DCN 550

NAVAL AIR WARFARE CENTER
WEAPONS DIVISION
CHINA LAKE, CA

1995 Base Realignment and Closure
T&E Joint Cross-Service Group
Data Report

May 13, 1994

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T&E JOINT CROSS-SERVICE GROUP DATA REPORT

SECTION 1: INTRODUCTION 2
1.1 INSTALLATION OVERVIEW 2
1.2 IDENTIFICATION OF T&E FACILITIES/CAPABILITIES 5
1.3 FUNCTIONAL AREA ASSUMPTIONS 9
1.3.A Air Vehicles 9
1.3.B Electronic Combat (EC) Systems 9
1.3.C Armaments/Weapons 9

SECTION 2: CAPACITY & TECHNICAL RESOURCES 10
2.1 WORKLOAD 10
2.1.A Historical Workload 10
2.1.B Forecasted Workload 11
2.2 UNCONSTRAINED CAPACITY 30
2.3 TECHNICAL RESOURCES 32

SECTION 3: MEASURES OF MERIT 47
3.1 OVER-ARCHING MEASURES OF MERIT 47
3.1.A Interconnectivity 47
3.1.B Facility Condition 67
3.1.C Environmental and Encroachment Carrying Capacity 68
3.1.D Specialized Test Support Facilities and Targets 75
3.1.E Expandability 87
3.1.F Uniqueness 118
3.1.G Available Air, Land, and Sea Space 134
3.1.H Geographic/Climatological Features 141
3.2 AIR VEHICLES 143
3.2.A Supersonic Airspace 143
3.2.B Airfield and Facility Characteristics 146
3.2.C Test Operations 160
3.3 ELECTRONIC COMBAT 163
3.3.A Threat Environment 163
3.3.B Test Article Support 171
3.4 ARMAMENTS/WEAPONS 173
3.4.A Directed Energy 173
3.4.B Rocket/Missile/Bomb Systems 174

T&E JOINT CROSS-SERVICE GROUP

SECTION 1: INTRODUCTION

1.1 INSTALLATION OVERVIEW

The Naval Air Warfare Center Weapons Division (NAWCWPNS) is a full-spectrum research, development, test, evaluation, and in-service engineering center for weapon systems associated with air warfare (except antisubmarine warfare systems), missiles and missile subsystems, aircraft weapons integration, and assigned airborne electronic warfare systems. In addition, NAWCWPNS maintains and operates DOD's largest and most completely instrumented air, land, and sea test range complex.

NAWCWPNS was formed through the combination of four Navy shore facilities: the Naval Weapons Evaluation Facility, Albuquerque, New Mexico; the Naval Ordnance Missile Test Station, White Sands, New Mexico; the Pacific Missile Test Center, Point Mugu, California; and the Naval Weapons Center, China Lake, California. Integrating the full-spectrum activities of these four organizations provides an expanded capability for research, development, test, evaluation, and support throughout the weapon-system life cycle. The current structure of NAWCWPNS includes an overall Command function; laboratory (R&D) functions concentrated within the R&D Pillar, reporting to the Deputy Commander for R&D; T&E functions in the T&E Pillar, reporting to the Deputy Commander for T&E; a single Services and Information Directorate; and Naval Air Weapons Stations at Point Mugu and China Lake as "base-keepers."

The primary sites of NAWCWPNS are at China Lake, California, located in the high desert approximately 150 miles northeast of Los Angeles, and at Point Mugu, California, located on the coast approximately 80 miles northwest of Los Angeles. A major detachment is operated at White Sands, New Mexico (as a tenant at the White Sands Missile Range (WSMR)), and another smaller group is located at Albuquerque, New Mexico (as a tenant at Kirtland AFB). The location of the NAWCWPNS sites is shown in the following figure.

NAWCWPNS is a truly integrated structure. Many organizational entities are spread across multiple sites. For example, the Aircraft Weapon Systems programs at the China Lake and Point Mugu sites have been consolidated into a single organization with facilities and capabilities at both sites, and the personnel work as an integrated team. Similar consolidations at NAWCWPNS have been made in the areas of Engineering and In-Service Engineering, Targets and Threat Simulations, Information and Electronic Warfare, Air Intercept Weapons and Attack Weapons, and most base support functions. Additionally, this integration has resulted in the Naval Western Test Range Complex, which is composed of the Point Mugu sea range and test facilities combined with the land ranges and test facilities at China Lake and White Sands. The Complex provides complementary, full-spectrum test capability for weapon systems and aircraft. Additionally, the Major Range and Test Facility Base (MRTFB) portion of the funding is managed through a consolidated centralized program office.

NAWCWPNS as a total entity represents the work of more than 8,000 civilian employees and 1,300 military personnel. It is the Navy's complete sector of scientific and technical knowledge for air warfare systems, guided missiles, and aircraft weapon integration. Existence at China Lake of DOD's largest weapons R&D laboratory in immediate proximity to the land test range has repeatedly been shown to be of great significance in furthering the air weapons development function. Equally significant is NAWCWPNS Point Mugu's role as the Navy's primary weapons T&E site and air weapons in-service engineering support site with its contiguous Sea Test Range, which complements the China Lake R&D role.

Since NAWCWPNS is an integrated organization at multiple sites, an artificial split is being made to respond to BRAC data calls. NAWCWPNS is completely integrated across sites and functional areas and pursues work with the philosophy that RDT&E is a seamless process. In addition, many support functions are provided through a single, central, consolidated organizational element. Although the data calls are provided separately as requested, the capabilities of the NAWCWPNS sites must be treated as an integrated whole. As an example, the Threat Simulation Directorate is a single organization with personnel at both major sites supporting both Laboratory and T&E functions. The Directorate has a consolidated budget administered by a single comptroller, and a consolidated position management structure administered by a single Human Resources Department.

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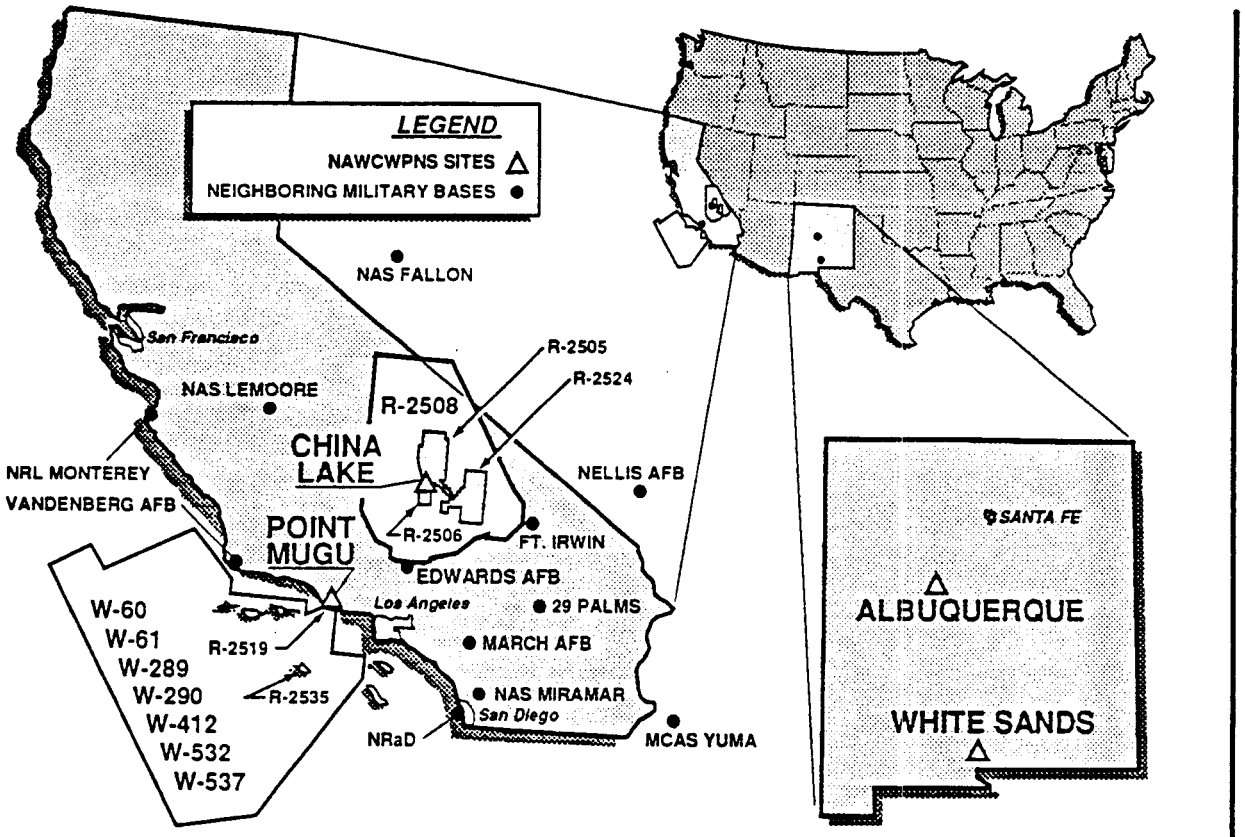
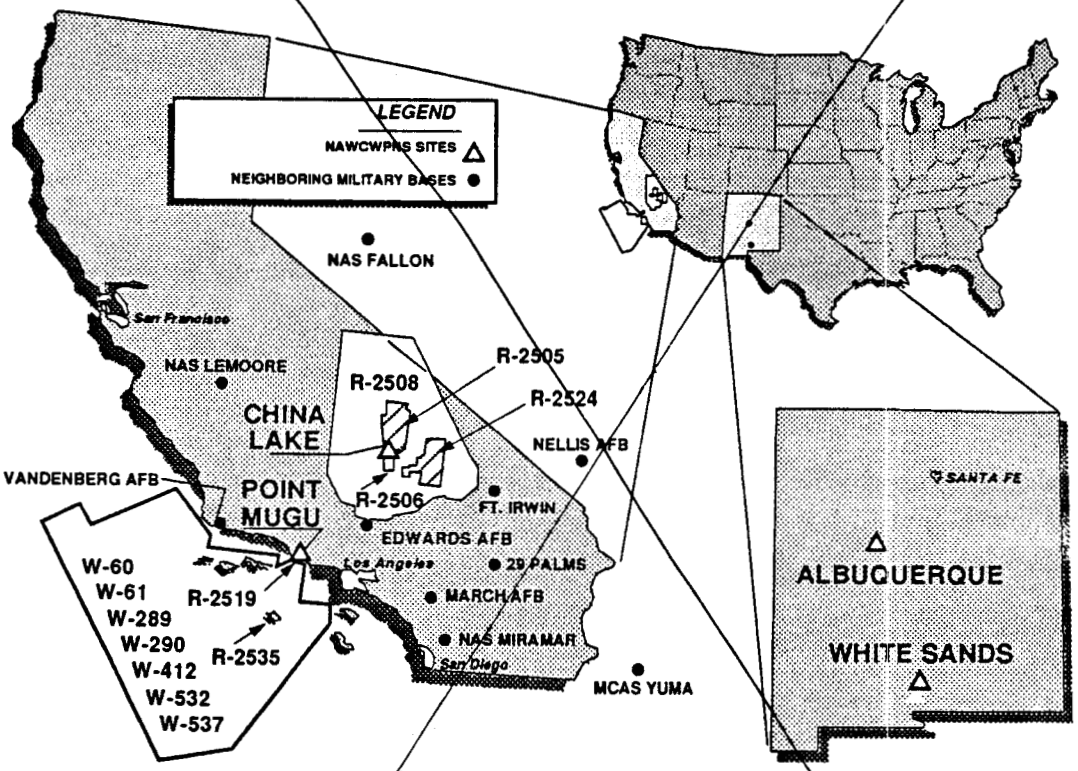


