director station.

(3.1.F.1) Is this a one-of-a-kind facility within the DOD? Yes/no. If yes, describe.

Yes. AFEWES is a one of a kind facility within DOD. Since 1958, AFEWES has and continues to make important contributions to the national defense by quantifying, refining, and evaluating the effectiveness of DOD and allied electronic combat systems. In addition to the stand alone open and closed loop simulations, some of which are available only at AFEWES, the following are unique capabilities that exist.

1. <u>Dense Environment Effectiveness Testing</u>. The density/fidelity of real-frequency signal environments generated by the Multiple Environment Generators (MEG) exceed those possible with commercial environment generators. When integrated with AFEWES RF closed-loop simulations, MEG can force power-managed EC systems to low-order response techniques whose effectiveness can be quantified against validated terminal threat simulations.

2. IR Alert/Response Testing. The fully-dynamic IR Alert/Response capabilities achieved via integration of the AFEWES Threat Alert and Threat Response IR Laboratories provide a unique T&E capability not available at other DOD test facilities.

3. Red/Blue Man-in-the-loop (MIL) Testing. AFEWES integration with the Lockheed Flight Simulation Laboratory, which is available to AFEWES users, provides a unique capability to evaluate Combined Countermeasures by including Red and Blue MIL at a level of fidelity not available at other T&E facilities.

4. Multi-Spectral Testing. When integrated via a Master Scenario controller (TACWARS), AFEWES Open-Loop (MEG) and Closed-Loop (RF and IR) simulations can provide correlated, multispectral scenarios sufficient to evaluate the effectiveness of Integrated Avionics Systems.

5. Inter Facility Testing. When integrated via a Master Scenario Controller (e.g. TACWARS), AFEWES simulators can be interconnected to simulators at other facilities (i.e. Eglin and REDCAP) to provide better utilization of assets in complicated test scenarios.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

Yes, AFEWES is a one of a kind facility within the U.S. Government. Since 1958, AFEWES has and continues to make important contributions to the national defense by quantifying, refining, and evaluating the effectiveness of DoD and allied electronic combat systems. In addition to the stand alone open and closed loop simulations, some of which are available only at AFEWES, the following are unique capabilities that exist.

1. Dense Environment Effectiveness Testing. The density/fidelity of real-frequency signal environments generated by the Multiple Environment Generators (MEG) exceed those possible with commercial environment generators. When integrated with AFEWES RF closed-loop simulations, MEG can force power-managed EC systems to low-order response techniques whose effectiveness can be quantified against validated terminal threat simulations.

2. IR Alert/Response Testing. The fully-dynamic IR Alert/Response capabilities achieved via integration of the AFEWES Threat Alert and Threat Response IR Laboratories provide a unique T&E capability not available at other DOD test facilities.

3. Red/Blue Man-in-the-loop (MIL) Testing. AFEWES integration with the Lockheed Flight Simulation Laboratory, which is available to AFEWES users, provides a unique capability to evaluate Combined Countermeasures by including Red and Blue MIL at a level of fidelity not available at other T&E facilities.

4. Multi-Spectral Testing. When integrated via a Master Scenario controller (TACWARS), AFEWES Open-Loop (MEG) and Closed-Loop (RF and IR) simulations can provide correlated, multispectral scenarios sufficient to evaluate the effectiveness of Integrated Avionics Systems.

5. Inter Facility Testing. When integrated via a Master Scenario Controller (e.g. TACWARS), AFEWES simulators can be interconnected to simulators at other facilities (i.e. Eglin and REDCAP) to provide better utilization of assets in complicated test scenarios.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

Yes, AFEWES is a one of a kind facility within the US. Since 1958, AFEWES has and continues to make important contributions to the national defense by quantifying, refining, and evaluating the effectiveness of DoD and allied electronic combat systems. In addition to the stand alone open and closed loop simulations, some of which are available only at AFEWES, the following are unique capabilities that exist.

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5. Inter Facility Testing. When integrated via a Master Scenario Controller (e.g. TACWARS), AFEWES simulators can be interconnected to simulators at other facilities (i.e. Eglin and REDCAP) to provide better utilization of assets in complicated test scenarios.

(3.1.F.2) Are you currently providing support to DOD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
0.00%	0.00%	0.00%	5.00%	0.00%	0.00%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Not Applicable.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

Not Applicable.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

Not Applicable.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Not Applicable.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

Not Applicable.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

Not Applicable.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Not Applicable.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Not Applicable.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

Not Applicable.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Not Applicable.

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Not Applicable.

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

Not Applicable.

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

None.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Not Applicable.

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

Not Applicable.

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Not Applicable.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

Not Applicable.

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Not Applicable.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Not Applicable.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

Not Applicable.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

Not Applicable.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

Not Applicable.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(3.3.A.1) What is the number of threats simulated?

There are 34 closed-loop threat simulations. The Multiple Environment Generator (MEG) Open-Loop Simulator is programmable and the signals it can simulate are limited only by equipment parametric constraints.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

The AFEWES open-loop MEG simulation can generate up to 217 simultaneous signals. The types of signals that can be simulated are limited only by equipment parametric constraints and include SAM, AAA, AI, C3, IF, TACAN, etc. The maximum signal density achievable is > 10 million pulses/second, while the average pulse density is dependent upon the scenario being generated, average pulse densities between 25,000 and 500,000 pulses per second have been demonstrated. Frequency bands are 0.5-18 GHz, 30-40 GHz and 90-100 GHz. The power output of MEG is at least as strong as +5 dBm in Bands 1-9 (0.5-18 GHz), 0 dBm in band 10 (6-18 GHz), 0 dBm in band 11 (30-40 GHz) and -15 dBm in band 12 (90-100 GHz). Signals are injected into the receiver with coaxial cable and/or waveguide.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Yes. Validated by DIA.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Yes. AFEWES conducts open-loop testing, reactive target testing, and closed-loop testing.

(3.3.A.5) What is the threat representation (fidelity) and density?

Both are dependent on customer requirements. The density, as provided by the MEG, can include up to 217 threats. Simulation fidelity increases with use of man-in-the-loop and system in use.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Yes. MEG does simulate land, sea threats, and combined land/sea threats.

(3.3.A.7) What geographic dispersion can be simulated?

Hundreds of kilometers.

(3.3.A.7.A) Threat lay down?

Any threat laydown can be simulated subject to the signals being within parametric constraints and having no more than 217 simultaneous signals at 195 sites.

(3.3.A.7.B) Representative distance?

Representative distances in threat laydown can vary between several hundred to thousands of kilometers depending upon the power levels of the signals in the scenario.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? Relocatable to new scenarios? Yes/no

Yes. The threat signals are movable within a threat scenario and they are relocatable to new scenarios.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

Yes. The AFEWES has been linked to Eglin and REDCAP threats by telephone lines.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Yes.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

Yes. AFEWES is an indoor, hardware-in-the-loop, ground test facility. It therefore has limitations in testing compatibility and interoperability with the host platform and limitations in simulation of flight environments. However, AFEWES has demonstrated the capability to link to aircraft located outside the test facility via modification to the test facility.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

Multispectral testing evaluation can be conducted. Active and passive RF and IR countermeasures can be tested by concurrently operating a closed-loop simulator, MEG, and the two IR labs. Although there has been no requirement, it is possible to evaluate a system under test employing chaff, decoys, flares, and maneuvers.

(3.3.B.3) What range of spectra can be tested and evaluated?

RF 30 MHz -100 GHz
UV 0.25 - 0.4 micron
EO 0.4-0.8 microns
IR 0.25 - 6.5 microns

(3.3.B.4) What are the available spectra?

The available spectra are RF, IF, UV, EC, and laser.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Yes, EO/IR scene generator is available. Scenery from previously recorded video or from the Evans & Southerland Scene Generator Data Base can be displayed. The data base covers the southwest United States and contains cultural/terrain features.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Not Applicable.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Not Applicable.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?

Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: AIR FORCE ELECTRONIC WARFARE EVALUATION SIMULATOR (AFEWES)

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR	116,700	58,200	84,200	41,400	42,400	42,400	30,800	58,900
	TEST HOURS	9,130	4,565	6,595	3,235	3,320	3,320	2,405	4,605
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: AIR FORCE ELECTRONIC WARFARE EVALUATION SIMULATOR (AFEWES)

ANNUAL HOURS OF DOWNTIME	2,100
AVERAGE DOWNTIME PER DAY	5.75
AVERAGE HOURS AVAILABLE PER DAY	18.25

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY
				4,626
IR	2	12.5	25	
RF	5	40	200	ANNUAL UNCONSTRAINED CAPACITY
TYPICAL	2	14.25	28.5	1,688,627
			TOTAL 253.5	

Note: "Typical" represents additional tests that could be accomplished if manpower were unconstrained.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: AIR FORCE ELECTRONIC WARFARE EVALUATION SIMULATOR (AFEWES)

AGE: 35 Years

REPLACEMENT VALUE: $300M*

MAINTENANCE AND REPAIR BACKLOG: $2,072,000 (Yearly Simulator Maintenance Fund)

DATES OF LAST UPGRADES: UNKNOWN**

NATURE OF LAST UPGRADES:

MAJOR UPGRADES PROGRAMMED: NONE **

1. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:

*Replacement cost is for equipment only. Existing building replacement value is unknown.

**Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on Additional Information Chart.

GENERAL INFORMATION

Facility/Capability Title: AIR FORCE ELECTRONIC WARFARE EVALUATION SIMULATOR (AFEWES)

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46th Test Wing/OL-AG

Location: AF PLANT #4 Ft Worth, TX

T&E Functional Area: Electronic Combat

UIC: Not Available

T&E Test Facility Category: Hardware in the loop (HITL)

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	100	0	0	0	0	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	0	0	0	0	0	0	0
Armament/Weapons	0	0	0	0	0	0	0
EC	100	0	0	0	0	0	100
Other	0	0	0	0	0	0	0

TECHNICAL INFORMATION

Facility/Capability Title: AIR FORCE ELECTRONIC WARFARE EVALUATION SIMULATOR (AFEWES)

Facility Description; Including mission statement: The AFEWES is a major HITL electronic combat test facility located at Air Force Plant 4 in Fort Worth TX, managed by AFDTC. The mission of the AFEWES is to provide technical evaluations of EC systems (ECM systems, RWRs, decoys, IRCM systems, flares, etc.) and techniques in simulated RF and IR threat environments. The AFEWES has been used by all services and allies in every phase of the EC system life cycle from concept development through operational changes. The key features of AFEWES combine actual frequency, real-time, and man-in-the-loop testing with the capability to evaluate effectiveness in a dense background environment.
Interconnectivity/Multi-Use of T&E Facility: AFEWES simulators are linked to the Lockheed Fort Worth Company-owned Flight Simulator Lab and Tactical Warfare Simulation (TACWARS). Through TACWARS, AFEWES has been linked to the Open Air Flight Test Range at Eglin AFB and the REDCAP HITL test facility in Buffalo, NY, and has the capability to link to other Government T&E facilities.
Type of Test Supported: The AFEWES has a large group of surface-to-air missile, airborne interceptor, IR missile, early warning/acquisition radar, communication/data link, C^3, and AAA "closed-loop" simulations available for jammer/receiver evaluations. The AFEWES also has an open-loop simulator, the Multiple Emitter Generator (MEG) that is used to evaluate radar warning receivers and the receiver section of jammers. Measures of performance data for the closed-loop simulators include miss-distance and tracking error data. Measures of performance data for the MEG include such receiver performance data as emitter detection, identification, frequency measurement accuracy, PRI measurement accuracy, receiver response time, and ECM resource allocation.
Summary of Technical Capabilities: In addition to the closed-loop and open-loop simulations listed above, AFEWES has such instrumentation assets as: 1) The Test Director System, which includes five Test Management Centers (TMC) and one Test Observation Center (TOC). Each TMC consists of eight digital strip chart recorders, five video monitors, and two video recorders. The TOC consists of a large screen display and four video monitors. 2) The Bus Snapshot Analyzer (BSA) which is used to record EC receiver data during a MEG test. Other AFEWES assets include an RF and IR jammer techniques simulator and an RF clutter generator.
Keywords: Hardware-in-the-loop, man-in-the-loop, actual frequency, real-time, EC system effectiveness testing, multi-spectral, RF, IR, MMW, EC Threat Simulator

FACILITY/CAPABILITY TITLE: AFEWES

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	4	4	4	4	4	4	4
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	1	1	1	1	1	1	1
CONTRACTOR	48	48	48	48	48	48	48
TOTAL	53	53	53	53	53	53	53

*Note: FY95 and beyond are subject to additional manpower reductions.

TOTAL SQUARE FOOTAGE 39,000 SF
TEST AREA SQUARE FOOTAGE 36,621 SF
TONNAGE OF EQUIPMENT 563,359 LBS
ANNUAL MAINTENANCE COST $965K*
*Operation & Maintenance

OFFICE SPACE SQ. FOOTAGE 2,379 SF
VOLUME OF EQUIPMENT 24,028 CF
ESTIMATED MOVING COST $72.7M

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	$5.85M	$8.84M	$7.0M	$2.45M	$5.04M	$2.69M

Document Separator

FACILITY/CAPABILITY: REDCAP (EGLIN AFB)

TEST FACILITY CATEGORY: HITL

% T&E - OVERALL: 100

AV: 0

EC: 100

A/W: 0

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 7

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	0	FY93	0
EC:	FY92	160	FY93	80
A/W:	FY92	0	FY93	0

Nation 12 Aug 94

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
64735F		X			
65712F		X			
31310F		X			
DOE		X			

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
64735F		X			
65807F		X			
64270F		X			
64240F		X			
65712F		X			
ARMY		X			

Future Years

Program Element	AV	EC	A/W	OT	OTHER
31310F		X			
64240F		X			
64270F		X			
64256F		X			
65712F		X			
65807F		X			
NAVY		X			
DOE		X			

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	0	0
Electronic Combat	.09	.05
Armament/Weapons	0	0
Other Test	0	0
Other	0	0

Note: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

No.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. REDCAP is an essential link in the Electronic Combat Test Process. It provides the only means of doing hardware-in-the-loop testing of EC systems against integrated air defenses.

(2.3.B.1) On the test mission of any other activity?

REDCAP is currently a stand-alone facility not tied to the test mission of any other facility. However, as part of the Option B effort currently in progress, REDCAP will be linked to another EC test facility, e.g., AFEWES, ACETEF, etc., to provide the IADS threat scenarios coupled with the terminal threats. Provisions can also be made to link to other ISTFs as funds are available.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the Armed Forces of the United States?

REDCAP is the nation's only hardware-in-the-loop test facility capable of testing EC systems against integrated air defenses. Without this facility, there will be no means to test the operational effectiveness of US EC systems to Integrated Air Defenses. REDCAP has also provided support in areas such as threat analysis, mission planning systems, etc.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

0% in FY93. In FY91 the not yet upgraded portion of REDCAP was linked real-time to the ACETEF facility at Patuxent River, MD as a feasibility demonstration/proof-of-concept for providing remote support to a remote Integrated System Test Facility. In FY92 the not yet upgraded portion of REDCAP was simultaneously linked real-time to the EMTE Open-air test range at Eglin AFB FL and the AFEWES Hardware-in-the-loop (HIL) facilities in Fort Worth TX, as a demonstration/proof-of-concept of remote support to an open-air range and also to another HIL facility. In FY93 the REDCAP Upgrade Program brought an internal real-time computer to computer linkage capability on-line between the SECRET portion of REDCAP and the SCI portion of REDCAP. This linkage is fully approved and is currently operational. Also in FY93 and early FY94 REDCAP was/is in the process of implementing the REDCAP Upgrade Program Option B that implements a permanent secure high-speed real-time linking capability designed to accommodate any remote facility requiring REDCAP's services. This linkage capability has been designed to meet DIS Standards with additional capabilities for more demanding linkage applications. In FY93 REDCAP resources supported the War Breaker demonstrations; however, there were no real-time linkages involved in the FY93 phase.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

No. However, REDCAP has/will be linked to other facilities. See paragraph 3.1.A.1.

(3.1.B) Facility Condition (MV II)

Reference the Facility Condition Form provided in Appendix A of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

No.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Not Applicable.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

No.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

REDCAP is located in Buffalo NY, with a population within a:

50-mile radius	750,432
100-mile radius	1,547,715
150-mile radius	3,426,190
200-mile radius	6,137,383

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Not Applicable.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

Not Applicable.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

No.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

No.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Not Applicable.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

No.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes. REDCAP can currently provide some limited digital modeling work. With additional software and hardware improvements, this can become an additional capacity.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DOD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace - N/A; Water - N/A; Land - Yes. This facility can be expanded within contractor-owned workspace.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Top Secret/Sensitive Compartmented Information.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes. Options A & B of the REDCAP Upgrade program have been underway since FY93 and will have IOC in the summer of 94. This provides the only U.S. test capability against a modern threat IADS as is found in most threat areas of the world today. Option C of the REDCAP Upgrade program is programmed to begin in FY94 with a completion date in FY96. This option incorporates the existing REDCAP radars into the upgraded IADS completing the incorporation of almost all existing REDCAP capabilities into the new upgraded REDCAP.

(3.1.F.1) Is this a one-of-a-kind facility within the DOD? Yes/no. If yes, describe.

Yes. It is the only hardware-in-the-loop/man-in-the-loop simulation of an inter-netted air defense system known in the free world.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

Yes. See 3.1.F.1.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

Yes. See 3.1.F.1.

(3.1.F.2) Are you currently providing support to DOD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
0.00%	36.00%	0.00%	0.00%	0.00%	0.00%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Not Applicable.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

Not Applicable.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

Not Applicable.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Not Applicable.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

Not Applicable.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

Not Applicable.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Not Applicable.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Not Applicable.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

Not Applicable.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Not Applicable.

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Not Applicable.

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

Not Applicable.

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985: 2. 1986-1993: 0

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Not Applicable.

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

Not Applicable.

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Not Applicable.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

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(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

Not Applicable.

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Not Applicable.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Not Applicable.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

Not Applicable.

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(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

Not Applicable.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

Not Applicable.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(3.3) Electronic Combat

(3.3.A) Threat Environment (MVI) - Measure of Merit: Extent to which the capability satisfies weapon system requirements.

General Comments to help clarify the answers to the following questions. REDCAP is a very unique hybrid laboratory simulation using both HIL, MIL and special purpose digital simulation techniques to provide several possible levels of fidelity simulation that can (and are routinely) be used together simultaneously to provide the best possible overall simulation. When a question is asked how many of something can be simulated, the correct answer depends on the requirements of the device or system being tested and the objectives of the test. There is a classified threat list that can be provided that describes all the threat systems that can be simulated in the REDCAP simulator; i.e., if the EC device or system under test (SUT) is an ECM system requiring an RF interface with closed-loop systems such as radars of communication links, for a one-on-one test to measure effectiveness against that particular threat system, then the correct answer is probably the total number of different types of radars and links that REDCAP can produce. If the test is a one-on-several test requiring the evaluation of the SUT's ECM capability against several radars or links simultaneously, then the correct answer is probably the number of simultaneous closed-loop systems that can be produced (this will be a smaller number). If the test is an IADS test where the objective is to evaluate the impact of the ECM on the overall effectiveness of the threat IADS to engage penetrators, then there are valid, high fidelity simulation techniques permitting the number of simultaneous threats that can be simulated to become a very large number. If the EC device or SUT does not directly require an RF interface to perform its function (such as a passive low observable vehicle), then the number of systems that can be simulated becomes a large number.

(3.3.A.1) What is the number of threats simulated?

Depends on the test item and test objectives. Magnitudes ranges from tens to hundreds of active objects.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

Simultaneous (540 moving entities)
Radars - 6 Closed-loop, 256 Ground Radars at RF, many more digitally simulated
Links and IFF - 5 Closed-Loop, 100s possible at RF (depends on type)
Threat Interceptors, 4 fully manned, 40 interactive, more digitally simulated

Zone Command Post - 1 typical manned (more possible)
Sector Command Post - 3 typical manned (more possible)

Type
Closed-Loop - EW/GCI Radars, AEW Radars, HF Radars, Terminal Threat Acquisition Radars, Communications Links, IFF signals, various communications background.

Open-Loop - EW/GCI radars, AEW radars, HF Radars, Terminal Threat Acquisition radars, Communication Links, IFF signals various communications background

Signal Density - Radars 4.5 M PPS, Communications - higher

Average Density - Test Scenario Dependent

Power Level - Non Radiating (MWs)

Band - .05 - 7 GHz

Radiated or Injected - Always Injected

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Yes. DIA/NAIC Option 0 of the REDCAP Upgrade Program has already been validated. Options A&B are scheduled for validation later this year. Remaining Options as they are brought on-line will be validated.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Open Loop - Yes
Closed Loop - Yes
Reactive - Yes

(3.3.A.5) What is the threat representation (fidelity) and density?

REDCAP is a hybrid facility containing HIL/MIL validated closed-loop simulations. If the test is a full IADS test, where the objective is to evaluate the impact of ECM on the overall effectiveness of the threat IADS to engage penetrators, then there are valid, high fidelity simulation techniques permitting the number of simultaneous threats that can be simulated to become a very large number. Both are test dependent. Fidelity increases with use of man-in-the-loop. Density can be as much as 540 moving entities; again, dependent on customer test requirements.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Yes, all of the above. REDCAP HIL/MIL simulations can be configured for all of the above within the constraints of their design limitations. There is, however, some limited fidelity in simulating sea threats. These are scheduled for upgrade in future options.

(3.3.A.7) What geographic dispersion can be simulated?

There are no specific geographical limitations. DMA data can be loaded from any geographical location available.

(3.3.A.7.A) Threat lay down?

There are no specific limitations other than obvious limitations in numbers of physical consoles and simulators available and their ability to be configured to the specific threat characteristics. Special purpose digital simulations techniques permit the size of simulation to be extended beyond the limitations of physical consoles and available simulators at a loss of some fidelity.

(3.3.A.7.B) Representative distance?

There are no specific limitations other than obvious limitations in numbers of physical consoles and simulators available and their ability to be configured to the specific threat characteristics. Special purpose digital simulations techniques permit the size of simulation to be extended beyond the limitations of physical consoles and available simulators at a loss of some fidelity.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? Relocatable to new scenarios? Yes/no

Yes, in several senses. REDCAP is designed to accommodate over 500 moving entities at any one time (i.e. aircraft). Additionally, manned components are commonly "jumped" from one location to another to ensure the highest fidelity (man-in-the-loop) at critical locations at critical times i.e., manned pilot stations are typically "jumped" into the cockpit of intercepts as the actual intercept

approaches. (There can be 40 interceptors but only 4 manned interceptors) Similarly manned closed-loop radars and command and control functions are "jumped" as needed to obtain the desired fidelity at critical times.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

The facility is not permanently linked to any particular off-site threat. A permanent linking capability is designed into the facility but it is not anticipated that is would be dedicated to any one location. The linking designed is to use KG-94 encryption devices and standard T1 commercial phone lines to allow the facility to link to any location requiring REDCAP capabilities or any location having assets needed by REDCAP test programs. The linkage capability has been built to accommodate DIS standards as well as other more demanding applications such as 1553 data bus interconnects between facilities.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

In the sense of the Distributed Interactive Simulation with many "users" playing in a common scenario, no. REDCAP typically runs one scenario at a time. There are cases where subsets of REDCAP can be used to support one test customer while at the same time other subsets can be used to support another customer i.e., a one-on-one closed loop engineering ECM test against one radar while another customer performs one-on-one engineering ECM against another radar. REDCAP simulates an air defense system that is focused on the war at hand and therefore the general answer is that REDCAP is a single user system.

3.3.B Test Article Support (MV II) - Measure of Merits: Extent to which test support satisfies weapon system test requirements.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

Yes. REDCAP is a hardware-in-the-loop facility. It is designed to accept key components of a weapons system, not a weapons system per-se, i.e., REDCAP has shield rooms designed to accommodate the required ALQ-99 components from a EF-111 or ALQ-161 components from a B-1 but not a EF-111 or B-1. The "limitations" are not considered appropriate for pursuing measures to "remove them." There are several anechoic chamber based facilities, ISTFs (ACETEF, PRIMES, ECIT) designed to accept the weapons system that REDCAP has been designed to interface with through real-time secure data links. There have been no test requirements identified that cannot be addressed through real-time linking.

The size limitations are:

1st Screen Room: 8 ft X 16 ft, 8 ft high; door: 41 inches x 84 inches.
2nd Screen Room (SCIF): 16 ft x 16 ft, 8 ft high; door: 42 inches x 84 inches.

The weight limitation is 6,000 pounds.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

Typically REDCAP focuses on testing the impact of one ECM device at a time. Multiple devices can be tested at one time but the quantity is very test requirements specific. One very important capability of the REDCAP approach is to permit one or a small number of countermeasures devices to function as many devices in the scenarios. There have been numerous test programs where one or two ECM devices have been used to directly simulate the impact of tens or hundreds of devices in the scenario; i.e., one drone ECM payload is used to simulate the effect of hundreds of jamming drones. Again the application of this technique is very test article and scenario dependent.

(3.3.B.3) What range of spectra can be tested and evaluated?

REDCAP is a HIL facility with closed-loop simulators that can interface with devices that use the RF spectrum to counter threat sensors (this includes ECM devices and low observable initiatives). Countermeasures other than RF, such as in the IR spectrum, cannot be directly tested in REDCAP; but their effect or impact can be incorporated into REDCAP scenarios by either digital simulation techniques or by linking with a facility that can directly measure the effects, i.e., the GWEF facility at Eglin.

(3.3.B.4) What are the available spectra?

RF .05-7 GHz

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Yes, but very simplistic compared to those in typical full domed cockpit simulations. Our pilot stations have a very basic out-the-window view based on processed DMA data with simple ICONS for representing aircraft.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no. If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Not Applicable.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Not Applicable.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?

Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: REAL-TIME DIGITALLY CONTROLLED ANALYZER PROCESSOR (REDCAP) FACILITY

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR	15,600	1,800	6,600	4,800	1,819	1,833	964	1,342
	TEST HOURS	1,040	120	440	320	400	240	160	80
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Note: FY 86-89 Direct Labor Hours are estimated based on the Test Hours multiplied by the "Workload Per Test Hour Per Facility Hour" factor from the Unconstrained Capacity Form.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: REDCAP NETTED AIR DEFENSE SIMULATION FACILITY

ANNUAL HOURS OF DOWNTIME	1,480
AVERAGE DOWNTIME PER DAY	4.05
AVERAGE HOURS AVAILABLE PER DAY	19.95

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY
				2,574
IADS	1	60	60	
Radar	1	3	3	ANNUAL UNCONSTRAINED CAPACITY
Link	1	6	6	
TYPICAL	4	15	60	939,346
			TOTAL 129	

Note: "Typical" represents additional tests that could be accomplished if manpower were unconstrained.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: REDCAP NETTED AIR DEFENSE SIMULATION FACILITY

AGE: 28 Years

REPLACEMENT VALUE: $67M*

MAINTENANCE AND REPAIR BACKLOG: None

DATES OF LAST UPGRADES: Ongoing**

NATURE OF LAST UPGRADES: Refurbishment/replacement of building structure, walls, Air Conditioning, Electrical systems, and Security Systems

MAJOR UPGRADES PROGRAMMED: None**

1. **UPGRADE TITLE:**
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. **UPGRADE TITLE:**
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

* Replacement Cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.

** Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on additional information chart.

GENERAL INFORMATION

Facility/Capability Title: REDCAP NETTED AIR DEFENSE SIMULATION FACILITY

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46th Test Wing/OL-AH

Location: Buffalo NY

T&E Functional Area: Electronic Combat

UIC: Not Available

T&E Test Facility Category: Hardware in the loop (HITL)

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	100	0	0	0	0	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	0	0	0	0	0	0	0
Armament/Weapons	0	0	0	0	0	0	0
EC	100	0	0	0	0	0	100
Other	0	0	0	0	0	0	0

TECHNICAL INFORMATION

Facility/Capability Title: REDCAP NETTED AIR DEFENSE SIMULATION FACILITY

Facility Description; Including mission statement: REDCAP is the US's only man-in-the-loop/hardware-in-the-loop (MITL/HIL) Threat Command and Control Simulation Facility. The REDCAP facility is located within a contractor-owned facility. **The mission of this facility is to provide validated threat radar, command and control, airborne interceptor, data link, and Airborne Electronic Warfare (AEW) simulations. The Integrated Air Defense System (IADS) simulation incorporates the latest in former Soviet Union command and control (including both GCI and SAM weapons control), data link, airborne interceptor, and AEW capabilities. The REDCAP IADS simulation can represent up to four levels of command and control and is sized to simulate up to 540 airborne vehicles. The simulation is written in Mil Std ADA, and is supported by a large collateral level network of workstations and board level computers that is electronically connected through a custom digital guard to a SCIF based TS/SCI network. It includes three RF shielded rooms for test articles and includes closed-loop radar and data link simulations for performing ECM effectiveness evaluations.**
Interconnectivity/Multi-Use of T&E Facility: REDCAP has in the past been connected to and provided IADS support for ACETEF at Pax River, AFEWES at Ft. Worth, and the EMTE range at Eglin AFB. The current interconnectivity is to the ARPA/WARBREAKER net (main terminus in Arlington VA) with DIS compliant message traffic being sent over two secure 1.544 MBPS T-1 lines. This connectivity has an IOC of late 1994.
Type of Test Supported: As a HIL facility, REDCAP tests devices that electronically (usually through RF) impact the operation of a threat air defense system. Additionally, REDCAP tests other functional areas involving tactics, deception, situational awareness, and other factors that do not necessarily electronically interface with the IADS but have an impact on its performance and the survivability of penetrating forces.
Summary of Technical Capabilities: REDCAP has the normal RF support equipment necessary to operate and maintain RF simulators. These are standard off-the-shelf items like spectrum analyzers, network analyzers, logical analyzers, etc. Additionally, REDCAP has a unique ECM Noise Quality Measurement System used to support ECM test programs. For the test of impacts to an IADS, many of the measurements required are real-time recorded digitally. There is extensive recording of event and parametric data on the many computers in the network.
Keywords: IADS, hardware-in-the-loop, closed-loop, man-in-the-loop, EW/GCI, C3, C2, Link, threat, IW, Radar, AWACS, AI

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: REAL-TIME DIGITALLY CONTROLLED ANALYZER PROCESSOR (REDCAP) FACILITY

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
OFFICER	2	2	2	2	2	2	2
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	1	1	1	1	1	1	1
CONTRACTOR	29	29	29	29	29	29	29
TOTAL	32	32	32	32	32	32	32

TOTAL SQUARE FOOTAGE 28,000 SF
TEST AREA SQUARE FOOTAGE 23,000 SF
TONNAGE OF EQUIPMENT 219,200 LBS
ANNUAL MAINTENANCE COST $565K*

*Operation & Maintenance

OFFICE SPACE SQ. FOOTAGE 5,000 SF
VOLUME OF EQUIPMENT 15,091 CF
ESTIMATED MOVING COST $36.2M

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$3.68M	$11.03M	$7.0M	$7.0M	$6.34M	$5.35M	$3.3M

Document Separator

FACILITY/CAPABILITY: PRIMES (EGLIN)

TEST FACILITY CATEGORY: 1STF

% T&E - OVERALL: 100 DRT

AV: 0

EC: 53

A/W: 31 DRT

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 6 DRT

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	0	FY93	0
EC:	FY92	1,352	FY93	762
A/W:	FY92	24 DRT	FY93	443 DRT

Nation 12 Aug 94

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Since 1991, Electronic Combat (EC) test mission activities have been declining and munitions test activities have been rapidly increasing to utilize the facility for its designated munitions mission as defined by Project Reliance.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
12325F				X	
27130F		X			
27133F		X			
27134F		X			
27162F		X			
28015F		X			
35116F		X			
64270F		X			
64733F		X			
64770F				X	
65712F		X			
65807F		X		X	
B6404D		X			

Historical, FY 93

Program Element	AV	EC	A/W	OT	OTHER
21001F		X			
27134F		X	X		
27590F			X		
28015F		X			

PRE-FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

Historical, FY 93 (Continued)

Program Element	AV	EC	A/W	OT	OTHER
35887F		X			
64270F		X			
64733F		X			
64770F				X	
65712F		X			
65807F				X	
ARMY		X			
B6404D		X			

Future Years

Program Element	AV	EC	A/W	OT	OTHER
12325F				X	
27130F		X			
27133F		X			
27134F		X	X		
27160F	X	X	X		
27162F		X			
27590F			X		
28015F		X			
28060F	X	X	X		
35116F		X			
35887F		X			
64270F		X			
64618F	X	X	X		
64727F	X	X	X		
64733F		X			
64770F				X	
65712F		X			

Note: Due to the methodology used, program elements are not identified in the mission area of "Other," and were identified in the "AV" area. Virtually all of the PRIMES workload is in the "A/W" and "EC" areas.

053

(2.1.B.1) Continued

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
65807F		X		X	
ARMY		X			
B6404D		X			

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

	FY92	FY93
Air Vehicles	0	0
Electronic Combat	0.76	0.43
Armament/weapons	0.01	0.25
Other Test	0.06	0.13
Other	0	0

Note: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

Yes. The total number of simultaneous tests is limited by the physical size of the structure; for example, the anechoic chamber is limited to one test, the ramp area to two tests, the hangar floor to two tests, and the three enclosed labs to a bench test each.

PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. Without the support of the PRIMES facility and its ISTF capability, the Air Force Munitions Test Process cannot be accomplished.

(2.3.B.1) On the test mission of any other activity?

Yes. The GWEF cannot support integrated testing without the PRIMES support.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. It is vital to operational readiness of Combat Talon II aircraft because the PRIMES is currently the only Government test facility that provides complete EC equipment acceptance testing for newly modified AFSOC aircraft. Significant support provided to the USAF Air Warfare Center and US Army Special Operations Forces to test EC systems prior to deployment for Desert Shield/Storm.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

0% in FY93. However, in FY93, the GWEF/Primes Link (GPL) "extended umbilical" (Phase I Development) was completed and demonstrated. This was used to prove that all prelaunch/launch testing between Block 40 and 50 F-16 A/C (Primes) and AMRAAM (GWEF) could be accomplished using GPL interconnectivity. In FY94, the "Total" launch to intercept weapon systems testing (Phase II) capability will be completed to support "Integrated A/C and Weapons System Testing. Actual customer test workload for the GPL should ramp up beginning 4th quarter FY94 and continue thereafter.

PRIMES is unique to the USAF, DoD, and US due to the ability to link an aircraft Installed System Test (IST) capability with a munitions HIL capability. There is no other facility in the US that has this capability to provide integrated T&E of the aircraft and munition, simultaneously, for all weapon employment phases, in a ground test environment.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Yes. The overall combined synergistic capabilities of the GWEF-PRIMES facility interconnection could not be employed for current and future total weapons systems testing.

PRIMES is unique to the USAF, DoD, and US due to the ability to link an aircraft Installed System Test (IST) capability with a munitions HIL capability. There is no other facility in the US that has this capability to provide integrated T&E of the aircraft and munition, simultaneously, for all weapon employment phases, in a ground test environment.

(3.1.B) Facility Condition (MV II).

Reference the Facility Condition Form provided in Appendix A of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.
<u>Encroachment:</u>

There are NO limiting encroachment characteristics associated with this facility.

<u>Environmental:</u>

No. The PRIMES Facility is not currently limited by any environmental constraints. As mentioned in the response to question 3.1.H.2, this facility is sensitive to noise and vibration. However, due to the excellent acoustic isolation designed into the facility coupled with the abating characteristics of local soils, testing could continue unconstrained even with increases in ambient noise levels.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.
<u>Encroachment:</u>

Not Applicable.

(3.1.C.2) (Continued)

Environmental:

Not Applicable. Testing could continue unconstrained even with increases in ambient noise levels.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

The PRIMES Facility is currently operating without any temporary permits or voluntary agreements of an environmental nature.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	253,144
100 Mile Radius:	952,650
150 Mile Radius:	1,211,688
200 Mile Radius:	1,966,382

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Not Applicable.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

AIRFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. The following facilities are currently required to support the PRIMES mission or are potentially required to support future test mission activities.

SUPPORT FACILITIES LIST

WRIGHT LABORATORIES

- Environmental Sciences Facility
- Fuzes Research and Development Facility
- Radio Frequency/Millimeter Wave (RF/MMW) Facility
- Electro-Optical Research Facility
- LADAR Development and Evaluation Research Facility (LDERF)
- Advanced Guidance Research Facility
- Kinetic Kill Vehicle HWIL Simulation Facility (KHILS)
- Neural Network and Signal Processing Facility
- Model Fabrication Facility
- Inertial Navigation Facility
- Instrumentation Technology Research Facility

AIR WARFARE CENTER

AFDTC

- Freeman Computer Science Center
  - Test and Analysis
  - System Technology
- Safety
- Instrumented Airborne Platforms (C-130, F-111, F-15, F-16, UH-1)
- Avionics

AIRFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

AFDTC (Continued)
- JTIDS Ground Technical Facilities/Support Equipment
  - Enhanced JTIDS System Exerciser (EJSE)
  - JTIDS Integration "Hot" Bench & JTIDS Interface Test Set
- Multilateration Systems & GPS
- Electro-Optical/Millimeter Wave Instrumentation
- Airborne Systems/Instrumentation
- "Specialized" Electronic Systems Flight
- Electronic Design and Development Flight
- Aircraft Systems/Design and Modification
- Air-to-Air Missile Maintenance Facility
- Air-to-Ground Missile Maintenance Facility
- Precision Measurement Equipment Lab (PMEL)
- Precision Measurement Facility - Site III Mass Properties
- Munitions Build-Up
- Munitions Storage and Handling
- Armament Maintenance Section
- Alternate Mission Equipment Section
- Aircraft Repair Element
- Egress
- Fuels
- Machine Shop
- Structural Maintenance
- Metals Processing
- Corrosion Control
- Non-Destructive Inspection
- Electro-Environmental
- Pneudraulic
- Patterns and Plastics
- Wheel and Tire Element
- Aerospace Ground Equipment

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

WRIGHT LABORATORIES (WL/MN)

The laboratories provide numerous capabilities that are an integral part of the cradle-to-grave munitions development process which is uniquely located on one installation (the complete Wright Laboratories facilities/capabilities are provided under another data call.):

Environmental Sciences Facility

Environmental Analysis and research in support of conventional munitions technology development.

Quantitative determination of contaminants in chemicals, explosives, fuels, soils, or water including on-the-spot analysis to determine residual metal contaminate levels.

Automated image analysis for material and particle studies.

Document preparation to insure compliance with all local, state and federal regulations and laws.

Fuzes Research and Development Facility

Research and development of fuzes, sensors and associated signal processing circuitry for targets of interest.

Electronic lab, explosive test bays, laser lab, aerosol chamber, printed circuit board fabrication equipment.

Radio Frequency/Millimeter Wave (RF/MMW) Facility

Main Lab: Calibration and measurement test benches; 94 GHz monopulse radar; X-band pulse doppler fire control radar.

Penthouse: Roof level room with sliding windows allowing sensors to view area outside building; includes instrumentation and communication with main lab and tower.

Tower: 3 X 3 meter room 10.6 meters above bldg. 13A roof; Elevator; 360 degree field of view; instrumentation and communication lines with main lab. Areas available to view include Eglin flightline and runways, intercoastal waterway in Choctawhatchee Bay, Eglin tank farm, various buildings and associated structure.

PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

WRIGHT LABORATORIES (WL/MN) (Continued)

Electro-Optical Research Facility

Main Lab : (1232 ft^2) Vibration isolated optics benches and computer workstations, Laser Polarimeter.

Make measurements of the electro- and magneto-optic constants of optical and infrared materials, optical processing experiments and simulation.

LADAR Development and Evaluation Research Facility (LDERF)

Optics Labs: Four optical work/test benches on isolated slabs of cement in 2 separate 20' X 40' rooms; 1064 NM Nd: Yag diode pumped laser radar system; Laser Imaging Radar System; two Tunable Ti-sapphire lasers; three Nd: YV04; Janis dewar for material characterization down to 2° K; 80' darkened indoor range for conducting LADAR tests in a controlled environment. Garage door provides access to a 1.5 km outdoor range.

Electronics Lab: 1600 ft^2 room with PCB assembly area; four general purpose electronics work benches; LADAR Video/data display and processing station; Computer Aided Design (CAD) System including schematic capture, circuit simulation, PCB layout, and mechanical drawing packages.

UAV Operations: Air conditioned hanger space for modification, sensor integration and storage of unmanned aerial vehicles (UAV). A 16' X 12' tall hanger door opens to roughly 1600 ft^2 of hanger floor space. 30 ft^2 of workbench space is complemented by a complete selection of hand tools and light machine tools. A 2000 ft^2 cement pad is adjacent to the hanger door.

Advanced Guidance Research Facility

Develop signal processing software for guided weapons through computer simulation, develop and validate target detection algorithms through simulation and captive flight test results.

Analyze E/O and RF characteristics through image processing and simulation.