NAWCWPNS Site Locations.



NAWCWPNS Site Locations

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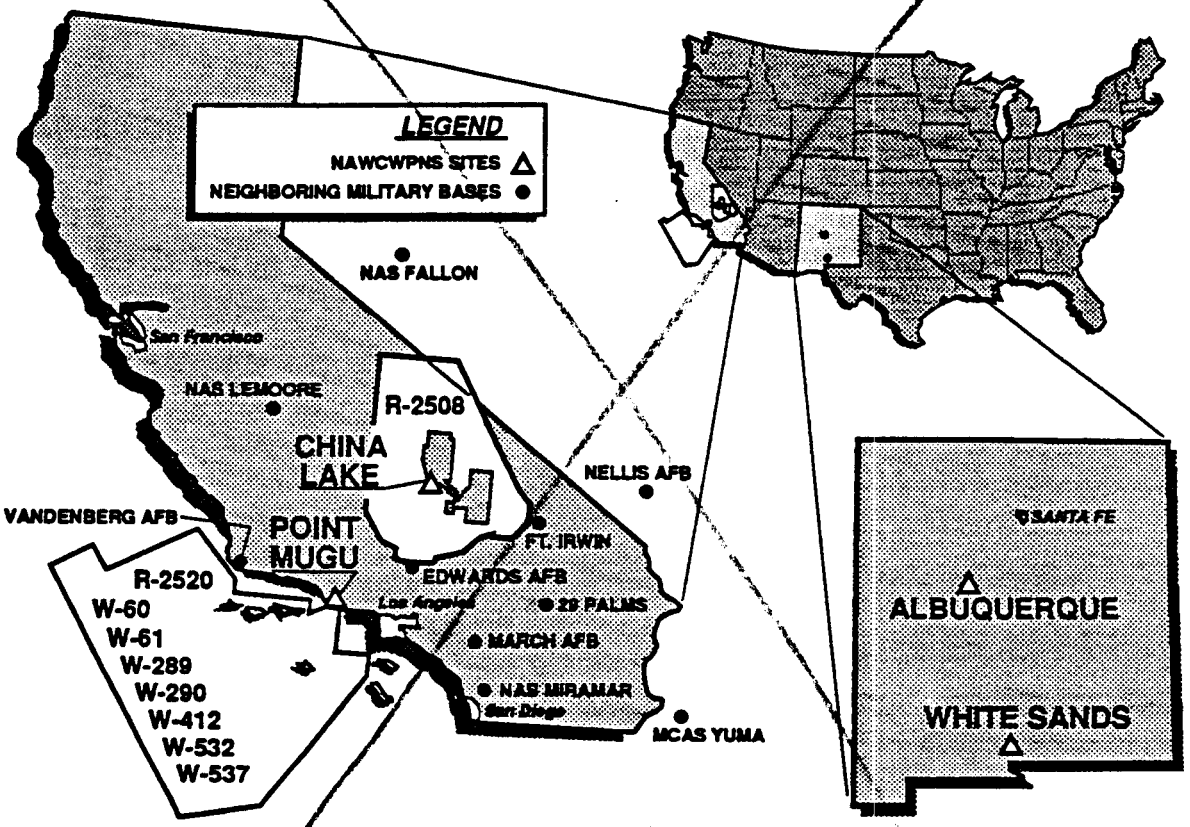

NAWCWPNS Site Locations

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1.2 IDENTIFICATION OF T&E FACILITIES/CAPABILITIES

The Navy has developed NAWCWPNS China Lake into a premier air weapons RDT&E facility. Some of the attributes making this an exemplary weapons RDT&E site include:

- Remote location on the eastern slope of the Sierra Nevada Mountains, surrounded by the Mojave Desert.
- Large expanses of very sparsely populated land that allow safe and secure firing of aircraft weapons.
- Clear air and favorable weather conditions that permit over 350 flying days per year.
- Approximately 20,000 square statute miles of restricted airspace (R-2508).
- 1723 square miles of land.

Approximately 90% of the land is devoted to test and training ranges. Principal test capabilities include:

- Air/Ground Ranges for the test and evaluation of aircraft air-to-air and air-to-ground weapons systems, surface-to-air guided missiles, small tactical air-defense systems, surface-to-surface systems, development of weapons delivery techniques and tactics, and pilot training in target acquisition and weapons delivery techniques.
- An outdoor Electronic Combat Range that provides a comprehensive electronic warfare test environment to support developmental and operational T&E of airborne electronic warfare devices and systems, development of aircraft tactics, and training of aircrews.
- Test tracks for collecting data on test items under controlled conditions at subsonic, supersonic, or hypersonic speeds.
- Propulsion test facilities for static testing of solid propulsion systems from the smallest laboratory scale devices to all-up strategic systems with thrusts up to 1,500,000 pounds.
- Warhead test arenas for large-scale static tests of conventional warheads and explosive devices from early research through final configuration qualification.
- Environmental and safety test facilities that provide a wide range of capabilities to perform the required Navy weapons safety tests, qualification of all-up ordnance systems, insensitive munitions tests, and external fire stack tests for hazard classification purposes.
- Climatic test chambers for evaluating all-up tactical weapons for their response to factory-to-target climatic environments including temperature, humidity, salt spray, and rain.
- Dynamic environmental facilities providing a wide range of capabilities in dynamic (vibration) testing of all-up weapons up to 2500 pounds net explosive weight.
- Radar Cross Section (RCS) ranges that provide precision RCS measurements in an isolated outdoor environment with controlled land and airspace enhancing security of highly classified testing.
- Aircraft Survivability Range for testing the vulnerabilities of combat aircraft to enemy weapon fire.
- Parachute test capabilities for all types of aircraft emergency egress recovery systems, premeditated jump assemblies, and missile/bomb stabilization and retardation/recovery systems.

China Lake's convenient location near several DOD ranges and sites is also a major attribute. This proximity has led to cross-utilization of China Lake ranges by other activities and vice versa. Examples include:

- Launch of Tomahawk Cruise Missiles from Point Mugu's Sea Range for impact on China Lake's Land Ranges.
- Air Force weapons launches onto China Lake Ranges from Edwards AFB and Nellis AFB based and staged aircraft.
- Fleet training exercises by Fallon, Lemoore, and Miramar based squadrons.

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- Fleet training exercises by Fallon, Lemoore, and Miramar based squadrons.

- China Lake's detachment at White Sands provides land-based flight test and evaluation of ship-launched missiles and directed-energy T&E. White Sands provides the only place with sufficient land and airspace to contain the Standard Missile launch envelope and associated target test scenarios and the required safety footprints to launch and recover suborbital space rockets and other scientific payloads.

The Navy has also developed multiple and diverse R&D and support capabilities at China Lake that complement the range developments and activities. China Lake has thus long functioned in a scenario of collocated T&E/R&D. This synergistic environment has been a major factor in China Lake's success in developing and fielding more weapons for the U.S. Navy (and many for the U.S. Air Force) than any other single site in the Navy Laboratory system.

The availability of land and airspace, relative freedom from encroachment, optimum weather conditions, and remoteness are critical factors in accomplishing the T&E missions for a wide variety of customers and requirements. The adjacent R&D capabilities permit total systems integration of platforms and weapons systems and provide the ability to do full-spectrum RDT&E and life cycle inservice support of aircraft and related weapon systems. The combination of indoor and outdoor laboratory conditions is ideal. Being able to modify, test, and validate existing hardware in the same general location on a real-time basis has proven invaluable for quick reaction requirements, such as experienced in Desert Storm. A land range location and capability such as exists at China lake is mandatory to accommodate this type of hazardous and classified workload.

The instructions in the call are to include facilities/capabilities that have and are still capable of performing T&E within the three functional areas. This instruction was implemented by first determining if the facilities show greater than 0% T&E use on the General Information form. T&E use was interpreted to mean work done on a range, in support of a range, or in lieu of performing range tests. Consequently, many facilities capable of T&E (but not meeting the "have done" criteria) were omitted. The total capability and unconstrained capacity of the installation to perform T&E is thus understated.

Using the definition given in this data call, we initially counted over 150 individual facilities/capabilities at NAWCWPNS China Lake. However, in order to make this response more readable and less bulky, we have combined many of these facilities/capabilities to represent common functions. For example, under the category of Open Air Ranges we have listed the North Range as a single air/ground range even though it is a complex of subranges, used individually or in combinations depending on the test scenario, that are also "facilities/capabilities" by the given definition. By these rational groupings, we have reduced the total number of facilities/capabilities at NAWCWPNS China Lake to a total of 60 as follows.

MODELING AND SIMULATION
Air Weapon Digital Modeling & Simulation
Explosive and Ordnance Modeling
Strike Simulation & Modeling
Strike Software/Simulation Facility
System Modeling & Signal Processing Facility
Weapons and Tactics Analysis Center (WEPTAC)

MEASUREMENT
Aeroheat Test Facility
Air Breathing Propulsion Laboratory
Antiradiation Missile (ARM) Seeker Test Complex
Cactus Flats Ordnance Test Area
Chemical Analysis Research Facility
Detonation Physics Laboratory
Dynamic Properties Measurements Complex
Energetic Materials Properties Analysis Laboratory
Environmental Test Complex
Foreign Material Exploitation (FME) & Balloon Test Complex
Guidance Components T&A Complex
High Hazard Propulsion Test Facility
IR Seeker, GCS DDT&E (Design, Development, Test & Evaluation) Complex
Junction Ranch Radar Cross Section Range
Materials Engineering / Failure Analysis Facility
Medium Caliber Gun & Ammo Ballistics Test Laboratory
Missile Engagement Simulation Arena (MESA)
Non-Destructive Ordnance Test Facility
Optics & Laser Research Facility
Ordnance & Propulsion Foreign Materials Exploitation Laboratory
Ordnance Test Complex
RF Seeker/Guidance/Control DDT&E (Design, Development, Test & Evaluation) Complex
Sensor & Targeting Technology Facility
Sled Tracks
Strategic Propulsion Test Complex
Tactical Propulsion Test Facility
VHF Anechoic Chamber
Weapons Signal Processing Design Complex
Weapons Survivability Laboratory (WSL)

INTEGRATION LABORATORY
Actuator and Power Systems Laboratory
Antiradiation Missile Integration Complex
Armament/Weapons Design, Prototyping, & Integration Facility
Composites Development Laboratory
Data Link Development Laboratory
Electronic Warfare Integration Laboratory (EWIL)
Fuze Development Laboratory
Laser Seeker Integration and Test Facility
Missile/Rocket Motor Assembly Facility
Ordnance Assembly Facility
Telemetry Development Laboratory
TSSAM Mission Planning Facility

Warhead/Bomb Assembly/Integration Facilities
Weapons Guidance/Control/Seeker IL
Weapons System Support Facility, A-6
Weapons System Support Facility, AH-1
Weapons System Support Facility, AV-8
Weapons System Support Facility, F/A-18

HARDWARE-IN-THE-LOOP
Mk 45 TDD (Target Detecting Device) Engineering Development HITL/Test Laboratory
Simulation Laboratory—Missile HITL
TSSAM Hardware In the Loop

OPEN AIR
Air/Ground Range
Electronic Combat Range (ECR)
Flight Test Capability
NAWCWPNS-White Sands

1.3 FUNCTIONAL AREA ASSUMPTIONS

Three functional areas of T&E facilities/capabilities were selected for specific emphasis during cross-service analyses following analysis of the T&E Reliance study areas. These three areas -- air vehicles, electronic combat, and armament/weapons -- show the greatest potential for cross-service consolidation opportunities; others are predominately or nearly Military Department unique.

Over-arching measures of merit have been developed that are applicable to many T&E facilities/capabilities across the three functional areas. These measures generally relate to the overall demographics of the facility/capability at an installation and are important to evaluating a facility/capability for: overall condition; potential to support current or future contingency, mobilization and future missions; additional workload; and overall Mission Essentiality. Additional data specific to the three functional areas will also be collected. For the purpose of this data collection, the three functional areas are defined as follows:

1.3.A 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 sub-systems (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.

1.3.B Electronic Combat (EC) Systems

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.

1.3.C 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.

Document Separator

SECTION 2: CAPACITY & TECHNICAL RESOURCES

Use the forms and accompanying instructions in appendix A to provide answers for this section.

NOTE: Many people contributed data for this document. The inevitable differences in interpretations by the various contributors may have given results that make meaningful comparisons between Facilities/Capabilities difficult or impossible.

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.*

In contrast to the direct labor hours reported in the Workload section of Data Call No. 12, the direct labor hours reported in this section are those performed in/by the testing facilities at NAWCWPNS China Lake, regardless of whether the individual facilities or another China Lake entity managed the funding connected with this labor. The table below is a summary of the FY93 information provided for each of the facilities.

T&E TEST FACILITY CATEGORY	DIRECT LABOR	TEST HOURS	MISSIONS
Modeling and Simulation	175,723	71,833	168
Hardware-in-the-Loop	76,510	6,616	
Integration Laboratory	735,517	81,400	339
Measurement	748,367	226,632	1,117
Open Air	586,841	16,187	29,541
TOTAL	2,322,958	402,668	31,165

* Most facilities/capabilities do not account for workload in terms of missions. Therefore, the "total" missions shown is not an accurate representation.

Historical workload for each of the NAWCWPNS China Lake 60 facilities/capabilities are given in the Historical Workload forms in Appendix A, Tabs 1 through 60. Workload in the tables is the total workload for the facility/capability without regard to the category of work (i.e., T&E, S&T, DE, IE, or T&D). If workload for a category is required, use the percentage for that category shown in the General Information table (Appendix A) for the facility/capability as a multiplier. For either Test Hours or Direct Labor this methodology yields a "rough" allocation by category which is usable for a first order approximation only. It must be emphasized that this methodology is NOT exact since the same ratio of Direct Labor to Test Hours does not necessarily hold for each category of work (i.e., an S&T task may require much more direct labor per test hour than a T&E task at a given facility). Furthermore, it is apparent from an examination of some of the facility

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T&E TEST FACILITY CATEGORY	DIRECT LABOR	TEST HOURS	MISSIONS
Modeling and Simulation	99,259	44,087	120
Hardware-in-the-Loop	76,510	37,650	
Integration Laboratory	730,981	95,073	339
Measurement	958,519	390,774	777
Open Air	572,989	16,188	29,541
TOTAL	2,438,258	583,772	30,777

* Most facilities/capabilities do not account for workload in terms of missions. Therefore, the "total" missions shown is not an accurate representation.

Historical workload for each of the NAWCWPNS China Lake 60 facilities/capabilities are given in the Historical Workload forms in Appendix A, Tabs 1 through 60. Direct work load in the tables is the total direct labor hours for the facility/capability without regard to the type of work (i.e., T&E, S&T, DE, IE, or T&D). If only the direct labor hours for T&E are required, use the percentages shown in the General Information table (Appendix A) for the facility/capability as a multiplier. (Since Military labor is not charged to the customer, it is not captured in the database; therefore military workload is not included in the Historical Workload forms.)

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data that the ratio of Direct Labor to Test Hours; or the allocation of use of a given facility to various functional areas such as air vehicles or armament/weapons is highly variable from year to year. Since Military labor is not charged to the customer, it is not captured in the database; therefore military workload is not included in the Historical Workload forms.