Kinetic Kill Vehicle Hardware-in-the-Loop (HWIL)
Simulation Facility (KHILS)

WRIGHT LABORATORIES (WL/MN) (Continued)

Digital and HWIL simulators to realistically simulate launch-to-impact scenarios for guided weapons.

High frame rate/high fidelity UV, visible, and IR scene projections. Color (5.6, 9.28, 10.6 micrometer), 400 Hz update, resolution of 96x96 pixels, wideband 128x128 pixel, 400 Hz resistor array.

Digital scene generation of boost , post boost, and RV targets; high speed signal injection with seeker effects and line-of-sight motion modeled in real-time.

High bandwidth flight motion simulator, 60 Hz, 25 lb payload, +/- 10 degree pitch and yaw, +/- 120 degree roll, 17 microradian pointing accuracy.

Neural Network and Signal Processing Facility

Mac II with neural network analysis software and another Mac II for analysis work.

A VT340 for network access to base computers.

A 386 PC with a neural network accelerator board and neural network analysis software.

A Sun Sparc 1 which is available for signal processing analysis and software evaluation; scanner and controller to support signal processing analysis.

Model Fabrication Facility

Produce, assemble, and modify both full and sub-scale aeroballistic, aerodynamic and aeromechanical assemblies and components for experimental munitions applications.

Inertial Navigation Facility

Test and evaluate tactical inertial navigation hardware and imbedded GPS/inertial systems.

Instrumentation Technology Research Facility

Modern 3000 sq ft laboratory dedicated specifically to developing, fabricating, and testing advanced instrumentation systems for explosive, guidance, and flight systems test.

WRIGHT LABORATORIES (WL/MN) (Continued)

Verify the performance of electronic and opto-electronic instrumentation used during the development and testing of airborne munition acquisition programs.

Electronic/Optic design and fabrication to support the prototyping and analysis of advanced instrumentation technology concepts.

AIR WARFARE CENTER

The mission of the USAF Air Warfare Center (USAFAWC) is to test and evaluate new or improved weapon systems and air defense radar systems and to support the Combat Air Forces (CAF) in assigned areas of technical expertise. Specific duties include operational testing of the following CAF weapon systems and equipment: electronic combat (EC) systems and support equipment; reconnaissance systems; aircrew training devices (ATDs); life support; command, control, communications, and intelligence (C3I); armament and avionics systems; combat support; chemical warfare defense (CWD); air base and installation security systems (BISSs) and subsystems; and air defense radar systems and equipment. USAFAWC provides technical and operational expertise to assist Headquarters (HQ) Air Combat Command (ACC) in providing operational forces required in support of testing managed by the Air Force Operational Test and Evaluation Center (AFOTEC). USAFAWC also manages and conducts Follow-on Operational Test and Evaluations (FOT&Es) of hardware and software for which AFOTEC serves as the Air Force focal point. USAFAWC develops and evaluates tactics for EC, avionics and armament, reconnaissance systems, ATDs, life support, C3I, drones, combat support, CWD, BISS, and air defense radar systems and equipment. The Center reprograms designated EC systems to meet mission needs of CAF aircraft. (The peacetime implementation of this mission is through USAFAWC Emergency Reprogramming Center (ERC). The Center also maintains the software that supports the reprogramming of EC systems. USAFAWC creates various mission data configurations in EC systems and manages these configurations according to AFR 800-14. USAFAWC assists the HQ ACC operations staff and CAF units in determining the use of and making improvements to technical equipment and software used by the CAF. USAFAWC assists the HQ ACC staff in the Air Force requirements and acquisition process, including concept exploration, demonstrations, and evaluations. USAFAWC improves the effectiveness of CAF systems through such evaluation programs as the Air-to-Ground Weapon Systems Evaluation Program (A/G WSEP), the Ground to-Ground Weapon Systems Evaluation Program (G/G WSEP), the Electronic Warfare Evaluation Program, the Air-to-Air Weapon Systems Evaluation Program (A/A WSEP), the Periodic Radar Evaluation Program, the Air Force Radar Evaluation Program, and the Precision Guided Munitions Analysis Program. USAFAWC improves the combat capability

AIR WARFARE CENTER (Continued)

of CAF personnel through specialized training: Blue Flag exercises (for battle staff), Green Flag exercises (for EC), EC and battle management courses, and USAF Air Ground Operations School (USAFAGOS). USAFAWC operates specific Air Force complexes used for training and testing of Air Force systems and procedures: the C3I complex, Air Force subscale and full-scale aerial target assets, and the USAFAGOS. USAFAWC manages William Tell (the biennial worldwide Air Force air-to-air weapons meet). The Center conducts day-to-day management and execution of ACC war gaming responsibilities, with policy and commitment of ACC resources approval authority remaining with HQ ACC/DO.

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.

The CCF is designed for commonalty/compatibility with DoD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DoD services and US Allies on a regular basis.

Systems Technology

Designs, develops, implements, operates and maintains the AFDTC Scientific Computer Center and its networks. Provides a broad base of expert computer and system engineering consultants. Provides software engineering support for the Eglin scientific and engineering community including development, customization and adaptation of graphics, applications, and system software products. Develops

FREEMAN COMPUTER SCIENCE CENTER (Continued)

software products for the simulation and/or control of weapon or related systems as required for RDT&E. Operates and maintains the Eglin Decision Support System and the CRAY YMP Supercomputer.

The computer center has a CRAY YMP supercomputer and visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN).

This is a general purpose computer center that supports all phases of digital models and computer simulations. It is available to all DoD agencies. The largest current user is the Aeronautical Systems Center.

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and safety control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources [radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

INSTRUMENTED AIRBORNE PLATFORMS

Mission Statement: Instrumented aircraft are required to support the test and evaluation of munitions, electronic combat, communications computers command control and intelligence (C4I) systems, and inertial navigation/guidance systems in the Open Air Arena.

Unique Capabilities: Aircraft instrumentation provides time, space, position information (TSPI), platform specific information (avionics/weapons data), and test specific information (environmental/infrared/separation data). Instrumentation data can be provided real time (via telemetry (TM) transmitters and/or data links) and/or post mission (via analog data tape recorders, video tape recorders and film cameras). The TM stream is usually the PCM (pulse code modulation) output of a data acquisition system which collects and conditions the various analog and digital signals. The oldest data systems are the programmable Data Acquisition System (pDAS) and the Airborne Test Instrumentation System (ATIS). Until the Common Airborne Instrumentation System (CAIS) is available, the Advanced ATIS system (AATIS) is presently being installed. The main sources of digital data are the aircraft's busses, avionics, weapons, ECM, and display. This data can be recorded selectively or totally. Cockpit displays (HUD/VSD/TEWS/RWR/MFD/etc) are recorded on video tape recorders (video cameras may be required if display signal is not TV (RS-170) formatted). 1553 buss data or other PCM information may be formatted/conditioned (Merlin system) to a TV format for video tape recording. Analog tape recorders are the MARS 1400 (14 track, 14" reel), MARS 2000 (14 track, 10" reel), and the MARS 2028 (28 tracks, 10" reel); video tape recorders are the NAC (VHS) and the new TEAC (Hi 8 mm); digital recorder is the MARS II. A Time Code Generator (TCG) provides IRIG (Interrange Instrumentation Group) time for time correlation of analog, digital, film and video data. Store separation data is provided by 16 mm film cameras which are installed in aircraft fairings and/or carried on store stations. Airborne TSPI sources are a radar transponder (beacon), user GPS, or RAJSPO GPS. The GPS data can be recorded or it can be transmitted via the MTACS (Multilateration Tracking and Control System) data link. Telemetry and video streams are encrypted before transmission.

Various types of instrumented pods/shapes are carried on the platform's store stations. Power and control wiring is either installed or standard aircraft wiring is utilized. The Golden Bird Missile is an instrumented AIM-7; the ARTIS pod contains an instrumentation radar for relative TSPI; I-HAWK and SADS VI M/1 are threat simulator pods; the BASES, SAIMS, and ASIMS are infrared (IR) pods; GPS/MTACS pods contain the RAJSPO HDIS receiver combined with the MTACS data link. Two F-15B aircraft have an instrumentation 1553 buss specifically installed to control instrumentation pods. ACES II, ITV, and IMV are instrumented AMRAAM shapes/pods.

Listed below are the 46TW and AWC aircraft already modified, in process of being modified, or will begin modification this FY.

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

C-130

C-130A 55-0022: Airborne platform for DT&E of air-to-ground and air-to-air seekers and sensors (visible, IR, MMW), stabilized turret, beacon, GPS

F-111

F-111E 67-0118: Film cameras, cockpit video camera, VTR (Hi 8 mm), TCG, beacon F-111F 70-2379: Flutter instrumentation, film cameras w/FDRS, video cameras for separation, ATIS, MARS 2000, TCG, Beacon, VTR (Hi 8 mm)

F-111F 70-2400: Film cameras w/FDRS, AATIS, TCG, user GPS w/MTACS, Beacon, MARS 2028, TM

F-15

F-15A 76-0101: JTIDS, HUD/VSD/MPCD VTRs(Std TEAC, NAC), TCG, MARS 2000, pDAS, Beacon, TM

F-15C 84-0011: JTIDS, HUD/VSD VTRs(8 mm), MPCD VTR(NAC), TCG, MARS 2000, pDAS, TM, Beacon

F-15A 77-0064: Film cameras, HUD/VSD Video Cameras & VTRs(8 mm), TCG, MARS 2000, pDAS, Beacon, TM, partial Golden Bird

F-15A 76-0116: High Speed Radar Buffer Box, ITV Pod, TCG, Beacon, MARS 2000, pDAS, VTR(NAC), TM

F-15B 73-0114: MSIP B FOT&E, HUD/VSD/MPCD/RWR VTRs (Hi 8 mm), TCG, pDAS, Beacon, TM

F-15B 75-0080/84: 1553 Instrumentation Bus, HUD/VSD/MFD VTRs (NACs), TCG, pDAS, MARS 2000, Beacon, TM, Pods: ARTIS, I-HAWK, SADS VI M/1, BASES, SAIMS, ASIMS, Golden Bird

F-15B 77-0161: High Speed Radar Buffer Box, PSP/RSP Radar, TCG, pDAS, HUD/VSD cameras, VTRs (Hi 8 mm), TM, Beacon, Film Cameras on Station Adaptors, pods: Golden Bird, ARTIS

F-15C 84-0018: AMRAAM Instrumentation, TCG, pDAS, MARS 1400, TM, Film Cameras, Beacon, HUD/VSD VTRs (8 mm), pods: ACE II, ITV, IMV, partial Golden Bird.

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-15 (Continued)

F-15C 85-0126: AMRAAM/TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (8 mm & NAC), Film Cameras, pDAS, TCG, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, Beacon, pods: ACE II, IMV, partial Golden Bird.

F-15C 80-0022: AMRAAM/TEWS/JTIDS instrumentation, AATIS, MARS 2028, MARS II, TCG, TM, Beacon, pods: partial Golden Bird (In design)

F-15C 78-0542: TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (NACs), TCG, pDAS, TM, Beacon, MARS 2028, pod: partial Golden Bird

F-15D 84-0045: AMRAAM Instrumentation, Film Cameras, HUD/VSD Video Cameras & VTR (NAC), High Speed Radar Buffer Box, pDAS, TCG, TM, Beacon, pods: ACE II, ITV, DMV

F-15E 86-0185/0188: SEEK EAGLE/TEWS/AMRAAM Instrumentation, Film Cameras, MPDP VTRs (Hi 8 mm), TCG, pDAS, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, beacon, video TM

F-16

F-16A 80-0609: AMRAAM Instrumentation, Film Cameras, Hud/REO Video cameras & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Dual HUD capability, partial OCU, Beacon, Total A&W bus recording, pods: ATLIS II, RDIP, RUBIS, ASRAAM (In Design)

F-16A 80-0761: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Camera & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Beacon, ADF capable, pods: ACE II, Musketeer Lee, ASRAAM (In design)

F-16B 78-0104: INS Fighter test bed.

F-16B 82-1037: Film Cameras, TCG, Beacon

F-16B 83-1123/88-0353: Flutter & Loads, Flutter Exciter Panel, Film Cameras, pDAS, TCG, TM, MARS 2000, HUD/RMFD or LMFD VTRs (NACs), Beacon, pods: RDIP (123 only)

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-16 (Continued)

F-16C 83-1163: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Cameras & VTRs(NACs), pDAS, TCG, MARS 1400 or 2000, Beacon, TM, pod: ACE II

F-16C 84-1280/1285: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR Video Cameras & VTRs(NACs), MARS 1400, pDAS, TCG, TM, Beacon, chaff/ flare monitor, pod: ACE II

F-16C 88-0441: AMRAAM Instrumentation, Film Cameras, RWR video camera, Total Bus recording, HUD/LMFD/RMFD/RWR VTRs (Hi 8 mm), TCG, pDAS, TM, ALE-47 instrumentation, Beacon, pods: IMV, DMV, JSOW, ACE II

F-16C 89-2070: ALE-47 Instrumentation, RWR video camera, HUD/LMFD/RMFD/RWR VTRs(NACs), TCG, pDAS, TM, Total Bus recording, Beacon, pods: ACE II

F-16C 90-0726: ALQ-126B

F-16D 80-0844/0848: HUD/MFD/RWR VTRs(Hi 8 mm), Total bus recording A/B/C/D/EW/W busses (Merlin, Hi 8 mm), HARM & ALIC PCM recording (Merlin, Hi 8 mm), TCG, Beacon (In design)

F-16D 88-0469: NAC Recorders

F-16D 90-0835: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR/HELMET/HAND-HELD VTRs (Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS 422 monitor, user GPS w/MTACS, encrypted video, beacon, TM, pods: ACE II, RDIP

F-16D 80-0836: HARM Instrumentation, Film Cameras, HUD/MFD/RWR VTRs(Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS
422 monitor, user GPS w/MTACS, encrypted video, TM, beacon, pods: RDIP, ACE II

UH-1

UH-1N 69-6617/6626: BASES Pod, Aerial Ignition Device, beacon

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

AVIONICS

Mission Statement: The F-16 AIS Shop is responsible for off-equipment Intermediate level maintenance and support of F-16 Line Replaceable Units (LRUs). Does software loading of Operational Flight Programs, TCTOs, modifications, calibrations, and testing of F-16 LRUs. Responsible for testing weapons, instruments, and ALR-69 systems using AIS test equipment. Maintains four test stations and ancillary equipment by performing inspections, modifications and repairs.

The F-15 AIS is responsible for testing F-15 LRUs including weapon control radar, inertial navigation, heads-up display, automatic flight control, instrument, and communication and navigation systems. Uses, maintains, and calibrates avionics intermediate shop test stations used to repair F-15 LRUs. Performs off-equipment maintenance and line delivery of AXQ-14 and Improved Data Link pods.

The Conventional Avionics Shop is responsible for intermediate and organizational level maintenance on avionics systems installed on UH-1N helicopters and transient aircraft. Performs intermediate level maintenance of CommNav, Guidance, and ECM systems on assigned aircraft. Modifies, repairs, loads, and operationally checks ECM pods on F-15, F-16 and F-111 aircraft to support test missions. Repairs and modifies communication ground cords, headsets, and emergency survival radio/beacons for Eglin units. Maintains, installs, and repairs radio ground mount adapters for emergency and operations vehicles on Eglin. Operationally checks all UHF, VHF, and RWR antennas for serviceability.

The Sensor Test Shop is responsible for on-equipment and off-equipment maintenance of all assigned and transient sensor systems. Performs intermediate and organizational level maintenance on LANTIRN targeting and navigation and PAVE TACK Laser Target Designation pods. Maintains intermediate level test equipment including the LANTIRN mobility shelter set. Performs intermediate level maintenance on Airborne Video Tape Recorders and Cockpit Television Systems, to include phase inspection work cards. Assists field engineers in the kit proofing, validating and fielding of new systems and/or upgrades to current systems.

The Radar Test Shop provides intermediate level repair of F-15 and F-16 radar and other avionics and components. Reprograms various avionics and other computers. Refurbishes F-15 and F-16 flight control and INU batteries. Performs operational checks for serviceability of F-15 and F-16 radar LRU's. Provides repair and functional checks of F-16 ARC-164, ARC-186, and ARN-118 receiver/transmitters, throttle grips, side stick controllers, GPS receivers and numerous F-16 control units. Repairs various circuit card assemblies by troubleshooting and replacing electronic components as required. Provides software testing to Test Wing agencies on Eglin AFB.

Unique Capabilities: Maintains full F-16 and F-15 radar mockups with capability to troubleshoot and repair parts in concert with associated avionics intermediate stations (AIS). A Huntron Tracker is on hand to repair circuit cards. A LANTIRN Mobile Support Shelter and a PAVE-TACK repair test set are also available.

AVIONICS (Continued)

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd FW (ACC)
4. 9th Special Operations Squadron
5. 728th Tactical Control Squadron

JTIDS GROUND TECHNICAL FACILITIES/SUPPORT EQUIPMENT

ENHANCED JTIDS SYSTEM EXERCISER (EJSE)

Mission Statement: The EJSE was developed to test and evaluate JTIDS.

Unique Capabilities: Provides monitoring, control functions, and real-time message generation. Supports test analysis through its data printout and tape playback capability. Prepares simulation tapes to match a wide range of operational and test scenarios. Emulates individual tactical elements, such as a small radar-equipped surveillance site, and can perform rate-aided manual tracking. With an antenna mounted on a 90-foot pole, the EJSE can communicate with aircraft on the Eglin Ranges, and with the ASIT at Hurlburt Field.

Outside Customers Supported:

1. JTIDS Joint Program Office, Hanscom AFB, MA.
2. Joint STARS Program Office, Melbourne, FL.
3. ABCCC Program Office, Hanscom AFB, MA.
4. TMD Program Office, Hanscom AFB, MA.
5. 727th Air Control Squadron, Hurlburt Field, FL.
6. 728th Air Control Squadron, Eglin AFB, FL.

OPERATIONAL FACILITY (OPFAC)

Mission Statement: The OPFAC is an F-15 Multistage Improvement Program (MSIP) Operational Flight Program (OFP) Avionics Integration Bench. It was originally intended for the pre-release verification of new aircraft software.

JTIDS GROUND TECHNICAL FACILITIES/SUPPORT EQUIPMENT (Continued)

Unique Capabilities: Provides the capability for the complete manipulation of any aircraft parameters to allow for the trapping or simulation of special circumstance events. OFP monitoring is available, as well as single step execution to enable software debugging. A JTIDS scenario assembler is included in the OPFAC, enabling it to be used to conduct JTIDS software testing, demonstrations, and pilot training.

Outside Customers Supported:

1. **JTIDS Joint Program Office.**

JTIDS INTEGRATION "HOT" BENCH & JTIDS INTERFACE TEST SET

Mission Statement: Provides a means for testing each JTIDS terminal prior to installation in an aircraft. It also supports laboratory analysis of any JTIDS problems that may be experienced in the aircraft.

Unique Capabilities: Performs laboratory testing of the JTIDS terminals. Consists of shelves with brackets for mounting and securing the terminal under test, and 28 Volts DC and 115 Volts AC/400 HZ power sources. The Hot Bench has fans for cooling the terminal, and a test panel for testing each operating function of the terminal. The Interface Test Set can simulate TACAN inputs, and can provide JTIDS voice. The Hot Bench can also monitor the local Eglin TACAN through the JTIDS terminal's internal TACAN. Since the Hot Bench has no Heading Situation Indicator (HSI) to display the TACAN range and bearing, the TACAN functions are displayed on a computer screen.

Outside Customers Supported:

1. **JTIDS Joint Program Office.**

MULTILATERATION SYSTEMS & GPS

Mission Statement: Provides a time-space-position-information (TSPI) capability to support customer needs. While providing TSPI of up to 20 aircraft or ground vehicles, up to 6 vehicles can be remotely controlled. Airborne pods provide TSPI from multilateration and/or GPS/inertial reference. A synchronized A/C and remote controlled target test capability is provided at a central control facility (CCF).

MULTILATERATION SYSTEMS & GPS (Continued)

Unique Capabilities: Uses the resources of the Gulf Range Drone Control Upgrade System (GRDCUS) to provide a wide area test arena, including over-the-horizon, over Eglin, Tyndall and the South East Test and Training Area (SETTA). IFF radar data can also be shared with MTACS. Two data link frequencies are available for simultaneous missions each having the number of participants mentioned in the above statement.

Outside Customers Supported:

1. **AFOTEC**
2. **USAF AWC**
3. **U. S. Navy**
4. **U. S. Army**
5. **Various foreign governments**

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION

Mission Statement: Provides design, development, and operation of airborne and surface EO/MMW instrumentation systems. Provides multispectral targets and targets in back-ground including target expendables. Provides captive carry operation and test of air-to-air, surface-to-air, and surface-to-surface domestic and threat missile seeker guidance, and control units operating in a real and CM environment. Provides quick look and field data reduction and analysis of all collected signature data.

Unique Capabilities: Multispectral signature measurement and captive flight testing capability residing in a cadre of highly qualified technical and range personnel and customized and standard sophisticated EO/MMW instrumentation operating in A-A, A-S, S-S, S-A, and tower/turntable scenarios. Spectral range includes ultra-violet, visible, mid and long wavelength infrared, laser, millimeter wave, seismic, acoustic, and magnetic. Measurement disciplines include temporal, radiometric, spatial, spectral, phase, range, polarization, frequency, and cross section. State-of-the-art sensitivity, resolution, and bandwidth, data rate/recording and seeker/sensor performance measurements are maintained. A suite of targets for target and target in clutter signature measurement and seeker/sensor evaluation are maintained. Archiving of collected data is provided by the Targets and Background Information Library System (TABILS). The capability is uniquely connected to modeling and simulation facilities such as the Guided Weapons Evaluation Facility (GWEF) as a source of data required to drive HITL scene generators and to validate models. The capability is built upon many years of T&E research and engineering expertise and experience.

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION (Continued)

Outside Customers Supported:

1. ASC
2. USAF AWC
3. AFSOC
4. U. S. ARMY
5. U. S. NAVY

AIRBORNE SYSTEMS/INSTRUMENTATION

Mission Statement: Designs, develops and procures airborne instrumentation systems for installation on aerospace vehicles and airborne threat simulators. Performs T-2 (Class II) modification support and post modification calibration and checkout. Provides pre/postflight instrumentation support for test missions.

Unique Capabilities: The unique capability provided is the design, procurement, installation and support of aircraft instrumentation systems, i.e. the requirement-to-requirement support of highly instrumented T&E aircraft. Based on the given requirements, the system engineers design instrumentation systems utilizing standard instrumentation subsystems, where possible, for quick turnaround and best maintenance support. Procurement of the system components is then initiated. This may entail contacting potential vendors, writing specifications and Justification Review Documents, and evaluating bids. Next is the creation of the instrumentation modification package, it's installation, and it's checkout. "Standard Operating Procedures" detailing instrumentation operation during pre/postflight checkout are written and the aircrew is aided in writing the Partial Flight Manual Supplement. Instrumentation systems collect various types of data for real time transmission (after encryption) and/or onboard recording. One type includes avionics/weapons/electronic warfare/display buss information and sensor data (strain gauges, accelerometers, etc). Aircraft displays (Hud, VSD, RWR, etc) are tape recorded and transmitted, if desired. Film cameras record store separation and a radar transponder enhances radar tracking. All data and events are time correlated with IRIG time. Engineers and electronic "bench" technicians maintain, calibrate, and repair the various instrumentation subsystems utilizing special "hot" benches. System engineers and electronic "preflight" technicians also checkout and setup the instrumentation before flight and download tape recorders and pods after flight.

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

"SPECIALIZED" ELECTRONIC SYSTEMS FLIGHT

Mission Statement: Provides AFDTC with a complete in-house capability for developing unique TSPI and remote-controlled systems.

Unique Capabilities: Provides electrical and mechanical engineering, design and fabrication services for simple to very complex one-of-a-kind systems. The functions of the flight include:

1. Electrical and Mechanical design, prototyping, and end-product fabrication of the various sub-systems involved.
2. System integration and testing
3. Preparation of technical specifications and engineering evaluation reports
4. Engineering consultation to AFDTC agencies as well as outside agencies on TSPI, remote control, TM, RF and antennas
5. Personnel expertise and equipment to perform the mission

Outside Customers Supported:

1. ASC
2. Tyndall AFB
3. WSMR

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Mission Statement: Provides AFDTC with a system level capability for developing, integrating, and testing the specialized instrumentation and control systems required in support of all types of ground and flight testing. This in-house capability spans the entire process of acquiring such systems: from "development of requirements" to "design" to "build-up" to "testing" to "installation and training".

Unique Capabilities: The uniqueness of the Electronic Design and Development Flight is its broad based expertise which allows it to perform its mission (in-house development) in a quick response mode without outside support. Equally important is its capability to remain flexible to changes in requirements during the development process with minimal impact on schedule.

Outside Customers Supported:

1. USAF AWC
2. Aeronautical Systems Center
3. AFOTEC

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Outside Customers Supported: (Continued)

4. **U. S. Army**
5. **U. S. Navy**
6. **Various foreign governments**

AIRCRAFT SYSTEMS/DESIGN AND MODIFICATION

Mission Statement: Designs, installs, and documents the buildup of aerospace vehicle T-2 modifications and airborne threat simulators. Maintains configuration management records on these modifications.

Unique Capabilities: The 46 Test Wing has the capability and the facilities necessary to perform the entire T-2 modification process. The aero-engineering section has all the various skills required: aero-engineers, mechanical engineers, electrical engineers, aero-technicians, and electronic technicians. These personnel (working with an assigned systems engineer) perform the aero/mech/elec design of all in-house T-2 modifications and approve/review all contractor provided T-2 modifications. In conjunction with the system engineer, a cost/man-hours estimate is provided to the customer. Aircraft technical orders, military standards and specifications, equipment manuals are researched. The aircraft to be modified is examined for available space for installing instrumentation and detailed measurements are taken. Then, utilizing engineering workstations with computer aided design (CAD) and computer aided engineering (CAE) software, structural and electrical drawings are created. Aerodynamic/structural analyses are performed. All material, mechanical and electrical, are researched for part numbers and other ordering information and a list is provided for procurement. Work orders are generated and sent for mechanical fabrication and then returned for electrical wiring and component installation. Electrical engineers approve the electrical drawings and perform an electrical loads analysis to prevent overloading any portion of the aircraft's power generation and distribution system. The modification engineer provides written instructions, guidance, and other pertinent documentation which constitute the T-2 modification package. With shop support (sheet metal, machine shop, etc) and electricians, dock chiefs direct the T-2 modification installation. The installation is monitored throughout by the modification and system engineers.

Outside Customers Supported:

1. **USAF AWC**

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

AIR-TO-AIR MISSILE MAINTENANCE FACILITY

Mission Statement: Provides the necessary expertise and direction for all missile related activities. Coordinates between Weapons System Evaluation Group (WSEP), Advanced Medium Range Air-to-Air Missile (AMRAAM), and numerous other test and development projects to provide work space, equipment, and technical knowledge, enabling continuous operations. Provides in-depth training to all assigned personnel to ensure management of seven missile systems(AIM-7, AIM-9, AIM-120, AGM-45, AGM-65, AGM-84, AGM-88). Ensures proper management of the Tactical Missile Reporting System (TMRS). Provides periodic maintenance and management of over 70 pieces of missile support equipment. Performs periodic safety inspections ensuring all safety practices are enforced. Provides a quality product to the customer. Provides essential on-the-job- training to assigned personnel.

Unique Capabilities: Performs maintenance and inspection on telemetry units of AIM-9L/M and AIM-7M. Completed action on unpublished Time Compliance Technical Order on AIM-120 Advanced Medium Range Air-to-Air Missile.

Outside Customers Supported:

1. **Air Warfare Center**
2. **Weapons System Evaluation Program (WSEP)**
3. **Hughes Corporation**
4. **Raytheon Corporation**
5. **China Lake Depot**
6. **Georgia Tech Research Institute**
7. **Harris Corporation**
8. **Atlantic City Air National Guard**

AIR-TO-GROUND MISSILE MAINTENANCE FACILITY

Mission Statement: Used for the assembly, final integration testing, and inspection of guided weapons prior to flight testing. The facility is fully staffed and equipped to support the T&E of the integration of fuzes, warheads, actuators, data links, IMU/GPS, propulsion, airframes/structures, hardware/software, guidance/control, weapons sensors, and flight termination systems. Additionally, build-up and modification of bombs/missiles, as well as integrated systems tests, are performed at this facility. The test chambers in building 999 are rated for Category 1 explosives.

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB

Mission Statement: Responsible for the maintenance, calibration and certification test, measurement and diagnostic equipment designated Type II, Type III and Type IV PMEL support. Responsible for the calibration and repair of signal generating, waveform measuring, and frequency counting, voltage, current, resistance, inductance, and power measuring instruments, mechanical, electro-mechanical, dimensional and radiation measuring equipment. Responsible for the calibration and repair of F-15 and F-16 Avionics Intermediate Stations

Unique Capabilities: One of the largest PMELs in the Air Force and the regional facility servicing Northwest Florida. Has an active program currently developing automated calibration testing of equipment.

Outside Customer Supported:

1. **919th Special Operations Wing**
2. **OSD JADO Program**
3. **USAF AWC**
4. **AFOTEC**
5. **Naval EOD School**
6. **Vitro Services**

PRECISION MEASUREMENT FACILITY
SITE III MASS PROPERTIES

Mission Statement: Performs the weight, center of gravity, and moments of inertia measurements on munition and non munition items. Performs reballast procedures on munition and non munition items to provide the test engineers with a reliable product. Performs maintenance and operation of the portable mass properties machine. Used for the world wide field review measurement of stores (FRMS) operation. Mass properties data collected at various bases is put into the mass properties data program for updating the stores technical and mass properties data bank (STAMP), This ensures the project engineers have the proper mass properties data. Performs assembly/disassembly of munitions items for the purpose of adapting the items to the test set. Develops procedures for efficiency and safety of operations on new prototype test items.

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

MUNITIONS BUILD-UP

Mission Statement: Operates six indoor maintenance/build-up facilities totaling 54,000 square feet and 2 outdoor holding /build-up areas totaling 27,000 square feet. The missile section performs build-up of Air-to-Air, AIM-4, 7, 9, and 120 missiles and Air-to-Ground, AGM-45, 65, and 88 missiles. The conventional munitions maintenance shops perform build-up of expendable aircraft countermeasures, cannon ammunitions, GBU-10, 12, 15, 16, 24 and 28 guided bombs, CBU-58, 87 89 and 97 cluster bombs, MK-82, 83, 84, M-117 and 118 general purpose bombs, MC-1 and TMU-28 chemical weapons, nuclear training shapes and BLU-107 cratering bombs.

MUNITIONS STORAGE AND HANDLING

Mission Statement: Provides the capability for storing and handling over 2,000 different types of munitions used to support DoD and foreign allies test and development projects, and 50 tenant unit munitions supply points. Responsible for inspection, minor maintenance and house keeping on 35 facilities within the 297 acre munitions storage area. Ensures correct storage and compatibility of munitions are maintained in strict compliance with all explosive safety standards. Total munitions storage capacity is 121,729 sq. ft. and total sited net explosive weight (NEW) authorized is 2,287,900 pounds. Capable of storing various sizes of munitions ranging from small arms ammunition to the Tomahawk cruise missile; maximum size of any one item to fit into storage structures would be no greater than 15,000 NEW and a dimension of approximately 18' x 10' x 10'. Provides logistical support to 500 test projects and five different maintenance sites within the munitions storage area. Directly supports several off-base test ranges on the 464,000 acre Eglin test complex. On a yearly basis, moves or delivers over 500 tons net explosive weight/1250 tons total weight of munitions covering more than 15,000 miles.

Unique Capabilities: Receipt, inspection, storage, maintenance, buildup, shipping and delivery capability is provided for any US or foreign munition used or tested at Eglin AFB. Major munitions categories include both current inventory and prototype general purpose and cluster bombs; precision guided munitions; air-to-air and air-to-ground missiles, nuclear trainers, Navy cruise missiles, Army Hellfire missiles, expendable aircraft countermeasures and small arm/cannon ammunition. Additional items include various British, Norwegian, Israeli, and former-Soviet Bloc munitions. A technical data library with preliminary handling/maintenance data and interim hazard classification is maintained for prototype, modified and foreign munitions.

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

ARMAMENT MAINTENANCE SECTION

Mission Statement: **Inspects and maintains all munition suspension equipment for the 46th Test Wing and the Air Warfare Center aircraft. To include pylons, bomb racks, launchers and adapters for weapons carriage on the F-15, F-16, and F-111 aircraft. Inspects and maintains guns and gun systems on the F-15 and F-16 aircraft, including removal and installation.**

Unique Capabilities: **Supports Ammo/Gun Test Range 22/C-64/C-74L with gun maintenance and support personnel on a daily basis. Advises test project personnel on modification requirements for AME. Maintains modified equipment for various test projects. Provides maintenance, repair and/or inspection for armament systems components owned by various military and civilian test agencies.**

ALTERNATE MISSION EQUIPMENT SECTION

Mission Statement: **Stores, controls and accounts for all munition suspension equipment for the 46th Test Wing and Air Warfare Center aircraft. Tracks all in-use equipment and schedules inspections through the maintenance section.**

AIRCRAFT REPAIR ELEMENT

Mission Statement: **Performs organizational, intermediate, and limited depot-level maintenance beyond the capability of other assigned maintenance activities. Accomplishes troubleshooting analysis, repairs, replacement, rigging, and operational and functional checkout of flight control systems, landing gears, air induction equipment, and canopy and windscreen assemblies. Provides capability for the recovery and reclamation of damaged and crashed aircraft. Maintains, inspects, and repairs all associated equipment required to accomplish the above mission.**

Unique Capabilities: **Performs flight control, landing gear, and canopy maintenance on any fighter aircraft in the USAF inventory. They are multi-aircraft qualified and perform intermediate and limited depot-level maintenance, tow target maintenance, and provide crash recovery services on any military or civilian aircraft without exception. Performs aircraft reclamation services on any type of aircraft and provide emergency response/crash recovery service to any aircraft over a three state area. Respond to all ground or inflight emergencies on Eglin and the Fort Walton Beach Regional Airport. Uniquely qualified to work with engineers performing class II modifications on aircraft and systems. Experience includes T-37, T-38, T-39, A-10, F-4, F-5, F-15, F-16, F-111, and UH-1 aircraft maintenance.**

EGRESS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on F-15, F-16 and F-111, Aircrew Egress Systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies egress systems and components. Replaces transparencies and rigs canopies on F-16 aircraft. Provides egress system familiarization training as required for, life support, fire department, and personal working within the Test Wing. Provides support on transient aircraft, as well as support to the 33 FW (ACC) under the host tenant support agreement. Provides support to the Eglin Armament Museum as required.

Unique Capabilities: Due to the knowledge of civilians, the shop has the repair capability for F-15, F-16, F-111, F-4 and A-10 egress systems.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing

FUELS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on aircraft fuel and in-flight refueling systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, seals, and modifies systems and components. Performs systems maintenance and servicing of Hydrazine tanks. Provides qualified support for emergency Hydrazine response teams. Maintains proficiency in detection of Hydrazine.

Unique Capabilities: The fuel system repair hangar is a state-of-the-art building and designed for that purpose. It has multi aircraft capability. It has indoor space for two, F-111/F-15 size aircraft, three F-16 size aircraft, of five UH-1N helicopters. The fuel hangar has indoor external fuel tank work area with a lifting hoist. This flight also has the regional hydrazine resource responsibility.

Outside Customers Supported:

1. USAF AWC
2. 187th Tactical Fighter Group, Montgomery, AL, Hydrazine Tank Servicing
3. 926th Fighter Group/XP, Naval Air Station, New Orleans, LA, Hydrazine Tank Servicing

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop is equipped with modern conventional toolroom and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

STRUCTURAL MAINTENANCE

Mission Statement: Provides a Structural Repair Shop for design, manufacture, modification, and repair of RDT&E test items required to support the AFDTC test program of a non-repetitive nature. Manufactures items and works with sheet metal and fiberglass in modifying bombs, missiles, rockets, robots, etc. Manufactures and installs class II modifications parts and kits on aircraft and missiles to include CNC production required by AFDTC engineers, scientists and contractors for development of the test projects. Provides an intermediate maintenance capability to support all AFDTC assigned, transient and associate tenant aircraft.

Unique Capabilities: Maintains operational support of multiple aircraft to include F-111's, F-16's, F-15's, UN-1H and full manufacturing capability for all aircraft tubing assemblies (to include Depot level lines).

STRUCTURAL MAINTENANCE (Continued)

Outside Customers Supported:

1. 9 SOS
2. Eglin AFB. 33 FW (ACC)
3. Tyndall AFB.
4. Hurlburt AFB.

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS
3 Manufactured Sleds for Holloman AFB
4. Provide welding and manufacture for 728 ACS
5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

CORROSION CONTROL

Mission Statement: Inspects and treats corrosion on aircraft, missiles, armament and other related equipment. Provides wash rack facilities to wash aircraft and aircraft parts. Provides a corrosion capability for performing intermediate maintenance and painting on assigned aircraft, age, and class II modification items. Provide RDT&E experimental coating for test engineers on tasks, drones, missiles, and radomes etc.

Outside Customers Supported:

1. Wright Laboratory - Armament Division
2. Navy EOD School
3. 9th SOS
4. Seek Eagle Program Office
5. Navy Coastal System Laboratory
6. 919 SOS
7. Mill Star Program

NON-DESTRUCTIVE INSPECTION

Mission Statement: Provides a capability to accomplish optical, penetrant, magnetic particles, ultra sound, eddy current, and radiographic inspections to determine component integrity and serviceability. Conducts experimental tests as to the integrity of RDT&E test designs and specifications. Provides oil analysis to determine wear metal effects on aircraft engines and oil wetted components.

Unique Capabilities: Multi-use facility, equipment, manpower, materials and training are shared equally with the 33rd Fighter Wing (ACC). The only known field level shop with two film processors.

Outside Customers Supported:

1. Air Warfare Center
2. 33d Fighter Wing
3. Wright Laboratory
4. 919 Special Operations

ELECTRO-ENVIRONMENTAL

Mission Statement: Responsible for off-equipment maintenance on aircraft electrical and environmental control systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies systems and components. Provides battery servicing for assigned aircraft, associate tenant aircraft and ground support equipment. Responsible for field maintenance of all aircraft ground support equipment, (AGE), gaseous and liquid oxygen and nitrogen systems. Services life raft cylinders and emergency oxygen bottles, (Life Support Equipment), for all assigned and associate tenant aircraft.

Unique Capabilities: Possesses one of only three K400 generator test stands at field level, and will be only one of two sites in the world capable of running both F-111 and F-15 parts.

Outside Customers Supported:

1. **33rd Tactical Fighter Wing**
2. **9th Special Operations Squadron**
3. **728th Tactical Control Squadron**

PNEUDRAULIC

Mission Statement: Responsible for off-equipment maintenance of pneudraulic components. Inspects, troubleshoots, bench checks, tests, repairs, services, and modifies components. Provides local manufacture and testing of flexible hoses and testing of rigid tubing. Maintains associated Test Stands and support equipment.

Unique Capabilities: Possess two state-of-the-art pneudraulic test stands which allow check-out and repair of all current and projected pneudraulic systems. Because of this capability, depots have authorized depot-level repairs on a case-by-case basis. A citrus-based parts cleaner is used to minimize hazardous waste.

Outside Customers Supported:

1. **Air Force Armament Museum**
2. **33rd Tactical Fighter Wing**
3. **9th Special Operations Squadron**

PATTERNS AND PLASTIC

Mission Statement: Provides a Pattern and Plastic Shop for design, manufacture, modification, and repair of RDT&E test items required to support the test program of a non-repetitive nature. Manufactures items and works with fiberglass, advanced composites, wood, and plastics in modifying bombs, missiles, rockets, etc. Manufactures Class II modification parts and kits on aircraft and missiles. Provides an intermediate maintenance capability to support all AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: Capable of manufacturing and repairing shock mitigation system under the container development program. This operation facilitates a fully equipped Wood Shop with unlimited support of hardware for finished wood products. Also supports manufacturing of form blocks for aircraft parts in support of class II modification and repair of assigned aircraft. Manufactures various airborne radomes for missiles, rockets and aircraft components using engineer specifications. Fully capable of supporting all DoD aircraft operations.

Outside Customers Supported:

1. **Drone Projects**
2. **Contractors VITRO, Raytheon, etc.**

WHEEL AND TIRE ELEMENT

Mission Statement: Performs turnaround maintenance on all wheel assemblies to directly support all AFDTC, AWC, and Air Rescue aircraft. Performs teardown, inspection, and buildup of all wheel assemblies to include cleaning and inspection of wheels and bearings, seals, and retainers. Ensures ample spare wheels and tires are on hand to accomplish missions requirements. Inspects and maintains all shop equipment associated with the wheel and tire element.