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.*

The NAWCWPNS China Lake database does not identify appropriations by the functional areas used in this call. Obtaining the requested data was, therefore a three step process.
1) A list of all appropriations was obtained from the corporate data base.
2) A group of people knowledgeable of China Lake programs categorized the program elements into those that generated or are expected to generate testing/test support by functional area.
3) Program elements involving Air Vehicle testing/test support and "other" testing/test support were split 10% Air Vehicles, 90% other, based on our collective judgment that this was the average historical split. This split is dependent on the definitions of the functional areas in Data Call #13. (These definitions differ from those in Data Call #12.)

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NAWCWPNS China Lake Forecasted Workload

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
AIR VEHICLE	ARM	A	0					
	ARM 65805A	A	105					
	RDO 23801A	A	0					
	RDO 33142A	A	147					
	RDO 65805A	A	180	13	22	21	20	20
	ARM	A	0					
	Subtotal		**432**	**13**	**22**	**21**	**20**	**20**
	AFM	AF		-1	0	0	0	0
	AFR	AF	18					
	RDO 27417F	AF	19					
	RDO 61650F	AF	176	20	5	5	5	5
	RDO 62202F	AF	55					
	RDO 63205F	AF		9	0	0	0	0
	RDO 63601F	AF	2					
	RDO 64239F	AF		0	0	0	0	0
	RDO 64270F	AF	12					
	RDO 65000F	AF	475					
	RDO 65708F	AF		0	19	19	19	18
	Subtotal		**757**	**28**	**24**	**24**	**23**	**23**
	APN	N	4,473	5,218	9,913	9,844	9,437	9,182
	MCN	N	2					
	OMN	N	2,055	1,870	2,017	2,003	1,921	1,869
	OPN	N		0	553	549	526	512
	PMC	N		2	0	0	0	0
	RDO 24152N	N	0					
	RDO 25667N	N	4					
	RDO 61152N	N	59					
	RDO 61153N	N	42					
	RDO 62111N	N	339					
	RDO 62122N	N	15					
	RDO 62234N	N	312					
	RDO 62314N	N	12					
	RDO 62936N	N	19					
	RDO 63000N	N	924					
	RDO 63109N	N	90					
	RDO 63200N	N	66					
	RDO 63216N	N	254					
	RDO 63721N	N	0					
	RDO 63792N	N	16					
	RDO 64203N	N	0					

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 64221N	N	300					
	RDO 64258N	N	59					
	RDO 64601N	N	2					
	RDO 64777N	N	0					
	RDO 65000N	N	17					
	RDO 65152N	N	135					
	RDO 65804N	N	55					
	RDO 65853N	N	17					
	RDO 65861N	N	5					
	RDO 78011N	N	0					
	RDT 24134N	N	563					
	RDT 24134N	N		698	3	3	3	3
	RDT 24136N	N	362	981	1,260	1,251	1,199	1,167
	RDT 24571N	N	0	510	321	318	305	297
	RDT 25604N	N	0	41	13	13	13	12
	RDT 25667N	N		44	41	41	39	38
	RDT 62111N	N		1,455	1,296	1,287	1,234	1,201
	RDT 62122N	N		28	25	25	24	23
	RDT 62234N	N		159	79	78	75	73
	RDT 62936N	N		79	0	0	0	0
	RDT 63000N	N		533	638	634	608	591
	RDT 63109N	N	0					
	RDT 63261N	N	230	94	27	26	25	25
	RDT 63262N	N	97	108	154	153	147	143
	RDT 63320N	N	332					
	RDT 64203N	N	330	92	103	103	99	96
	RDT 64213N	N	920	41	55	54	52	51
	RDT 64214N	N	0					
	RDT 64215N	N		12	71	70	67	66
	RDT 64233N	N	606					
	RDT 64258N	N	1,736	2,137	1,444	1,434	1,375	1,337
	RDT 64262N	N	0	138	158	156	150	146
	RDT 64268N	N	36	5	0	0	0	0
	RDT 64270N	N	53					
	RDT 64372N	N	4,957	4	0	0	0	0
	RDT 64502N	N		5	0	0	0	0
	RDT 64603N	N		0	4	1	4	3
	RDT 64618N	N		45	21	21	20	19
	RDT 64727N	N		269	75	74	71	69

0014

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDT 64777N	N		588	363	361	346	336
	RDT 65162N	N	0					
	RDT 65863N	N		0	4	4	4	4
	RDT 65864N	N		3	0	0	0	0
	WPN	N	727	354	809	803	770	749
	Subtotal		**20,218**	**15,511**	**19,447**	**19,311**	**18,513**	**18,013**
	ARM 63217D	O	300					
	BRA	O		5	0	0	0	0
	DBF	O	436					
	DBO	O		136	282	280	269	262
	DOE	O		0	3	3	3	3
	FMC	O	1,307					
	FMS	O		1,057	1,586	1,575	1,510	1,469
	MIS	O	1,077					
	NAS	O		2	2	2	2	2
	NSF	O	15	35	0	0	0	0
	ODO	O		350	1,573	1,562	1,498	1,457
	PVT	O	29					
	RDO	O	50	30	0	0	0	0
	RDO 35141D	O	40					
	RDO 62301E	O	10					
	RDO 62702E	O	0					
	RDO 62715H	O	19	82	84	83	80	78
	RDO 63216C	O	93	143	2,015	2,001	1,918	1,867
	RDO 63217C	O	2					
	RDO 63226E	O		15	0	0	0	0
	RDO 63705D	O	0					
	RDO 63737D	O	1					
	RDO 63739E	O		5	3	3	2	2
	RDO 63756D	O	0					
	RDO 63832D	O		75	98	97	93	91
	RDO 64940D	O	1,739					
	RDO 65131D	O		29	218	217	208	202
	RDO 65132D	O	0					
	RDO 65804D	O		549	448	445	426	415
	RDT	O		93	250	248	238	231
	RDT 35141D	O		113	234	233	223	217
	SPD	O		14	40	40	38	37
	UNKNOWN	O		677	952	945	906	881
	VAR	O	0					
	Subtotal		**5,117**	**3,408**	**7,788**	**7,733**	**7,414**	**7,214**
	Total		**26,523**	**18,960**	**27,281**	**27,090**	**25,971**	**25,269**

0015

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
EC	ARM	A	0	77	37	37	35	34
	RDO 23801A	A	50					
	RDO 33142A	A	659					
	RDO 62104A	A		101	172	171	164	160
	RDO 62303A	A		0	0	0	0	0
	RDO 62782A	A	200	-15	0	0	0	0
	RDO 63313A	A	1,500	203	0	0	0	0
	RDO 64256A	A		0	43	43	41	40
	RDO 64270A	A		0	63	63	60	58
	RDO 65600A	A		71	5	5	5	5
	RDO 65602A	A		199	0	0	0	0
	RDO 65805A	A	72	69	60	60	57	56
	Subtotal		**2,481**	**705**	**381**	**378**	**362**	**353**
	AFO	AF		306	1,004	997	956	930
	AFR	AF	190	49	0	0	0	0
	RDO 21002F	AF		125	0	0	0	0
	RDO 27412F	AF	668	3	0	0	0	0
	RDO 27417F	AF	174	0	179	178	171	166
	RDO 62204F	AF		0	0	0	0	0
	RDO 63601F	AF	8					
	RDO 63743F	AF	1,088	38	0	0	0	0
	RDO 64270F	AF		99	0	0	0	0
	RDO 65807F	AF		1,597	860	854	819	797
	Subtotal		**2,127**	**2,217**	**2,043**	**2,029**	**1,945**	**1,893**
	APN	N	3,764	1,995	8,202	8,145	7,808	7,597
	MCN	N	7					
	OMN	N	880	2,284	2,226	2,210	2,119	2,062
	OPN	N		1,194	1,481	1,471	1,410	1,372
	RDO 11226N	N	25					
	RDO 33901N	N	40					
	RDO 61152N	N	266					
	RDO 61153N	N	188					
	RDO 62111N	N	1,076					
	RDO 62122N	N	68					
	RDO 62234N	N	691					
	RDO 62314N	N	52					
	RDO 62936N	N	86					
	RDO 63000N	N	561					
	RDO 63109N	N	55					

0016

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 63200N	N	297					
	RDO 63303N	N	0					
	RDO 63792N	N	73					
	RDO 64270N	N	658					
	RDO 65000N	N	76					
	RDO 65804N	N	246					
	RDO 65853N	N	75					
	RDO 65861N	N	21					
	RDO 65864N	N	809					
	RDO 78011N	N	0					
	RDT 24571N	N	107	88	44	44	42	41
	RDT 33901N	N		209	106	105	101	98
	RDT 62122N	N		124	113	113	108	105
	RDT 62234N	N		587	355	352	338	329
	RDT 62270N	N		12	0	0	0	0
	RDT 62936N	N		39	0	0	0	0
	RDT 63000N	N		6	27	26	25	25
	RDT 63217N	N		3,354	3,976	3,948	3,785	3,683
	RDT 63262N	N	263					
	RDT 63303N	N	454					
	RDT 63320N	N	1,493					
	RDT 63792N	N		0	9	9	8	8
	RDT 64208N	N		1,891	1,608	1,597	1,531	1,490
	RDT 64255N	N	12,140	5,811	3,391	3,367	3,228	3,141
	RDT 64256N	N		1,917	10,644	10,570	10,133	9,860
	RDT 64258N	N		41	0	0	0	0
	RDT 64270N	N	7,404	7,679	12,637	12,548	12,030	11,705
	RDT 64502N	N		23	0	0	0	0
	RDT 65864N	N		65	0	0	0	0
	Subtotal		**31,873**	**27,318**	**44,818**	**44,505**	**42,666**	**41,514**
	AFO	O		193	31	31	30	29
	DBF	O	3,454					
	DBO	O		2	0	0	0	0
	DOE	O		0	15	15	14	14
	FMC	O	0					
	FMS	O		773	104	103	99	96
	MIS	O	76					
	NAS	O		0	6	6	6	5
	ODO	O		1,382	5,192	5,156	4,943	4,810

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 63200N	N	297					
	RDO 63303N	N	0					
	RDO 63792N	N	73					
	RDO 64270N	N	658					
	RDO 65000N	N	76					
	RDO 65804N	N	246					
	RDO 65853N	N	75					
	RDO 65861N	N	21					
	RDO 65864N	N	809					
	RDO 78011N	N	0					
	RDT 24571N	N	107	88	44	44	42	41
	RDT 33901N	N		209	106	105	101	98
	RDT 62122N	N		124	113	113	108	105
	RDT 62234N	N		587	355	352	338	329
	RDT 62270N	N		12	0	0	0	0
	RDT 62936N	N		39	0	0	0	0
	RDT 63000N	N		6	27	26	25	25
	RDT 63217N	N		3,354	3,976	3,948	3,785	3,683
	RDT 63262N	N	263					
	RDT 63303N	N	454					
	RDT 63320N	N	1,493					
	RDT 63792N	N		0	9	9	8	8
	RDT 64208N	N		1,891	1,608	1,597	1,531	1,490
	RDT 64255N	N	12,140	5,811	3,391	3,367	3,228	3,141
	RDT 64256N	N		1,917	10,644	10,570	10,133	9,860
	RDT 64258N	N		41	0	0	0	0
	RDT 64270N	N	7,404	7,679	12,637	12,548	12,030	11,705
	RDT 64502N	N		23	0	0	0	0
	RDT 65864N	N		65	0	0	0	0
	Subtotal		**31,873**	**27,318**	**44,818**	**44,505**	**42,666**	**41,514**
	AFO	O		193	31	31	30	29
	DBF	O	3,454					
	DBO	O		2	0	0	0	0
	DOE	O		0	15	15	14	14
	FMC	O	0					
	FMS	O		773	104	103	99	96
	MIS	O	76					
	NAS	O		0	6	6	6	5
	ODO	O		1,248	4,908	4,874	4,673	4,547

0017

NAWCWPNS China Lake Forecasted Workload (Contd)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	OGV	O		1	0	0	0	0
	OSD	O		14	0	0	0	0
	PVT	O	164					
	RDO	O	914	264	0	0	0	0
	RDO 31011G	O	26					
	RDO 60504D	O	260					
	RDO 62301E	O	46					
	RDO 62702E	O	0					
	RDO 63216C	O	664	819	581	577	553	538
	RDO 63217C	O	7					
	RDO 63705D	O	0					
	RDO 63737D	O	5	42	217	216	207	201
	RDO 63739E	O		20	12	12	11	11
	RDO 63756D	O	0					
	RDO 63832D	O		339	440	437	419	407
	RDO 64940D	O		6,832	5,106	5,070	4,861	4,730
	RDO 65131D	O		35	0	0	0	0
	RDO 65804D	O	750	379	39	39	37	36
	RDT	O		471	0	0	0	0
	RDT 35141D	O		8	32	32	30	30
	SPD	O		192	175	174	167	162
	UNKNOWN	O		515	2,100	2,085	1,999	1,945
	Subtotal		**6,366**	**12,280**	**14,049**	**13,951**	**13,375**	**13,014**
	Total		**42,848**	**42,521**	**61,291**	**60,863**	**58,349**	**56,774**
OTHER	RDO 62786A	A		41	0	0	0	0
	RDO 63001A	A	0	20	0	0	0	0
	RDO 65601A	A		191	0	0	0	0
	Subtotal		**0**	**252**	**0**	**0**	**0**	**0**
	AFO	AF		315	361	358	343	334
	RDO 27129F	AF	0	324	518	514	493	479
	RDO 63205F	AF		30	19	19	18	18
	RDO 63742F	AF	62					
	RDO 64601F	AF	106					
	RDO 64706F	AF	0	4	1	1	1	1
	Subtotal		**168**	**673**	**898**	**892**	**855**	**832**
	APN	N		60	633	629	603	587
	ARM	N		9	637	632	606	590
	OMM	N		53	35	35	34	33

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	OGV	O		1	0	0	0	0
	OSD	O		14	0	0	0	0
	PVT	O	164					
	RDO	O	914	264	0	0	0	0
	RDO 31011G	O	26					
	RDO 60504D	O	260					
	RDO 62301E	O	46					
	RDO 62702E	O	0					
	RDO 63216C	O	664	819	581	577	553	538
	RDO 63217C	O	7					
	RDO 63705D	O	0					
	RDO 63737D	O	5	42	217	216	207	201
	RDO 63739E	O		20	12	12	11	11
	RDO 63756D	O	0					
	RDO 63832D	O		339	440	437	419	407
	RDO 64940D	O		6,832	5,106	5,070	4,861	4,730
	RDO 65131D	O		35	0	0	0	0
	RDO 65804D	O	750	379	39	39	37	36
	RDT	O		471	0	0	0	0
	RDT 35141D	O		8	32	32	30	30
	SPD	O		192	175	174	167	162
	UNKNOWN	O		515	2,100	2,085	1,999	1,945
	Subtotal		**6,366**	**12,147**	**13,765**	**13,669**	**13,105**	**12,751**
	Total		**42,848**	**42,387**	**61,008**	**60,581**	**58,078**	**56,510**
OTHER	RDO 62786A	A		41	0	0	0	0
	RDO 63001A	A	0	20	0	0	0	0
	RDO 65601A	A		191	0	0	0	0
	Subtotal		**0**	**252**	**0**	**0**	**0**	**0**
	AFO	AF		315	361	358	343	334
	RDO 27129F	AF	0	324	518	514	493	479
	RDO 63205F	AF		30	19	19	18	18
	RDO 63742F	AF	62					
	RDO 64601F	AF	106					
	RDO 64706F	AF	0	4	1	1	1	1
	Subtotal		**168**	**673**	**898**	**892**	**855**	**832**
	APN	N		60	633	629	603	587
	ARM	N		9	637	632	606	590
	OMM	N		53	35	35	34	33

0018

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	OMN	N		1,974	1,615	1,604	1,538	1,496
	OPN	N		109	209	208	199	194
	RDO 26623M	N	440	55	0	0	0	0
	RDT 25633N	N		42	239	237	227	221
	RDT 33901N	N	541	248	88	88	84	82
	RDT 62234N	N	796	1,304	443	440	421	410
	RDT 63216N	N	0	438	398	395	379	368
	RDT 63721N	N		113	0	0	0	0
	RDT 63792N	N		275	0	0	0	0
	RDT 64575N	N	0	1,015	389	386	370	360
	RDO 65156M	N	0					
	RDT 63792N	N	2,450					
	SCN	N	0	4	1	1	1	1
	WPN	N		65	15	15	14	14
	Subtotal		**4,227**	**5,764**	**4,701**	**4,668**	**4,475**	**4,354**
	BRA	O		21	0	0	0	0
	DBF	O	19					
	DBO	O		605	1,298	1,288	1,235	1,202
	FAC	O	0					
	MIS	O	134					
	NAS	O		202	210	208	200	194
	NSF	O	0	420	197	196	188	182
	ODO	O		209	894	888	851	828
	OGV	O		-6	0	0	0	0
	PVT	O	386					
	RDO 61101E	O		0	204	203	194	189
	RDO 62712E	O		49	10	10	10	10
	RDO 63225D	O		10	0	0	0	0
	RDO 63756D	O		63	10	10	10	10
	RDO 65136D	O		331	164	163	156	152
	RDT	O		120	0	0	0	0
	SPD	O		706	1,021	1,013	972	945
	UNKNOWN	O		0	154	153	146	142
	Subtotal		**539**	**2,730**	**4,161**	**4,132**	**3,961**	**3,854**
	Total		**4,934**	**9,419**	**9,760**	**9,691**	**9,291**	**9,040**
ARMAMENT	ARM	A	1,801	736	181	180	172	168
	ASF	A		157	211	210	201	196
	RDO 23801A	A	0					