Unique Capabilities: Capable of performing tear down and/or buildup of wheel and tire assemblies on any A-6, A-7, F-4, F-5, F-16, F-15, F-111, C-130, T-38, T-39, H-60, H-53, Tornado, or Harrier aircraft. If given the equipment, capable of performing the same maintenance on any weapon system. Being a forward supply point enables them to interface directly with supply, thus facilitating a positive wheel and tire acquisition process. Works directly with the 46th EMS Corrosion Element when stripping of wheels is required.

WHEEL AND TIRE ELEMENT (Continued)

Outside Customers Supported:

1. 33rd FW (ACC)
2. Duke Field
3. Hurlburt AFB
4. USAF AWC
4. British Aircraft

AEROSPACE GROUND EQUIPMENT

Mission Statement: Provides field maintenance, periodic inspections, special inspections, servicing, refueling and dispatch as well as technical order modifications on over 500 pieces of powered and non-powered AGE assigned to AFDTC. Provides supervision, production control, quality assurance and supply support for AGE activities. Performs engine teardown, buildup (overhaul) and repair of components, i.e. starters, generators, motors, relays, etc. Responds to trouble calls on equipment in use. Provides equipment operator training to customers. Performs servicing of aircraft oil and hydraulic carts. Collects and recycles waste petroleum products generated by aircraft maintenance. The equipment is, for the most part, the newest and latest designs in the Air Force inventory today.

Unique Capabilities: AGE has supported the latest aircraft in the inventory. For example: F-117A, C-17, RC-135, B-1 and B-2 bombers, E-3A AWACS as well as NATO aircraft such as the Harrier and Tornado. The capability also extends to all other services DoD wide which AGE will be able to support well into the year 2000. Provides test support to Army and Navy aircraft such as helicopters and Navy sea launch cruise missile tests. Provides specialized equipment to contractors and base facilities in support of new and state of the art munitions and electronic warfare testing.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

No.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Not Applicable.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. The PRIMES facility can support Air Vehicle, Armament/Weapons, Electronic Combat and commercial functional areas. The PRIMES facility uses special test hardware and analysis software that provide a shared test capability for Air Vehicle, Armament/Weapon, Electronic Combat, and commercial functional T&E areas. Threat and target simulators, data collection systems, test control systems, and expertise can be shared to fully support increased testing of the listed functional area.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes. The PRIMES facility can accept additional T&E workload in support of Air Vehicle, Armament/Weapons, Electronic Combat and commercial functional areas including integration testing of land vehicles.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-N/A; Water-N/A; Land-Yes, this facility can be expanded on existing DoD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Top Secret/Special Access Required.

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes. GPS Monitor, GWEF-Primes Link, Radar Target Upgrade will greatly improve the current capability to test Armament/Weapons programs in PRIMES.

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

(3.1.F.1) Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.

Yes. PRIMES is the only ISTF supporting Air Armament testing for the DoD.

PRIMES is unique to the USAF, DoD, and US due to the ability to link an aircraft Installed System Test (IST) capability with a munitions HIL capability. There is no other facility in the US that has this capability to provide integrated T&E of the aircraft and munition, simultaneously, for all weapon employment phases, in a ground test environment.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

Yes. PRIMES is the only ISTF supporting Air Armament testing for the US Government.

PRIMES is unique to the USAF, DoD, and US due to the ability to link an aircraft Installed System Test (IST) capability with a munitions HIL capability. There is no other facility in the US that has this capability to provide integrated T&E of the aircraft and munition, simultaneously, for all weapon employment phases, in a ground test environment.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

Yes. PRIMES is the only ISTF supporting Air Armament testing within the United States.

PRIMES is unique to the USAF, DoD, and US due to the ability to link an aircraft Installed System Test (IST) capability with a munitions HIL capability. There is no other facility in the US that has this capability to provide integrated T&E of the aircraft and munition, simultaneously, for all weapon employment phases, in a ground test environment.

(3.1.F.2) Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
0.00%	24.60%	0.00%	0.00%	0.00%	0.00%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Not Applicable.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

Not Applicable.

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

Not Applicable.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Not Applicable.

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

Not Applicable.

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

Not Applicable.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Not Applicable.

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Not Applicable.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

Not Applicable.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

Local soil conditions enhance the ability of PRIMES to conduct ISTF tests. PRIMES benefits from area soils which consist ocean-washed sediments from the Piedmont region. Most of the colloidal material is removed, leaving a notedly loose soil composed largely of quartz crystals. These soils are poor transmitters of seismic energy making them ideal for isolating extremely sensitive instrumentation from ambient vibrations. This is extremely important if hardware-in-the-loop testing is to take place in the same geograhic area as open air munitions testing.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

No.

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Not Applicable, because most of the tests are conducted indoors under temperature and humidity controlled conditions. The tests that are conducted outdoors are not affected by temperature.

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Not Applicable, because most of the tests are conducted indoors under temperature and humidity controlled conditions. The tests that are conducted outdoors are not affected by humidity and not limited by rain..

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

FY		FY	
85	0	90	0
86	0	91	1
87	0	92	1
88	4	93	2
89	13		

= 21

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Not Applicable.

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

Not Applicable.

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Not Applicable.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Not Applicable.

(3.2.A.2) Where are they located relative to your airfield?

Not Applicable.

(3.2.A.3) At what altitude (upper and lower altitude)?

Not Applicable.

(3.2.A.4) Over land or water? What size and shape (length and width)?

Not Applicable.

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Not Applicable.

(3.2.A.6) What is the maximum number of simultaneous users?

Not Applicable.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

1. **Number and Azimuth of Runways - 3 Runways:**
   a. **Runway 12/30 (Main Base)**
   b. **Runway 01/19 (Main Base)**
   c. **Runway 18/36 (Duke Field)**

2. **Elevation:**
   a. **Runway 12/30 = 85' MSL**
   b. **Runway 01/19 = 85' MSL**
   c. **Runway 18/36 = 193' MSL**

(3.2.B.1) (Continued)

3. Runway Length (Excluding Overrun):
   a. Runway 12/30 = 12,000'
   b. Runway 01/19 = 10,000'
   c. Runway 18/36 = 8,000'

4. Overrun Length (Departure End):
   a. Runway 12 = 1,000'
   b. Runway 30 = 1,000'
   c. Runway 01 = 550'
   d. Runway 19 = 1,000'
   e. Runway 18 = 555'
   f. Runway 36 = 552'

5. Terminal/Landing Aids:
   a. Main Base - TACAN, ILS, VASI, ASR
   b. Duke Field - TACAN, ILS, VASI, ASR

6. Arresting Cable:
   a. Main Base - YES
      (1) Runway 12/30 - BAK-9, BAK-12
      (2) Runway 01/19 - BAK-12
   b. Duke Field - YES
      (1) Runway 18/36 - MA-1A

7. Ramp Area:
   a. Main Base = 4,723,758 SF (does not include 1,681,021 SF of transient ramp)
   b. Duke Field = 1,908,360 SF (does not include 182,074 SF of transient ramp)

(3.2.B.1) (Continued)

8. Construction Material:
   a. Runway 12/30 (Main Base) - First 2,000 feet on each end is concrete. All other is asphalt.
   b. Runway 01/19 (Main Base) - All asphalt.
   c. Runway 18/36 (Duke Field) - All asphalt.
   d. Ramps - All concrete.

9. Load Capability - The runways will support any aircraft in the DoD inventory in their present condition.

10. Hangar Space:

MAIN BASE FACILITY #	ENCLOSED SPACE (SF)	
72	31,552	
102	38,440	
103	38,340	
110	57,546	
130	129,766	
138	14,866	
421	43,322	
422	43,322	(Currently being used for storage, contains internal temporary dividers)
920	2,583	
1318	57,408	
1339	18,807	
1343	33,998	
1345	36,968	
1385	11,050	
1386	11,050	
	569,018	SF Total Enclosed Area

(3.2.B.1) (Continued)

DUKE FIELD FACILITY #	ENCLOSED SPACE (SF)
3020	23,876
3025	58,846
3029	22,373
3057	33,834
3087	23,409
3150	37,488
	199,826 SF Total Enclosed Area

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Not Applicable.

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Not Applicable.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Not Applicable.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

Not Applicable.

(3.2.B.6) Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

Not Applicable.

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

PRIMES supports fit and function testing of munitions and electronic pods on F-15, F-16, F-111 and helicopter air vehicles (See 3.3.B.1 for additional capabilities).

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

A full complement of ground support facilities for preflight checkout or rehearsal of test missions exists at Eglin AFB. Notable examples are:

The Guided Weapons Evaluation Facility (GWEF) and Preflight Integration of Munitions and Electronic Systems (PRIMES) facilities are linked and provide open and closed loop simulation of realistic scenarios. These unique simulation facilities can take a weapon system from target acquisition through launch and mid-course flight in a dense electronic combat environment to terminal engagement with a target. Flightline preflight of instrumented aircraft and weapons to include exercising telemetry, command destruct, operational flight program software, weapon system data link, and offensive and defensive systems.

In addition to the off-equipment repair of Line Replaceable Units (LRU) removed from F-15 and F-16 aircraft, Avionics Intermediate Shops (AIS) perform software loading of operational flight programs, modifications, calibrations and testing for those aircraft. This includes weapons control radars, internal navigation units, head-up displays, automatic flight control, instrument, communication, and navigation systems.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Not Applicable.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

Not Applicable.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Not Applicable.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

Not Applicable.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Not Applicable.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Not Applicable.

(3.3.A.1) What is the number of threats simulated?

PRIMES can provide 6,172 unique multiplexed threat signals.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

PRIMES can simulate 66 simultaneous threats of all types. Maximum signal density is 21 million pulses. Average power density is 8 million pulses, Power levels range from -10 dBm to +20 dBW. Frequency bands are 0.5 to 18 GHz. Signals can be both radiated and injected.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Yes. NAIC.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Open loop - Yes; Reactive - Yes; Closed loop - No.

(3.3.A.5) What is the threat representation (fidelity) and density?

High fidelity with 66 threats. Low fidelity with 6,172 threats.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

Sea, land and airborne threats can be generated by defining platform.

(3.3.A.7) What geographic dispersion can be simulated?

One cell of DMA terrain elevation data is used to represent geographic location.

(3.3.A.7.A) Threat lay down?

Any threat laydown can be simulated within constraints of signal density.

(3.3.A.7.B) Representative distance?

Representative distances can vary from tens to hundred of kilometers depending on signal levels required.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? Relocatable to new scenarios? Yes/no

Yes, all threats are dynamic in motion via modeling and simulation methods.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

No, however PRIMES is planning to be connected to the Joint Advanced Distributed Simulation and Distributed Interactive Simulation program in FY95-96. These programs will link EMTE, AFEWES, REDCAP, PRIMES, and other MRTFB facilities.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

Yes, only one customer can use the PRIMES anechoic chamber at a time. There are no other limitations on simultaneous users.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

Yes. Maximum size airframe is EF-111, weight limit is 40 tons for anechoic chamber. Enlarging chamber and increasing hoist capacity would accommodate larger aircraft. There is no limitation on supporting large aircraft on the ramp.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

6. One in the chamber, 2 in labs, 2 in the hangar, and 1 on the ramp.

(3.3.B.3) What range of spectra can be tested and evaluated?

1 KHz to 35 GHz in the chamber. FCC coordination is required for radiation outside the chamber.

(3.3.B.4) What are the available spectra?

1 KHz to 35 GHz in the chamber. FCC coordination is required for radiation outside the chamber.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Yes. RF threat scenario, target scenarios, and GPS scenarios can be generated.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Not Applicable.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Not Applicable.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

Not Applicable.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES)

		FISCAL YEAR								
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93	
AIR VEHICLES	DIRECT LABOR	NA	0	0	0	0	0	0	0	
	TEST HOURS	NA	0	0	0	0	0	0	0	
	MISSIONS	0	0	0	0	0	0	0	0	
EC	DIRECT LABOR	NA	0	3,564	2,937	6,067	12,111	7,436	4,191	
	TEST HOURS	NA	0	648	534	1,103	2,202	1,352	762	
	MISSIONS	0	0	157	99	77	157	137	90	= 717
ARMAMENT/WEAPONS	DIRECT LABOR	NA	0	0	0	1,430	1,254	132	2,437	
	TEST HOURS	NA	0	0	0	260	228	24	443	
	MISSIONS	0	0	0	0	15	19	3	45	= 82
OTHER T&E	DIRECT LABOR	NA	0	0	275	2,893	1,172	545	1,287	
	TEST HOURS	NA	0	0	50	526	213	99	234	
	MISSIONS	0	0	0	5	22	12	11	27	= 77
OTHER	DIRECT LABOR	NA	0	0	55	0	1,056	28	0	
	TEST HOURS	NA	0	0	10	0	192	5	0	
	MISSIONS	0	0	0	1	0	8	1	0	= 10

NOTE: Direct Labor hours are estimated using the "Workload Per Test Per Facility Hour" factor from the Unconstrained Capacity Form. 886

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PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES)

ANNUAL HOURS OF DOWNTIME	605
AVERAGE DOWNTIME PER DAY	1.7
AVERAGE HOURS AVAILABLE PER DAY	22.3

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY
				580
CHAMBER	1	7	7	
FLIGHTLINE/RAMP	1	3	3	ANNUAL
HANGAR	2	4	8	UNCONSTRAINED
SHEILDED LAB	2	4	8	CAPACITY
TYPICAL	0	0	0	211,627
			TOTAL: 26	

NOTE: Typical represents additional tests that could be accomplished if manpower were unconstrained.

FLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: PRIMES

AGE: 51 years

REPLACEMENT VALUE: $195,701,000*

MAINTENANCE AND REPAIR BACKLOG: $205,000

DATE OF LAST UPGRADE: FY84**

NATURE OF LAST UPGRADE: Rehab of hangar to accommodate PRIMES $7 million in MILCON and $17 Million in instrumentation and equipment.

MAJOR UPGRADES PROGRAMMED: NONE**

1. UPGRADE TITLE:
TOTAL PROGRAMMED AMOUNT:
SUMMARY DESCRIPTION:

2. UPGRADE TITLE:
TOTAL PROGRAMMED AMOUNT:
SUMMARY DESCRIPTION:

* Replacement Cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.

**Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on additional information chart.

PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

GENERAL INFORMATION

Facility/Capability Title: PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONIC SYSTEMS (PRIMES)

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46th Test Wing

Location: Eglin AFB, FL

T&E Functional Area: Armament/Weapons

UIC: Not Available.

T&E Test Facility Category:
PRIMARY: Installed Systems Test Facility (ISTF)
SECONDARY: Integration Lab

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	100	0	0	0	0	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	0	0	0	0	0	0	0
Armament/Weapons	31/31 = 100%	0	0	0	0	0	31
EC	53	0	0	0	0	0	53
Other	16	0	0	0	0	0	16

PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

TECHNICAL INFORMATION

Facility/Capability Title: PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONIC SYSTEMS (PRIMES)

Facility Description; Including mission statement: The PRIMES Test Facility is an Installed Systems test capability (also capable of Integration Laboratory testing) for the T&E of aircraft and munitions systems. Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) testing, weapon system integration testing, and weapon system electronic counter-countermeasures (ECCM) testing are provided in a shielded anechoic chamber test environment. Two rapid preflight and postflight test areas are provided, concurrent with anechoic chamber testing, in two unshielded hangar test stations and a larger outdoor test station.
Interconnectivity/Multi-Use of T&E Facility: The PRIMES Test Facility is currently linked to the Guided Weapons Evaluation Facility (GWEF) at Eglin AFB. The fiber optic link serves as a transparent MIL-STD 1760 connection between the aircraft at PRIMES and the munition at the GWEF during captive carriage simulation. The GWEF-PRIMES Link also provides coherent scene synchronization between the two facilities during captive carriage, launch/release, midcourse, and terminal phases of the weapon employment simulation. The link is composed of over 100 separate fiber optic channels, each with 2 GHz bandwidth. Each fiber optic channel is secured with communications security (COMSEC) equipment and procedures. PRIMES also provides a test capability for electronic combat, command-control-communication-computers-intelligence (C4I), and avionics/electronics systems on aircraft, helicopters, and land vehicles.
Type of Test Supported: Electromagnetic Interference (EMI), Electromagnetic Compatibility (EMC), air-to-air weapon systems performance and ECCM, air-to-surface munitions performance and ECCM, fire control radar performance and ECCM, anti-radiation munitions performance, radar warning receiver characterization, jammer system performance, identification friend or foe (IFF) performance, and anti-jam communication systems ECCM performance.
Summary of Technical Capabilities: The PRIMES Test Facility has general and special purpose test equipment for testing EMI and EMC of aircraft avionics, munitions, C4I, and electronic combat systems in a fighter-sized anechoic chamber environment. Facility and personnel certification for EMI/EMC testing will be completed by the National Institute of Science and Technology under the National Voluntary Laboratory Accreditation Program in FY95. Performance testing of aircraft weapons systems is presently accomplished with radar target generators and jammers, 6 degree of freedom flight motion simulators, threat radar simulators and high speed data collection equipment. Effectiveness testing of aircraft and weapons systems is accomplished with the GWEF-PRIMES Link capability.
Keywords: EMI, EMC, ANECHOIC, AIR-TO-AIR, AIR-TO-SURFACE, AIRBORNE, ECCM, CCM, INSTALLED, C4I, LINKS, INTEGRATION TESTING

PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

INSTRUMENTATION/ASSETS FACT SHEET

Target and ECM Generator System (TEGS) is a 2-channel, radar target generator for testing the APG-63, APG-66, APG-68, and the WEST XI fire control radars. Target minimum range is 2 nautical miles (NM) and maximum range is 160 NM. Line of sight for each radar target is constant, within the field of view of the radar system. ECM techniques include correlated velocity and range deception, spot noise, and barrage noise.

PRIMES Trajectory Generator (PTG) is a 6 degree of freedom (DOF) flight motion generator providing state vector data that is used for inertial data injection on the MIL-STD 1553 avionics data bus. The state vector data is also used by other RF simulators in PRIMES to create a synchronized, correlated environment. The PTG also generates 6 DOF state vectors for airborne or ground targets.

GPS Constellation Simulator is a 10-channel, RF simulator that provides radiated, free-space GPS signals to the platform under test in the anechoic chamber. ECM (DLQ-3B) can be added to the GPS signal in an on-axis or off-axis configuration. NSA approved Selective Availability (SA) and Anti-Spoofing (AS) simulations are also provided.

High Speed Instrumentation (HSI) is a 16 gigabyte per second data collection and recording system. The HSI can be configured for collecting multiple standard digital formats, such as MIL-STD 1553. Other data formats such as telemetry PCM, analogs, and customized data/address buses can be accommodated. Work stations provide data reduction capability for post mission analysis.

EMI/EMC Instrumentation is a collection of spectrum analyzers, antennas, signal generators, and field probes providing a limited MIL-STD 461/462 test capability. Facility and personnel EMI/EMC certification is provided by the National Institute of Science and Technology.

GWEF-PRIMES Link is a fiber optic network that connects the Guided Weapons Evaluation Facility (GWEF) and the PRIMES facility to provide an integrated aircraft/munitions test capability. This capability resides in specialize hardware and software to control the multi-spectral simulations running at PRIMES and GWEF simultaneously. Real-time data analysis is provided to monitor the simulation.

PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONICS SYSTEMS (PRIMES) FACILITY

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONIC SYSTEMS (PRIMES)

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	0	0	0	0	0	0	0
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	9	9	9	8	7	7	7
CONTRACTOR	24	24	24	24	24	24	24
TOTAL	33	33	33	32	31	31	31

*NOTE: FY95 and beyond are subject to manpower reductions.

TOTAL SQUARE FOOTAGE: 80,069 SF
TEST AREA SQUARE FOOTAGE: 61,495 SF
TONNAGE OF EQUIPMENT: 72 TONS
ANNUAL MAINTENANCE COST: $1.7 M

OFFICE SPACE SQUARE FOOTAGE: 18,574 SF
VOLUME OF EQUIPMENT: 88,800 CF
ESTIMATED MOVING COST: $12.36 M

CAPITAL EQUIPMENT INVESTMENT:

Program Element	FY93	FY94	FY95	FY96	FY97	FY98	FY99
64759F	$2,127K	$2,503K	$1,403K	$608K	$1,612K	$2,395K	$2,000K
64256F	$400K	0	$148K	$4,070K	$2,005K	$166K	0

Document Separator

T&E PERCENTAGES

SITE/ACTIVITY: AFDTC @ EGLIN AFB, FL

FACILITY	TOTAL % T&E	AV	EC	A/W	OTHER	
DIGITAL MODELING AND SIM	100	0	3.5	96.5	0	A/W DMS
McKINLEY CLIMATIC LAB	100	58	9	0	33	AV MF
MULTISPECTRAL SIG MSMT	100	8	7	50	35	A/W MF
EGLIN SLED TRACK	100	0	2	92	6	A/W MF
WARHEAD ARENA	100	1	0	99	0	A/W MF
FUZE TEST FACILITY	100	0	0	99	1	A/W MF
GUN TEST FACILITY	96	0	0	93	3	A/W MF
GWEF	90.44	0.49	1.81	80.06	8.08	A/W HITL
AFEWES	100	0	100	0	0	EC HITL
REDCAP	100	0	100	0	0	EC HITL
RIMES	100	0	53	31	16	A/W ISTF
ASTE	80	3	5	40	32	A/W OAR
EMTE	98	1	57	9	31	EC OAR
GULF TEST FACILITY	33	1	3	7	22	A/W OAR
HELLFIRE TEST FACILITY	100	0	0	100	0	A/W OAR
BISS	95.8	1.3	0.5	3.1	90.9	OTHER OAR

Doug Nation 12 Aug 94
SIGNATURE DATE

Don Jenkins 12 Aug 94
SIGNATURE DATE

12 Aug 94
SIGNATURE DATE

BOOK #310

TOTAL PAGES

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FACILITY/CAPABILITY: ASTE @ EGLIN AFB

TEST FACILITY CATEGORY: OAR

% T&E - OVERALL: 80

AV: 3

EC: 5

A/W: 40

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 10 + 20 = 30

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	177	FY93	964
EC:	FY92	1,386	FY93	1,131
A/W:	FY92	5,028	FY93	9,363

Nation 12 Aug 94

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY92

Program Element	AV	EC	A/W	OT	OTHER
11128F			X		
27130F		X			
27134F		X	X		
27162F			X		
27217F	X				
27313F			X		
27590F			X		
27597F					X
28015F			X		X
35887F		X			
62101F			X		
62602F			X		
63601F			X		
63737D			X		
64211F	X				
64270F		X			
64602F			X		
64604F		X	X		
64607F			X		
64733F			X		
64735F				X	
64770F				X	
64940D			X	X	
65130D			X		

(2.1.B.1) Continued

Historical, FY92 (Continued)

Program Element	AV	EC	A/W	OT	OTHER
65712F		X	X		
65807F			X	X	
72806F			X		
ARMY		X	X	X	X
B6404D			X		

Historical, FY93

Program Element	AV	EC	A/W	OT	OTHER
11120F			X		
27130F		X			
27133F	X		X		
27134F		X	X		
27162F			X		
27163F			X		
27165F			X		
27217F	X				
27249F	X				
27313F			X		
27590F			X		
27597F					X
28015F		X	X		X
28030F			X		
35887F		X			
62101F			X		
62602F			X	X	
63203F			X		
63226E	X				
63270F	X				
63307F		X	X	X	
63601F			X		

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(2.1.B.1) Continued

Historical, FY93 (Continued)

Program Element	AV	EC	A/W	OT	OTHER
63737D			X		
64239F	X				
64270F		X			
64602F			X		
64604F	X		X		
64607F			X		
64617F			X		
64733F			X		
64735F				X	
64770F				X	
64940D				X	
65130D			X		
65712F		X	X		
65804D	X				
65807F			X	X	
65865F				X	
72806F			X		
ARMY		X	X	X	X
B6404D			X		

Future Years

Program Element	AV	EC	A/W	OT	OTHER
11120F			X		
11128F			X		
27130F		X			
27133F	X		X		
27134F		X	X		
27160F			X		
27162F			X		

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(2.1.B.1) Continued

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
27163F			X		
27165F			X		
27217F	X				
27249F	X				
27313F			X		
27590F			X		
27597F					X
28015F		X	X		X
28030F			X		
35887F		X			
62101F			X		
62602F			X	X	
63203F			X		
63226E	X				
63270F	X				
63307F		X	X	X	
63601F			X		
63737D			X		
64226F			X		
64239F	X				
64249F	X		X		
64270F		X			
64602F			X		
64604F	X	X	X		
64617F			X		
64618F			X		
64727F			X		
64733F			X		
64735F				X	
64770F				X	
64940D			X	X	

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(2.1.B.1) Continued

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
65130D			X		
65712F		X	X		
65804D	X				
65807F			X	X	
72806F			X		
ARMY		X	X	X	X
B6404D			X		

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	.10	.55
Electronic Combat	.78	.64
Armament/Weapons	2.84	5.30
Other Test	4.62	3.84
Other	1.33	1.83

Note: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

Yes. The safety footprint or required mission profile for an item under test must be deconflicted with other concurrent mission activity.

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(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. The loss of ASTE would result in the inability to support quick reaction testing for contingency operations such as preparation training for the Gulf War, classified missions, classified stores for the F-117, and the GBU-28.

(2.3.B.1) On the test mission of any other activity?

Yes. ASTE is essential to AMRAAM testing, AFSOC testing at Hurlburt Field, WSEP testing by AWC (both A-A and A-G) including Tyndall AFB testing, joint Army/Air Force Chicken Little testing, DoD EOD school testing/training, and Navy testing at the Shallow Water Mine Countermeasure Test Facility.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. AMRAAM flight testing (DT&E and OT&E), Hellfire testing, AWC Blue Flag C4I testing/training and other command training (Alabama National Guard, 33 FW, AFSOC, etc.) are conducted using ASTE resources.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

For test missions utilizing the ASTE Range almost 100% of the missions will interconnect the Central Control Facility (CCF) with the range. Drone missions over the ASTE can be controlled from Tyndall AFB via the Gulf Range Drone Control Upgrade System (GRDCUS). The Hellfire facility uses TA C-72 (part of the ASTE) for the launch, tracking, and target impact of its missile tests.

(1) Central Control Facility	**External to the ASTE.**
(2) Hellfire	**Internal to the ASTE.**
(3) Drone Targets at Tyndall	**External to the ASTE.**

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(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Yes. CCF would lose a significant portion of its workload. The Hellfire Facility could not operate without use of the ASTE (specifically TA C-72). Like CCF, GRDCUS would be primarily affected in its workload.

(3.1.B) Facility Condition (MV II)

Reference the Facility Condition Form provided in Appendix A of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

<u>Encroachment:</u>

There are no limiting encroachment characteristics associated with this facility.

<u>Environmental:</u>

Yes. To date, AFDTC has not been restricted by environmental concerns, except for BLU-82/B 15,000 pound bombs (out of production, no future test requirements) and large bomb storage explosive propagation testing (max one per year). Potential conflicts between mission and environment have been mitigated through innovative land stewardship initiatives. For example Eglin has made a commitment to aggressively manage endangered species habitat in a manner to increase existing populations thereby gaining credibility with regulatory agencies while growing mission flexibility. Eglin's ability to conduct its existing mission and to accommodate new missions is heavily enhanced by its nationally recognized natural resources management program. During 1993-1994 Eglin received the Nature Conservancy's Presidential Award for Conservation, an award from the Florida Chapter of the Sierra Club, as well as the Air Force and DoD Program and Individual Awards for Nature Resource management. In addition, a Geographic Information System (GIS) is currently being developed as a method of memorializing environmental constraint data for the entire Eglin Military Reservation. This GIS coupled with a detailed Environmental Baseline Survey (EBS) of the ASTE will greatly accelerate environmental analysis and support quicker-cheaper-better decision making.

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(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Encroachment:
Not Applicable.

Environmental:
Not Applicable.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

Yes. Temporary permits include:

(1) Interim status under RCRA Subpart X which covers thermal treatment of waste explosives via Open Burn/Open Detonation (OB/OD). Recent meetings with the Florida Department of Environmental Regulation and the US Environmental Protection Agency (USEPA) indicate that Eglin's Subpart X permit application is now complete and the permit should be issued NLT Dec. 94, making Eglin one of the first bases in DoD to be formally permitted. Thermal treatment of waste munitions and unexploded ordnance are ongoing under interim status without any problems.

(2) The facility, which is used to perform life cycle testing of armor piercing rounds and conduct RDT&E for heavy metal warhead technologies is currently upgrading the process for recovering DU from the sand in catchment structures. The facility is Permitted by the USAF Radioisotope Committee and the Permit is renewed every 3 years.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	253,144
100 Mile Radius:	952,650
150 Mile Radius:	1,211,688
200 Mile Radius:	1,966,382

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(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Jet airway J58-86 and Gulf Route 26: routes are used on a daily basis. State highways 85 and 285: used on a daily basis. Sea area under warning areas W-151 and W-470 is international waters. Air routes may be closed for up to four hours for test activities. State highways may be closed for duration of test activities. Sea area is sufficiently large to permit positioning the test activity to avoid surface traffic.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. The following facilities are currently required to support the ASTE mission or are potentially required to support future test mission activities:

SUPPORT FACILITIES LIST

WRIGHT LABORATORIES
- **Advanced Warhead Experimentation Facility**
- **Environmental Sciences Facility**
- **Hypervelocity Research Facility**
- **Fuzes Research and Development Facility**
- **Ballistics Experimentation Facility (BEF)**
- **Aeroballistics Research Facility (ARF)**

WRIGHT LABORATORIES (Continued)
- Radio Frequency/Millimeter Wave (RF/MMW) Facility
- Electro-Optical Research Facility
- LADAR Development and Evaluation Research Facility (LDERF)
- Advanced Guidance Research Facility
- Kinetic Kill Vehicle HWIL Simulation Facility (KHILS)
- Model Fabrication Facility
- High Explosive Research and Development Facility
- Inertial Navigation Facility

AIR WARFARE CENTER

NAVAL EXPLOSIVE ORDNANCE DISPOSAL SCHOOL

AFDTC
- Freeman Computer Science Center
  - Test and Analysis
  - System Technology
  - Gulf Range Drone Control Upgrade System (GRDCUS)
- Safety
- Instrumented Airborne Platforms (C-130, F-111, F-15, F-16, UH-1)
- Avionics
- JTIDS Ground Technical Facilities/Support Equipment
  - Enhanced JTIDS System Exerciser (EJSE)
  - JTIDS Integration "Hot" Bench & JTIDS Interface Test Set
- Multilateration Systems & GPS
- Static Test Facility
- Electro-Optical/Millimeter Wave Instrumentation
- Airborne Systems/Instrumentation
- Meteorological Instrumentation
- "Specialized" Electronic Systems Flight
  - Electronic Design and Development Flight

AFDTC (Continued)

Aircraft Systems/Design and Modification
Air-to-Air Missile Maintenance Facility
Air-to-Ground Missile Maintenance Facility
Precision Measurement Equipment Lab (PMEL)
Precision Measurement Facility - Site III Mass Properties
Munitions Build-Up
Munitions Storage and Handling
Armament Maintenance Section
Alternate Mission Equipment Section
Aircraft Repair Element
Egress
Fuels
Propulsion
Machine Shop
Structural Maintenance
Metals Processing
Corrosion Control
Non-Destructive Inspection
Electro-Environmental
Pneudraulic
Patterns and Plastics
Survival Equipment
Inspection Element
Wheel and Tire Element
Aerospace Ground Equipment

WRIGHT LABORATORIES (WL/MN)

The laboratories provide numerous capabilities that are an integral part of the cradle-to-grave munitions development process which is uniquely located on one installation (the complete Wright Laboratories facilities/capabilities are provided under another data call.):

Advanced Warhead Experimentation Facility

Conduct R&D of warheads and warhead technologies; fabricate test and characterize ordnance items constructed of various conventional and heavy metals.

Research items include warheads, projectiles and associated components such as penetrators, shaped charge liners, explosives and fuzes.

Above items manufactured and tested while toxic effects of potentially hazardous materials contained and air filtered before reaching the outside environment.

Environmental Sciences Facility

Environmental Analysis and research in support of conventional munitions technology development.

Quantitative determination of contaminants in chemicals, explosives, fuels, soils, or water including on-the-spot analysis to determine residual metal contaminate levels.

Automated image analysis for material and particle studies.

Document preparation to insure compliance with all local, state and federal regulations and laws.

Hypervelocity Research Facility

Contains a dedicated laboratory for performing research and development on Advanced Oxidation Techniques (i.e. non-thermal silent-discharge plasma processing) for potential use in (1) the destruction of environmental contaminants extracted from ground water; (2) the disposal of munitions; (3) the destruction of hazardous compounds generated by weapons; (4) the reduction of NO_X Emissions from power plant smoke stacks and advanced aircraft engines.

WRIGHT LABORATORIES (WL/MN) (Continued)

Fuzes Research and Development Facility

Research and development of fuzes, sensors and associated signal processing circuitry for targets of interest.

Electronic lab, explosive test bays, laser lab, aerosol chamber, printed circuit board fabrication equipment.

Ballistics Experimentation Facility (BEF)

6500 feet by 1500 feet outdoor firing range, 300 feet indoor range, machine shop, electronics repair shop, munitions storage area, equipment storage compound, and over 450 air and powder launchers.

Development of launch and flight verification for nonstandard munitions and projectiles scheduled for testing in the Aeroballistics Research Facility.

Test capability for developmental munitions to include data gathering and analysis of free-flight and impact phenomena.

Aeroballistics Research Facility (ARF)

Enclosed, instrumented concrete range (207 m instrumented section with 3.66 m square test area for first 69 m and 4.88 m square test area for remaining; length) designed for studying free-flight characteristics of munitions and projectiles (both axisymmetric and asymmetric configurations).

Atmospherically controlled at 22 $\pm$ 1 degrees Celsius and less than 50 percent relative humidity.

Radio Frequency/Millimeter Wave (RF/MMW) Facility

Main Lab: Calibration and measurement test benches; 94 GHz monopulse radar; X-band pulse doppler fire control radar.

Penthouse: Roof level room with sliding windows allowing sensors to view area outside building; includes instrumentation and communication with main lab and tower.

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WRIGHT LABORATORIES (WL/MN) (Continued)

Tower: 3 X 3 meter room 10.6 meters above bldg. 13A roof; Elevator; 360 degree field of view; instrumentation and communication lines with main lab. Areas available to view include Eglin flightline and runways, intercoastal waterway in Choctawhatchee Bay, Eglin tank farm, various buildings and associated structure.

Electro-Optical Research Facility

Main Lab : (1232 ft^2) Vibration isolated optics benches and computer workstations, Laser Polarimeter.

Make measurements of the electro- and magneto-optic constants of optical and infrared materials, optical processing experiments and simulation.

LADAR Development and Evaluation Research Facility (LDERF)

Optics Labs: Four optical work/test benches on isolated slabs of cement in 2 separate 20' X 40' rooms; 1064 NM Nd: Yag diode pumped laser radar system; Laser Imaging Radar System; two Tunable Ti-sapphire lasers; three Nd: YV04; Janis dewar for material characterization down to 2^0 K; 80' darkened indoor range for conducting LADAR tests in a controlled environment. Garage door provides access to a 1.5 km outdoor range.

Electronics Lab: 1600 ft^2 room with PCB assembly area; four general purpose electronics work benches; LADAR Video/data display and processing station; Computer Aided Design (CAD) System including schematic capture, circuit simulation, PCB layout, and mechanical drawing packages.

UAV Operations: Air conditioned hanger space for modification, sensor integration and storage of unmanned aerial vehicles (UAV). A 16' X 12' tall hanger door opens to roughly 1600 ft^2 of hanger floor space. 30 ft^2 of workbench space is complemented by a complete selection of hand tools and light machine tools. A 2000 ft^2 cement pad is adjacent to the hanger door.

Advanced Guidance Research Facility

Develop signal processing software for guided weapons through computer simulation, develop and validate target detection algorithms through simulation and captive flight test results.

Analyze E/O and RF characteristics through image processing and simulation.

WRIGHT LABORATORIES (WL/MN) (Continued)

Kinetic Kill Vehicle Hardware-in-the-Loop (HWIL)
Simulation Facility (KHILS)

Digital and HWIL simulators to realistically simulate launch-to-impact scenarios for guided weapons.

High frame rate/high fidelity UV, visible, and IR scene projections. Color (5.6, 9.28, 10.6 micrometer), 400 Hz update, resolution of 96x96 pixels, wideband 128x128 pixel, 400 Hz resistor array.

Digital scene generation of boost , post boost, and RV targets; high speed signal injection with seeker effects and line-of-sight motion modeled in real-time.

High bandwidth flight motion simulator, 60 Hz, 25 lb payload, +/- 10 degree pitch and yaw, +/- 120 degree roll, 17 microradian pointing accuracy.

Model Fabrication Facility

Produce, assemble, and modify both full and sub-scale aeroballistic, aerodynamic and aeromechanical assemblies and components for experimental munitions applications.

High Explosive Research and Development Facility

Load experimental munitions up to 1000 lbs of explosives.
Develop processing techniques for loading air Force Munitions.
Provide quality control x-ray capability up to 6 MeV.
Formulation and processing of melt cast, cure cast PBX, and pressed explosives.
Accelerated aging and environmental testing.
Performance and sensitivity testing up to 20 lbs TNT equivalent explosive.

Inertial Navigation Facility

Test and evaluate tactical inertial navigation hardware and imbedded GPS/inertial systems.

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AIR WARFARE CENTER

The mission of the USAF Air Warfare Center (USAFAWC) is to test and evaluate new or improved weapon systems and air defense radar systems and to support the Combat Air Forces (CAF) in assigned areas of technical expertise. Specific duties include operational testing of the following CAF weapon systems and equipment: electronic combat (EC) systems and support equipment; reconnaissance systems; aircrew training devices (ATDs); life support; command, control, communications, and intelligence (C3I); armament and avionics systems; combat support; chemical warfare defense (CWD); air base and installation security systems (BISSs) and subsystems; and air defense radar systems and equipment. USAFAWC provides technical and operational expertise to assist Headquarters (HQ) Air Combat Command (ACC) in providing operational forces required in support of testing managed by the Air Force Operational Test and Evaluation Center (AFOTEC). USAFAWC also manages and conducts Follow-on Operational Test and Evaluations (FOT&Es) of hardware and software for which AFOTEC serves as the Air Force focal point. USAFAWC develops and evaluates tactics for EC, avionics and armament, reconnaissance systems, ATDs, life support, C3I, drones, combat support, CWD, BISS, and air defense radar systems and equipment. The Center reprograms designated EC systems to meet mission needs of CAF aircraft. (The peacetime implementation of this mission is through USAFAWC Emergency Reprogramming Center (ERC). The Center also maintains the software that supports the reprogramming of EC systems. USAFAWC creates various mission data configurations in EC systems and manages these configurations according to AFR 800-14. USAFAWC assists the HQ ACC operations staff and CAF units in determining the use of and making improvements to technical equipment and software used by the CAF. USAFAWC assists the HQ ACC staff in the Air Force requirements and acquisition process, including concept exploration, demonstrations, and evaluations. USAFAWC improves the effectiveness of CAF systems through such evaluation programs as the Air-to-Ground Weapon Systems Evaluation Program (A/G WSEP), the Ground to-Ground Weapon Systems Evaluation Program (G/G WSEP), the Electronic Warfare Evaluation Program, the Air-to-Air Weapon Systems Evaluation Program (A/A WSEP), the Periodic Radar Evaluation Program, the Air Force Radar Evaluation Program, and the Precision Guided Munitions Analysis Program. USAFAWC improves the combat capability of CAF personnel through specialized training: Blue Flag exercises (for battle staff), Green Flag exercises (for EC), EC and battle management courses, and USAF Air Ground Operations School (USAFAGOS). USAFAWC operates specific Air Force complexes used for training and testing of Air Force systems and procedures: the C3I complex, Air Force subscale and full-scale aerial target assets, and the USAFAGOS. USAFAWC manages William Tell (the biennial worldwide Air Force air-to-air weapons meet). The Center conducts day-to-day management and execution of ACC war gaming responsibilities, with policy and commitment of ACC resources approval authority remaining with HQ ACC/DO.

NAVAL EXPLOSIVE ORDINANCE DISPOSAL SCHOOL

Mission Statement: A jointly-staffed (Army, Navy, Air Force, Marine Corps) school providing specialized Explosive Ordinance Disposal training to officer and enlisted personnel of all services, both U. S. and foreign, and to selected civilian officials, in the best methods and procedures for the detection, identification, render safe, recovery, evaluation, and disposal of explosive ordinance, surface and underwater, conventional and nuclear, employed by the U. S. and other nations.

Unique Capabilities: The EOD School supports test activities by rendering safe or removing unexploded ordinance from various land and water test ranges.

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.

The CCF is designed for commonalty/compatibility with DoD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DoD services and US Allies on a regular basis.

Systems Technology

Designs, develops, implements, operates and maintains the AFDTC Scientific Computer Center and its networks. Provides a broad base of expert computer and system engineering consultants. Provides software engineering support for the Eglin scientific and engineering community including development, customization and adaptation of graphics, applications, and system software products. Develops software products for the simulation and/or control of weapon or related systems as required for RDT&E. Operates and maintains the Eglin Decision Support System and the CRAY YMP Supercomputer.

FREEMAN COMPUTER SCIENCE CENTER (Continued)

The computer center has a CRAY YMP supercomputer and visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN).

This is a general purpose computer center that supports all phases of digital models and computer simulations. It is available to all DoD agencies. The largest current user is the Aeronautical Systems Center.

Gulf Range Drone Control Upgrade System (GRDCUS)

This Division is responsible for system development of the Gulf Range Drone Control Upgrade System (GRDCUS) system and related systems. This system is a multifunction command and control, tracking, and data link system capable of supporting DT&E and OT&E air-to-air missions over the Gulf. The system supports the control of multiple drones flying independently or in close formation.

Develop target control software for automatic control of multiple targets, aerial or ground.

Develop real time computer systems that control targets and provide real time Time Spaced Position information (TSPI) for targets and other mission participants, missiles, shooters, relay platforms, ground vehicles, and helicopters.

Support the Target Acquisition agencies to define target control requirements, support testing and systems engineering.

Provide capability to use Global Positioning System (GPS) receivers to provide real time TSPI data for test mission use.

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

SAFETY (Continued)

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support and safety requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources [radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

INSTRUMENTED AIRBORNE PLATFORMS

Mission Statement: Instrumented aircraft are required to support the test and evaluation of munitions, electronic combat, communications computers command control and intelligence (C4I) systems, and inertial navigation/guidance systems in the Open Air Arena.

Unique Capabilities: Aircraft instrumentation provides time, space, position information (TSPI), platform specific information (avionics/weapons data), and test specific information (environmental/infrared/separation data). Instrumentation data can be provided real time (via telemetry (TM) transmitters and/or data links) and/or post mission (via analog data tape recorders, video tape recorders and film cameras). The TM stream is usually the PCM (pulse code modulation) output of a data acquisition system which collects and conditions the various analog and digital signals. The oldest data systems are the programmable Data Acquisition System (pDAS) and the Airborne Test Instrumentation System (ATIS). Until the Common Airborne Instrumentation System (CAIS) is available, the Advanced ATIS system (AATIS) is presently being installed. The main sources of digital data are the aircraft's busses, avionics, weapons, ECM, and display. This data can be recorded selectively or totally. Cockpit displays (HUD/VSD/TEWS/RWR/MFD/etc) are recorded on video tape recorders (video cameras may be required if display signal is not TV (RS-170) formatted). 1553 bus data or other PCM information may be formatted/conditioned (Merlin system) to a TV format for video tape recording. Analog tape recorders are the MARS 1400 (14 track, 14" reel), MARS 2000 (14 track, 10" reel), and the MARS 2028 (28 tracks, 10" reel); video tape recorders are the NAC (VHS) and the new TEAC (Hi 8 mm); digital recorder is the MARS II. A Time Code Generator (TCG) provides IRIG (Interrange Instrumentation Group) time for time correlation of analog, digital, film and video data. Store separation data is provided by 16 mm film cameras which are installed in aircraft fairings and/or carried on store stations. Airborne TSPI sources are a radar

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

transponder (beacon), user GPS, or RAJPO GPS. The GPS data can be recorded or it can be transmitted via the MTACS (Multilateration Tracking and Control System) data link. Telemetry and video streams are encrypted before transmission.

Various types of instrumented pods/shapes are carried on the platform's store stations. Power and control wiring is either installed or standard aircraft wiring is utilized. The Golden Bird Missile is an instrumented AIM-7; the ARTIS pod contains an instrumentation radar for relative TSPI; I-HAWK and SADS VI M/1 are threat simulator pods; the BASES, SAIMS, and ASIMS are infrared (IR) pods; GPS/MTACS pods contain the RAJPO HDIS receiver combined with the MTACS data link. Two F-15B aircraft have an instrumentation 1553 bus specifically installed to control instrumentation pods. ACES II, ITV, and IMV are instrumented AMRAAM shapes/pods. The Tomahawk cruise missile control pod can be carried by F-15 or F-16 aircraft.

Listed below are the 46TW and AWC aircraft already modified, in process of being modified, or will begin modification this FY.

C-130

C-130A 55-0022: Airborne platform for DT&E of air-to-ground and air-to-air seekers and sensors (visible, IR, MMW), stabilized turret, beacon, GPS

F-111

F-111E 67-0118: Film cameras, cockpit video camera, VTR (Hi 8 mm), TCG, beacon F-111F 70-2379: Flutter instrumentation, film cameras w/FDRS, video cameras for separation, ATIS, MARS 2000, TCG, Beacon, VTR (Hi 8 mm)

F-111F 70-2400: Film cameras w/FDRS, AATIS, TCG, user GPS w/MTACS, Beacon, MARS 2028, TM

F-15

F-15A 76-0101: JTIDS, HUD/VSD/MPCD VTRs(Std TEAC, NAC), TCG, MARS 2000, pDAS, Beacon, TM

F-15C 84-0011: JTIDS, HUD/VSD VTRs(8 mm), MPCD VTR(NAC), TCG, MARS 2000, pDAS, TM, Beacon

F-15A 77-0064: Film cameras, HUD/VSD Video Cameras & VTRs(8 mm), TCG, MARS 2000, pDAS, Beacon, TM, partial Golden Bird

F-15A 76-0116: High Speed Radar Buffer Box, ITV Pod, TCG, Beacon, MARS 2000, pDAS, VTR(NAC), TM

F-15B 73-0114: MSIP B FOT&E, HUD/VSD/MPCD/RWR VTRs (Hi 8 mm), TCG, pDAS, Beacon, TM

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-15 (Continued)

F-15B 75-0080/84: 1553 Instrumentation Bus, HUD/VSD/MFD VTRs (NACs), TCG, pDAS, MARS 2000, Beacon, TM, Pods: ARTIS, I-HAWK, SADS VI M/1, BASES, SAIMS, ASIMS, Golden Bird

F-15B 77-0161: High Speed Radar Buffer Box, PSP/RSP Radar, TCG, pDAS, HUD/VSD cameras, VTRs (Hi 8 mm), TM, Beacon, Film Cameras on Station Adaptors, pods: Golden Bird, ARTIS

F-15C 84-0018: AMRAAM Instrumentation, TCG, pDAS, MARS 1400, TM, Film Cameras, Beacon, HUD/VSD VTRs (8 mm), pods: ACE II, ITV, IMV, partial Golden Bird.
F-15C 85-0126: AMRAAM/TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (8 mm & NAC), Film Cameras, pDAS, TCG, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, Beacon, pods: ACE II, IMV, partial Golden Bird.

F-15C 80-0022: AMRAAM/TEWS/JTIDS instrumentation, AATIS, MARS 2028, MARS II, TCG, TM, Beacon, pods: partial Golden Bird (In design)

F-15C 78-0542: TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (NACs), TCG, pDAS, TM, Beacon, MARS 2028, pod: partial Golden Bird

F-15D 84-0045: AMRAAM Instrumentation, Film Cameras, HUD/VSD Video Cameras & VTR (NAC), High Speed Radar Buffer Box, pDAS, TCG, TM, Beacon, pods: ACE II, ITV, DMV

F-15E 86-0185/0188: SEEK EAGLE/TEWS/AMRAAM Instrumentation, Film Cameras, MPDP VTRs (Hi 8 mm), TCG, pDAS, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, beacon, video TM

F-16

F-16A 80-0609: AMRAAM Instrumentation, Film Cameras, Hud/REO Video cameras & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Dual HUD capability, partial OCU, Beacon, Total A&W bus recording, pods: ATLIS II, RDIP, RUBIS, ASRAAM (In Design)

F-16A 80-0761: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Camera & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Beacon, ADF capable, pods: ACE II, Musketeer Lee, ASRAAM (In design)

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-16 (Continued)

F-16B 78-0104: INS Fighter test bed.

F-16B 82-1037: Film Cameras, TCG, Beacon

F-16B 83-1123/88-0353: Flutter & Loads, Flutter Exciter Panel, Film Cameras, pDAS, TCG, TM, MARS 2000, HUD/RMFD or LMFD VTRs (NACs), Beacon, pods: RDIP (123 only)
F-16C 83-1163: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Cameras & VTRs(NACs), pDAS, TCG, MARS 1400 or 2000, Beacon, TM, pod: ACE II

F-16C 84-1280/1285: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR Video Cameras & VTRs(NACs), MARS 1400, pDAS, TCG, TM, Beacon, chaff/ flare monitor, pod: ACE II

F-16C 88-0441: AMRAAM Instrumentation, Film Cameras, RWR video camera, Total Bus recording, HUD/LMFD/RMFD/RWR VTRs (Hi 8 mm), TCG, pDAS, TM, ALE-47 instrumentation, Beacon, pods: IMV, DMV, JSOW, ACE II

F-16C 89-2070: ALE-47 Instrumentation, RWR video camera, HUD/LMFD/RMFD/RWR VTRs(NACs), TCG, pDAS, TM, Total Bus recording, Beacon, pods: ACE II

F-16C 90-0726: ALQ-126B

F-16D 80-0844/0848: HUD/MFD/RWR VTRs(Hi 8 mm), Total bus recording A/B/C/D/EW/W busses (Merlin, Hi 8 mm), HARM & ALIC PCM recording (Merlin, Hi 8 mm), TCG, Beacon (In design)

F-16D 88-0469: NAC Recorders

F-16D 90-0835: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR/HELMET/HAND-HELD VTRs (Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS 422 monitor, user GPS w/MTACS, encrypted video, beacon, TM, pods: ACE II, RDIP

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INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-16D 80-0836: HARM Instrumentation, Film Cameras, HUD/MFD/RWR VTRs(Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS
422 monitor, user GPS w/MTACS, encrypted video, TM, beacon, pods: RDIP, ACE II

UH-1

UH-1N 69-6617/6626: BASES Pod, Aerial Ignition Device, beacon

AVIONICS

Mission Statement: The F-16 AIS Shop is responsible for off-equipment Intermediate level maintenance and support of F-16 Line Replaceable Units (LRUs). Does software loading of Operational Flight Programs, TCTOs, modifications, calibrations, and testing of F-16 LRUs. Responsible for testing weapons, instruments, and ALR-69 systems using AIS test equipment. Maintains four test stations and ancillary equipment by performing inspections, modifications and repairs.

The F-15 AIS is responsible for testing F-15 LRUs including weapon control radar, inertial navigation, heads-up display, automatic flight control, instrument, and communication and navigation systems. Uses, maintains, and calibrates avionics intermediate shop test stations used to repair F-15 LRUs. Performs off-equipment maintenance and line delivery of AXQ-14 and Improved Data Link pods.

The Conventional Avionics Shop is responsible for intermediate and organizational level maintenance on avionics systems installed on UH-1N helicopters and transient aircraft. Performs intermediate level maintenance of CommNav, Guidance, and ECM systems on assigned aircraft. Modifies, repairs, loads, and operationally checks ECM pods on F-15, F-16 and F-111 aircraft to support test missions. Repairs and modifies communication ground cords, headsets, and emergency survival radio/beacons for Eglin units. Maintains, installs, and repairs radio ground mount adapters for emergency and operations vehicles on Eglin. Operationally checks all UHF, VHF, and RWR antennas for serviceability.

The Sensor Test Shop is responsible for on-equipment and off-equipment maintenance of all assigned and transient sensor systems. Performs intermediate and organizational level maintenance on LANTIRN targeting and navigation and PAVE TACK Laser Target Designation pods. Maintains intermediate level test equipment including the LANTIRN mobility shelter set. Performs intermediate level maintenance on Airborne Video Tape Recorders and Cockpit Television Systems, to include phase inspection work cards. Assists field engineers in the kit proofing, validating and fielding of new systems and/or upgrades to current systems.

The Radar Test Shop provides intermediate level repair of F-15 and F-16 radar and other avionics and components. Reprograms various avionics and other computers. Refurbishes F-15 and F-16 flight control and INU batteries. Performs operational checks for serviceability of F-15 and F-16 radar LRU's. Provides repair and functional checks of F-16 ARC-164, ARC-186, and ARN-118 receiver/transmitters, throttle grips, side stick controllers, GPS receivers and numerous F-16 control units. Repairs various circuit card

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AVIONICS (Continued)

assemblies by troubleshooting and replacing electronic components as required. Provides software testing to Test Wing agencies on Eglin AFB.

Unique Capabilities: Maintains full F-16 and F-15 radar mockups with capability to troubleshoot and repair parts in concert with associated avionics intermediate stations (AIS). A Huntron Tracker is on hand to repair circuit cards. A LANTIRN Mobile Support Shelter and a PAVE-TACK repair test set are also available.

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd FW (ACC)
4. 9th Special Operations Squadron
5. 728th Tactical Control Squadron

JTIDS GROUND TECHNICAL FACILITIES/SUPPORT EQUIPMENT

ENHANCED JTIDS SYSTEM EXERCISER (EJSE)

Mission Statement: The EJSE was developed to test and evaluate JTIDS.

Unique Capabilities: Provides monitoring, control functions, and real-time message generation. Supports test analysis through its data printout and tape playback capability. Prepares simulation tapes to match a wide range of operational and test scenarios. Emulates individual tactical elements, such as a small radar-equipped surveillance site, and can perform rate-aided manual tracking. With an antennae mounted on a 90-foot pole, the EJSE can communicate with aircraft on the Eglin Ranges, and with the ASIT at Hurlburt Field.

Outside Customers Supported:

1. JTIDS Joint Program Office, Hanscom AFB, MA.
2. Joint STARS Program Office, Melbourne, FL.
3. ABCCC Program Office, Hanscom AFB, MA.
4. TMD Program Office, Hanscom AFB, MA.

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JTIDS GROUND TECHNICAL FACILITIES/SUPPORT EQUIPMENT (Continued)

5. 727th Air Control Squadron, Hurlburt Field, FL.
6. 728th Air Control Squadron, Eglin AFB, FL.

OPERATIONAL FACILITY (OPFAC)

Mission Statement: The OPFAC is an F-15 Multistage Improvement Program (MSIP) Operational Flight Program (OFP) Avionics Integration Bench. It was originally intended for the pre-release verification of new aircraft software.

Unique Capabilities: Provides the capability for the complete manipulation of any aircraft parameters to allow for the trapping or simulation of special circumstance events. OFP monitoring is available, as well as single step execution to enable software debugging. A JTIDS scenario assembler is included in the OPFAC, enabling it to be used to conduct JTIDS software testing, demonstrations, and pilot training.

Outside Customers Supported:

1. JTIDS Joint Program Office.

JTIDS INTEGRATION "HOT" BENCH & JTIDS INTERFACE TEST SET

Mission Statement: Provides a means for testing each JTIDS terminal prior to installation in an aircraft. It also supports laboratory analysis of any JTIDS problems that may be experienced in the aircraft.

Unique Capabilities: Performs laboratory testing of the JTIDS terminals. Consists of shelves with brackets for mounting and securing the terminal under test, and 28 Volts DC and 115 Volts AC/400 HZ power sources. The Hot Bench has fans for cooling the terminal, and a test panel for testing each operating function of the terminal. The Interface Test Set can simulate TACAN inputs, and can provide JTIDS voice. The Hot Bench can also monitor the local Eglin TACAN through the JTIDS terminal's internal TACAN. Since the Hot Bench has no Heading Situation Indicator (HSI) to display the TACAN range and bearing, the TACAN functions are displayed on a computer screen.

Outside Customers Supported:

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1. JTIDS Joint Program Office.

MULTILATERATION SYSTEMS & GPS

Mission Statement: Provides a time-space-position-information (TSPI) capability to support customer needs. While providing TSPI of up to 20 aircraft or ground vehicles, up to 6 vehicles can be remotely controlled. Airborne pods provide TSPI from multilateration and/or GPS/inertial reference. A synchronized A/C and remote controlled target test capability is provided at a central control facility (CCF).

Unique Capabilities: Uses the resources of the Gulf Range Drone Control Upgrade System (GRDCUS) to provide a wide area test arena, including over-the-horizon, over Eglin, Tyndall and the South East Test and Training Area (SETTA). IFF radar data can also be shared with MTACS. Two data link frequencies are available for simultaneous missions each having the number of participants mentioned in the above statement.

Outside Customers Supported:

1. AFOTEC
2. USAF AWC
3. U. S. Navy
4. U. S. Army
5. Various foreign governments

STATIC TEST FACILITY

Mission Statement: Provides the capability to test the strength of external stores and suspension equipment

Unique Capabilities:. Through the use of hydraulic cylinders, loads are exerted on test articles to simulate actual loads which may be encountered by the item during flight conditions. Currently, the force exerted by the cylinders is measured by load cells and the operators regulate the hydraulic pressure to each cylinder to adjust the load. The facility is being upgraded to incorporate an automatic feedback control system using input from the load cells to regulate hydraulic pressure. In addition, the capability exists to measure the displacements resulting from the forces exerted on the test item.

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION

Mission Statement: Provides design, development, and operation of airborne and surface EO/MMW instrumentation systems. Provides multispectral targets and targets in back-ground including target expendables. Provides captive carry operation and test of air-to-air,

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION (Continued)

surface-to-air, and surface-to-surface domestic and threat missile seeker guidance, and control units operating in a real and CM environment. Provides quick look and field data reduction and analysis of all collected signature data.

Unique Capabilities: Multispectral signature measurement and captive flight testing capability residing in a cadre of highly qualified technical and range personnel and customized and standard sophisticated EO/MMW instrumentation operating in A-A, A-S, S-S, S-A, and tower/turntable scenarios. Spectral range includes ultra-violet, visible, mid and long wavelength infrared, laser, millimeter wave, seismic, acoustic, and magnetic. Measurement disciplines include temporal, radiometric, spatial, spectral, phase, range, polarization, frequency, and cross section. State-of-the-art sensitivity, resolution, and bandwidth, data rate/recording and seeker/sensor performance measurements are maintained. A suite of targets for target and target in clutter signature measurement and seeker/sensor evaluation are maintained. Archiving of collected data is provided by the Targets and Background Information Library System (TABILS). The capability is uniquely connected to modeling and simulation facilities such as the Guided Weapons Evaluation Facility (GWEF) as a source of data required to drive HITL scene generators and to validate models. The capability is built upon many years of T&E research and engineering expertise and experience.

Outside Customers Supported:

1. ASC
2. USAF AWC
3. AFSOC
4. U. S. ARMY
5. U. S. NAVY

AIRBORNE SYSTEMS/INSTRUMENTATION

Mission Statement: Designs, develops and procures airborne instrumentation systems for installation on aerospace vehicles and airborne threat simulators. Performs T-2 (Class II) modification support and post modification calibration and checkout. Provides pre/postflight instrumentation support for test missions.

Unique Capabilities: The unique capability provided is the design, procurement, installation and support of aircraft instrumentation systems, i.e. the requirement-to-requirement support of highly instrumented T&E aircraft. Based on the given requirements, the system engineers design instrumentation systems utilizing standard instrumentation subsystems, where possible, for quick turnaround and best maintenance support. Procurement of the system components is then initiated. This may entail contacting potential vendors, writing specifications and Justification Review Documents, and evaluating bids. Next is the creation of the instrumentation modification package, it's installation, and it's checkout. "Standard Operating Procedures" detailing instrumentation operation during

AIRBORNE SYSTEMS/INSTRUMENTATION (Continued)

pre/postflight checkout are written and the aircrew is aided in writing the Partial Flight Manual Supplement. Instrumentation systems collect various types of data for real time transmission (after encryption) and/or onboard recording. One type includes avionics/weapons/electronic warfare/display bus information and sensor data (strain gauges, accelerometers, etc). Aircraft displays (Hud, VSD, RWR, etc) are tape recorded and transmitted, if desired. Film cameras record store separation and a radar transponder enhances radar tracking. All data and events are time correlated with IRIG time. Engineers and electronic "bench" technicians maintain, calibrate, and repair the various instrumentation subsystems utilizing special "hot" benches. System engineers and electronic "preflight" technicians also checkout and setup the instrumentation before flight and download tape recorders and pods after flight.

METEOROLOGICAL INSTRUMENTATION

Mission Statement: Meteorological support for AFDTC is provided through the 46th Test Wing Weather Squadron which provides 24-hour weather forecasting services including preflight weather briefings, pilot-to-forecaster services to aircraft in the area, and weather warnings and advisories.

Unique Capabilities: Provides specialized weather services to both host and tenant units. The Test Meteorological Office provides consultation on the meteorological environment consisting of physics, chemistry and the dynamics of the atmosphere. Provides ME instrumentation at permanent, semi-permanent, and temporary sites, using mobile equipment when necessary. A full range of ME data are gathered to measure the following: wind vector, atmospheric temperature/pressure, relative humidity, dew point, rainfall amount/rates, visibility, visual range, cloud bases, solar radiation, particle size distribution, rainfall size distribution, extinction coefficient, density, defractivity, height, atmospheric electric field, etc.

"SPECIALIZED" ELECTRONIC SYSTEMS FLIGHT

Mission Statement: Provides AFDTC with a complete in-house capability for developing unique TSPI and remote-controlled systems.

Unique Capabilities: Provides electrical and mechanical engineering, design and fabrication services for simple to very complex one-of-a-kind systems. The functions of the flight include:

1. Electrical and Mechanical design, prototyping, and end-product fabrication of the various sub-systems involved.
2. System integration and testing
3. Preparation of technical specifications and engineering evaluation reports
4. Engineering consultation to AFDTC agencies as well as outside agencies on TSPI, remote control, TM, RF and antennas
5. Personnel expertise and equipment to perform the mission.

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"SPECIALIZED" ELECTRONIC SYSTEMS FLIGHT (Continued)

Outside Customers Supported:

1. ASC
2. Tyndall AFB
3. WSMR

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Mission Statement: Provides AFDTC with a system level capability for developing, integrating, and testing the specialized instrumentation and control systems required in support of all types of ground and flight testing. This in-house capability spans the entire process of acquiring such systems: from "development of requirements" to "design" to "build-up" to "testing" to "installation and training".

Unique Capabilities: The uniqueness of the Electronic Design and Development Flight is its broad based expertise which allows it to perform its mission (in-house development) in a quick response mode without outside support. Equally important is its capability to remain flexible to changes in requirements during the development process with minimal impact on schedule.

Outside Customers Supported:

1. USAF AWC
2. Aeronautical Systems Center
3. AFOTEC
4. U. S. Army
5. U. S. Navy
6. Various foreign governments

AIRCRAFT SYSTEMS/DESIGN AND MODIFICATION

Mission Statement: Designs, installs, and documents the buildup of aerospace vehicle T-2 modifications and airborne threat simulators. Maintains configuration management records on these modifications.

Unique Capabilities: The 46 Test Wing has the capability and the facilities necessary to perform the entire T-2 modification process. The aero-engineering section has all the various skills required: aero-engineers, mechanical engineers, electrical engineers, aero-technicians, and electronic technicians. These personnel (working with an assigned systems engineer) perform the aero/mech/elec design

AIRCRAFT SYSTEMS/DESIGN AND MODIFICATION (Continued)

of all in-house T-2 modifications and approve/review all contractor provided T-2 modifications. In conjunction with the system engineer, a cost/man-hours estimate is provided to the customer. Aircraft technical orders, military standards and specifications, equipment manuals are researched. The aircraft to be modified is examined for available space for installing instrumentation and detailed measurements are taken. Then, utilizing engineering workstations with computer aided design (CAD) and computer aided engineering (CAE) software, structural and electrical drawings are created. Aerodynamic/structural analyses are performed. All material, mechanical and electrical, are researched for part numbers and other ordering information and a list is provided for procurement. Work orders are generated and sent for mechanical fabrication and then returned for electrical wiring and component installation. Electrical engineers approve the electrical drawings and perform an electrical loads analysis to prevent overloading any portion of the aircraft's power generation and distribution system. The modification engineer provides written instructions, guidance, and other pertinent documentation which constitute the T-2 modification package. With shop support (sheet metal, machine shop, etc) and electricians, dock chiefs direct the T-2 modification installation. The installation is monitored throughout by the modification and system engineers.

Outside Customers Supported:

1. USAF AWC

AIR-TO-AIR MISSILE MAINTENANCE FACILITY

Mission Statement: Provides the necessary expertise and direction for all missile related activities. Coordinates between Weapons System Evaluation Group (WSEP), Advanced Medium Range Air-to-Air Missile (AMRAAM), and numerous other test and development projects to provide work space, equipment, and technical knowledge, enabling continuous operations. Provides in-depth training to all assigned personnel to ensure management of seven missile systems(AIM-7, AIM-9, AIM-120, AGM-45, AGM-65, AGM-84, AGM-88). Ensures proper management of the Tactical Missile Reporting System (TMRS). Provides periodic maintenance and management of over 70 pieces of missile support equipment. Performs periodic safety inspections ensuring all safety practices are enforced. Provides a quality product to the customer. Provides essential on-the-job- training to assigned personnel.

Unique Capabilities: Performs maintenance and inspection on telemetry units of AIM-9L/M and AIM-7M. Completed action on unpublished Time Compliance Technical Order on AIM-120 Advanced Medium Range Air-to-Air Missile.

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AIR-TO-AIR MISSILE MAINTENANCE FACILITY (Continued)

Outside Customers Supported:

1. Air Warfare Center
2. Weapons System Evaluation Program (WSEP)
3. Hughes Corporation
4. Raytheon Corporation
5. China Lake Depot
6. Georgia Tech Research Institute
7. Harris Corporation
8. Atlantic City Air National Guard

AIR-TO GROUND MISSILE MAINTENANCE FACILITY

Mission Statement: Used for the assembly, final integration testing, and inspection of guided weapons prior to flight testing. The facility is fully staffed and equipped to support the T&E of the integration of fuzes, warheads, actuators, data links, IMU/GPS, propulsion, airframes/structures, hardware/software, guidance/control, weapons sensors, and flight termination systems. Additionally, build-up and modification of bombs/missiles, as well as integrated systems tests, are performed at this facility. The test chambers in building 999 are rated for Category 1 explosives.

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB

Mission Statement: Responsible for the maintenance, calibration and certification test, measurement and diagnostic equipment designated Type II, Type III and Type IV PMEL support. Responsible for the calibration and repair of signal generating, waveform measuring, and frequency counting, voltage, current, resistance, inductance, and power measuring instruments, mechanical, electro-mechanical, dimensional and radiation measuring equipment. Responsible for the calibration and repair of F-15 and F-16 Avionics Intermediate Stations

Unique Capabilities: One of the largest PMELs in the Air Force and the regional facility servicing Northwest Florida. Has an active program currently developing automated calibration testing of equipment.

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PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB (Continued)

Outside Customer Supported:

1. **919th Special Operations Wing**
2. **OSD JADO Program**
3. **USAF AWC**
4. **AFOTEC**
5. **Naval EOD School**
6. **Vitro Services**

PRECISION MEASUREMENT FACILITY
SITE III MASS PROPERTIES

Mission Statement: Performs the weight, center of gravity, and moments of inertia measurements on munition and non munition items. Performs reballast procedures on munition and non munition items to provide the test engineers with a reliable product. Performs maintenance and operation of the portable mass properties machine. Used for the world wide field review measurement of stores (FRMS) operation. Mass properties data collected at various bases is put into the mass properties data program for updating the stores technical and mass properties data bank (STAMP), This ensures the project engineers have the proper mass properties data. Performs assembly/disassembly of munitions items for the purpose of adapting the items to the test set. Develops procedures for efficiency and safety of operations on new prototype test items.

MUNITIONS BUILD-UP

Mission Statement: Operates six indoor maintenance/build-up facilities totaling 54,000 square feet and 2 outdoor holding /build-up areas totaling 27,000 square feet. The missile section performs build-up of Air-to-Air, AIM-4, 7, 9, and 120 missiles and Air-to-Ground, AGM-45, 65, and 88 missiles. The conventional munitions maintenance shops perform build-up of expendable aircraft countermeasures, cannon ammunitions, GBU-10, 12, 15, 16, 24 and 28 guided bombs, CBU-58, 87 89 and 97 cluster bombs, MK-82, 83, 84, M-117 and 118 general purpose bombs, MC-1 and TMU-28 chemical weapons, nuclear training shapes and BLU-107 cratering bombs.

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MUNITIONS STORAGE AND HANDLING

Mission Statement: Provides the capability for storing and handling over 2,000 different types of munitions used to support DoD and foreign allies test and development projects, and 50 tenant unit munitions supply points. Responsible for inspection, minor maintenance and house keeping on 35 facilities within the 297 acre munitions storage area. Ensures correct storage and compatibility of munitions are maintained in strict compliance with all explosive safety standards. Total munitions storage capacity is 121,729 sq. ft. and total sited net explosive weight (NEW) authorized is 2,287,900 pounds. Capable of storing various sizes of munitions ranging from small arms ammunition to the Tomahawk cruise missile; maximum size of any one item to fit into storage structures would be no greater than 15,000 NEW and a dimension of approximately 18' x 10' x 10'. Provides logistical support to 500 test projects and five different maintenance sites within the munitions storage area. Directly supports several off-base test ranges on the 464,000 acre Eglin test complex. On a yearly basis, moves or delivers over 500 tons net explosive weight/1250 tons total weight of munitions covering more than 15,000 miles.

Unique Capabilities: Receipt, inspection, storage, maintenance, buildup, shipping and delivery capability is provided for any US or foreign munition used or tested at Eglin AFB. Major munitions categories include both current inventory and prototype general purpose and cluster bombs; precision guided munitions; air-to-air and air-to-ground missiles, nuclear trainers, Navy cruise missiles, Army Hellfire missiles, expendable aircraft countermeasures and small arm/cannon ammunition. Additional items include various British, Norwegian, Israeli, and former Soviet Bloc munitions. A technical data library with preliminary handling/maintenance data and interim hazard classification is maintained for prototype, modified and foreign munitions.

ARMAMENT MAINTENANCE SECTION

Mission Statement: Inspects and maintains all munition suspension equipment for the 46th Test Wing and the Air Warfare Center aircraft. To include pylons, bomb racks, launchers and adapters for weapons carriage on the F-15, F-16, and F-111 aircraft. Inspects and maintains guns and gun systems on the F-15 and F-16 aircraft, including removal and installation.

Unique Capabilities: Supports Ammo/Gun Test Range 22/C-64/C-74L with gun maintenance and support personnel on a daily basis. Advises test project personnel on modification requirements for AME. Maintains modified equipment for various test projects. Provides maintenance, repair and/or inspection for armament systems components owned by various military and civilian test agencies.

ALTERNATE MISSION EQUIPMENT SECTION

Mission Statement: Stores, controls and accounts for all munition suspension equipment for the 46th Test Wing and Air Warfare Center aircraft. Tracks all in-use equipment and schedules inspections through the maintenance section.

AIRCRAFT REPAIR ELEMENT

Mission Statement: Performs organizational, intermediate, and limited depot-level maintenance beyond the capability of other assigned maintenance activities. Accomplishes troubleshooting analysis, repairs, replacement, rigging, and operational and functional checkout of flight control systems, landing gears, air induction equipment, and canopy and windscreen assemblies. Provides capability for the recovery and reclamation of damaged and crashed aircraft. Maintains, inspects, and repairs all associated equipment required to accomplish the above mission.

Unique Capabilities: Performs flight control, landing gear, and canopy maintenance on any fighter aircraft in the USAF inventory. They are multi-aircraft qualified and perform intermediate and limited depot-level maintenance, tow target maintenance, and provide crash recovery services on any military or civilian aircraft without exception. Performs aircraft reclamation services on any type of aircraft and provide emergency response/crash recovery service to any aircraft over a three state area. Respond to all ground or inflight emergencies on Eglin and the Fort Walton Beach Regional Airport. Uniquely qualified to work with engineers performing Class II modifications on aircraft and systems. Experience includes T-37, T-38, T-39, A-10, F-4, F-5, F-15, F-16, F-111, and UH-1 aircraft maintenance.

EGRESS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on F-15, F-16 and F-111, Aircrew Egress Systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies egress systems and components. Replaces transparencies and rigs canopies on F-16 aircraft. Provides egress system familiarization training as required for, life support, fire department, and personal working within the Test Wing. Provides support on transient aircraft, as well as support to the 33 FW (ACC) under the host tenant support agreement. Provides support to the Eglin Armament Museum as required.

Unique Capabilities: Due to the knowledge of civilians, the shop has the repair capability for F-15, F-16, F-111, F-4 and A-10 egress systems.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing

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FUELS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on aircraft fuel and in-flight refueling systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, seals, and modifies systems and components. Performs systems maintenance and servicing of Hydrazine tanks. Provides qualified support for emergency Hydrazine response teams. Maintains proficiency in detection of Hydrazine.

Unique Capabilities: The fuel system repair hangar is a state-of-the-art building and designed for that purpose. It has multi aircraft capability. It has indoor space for two, F-111/F-15 size aircraft, three F-16 size aircraft, of five UH-1N helicopters. The fuel hangar has indoor external fuel tank work area with a lifting hoist. This flight also has the regional hydrazine resource responsibility.

Outside Customers Supported:

1. USAF AWC
2. 187th Tactical Fighter Group, Montgomery, AL, Hydrazine Tank Servicing
3. 926th Fighter Group/XP, Naval Air Station, New Orleans, LA, Hydrazine Tank Servicing

PROPULSION

Mission Statement: Responsible for jet engine intermediate maintenance (JEIM) on General Electric F100-GE-100/129, J79-15, J85-100, Pratt and Whitney TF30-111 and 109, and FW100-PW-100/200/220 engines. Responsible for assembly and disassembly of F100 modular engines and sub-components. Responsible for JEIM on F-15 starting systems and secondary power system components to include testing after maintenance. Responsible for JEIM on GTCP-397 gas turbine compressors used in AM32A-60B auxiliary power units. Responsible for acquisition, modification and testing of surplus and time-expired engines to the J85-100 configuration for use in the BQM-34S target drone. Provides modified J85-100 engines to the BQM-34S manufacturer for installation into new target drones used by both the Air Force and Navy organizations. Operates the engine test cell which is used for troubleshooting and testing of the above mentioned engines as well as aircraft noise suppression systems and other engine test facilities. Maintains engine support trailers for engine removal/installation and transportation. Ensures adequate spare level to support flying mission of various types and models of F-15 and F-16 aircraft assigned.

Unique Capabilities: Provides full JEIM on F100-100/200/220/220A/220E, J79 and J85 engines. Hush House and twin test cells are available to test all engines. Currently modifying J85 engines for both Air Force and Navy to be used in BQM-34S target drones. Has a steam and citrus-based parts cleaner to minimize hazardous waste.

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PROPULSION (Continued)

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd Fighter Wing (ACC)
4. 9th Special Operations Squadron
5. 475th Weapons System Evaluation Group (ACC)
6. Naval Air Warfare Center

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop is equipped with modern conventional toolroom and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

STRUCTURAL MAINTENANCE

Mission Statement: Provides a Structural Repair Shop for design, manufacture, modification, and repair of RDT&E test items required to support the AFDTC test program of a non-repetitive nature. Manufactures items and works with sheet metal and fiberglass in modifying bombs, missiles, rockets, robots, etc. Manufactures and installs class II modifications parts and kits on aircraft and missiles to include CNC production required by AFDTC engineers, scientists and contractors for development of the test projects. Provides an intermediate maintenance capability to support all AFDTC assigned, transient and associate tenant aircraft.

Unique Capabilities: Maintains operational support of multiple aircraft to include F-111's, F-16's, F-15's, UN-1H and full manufacturing capability for all aircraft tubing assemblies (to include Depot level lines).

Outside Customers Supported:

1. 9 SOS
2. Eglin AFB. 33 FW (ACC)
3. Tyndall AFB.
4. Hurlburt AFB.

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS
3 Manufactured Sleds for Holloman AFB
4. Provide welding and manufacture for 728 ACS
5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

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CORROSION CONTROL

Mission Statement: Inspects and treats corrosion on aircraft, missiles, armament and other related equipment. Provides wash rack facilities to wash aircraft and aircraft parts. Provides a corrosion capability for performing intermediate maintenance and painting on assigned aircraft, age, and Class II modification items. Provide RDT&E experimental coating for test engineers on tasks, drones, missiles, and radomes etc.

Outside Customers Supported:

1. Wright Laboratory - Armament Division
2. Navy EOD School
3. 9th SOS
4. Seek Eagle Program Office
5. Navy Coastal System Laboratory
6. 919 SOS
7. Mill Star Program

NON-DESTRUCTIVE INSPECTION

Mission Statement: Provides a capability to accomplish optical, penetrant, magnetic particles, ultra sound, eddy current, and radiographic inspections to determine component integrity and serviceability. Conducts experimental tests as to the integrity of RDT&E test designs and specifications. Provides oil analysis to determine wear metal effects on aircraft engines and oil wetted components.

Unique Capabilities: Multi-use facility, equipment, manpower, materials and training are shared equally with the 33rd Fighter Wing (ACC). The only known field level shop with two film processors.

Outside Customers Supported:

1. Air Warfare Center
2. 33d Fighter Wing
3. Wright Laboratory
4. 919 Special Operations

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ELECTRO-ENVIRONMENTAL

Mission Statement: Responsible for off-equipment maintenance on aircraft electrical and environmental control systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies systems and components. Provides battery servicing for assigned aircraft, associate tenant aircraft and ground support equipment. Responsible for field maintenance of all aircraft ground support equipment, (AGE), gaseous and liquid oxygen and nitrogen systems. Services life raft cylinders and emergency oxygen bottles, (Life Support Equipment), for all assigned and associate tenant aircraft.

Unique Capabilities: Possesses one of only three K400 generator test stands at field level, and will be only one of two sites in the world capable of running both F-111 and F-15 parts.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing
2. 9th Special Operations Squadron
3. 728th Tactical Control Squadron

PNEUDRAULIC

Mission Statement: Responsible for off-equipment maintenance of pneudraulic components. Inspects, troubleshoots, bench checks, tests, repairs, services, and modifies components. Provides local manufacture and testing of flexible hoses and testing of rigid tubing. Maintains associated Test Stands and support equipment.

Unique Capabilities: Possess two state-of-the-art pneudraulic test stands which allow check-out and repair of all current and projected pneudraulic systems. Because of this capability, depots have authorized depot-level repairs on a case-by-case basis. A citrus-based parts cleaner is used to minimize hazardous waste.

Outside Customers Supported:

1. Air Force Armament Museum
2. 33rd Tactical Fighter Wing
3. 9th Special Operations Squadron

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PATTERNS AND PLASTIC

Mission Statement: Provides a Pattern and Plastic Shop for design, manufacture, modification, and repair of RDT&E test items required to support the test program of a non-repetitive nature. Manufactures items and works with fiberglass, advanced composites, wood, and plastics in modifying bombs, missiles, rockets, etc. Manufactures Class II modification parts and kits on aircraft and missiles. Provides an intermediate maintenance capability to support all AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: Capable of manufacturing and repairing shock mitigation system under the container development program. This operation facilitates a fully equipped Wood Shop with unlimited support of hardware for finished wood products. Also supports manufacturing of form blocks for aircraft parts in support of Class II modification and repair of assigned aircraft. Manufactures various airborne radomes for missiles, rockets and aircraft components using engineer specifications. Fully capable of supporting all DoD aircraft operations.

Outside Customers Supported:

1. Drone Projects
2. Contractors VITRO, Raytheon, etc.

SURVIVAL EQUIPMENT

Mission Statement: Provides a parachute and survival equipment shop to manufacture, modify, repair, and design item constructed of fabric in support of RDT&E test projects of a non-repetitive nature. Provides an extended intermediate maintenance capability to support aeronautical equipment, parachutes, and other aircraft maintenance requirements for support of AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop has the capability of servicing all personnel parachutes in the Department of Defense inventory. Capable of servicing the Advance Concept Ejection Seat (ACES II) employed on the A-10, B-52, F-16, and F-15 aircraft. Also currently the focal point for the Universal Water Activator Release System.

Outside Customers Supported:

1. U. S. Customs
2. U. S. Army
3. U. S. Navy
4. U. S. Marine Corps
5. AMRAAM Program Office
6. Turkish Air Force

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INSPECTION ELEMENT

Mission Statement: Performs maintenance on modified test aircraft undergoing various inspections such as phase, periodic, major, minor, hourly post-flight, and special inspections. Also performs scheduled and unscheduled maintenance. Removes, disassembles, inspects, repairs, reassembles, installs, and operationally checks all assigned aircraft. Determines the condition of airframe and engines and all associated equipment. Performs maintenance on specialized systems such as flight control surfaces, landing gear, and engines. Performs time changes, Time Compliance Technical Orders and special inspections as required by the mission. Performs pre-dock and post-dock meetings to coordinate requirements while in the inspection process.

Unique Capabilities: Capable of performing any of the inspections cited above on any model of F-111, F-16, F-15, F-4, T-38, F-5, UH-1N, or A-10 aircraft. Additionally, given the equipment, they are capable of performing the same inspections on any other Air Force, separate service, or foreign national aircraft. Performs consolidated maintenance with the Aircraft Modification Element. Recently completed phase inspections and minor aircraft modifications simultaneously, saving an average of six complete days of aircraft downtime on each occurrence. Concurrently perform Time Compliance Technical Orders and special/one time inspections during their phase inspections.