0019

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 23802A	A	20					
	RDO 27316A	A	3,662					
	RDO 33142A	A	659	23	0	0	0	0
	RDO 62104A	A		42	0	0	0	0
	RDO 62303A	A	25	41	2	2	2	2
	RDO 62618A	A		156	43	43	41	40
	RDO 62624A	A		30	4	4	4	4
	RDO 62625A	A	154					
	RDO 62709A	A	0	16	543	540	517	504
	RDO 62784A	A	50	52	109	108	103	101
	RDO 63215A	A	117					
	RDO 63645A	A	100	199	0	0	0	0
	RDO 63772A	A		17	69	68	66	64
	RDO 64270A	A	78					
	RDO 64768A	A	60	11	14	14	13	13
	RDO 65601A	A	191	66	15	15	14	14
	RDO 65605A	A	399	381	78	77	74	72
	RDO 65805A	A	52	390	262	261	250	243
	Subtotal		**7,368**	**2,317**	**1,530**	**1,520**	**1,457**	**1,418**
	AFM	AF		71	0	0	0	0
	AFO	AF		6,456	6,036	5,994	5,746	5,591
	AFR	AF	13,258	87	0	0	0	0
	RDO 27134F	AF		0	689	684	656	638
	RDO 27162F	AF		463	949	942	903	879
	RDO 28021F	AF	13					
	RDO 61650F	AF	1,582	183	44	44	42	41
	RDO 62202F	AF	495					
	RDO 62302F	AF	110					
	RDO 62602F	AF	210	41	156	155	148	144
	RDO 63112F	AF		16	0	0	0	0
	RDO 63202F	AF	100					
	RDO 63216F	AF	27	50	0	0	0	0
	RDO 63218F	AF	180					
	RDO 63269F	AF	118	36	71	70	67	65
	RDO 63327F	AF	52					
	RDO 63601F	AF	8	57	0	0	0	0
	RDO 63743F	AF	40	243	0	0	0	0
	RDO 64239F	AF	371	794	1,041	1,034	991	964
	RDO 64244F	AF	678					

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 23802A	A	20					
	RDO 27316A	A	3,662					
	RDO 33142A	A	659	23	0	0	0	0
	RDO 62104A	A		42	0	0	0	0
	RDO 62303A	A	25	41	2	2	2	2
	RDO 62618A	A		156	43	43	41	40
	RDO 62624A	A		30	4	4	4	4
	RDO 62625A	A	154					
	RDO 62709A	A	0	16	543	540	517	504
	RDO 62784A	A	50	52	109	108	103	101
	RDO 63215A	A	117					
	RDO 63645A	A	100	199	0	0	0	0
	RDO 63772A	A		17	69	68	66	64
	RDO 64270A	A	78					
	RDO 64768A	A	60	11	14	14	13	13
	RDO 65601A	A	191	66	15	15	14	14
	RDO 65605A	A	399					
	RDO 65805A	A	52	787	340	338	324	315
	Subtotal		**7,368**	**2,333**	**1,531**	**1,520**	**1,457**	**1,418**
	AFM	AF		71	0	0	0	0
	AFO	AF		6,456	6,036	5,994	5,746	5,591
	AFR	AF	13,258	87	0	0	0	0
	RDO 27134F	AF		0	689	684	656	638
	RDO 27162F	AF		463	949	942	903	879
	RDO 28021F	AF	13					
	RDO 61650F	AF	1,582	365	88	88	84	82
	RDO 62202F	AF	495					
	RDO 62302F	AF	110					
	RDO 62602F	AF	210	41	156	155	148	144
	RDO 63112F	AF		16	0	0	0	0
	RDO 63202F	AF	100					
	RDO 63216F	AF	27	50	0	0	0	0
	RDO 63218F	AF	180					
	RDO 63269F	AF	118	36	71	70	67	65
	RDO 63327F	AF	52					
	RDO 63601F	AF	8	57	0	0	0	0
	RDO 63743F	AF	40	243	0	0	0	0
	RDO 64239F	AF	371	794	1,041	1,034	991	964
	RDO 64244F	AF	678					

0020

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 64270F	AF	112	516	182	180	173	168
	RDO 64618F	AF		289	1,495	1,484	1,423	1,385
	RDO 64727F	AF		55	1,498	1,488	1,426	1,388
	RDO 64735F	AF	49	384	2,425	2,408	2,308	2,246
	RDO 64755F	AF	144					
	RDO 65502F	AF		314	13	13	12	12
	RDO 65708F	AF	0	697	175	174	167	162
	RDO 65712F	AF	28					
	RDO 65807F	AF	472	856	22	22	20	20
	Subtotal		**18,047**	**11,608**	**14,795**	**14,692**	**14,084**	**13,704**
	AFM	N		918	529	525	504	490
	APN	N	36,564	37,308	72,137	71,632	68,673	66,819
	MCN	N	7					
	OMN	N	1,884	19,614	26,321	26,137	25,057	24,381
	OPN	N	842	1,160	792	787	754	734
	PMC	N		42	47	47	45	43
	RDO	N		0	19	19	18	18
	RDO 24152N	N	0					
	RDO 25658N	N	770					
	RDO 25667N	N	36					
	RDO 26623M	N	0	321	61	61	58	57
	RDO 61152N	N	854					
	RDO 61153N	N	944					
	RDO 61154N	N	25					
	RDO 62000N	N	311					
	RDO 62111N	N	8,957	31	0	0	0	0
	RDO 62122N	N	68					
	RDO 62131M	N	419	105	0	0	0	0
	RDO 62234N	N	1,087					
	RDO 62314N	N	193					
	RDO 62936N	N	215					
	RDO 63000N	N	8,316					
	RDO 63200N	N	297					
	RDO 63221N	N	2,563					
	RDO 63262N	N	15					
	RDO 63514N	N	178					
	RDO 63609N	N	11,154					
	RDO 63635M	N	82					
	RDO 63701N	N	0					

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 64270F	AF	112	516	182	180	173	168
	RDO 64618F	AF		289	1,495	1,484	1,423	1,385
	RDO 64727F	AF		55	1,498	1,488	1,426	1,388
	RDO 64735F	AF	49	384	2,425	2,408	2,308	2,246
	RDO 64755F	AF	144					
	RDO 65502F	AF		314	13	13	12	12
	RDO 65708F	AF	0	697	175	174	167	162
	RDO 65712F	AF	28					
	RDO 65807F	AF	472	802	9	9	8	8
	Subtotal		**18,047**	**11,736**	**14,826**	**14,722**	**14,114**	**13,733**
	AFM	N		918	529	525	504	490
	APN	N	36,564	37,308	72,137	71,632	68,673	66,819
	MCN	N	7					
	OMN	N	1,884	19,614	26,321	26,137	25,057	24,381
	OPN	N	842	1,160	792	787	754	734
	PMC	N		42	47	47	45	43
	RDO	N		0	19	19	18	18
	RDO 24152N	N	0					
	RDO 25658N	N	770					
	RDO 25667N	N	36					
	RDO 26623M	N	0	321	61	61	58	57
	RDO 61152N	N	854					
	RDO 61153N	N	944					
	RDO 61154N	N	25					
	RDO 62000N	N	311					
	RDO 62111N	N	8,957	31	0	0	0	0
	RDO 62122N	N	68					
	RDO 62131M	N	419	105	0	0	0	0
	RDO 62234N	N	1,087					
	RDO 62314N	N	193					
	RDO 62936N	N	215					
	RDO 63000N	N	8,316					
	RDO 63200N	N	297					
	RDO 63221N	N	2,563					
	RDO 63262N	N	15					
	RDO 63514N	N	178					
	RDO 63609N	N	11,154					
	RDO 63635M	N	82					
	RDO 63701N	N	0					

0021

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 63712N	N	20					
	RDO 63721N	N	0					
	RDO 63792N	N	267					
	RDO 63795N	N	72					
	RDO 64258N	N	825					
	RDO 64262N	N	18					
	RDO 64270N	N	400					
	RDO 64314N	N	144					
	RDO 64358N	N	480					
	RDO 64361N	N	0					
	RDO 64363N	N	1,270					
	RDO 64366N	N	1,976					
	RDO 64369N	N	2,122					
	RDO 64601N	N	22					
	RDO 64602N	N	82					
	RDO 64609N	N	29					
	RDO 64777N	N	4,185					
	RDO 65000N	N	76					
	RDO 65804N	N	246					
	RDO 65853N	N	75					
	RDO 65861N	N	21					
	RDO 65864N	N	0					
	RDO 65865N	N	0					
	RDO 65866N	N	39					
	RDO 78011N	N	0					
	RDT 11226N	N		0	9	9	8	8
	RDT 24134N	N	5,065	6,278	30	30	29	28
	RDT 24136N	N	3,256	8,828	11,340	11,260	10,795	10,504
	RDT 24229N	N	1,626	1,714	2,280	2,264	2,170	2,111
	RDT 24571N	N	1,632	1,682	1,199	1,191	1,141	1,111
	RDT 25604N	N	0	907	1,259	1,250	1,199	1,166
	RDT 25667N	N		399	370	367	352	342
	RDT 61152N	N		1,410	1,332	1,323	1,268	1,234
	RDT 61153N	N		1,612	2,239	2,223	2,131	2,074
	RDT 62111N	N		14,831	12,596	12,508	11,991	11,668
	RDT 62121N	N		277	945	939	900	876
	RDT 62122N	N		767	113	113	108	105
	RDT 62233N	N		439	239	237	227	221
	RDT 62234N	N		2,334	1,582	1,571	1,506	1,465