Given the personnel and equipment, six aircraft could be inspected simultaneously on a three shift operation. Unique to the Inspection Element are custom built dock boxes centrally located at the head of each dock within the hangar floor area. These dock boxes enable supervisors to have complete control over every aspect of the inspection/maintenance process. They are wired with telephones, CAMS computers, and electrical power.

WHEEL AND TIRE ELEMENT

Mission Statement: Performs turnaround maintenance on all wheel assemblies to directly support all AFDTC, AWC, and Air Rescue aircraft. Performs teardown, inspection, and buildup of all wheel assemblies to include cleaning and inspection of wheels and bearings, seals, and retainers. Ensures ample spare wheels and tires are on hand to accomplish missions requirements. Inspects and maintains all shop equipment associated with the wheel and tire element.

Unique Capabilities: Capable of performing tear down and/or buildup of wheel and tire assemblies on any A-6, A-7, F-4, F-5, F-16, F-15, F-111, C-130, T-38, T-39, H-60, H-53, Tornado, or Harrier aircraft. If given the equipment, capable of performing the same maintenance on any weapon system. Being a forward supply point enables them to interface directly with supply, thus facilitating a positive wheel and tire acquisition process. Works directly with the 46th EMS Corrosion Element when stripping of wheels is required.

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WHEEL AND TIRE ELEMENT (Continued)

Outside Customers Supported:

1. 33rd FW (ACC)
2. Duke Field
3. Hurlburt AFB
4. USAF AWC
4. British Aircraft

AEROSPACE GROUND EQUIPMENT

Mission Statement: Provides field maintenance, periodic inspections, special inspections, servicing, refueling and dispatch as well as technical order modifications on over 500 pieces of powered and non-powered AGE assigned to AFDTC. Provides supervision, production control, quality assurance and supply support for AGE activities. Performs engine teardown, buildup (overhaul) and repair of components, i.e. starters, generators, motors, relays, etc. Responds to trouble calls on equipment in use. Provides equipment operator training to customers. Performs servicing of aircraft oil and hydraulic carts. Collects and recycles waste petroleum products generated by aircraft maintenance. The equipment is, for the most part, the newest and latest designs in the Air Force inventory today.

Unique Capabilities: AGE has supported the latest aircraft in the inventory. For example: F-117A, C-17, RC-135, B-1 and B-2 bombers, E-3A AWACS as well as NATO aircraft such as the Harrier and Tornado. The capability also extends to all other services DoD wide which AGE will be able to support well into the year 2000. Provides test support to Army and Navy aircraft such as helicopters and Navy sea launch cruise missile tests. Provides specialized equipment to contractors and base facilities in support of new and state of the art munitions and electronic warfare testing.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

Yes. Targets for air-to-surface munitions testing are fabricated locally or brought in as real threats or threat representative targets. Targets may be armored vehicles, trucks, tanks, jeeps, bunkers, bridges, abutments, simulated industrial centers, EO/IR resolution targets, runways, aircraft, missiles, etc. Mobile surface targets may be remoted as required. Tank grids with heaters installed and heated transportable/mobile targets used for LANTIRN testing are other examples. Aerial targets for air-to-air weapons testing overland can be provided. Both subscale and full-scale aerial drone targets flown in manned and unmanned configurations can be provided for captive as well as live launch testing of air-to-air missiles.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Yes. When required, targets (both aerial drone targets as well as ground mobile and fixed) are validated by the T&E community, the customer, and appropriate intelligence agencies.

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. The contrasting terrain background of ASTE provides an excellent test arena for all munitions, air vehicle, and weapon systems testing. The water/land interface provides the opportunity to test all DoD vehicles/munitions/electronic combat systems that operate in this region.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes. All air vehicles, munitions, C4I, Theater Missile Defense, EC testing and cruise missile tests are accomplished utilizing ASTE.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-Yes. While expansion of Eglin airspace over land is limited by the presence of ATC airways and other DoD special use airspace, expansion of the ASTE within existing Eglin airspace is possible; Water-Yes, Eglin land test areas may be expanded into the central Gulf of Mexico to support an expanded footprint for testing; Land-Yes. ASTE is a collection of instrumented land areas, each of which is expandable within existing DoD property. Also, additional land areas could be created by the instrumentation of existing non-instrumented land areas, thereby expanding ASTE in that manner. For example, cruise missile testing profiles could be expanded.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Secret/Special Access Required.

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(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes. 95 FYDP I&M funds ($2,152K for the ASTE I&M Project plus $1,275K for the Range Photo Optics Project) are to improve ASTE land ranges capability as follows: (1) enables remote control of telemetry sites B4A and B4B, (2) enables cinetheodilite frame rates to be synchronized and operated independently of the Central Timing Facility, (3) increases timing resolution 10X for high speed cameras, (4) increases the telemetry sites wideband stream capability from two to three, (5) increases the transportable microwave system data rates from 1.54 MB/S to 32 MB/S, (6) modifies Fuze Test Facility refrigeration systems to eliminate the use of ozone depleting chemicals, (7) acquires four additional Kineto Tracking Mount automatic video trackers, and (8) acquires Eglin's first 20 million frame per second ultra high speed camera.

(3.1.F.1) Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.

Yes. The 724 square miles of land ranges, 92,998 square miles of water ranges and 19 miles of AF owned beachfront property provide a unique land-sea interface with contrasting background/clutter environments (semitropic and forested) which is especially useful for munition seeker testing.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

Yes. The 724 square miles of land ranges, 92,998 square miles of adjacent water ranges and 19 miles of AF owned beach front property provide a unique land-sea interface with contrasting background/clutter environments (semitropic and forested) which is especially useful for munitions and EC testing.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

Yes. The 724 square miles of land ranges, 92,998 square miles of water ranges and 19 miles of AF owned beach front property provide a unique land-sea interface with contrasting background/clutter environments which is especially useful for munition seeker testing. The ASTE is the only A-S supersonic range east of the Mississippi River with its semitropic and forested environment.

(3.1.F.2) Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

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ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
21.25%	18.39%	12.10%	19.83%	0.36%	1.98%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Air is 135,313 square miles (101,842 square miles are under direct control); land is 874 square miles (724 square miles are government owned); and sea is 92,998 square miles, the Gulf Test Facility.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

U. S. government owns 724 square miles (83%), remaining 150 square miles are privately owned (17%).

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

R-2914A	Surface to unlimited, excluding R-2917
R-2914B	8,500 feet MSL to unlimited
R-2915A	Surface to unlimited
R-2915B	Surface to unlimited
R-2915C	8,500 feet MSL to unlimited
R-2917	No fly zone.
R-2918	Surface to unlimited
R-2919A	Surface to unlimited
R-2919B	8,500 feet MSL to unlimited

Note: See 3.1.G.4 for dimensions of the airspace.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Yes. Testing of conventional air armament and electronic combat systems, launch of surface-to-air, air-to-air, air-to-surface, and surface-to-surface munitions. Dimensions are listed below. Yes, it will support simultaneous users.

SUA	Area (Sq. Mi.)	Altitude
R-2914A	518	Surface to unlimited
R-2914B	83	8,500 feet MSL to unlimited
R-2915A	274	Surface to unlimited
R-2915B	61	Surface to unlimited
R-2915C	48	8,500 feet MSL to unlimited
R-2917	23	No fly zone
R-2918	25	Surface to unlimited
R-2919A	71	Surface to unlimited
R-2919B	65	8,500 feet MSL to unlimited
Eglin MOA A	87	1,000 feet AGL to but not including FL 180
Eglin MOA B	222	1,000 feet AGL to but not including FL 180
Eglin MOA C	145	1,000 feet AGL to but not including FL 180
Eglin MOA D	126	1,000 feet AGL to 3,000 feet AGL
Eglin MOA F	8	Surface to but not including FL 180
Moody MOAs	1,407	8,000 feet AGL to FL 230
Camden Ridge MOAs	3,039	500 feet AGL to 10,000 feet MSL
Tyndall MOAs	2,960	500 feet AGL to 2,000 feet AGL; 9,000 feet AGL to 17,000 feet MSL
Rose Hill MOA	736	8,000 feet MSL to FL 230
W-151	11,140	Surface to unlimited
W-155	5,498	Surface to unlimited
W-470	6,010	Surface to unlimited
W-168	9,970	Surface to unlimited
EWTA-1	9,250	Surface to unlimited
EWTA-2	18,385	Surface to unlimited
EWTA-3	16,735	Surface to unlimited
EWTA-4	9,970	Surface to unlimited
EWTA-5	5,040	Surface to unlimited

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

SUA	Over land (Sq. Mi.)	Over water (Sq. Mi.)
R-2914A	518	
R-2914B	31	52
R-2915A	274	
R-2915B	61	
R-2915C		48
R-2918	25	
R-2919A	71	
R-2919B	26	39
Eglin MOA A	87	
Eglin MOA B	222	
Eglin MOA C	145	
Eglin MOA D	126	
Eglin MOA F	8	
Moody MOAs	1,407	
Camden Ridge MOAs	3,039	
Tyndall MOAs	2,960	
Rose Hill MOA	736	
W-151		11,140
W-155		5,498
W-470		6,010
W-168		9,970
EWTA-1		9,250
EWTA-2		18,385
EWTA-3		16,735
EWTA-4		9,970
EWTA-5		5,040

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97,137

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

There are no known or projected airspace problems.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Maximum straight line segment in Eglin <u>controlled</u> airspace is:

385 NM

(This is computed as a straight line from the southeast corner of EWTA-5 to the northeast corner of R-2915A.)

Maximum straight line segment in Eglin <u>available</u> airspace is:

478 NM

(This is computed as a straight line from the southeastern boundary of warning area W-174B to the northwest corner of warning area W-155.)

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Airways: J58-86, Gulf Route 26, A509 and A758 in the Gulf of Mexico. Tests conducted are: Cruise missile, long range missile and high speed targets. This airspace should be available for similar tests in the future.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

The Armament Systems Test Environment (ASTE) test area consists of 724 square miles of land area with over 45 test areas. The terrain of the ASTE is gently rolling and about equally divided by two watersheds. The northern and western portion of the reservation drains to Pensacola Bay, while the southern and eastern portion drains to Choctawhatchee Bay. Elevations vary from sea level at both bays to a maximum of 280 feet in the extreme northeast portion of the reservation. Approximately 14% or 101 square miles of ASTE consists of cleared test range areas, 70% or 507 square miles of the ASTE is comprised of Sandhills Forest consisting primarily of

longleaf pine and scrub oak, 2% or 15 square miles is rolling upland, 4% or 30 square miles is Flatwoods Forests with Dry Pocosins (isolated marsh), with the remaining 10% or 73 square miles consisting of Bays and Wet Pocosins, and stream bottoms. MOAs may be called up adding 8730 square miles of available airspace over land which is heavily forested and rolling farmland.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

Open Air Munitions Testing Facilities benefit from area soils which consist of ocean-washed sediments from the Piedmont region. Most of the colloidal material is removed, leaving a notably loose soil composed largely of quartz crystals. These soils are poor transmitters of seismic energy and serve to abate propagation of seismic vibrations which could otherwise be damaging to military and civilian infrastructure (i.e. well casing, pipelines, and other structures.) This is an extremely important mitigating factor to take into consideration when designing open air munitions tests. Eglin's soils have allowed AFDTC to conduct extensive munitions test over the last fifty years with minimal impact due to associated seismic noise.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

Yes. Some other geographic locations were utilized to achieve specific background environments; for example, Grayling MI for heavy snow, Yuma Proving Grounds for hot, dry desert, etc. The following data is the percentage of workload by year conducted off base and is the total, not broken down by facility workload or functional (Reliance) areas:

1986	Not Available	1990	5%
1987	4%	1991	7%
1988	6%	1992	7%
1989	4%	1993	4%

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Below 32 degrees F:	1 day
Between 32 and 95 degrees:	364 days
Above 95 degrees:	0 days

049

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Below 30%:	5 days
Between 30 and 80%:	330 days
Above 80%:	30 days

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

FY		FY	
85	95	90	172
86	160	91	173
87	279	92	184
88	135	93	119
89	281		
			1503

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Less than 1 mile:	0 days
Between 1 and 3 miles:	7 days
Greater than 3 miles:	358 days

(This table represents the best conditions that can be expected to occur at sometime during daylight hours (0600 to 1800L))

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

355 days. This assumes ceiling and/or visibility are at least 1500/3 at some point during daylight (0600 to 1800L).

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(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Less than 5 percent. Weapon test missions typically require weather minimums of 1500/3. For FY 92, 4.89 percent of weapon test missions scheduled were cancelled due to weather; for FY 93, 3.05 percent.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Yes. The ASTE and the Gulf Test Facility are the only supersonic Air-to-Surface Test Ranges east of the Mississippi River.

(3.2.A.2) Where are they located relative to your airfield?

Area	Distance from Eglin
B-70	10 NM
W-151	22 NM
W-155	26 NM
W-170	114 NM
EWTA 1-5	117 NM
W-168	222 NM
W-174	317 NM

(3.2.A.3) At what altitude (upper and lower altitude)?

Over land supersonic corridor: 200 feet AGL to unlimited. Over water supersonic areas: Surface to unlimited. (By local regulation, supersonic flights surface to 10,000 feet are conducted at least 25 NM offshore; supersonic flights above 10,000 feet are conducted at least 15 NM offshore.)

(3.2.A.4) Over land or water? What size and shape (length and width)?

? size?

Over land: 13 NM long by 1.25 NM wide. Over water: All airspace within the Gulf Test Facility. (By local regulation, supersonic flights surface to 10,000 feet are conducted at least 25 NM offshore; supersonic flights above 10,000 feet are conducted at least 15 NM offshore.)

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(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Yes. Over land: Sonic boom over pressures shall not exceed 3.5 pounds per square foot outside of five statute miles either side of the aircraft ground track. Aircraft conducting supersonic flights shall reduce from supersonic speed in level flight to ensure sonic boom is kept within defined limits. These restrictions have not inhibited aircraft/test operations. Over water: There are no FAA restrictions (by local regulations, supersonic flights surface to 10,000 feet are conducted at least 25 NM off shore; supersonic flights above 10,000 feet are conducted at least 15 NM off shore).

(3.2.A.6) What is the maximum number of simultaneous users?

Undetermined. The Gulf water areas of 92,998 square miles can accommodate multiple supersonic users.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

1. Number and Azimuth of Runways - 3 Runways:
   a. Runway 12/30 (Main Base)
   b. Runway 01/19 (Main Base)
   c. Runway 18/36 (Duke Field)

2. Elevation:
   a. Runway 12/30 = 85' MSL
   b. Runway 01/19 = 85' MSL
   c. Runway 18/36 = 193' MSL

3. Runway Length (Excluding Overrun):
   a. Runway 12/30 = 12,000'
   b. Runway 01/19 = 10,000'
   c. Runway 18/36 = 8,000'

4. Overrun Length (Departure End):
   a. Runway 12 = 1,000'
   b. Runway 30 = 1,000'

c. Runway 01 = 550'
d. Runway 19 = 1,000'
e. Runway 18 = 555'
f. Runway 36 = 552'

5. Terminal/Landing Aids:
   a. Main Base - TACAN, ILS, VASI, ASR
   b. Duke Field - TACAN, ILS, VASI, ASR

6. Arresting Cable:
   a. Main Base - YES
      (1) Runway 12/30 - BAK-9, BAK-12
      (2) Runway 01/19 - BAK-12
   b. Duke Field - YES
      (1) Runway 18/36 - MA-1A

7. Ramp Area:
   a. Main Base = 4,723,758 SF (does not include 1,681,021 SF of transient ramp)
   b. Duke Field = 1,908,360 SF (does not include 182,074 SF of transient ramp)

8. Construction Material:
   a. Runway 12/30 (Main Base) - First 2,000 feet on each end is concrete. All other is asphalt.
   b. Runway 01/19 (Main Base) - All asphalt.
   c. Runway 18/36 (Duke Field) - All asphalt.
   d. Ramps - All concrete.

9. Load Capability - The runways will support any aircraft in the DoD inventory in their present condition.

10. Hangar Space:

MAIN BASE FACILITY #	ENCLOSED SPACE (SF)	
72	31,552	
102	38,440	
103	38,340	
110	57,546	
130	129,766	
138	14,866	
421	43,322	
422	43,322	(Currently being used for storage, contains internal temporary dividers)
920	2,583	
1318	57,408	
1339	18,807	
1343	33,998	
1345	36,968	
1385	11,050	
1386	11,050	
	569,018	SF Total Enclosed Area

DUKE FIELD FACILITY #	ENCLOSED SPACE (SF)	
3020	23,876	
3025	58,846	
3029	22,373	
3057	33,834	
3087	23,409	
3150	37,488	
	199,826	SF Total Enclosed Area

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(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Airfield	Distance (NM)
Hurlburt Field, FL	9
Duke Field, FL	10
Sikes Airport, FL	17
NAS Pensacola, FL	42
NAS Whiting Field, FL	30
Pensacola Regional, FL	34
Panama City-Bay Co Intl., FL	48
Tyndall AFB, FL	56
Mobile Regional, AL	80
Keesler AFB, MS	124
Gulfport-Biloxi Regional, MS	132
Danelly Field, AL	110
Maxwell AFB, AL	116
Lawson AAF, GA	138
Tallahassee Regional, FL	115

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Eglin AFB is located 7 NM from restricted areas, 9 NM from warning area W-151, and 100 NM from warning area W-470.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Eglin AFB is centrally located between two major restricted areas (R-2914A and R-2915A), distance is less than 7 NM to each. Restricted areas contain both Armament Systems Test Environment (ASTE) and Electromagnetic Test Environment (EMTE) sites which are used for testing. The vast water range is located immediately to the south with the warning airspace (over-water testing areas) located less than 10 NM away.

Eglin's two runways are capable of handling all known military aircraft.

Eglin's location provides easy access to numerous low level military training routes.

Climate is sub-tropical and the vast majority of the time flying conditions are Visual Meteorological Conditions (VMC).

There is limited commercial air traffic in the area to impact testing.

There are seven emergency airfields within 55 NM of Eglin.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

No.

(3.2.B.6) Including hangars and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

1. Fighter Type Aircraft (F-15), Criteria From AFM 86-2:
   F-15 requirement, (42.8' x 63.8') x 4.4 = 12,015 SF

   Main Base Ramp = 4,723,758 SF/12,015 = 393 F-15 aircraft

Hangars

Bldg.	Aircraft	
72	2	
102	3	
103	3	
110	4	
130	10	
138	1	
421	3	
422	3	(Currently being used for temporary storage)
1318	4	
1339	1	
1343	2	
1345	3	
TOTAL	39	

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Main Base Total = 393 + 39 = 432 F-15's maximum capacity

Duke Field Ramp = 1,908,360 SF/12,015 = 158 F-15 aircraft

Hangars

Bldg.	Aircraft
3020	1
3025	4
3029	1
3057	2
3087	1
3150	3
TOTAL	12

Duke Field Total = 158 + 12 = 170 F-15's maximum capacity

TOTAL FIGHTER AIRCRAFT CAPACITY = 432 + 170 = 602

2. Large Multi-Engine Type Aircraft
   a. KC-135, Criteria From AFM 86-2:

KC-135 requirement, (130.8' x 136.2') x 3.5 = 62,352 SF

Main Base Ramp = 4,723,758 SF/62,352 = 75 KC-135 aircraft

Hangars

Bldg.	Aircraft
130	2
TOTAL	2

Main Base Total = 75 + 2 = 77 KC-135's maximum capacity

Duke Field Ramp = 1,908,360 SF/62,352 = 30 KC-135 aircraft

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No Hangars

Duke Field Total = 30 KC-135's maximum capacity

TOTAL KC-135 AIRCRAFT CAPACITY = 77 + 30 = 107

b. C-130, Criteria From AFM 86-2:

C-130 requirement, (132.6' x 99.5') x 3.5 = 46,177 SF

Main Base Ramp = 4,723,758 SF/46,177 = 102 C-130 aircraft

Hangars

Bldg.	Aircraft
110	1
130	2
1318	1
TOTAL	4

Main Base Total = 102 + 4 = 106 C-130's maximum capacity

Duke Field Ramp = 1,908,360 SF/46,177 = 41 C-130 aircraft

Hangars

Bldg.	Aircraft
3025	1
TOTAL	1

Duke Field Total = 41 + 1 = 42 C-130's maximum capacity

TOTAL C-130 AIRCRAFT CAPACITY = 106 + 42 = 148

3. Rotary Wing Type Aircraft (H-53), Criteria From AFM 86-2:

H-53 requirement, (88.3' x 72.3') x 3.5 = 22,344 SF

Main Base Ramp = 4,723,758 SF/22,344 = 211 H-53 aircraft

Hangars

Bldg.	Aircraft
72	1
102	1
103	1
110	2
130	5
421	1
422	1
1318	2
1343	1
1345	1
TOTAL	16

Main Base Total = 211 + 16 = 227 H-53's maximum capacity

Duke Field Ramp = 1,908,360 SF/22,344 = 85 H-53 aircraft

Hangars

Bldg.	Aircraft
3020	1
3025	2
3029	1
3057	1
3087	1
3150	3
TOTAL	9

Duke Field Total = 85 + 9 = 94 H-53's maximum capacity

TOTAL ROTARY AIRCRAFT CAPACITY = 226 + 94 = 320

4. UAV Type Aircraft - Pioneer - UAV-SR, Criteria from PEO for Cruise Missile and UAV Joint Project UAV requirement, 125.7 SF x 3.5 = 440 SF per UAV in its shipping container.

Main Base Ramp = 4,723,758 SF/440 = 10,735 UAV aircraft

Hangars

Bldg.	UAV	
72	71	
102	87	
103	87	
110	130	
130	294	
138	33	
421	98	
422	98	(currently being used for temporary storage)
920	5	
1318	130	
1339	42	
1343	77	
1345	84	
1385	25	
1386	25	
TOTAL	1286	

Main Base Total = 10,735+1286=12,021 UAV's maximum capacity

Duke Field Ramp = 1,908,360 SF/440 = 4337 UAV aircraft

Hangars

Bldg.	UAV
3020	54
3025	133
3029	50
3057	76
3087	53
3150	85
TOTAL	451

Duke Field Total = 4337+ 451 = 4788 UAV's maximum capacity

TOTAL UAV CAPACITY = 12,021+4788=16,809

5. Cruise Missiles Type Aircraft AGM-86B/C:
AGM-86 requirement, (20.75' x 12') x 3.5 = 872 SF

Main Base Ramp = 4,723,758 SF/872 = 5,417 AGM-86 aircraft

Hangars Bldg.	Cruise Missiles
72	36
102	44
103	43
110	66
130	148
138	17
421	49
422	49
920	2
1318	65
1339	21
1343	38
1345	42

Hangars Bldg.	Cruise Missiles
1385	12
1386	12
TOTAL	644

Main Base Total = 5,417 +644 = 6,061 AGM-86's maximum capacity
Duke Field Ramp = 1,908,360 SF/872 = 2,188 AGM-86 aircraft

Hangars Bldg.	Cruise Missiles
3020	27
3025	67
3029	25
3057	38
3087	26
3150	43
TOTAL	226

Duke Field Total = 2,188 + 226 = 2414 AGM-86's maximum capacity

TOTAL CRUISE MISSILE CAPACITY = 6,012 + 2,414 = 8,475

(3.2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

The Air Force Development Test Center (AFDTC) at Eglin Air Force Base has the natural and technical resources as well as the expertise to conduct a full range of air vehicle testing. Eglin's airspace and ground test facilities are used for USAF, joint service, and foreign military sales tests on an assortment of systems, including fixed and rotary wing aircraft, unmanned vehicles, cruise missiles, munitions and electronic combat systems. Eglin's primary mission is the developmental and operational test and evaluation of air armament and electronic combat weapons systems; in addition, AFDTC test resources have been utilized on a variety of air vehicle test programs. Specifically, test planning, execution, analysis and reporting capabilities exist at the AFDTC for the following types of air vehicle testing: performance, handling qualities, wheels and brakes, flutter, loads, aeroservoelasticity, dynamic response, heavy stores

oscillation, munitions, life-cycle, operational flight program software, sensors (radar, infrared, electro-optical), avionics integration, stores compatibility, and physical integration with external stores or avionics.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

A full complement of ground support facilities for preflight checkout or rehearsal of test missions exists at Eglin AFB. Notable examples are:

The Guided Weapons Evaluation Facility (GWEF) and Preflight Integration of Munitions and Electronic Systems (PRIMES) facilities are linked and provide open and closed loop simulation of realistic scenarios. These unique simulation facilities can take a weapon system from target acquisition through launch and mid-course flight in a dense electronic combat environment to terminal engagement with a target.

Flightline preflight of instrumented aircraft and weapons to include exercising telemetry, command destruct, operational flight program software, weapon system data link, and offensive and defensive systems.

Installed and uninstalled aircraft gun firing and boresighting, ballistics, dispersion pattern, accuracy, feed systems and projectile testing at a fully instrumented ground test range.

In addition to the off-equipment repair of Line Replaceable Units (LRU) removed from F-15 and F-16 aircraft, Avionics Intermediate Shops (AIS) perform software loading of operational flight programs, modifications, calibrations and testing for those aircraft. This includes weapons control radars, internal navigation units, head-up displays, automatic flight control, instrument, communication, and navigation systems.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

All inventory US aircraft as well as foreign aircraft can be supported by ASTE. The numbers and types of aircraft supportable are dependent upon the complexity of the scenario desired.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

No.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Mission capability includes: Air-to-air, air-to-surface, surface-to-air, surface-to-surface, cruise missile, drone, laser, air drops, air refueling, Theater Missile Defense, ground detonations, radar cross section, and signature measurements.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

AFDTC telemetry can receive/record/display up to 20 simultaneous streams of telemetry data.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Largest number of simultaneous air test missions scheduled was 19 (FY90).

Largest number of simultaneous air test sorties scheduled was 32 (FY90).

Note: Eglin airspace consists of the ASTE, EMTE, and Gulf Test Facility.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Type Aircraft	Number	Owner
UH-IN	2	46th Test Wing
F-111E/F	5	46th Test Wing
EF-111	1	46th Test Wing
F-15A/B/C/D/E	9	46th Test Wing
F-15A/B/C	11	USAFAWC
F-16A/B/C/D	11	46th Test Wing
F-16A/C/D	12	USAFAWC
F-15C/D	61	33rd Fighter Wing
HC-130	12	9th Special Operations Squadron
NC-130A	1	46th Test Wing
AC-130A	10	919th Special Operations Wing
C-130H	2	919th Special Operations Wing

(3.3.A.1) What is the number of threats simulated?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.5) What is the threat representation (fidelity) and density?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.7) What geographic dispersion can be simulated?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.7.A) Threat lay down?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.7.B) Representative distance?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? Relocatable to new scenarios? Yes/no

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.B.3) What range of spectra can be tested and evaluated?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.B.4) What are the available spectra?

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

The Armament Systems Test Environment (ASTE) is contiguous with the Electromagnetic Test Environment EMTE and the Gulf Test Facility. Tests conducted on the ASTE requiring the use of threat systems/simulators, will use EMTE assets. Reference EMTE paragraphs of same designation for detailed answers.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Land: 874 square miles. (724 square miles are under direct control.)

Water: 92,998 square miles.

Other airspace is available for scheduling bringing the total to 135,313 square miles.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

The entire ASTE and Gulf Test ranges are available to conduct tests of live weapons. ASTE contains 463,360 acres over land and the Gulf Test range contains 59,518,720 acres over water. ASTE test sites specifically instrumented for live weapons tests are:

Test Area	Acres
B70	10,400
B71	192
B72	3,840
B75	3,360
C52 A/C/N	11,120

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

As stated in 3.1.G.7, the maximum straight-line range contained within the Eglin available use airspace is 478 NM. This distance is available for all types of weapons testing. It should be noted that land-impact tests could be, and in some cases are, released over the water ranges. Ground track distances much longer than 500 NM could be accommodated within AFDTC ranges for autonomously guided weapons (i.e. cruise missiles). Even longer straight-line distances can be achieved by utilizing the extended water range capabilities in conjunction with the ground test ranges. For example, TOMAHAWK launches from the Gulf Test Range and Terminating on the ASTE have covered up to 725 NM. Longer ground track distances can be accommodated as test requirements dictate.

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

(Note: These totals are also reported in Gulf Test Facility. Hellfire data is also presented in the Hellfire Test Facility data package.

Unguided 2000 pound-class ballistic weapon	FY92	FY93
---live?	6	0
---inert?	165	49
Guided weapon (e.g., GBU-24 class)		
---live?	11	4
---inert?	42	27
Stand-off weapon (e.g., AGM-130 class)		
---live?	0	0
---inert?	14	25
---Cruise Missile - inert**?	4	14

Short-range missile (e.g., AIM-9, AIM-4)	*136 msns/	*195 msns/
---below 5000 feet MS	373 missions	384 missions
---between 5000 and 20,000 feet MSL		
---above 20,000 feet MSL		
Long-range missile (e.g., AIM-120, AIM-7)	*136 msns/	*154 msns/
---below 5000 feet MSL	198 missiles	221 missiles
---between 5000 and 20,000 feet MSL		
---above 20,000 feet MSL		

* All Altitudes
**Cruise Missiles travel over both the Gulf Test Water Range and the ASTE Land Range and therefore this data is listed in both places.

Note: AGM-65 Mavericks and Hellfire missiles have been launched at Eglin, but they do not fall within the above classifications. Ninety-six AGM 76's were launched on 20 missions in FY92 and 55 during 10 missions in FY93. Fifty-four Hellfire missions were scheduled in FY92 and 78 missions in FY93.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Yes.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

There was no requirement.

(3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

No.

070

APPENDIX A

HISTORICAL WORKLOAD*

FACILITY/CAPABILITY TITLE: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

		FISCAL YEAR								
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93	
AIR VEHICLES	DIRECT LABOR									
	TEST HOURS	NA	1,254	639	382	431	592	177	964	
	MISSIONS	294	507	108	139	134	72	24	219	1477
EC	DIRECT LABOR									
	TEST HOURS	NA	235	144	890	457	308	1,386	1,131	
	MISSIONS	79	101	77	274	139	90	221	292	1273
ARMAMENT/WEAPONS	DIRECT LABOR									
	TEST HOURS	NA	7,817	9,597	6,049	12,423	7,737	5,028	9,363	
	MISSIONS	2,270	2,287	1,865	1,749	2,432	1,857	1,605	1,570	15635
OTHER T&E	DIRECT LABOR									
	TEST HOURS	NA	5,639	7,333	4,131	2,710	3,083	8,172	6,795	
	MISSIONS	338	616	587	686	480	567	1,137	1,119	5530
OTHER	DIRECT LABOR									
	TEST HOURS	NA	5,407	6,738	7,434	7,614	7,644	2,360	3,241	
	MISSIONS	1,697	1,490	1,146	1,345	1,576	1,608	770	704	10536

34271

* These workload figures include only missions flown over the ASTE land ranges. Workload associated with missions flown over the water ranges are included in the Gulf Test Facility package.

Note: NA = Not available.

DETERMINATION OF GROUND UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

ANNUAL HOURS OF DOWNTIME	308
AVERAGE DOWNTIME PER DAY	.84
AVERAGE HOURS AVAILABLE PER DAY	23.16

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY 810.6
GROUND MOUNTS	4	1.75	7	
TARGET BUILDUP	2	1.75	3.5	ANNUAL UNCONSTRAINED CAPACITY
SMOKE WEEK	4	1.75	7	
TYPICAL	10	1.75	17.5	295,869
	20		TOTAL 35	

Note: "Typical" represents additional tests that could be accomplished if manpower were uconstrained.

DETERMINATION OF AIRBORNE UNCONSTRAINEDCAPACITY

FACILITY/CAPABILITY TITLE: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

ANNUAL HOURS OF DOWNTIME	308
AVERAGE DOWNTIME PER DAY	.84
AVERAGE HOURS AVAILABLE PER DAY	23.16

TEST TYPES	TESTS AT ONE TIME	FLIGHT HOURS PER MISSION	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY 1,317.8
A/G WSEP	2	6	12	
SEEK EAGLE	1	3	3	ANNUAL
AGM-130RE	1	4.4	4.4	UNCONSTRAINED
SFW	1	6	6	CAPACITY
				480,999
TYPICAL	5	6.3	31.5	
	10		TOTAL 56.9	

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

AGE: 18-50 years

REPLACEMENT VALUE: $11,138,000*

MAINTENANCE AND REPAIR BACKLOG: $10,000

DATES OF LAST UPGRADES: Unknown**

NATURE OF LAST UPGRADES: See attached for complete list of buildings

MAJOR UPGRADES PROGRAMMED: None**

1. **UPGRADE TITLE:**
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. **UPGRADE TITLE:**
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

*Replacement cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.

**Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on Additional Information Chart.

FACILITY CONDITION (Continued)

FACILITY/CAPABILITY TITLE: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M & R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
8968	66	$11,000	0	UNKNOWN	NONE
8970	52	$741,000	0	UNKNOWN	NONE
8971	52	$353,000	0	UNKNOWN	NONE
9300	54	$348,000	0	UNKNOWN	NONE
9302	54	$123,000	0	UNKNOWN	NONE
9303	54	$132,000	0	UNKNOWN	NONE
9304	54	$108,000	0	UNKNOWN	NONE
9305	54	$121,000	0	UNKNOWN	NONE
9307	76	$11,000	0	UNKNOWN	NONE
9311	91	$185,000	0	UNKNOWN	NONE
9312	57	$104,000	0	UNKNOWN	NONE
9314	57	$104,000	0	UNKNOWN	NONE
9316	57	$104,000	0	UNKNOWN	NONE
9318	57	$104,000	0	UNKNOWN	NONE
9321	67	$302,000	0	UNKNOWN	NONE
9409	57	$73,000	0	UNKNOWN	NONE
9310	75	$289,000	0	UNKNOWN	NONE
9313	69	$123,000	0	UNKNOWN	NONE
9315	69	$123,000	0	UNKNOWN	NONE
9323	71	$134,000	$10,000	UNKNOWN	NONE
9454	54	$59,000	0	UNKNOWN	NONE
9603	54	$112,000	0	UNKNOWN	NONE
9608	65	$115,000	0	UNKNOWN	NONE
9615	66	$337,000	0	UNKNOWN	NONE
9617	66	$165,000	0	UNKNOWN	NONE
9605	71	$170,000	0	UNKNOWN	NONE
9612	71	$170,000	0	UNKNOWN	NONE
9613	71	$170,000	0	UNKNOWN	NONE
9614	71	$170,000	0	UNKNOWN	NONE

FACILITY CONDITION (Continued)

FACILITY/CAPABILITY TITLE: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE) (CONTINUED)

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M & R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
9400	57	$1,947,000	0	UNKNOWN	NONE
9403	57	$79,000	0	UNKNOWN	NONE
9406	57	$71,000	0	UNKNOWN	NONE
9408	57	$115,000	0	UNKNOWN	NONE
9411	57	$79,000	0	UNKNOWN	NONE
9421	66	$9,000	0	UNKNOWN	NONE
9317	71	$170,000	0	UNKNOWN	NONE
9420	58	$62,000	0	UNKNOWN	NONE
9422	69	$121,000	0	UNKNOWN	NONE
9425	71	$134,000	0	UNKNOWN	NONE
3048	71	$134,000	0	UNKNOWN	NONE
6029	71	$134,000	0	UNKNOWN	NONE
9409	57	$73,000	0	UNKNOWN	NONE
8712	59	$97,000	0	UNKNOWN	NONE
8721	56	$27,000	0	UNKNOWN	NONE
8725	57	$51,000	0	UNKNOWN	NONE
8729	65	$7,000	0	UNKNOWN	NONE
8730	69	$805,000	0	UNKNOWN	NONE
8702	69	$121,000	0	UNKNOWN	NONE
8704	69	$121,000	0	UNKNOWN	NONE
8705	68	$121,000	0	UNKNOWN	NONE
8733	75	$289,000	0	UNKNOWN	NONE
9900	54	$49,000	0	UNKNOWN	NONE
1039	44	$88,000	0	UNKNOWN	NONE
9460	63	$27,000	0	UNKNOWN	NONE
9500	54	$317,000	0	UNKNOWN	NONE
9504	54	$37,000	0	UNKNOWN	NONE
9505	54	$37,000	0	UNKNOWN	NONE

FACILITY CONDITION (Continued)

FACILITY/CAPABILITY TITLE: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M & R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
9511	54	$73,000	0	UNKNOWN	NONE
9512	54	$157,000	0	UNKNOWN	NONE
1078	67	$29,000	0	UNKNOWN	NONE
9534	67	$124,000	0	UNKNOWN	NONE
9535	67	$124,000	0	UNKNOWN	NONE
9536	67	$124,000	0	UNKNOWN	NONE
9537	67	$124,000	0	UNKNOWN	NONE
	TOTAL	$11,138,000	$10,000		

GENERAL INFORMATION

Facility/Capability Title: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46 Test Wing

Location: Eglin AFB, FL

T&E Functional Area: Armament/Weapons

UIC: Not Available

T&E Test Facility Category: Open Air Ranges

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	80	0	0	0	20	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	3	0	0	0	2	0	5
Armament/Weapons	40	0	0	0	3	0	43
EC	5	0	0	0	0	0	5
Other	32	0	0	0	15	0	47

TECHNICAL INFORMATION

Facility/Capability Title: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

Facility Description; Including Mission Statement: The mission of the Armament Systems Test Environment (ASTE) is to provide all the resources needed for conducting open air test and evaluation of munitions and weapon systems. The ASTE includes 724 square miles of land ranges including B-70,71,75,C-72,52A/C/N; 86,500 square miles of water ranges including the Gulf Test Facility; and all the support infrastructure required to fully support the entire spectrum of armament testing. There are 45 permanent weapons test areas, 34 fully operational test facilities, and 26 support/instrumentation facilities. Nineteen miles of AF-owned beach front property provide a unique land-sea interface with contrasting background/clutter environments which is especially useful for munition seeker testing. Military controlled airspace exists over the entire land and water range complex. In addition, there are adjacent military operating areas (MOAs), bringing the total to 135,313 square miles, should a larger controlled area be needed for specific tests. Numerous simultaneous air-to-air, air-to-ground, and ground missions are controlled from a state-of-the-art Central Control Facility which also houses a real-time and post mission data reduction facility including the only DoD super computer in the Southeastern United States. The capability to accomplish extensive integration testing, at both the component and systems levels, is available. An AFDTC Operations Security (OPSEC) program provides tools needed to achieve a secure test environment. Test/Programming Engineering provides a skilled cadre of personnel that plans, manages, and conducts Development, Test, and Evaluation of weapon and electronic combat systems, and is responsible for data collection, analysis, and technical reports for program documentation. The ASTE provides a vast diversity in capabilities and terrain characteristics ranging from multi-canopied tropical forests to simulated desert areas with large exposed surfaces. Test Area (TA) B-70, established for high altitude and high speed (including supersonic) bombing and rocketry, is approximately 18 miles long, averages 1 1/4 miles wide, and is located approximately 15 miles northwest of Eglin Main. The B-70 complex provides the capability for air-to-ground testing of bombs, napalm, guided munitions, rockets, missiles and submunitions, for laser testing, for static testing of bombs and rockets in cleared arenas, water-filled and mud-filled arenas, and for shallow water mine countermeasure testing. TA B-71 is a submunition and incendiary weapons test area near TA B-70. TA B-71 includes a 2,000' x 4,000' asphalt-covered grid used for submunition testing and a 300' x1,000' area containing fixed targets used for incendiary weapons testing. TA B-75, a cleared, rectangular area 3 1/2 by 1 1/2 miles located approximately 16 miles northwest of Eglin Main, is primarily used for close air support and high speed (including supersonic) test missions for air-to-ground bombing, rocketry, and napalm delivery against runways/airfields. A 300' x 1200' runway target is the primary target for air drops and concrete, asphalt and clay pads are used for static firings and detonations. Also, a tank gun range and target complex superimposed on TA B-75 is used and supported by the Alabama Army National Guard for annual training. TA C-72 is a cleared, major test area approximately 6 miles long extending from the northwest to southeast with varying widths averaging approximately 1 mile. The C-72 complex is primarily used for air-to-ground and ground-to-ground missions involving the development or production testing of conventional munitions. Target arrays include semi-permanent fortified defensive targets, hard structure targets, a 200' x 1500' runway target, and simulated high value targets such as power lines, bridge pilings, and bunkers. TA C-52A is the southernmost 10 square mile portion of the TA C-52 range complex and is located approximately 18 miles east-northeast of Eglin Main. TA C-52A is primarily used for supporting air and ground testing of EO, IR, laser, and MMW seekers.

TECHNICAL INFORMATION (Continued)

Facility/Capability Title: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

A 300' tower is located in the center of TA C-52 and provides an elevated position to mount seeker systems or instrumentation to simulate an air-to-ground scenario. A track-mounted turntable capable of rotating targets up to 75 tons for target signature measurements is located adjacent to the tower. TA C-52C is a large cleared area about 2 1/4 by 1 1/2 miles contiguous with TAs C-52A, E, N, W. TA C-52C serves as the central control site for overall control of the C-52 Complex. As a test site, it is used for evaluating the performance of air-to-surface munitions including dispensers with live bomblets, incendiary and flame weapons, resolution testing of airborne cameras, and ground functional testing of munitions. TA C-52N is a large cleared area about 2 by 2 miles and is the Eglin test site designed for large scale drops of fully live high explosive ordnance, such as B-52 carpet bombing.

Interconnectivity/Multi-Use of T&E Facility: The ASTE can be linked to Tyndall AFB to provide multiple full- scale and subscale drone targets (using the Gulf Range Drone Control Upgrade System (GRDCUS), multilateration TSPI, scalar and vector scoring, additional TM receivers, and two E-9A aircraft for TM and UHF relay and surface clearance for complex Air-to-Air and Air-to- Surface tests. The ASTE also includes special targets ranging from simulated Warsaw Pact A/C shelters and runways to remote controlled tanks; and test facilities that are one-of-a-kind in the world; e.g., the shallow water mine countermeasure testing facility and the HELLFIRE Integration Facility and Test Range. A wide range of current threat emitters are available to provide a realistic electromagnetic radiation environment or act as "targets" for armament testing. Access is available to a full range of Defense Mapping Agency products including TERCOM and DSMAC terrain maps.

Type of Test Supported: High altitude and high speed (including supersonic) bombing and rocketry; air-to-ground testing of bombs, napalm, guided munitions, rockets, missiles, and submunitions; laser testing; static testing of bombs and rockets in cleared, water-filled, and mud-filled arenas; shallow water mine countermeasures testing; ground-to-ground munitions testing; air and ground testing of EO, IR, laser, and MMW seekers; air-to-air missile testing; and target signature measurement testing.

Summary of Technical Capabilities: A full range of instrumentation (TSPI-radar, optical, multilateration, laser, GPS), TM, photo, video, frequency control/analysis, Flight Termination Systems, weather, Radar Cross Section, blast, structural, ballistics, multi spectral (EO, IR, MMW, RF), impact scoring, real time data reduction, timing (IRIG), Over the Horizon TM/TSPI/control capability is available.

Keywords: Armament Systems Test Environment (ASTE), Gulf Range Drone Control Upgrade System (GRDCUS), land range, water range, air-to-ground, ground-to-ground, Time Space Position Information (TSPI), munitions, air-to-air missiles, tank range, runway, targets, arenas, HELLFIRE, tower, seeker, target measurement; integration testing.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: ARMAMENT SYSTEMS TEST ENVIRONMENT (ASTE)

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	0	0	0	0	0	0	0
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	25	25	24	22	21	19	19
CONTRACTOR	34	34	34	34	34	34	34
TOTAL	59	59	58	56	55	53	53

*Note: FY95 and beyond are subject to additional manpower reductions.

TOTAL SQUARE FOOTAGE 404,416 SF
TEST AREA SQUARE FOOTAGE 363,732 SF
TONNAGE OF EQUIPMENT 7,664 TONS
ANNUAL MAINTENANCE COST $4,082,538

OFFICE SPACE SQ. FOOTAGE 40,414 SF
VOLUME OF EQUIPMENT 1,073,000 CF
ESTIMATED MOVING COST $28,971,056

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
2,197K	1,449K	1,350K	1,623K	1,008K	1,575K	1,900K

Document Separator

FACILITY/CAPABILITY: EMTE @ EGLIN AFB

TEST FACILITY CATEGORY: OAR

% T&E - OVERALL: 98

AV: 1

EC: 57

A/W: 9

NUMBER OF TESTS AT ONE TIME (SUM OF COLUMN 5): 15 + 4 = 19

HISTORICAL WORKLOAD (TEST HOURS)

AV:	FY92	2	FY93	29.75
EC:	FY92	1,518.25	FY93	978
A/W:	FY92	47.50	FY93	150.75

Nation 12 Aug 94

(2.1.A.1) What amount of workload have you performed each year from FY86-93?

Reference the Historical Workload Form provided in Appendix A of this package.

(2.1.B.1) Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP.

Historical, FY 92

Program Element	AV	EC	A/W	OT	OTHER
21001F		X			
27130F		X			
27133F		X			
27134F		X	X		
27163F			X		
27313F			X		
27412F		X			
27417F		X		X	
27426F			X		
28015F		X	X		
35887F		X			
63270F		X			
63737D			X		
64270F		X			
64733F			X		
64754F				X	
64770F				X	
64940D			X		
65712F		X		X	
65807F		X	X	X	
72207F		X			
ARMY		X			

(2.1.B.1) Continued

Historical, FY93

Program Element	AV	EC	A/W	OT	OTHER
11127F				X	
21001F		X			
27130F		X			
27133F		X	X		
27134F		X	X		
27165F			X		
27313F			X		
27417F		X			
27589F				X	
27590F			X		
28015F	X	X	X		
28030F			X		
31310F				X	
35887F		X			
62101F			X		
63228D				X	
63601F			X		
64270F		X			
64602F			X		
64770F				X	
65130D			X		
65712F		X	X		
65807F		X	X	X	
72806F			X		
ARMY		X			
B6404D			X		
NAVY				X	

(2.1.B.1) Continued

Future Years

Program Element	AV	EC	A/W	OT	OTHER
11127F				X	
27130F		X			
27133F		X	X		
27134F		X	X		
27160F		X	X		
27163F			X		
27165F			X		
27313F			X		
27412F		X			
27417F		X		X	
27419F		X			
27423F		X			
27426F			X		
27589F				X	
27590F			X		
28015F	X	X	X		
28030F			X		
31310F				X	
35887F		X			
62101F			X		
63228D				X	
63270F		X			
63601F			X		
63737D			X		
64270F		X			
64602F			X		
64618F		X	X		
64727F		X	X		
64733F			X		
64754F				X	

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(2.1.B.1) Continued

Future Years (Continued)

Program Element	AV	EC	A/W	OT	OTHER
64770F				X	
64940D			X		
65130D			X		
65712F		X	X	X	
65807F		X	X	X	
72207F		X			
72806F			X		
ARMY		X			
B6404D			X		
NAVY				X	

(2.1.B.2) What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

Functional Area	FY92 Workyears	FY93 Workyears
Air Vehicle	0	.02
Electronic Combat	0.86	0.55
Armament/Weapons	0.03	0.09
Other Test	0.40	0.30
Other	0.01	0.02

Note: Workyears computed by dividing test hours by 1768 hours per workyear.

(2.2.A) Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.).

Reference the Determination of Unconstrained Capacity Form provided in Appendix A of this package.

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(2.2.B) Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

No.

(2.3.A) Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

Yes.

(2.3.B) Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

Yes. The loss of the EMTE would result in the inability to support Quick Reaction testing such as support for the SOF forces as required for Bosnia, Somalia, and software upgrades for Desert Storm. The EMTE also supports the Air Armament Mission area and is uniquely collocated with other test facilities on Eglin AFB such as the PRIMES, GWEF, ASTE, Climatic Laboratory, and the Freeman Computer Science Center. The EMTE can also be electronically linked to other ISTFs and HITLs such as the AFEWES and the REDCAP Facilities.

(2.3.B.1) On the test mission of any other activity?

Yes. The loss of the EMTE would severely impact the EC test and training mission of tenant organizations such as AWC, AFSOC, AFOTEC, and other organizations such as Warner-Robbins AFB. Customers such as the Army, Navy, and Foreign Military Services would also be severely impacted.

(2.3.B.2) On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

Yes. AFSOC and AWC utilize the EMTE to evaluate and test equipment and tactics modified and/or developed for rapid response deployments into hostile environments as well as train and prepare aircrews for use of the new or modified equipment and tactics prior to such deployments.

(3.1.A.1) What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

100%. The EMTE is interconnected to the Freeman Computer Sciences Center (FCSC) for real-time testing of EC systems. The testing requires simultaneous operation to provide control data for precision track of targets and test items as well as the processing of test data for evaluation of the SUT. The FCS Center is external to the EMTE.

(3.1.A.2) If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

Yes. The EC test mission requires human resources with expertise in the test process. A loss of the EC test mission would impact other test areas due to cross utilization of personnel into other areas of testing currently performed on Eglin. In areas such as the Freeman Computer Sciences Center, a cross utilization of computer equipment resources also exists, in which case a duplication of resources could be required if the EC mission is relocated to another geographic location and a possible under utilization of remaining resources could be realized.

(3.1.B) Facility Condition (MV II)

Reference the Facility Condition Form provided in Appendix A of this package.

(3.1.C.1) Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

<u>Encroachment:</u>
No. There are NO limiting encroachment characteristics associated with this facility.

<u>Environmental:</u>
There are no known current or future environmental limitations.

(3.1.C.2) How much could workload be increased before this limit would be reached? Express your answer as a percentage of your current workload.

Encroachment:

Not Applicable. Encroachment (current or future) is not a limiting factor in determining facility workload.

Environmental:
Not Applicable.

(3.1.C.3) Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

None of Eglin's EMTE Facilities are currently operating under any temporary permits or voluntary agreements of an environmental nature.

(3.1.C.4) What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

50 Mile Radius:	**253,144**
100 Mile Radius:	**952,650**
150 Mile Radius:	**1,211,688**
200 Mile Radius:	**1,966,382**

(3.1.C.5) Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

Jet airway J58-86 and Gulf Route 26: routes are used on a daily basis. State highways 85 and 285: used on a daily basis. Sea area under warning areas W-151 and W-470 is international waters. Air routes may be closed for up to four hours for test activities. State highways may be closed for duration of test activities. Sea area is sufficiently large to permit positioning the test activity to avoid surface traffic.

(3.1.C.5.A) How many test missions per year are canceled due to commercial or public use?

None.

(3.1.C.6) What is the number of test missions that have been canceled due to encroachment in each of the last two years?

None.

(3.1.D.1) Do you have specialized facilities which are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. The following facilities are currently required to support the EMTE mission or are potentially required to support future test mission activities.

SUPPORT FACILITIES LIST

WRIGHT LABORATORIES

- **Environmental Sciences Facility**
- **Radio Frequency/Millimeter Wave (RF/MMW) Facility**
- **Electro-Optical Research Facility**
- **LADAR Development and Evaluation Research Facility (LDERF)**
- **Neural Network and Signal Processing Facility**
- **Model Fabrication Facility**
- **Inertial Navigation Facility**
- **Instrumentation Technology Research Facility**

AIR WARFARE CENTER

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AFDTC
- Freeman Computer Science Center
  - Test and Analysis
  - System Technology
  - Gulf Range Drone Control Upgrade System (GRDCUS)
- Safety
- Instrumented Airborne Platforms (C-130, F-111, F-15, F-16, UH-1)
- Avionics
- JTIDS Ground Technical Facilities/Support Equipment
  - Enhanced JTIDS System Exerciser (EJSE)
  - JTIDS Integration "Hot" Bench & JTIDS Interface Test Set
- Multilateration Systems & GPS
- Electro-Optical/Millimeter Wave Instrumentation
- Airborne Systems/Instrumentation
- Meteorological Instrumentation
- "Specialized" Electronic Systems Flight
- Electronic Design and Development Flight
- Aircraft Systems/Design and Modification
- Precision Measurement Equipment Lab (PMEL)
- Precision Measurement Facility - Site III Mass Properties
- Munitions Storage and Handling
- Alternate Mission Equipment Section
- Aircraft Repair Element
- Egress
- Fuels
- Propulsion
- Machine Shop
- Structural Maintenance
- Metals Processing
- Corrosion Control
- Non-Destructive Inspection
- Electro-Environmental
- Pneudraulic
- Patterns and Plastics

AFDTC (Continued)
- Survival Equipment
- Inspection Element
- Wheel and Tire Element
- Aerospace Ground Equipment

WRIGHT LABORATORIES (WL/MN)

The laboratories provide numerous capabilities that are an integral part of the cradle-to-grave munitions development process which is uniquely located on one installation (the complete Wright Laboratories facilities/capabilities are provided under another data call.):

Environmental Sciences Facility

Environmental Analysis and research in support of conventional munitions technology development.

Quantitative determination of contaminants in chemicals, explosives, fuels, soils, or water including on-the-spot analysis to determine residual metal contaminate levels.

Automated image analysis for material and particle studies.

Document preparation to insure compliance with all local, state and federal regulations and laws.

Radio Frequency/Millimeter Wave (RF/MMW) Facility

Main Lab: Calibration and measurement test benches; 94 GHz monopulse radar; X-band pulse doppler fire control radar.

Penthouse: Roof level room with sliding windows allowing sensors to view area outside building; includes instrumentation and communication with main lab and tower.

Tower: 3 X 3 meter room 10.6 meters above bldg. 13A roof; Elevator; 360 degree field of view; instrumentation and communication lines with main lab. Areas available to view include Eglin flightline and runways, intercoastal waterway in Choctawhatchee Bay, Eglin tank farm, various buildings and associated structure.

WRIGHT LABORATORIES (WL/MN) (Continued)

Electro-Optical Research Facility

Main Lab : (1232 ft^2) Vibration isolated optics benches and computer workstations, Laser Polarimeter.

Make measurements of the electro- and magneto-optic constants of optical and infrared materials, optical processing experiments and simulation.

LADAR Development and Evaluation Research Facility (LDERF)

Optics Labs: Four optical work/test benches on isolated slabs of cement in 2 separate 20' X 40' rooms; 1064 NM Nd: Yag diode pumped laser radar system; Laser Imaging Radar System; two Tunable Ti-sapphire lasers; three Nd: YV04; Janis dewar for material characterization down to 2^0 K; 80' darkened indoor range for conducting LADAR tests in a controlled environment. Garage door provides access to a 1.5 km outdoor range.

Electronics Lab: 1600 ft^2 room with PCB assembly area; four general purpose electronics work benches; LADAR Video/data display and processing station; Computer Aided Design (CAD) System including schematic capture, circuit simulation, PCB layout, and mechanical drawing packages.

UAV Operations: Air conditioned hanger space for modification, sensor integration and storage of unmanned aerial vehicles (UAV). A 16' X 12' tall hanger door opens to roughly 1600 ft^2 of hanger floor space. 30 ft^2 of workbench space is complemented by a complete selection of hand tools and light machine tools. A 2000 ft^2 cement pad is adjacent to the hanger door.

High bandwidth flight motion simulator, 60 Hz, 25 lb payload, +/- 10 degree pitch and yaw, +/- 120 degree roll, 17 microradian pointing accuracy.

Neural Network and Signal Processing Facility

Mac II with neural network analysis software and another Mac II for analysis work.

A VT340 for network access to base computers.

A 386 PC with a neural network accelerator board and neural network analysis software.

WRIGHT LABORATORIES (WL/MN) (Continued)

A Sun Sparc 1 which is available for signal processing analysis and software evaluation; scanner and controller to support signal processing analysis.

Model Fabrication Facility

Produce, assemble, and modify both full and sub-scale aeroballistic, aerodynamic and aeromechanical assemblies and components for experimental munitions applications.

Inertial Navigation Facility

Test and evaluate tactical inertial navigation hardware and imbedded GPS/inertial systems.

Instrumentation Technology Research Facility

Modern 3000 sq ft laboratory dedicated specifically to developing, fabricating, and testing advanced instrumentation systems for explosive, guidance, and flight systems test.

Verify the performance of electronic and opto-electronic instrumentation used during the development and testing of airborne munition acquisition programs.

Electronic/Optic design and fabrication to support the prototyping and analysis of advanced instrumentation technology concepts.

AIR WARFARE CENTER

The mission of the USAF Air Warfare Center (USAFAWC) is to test and evaluate new or improved weapon systems and air defense radar systems and to support the Combat Air Forces (CAF) in assigned areas of technical expertise. Specific duties include operational testing of the following CAF weapon systems and equipment: electronic combat (EC) systems and support equipment; reconnaissance systems; aircrew training devices (ATDs); life support; command, control, communications, and intelligence (C3I); armament and avionics systems; combat support; chemical warfare defense (CWD); air base and installation security systems (BISSs) and subsystems; and air defense radar systems and equipment. USAFAWC provides technical and operational expertise to assist Headquarters (HQ) Air Combat Command (ACC) in providing operational forces required in support of testing managed by the Air Force Operational Test

AIR WARFARE CENTER (Continued)

and Evaluation Center (AFOTEC). USAFAWC also manages and conducts Follow-on Operational Test and Evaluations (FOT&Es) of hardware and software for which AFOTEC serves as the Air Force focal point. USAFAWC develops and evaluates tactics for EC, avionics and armament, reconnaissance systems, ATDs, life support, C3I, drones, combat support, CWD, BISS, and air defense radar systems and equipment. The Center reprograms designated EC systems to meet mission needs of CAF aircraft. The peacetime implementation of this mission is through USAFAWC Emergency Reprogramming Center (ERC). The Center also maintains the software that supports the reprogramming of EC systems. USAFAWC creates various mission data configurations in EC systems and manages these configurations according to AFR 800-14. USAFAWC assists the HQ ACC operations staff and CAF units in determining the use of and making improvements to technical equipment and software used by the CAF. USAFAWC assists the HQ ACC staff in the Air Force requirements and acquisition process, including concept exploration, demonstrations, and evaluations. USAFAWC improves the effectiveness of CAF systems through such evaluation programs as the Air-to-Ground Weapon Systems Evaluation Program (A/G WSEP), the Ground to-Ground Weapon Systems Evaluation Program (G/G WSEP), the Electronic Warfare Evaluation Program, the Air-to-Air Weapon Systems Evaluation Program (A/A WSEP), the Periodic Radar Evaluation Program, the Air Force Radar Evaluation Program, and the Precision Guided Munitions Analysis Program. USAFAWC improves the combat capability of CAF personnel through specialized training: Blue Flag exercises (for battle staff), Green Flag exercises (for EC), EC and battle management courses, and USAF Air Ground Operations School (USAFAGOS). USAFAWC operates specific Air Force complexes used for training and testing of Air Force systems and procedures: the C3I complex, Air Force subscale and full-scale aerial target assets, and the USAFAGOS. USAFAWC manages William Tell (the biennial worldwide Air Force air-to-air weapons meet). The Center conducts day-to-day management and execution of ACC war gaming responsibilities, with policy and commitment of ACC resources approval authority remaining with HQ ACC/DO.

FREEMAN COMPUTER SCIENCE CENTER

Test and Analysis

Provides the mathematical and software engineering services required for the measurement, reduction, and analysis of test data, both in real time and post mission, for the 46th Test Wing and for AFDTC tenants. Designs, develops and implements the AFDTC Test Range Central Control Facility (CCF), Telemetry Facility (TELEMAG) and Image Processing Facility. Provides a broad base of mathematical and statistical and computer expertise for the development of data reduction methodology, for the engineering of data reduction and analysis software products, for the design of tests and experiments, and for the analysis of test and experimental data.

FREEMAN COMPUTER SCIENCE CENTER (Continued)

No other facility has the integrated capability of telemetry, control radar, threat sites, surveillance radar, and photo-optics in a single location for open air real time testing. The computational capability of the facility allows many data products to be available for the customer as soon as the mission is complete.

The CCF is designed for commonalty/compatibility with DoD instrumentation systems such as GPS, SAI, and Common Airborne Instrumentation. The facility is currently used by other DoD services and US Allies on a regular basis.

Systems Technology

Designs, develops, implements, operates and maintains the AFDTC Scientific Computer Center and its networks. Provides a broad base of expert computer and system engineering consultants. Provides software engineering support for the Eglin scientific and engineering community including development, customization and adaptation of graphics, applications, and system software products. Develops software products for the simulation and/or control of weapon or related systems as required for RDT&E. Operates and maintains the Eglin Decision Support System and the CRAY YMP Supercomputer.

The computer center has a CRAY YMP supercomputer and visualization laboratory, consisting of a 1 Gigabit network to the CRAY, Silicon Graphics workstations, video recording and printing equipment, to aid in the rapid analysis and presentation of simulation data. The center is a node on the Defense Research Engineering Network (DREN).

This is a general purpose computer center that supports all phases of digital models and computer simulations. It is available to all DoD agencies. The largest current user is the Aeronautical Systems Center.

Gulf Range Drone Control Upgrade System (GRDCUS)

This Division is responsible for system development of the Gulf Range Drone Control Upgrade System (GRDCUS) system and related systems. This system is a multifunction command and control, tracking, and data link system capable of supporting DT&E and OT&E air-to-air missions over the Gulf. The system supports the control of multiple drones flying independently or in close formation.

Develop target control software for automatic control of multiple targets, aerial or ground.

Develop real time computer systems that control targets and provide real time Time Spaced Position information (TSPI) for targets and other mission participants, missiles, shooters, relay platforms, ground vehicles, and helicopters.

FREEMAN COMPUTER SCIENCE CENTER (Continued)

Support the Target Acquisition agencies to define target control requirements, support testing and systems engineering.

Provide capability to use Global Positioning System (GPS) receivers to provide real time TSPI data for test mission use.

SAFETY

Mission Statement: Provide the Commander, AFDTC, with a coordinated and integrated safety program. Provide accident prevention guidance and technical safety support for Eglin military and contractor agencies. Develops and provides safety training and education, investigates and reports accidents/incidents. Maintains safety survey effort and assures acceptable range safety for all activities conducted under purview of the Commander, AFDTC, according to AFMCR 127-8. Implements the AFDTC system/munitions safety program in conformance with AFR 127-6 and AFDTCR 127-3 and supplements. Assigns explosive hazard classifications for munitions developed or stored at AFDTC and certifies technical data from safety standpoint. Interfaces during all phases (test planning, aircraft modification, flight profile approval, and mission conduct) of multi-national and multi-service weapons test programs to ensure the flight safety directives and principles are adhered to. Safety officers maintain currency in a mission aircraft.

Unique Capabilities: Real-Time Processing Systems: Safety real-time mission analysis and control is provided at the Central Control Facility (CCF) located in building 380. The CCF is designed to provide state-of-the-art analysis and control resources which are needed to satisfy AFDTC's real-time test support requirements through the 1990s. The general-purpose computers which support the CCF have access to most of the range data sources [radars, telemetry, the Gulf Range Drone Control Upgrade System (GRDCUS), and TPX-42]. Real-time application programs process data collected during missions to provide real-time analysis and control information. These computer resources, displays, and system flexibility are sufficient to support many different types of missions simultaneously.

INSTRUMENTED AIRBORNE PLATFORMS

Mission Statement: Instrumented aircraft are required to support the test and evaluation of munitions, electronic combat, communications computers command control and intelligence (C4I) systems, and inertial navigation/guidance systems in the Open Air Arena.

Unique Capabilities: Aircraft instrumentation provides time, space, position information (TSPI), platform specific information (avionics/weapons data), and test specific information (environmental/infrared/separation data). Instrumentation data can be provided real time (via telemetry (TM) transmitters and/or data links) and/or post mission (via analog data tape recorders, video tape recorders

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

and film cameras). The TM stream is usually the PCM (pulse code modulation) output of a data acquisition system which collects and conditions the various analog and digital signals. The oldest data systems are the programmable Data Acquisition System (pDAS) and the Airborne Test Instrumentation System (ATIS). Until the Common Airborne Instrumentation System (CAIS) is available, the Advanced ATIS system (AATIS) is presently being installed. The main sources of digital data are the aircraft's busses, avionics, weapons, ECM, and display. This data can be recorded selectively or totally. Cockpit displays (HUD/VSD/TEWS/RWR/MFD/etc) are recorded on video tape recorders (video cameras may be required if display signal is not TV (RS-170) formatted). 1553 buss data or other PCM information may be formatted/conditioned (Merlin system) to a TV format for video tape recording. Analog tape recorders are the MARS 1400 (14 track, 14" reel), MARS 2000 (14 track, 10" reel), and the MARS 2028 (28 tracks, 10" reel); video tape recorders are the NAC (VHS) and the new TEAC (Hi 8 mm); digital recorder is the MARS II. A Time Code Generator (TCG) provides IRIG (Interrange Instrumentation Group) time for time correlation of analog, digital, film and video data. Store separation data is provided by 16 mm film cameras which are installed in aircraft fairings and/or carried on store stations. Airborne TSPI sources are a radar transponder (beacon), user GPS, or RAJPO GPS. The GPS data can be recorded or it can be transmitted via the MTACS (Multilateration Tracking and Control System) data link. Telemetry and video streams are encrypted before transmission.

Various types of instrumented pods/shapes are carried on the platform's store stations. Power and control wiring is either installed or standard aircraft wiring is utilized. The Golden Bird Missile is an instrumented AIM-7; the ARTIS pod contains an instrumentation radar for relative TSPI; I-HAWK and SADS VI M/1 are threat simulator pods; the BASES, SAIMS, and ASIMS are infrared (IR) pods; GPS/MTACS pods contain the RAJPO HDIS receiver combined with the MTACS data link. Two F-15B aircraft have an instrumentation 1553 bus specifically installed to control instrumentation pods. ACES II, ITV, and IMV are instrumented AMRAAM shapes/pods. Two F-16s and two F-15s are modified to carry the Tomahawk control pod.

Listed below are the 46TW and AWC aircraft already modified, in process of being modified, or will begin modification this FY.

C-130

C-130A 55-0022: Airborne platform for DT&E of air-to-ground and air-to-air seekers and sensors (visible, IR, MMW), stabilized turret, beacon, GPS

F-111

F-111E 67-0118: Film cameras, cockpit video camera, VTR (Hi 8 mm), TCG, beacon F-111F 70-2379: Flutter instrumentation, film cameras w/FDRS, video cameras for separation, ATIS, MARS 2000, TCG, Beacon, VTR (Hi 8 mm)

F-111F 70-2400: Film cameras w/FDRS, AATIS, TCG, user GPS w/MTACS, Beacon, MARS 2028, TM

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-15

F-15A 76-0101: JTIDS, HUD/VSD/MPCD VTRs(Std TEAC, NAC), TCG, MARS 2000, pDAS, Beacon, TM

F-15C 84-0011: JTIDS, HUD/VSD VTRs(8 mm), MPCD VTR(NAC), TCG, MARS 2000, pDAS, TM, Beacon

F-15A 77-0064: Film cameras, HUD/VSD Video Cameras & VTRs(8 mm), TCG, MARS 2000, pDAS, Beacon, TM, partial Golden Bird

F-15A 76-0116: High Speed Radar Buffer Box, ITV Pod, TCG, Beacon, MARS 2000, pDAS, VTR(NAC), TM

F-15B 73-0114: MSIP B FOT&E, HUD/VSD/MPCD/RWR VTRs (Hi 8 mm), TCG, pDAS, Beacon, TM

F-15B 75-0080/84: 1553 Instrumentation Bus, HUD/VSD/MFD VTRs (NACs), TCG, pDAS, MARS 2000, Beacon, TM, Pods: ARTIS, I-HAWK, SADS VI M/1, BASES, SAIMS, ASIMS, Golden Bird

F-15B 77-0161: High Speed Radar Buffer Box, PSP/RSP Radar, TCG, pDAS, HUD/VSD cameras, VTRs (Hi 8 mm), TM, Beacon, Film Cameras on Station Adaptors, pods: Golden Bird, ARTIS

F-15C 84-0018: AMRAAM Instrumentation, TCG, pDAS, MARS 1400, TM, Film Cameras, Beacon, HUD/VSD VTRs (8 mm), pods: ACE II, ITV, IMV, partial Golden Bird.

F-15C 85-0126: AMRAAM/TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (8 mm & NAC), Film Cameras, pDAS, TCG, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, Beacon, pods: ACE II, IMV, partial Golden Bird.

F-15C 80-0022: AMRAAM/TEWS/JTIDS instrumentation, AATIS, MARS 2028, MARS II, TCG, TM, Beacon, pods: partial Golden Bird (In design)

F-15C 78-0542: TEWS Instrumentation, HUD/VSD/TEWS Video Cameras & VTRs (NACs), TCG, pDAS, TM, Beacon, MARS 2028, pod: partial Golden Bird

F-15D 84-0045: AMRAAM Instrumentation, Film Cameras, HUD/VSD Video Cameras & VTR (NAC), High Speed Radar Buffer Box, pDAS, TCG, TM, Beacon, pods: ACE II, ITV, DMV

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-15 (Continued)

F-15E 86-0185/0188: SEEK EAGLE/TEWS/AMRAAM Instrumentation, Film Cameras, MPDP VTRs (Hi 8 mm), TCG, pDAS, TM, MARS 2028, encrypted/transmitted ALR-56C FTI data, beacon, video TM

F-16

F-16A 80-0609: AMRAAM Instrumentation, Film Cameras, Hud/REO Video cameras & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Dual HUD capability, partial OCU, Beacon, Total A&W bus recording, pods: ATLIS II, RDIP, RUBIS, ASRAAM (In Design)

F-16A 80-0761: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Camera & VTRs (NACs), pDAS, MARS 2000, TCG, TM, Beacon, ADF capable, pods: ACE II, Musketeer Lee, ASRAAM (In design)

F-16B 78-0104: INS Fighter test bed.

F-16B 82-1037: Film Cameras, TCG, Beacon

F-16B 83-1123/88-0353: Flutter & Loads, Flutter Exciter Panel, Film Cameras, pDAS, TCG, TM, MARS 2000, HUD/RMFD or LMFD VTRs (NACs), Beacon, pods: RDIP (123 only)

F-16C 83-1163: AMRAAM Instrumentation, Film Cameras, HUD/REO Video Cameras & VTRs(NACs), pDAS, TCG, MARS 1400 or 2000, Beacon, TM, pod: ACE II

F-16C 84-1280/1285: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR Video Cameras & VTRs(NACs), MARS 1400, pDAS, TCG, TM, Beacon, chaff/ flare monitor, pod: ACE II

F-16C 88-0441: AMRAAM Instrumentation, Film Cameras, RWR video camera, Total Bus recording, HUD/LMFD/RMFD/RWR VTRs (Hi 8 mm), TCG, pDAS, TM, ALE-47 instrumentation, Beacon, pods: IMV, DMV, JSOW, ACE II

F-16C 89-2070: ALE-47 Instrumentation, RWR video camera, HUD/LMFD/RMFD/RWR VTRs(NACs), TCG, pDAS, TM, Total Bus recording, Beacon, pods: ACE II

F-16C 90-0726: ALQ-126B

INSTRUMENTED AIRBORNE PLATFORMS (Continued)

F-16 (Continued)

F-16D 80-0844/0848: HUD/MFD/RWR VTRs(Hi 8 mm), Total bus recording A/B/C/D/EW/W busses (Merlin, Hi 8 mm), HARM & ALIC PCM recording (Merlin, Hi 8 mm), TCG, Beacon (In design)
F-16D 88-0469: NAC Recorders

F-16D 90-0835: AMRAAM Instrumentation, Film Cameras, HUD/MFD/RWR/HELMET/HAND-HELD VTRs (Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS 422 monitor, user GPS w/MTACS, encrypted video, beacon, TM, pods: ACE II, RDIP

F-16D 80-0836: HARM Instrumentation, Film Cameras, HUD/MFD/RWR VTRs(Hi 8 mm), AATIS, TCG, MARS 2028, Total Bus recording, user GPS
422 monitor, user GPS w/MTACS, encrypted video, TM, beacon, pods: RDIP, ACE II

UH-1

UH-1N 69-6617/6626: BASES Pod, Aerial Ignition Device, beacon

AVIONICS

Mission Statement: The F-16 AIS Shop is responsible for off-equipment Intermediate level maintenance and support of F-16 Line Replaceable Units (LRUs). Does software loading of Operational Flight Programs, TCTOs, modifications, calibrations, and testing of F-16 LRUs. Responsible for testing weapons, instruments, and ALR-69 systems using AIS test equipment. Maintains four test stations and ancillary equipment by performing inspections, modifications and repairs.

The F-15 AIS is responsible for testing F-15 LRUs including weapon control radar, inertial navigation, heads-up display, automatic flight control, instrument, and communication and navigation systems. Uses, maintains, and calibrates avionics intermediate shop test stations used to repair F-15 LRUs. Performs off-equipment maintenance and line delivery of AXQ-14 and Improved Data Link pods.

The Conventional Avionics Shop is responsible for intermediate and organizational level maintenance on avionics systems installed on UH-1N helicopters and transient aircraft. Performs intermediate level maintenance of CommNav, Guidance, and ECM systems on assigned aircraft. Modifies, repairs, loads, and operationally checks ECM pods on F-15, F-16 and F-111 aircraft to support test missions. Repairs and modifies communication ground cords, headsets, and emergency survival radio/beacons for Eglin units. Maintains, installs, and repairs radio ground mount adapters for emergency and operations vehicles on Eglin. Operationally checks all UHF, VHF, and RWR antennas for serviceability.

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AVIONICS (Continued)

The Sensor Test Shop is responsible for on-equipment and off-equipment maintenance of all assigned and transient sensor systems. Performs intermediate and organizational level maintenance on LANTIRN targeting and navigation and PAVE TACK Laser Target Designation pods. Maintains intermediate level test equipment including the LANTIRN mobility shelter set. Performs intermediate level maintenance on Airborne Video Tape Recorders and Cockpit Television Systems, to include phase inspection work cards. Assists field engineers in the kit proofing, validating and fielding of new systems and/or upgrades to current systems.

The Radar Test Shop provides intermediate level repair of F-15 and F-16 radar and other avionics and components. Reprograms various avionics and other computers. Refurbishes F-15 and F-16 flight control and INU batteries. Performs operational checks for serviceability of F-15 and F-16 radar LRU's. Provides repair and functional checks of F-16 ARC-164, ARC-186, and ARN-118 receiver/transmitters, throttle grips, side stick controllers, GPS receivers and numerous F-16 control units. Repairs various circuit card assemblies by troubleshooting and replacing electronic components as required. Provides software testing to Test Wing agencies on Eglin AFB.

Unique Capabilities: Maintains full F-16 and F-15 radar mockups with capability to troubleshoot and repair parts in concert with associated avionics intermediate stations (AIS). A Huntron Tracker is on hand to repair circuit cards. A LANTIRN Mobile Support Shelter and a PAVE-TACK repair test set are also available

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd FW (ACC)
4. 9th Special Operations Squadron
5. 728th Tactical Control Squadron

JTIDS GROUND TECHNICAL FACILITIES/SUPPORT EQUIPMENT

ENHANCED JTIDS SYSTEM EXERCISER (EJSE)

Mission Statement: The EJSE was developed to test and evaluate JTIDS.

Unique Capabilities: Provides monitoring, control functions, and real-time message generation. Supports test analysis through its data printout and tape playback capability. Prepares simulation tapes to match a wide range of operational and test scenarios. Emulates individual tactical elements, such as a small radar-equipped surveillance site, and can perform rate-aided manual tracking. With an

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JTIDS GROUND TECHNICAL FACILITIES/SUPPORT EQUIPMENT

antennae mounted on a 90-foot pole, the EJSE can communicate with aircraft on the Eglin Ranges, and with the ASIT at Hurlburt Field.

Outside Customers Supported:

1. JTIDS Joint Program Office, Hanscom AFB, MA.
2. Joint STARS Program Office, Melbourne, FL.
3. ABCCC Program Office, Hanscom AFB, MA.
4. TMD Program Office, Hanscom AFB, MA.
5. 727th Air Control Squadron, Hurlburt Field, FL.
6. 728th Air Control Squadron, Eglin AFB, FL.

OPERATIONAL FACILITY (OPFAC)

Mission Statement: The OPFAC is an F-15 Multistage Improvement Program (MSIP) Operational Flight Program (OFP) Avionics Integration Bench. It was originally intended for the pre-release verification of new aircraft software.

Unique Capabilities: Provides the capability for the complete manipulation of any aircraft parameters to allow for the trapping or simulation of special circumstance events. OFP monitoring is available, as well as single step execution to enable software debugging. A JTIDS scenario assembler is included in the OPFAC, enabling it to be used to conduct JTIDS software testing, demonstrations, and pilot training.

Outside Customers Supported:

1. JTIDS Joint Program Office.

JTIDS INTEGRATION "HOT" BENCH & JTIDS INTERFACE TEST SET

Mission Statement: Provides a means for testing each JTIDS terminal prior to installation in an aircraft. It also supports laboratory analysis of any JTIDS problems that may be experienced in the aircraft.

INTEGRATION "HOT" BENCH & JTIDS INTERFACE TEST SET

Unique Capabilities: Performs laboratory testing of the JTIDS terminals. Consists of shelves with brackets for mounting and securing the terminal under test, and 28 Volts DC and 115 Volts AC/400 HZ power sources. The Hot Bench has fans for cooling the terminal, and a test panel for testing each operating function of the terminal. The Interface Test Set can simulate TACAN inputs, and can JTIDS provide JTIDS voice. The Hot Bench can also monitor the local Eglin TACAN through the JTIDS terminal's internal TACAN. Since the Hot Bench has no Heading Situation Indicator (HSI) to display the TACAN range and bearing, the TACAN functions are displayed on a computer screen.

Outside Customers Supported:

1. JTIDS Joint Program Office.

MULTILATERATION SYSTEMS & GPS

Mission Statement: Provides a time-space-position-information (TSPI) capability to support customer needs. While providing TSPI of up to 20 aircraft or ground vehicles, up to 6 vehicles can be remotely controlled. Airborne pods provide TSPI from multilateration and/or GPS/inertial reference. A synchronized A/C and remote controlled target test capability is provided at a central control facility (CCF).

Unique Capabilities: Uses the resources of the Gulf Range Drone Control Upgrade System (GRDCUS) to provide a wide area test arena, including over-the-horizon, over Eglin, Tyndall and the South East Test and Training Area (SETTA). IFF radar data can also be shared with MTACS. Two data link frequencies are available for simultaneous missions each having the number of participants mentioned in the above statement.

Outside Customers Supported:

1. AFOTEC
2. USAF AWC
3. U. S. Navy
4. U. S. Army
5. Various foreign governments

ELECTRO-OPTICAL/MILLIMETER WAVE INSTRUMENTATION

Mission Statement: Provides design, development, and operation of airborne and surface EO/MMW instrumentation systems. Provides multispectral targets and targets in back-ground including target expendables. Provides captive carry operation and test of air-to-air,

surface-to-air, and surface-to-surface domestic and threat missile seeker guidance, and control units operating in a real and CM environment. Provides quick look and field data reduction and analysis of all collected signature data.

Unique Capabilities: Multispectral signature measurement and captive flight testing capability residing in a cadre of highly qualified technical and range personnel and customized and standard sophisticated EO/MMW instrumentation operating in A-A, A-S, S-S, S-A, and tower/turntable scenarios. Spectral range includes ultra-violet, visible, mid and long wavelength infrared, laser, millimeter wave, seismic, acoustic, and magnetic. Measurement disciplines include temporal, radiometric, spatial, spectral, phase, range, polarization, frequency, and cross section. State-of-the-art sensitivity, resolution, and bandwidth, data rate/recording and seeker/sensor performance measurements are maintained. A suite of targets for target and target in clutter signature measurement and seeker/sensor evaluation are maintained. Archiving of collected data is provided by the Targets and Background Information Library System (TABILS). The capability is uniquely connected to modeling and simulation facilities such as the Guided Weapons Evaluation Facility (GWEF) as a source of data required to drive HITL scene generators and to validate models. The capability is built upon many years of T&E research and engineering expertise and experience.

Outside Customers Supported:

1. ASC
2. USAF AWC
3. AFSOC
4. U. S. ARMY
5. U. S. NAVY

AIRBORNE SYSTEMS/INSTRUMENTATION

Mission Statement: Designs, develops and procures airborne instrumentation systems for installation on aerospace vehicles and airborne threat simulators. Performs T-2 (Class II) modification support and post modification calibration and checkout. Provides pre/postflight instrumentation support for test missions.

Unique Capabilities: The unique capability provided is the design, procurement, installation and support of aircraft instrumentation systems, i.e. the requirement-to-requirement support of highly instrumented T&E aircraft. Based on the given requirements, the system engineers design instrumentation systems utilizing standard instrumentation subsystems, where possible, for quick turnaround and best maintenance support. Procurement of the system components is then initiated. This may entail contacting potential vendors, writing specifications and Justification Review Documents, and evaluating bids. Next is the creation of the instrumentation modification package, it's installation, and it's checkout. "Standard Operating Procedures" detailing instrumentation operation during pre/postflight checkout are written and the aircrew is aided in writing the Partial Flight Manual Supplement. Instrumentation systems

AIRBORNE SYSTEMS/INSTRUMENTATION (Continued)

collect various types of data for real time transmission (after encryption) and/or onboard recording. One type includes avionics/weapons/electronic warfare/display buss information and sensor data (strain gauges, accelerometers, etc). Aircraft displays (Hud, VSD, RWR, etc) are tape recorded and transmitted, if desired. Film cameras record store separation and a radar transponder enhances radar tracking. All data and events are time correlated with IRIG time. Engineers and electronic "bench" technicians maintain, calibrate, and repair the various instrumentation subsystems utilizing special "hot" benches. System engineers and electronic "preflight" technicians also checkout and setup the instrumentation before flight and download tape recorders and pods after flight.