0022

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDT 62314N	N		851	420	417	400	389
	RDT 62936N	N		657	258	256	246	239
	RDT 63000N	N		4,795	5,744	5,703	5,468	5,320
	RDT 63013N	N		0	106	105	101	98
	RDT 63216N	N	500	3,449	2,309	2,293	2,198	2,139
	RDT 63238N	N		25	265	263	252	246
	RDT 63254N	N		6	0	0	0	0
	RDT 63261N	N	2,066	848	239	237	227	221
	RDT 63262N	N	607	973	1,388	1,378	1,321	1,285
	RDT 63270N	N		34	0	0	0	0
	RDT 63318N	N		424	361	359	344	335
	RDT 63320N	N	4,272	2,313	0	0	0	0
	RDT 63321N	N	153					
	RDT 63514N	N		63	159	158	151	147
	RDT 63555N	N		746	1,312	1,303	1,249	1,215
	RDT 63609N	N		21,235	11,960	11,876	11,386	11,078
	RDT 63634N	N		0	150	149	143	139
	RDT 63717N	N		0	21	21	20	20
	RDT 63721N	N		59	44	44	42	41
	RDT 63755N	N		575	528	525	503	490
	RDT 63763N	N		578	710	705	676	658
	RDT 63792N	N	0	4,088	5,760	5,720	5,484	5,336
	RDT 63795N	N		112	290	288	276	269
	RDT 64214N	N	0					
	RDT 64221N	N		69	31	31	29	29
	RDT 64258N	N		413	88	88	84	82
	RDT 64262N	N		1,240	1,418	1,408	1,350	1,313
	RDT 64264N	N		670	313	311	298	290
	RDT 64268N	N		43	0	0	0	0
	RDT 64270N	N		0	4	4	3	3
	RDT 64213N	N		367	492	489	469	456
	RDT 64233N	N	5,118					
	RDT 64258N	N	321					
	RDT 64268N	N	324					
	RDT 64270N	N	473					
	RDT 64314N	N	1,275	1,129	1,433	1,423	1,364	1,328
	RDT 64361N	N		0	152	151	145	141
	RDT 64363N	N		6,127	3,700	3,675	3,523	3,428
	RDT 64366N	N		3,998	3,495	3,471	3,328	3,238

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDT 64372N	N		40	0	0	0	0
	RDT 64502N	N		23	0	0	0	0
	RDT 64518N	N		124	110	110	105	102
	RDT 64524N	N		0	13	13	13	12
	RDT 64562N	N		0	152	151	145	141
	RDT 64602N	N		505	53	53	50	49
	RDT 64603N	N	438	3,168	2,926	2,906	2,786	2,710
	RDT 64609N	N	9,770					
	RDT 64618N	N		9,046	9,067	9,003	8,631	8,398
	RDT 64727N	N	28	17,462	15,948	15,836	15,182	14,772
	RDT 64755N	N		0	2,614	2,596	2,489	2,422
	RDT 64777N	N		5,289	3,268	3,245	3,111	3,027
	RDT 65155N	N		10	4	4	4	4
	RDT 65162N	N	0					
	RDT 65863N	N		5,030	4,209	4,180	4,007	3,899
	RDT 78011N	N		340	297	295	283	275
	SCN	N	0	34	124	124	119	115
	SEA	N	5,995					
	SEA 63795N	N	23					
	WPN	N	47,127	67,323	62,878	62,437	59,859	58,242
	Subtotal		**178,217**	**265,258**	**280,253**	**278,290**	**266,797**	**259,593**
	DBF	O	8,865					
	DBO	O		1,088	838	832	798	776
	DOE	O		11	41	41	39	38
	FMA	O	0					
	FMC	O	16,833					
	FMS	O		15,262	20,666	20,521	19,674	19,142
	MCO	O		4	0	0	0	0
	MIS	O	7,649					
	NAS	O		83	77	76	73	71
	NSF	O	135	419	0	0	0	0
	ODO	O		8,036	3,365	3,342	3,204	3,117
	OGV	O		3,037	2,388	2,371	2,273	2,212
	OSD	O		5	429	426	408	397
	PVT	O	221					
	RDO	O	225	705	258	256	245	239
	RDO 35141D	O	360					
	RDO 60504D	O	51					
	RDO 61101E	O		436	483	480	460	448
	RDO 62301E	O	46					

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 62315C	O		0	189	188	180	175
	RDO 62702E	O	0					
	RDO 62712E	O	0	286	47	47	45	44
	RDO 62715H	O	263	802	1,230	1,221	1,171	1,139
	RDO 632116	O		0	233	231	221	215
	RDO 63215C	O	5,646	8,488	531	528	506	492
	RDO 63216C	O	1,579	5,514	22,486	22,329	21,407	20,829
	RDO 63216D	O	0	260	258	257	246	239
	RDO 63217C	O	97	419	103	102	98	95
	RDO 63217D	O	50					
	RDO 63218C	O	576	204	86	86	82	80
	RDO 63226E	O		0	20	20	19	18
	RDO 63228D	O	0					
	RDO 63705D	O	0					
	RDO 63715D	O	5,005	20,242	16,207	16,093	15,428	15,012
	RDO 63716C	O	0					
	RDO 63716D	O		0	86	86	82	80
	RDO 63737D	O	2,782	316	0	0	0	0
	RDO 63739E	O	0	20	12	12	11	11
	RDO 63741D	O	40					
	RDO 63756D	O	0					
	RDO 63790D	O		0	22	21	20	20
	RDO 63832D	O		339	440	437	419	407
	RDO 64080D	O		2	9	9	8	8
	RDO 64702D	O	408					
	RDO 64704D	O	592	266	0	0	0	0
	RDO 64940D	O		0	142	141	135	132
	RDO 65131D	O		366	2,142	2,127	2,039	1,984
	RDO 65132D	O	0					
	RDO 65804D	O	0	5,039	4,075	4,047	3,879	3,775
	RDT	O		12,406	7,523	7,470	7,162	6,969
	RDT 35141D	O		1,015	2,109	2,094	2,008	1,953
	RDT 63715D	O	16,373					
	SPD	O		186	435	432	414	403
	UNKNOWN	O		6,761	9,163	9,099	8,723	8,488
	VAR	O	125					
	Subtotal		**67,920**	**92,017**	**96,091**	**95,418**	**91,477**	**89,008**
	Total		**271,552**	**371,200**	**392,669**	**389,921**	**373,815**	**363,723**
	TOTAL		**345,856**	**442,099**	**491,001**	**487,564**	**467,425**	**454,806**

0025 A

NAWCWPNS China Lake Forecasted Workload (Contd.)

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
	RDO 62315C	O		0	189	188	180	175
	RDO 62702E	O	0					
	RDO 62712E	O	0	286	47	47	45	44
	RDO 62715H	O	263	802	1,230	1,221	1,171	1,139
	RDO 632116	O		0	233	231	221	215
	RDO 63215C	O	5,646	8,488	531	528	506	492
	RDO 63216C	O	1,579	5,514	22,486	22,329	21,407	20,829
	RDO 63216D	O	0	260	258	257	246	239
	RDO 63217C	O	97	419	103	102	98	95
	RDO 63217D	O	50					
	RDO 63218C	O	576	204	86	86	82	80
	RDO 63226E	O		0	20	20	19	18
	RDO 63228D	O	0					
	RDO 63705D	O	0					
	RDO 63715D	O	5,005	20,242	16,207	16,093	15,428	15,012
	RDO 63716C	O	0					
	RDO 63716D	O		0	86	86	82	80
	RDO 63737D	O	2,782	316	0	0	0	0
	RDO 63739E	O	0	20	12	12	11	11
	RDO 63741D	O	40					
	RDO 63756D	O	0					
	RDO 63790D	O		0	22	21	20	20
	RDO 63832D	O		339	440	437	419	407
	RDO 64080D	O		2	9	9	8	8
	RDO 64702D	O	408					
	RDO 64704D	O	592	266	0	0	0	0
	RDO 64940D	O		0	142	141	135	132
	RDO 65131D	O		366	2,142	2,127	2,039	1,984
	RDO 65132D	O	0					
	RDO 65804D	O	0	5,039	4,075	4,047	3,879	3,775
	RDT	O		12,406	7,523	7,470	7,162	6,969
	RDT 35141D	O		1,015	2,109	2,094	2,008	1,953
	RDT 63715D	O	16,373					
	SPD	O		186	435	432	414	403
	UNKNOWN	O		6,761	9,163	9,099	8,723	8,488
	VAR	O	125					
	Subtotal		**67,920**	**92,017**	**96,091**	**95,418**	**91,477**	**89,008**
	Total		**271,552**	**371,344**	**392,700**	**389,951**	**373,845**	**363,752**
	TOTAL		**345,856**	**442,110**	**490,748**	**487,312**	**467,185**	**454,572**