METEOROLOGICAL INSTRUMENTATION

Mission Statement: Meteorological support for AFDTC is provided through the 46th Test Wing Weather Squadron which provides 24-hour weather forecasting services including preflight weather briefings, pilot-to-forecaster services to aircraft in the area, and weather warnings and advisories.

Unique Capabilities: Provides specialized weather services to both host and tenant units. The Test Meteorological Office provides consultation on the meteorological environment consisting of physics, chemistry and the dynamics of the atmosphere. Provides ME instrumentation at permanent, semi-permanent, and temporary sites, using mobile equipment when necessary. A full range of ME data are gathered to measure the following: wind vector, atmospheric temperature/pressure, relative humidity, dew point, rainfall amount/rates, visibility, visual range, cloud bases, solar radiation, particle size distribution, rainfall size distribution, extinction coefficient, density, defractivity, height, atmospheric electric field, etc.

"SPECIALIZED" ELECTRONIC SYSTEMS FLIGHT

Mission Statement: Provides AFDTC with a complete in-house capability for developing unique TSPI and remote-controlled systems.

Unique Capabilities: Provides electrical and mechanical engineering, design and fabrication services for simple to very complex one-of-a-kind systems. The functions of the flight include:

1. Electrical and Mechanical design, prototyping, and end-product fabrication of the various sub-systems involved.
2. System integration and testing
3. Preparation of technical specifications and engineering evaluation reports
4. Engineering consultation to AFDTC agencies as well as outside agencies on TSPI, remote control, TM, RF and antennas
5. Personnel expertise and equipment to perform the mission

"SPECIALIZED" ELECTRONIC SYSTEMS FLIGHT (Continued)

Outside Customers Supported:

1. ASC
2. Tyndall AFB
3. WSMR

ELECTRONIC DESIGN AND DEVELOPMENT FLIGHT

Mission Statement: Provides AFDTC with a system level capability for developing, integrating, and testing the specialized instrumentation and control systems required in support of all types of ground and flight testing. This in-house capability spans the entire process of acquiring such systems: from "development of requirements" to "design" to "build-up" to "testing" to "installation and training".

Unique Capabilities: The uniqueness of the Electronic Design and Development Flight is its broad based expertise which allows it to perform its mission (in-house development) in a quick response mode without outside support. Equally important is its capability to remain flexible to changes in requirements during the development process with minimal impact on schedule.

Outside Customers Supported:

1. USAF AWC
2. Aeronautical Systems Center
3. AFOTEC
4. U. S. Army
5. U. S. Navy
6. Various foreign governments

AIRCRAFT SYSTEMS/DESIGN AND MODIFICATION

Mission Statement: Designs, installs, and documents the buildup of aerospace vehicle T-2 modifications and airborne threat simulators. Maintains configuration management records on these modifications.

Unique Capabilities: The 46 Test Wing has the capability and the facilities necessary to perform the entire T-2 modification process. The aero-engineering section has all the various skills required: aero-engineers, mechanical engineers, electrical engineers, aero-technicians, and electronic technicians. These personnel (working with an assigned systems engineer) perform the aero/mech/elec design of all in-house T-2 modifications and approve/review all contractor provided T-2 modifications. In conjunction with the system engineer, a cost/man-hours estimate is provided to the customer. Aircraft technical orders, military standards and specifications,

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equipment manuals are researched. The aircraft to be modified is examined for available space for installing instrumentation and detailed measurements are taken. Then, utilizing engineering workstations with computer aided design (CAD) and computer aided engineering (CAE) software, structural and electrical drawings are created. Aerodynamic/structural analyses are performed. All material, mechanical and electrical, are researched for part numbers and other ordering information and a list is provided for procurement. Work orders are generated and sent for mechanical fabrication and then returned for electrical wiring and component installation. Electrical engineers approve the electrical drawings and perform an electrical loads analysis to prevent overloading any portion of the aircraft's power generation and distribution system. The modification engineer provides written instructions, guidance, and other pertinent documentation which constitute the T-2 modification package. With shop support (sheet metal, machine shop, etc) and electricians, dock chiefs direct the T-2 modification installation. The installation is monitored throughout by the modification and system engineers.

Outside Customers Supported:

1. USAF AWC

PRECISION MEASUREMENT EQUIPMENT (PMEL) LAB

Mission Statement: Responsible for the maintenance, calibration and certification test, measurement and diagnostic equipment designated Type II, Type III and Type IV PMEL support. Responsible for the calibration and repair of signal generating, waveform measuring, and frequency counting, voltage, current, resistance, inductance, and power measuring instruments, mechanical, electro-mechanical, dimensional and radiation measuring equipment. Responsible for the calibration and repair of F-15 and F-16 Avionics Intermediate Stations

Unique Capabilities: One of the largest PMELs in the Air Force and the regional facility servicing Northwest Florida. Has an active program currently developing automated calibration testing of equipment.

Outside Customer Supported:

1. 919th Special Operations Wing
2. OSD JADO Program
3. USAF AWC
4. AFOTEC
5. Naval EOD School
6. Vitro Services

PRECISION MEASUREMENT FACILITY
SITE III MASS PROPERTIES

Mission Statement: Performs the weight, center of gravity, and moments of inertia measurements on munition and non munition items. Performs reballast procedures on munition and non munition items to provide the test engineers with a reliable product. Performs maintenance and operation of the portable mass properties machine. Used for the world wide field review measurement of stores (FRMS) operation. Mass properties data collected at various bases is put into the mass properties data program for updating the stores technical and mass properties data bank (STAMP), This ensures the project engineers have the proper mass properties data. Performs assembly/disassembly of munitions items for the purpose of adapting the items to the test set. Develops procedures for efficiency and safety of operations on new prototype test items.

MUNITIONS STORAGE AND HANDLING

Mission Statement: Provides the capability for storing and handling over 2,000 different types of munitions used to support DoD and foreign allies test and development projects, and 50 tenant unit munitions supply points. Responsible for inspection, minor maintenance and house keeping on 35 facilities within the 297 acre munitions storage area. Ensures correct storage and compatibility of munitions are maintained in strict compliance with all explosive safety standards. Total munitions storage capacity is 121,729 sq. ft. and total sited net explosive weight (NEW) authorized is 2,287,900 pounds. Capable of storing various sizes of munitions ranging from small arms ammunition to the Tomahawk cruise missile; maximum size of any one item to fit into storage structures would be no greater than 15,000 NEW and a dimension of approximately 18' x 10' x 10'. Provides logistical support to 500 test projects and five different maintenance sites within the munitions storage area. Directly supports several off-base test ranges on the 464,000 acre Eglin test complex. On a yearly basis, moves or delivers over 500 tons net explosive weight/1250 tons total weight of munitions covering more than 15,000 miles.

Unique Capabilities: Receipt, inspection, storage, maintenance, buildup, shipping and delivery capability is provided for any US or foreign munition used or tested at Eglin AFB. Major munitions categories include both current inventory and prototype general purpose and cluster bombs; precision guided munitions; air-to-air and air-to-ground missiles, nuclear trainers, Navy cruise missiles, Army Hellfire missiles, expendable aircraft countermeasures and small arm/cannon ammunition. Additional items include various British, Norwegian, Israeli, and former Soviet Bloc munitions. A technical data library with preliminary handling/maintenance data and interim hazard classification is maintained for prototype, modified and foreign munitions.

ALTERNATE MISSION EQUIPMENT SECTION

Mission Statement: Stores, controls and accounts for all munition suspension equipment for the 46th Test Wing and Air Warfare Center aircraft. Tracks all in-use equipment and schedules inspections through the maintenance section.

AIRCRAFT REPAIR ELEMENT

Mission Statement: Performs organizational, intermediate, and limited depot-level maintenance beyond the capability of other assigned maintenance activities. Accomplishes troubleshooting analysis, repairs, replacement, rigging, and operational and functional checkout of flight control systems, landing gears, air induction equipment, and canopy and windscreen assemblies. Provides capability for the recovery and reclamation of damaged and crashed aircraft. Maintains, inspects, and repairs all associated equipment required to accomplish the above mission.

Unique Capabilities: Performs flight control, landing gear, and canopy maintenance on any fighter aircraft in the USAF inventory. They are multi-aircraft qualified and perform intermediate and limited depot-level maintenance, tow target maintenance, and provide crash recovery services on any military or civilian aircraft without exception. Performs aircraft reclamation services on any type of aircraft and provide emergency response/crash recovery service to any aircraft over a three state area. Respond to all ground or inflight emergencies on Eglin and the Fort Walton Beach Regional Airport. Uniquely qualified to work with engineers performing class II modifications on aircraft and systems. Experience includes T-37, T-38, T-39, A-10, F-4, F-5, F-15, F-16, F-111, and UH-1 aircraft maintenance.

EGRESS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on F-15, F-16 and F-111, Aircrew Egress Systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies egress systems and components. Replaces transparencies and rigs canopies on F-16 aircraft. Provides egress system familiarization training as required for, life support, fire department, and personal working within the Test Wing. Provides support on transient aircraft, as well as support to the 33 FW (ACC) under the host tenant support agreement. Provides support to the Eglin Armament Museum as required.

Unique Capabilities: Due to the knowledge of civilians, the shop has the repair capability for F-15, F-16, F-111, F-4 and A-10 egress systems.

EGRESS (Continued)

Outside Customers Supported:

1. 33rd Tactical Fighter Wing

FUELS

Mission Statement: Responsible for on-equipment and off-equipment maintenance on aircraft fuel and in-flight refueling systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, seals, and modifies systems and components. Performs systems maintenance and servicing of Hydrazine tanks. Provides qualified support for emergency Hydrazine response teams. Maintains proficiency in detection of Hydrazine.

Unique Capabilities: The fuel system repair hangar is a state-of-the-art building and designed for that purpose. It has multi aircraft capability. It has indoor space for two, F-111/F-15 size aircraft, three F-16 size aircraft, of five UH-1N helicopters. The fuel hangar has indoor external fuel tank work area with a lifting hoist. This flight also has the regional hydrazine resource responsibility.

Outside Customers Supported:

1. USAF AWC
2. 187th Tactical Fighter Group, Montgomery, AL, Hydrazine Tank Servicing
3. 926th Fighter Group/XP, Naval Air Station, New Orleans, LA, Hydrazine Tank Servicing

PROPULSION

Mission Statement: Responsible for jet engine intermediate maintenance (JEIM) on General Electric F100-GE-100/129, J79-15, J85-100, Pratt and Whitney TF30-111 and 109, and FW100-PW-100/200/220 engines. Responsible for assembly and disassembly of F100 modular engines and sub-components. Responsible for JEIM on F-15 starting systems and secondary power system components to include testing after maintenance. Responsible for JEIM on GTCP-397 gas turbine compressors used in AM32A-60B auxiliary power units. Responsible for acquisition, modification and testing of surplus and time-expired engines to the J85-100 configuration for use in the BQM-34S target drone. Provides modified J85-100 engines to the BQM-34S manufacturer for installation into new target drones used by both the Air Force and Navy organizations. Operates the engine test cell which is used for troubleshooting and testing of the above mentioned engines as well as aircraft noise suppression systems and other engine test facilities. Maintains engine support trailers for engine removal/installation and transportation. Ensures adequate spare level to support flying mission of various types and models of F-15 and F-16 aircraft assigned.

PROPULSION (Continued)

Unique Capabilities: Provides full JEIM on F100-100/200/220/220A/220E, J79 and J85 engines. Hush House and twin test cells are available to test all engines. Currently modifying J85 engines for both Air Force and Navy to be used in BQM-34S target drones. Has a steam and citrus-based parts cleaner to minimize hazardous waste.

Outside Customers Supported:

1. Air Force Armament Museum
2. Vitro Services
3. 33rd Fighter Wing (ACC)
4. 9th Special Operations Squadron
5. 475th Weapons System Evaluation Group (ACC)
6. Naval Air Warfare Center

MACHINE SHOP

Mission Statement: Provides a Machine Shop for design, manufacture, modification and repair of RDT&E test items required to support AFDTC test programs of a non-repetitive nature. Manufacture Class II modification kits for installation. From engineer designs blueprints, utilizing CNC production equipment, provides a capability to manufacture prototype test items used by AFDTC engineers, scientists and contractors for various test projects. Provides an intermediate maintenance capability for support of all assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop is equipped with modern conventional toolroom and CNC machines. A CAD/CAM system is used for design and manufacturing with numerical controlled operations. The shop can machine single items up to 22 feet in length and 4,000 lbs in weight. Two CNC pantograph machines accomplish miniature milling and engraving using nine different fonts. Shop employees include machinist, tool makers and model makers that manufacture to tolerances of .0002 of an inch. Aircraft expenditures are reduced by in house repair of depot level repairable assets.

Outside Customers Supported:

1. Air Warfare Center
2. 9 SOS
3. 919 (Duke Field)
4. Jet Mod. Drone Program

STRUCTURAL MAINTENANCE

Mission Statement: Provides a Structural Repair Shop for design, manufacture, modification, and repair of RDT&E test items required to support the AFDTC test program of a non-repetitive nature. Manufactures items and works with sheet metal and fiberglass in modifying bombs, missiles, rockets, robots, etc. Manufactures and installs class II modifications parts and kits on aircraft and missiles to include CNC production required by AFDTC engineers, scientists and contractors for development of the test projects. Provides an intermediate maintenance capability to support all AFDTC assigned, transient and associate tenant aircraft.

Unique Capabilities: Maintains operational support of multiple aircraft to include F-111's, F-16's, F-15's, UN-1H and full manufacturing capability for all aircraft tubing assemblies (to include Depot level lines).

Outside Customers Supported:

1. 9 SOS
2. Eglin AFB. 33 FW (ACC)
3. Tyndall AFB.
4. Hurlburt AFB.

METALS PROCESSING

Mission Statement: Provides a Metal Processing Shop for design, manufacture, modification, and repair of test items of a non-repetitive nature. Provides arc, oxy-acetylene, heliarc, tungsten inert gas (TIG) welding, cutting and soldering, used in the fabrication and repair

of RDT&E test items required by AFDTC engineers, scientists and contractors for development of test projects. Provides heat treating of aluminum parts and sandblasting capability for the manufacturing and repair of test items. Provides and supports intermediate maintenance repair capabilities for support equipment and all assigned AFDTC, transient aircraft and support for the 33 FW.

Unique Capabilities: Manufacturing capability of environmental shelters that require the use of a large tube bending machine. Manufacture rocket sleds used in the testing of munitions. Support Class II modifications on assigned AFDTC aircraft and modification of the J-85 engines for drone project.

Outside Customers Supported:

1. Manufacture Environmental Shelters for VITRO
2. Manufacture stands and other related items for 9 SOS
3 Manufactured Sleds for Holloman AFB

METALS PROCESSING (Continued)

Outside Customers Supported:

4. Provide welding and manufacture for 728 ACS
5. Provide welding for Air Warfare Center test projects
6. Support 919 (Duke Field) in heat treating

CORROSION CONTROL

Mission Statement: Inspects and treats corrosion on aircraft, missiles, armament and other related equipment. Provides wash rack facilities to wash aircraft and aircraft parts. Provides a corrosion capability for performing intermediate maintenance and painting on assigned aircraft, age, and class II modification items. Provide RDT&E experimental coating for test engineers on tasks, drones, missiles, and radomes etc.

Outside Customers Supported:

1. Wright Laboratory - Armament Division
2. Navy EOD School
3. 9th SOS
4. Seek Eagle Program Office
5. Navy Coastal System Laboratory
6. 919 SOS
7. Mill Star Program

NON-DESTRUCTIVE INSPECTION

Mission Statement: Provides a capability to accomplish optical, penetrant, magnetic particles, ultra sound, eddy current, and radiographic inspections to determine component integrity and serviceability. Conducts experimental tests as to the integrity of RDT&E test designs and specifications. Provides oil analysis to determine wear metal effects on aircraft engines and oil wetted components.

Unique Capabilities: Multi-use facility, equipment, manpower, materials and training are shared equally with the 33rd Fighter Wing (ACC). The only known field level shop with two film processors.

NON-DESTRUCTIVE INSPECTION (Continued)

Outside Customers Supported:

1. Air Warfare Center
2. 33d Fighter Wing
3. Wright Laboratory
4. 919 Special Operations

ELECTRO-ENVIRONMENTAL

Mission Statement: Responsible for off-equipment maintenance on aircraft electrical and environmental control systems and components. Inspects, troubleshoots, bench checks, removes, tests, repairs, replaces, services, and modifies systems and components. Provides battery servicing for assigned aircraft, associate tenant aircraft and ground support equipment. Responsible for field maintenance of all aircraft ground support equipment, (AGE), gaseous and liquid oxygen and nitrogen systems. Services life raft cylinders and emergency oxygen bottles, (Life Support Equipment), for all assigned and associate tenant aircraft.

Unique Capabilities: Possesses one of only three K400 generator test stands at field level, and will be only one of two sites in the world capable of running both F-111 and F-15 parts.

Outside Customers Supported:

1. 33rd Tactical Fighter Wing
2. 9th Special Operations Squadron
3. 728th Tactical Control Squadron

PNEUDRAULIC

Mission Statement: Responsible for off-equipment maintenance of pneudraulic components. Inspects, troubleshoots, bench checks, tests, repairs, services, and modifies components. Provides local manufacture and testing of flexible hoses and testing of rigid tubing. Maintains associated Test Stands and support equipment.

Unique Capabilities: Possess two state-of-the-art pneudraulic test stands which allow check-out and repair of all current and projected pneudraulic systems. Because of this capability, depots have authorized depot-level repairs on a case-by-case basis. A citrus-based parts cleaner is used to minimize hazardous waste.

Outside Customers Supported:

1. Air Force Armament Museum
2. 33rd Tactical Fighter Wing
3. 9th Special Operations Squadron

PATTERNS AND PLASTIC

Mission Statement: Provides a Pattern and Plastic Shop for design, manufacture, modification, and repair of RDT&E test items required to support the test program of a non-repetitive nature. Manufactures items and works with fiberglass, advanced composites, wood, and plastics in modifying bombs, missiles, rockets, etc. Manufactures Class II modification parts and kits on aircraft and missiles. Provides an intermediate maintenance capability to support all AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: Capable of manufacturing and repairing shock mitigation system under the container development program. This operation facilitates a fully equipped Wood Shop with unlimited support of hardware for finished wood products. Also supports manufacturing of form blocks for aircraft parts in support of class II modification and repair of assigned aircraft. Manufactures various airborne radomes for missiles, rockets and aircraft components using engineer specifications. Fully capable of supporting all DoD aircraft operations.

Outside Customers Supported:

1. Drone Projects
2. Contractors VITRO, Raytheon, etc.

SURVIVAL EQUIPMENT

Mission Statement: Provides a parachute and survival equipment shop to manufacture, modify, repair, and design item constructed of fabric in support of RDT&E test projects of a non-repetitive nature. Provides an extended intermediate maintenance capability to support aeronautical equipment, parachutes, and other aircraft maintenance requirements for support of AFDTC assigned, transient, and associate tenant aircraft.

Unique Capabilities: This shop has the capability of servicing all personnel parachutes in the Department of Defense inventory. Capable of servicing the Advance Concept Ejection Seat (ACES II) employed on the A-10, B-52, F-16, and F-15 aircraft. Also currently the focal point for the Universal Water Activator Release System.

Outside Customers Supported:

1. U. S. Customs
2. U. S. Army
3. U. S. Navy
4. U. S. Marine Corps
5. AMRAAM Program Office
6. Turkish Air Force

INSPECTION ELEMENT

Mission Statement: Performs maintenance on modified test aircraft undergoing various inspections such as phase, periodic, major, minor, hourly post-flight, and special inspections. Also performs scheduled and unscheduled maintenance. Removes, disassembles, inspects, repairs, reassembles, installs, and operationally checks all assigned aircraft. Determines the condition of airframe and engines and all associated equipment. Performs maintenance on specialized systems such as flight control surfaces, landing gear, and engines. Performs time changes, Time Compliance Technical Orders and special inspections as required by the mission. Performs pre-dock and post-dock meetings to coordinate requirements while in the inspection process.

Unique Capabilities: Capable of performing any of the inspections cited above on any model of F-111, F-16, F-15, F-4, T-38, F-5, UH-1N, or A-10 aircraft. Additionally, given the equipment, they are capable of performing the same inspections on any other Air Force, separate service, or foreign national aircraft. Performs consolidated maintenance with the Aircraft Modification Element. Recently completed phase inspections and minor aircraft modifications simultaneously, saving an average of six complete days of aircraft downtime on each occurrence. Concurrently perform Time Compliance Technical Orders and special/one time inspections during their phase inspections.

Given the personnel and equipment, six aircraft could be inspected simultaneously on a three shift operation. Unique to the Inspection Element are custom built dock boxes centrally located at the head of each dock within the hangar floor area. These dock boxes enable supervisors to have complete control over every aspect of the inspection/maintenance process. They are wired with telephones, CAMS computers, and electrical power.

WHEEL AND TIRE ELEMENT

Mission Statement: Performs turnaround maintenance on all wheel assemblies to directly support all AFDTC, AWC, and Air Rescue aircraft. Performs teardown, inspection, and buildup of all wheel assemblies to include cleaning and inspection of wheels and bearings,

seals, and retainers. Ensures ample spare wheels and tires are on hand to accomplish missions requirements. Inspects and maintains all shop equipment associated with the wheel and tire element.

Unique Capabilities: Capable of performing tear down and/or buildup of wheel and tire assemblies on any A-6, A-7, F-4, F-5, F-16, F-15, F-111, C-130, T-38, T-39, H-60, H-53, Tornado, or Harrier aircraft. If given the equipment, capable of performing the same maintenance on any weapon system. Being a forward supply point enables them to interface directly with supply, thus facilitating a positive wheel and tire acquisition process. Works directly with the 46th EMS Corrosion Element when stripping of wheels is required.

Outside Customers Supported:

1. 33rd FW (ACC)
2. Duke Field
3. Hurlburt AFB
4. USAF AWC
5. British Aircraft

AEROSPACE GROUND EQUIPMENT

Mission Statement: Provides field maintenance, periodic inspections, special inspections, servicing, refueling and dispatch as well as technical order modifications on over 500 pieces of powered and non-powered AGE assigned to AFDTC. Provides supervision, production control, quality assurance and supply support for AGE activities. Performs engine teardown, buildup (overhaul) and repair of components, i.e. starters, generators, motors, relays, etc. Responds to trouble calls on equipment in use. Provides equipment operator training to customers. Performs servicing of aircraft oil and hydraulic carts. Collects and recycles waste petroleum products generated by aircraft maintenance. The equipment is, for the most part, the newest and latest designs in the Air Force inventory today.

Unique Capabilities: AGE has supported the latest aircraft in the inventory. For example: F-117A, C-17, RC-135, B-1 and B-2 bombers, E-3A AWACS as well as NATO aircraft such as the Harrier and Tornado. The capability also extends to all other services DoD wide which AGE will be able to support well into the year 2000. Provides test support to Army and Navy aircraft such as helicopters and Navy sea launch cruise missile tests. Provides specialized equipment to contractors and base facilities in support of new and state of the art munitions and electronic warfare testing.

(3.1.D.2) Are specialized targets required to support this facility? Yes/no. If yes, explain.

Yes. The Electromagnetic Test Environment (EMTE) complex consists of numerous radars operating in various frequency bands and modes, as well as ground monitoring facilities which are either real threats or simulators and/or surrogate emitters/monitoring

equipment which are used to evaluate countermeasures, tactics, and onboard aircraft threat sensors. The EMTE, therefore constitutes the targets for the countermeasures, tactics, and onboard sensors.

(3.1.D.2.A) Have the specialized targets been validated? Yes/no. If yes, by whom?

Yes. The EMTE sites go through a rigorous validation process to certify that real-world systems are operating properly or that surrogate systems properly emulate real-world systems. The validation process involves the T&E community, the customer, and is controlled by the appropriate intelligence agencies (DIA/NAIC).

(3.1.E.1) Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

Yes. The unique geographic location of this facility provides the ability to expand within the functional area of EC test and training. The large land area of 724 square miles with diverse terrain provides test areas replicating almost any geographic location with the obvious exception of mountainous and arctic areas. Large water ranges totaling 92,998 square miles in the Gulf of Mexico, are uniquely combined with the land area and restricted air space of surrounding test areas to provide a total restricted airspace available for EC testing of an unprecedented 135,313 square miles.

(3.1.E.1.A) Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

Yes. Can accept T&E of Integrated Air Defense Systems (C3I), Avionics, expand Radar Cross Section Measurements, and Naval Threat Systems with respect to EC weapons development.

(3.1.E.2) Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Airspace-Yes. Eglin Water Test Areas may be expanded into the central Gulf of Mexico and would be suitable for some types of EC testing. Water-Yes, same explanation as for "airspace"; Land-Yes, this capability is located at numerous sites on the Eglin reservation which can be expanded on existing DoD property.

(3.1.E.3) Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

Yes. Up to Secret/Special Access Required

(3.1.E.4) Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

Yes. 95 FYDP funds ($2635K) will improve existing resources and test instrumentation and add three new test resources.

(3.1.F.1) Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.

Yes. This facility is a one-of-a-kind facility within DoD due to the highly instrumented test range located to take advantage of developing, testing, and evaluating EC systems in over-water, over-land, land/water transition (semitropic and forested environment), and varying terrain and vegetation environments. The facility is also unique due to the size of controlled airspace which is available. Also the collocation with other test facilities and synergistic relationships with tenant organizations is unique within DoD and provides enhanced capabilities and opportunities for cost savings.

(3.1.F.1.A) Within the US Government? Yes/no. If yes, describe.

Yes. This facility is a one-of-a-kind facility within the US Government due to the highly instrumented test range located to take advantage of developing, testing, and evaluating EC systems in over-water, over-land, land/water transition (semitropic and forested environment), and varying terrain environments. The facility is also unique due to the size of controlled airspace which is available. Also the collocation with other test facilities and synergistic relationships with tenant organizations is unique within the US Government and provides enhanced capabilities and opportunities for cost savings.

(3.1.F.1.B) Within the US? Yes/no. If yes, describe.

Yes. This facility is a one-of-a-kind facility within the US due to the highly instrumented test range located to take advantage of developing, testing, and evaluating EC systems in over-water, over-land, land/water transition (semitropic and forested environment), and varying terrain environments. The facility is also unique due to the size of controlled airspace which is available. Also, the collocation with other test facilities and synergistic relationships with tenant organizations is unique within the US Government and provides enhanced capabilities and opportunities for cost savings.

(3.1.F.2) Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

Yes.

ARMY		NAVY		OTHER	
FY92	FY93	FY92	FY93	FY92	FY93
24.44%	21.60%	1.13%	1.07%	1.09%	0.00%

(3.1.G.1) How many square miles of air, land, and sea space are available to support test operations?

Air is 135,313 square miles (101,842 square miles are under direct control); land is 874 square miles (724 square miles are government owned); and sea is 92,998 square miles, the Gulf Test Facility.

(3.1.G.2) Who owns and or controls the land under the restricted airspace you use?

U. S. government owns 724 square miles (83%), remaining 150 square miles are privately owned (17%).

(3.1.G.3) How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

R-2914A	Surface to unlimited, excluding R-2917
R-2914B	8,500 feet MSL to unlimited
R-2915A	Surface to unlimited
R-2915B	Surface to unlimited
R-2915C	8,500 feet MSL to unlimited
R-2917	No fly zone.
R-2918	Surface to unlimited
R-2919A	Surface to unlimited
R-2919B	8,500 feet MSL to unlimited

Note: See 3.1.G.4 for airspace dimensions.

(3.1.G.4) Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

Yes. Testing of conventional air armament and electronic combat systems, launch of surface-to-air, air-to-air, air-to-surface, and surface-to-surface munitions. Dimensions are listed below. Yes, it will support simultaneous users.

SUA	Area (Sq. Mi.)		Altitude
R-2914A	518		Surface to unlimited
R-2914B	83		8,500 feet MSL to unlimited
R-2915A	274		Surface to unlimited
R-2915B	61	1,168	Surface to unlimited
R-2915C	48		8,500 feet MSL to unlimited
R-2917	23		No fly zone
R-2918	25		Surface to unlimited
R-2919A	71		Surface to unlimited
R-2919B	65		8,500 feet MSL to unlimited
Eglin MOA A	87		1,000 feet AGL to but not including FL 180
Eglin MOA B	222		1,000 feet AGL to but not including FL 180
Eglin MOA C	145		1,000 feet AGL to but not including FL 180
Eglin MOA D	126		1,000 feet AGL to 3,000 feet AGL
Eglin MOA F	8		Surface to but not including FL 180
Moody MOAs	1,407		8,000 feet AGL to FL 230
Camden Ridge MOAs	3,039		500 feet AGL to 10,000 feet MSL
Tyndall MOAs	2,960		500 feet AGL to 2,000 feet AGL; 9,000 feet AGL to 17,000 feet MSL
Rose Hill MOA	736		8,000 feet MSL to FL 230
W-151	11,140		Surface to unlimited
W-155	5,498	32,618	Surface to unlimited
W-470	6,010		Surface to unlimited
W-168	9,970		Surface to unlimited
EWTA-1	9,250		Surface to unlimited
EWTA-2	18,385	59,380	Surface to unlimited
EWTA-3	16,735		Surface to unlimited
EWTA-4	9,970		Surface to unlimited
EWTA-5	5,040		Surface to unlimited

(3.1.G.5) Is the airspace over land or water? List the number of square miles over each.

SUA	Over land (Sq. Mi.)	Over water (Sq. Mi.)
R-2914A	518	
R-2914B	31	52
R-2915A	274	
R-2915B	61	
R-2915C		48
R-2918 R2917 - no fly	25	
R-2919A	71	
R-2919B	26	39
Eglin MOA A	87	
Eglin MOA B	222	
(3.1.G.5) (Continued)	1315	139

1006

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SUA	Over land (Sq. Mi.)	Over water (Sq. Mi.)
Eglin MOA C	145	
Eglin MOA D	126	
Eglin MOA F	8	
Moody MOAs	1,407	
Camden Ridge MOAs	3,039	
Tyndall MOAs	2,960	
Rose Hill MOA	736	
W-151		11,140
W-155		5,498
W-470		6,010
W-168		9,970
EWTA-1		9,250
EWTA-2		18,385
EWTA-3		16,735
EWTA-4		9,970
EWTA-5		5,040
	8,421	91,998

9,336

92,(3)

(3.1.G.6) Identify known or projected airspace problems that may prevent accomplishing your mission.

There are no known or projected airspace problems.

(3.1.G.7) What is the maximum straight line segment in your airspace in nautical miles?

Maximum straight line segment in Eglin <u>controlled</u> airspace is:

385 NM

(This is computed as a straight line from the southeast corner of EWTA-5 to the northeast corner of R-2915A.)

Maximum straight line segment in Eglin <u>available</u> airspace is:

478 NM

(This is computed as a straight line from the southeastern boundary of warning area W-174B, to the northwest corner of warning area W-155A.)

(3.1.G.8) What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

Airways: J58-86, Gulf Route 26, A509 and A758 in the Gulf of Mexico. Tests conducted are: Cruise missile, long range missile and high speed targets. This airspace is expected to be available for similar tests in the future.

(3.1.H.1) Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

The EMTE complex consists of numerous ground based radars and airborne systems which operate in different frequency bands and modes to provide a flexible test capability. The ground based radar systems are primarily located on Santa Rosa Island. AFDTC controls approximately 17 miles of this barrier island which consists of dune ecosystems. Elevations range from sea level to approximately 30 feet at the crest of the tallest sand dunes. Vegetative cover consists largely of sea oats and beach grasses. Test Airspace associated with EMTE is assumed to mirror airspace associated with the Armament Systems Test Environment (ASTE). The ASTE

consists of 724 square miles of land area with over 45 test areas. The terrain of the ASTE is gently rolling and about equally divided by two watersheds. The northern and western portion of the reservation drains to Pensacola Bay, while the southern and eastern portion drains to Choctawhatchee Bay. Elevations vary from sea level at both bays to a maximum of 280 feet in the extreme northeast portion of the reservation. Approximately 14% or 101 square miles of ASTE consists of cleared test range areas, 70% or 507 square miles of the ASTE is comprised of Sandhills Forest consisting primarily of longleaf pine and scrub oak, 2% or 15 square miles is rolling upland, 4% or 30 square miles is Flatwoods Forests with Dry Pocosins (isolated marsh), with the remaining 10% or 73 square miles consisting of Bays and Wet Pocosins, and stream bottoms.

(3.1.H.2) Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

There are no known features of local geology or soil conditions that enhance or inhibit any types of test at this facility.

(3.1.H.3) Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

Yes. The following data is the percentage of workload by year conducted off base and is the total, not broken down by facility workload or functional (Reliance) areas:

1986	Not Available	1990	5%
1987	4%	1991	7%
1988	6%	1992	7%
1989	4%	1993	4%

(3.1.H.4) What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

Below 32 degrees F:	1 day
Between 32 and 95 degrees:	364 days
Above 95 degrees:	0 days

(3.1.H.5) What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

Below 30%:	5 days
Between 30 and 80%:	330 days
Above 80%:	30 days

(3.1.H.6) What is the number of test missions per year (1985 - 1993) canceled due to weather?

FY		FY	
85	37	90	40
86	58	91	42
87	105	92	38
88	56	93	27
89	76		

AA2

(3.1.H.7) What is the number of test days per year (1985 - 1993) canceled due to weather?

1985-1991, & 1993: 0; 1992: 2.

(3.1.H.8) What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

Less than 1 mile:	0 days
Between 1 and 3 miles:	7 days
Greater than 3 miles:	358 days

(This table represents the best conditions that can be expected to occur at sometime during daylight hours (0600 to 1800L))

(3.1.H.9) What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

355 days. This assumes ceiling and/or visibility are at least 1500/3 at some point during daylight (0600 to 1800L).

(3.1.H.10) What percentage of the time are your test operations restricted due to weather?

Less than 5 percent. EMTE test missions typically require weather minimums of 300/1. For FY92, 4.66 percent of EMTE test missions scheduled were cancelled due to weather; FY 93, 4.27 percent.

(3.2.A.1) Do supersonic corridors or areas exist? Yes/no.

Yes.

(3.2.A.2) Where are they located relative to your airfield?

Area	Distance from Eglin
B-70	10 NM
W-151	22 NM
W-155	26 NM
W-170	114 NM
EWTA 1-5	117 NM
W-168	222 NM
W-174	317 NM

(3.2.A.3) At what altitude (upper and lower altitude)?

Over land supersonic corridor: 200 feet AGL to unlimited. Over water supersonic areas: Surface to unlimited. (By local regulation, supersonic flights surface to 10,000 feet are conducted at least 25 NM offshore; supersonic flights above 10,000 feet are conducted at least 15 NM offshore.)

(3.2.A.4) Over land or water? What size and shape (length and width)?

Over land: 13 NM long by 1.25 NM wide. Over water: All airspace within the Gulf Test Facility (by local regulation, supersonic flights surface to 10,000 feet are conducted at least 25 NM offshore; supersonic flights above 10,000 feet are conducted at least 15 NM offshore).

(3.2.A.5) Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

Yes. Over land: Sonic boom over pressures shall not exceed 3.5 pounds per square foot outside of five statute miles either side of the aircraft ground track. Aircraft conducting supersonic flights shall reduce from supersonic speed in level flight to ensure sonic boom is kept within defined limits. These restrictions have not inhibited aircraft/test operations. Over water: There are no FAA restrictions (by local regulation, supersonic flights surface to 10,000 feet are conducted at least 25 NM offshore; supersonic flights above 10,000 feet are conducted at least 15 NM offshore).

(3.2.A.6) What is the maximum number of simultaneous users?

Dependent on mission requirements. We have scheduled 19 simultaneous air test missions and scheduled 32 simultaneous sorties.

(3.2.B.1) Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

1. **Number and Azimuth of Runways - 3 Runways:**
   a. **Runway 12/30 (Main Base)**
   b. **Runway 01/19 (Main Base)**
   c. **Runway 18/36 (Duke Field)**

2. **Elevation:**
   a. **Runway 12/30 = 85' MSL**
   b. **Runway 01/19 = 85' MSL**
   c. **Runway 18/36 = 193' MSL**

3. **Runway Length (Excluding Overrun):**
   a. **Runway 12/30 = 12,000'**
   b. **Runway 01/19 = 10,000'**
   c. **Runway 18/36 = 8,000'**

4. **Overrun Length (Departure End):**
   a. **Runway 12 = 1,000'**
   b. **Runway 30 = 1,000'**
   c. **Runway 01 = 550'**
   d. **Runway 19 = 1,000'**
   e. **Runway 18 = 555'**
   f. **Runway 36 = 552'**

5. **Terminal/Landing Aids:**
   a. **Main Base - TACAN, ILS, VASI, ASR**
   b. **Duke Field - TACAN, ILS, VASI, ASR**

6. Arresting Cable:
   a. Main Base - YES
      (1) Runway 12/30 - BAK-9, BAK-12
      (2) Runway 01/19 - BAK-12
   b. Duke Field - YES
      (1) Runway 18/36 - MA-1A

7. Ramp Area:
   a. Main Base = 4,723,758 Sq. Ft. (does not include 1,681,021 SF of transient ramp)
   b. Duke Field = 1,908,360 SQ. FT. (does not include 182,074 SF of transient ramp)

8. Construction Material:
   a. Runway 12/30 (Main Base) - First 2,000 feet on each end is concrete. All other is asphalt.
   b. Runway 01/19 (Main Base) - All asphalt.
   c. Runway 18/36 (Duke Field) - All asphalt.
   d. Ramps - All concrete.

9. Load Capability - The runways will support any aircraft in the DoD inventory in their present condition.

10. Hangar Space:

FACILITY #	ENCLOSED SPACE (SF)	
72	31,552	
102	38,440	
103	38,340	
110	57,546	
130	129,766	
138	14,866	
421	43,322	
422	43,322	(Currently being used for storage, contains internal temporary dividers)
920	2,583	
1318	57,408	
1339	18,807	

129

10. Hangar Space: (Continued)

FACILITY #	ENCLOSED SPACE (SF)
1343	33,998
1345	36,968
1385	11,050
1386	11,050
	569,018 SF Total Enclosed Area

DUKE FIELD FACILITY #	ENCLOSED SPACE (SF)
3020	23,876
3025	58,846
3029	22,373
3057	33,834
3087	23,409
3150	37,488
	199,826 SF Total Enclosed Area

(3.2.B.2) How close and how many emergency runways or airfields are in your area of operation?

Airfield	Distance (NM)
Hurlburt Field, FL	9
Duke Field, FL	10
Sikes Airport, FL	17
NAS Pensacola, FL	42
NAS Whiting Field, FL	30
Pensacola Regional, FL	34
Panama City-Bay Co Intl., FL	48
Tyndall AFB, FL	56
Mobile Regional, AL	80
Kessler AFB, MS	124

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Gulfport-Biloxi Regional, MS	132
Danelly Field, AL	110
Maxwell AFB, AL	116
Lawson AAF, GA	138
Tallahassee Regional, FL	115

(3.2.B.3) Where is your airfield situated relative to working areas (airspace) for supporting test operations?

Eglin AFB is located 7 NM from restricted areas, 9 NM from warning area W-151, and 100 NM from warning area W-470.

(3.2.B.4) What makes your airfield unique or at least suited for supporting test operations?

Eglin AFB is centrally located between two major restricted areas (R-2914A and R-2915A), distance is less than 7 NM to each. Restricted areas contain both Armament Systems Test Environment (ASTE) and Electromagnetic Test Environment (EMTE) sites which are used for testing. The vast water range is located immediately to the south with the warning airspace (over water testing areas) located less than 10 NM away.

Eglin's two runways are capable of handling all known military aircraft.

Eglin's location provides easy access to numerous low level military training routes.

Climate is sub-tropical and the vast majority of the time flying conditions are Visual Meteorological Conditions (VMC).

There is limited commercial air traffic in the area to impact testing.

There are seven emergency airfields within 55 NM of Eglin.

(3.2.B.5) Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

No.

(3.2.B.6) Including hangars and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

1. Fighter Type Aircraft (F-15), Criteria From AFM 86-2:

131

F-15 requirement, (42.8' x 63.8') x 4.4 = 12,015 SF

Main Base Ramp = 4,723,758 SF/12,015 = 393 F-15 aircraft

Hangars

Bldg.	Aircraft	
72	2	
102	3	
103	3	
110	4	
130	10	
138	1	
421	3	
422	3	(Currently being used for temporary storage)
1318	4	
1339	1	
1343	2	
1345	3	
TOTAL	39	

Main Base Total = 393 + 39 = 432 F-15's maximum capacity
Duke Field Ramp = 1,908,360 SF/12,015 = 158 F-15 aircraft

Hangars

Bldg.	Aircraft
3020	1
3025	4
3029	1
3057	2
3087	1
3150	3
TOTAL	12

Duke Field Total = 158 + 12 = 170 F-15's maximum capacity

TOTAL FIGHTER AIRCRAFT CAPACITY = 432 + 170 = 602

2. Large Multi-Engine Type Aircraft
   a. KC-135, Criteria From AFM 86-2:

KC-135 requirement, (130.8' x 136.2') x 3.5 = 62,352 SF
Main Base Ramp = 4,723,758 SF/62,352 = 75 KC-135 aircraft

Hangars

Bldg.	Aircraft
130	2
TOTAL	2

Main Base Total = 75 + 2 = 77 KC-135's maximum capacity
Duke Field Ramp = 1,908,360 SF/62,352 = 30 KC-135 aircraft

No Hangars
Duke Field Total = 30 KC-135's maximum capacity

TOTAL KC-135 AIRCRAFT CAPACITY = 77 + 30 = 107

b. C-130, Criteria From AFM 86-2:

C-130 requirement, (132.6' x 99.5') x 3.5 = 46,177 SF
Main Base Ramp = 4,723,758 SF/46,177 = 102 C-130 aircraft

Hangars

Bldg.	Aircraft
110	1
130	2
1318	1
TOTAL	4

Main Base Total = 102 + 4 = 106 C-130's maximum capacity

Duke Field Ramp = 1,908,360 SF/46,177 = 41 C-130 aircraft

Hangars

Bldg.	Aircraft
3025	1
TOTAL	1

Duke Field Total = 41 + 1 = 42 C-130's maximum capacity
TOTAL C-130 AIRCRAFT CAPACITY = 106 + 42 = 148

3. Rotary Wing Type Aircraft (H-53), Criteria From AFM 86-2:
H-53 requirement, (88.3' x 72.3') x 3.5 = 22,344 SF
Main Base Ramp = 4,723,758 SF/22,344 = 211 H-53 aircraft

Hangars

Bldg.	Aircraft
72	1
102	1
103	1
110	2
130	5
421	1
422	1
1318	2
1343	1
1345	1
TOTAL	16

Main Base Total = 211 + 16 = 227 H-53's maximum capacity
Duke Field Ramp = 1,908,360 SF/22,344 = 85 H-53 aircraft

Hangars

Bldg.	Aircraft
3020	1
3025	2
3029	1
3057	1
3087	1
3150	3
TOTAL	9

Duke Field Total = 85 + 9 = 94 H-53's maximum capacity
TOTAL ROTARY AIRCRAFT CAPACITY = 226 + 94 = 320

4. UAV Type Aircraft - Pioneer - UAV-SR, Criteria from PEO for Cruise Missile and UAV Joint Project UAV requirement, 125.7SF x 3.5SF = 440SF per UAV in its shipping container.

Main Base Ramp = 4,723,758 SF/440 = 10,735 UAV aircraft

Hangars

Bldg.	UAV	
72	71	
102	87	
103	87	
110	130	
130	294	
138	33	
421	98	
422	98	(currently being used for temporary storage)
920	5	
1318	130	
1339	42	
1343	77	

Hangars

Bldg.	UAV
1345	84
1385	25
1386	25
TOTAL	1286

Main Base Total = 10,735+1286=12,021 UAV's maximum capacity
Duke Field Ramp = 1,908,360 SF/440 = 4337 UAV aircraft

Hangars

Bldg.	UAV
3020	54
3025	133
3029	50
3057	76
3087	53
3150	85
TOTAL	451

Duke Field Total = 4337+451=4788 UAV's maximum capacity

TOTAL UAV CAPACITY = 12,021+4788=16,809

5. Cruise Missiles Type Aircraft AGM-86B/C:
AGM-86 requirement, (20.75' x 12') x 3.5 = 872 SF

Main Base Ramp = 4,723,758 SF/872 = 5,417 AGM-86 aircraft

Hangars Bldg.	Cruise Missiles
72	36
102	44
103	43

Hangars Bldg.	Cruise Missiles
110	66
130	148
138	17
421	49
422	49
920	2
1318	65
1339	21
1343	38
1345	42
1385	12
1386	12
TOTAL	644

Main Base Total = 5,417 +644 = 6,061 AGM-86's maximum capacity
Duke Field Ramp = 1,908,360 SF/872 = 2,188 AGM-86 aircraft

Hangars Bldg.	Cruise Missiles
3020	27
3025	67
3029	25
3057	38
3087	26
3150	43
TOTAL	226

Duke Field Total = 2,188 + 226 = 2414 AGM-86's maximum capacity

TOTAL CRUISE MISSILE CAPACITY = 6,012 + 2,414 = 8,475

(3. 2.C.1) What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

The Air Force Development Test Center (AFDTC) at Eglin Air Force Base has the natural and technical resources as well as the expertise to conduct a full range of air vehicle testing. Eglin's airspace and ground test facilities are used for USAF, joint service, and foreign military sales tests on an assortment of systems, including fixed and rotary wing aircraft, unmanned vehicles, cruise missiles, munitions and electronic combat systems. Eglin's primary mission is the developmental and operational test and evaluation of air armament and electronic combat weapons systems; in addition, AFDTC test resources have been utilized on a variety of air vehicle test programs. Specifically, test planning, execution, analysis and reporting capabilities exist at the AFDTC for the following types of air vehicle testing: performance, handling qualities, wheels and brakes, flutter, loads, aeroservoelasticity, dynamic response, heavy stores oscillation, munitions, life-cycle, operational flight program software, sensors (radar, infrared, electro-optical), avionics integration, stores compatibility, and physical integration with external stores or avionics.

(3.2.C.2) Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

A full complement of ground support facilities for preflight checkout or rehearsal of test missions exists at Eglin AFB. Notable examples are:

The Guided Weapons Evaluation Facility (GWEF) and Preflight Integration of Munitions and Electronic Systems (PRIMES) facilities are linked and provide open and closed loop simulation of realistic scenarios. These unique simulation facilities can take a weapon system from target acquisition through launch and mid-course flight in a dense electronic combat environment to terminal engagement with a target.

Flightline preflight of instrumented aircraft and weapons to include exercising telemetry, command destruct, operational flight program software, weapon system data link, and offensive and defensive systems.

Installed and uninstalled aircraft gun firing and boresighting, ballistics, dispersion pattern, accuracy, feed systems and projectile testing at a fully instrumented ground test range.

In addition to the off-equipment repair of Line Replaceable Units (LRU) removed from F-15 and F-16 aircraft, Avionics Intermediate Shops (AIS) perform software loading of operational flight programs, modifications, calibrations and testing for those aircraft. This includes weapons control radars, internal navigation units, head-up displays, automatic flight control, instrument, communication, and navigation systems.

(3.2.C.3) What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

All inventory US aircraft as well as foreign aircraft can be supported by the EMTE. The numbers and types of aircraft supportable are dependent upon the complexity of the scenario desired.

(3.2.C.4) Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

No.

(3.2.C.5) What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

Mission capability includes: Air-to-air, air-to-surface, surface-to-air, surface-to-surface, cruise missile, drone, laser, air drops, air refueling, and Theater Missile Defense.

(3.2.C.6) What is the maximum number of simultaneous missions you can support that require telemetry?

AFDTC telemetry can receive/record/display up to 20 simultaneous streams of telemetry data.

(3.2.C.7) What is the largest number of simultaneous test missions you have supported in your airspace?

Largest number of simultaneous air test missions scheduled was 19 (FY90).
Largest number of simultaneous air test sorties scheduled was 32 (FY90).

Note: Eglin airspace consists of the ASTE, EMTE, and Gulf Test Facilities.

(3.2.C.8) Identify the number, types, and owners of aircraft at your installation.

Type Aircraft	Number	Owner
UH-IN	2	46th Test Wing
F-111E/F	5	46th Test Wing
EF-111	1	46th Test Wing
F-15A/B/C/D/E	9	46th Test Wing
F-15A/B/C	11	USAFAWC
F-16A/B/C/D	11	46th Test Wing

(3.2.C.8) (Continued)

Type Aircraft	Number	Owner
F-16A/C/D	12	USAFAWC
F-15C/D	61	33rd Fighter Wing
HC-130	12	9th Special Operations Squadron
NC-130A	1	46th Test Wing
AC-130A	10	919th Special Operations Wing
C-130H	2	919th Special Operations Wing

(3.3.A.1) What is the number of threats simulated?

54 ground systems representing 27 different threats, and 3 airborne threat simulator pods representing 3 different threats.

(3.3.A.2) How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

All 54 threats can be operated simultaneously (limited by the number of operational personnel). Signal density: average of 3 per signal type. Power level: equal to the threat effective radiated power. Band: 50mhz to 300 Ghz. All threats are radiated open-air: AAA-16, SAM-26, ACQ-12, Airborne threat pods - 3.

Power levels and signal characteristics are unique to systems.

(3.3.A.3) Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

Yes. Validation by NAIC, WP AFB and AFIWC, Kelly AFB, TX. Design/Acquisition approval through CROSSBOW Committee. Airborne pods are not validated.

(3.3.A.4) Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

Open loop - Yes; Reactive - Yes; Closed-loop - Yes.

(3.3.A.5) What is the threat representation (fidelity) and density?

The EMTE includes: 18 actual threat systems representing 12 different threats; 20 emitter-receiver-processor simulators representing 21 different threats; 16 emitter systems; and 3 airborne pods representing 3 threats. All are high fidelity systems. The ground threats are currently located within a 14 miles wide by 19 miles long area.

(3.3.A.6) Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

The majority of threats on the EMTE are land based threats some of which are sea threat equivalents in a combined land/sea littoral configuration. It should be noted that there are very few unique sea threats and they do not represent a threat in the current world environment. Also, the AIM-7 Golden Bird is used as a surrogate land and airborne threat.

(3.3.A.7) What geographic dispersion can be simulated?

The 724 square mile land range area with adjoining 92,998 square miles of water range area allows for a large geographic dispersion for existing threats and can be configured to simulate any type of threat scenario, whether tactical, strategic, or an integrated air defense network, including littorial (land/sea) environments. The primary mission of the EMTE is Developmental Testing and Evaluation (DT&E) of EC systems and tactics which requires high fidelity threat systems which are properly aligned, calibrated, and highly instrumented. Testing is usually one-on-one or one-on-few to minimize the unconstrained variables and maintain a strict controlled RF environment. Realistic threat layout is not generally a factor in this type testing, as long as representative distances and collocated system relationships are maintained. Another equally important mission of the EMTE is training aircrews on new and modified EC equipment in the test environment.

(3.3.A.7.A) Threat lay down?

The EMTE can be configured to simulate any type of threat laydown, i.e., tactical, strategic, airborne, and littorial.

(3.3.A.7.B) Representative distance?

Sea ingress of over 100 miles out over the Gulf of Mexico into the land test area of 20 X 50 miles with extended MOAs for 135,313 square miles of controlled airspace. The reverse scenario of egress from land into the sea environment is also possible.

(3.3.A.8) Are the threats moveable (i.e. dynamic) within a test scenario? Relocatable to new scenarios? Yes/no

EMTE threat systems are not moveable during a single test scenario. Fourteen systems can be relocated to new scenarios with varying degrees of effort, seven are easily moveable. The airborne threat pods are flown on F-15 modified aircraft.

(3.3.A.9) Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

Yes. The EMTE has been linked (real-time operation) with the AFEWES Facility in AF Plant #4, Ft. Worth TX, and with the REDCAP Facility in Buffalo NY, using commercial phone lines.

(3.3.A.10) Is there a limit on simultaneous users? Yes/no. If no, explain.

No. All threat simulators can support site ground mount tests simultaneously. Airborne tests are not generally conducted simultaneously in order to preserve a controlled RF environment. The airborne pods are single-use systems.

(3.3.B.1) Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

No.

(3.3.B.2) What is the number of simultaneous countermeasures that can be evaluated?

All systems are radiated open-air, with no physical restrictions on simultaneous operation.

(3.3.B.3) What range of spectra can be tested and evaluated?

RF: 50 MHz to 300 GHz.
EO: Multiple high resolution BW & color cameras and video.
IR: 1.1 to 12 microns.

(3.3.B.4) What are the available spectra?

RF, IR, EO. Specific spectra data are unique to systems.

(3.3.B.5) Do you have a scene generation capability? Yes/no. If yes, describe.

Yes. Most EMTE site ground mount tests generate an RF scene/scenario and the PRIMES has the capability to generate RF scenes/scenarios while the GWEF has the capability of "scene generation" in all areas of the electromagnetic spectrum.

(3.4.A.1) Do you currently test directed energy weapon systems? Yes/no.
If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

(3.4.B.1.A) What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

Land: 874 square miles (724 square miles are under direct control).
Water: 92,998 square miles.

Other airspace is available for scheduling bringing the total to 135,313 square miles.

(3.4.B.1.B) How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

Electronic Combat testing is not limited to the areas immediately adjacent to the threat sites on Okaloosa Island or at the inland sites. Testing is conducted throughout Eglin's over-land airspace and the Gulf Test Facility. The sizes of the individual land and water ranges are listed in the ASTE and Gulf Test Facility packages, respectively.

(3.4.B.1.C) What are the maximum ranges (nautical miles) you can test, by type weapon?

As stated in 3.1.G.7, the maximum straight-line range contained within the Eglin available airspace is 478 NM. This distance is available for all types of weapons testing but must include safety footprints, required pre-release maneuvers, etc. It should be noted that land-impact tests could be, and in some cases are, released over the water ranges. Ground track distances much longer than 500 NM could be accommodated within Eglin's ranges for autonomously guided weapons (i.e. cruise missiles).

(3.4.B.2.A) For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

--Unguided 2000 pound-class ballistic weapon
---live?
---inert?
Guided weapon (e.g., GBU-24 class)
---live?
---inert?
Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

Not Applicable. EMTE resources are not utilized for live launches, except in very special cases where a specific EMTE threat is required in support of a munitions test.

(3.4.B.2.B) Were flight termination systems required? Yes/no.

Not Applicable.

(3.4.B.2.C) If no missions were scheduled in a category, give the reason(s).

Not Applicable.

3.4.B.2.D) Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

Not Applicable.

APPENDIX A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: ELECTROMAGNETIC TEST ENVIRONMENT (EMTE)

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93	
AIR VEHICLES	DIRECT LABOR									
	TEST HOURS	NA	30	0	5	7	8	2	29.75	
	MISSIONS	47	34	0	1	1	5	1	14	103
EC	DIRECT LABOR									
	TEST HOURS	NA	925	1,978	1,233	1,451	1,436	1,518.25	978	
	MISSIONS	694	906	1,005	738	674	706	643	439	5805
ARMAMENT/WEAPONS	DIRECT LABOR									
	TEST HOURS	NA	18	122	142	184	155	47.50	150.75	
	MISSIONS	64	35	78	89	116	77	26	66	551
OTHER T&E	DIRECT LABOR									
	TEST HOURS	NA	50	111	95	86	184	712.75	539	
	MISSIONS	70	54	45	48	18	54	138	93	520
OTHER	DIRECT LABOR									
	TEST HOURS	NA	1	4	17	668	215	18	35.25	
	MISSIONS	60	8	1	2	29	32	8	20	160
										7139

Note: NA = Not available

Σ missions =
6879 = Σ test
103 AV
5805 EC
551 A/W
520 other TE
160 other

DETERMINATION OF GROUND UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: ELECTROMAGNETIC TEST ENVIRONMENT (EMTE)

			ANNUAL HOURS OF DOWNTIME	1,095
			AVERAGE DOWNTIME PER DAY	3
			AVERAGE HOURS AVAILABLE PER DAY	21
TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY 7,875
GROUND	5	25	125	ANNUAL UNCONSTRAINED CAPACITY 2,874,375
TYPICAL	10	25	250	
			TOTAL 375	

Note: "Typical" represents additional tests that could be accomplished if manpower were unconstrained.

DETERMINATION OF AIRBORNE UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: ELECTROMAGNETIC TEST ENVIRONMENT (EMTE)

			ANNUAL HOURS OF DOWNTIME	1,095
			AVERAGE DOWNTIME PER DAY	3
			AVERAGE HOURS AVAILABLE PER DAY	21
TEST TYPES	TESTS AT ONE TIME	FLIGHT HOUR PER MISSION	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY 409.5
TEWS	1	7.5	7.5	ANNUAL UNCONSTRAINED CAPACITY
TYPICAL	3	4	12	
			TOTAL 19.5	149,468

Note: "Typical" represents additional tests that could be accomplished if manpower were unconstrained.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: ELECTROMAGNETIC TEST ENVIRONMENT (EMTE)

AGE: 3-47 Years

REPLACEMENT VALUE: $24,908,000 TOTAL*

MAINTENANCE AND REPAIR BACKLOG: $481,000

DATES OF LAST UPGRADES: Unknown**

NATURE OF LAST UPGRADES: See attached for complete list of buildings.

MAJOR UPGRADES PROGRAMMED: None**

1. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:
   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

*Replacement cost is MILCON only based on area cost factor of 1.0. Existing facility non-real property equipment and instrumentation costs not included.

**Upgrades are interpreted to be MILCON. Instrumentation/equipment upgrades are in I&M capital investment on Additional Information Chart.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: ELECTROMAGNETIC TEST ENVIRONMENT (EMTE)

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M & R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
8207	57	$518,000	0	UNKNOWN	NONE
8310	70	$97,000	0	UNKNOWN	NONE
8317	58	15,000	$5,000	UNKNOWN	NONE
8320	57	$1,978,000	$35,000	UNKNOWN	NONE
8352	57	$538,000	0	UNKNOWN	NONE
8502	57	$159,000	0	UNKNOWN	NONE
8550	59	$1,025,000	$83,000	UNKNOWN	NONE
8551	72	$66,000	$5,000	UNKNOWN	NONE
8553	90	$40,000	0	UNKNOWN	NONE
9208	47	$355,000	0	UNKNOWN	NONE
9210	47	$306,000	0	UNKNOWN	NONE
9258	80	$22,000	0	UNKNOWN	NONE
9264	57	$20,000	0	UNKNOWN	NONE
9265	80	$22,000	0	UNKNOWN	NONE
9266	57	$157,000	0	UNKNOWN	NONE
9268	57	$545,000	0	UNKNOWN	NONE
9269	84	$15,000	0	UNKNOWN	NONE
9270	57	$2,523,000	0	UNKNOWN	NONE
9271	60	$128,000	0	UNKNOWN	NONE
9273	68	$626,000	0	UNKNOWN	NONE
9274	75	$7,000	0	UNKNOWN	NONE
9277	60	$4,238,000	$66,000	UNKNOWN	NONE
9278	83	$11,000	0	UNKNOWN	NONE
9279	64	$29,000	0	UNKNOWN	NONE
9282	57	$1,714,000	$20,000	UNKNOWN	NONE
9283	77	$4,000	0	UNKNOWN	NONE
9285	69	$1,676,000	0	UNKNOWN	NONE
9287	80	$1,014,000	$91,000	UNKNOWN	NONE

FACILITY CONDITION (Continued)

FACILITY/CAPABILITY TITLE: ELECTROMAGNETIC TEST ENVIRONMENT (EMTE)

FAC NO.	YEAR BUILT	REPLACEMENT VALUE	M & R BACKLOG	LAST UPGRADE	FUTURE UPGRADE
9290	63	$29,000	0	UNKNOWN	NONE
9291	63	$243,000	0	UNKNOWN	NONE
9292	59	$192,000	0	UNKNOWN	NONE
9293	64	$49,000	0	UNKNOWN	NONE
9294	63	$27,000	0	UNKNOWN	NONE
9297	57	$1,431,000	$110,000	UNKNOWN	NONE
9298	80	$22,000	0	UNKNOWN	NONE
9299	80	$40,000	0	UNKNOWN	NONE
9301	84	$26,000	0	UNKNOWN	NONE
9308	84	$104,000	0	UNKNOWN	NONE
9550	57	$62,000	0	UNKNOWN	NONE
9551	85	$59,000	0	UNKNOWN	NONE
12594	68	$88,000	0	UNKNOWN	NONE
12595	64	$840,000	0	UNKNOWN	NONE
12598	64	$79,000	0	UNKNOWN	NONE
12715	91	$64,000	0	UNKNOWN	NONE
12716	91	$759,000	- 0	UNKNOWN	NONE
12721	65	$1,894,000	0	UNKNOWN	NONE
12723	86	$1,052,000	$66,000	UNKNOWN	NONE
	TOTAL	$24,908,000	481,000		

GENERAL INFORMATION

Facility/Capability Title: ELECTROMAGNETIC TEST ENVIRONMENT (EMTE)

Origin Date: 08/04/94

Service: USAF

Organization/Activity: 46 Test Wing

Location: Eglin AFB, FL

T&E Functional Area: Electronic Combat

UIC: Not Available

T&E Test Facility Category:
Primary: Open Air Range
Secondary: Integration Testing

	T&E	S&T	DE	IE	T&D	OTHER	TOTAL (%)
PERCENTAGE USE:	98	0	0	0	2	0	100
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	1	0	0	0	0	0	1
Armament/Weapons	9	0	0	0	0	0	9
EC	57	0	0	0	0	0	57
Other	31	0	0	0	2	0	33

TECHNICAL INFORMATION

Facility/Capability Title: ELECTROMAGNETIC TEST ENVIRONMENT (EMTE)

Facility Description; Including Mission Statement: The mission of the EMTE is to provide an open-air range for testing munitions and EC systems in a realistic open-air RF environment. The capability to accomplish extensive integration testing, at both the component and system levels, is available. It includes 54 instrumented ground RF threat systems, including real-world systems and validated simulators as well as 3 airborne threat simulator pods. It includes surface-to-air missile systems, radar guided anti-aircraft artillery systems, acquisition/ early warning radars, and ground based jammer systems. Installed instrumentation records operating modes, electronic counter-measure parameters, and supports data analysis for tracking accuracy, ECM effectiveness, and dynamic target signature. Military controlled airspace exists over the entire land and water range complex. In addition, there are adjacent DoD controlled air space areas, bringing the total to 135,313 square miles, should larger controlled areas be needed for specific tests.
Interconnectivity/Multi-Use of T&E Facility: The collocation of the EMTE with the extensive munitions testing capabilities at Eglin allows for testing armament/munitions/EC systems in a realistic RF environment. All types of countermeasures are routinely used, such as electronic countermeasures, chaff, flares, decoys, and obscurants. Instrumentation on EMTE systems supports precision tracking analysis with TSPI sources, multi-spectral measurement and analysis, and dynamic RCS and target signature measurement.
Type of Test Supported: Air-to-surface RF countermeasure and tactics performance and effectiveness, target acquisition, tracking and fire control, anti-radiation munitions, dynamic target cross section, EMI/EMC, and miss distance.
Summary of Technical Capabilities: The EMTE currently has over 54 threat systems. Majority of EMTE systems have installed instrumentation to record radar operating modes, tracking data, and ECM. Many systems can autotrack, optical track, or be slaved to a reference source. SAM systems include target track and missile guidance signals, and closed-loop digital weapon system flyout models.
Keywords: Electronic Countermeasure (ECM), Electronic Counter-Countermeasure (ECCM), Surface-to-Air Missile (SAM), Anti-Aircraft Artillery (AAA), Radar Cross-Section (RCS), Electromagnetic Space Interference/Electromagnetic Compatibility (EMI/EMC), Open-Air, Integration Testing

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: ELECTROMAGNETIC TEST ENVIRONMENT (EMTE)

PERSONNEL

	FY93	FY94	FY95*	FY96*	FY97*	FY98*	FY99*
OFFICER	11	11	11	11	11	11	11
ENLISTED	0	0	0	0	0	0	0
CIVILIAN	31	31	30	27	26	24	24
CONTRACTOR	98	98	98	98	98	98	98
TOTAL	140	140	139	136	135	133	133

*Note: FY95 and beyond are subject to additional manpower reductions.

TOTAL SQUARE FOOTAGE	21,500 SF		
TEST AREA SQUARE FOOTAGE	20,000 SF	OFFICE SPACE SQ. FOOTAGE	1,500 SF
TONNAGE OF EQUIPMENT	590 TONS	VOLUME OF EQUIPMENT	259,200 CF
ANNUAL MAINTENANCE COST	$618,000	ESTIMATED MOVING COST	$13,892,500

CAPITAL EQUIPMENT INVESTMENT:

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$2122K	$2636K	$2635K	$4000K	$2936K	$3088K	$1342K

Department of Defense

1995 Base Realignment and Closure T&E Joint Cross-Service Group Data Guidance

March 31, 1994

SECTION 2: CAPACITY & TECHNICAL RESOURCES

Use the forms and accompanying instructions in appendix A to provide answers for this section.

2.1 WORKLOAD

Annual workload will be reported in units as follows: for open air ranges involving flight testing, report test hours and missions. For all other T&E facilities direct labor hours and test hours must be reported; if available, missions must be reported. If an estimation of test hours based on direct labor hours is necessary, refer to the instructions for Determination of Unconstrained Capacity on page 28.

2.1.A Historical Workload

-2.1.A.1 What amount of workload have you performed each year from FY86-93? Use the Historical Workload Form provided in Appendix A of this package.

2.1.B Forecasted Workload

-2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP. The Military Departments will provide total funding amounts appropriated for all PEs identified in each functional area shown above.

-2.1.B.2 What amount of test work was performed at your facility (in workyears by functional areas of air vehicles, electronic combat, armament/weapons, other tests, and other) in FY92 & FY93?

2.2 UNCONSTRAINED CAPACITY

-2.2.A Unconstrained capacity is the maximum capacity of this facility, assuming manpower and consumable supplies (excluding utilities) are unlimited, but allowing for expected downtime (maintenance, weather, darkness (daylight), holidays, etc.). Provide your response by filling out the Determination of Unconstrained Capacity Form in accordance with the instructions in

-2.2.B Is this capacity limited by the physical characteristics of the facility itself, safety or health considerations, commercial utility availability, etc?

2.3 TECHNICAL RESOURCES

-2.3.A Does the facility have a specified war-time or contingency role established in approved war plans? Yes/no.

-2.3.B Does the facility provide a T&E product or service, without which irreparable harm would be imposed on the test mission of the host installation?

-2.3.B.1 On the test mission of any other activity?

-2.3.B.2 On any other mission deemed critical to the operational effectiveness of the armed forces of the United States?

SECTION 3: MEASURES OF MERIT

This section relates the measures of merit and the required data to the four criteria that have been established for Military Value. The four military value (MV) criteria are:

CRITERION 1: The current and future mission requirements and the impact on operational readiness of the Department of Defense's total force.

CRITERION 2: The availability and condition of land, facilities and associated airspace at both the existing and potential receiving locations.

CRITERION 3: The ability to accommodate contingency, mobilization, and future total force requirements at both the existing and potential receiving locations.

CRITERION 4: The cost and manpower implications.

3.1 OVER-ARCHING MEASURES OF MERIT

The over-arching measures of merit are listed with accompanying questions (or data requirements) intended to elicit standard information upon which the cross-service analyses can be based, and on which the Joint Cross-Service Groups can base their reviews of the Military Department analyses. Additional specific measures of merit are shown under individual functional areas. The numbers in parentheses () before each measure of merit indicate the BRAC selection criteria for military value.

3.1.A. Interconnectivity (MV I) - Measure of Merit: *Extent of linkage of this facility with other facilities and assessment of single-node failure potential.*

-3.1.A.1 What percentage of total test workload in FY93 involved the real-time or near real time exchange of data or control with another facility? List the facilities you interconnect to for test and identify how many are simultaneous activities. Identify these as to whether they are internal and external to the site.

-3.1.A.2 If your facility were to be closed, would there be an impact on other facilities to which you are connected? Yes/no. If yes, explain.

3.1.B Facility Condition (MV II) - Measure of merit: *Current and planned status of the T&E facilities for supporting assigned test missions.*
Fill out the Facility Condition Form in Appendix A in accordance with the instructions.

3.1.C Environmental and Encroachment Carrying Capacity (MV II) - Measure of Merit: *Extent of current and future potential environmental and encroachment impacts on air, land, and sea space for testing.*

- 3.1.C.1 Do you have limiting (current or future) environmental and/or encroachment characteristics associated with the installation/facility? Yes/no. If yes, explain.

- 3.1.C.3 Do you currently operate under temporary permits of an environmental nature, or voluntary agreements (including treaties) of any sort that deal with the environment? If so, when do they expire? Please describe.

- 3.1.C.4 What is the total population within a 50 mile radius? 100 mile radius? 150 mile radius? 200 mile radius?

Radius, statute miles	*Population*
50	
100	
200	
500	

- 3.1.C.5 Identify the commercial air/land/sea traffic routes, public use of air/land/sea space, and frequency of use for each that affects or could affect mission accomplishment in your air, land, or sea space.

- 3.1.C.5.A How many test missions per year are canceled due to commercial or public use?

- 3.1.C.6 What is the number of test missions that have been canceled due to encroachment in each of the last two years?

3.1.D Specialized Test Support Facilities and Targets (MV I) - Measure of Merit: *Extent to which specialized test support facilities and targets are available.*

-3.1.D.1 Do you have specialized facilities [that] are required to support you in conducting your test operations at your facility (e.g. Aerial delivery load build-up facilities; parachute drying towers/packing facilities; paratroop support facilities; specialized fuel storage and delivery systems; mission planning facilities; corrosion control, painting, washing facilities; and specialized maintenance facilities such as avionics intermediate shops)? Yes/no. If yes, please describe.

Yes. USAF BATTLESTAFF TRAINING FACILITY
ELECTRONIC COMBAT MAINTAINENANCE FACILITY
727 AIR CONTROL SQUADRON TEST FACILITY
AIR TO GROUND WEAPON SYSTEM EVALUATION PROGRAM

-3.1.D.2 Are specialized targets required to support this facility? Yes/no. If yes, explain.

-3.1.D.2.A Have the specialized targets been validated? Yes/no. If yes, by whom?

3.1.E Expandability (MV III) - Measure of Merit: *Extent to which an installation/facility is able to expand to accommodate additional workload or new missions.*

-3.1.E.1 Other than the expandability inherent in unconstrained capacity, discussed earlier, are there any special aspects of this facility that enhance its ability to expand output within each T&E functional area? Yes/no. If yes, explain.

-3.1.E.1.A Can you accept new T&E workload different from what you are currently performing? Yes/no. If yes, identify by T&E functional area and test type.

-3.1.E.2 Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

-3.1.E.3 Is the facility equipped to support secure operations? Yes/no. If yes, to what level of classification (Confidential, Secret, Top Secret, Special Access Required)?

-3.1.E.4 Are there any capital improvements underway or programmed in the 95 FYDP, that would change your capacity/capability? Yes/no. If yes, explain.

3.1.F Uniqueness (MV I) - Measure of Merit: *Extent to which the facility is one-of-a kind.*

-3.1.F.1 Is this a one-of-a-kind facility within the DoD? Yes/no. If yes, describe.

-3.1.F.1.A Within the US Government? Yes/no. If yes, describe.

-3.1.F.1.B Within the US? Yes/no. If yes, describe.

-3.1.F.2 Are you currently providing support to DoD users outside your Military Department? Yes/no. If yes, indicate percentage of total workload in FY92 and FY93 by Military Department.

3.1.G Available Air, Land, and Sea Space (MV II) - Measure of Merit: *Extent to which controlled test ranges satisfy weapon system test requirements.*

-3.1.G.1 How many square miles of air, land, and sea space are available to support test operations?

-3.1.G.2 Who owns and or controls the land under the restricted airspace you use?

-3.1.G.3 How much of this is Restricted Airspace, and what altitude limits are associated with the restricted areas?

-3.1.G.4 Do you have special use airspace other than supersonic airspace? Yes/no. If yes, for what types of test (e.g. terrain following radar)? Dimensions? Will it support simultaneous users? Yes/no.

-3.1.G.5 Is the airspace over land or water? List the number of square miles over each.

-3.1.G.6 Identify known or projected airspace problems that may prevent accomplishing your mission.

-3.1.G.7 What is the maximum straight line segment in your airspace in nautical miles?

-3.1.G.8 What public airspace have you used for overflight of weapons systems in the past? What was the nature of those tests? Do you anticipate being able to use that same public airspace for similar tests in the future? Yes/no.

3.1.H Geographic/Climatological Features (MV II) - Measure of Merit: *Extent to which types of climatic/geographic conditions represent world-wide operational conditions.*

-3.1.H.1 Describe the topography and ground cover/vegetation within your test airspace (include nap-of-the-earth capability). Identify all of the following that apply: mountains, forest/jungle, cultivated lowland, swamp/riverine, desert, and sea. State the area of each in square miles.

-3.1.H.2 Are there features of the local geology or soil conditions that enhance or inhibit any types of test?

-3.1.H.3 Did you have to go to other geographical locations to satisfy test requirements? Yes/no and explain. If yes, provide as a percent of overall workload per year for the past 8 years.

-3.1.H.4 What is the number of days per year the average temperature is below 32 degrees F? Between 32 and 95 degrees? Above 95 degrees?

-3.1.H.5 What is the number of days per year the average relative humidity is below 30%? Between 30 and 80%? Above 80%?

-3.1.H.6 What is the number of test missions per year (1985 - 1993) canceled due to weather?

-3.1.H.7 What is the number of test days per year (1985 - 1993) canceled due to weather?

-3.1.H.8 What is the number of days per year the visibility is less than 1 mile? Between 1 and 3 miles? Greater than 3 miles?

-3.1.H.9 What is the average number of flying days available per year for flight test? Provide historical average from the past eight years.

-3.1.H.10 What percentage of the time are your test operations restricted due to weather?

3.2 AIR VEHICLES

This functional area includes facilities involved in the testing of all air vehicles/subsystems/components whether fixed wing or rotary wing and test of major subsystems (e.g., avionics, engines, and sensors). This includes flight testing and the testing involving pre- and post-flight preparation and processing of the air vehicle. Unmanned air vehicles and cruise missiles are included.

3.2.A Supersonic Airspace (MV II) - Measure of Merit: *Extent of range size to support weapon system requirements.*

-3.2.A.1 Do supersonic corridors or areas exist? Yes/no.

-3.2.A.2 Where are they located relative to your airfield?

-3.2.A.3 At what altitude (upper and lower altitude)?

-3.2.A.4 Over land or water? What size and shape (length and width)?

-3.2.A.5 Are there restrictions you must observe to use this space? Yes/no. If yes, explain.

-3.2.A.6 What is the maximum number of simultaneous users?

-3.2.B Airfield and Facility Characteristics (MV II) - Measure of Merit: *Extent of air vehicle infrastructure to support T&E operations.*

-3.2.B.1 Provide a brief description of your airfield and support facilities, to include the following: number and azimuth of runways, elevation, runway length (excluding overrun), overrun length, terminal and/or landing aids, arresting cable (yes/no, type), ramp area (in square feet), construction material (runway and ramps), load capability, and hangar space.

-3.2.B.2 How close and how many emergency runways or airfields are in your area of operation?

-3.2.B.3 Where is your airfield situated relative to working areas (airspace) for supporting test operations?

-3.2.B.4 What makes your airfield unique or at least suited for supporting test operations?

-3.2.B.5 Is there a size, weight, maintenance or mission limitation that would affect test operations? If so, describe the limitation(s).

-3.2.B.6 Including hangers and ramp space, how many fighter size aircraft could you support? Large multi-engine aircraft? Rotary wing? UAV? Cruise missiles?

-3.2.C Test Operations (MV II) - Measure of Merit: *Extent of T&E operations that the airspace can accommodate.*

-3.2.C.1 What types of air vehicle testing (fixed wing, rotary wing, unmanned vehicles, and cruise missiles) can be supported? (e.g. performance, handling qualities, fatigue life, static, wheels and brakes, physical integration with external stores or avionics)

-3.2.C.2 Do ground support facilities exist for pre-flight checkout or rehearsal of test missions?

-3.2.C.3 What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

-3.2.C.4 Does UAV and or rotary wing operations pose any limitation on other types of missions? If yes, explain.

-3.2.C.5 What sorts of missions (e.g. air-to-air, air-to-ground and refueling) can be flown within local airspace?

-3.2.C.6 What is the maximum number of simultaneous missions you can support that require telemetry?

-3.2.C.7 What is the largest number of simultaneous test missions you have supported in your airspace?

-3.2.C.8 Identify the number, types, and owners of aircraft at your installation.

3.3 ELECTRONIC COMBAT

This functional area includes facilities involved in the testing of stand-alone electronic combat systems and electronic combat subsystems that are normally integrated into other weapon systems. It includes the testing of systems or subsystems that have as their primary mission threat warning, testing of systems that provide countermeasures in the RF (radio frequency) spectrum against radars and other RF sensors, systems that provide countermeasures that are used against sensors in the electro-optical or infrared spectrum as well as testing of electronic and C3 countermeasures.

3.3.A Threat Environment (MV I) - Measure of Merit: *Extent to which the capability satisfies weapon system requirements.*

-3.3.A.1 What is the number of threats simulated?

-3.3.A.2 How many simultaneous threats can be simulated? What type (e.g. AI, AAA, SAM)? What is maximum signal density? Average density? What power level? What band? Radiated or injected?

-3.3.A.3 Are the threat software models and simulators (software/hardware) validated? Yes/no. If yes, by whom?

-3.3.A.4 Do you conduct open loop testing? Reactive? Closed loop? Yes/no for each.

-3.3.A.5 What is the threat representation (fidelity) and density?

-3.3.A.6 Are you capable of simulating land threats? Sea threats? Combined land/sea threats? Yes/no. If yes, describe.

-3.3.A.7 What geographic dispersion can be simulated?

> **-3.3.A.7.A** Threat lay down?
> **-3.3.A.7.B** Representative distance?

-3.3.A.8 Are the threats moveable (i.e. dynamic) within a test scenario? relocatable to new scenarios? yes/no

-3.3.A.9 Is the facility interlinked with off-site threats? Yes/no. If yes, how are you linked?

-3.3.A.10 Is there a limit on simultaneous users? Yes/no. If no, explain.

3.3.B Test Article Support (MV II) - Measure of Merit: *Extent to which test support satisfies weapon system test requirements.*

-3.3.B.1 Is there a size, weight, or other limitation on test operations the facility can support? Yes/no. If so, identify the limits and measures to remove them.

-3.3.B.2 What is the number of simultaneous countermeasures that can be evaluated?

-3.3.B.3 What range of spectra can be tested and evaluated?

-3.3.B.4 What are the available spectra?

-3.3.B.5 Do you have a scene generation capability? Yes/no. If yes, describe.

3.4 ARMAMENTS / WEAPONS

This functional area includes facilities involved in the testing of the weapons portion of a weapon system. In those cases where the weapon system is composed almost exclusively of the weapon, it may include system-level and platform integration testing. In other cases, it addresses just the weapon subsystem (e.g., guidance and control, propulsion, warheads, and airframe), while the testing of the weapon system's vehicle is in another functional area.

3.4.A Directed Energy (MV II) - Measure of Merit: *Extent to which the facility satisfies directed energy weapon system test requirements.*

This includes testing of all types of directed energy weapons.

-3.4.A.1 Do you currently test directed energy weapon systems? Yes/no.

If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

3.4.B Rocket / Missile / Bomb Systems (MV II) - Measure of Merit: *Extent capability satisfies weapon system test requirements.*

This includes the testing of all types of rocket, missile, and bomb systems at the system/subsystem/component level, both stand alone and integrated into the launch platform. This includes testing of air-to-air, air-to-surface, and surface-to-air missiles.

-3.4.B.1 Ground Space

-3.4.B.1.A What is the area in square miles of the land and water space which you can use to conduct tests of live rocket, missile, or bomb systems?

-3.4.B.1.B How many separate and distinct land and water test areas are available to conduct tests of live weapons? List them and the size of each in acres.

-3.4.B.1.C What are the maximum ranges (nautical miles) you can test, by type weapon?

3.4.B.2 Test Operations

-3.4.B.2.A For each of your land and water ranges, how many test missions were scheduled in FY92 and FY93 that were required to use safety footprints comparable to those required for the following types of weapons:

--Unguided 2000 pound-class ballistic weapon
---live?
---inert?
--Guided weapon (e.g., GBU-24 class)
---live?
---inert?
--Stand-off weapon (e.g., AGM-130 class)
---live?
---inert?
--Short-range missile (e.g., AIM-9)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL
--Long-range missile (e.g., AIM-120)
---below 5000 feet MSL
---between 5000 and 20,000 feet MSL
---above 20,000 feet MSL

-3.4.B.2.B Were flight termination systems required? Yes/no.

-3.4.B.2.C If no missions were scheduled in a category, give the reason(s).

-3.4.B.2.D Were any scheduled missions canceled before the mission, or terminated/aborted during the mission because of encroachments into the safety footprint? Yes/no. If yes, how many per year.

ACC

T&E PERCENTAGES

SITE/ACTIVITY: EGLIN AFB USAF AIR WARFARE CENTER

FACILITY	TOTAL % T&E	AV	A/W	EC	OTHER
BATTLE STAFF TRAINING	Ø				
EC MAINTENANCE	Ø				
727 AIR CONTROL SQUADRON TEST	Ø				
AIR-GROUND WEAPON SYSTEM EVALUATION PROGRAM	Ø				

NOTE: THIS ACTIVITY CONSISTS OF ADMINISTRATIVE FUNCTIONS AND TRAINING FACILITIES. THEY, THEREFORE, DID NOT REPORT ANY QUANTITATIVE TEST DATA

SIGNATURE 8/11/94 DATE

SIGNATURE 8/12/94 DATE

SIGNATURE DATE