0025

NAWCWPNS White Sands Forecasted Workload

CAT	PE	APPN	FY92 $'S (K)	FY93 $'S (K)	FY94 $'S (K)	FY95 $'S (K)	FY96 $'S (K)	FY97 $'S (K)
ARMAMENT	ASF	A	3					
	RDT 6.2	A	769	300				
	RDT 6.3A	A	102					
	RDT 6.3B	A	2					
	RDT 6.5	A	332	838	1,787	1,060	105	109
	Subtotal		**1,208**	**1,138**	**1,787**	**1,060**	**105**	**109**
	RDT 6.2	AF	0					
	RDT 6.3B	AF			53			
	Subtotal		**0**	**0**	**53**	**0**	**0**	**0**
	APN	N		3	4	5	10	10
	NATO	N			101	100	116	129
	OMN	N	564	144	202	228	484	490
	OPN	N	3	8	151	150	174	193
	RDT 6.2	N		200	589	327		
	RDT 6.3B	N	2,161	4,447	4,015	3,986	4,636	5,138
	RDT 6.4	N	100	2,091	3,436	2,461	1,556	1,700
	SCN	N	3	62	73	74	101	109
	WPN	N	3,363	5,114	4,617	4,630	5,577	6,137
	Subtotal		**6,195**	**12,069**	**13,188**	**11,961**	**12,654**	**13,906**
	FMS	O	11					
	ODO	O	1,052	460	2	2	2	2
	RDO 6.3A	O	3,275	2,372				
	RDO 6.3B	O	692	2,372	1,676	1,646	1,402	630
	RDO 6.4	O	132					
	RDO 6.7	O	9	50				
	RDT 6.2	O		545				
	SPD	O			140	149	149	9
	Subtotal		**5,170**	**5,799**	**1,818**	**1,797**	**1,553**	**641**
	Total		**12,573**	**19,005**	**16,847**	**14,819**	**14,311**	**14,655**
OTHER	NASA	O	2,224	3,299	3,350	3,280	2,996	3,012
	EER	O	286	170				
	Subtotal		**2,510**	**3,469**	**3,350**	**3,280**	**2,996**	**3,012**
	Total		**2,510**	**3,469**	**3,350**	**3,280**	**2,996**	**3,012**
	GRAND TOTAL		**15,083**	**22,475**	**20,197**	**18,099**	**17,307**	**17,667**

-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 and FY93 test workyears were computed from data on the Historical Workload forms and the General Information forms using the following equation:

Workload = (DL/1750) x TE

Where

Workload=Test workload for the facility/capability in workyears
DL=Direct Labor hours from the Historical Workload table for the given facility
TE=% of T&E use (in decimals) from the General Information form for the given facility

Workload - FY92 (Workyears)

Pac./Cap.	Air Vehicles	Armament/ Weapons	Electronic Combat	Other Tests	Other (1)
Digital Modeling & Simulation					
C27 Explosive and Ordnance Modeling	0.0	0.2	0.0	0.0	1.1
C291 Air Weapon Digital Model & Sim	0.0	3.4	0.0	0.0	13.7
Strike Simulation & Modeling	0.5	7.3	0.0	0.0	15.8
Strike Software/Simulation Facility	0.0	2.0	0.0	0.0	9.6
Sys Modeling & Signal Processing Fac	0.0	3.8	0.0	0.0	11.3
Wep & Tactics Analy Ctr (WEPTAC)	0.3	6.3	0.3	0.0	26.1
Subtotal	**0.8**	**22.9**	**0.3**	**0.0**	**77.5**
Measurement Facilities					
Aeroheat Test Facility	0.0	1.3	0.0	0.0	0.0
Air Breathing Propulsion Lab	0.0	0.5	0.0	0.0	2.1
Anti-Rad Missile Seeker Test Complex	0.0	1.8	0.0	0.0	2.7
Cactus Flats Ordnance Test Area	0.0	6.3	0.0	0.0	0.7
Chemical Analysis Research Facility	0.0	1.6	0.0	0.1	7.9
Detonation Physics Lab	0.0	1.2	0.0	0.0	0.8
Dynamic Properties Measure Complex	0.1	0.1	0.0	0.0	0.6
Energetic Materials Properties Lab	0.0	1.5	0.0	0.0	13.5
Environmental Test Complex	3.7	28.7	0.0	3.0	24.4
Foreign Mat Explotation & Balloon Test	0.5	2.3	0.0	0.2	9.2
Guidance Components T&A Complex	0.3	5.5	0.0	0.0	7.7
High Hazard Propulsion Test Facility	0.0	11.6	0.0	0.0	0.0
IR Seeker, GCS DDT&E Complex	1.5	5.5	0.0	0.0	18.5
Junction Ranch Radar Cross Sec Range	4.2	0.1	0.0	2.7	0.0
Materials Eng /Failure Analysis Fac	0.9	10.0	0.0	0.0	7.3
Med Cal Gun & Ammo Ball Test Lab	0.0	0.7	0.0	0.0	0.9
Missile Engagement Sim Arena (MESA)	0.0	2.0	0.0	0.0	8.1
Non-Destructive Ordnance Test Facility	0.0	5.2	0.0	0.0	0.0
Optics & Laser Research Facility	0.1	0.3	0.0	0.7	13.0
Ord & Prop Foreign Mat Exploit Lab	0.0	1.1	0.0	0.0	20.7
Ordnance Test Complex	0.0	21.1	0.0	0.0	0.0
RF Seeker/Guid/Cntrl DDT&E Complex	1.0	4.5	0.0	0.0	26.5
Sensor & Targeting Technology Facility	0.2	2.7	0.0	0.2	21.2

-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 and FY93 test workyears were computed from data on the Historical Workload forms and the General Information forms using the following equation:

Workload = (DL/1750) x TE

Where

Workload=Test workload for the facility/capability in workyears
DL=Direct Labor hours from the Historical Workload table for the given facility
TE=% of T&E use (in decimals) from the General Information form for the given facility

Workload - FY92 (Workyears)

Pac./Cap.	Air Vehicles	Armament/ Weapons	Electronic Combat	Other Tests	Other (1)
Digital Modeling & Simulation					
C27 Explosive and Ordnance Modeling	0.0	0.5	0.0	0.0	1.1
C291 Air Weapon Digital Model & Sim	0.0	3.4	0.0	0.0	13.7
Strike Simulation & Modeling	1.0	16.0	0.0	0.0	34.7
Strike Software/Simulation Facility	0.0	1.0	0.0	0.0	4.9
Sys Modeling & Signal Processing Fac	0.0	3.8	0.0	0.0	11.3
Wep & Tactics Analy Ctr (WEPTAC)	0.0	1.9	0.0	0.0	5.8
Subtotal	**1.0**	**26.6**	**0.0**	**0.0**	**71.5**
Measurement Facilities					
Aeroheat Test Facility	0.0	1.3	0.0	0.0	0.0
Air Breathing Propulsion Lab	0.0	0.6	0.0	0.0	2.5
Anti-Rad Missile Seeker Test Complex	0.0	1.8	0.0	0.0	2.7
Cactus Flats Ordnance Test Area	0.0	6.3	0.0	0.0	0.7
Chemical Analysis Research Facility	0.0	1.6	0.0	0.1	7.9
Detonation Physics Lab	0.0	1.8	0.0	0.0	1.2
Dynamic Properties Measure Complex	0.1	0.1	0.0	0.0	0.6
Energetic Materials Properties Lab	0.0	1.2	0.0	0.0	10.8
Environmental Test Complex	2.2	16.9	0.0	1.8	14.4
Foreign Mat Explotation & Balloon Test	5.3	16.0	0.0	5.3	80.2
Guidance Components T&A Complex	0.3	5.5	0.0	0.0	7.7
High Hazard Propulsion Test Facility	0.0	11.6	0.0	0.0	0.0
IR Seeker, GCS DDT&E Complex	1.5	5.5	0.0	0.0	18.5
Junction Ranch Radar Cross Sec Range	0.0	7.0	0.0	0.0	0.0
Materials Eng /Failure Analysis Fac	0.9	10.0	0.0	0.0	7.3
Med Cal Gun & Ammo Ball Test Lab	0.0	0.7	0.0	0.0	0.9
Missile Engagement Sim Arena (MESA)	0.0	2.0	0.0	0.0	8.1
Non-Destructive Ordnance Test Facility	0.0	5.2	0.0	0.0	0.0
Optics & Laser Research Facility	0.1	0.3	0.0	0.7	13.0
Ord & Prop Foreign Mat Exploit Lab	0.0	1.1	0.0	0.0	20.7
Ordnance Test Complex	0.0	21.1	0.0	0.0	0.0
RF Seeker/Guid/Cntrl DDT&E Complex	0.6	3.3	0.0	0.0	19.5
Sensor & Targeting Technology Facility	0.2	2.7	0.2	0.0	21.2

Workload - FY92 (Workyears) (Contd.)

Pac./Cap.	Air Vehicles	Armament/ Weapons	Electronic Combat	Other Tests	Other (1)
Sled Tracks	2.4	17.7	0.0	0.0	0.0
Strategic Propulsion Test Complex	0.0	6.7	0.0	0.0	0.0
Tactical Propulsion Test Facility	0.0	13.6	0.0	0.0	0.0
VHF Anechoic Chamber	0.0	0.1	0.0	0.0	1.1
Weapons Signal Proc Design Complex	0.0	1.5	0.0	1.5	26.2
Weapons Survivability Lab (WSL)	7.5	0.0	0.0	0.0	29.9
Subtotal	**22.3**	**155.3**	**0.0**	**8.6**	**242.8**
Integration Lab					
Actuator and Power Systems Lab	0.0	1.1	0.0	0.0	20.2
Anti-Rad Missile Integration Complex	0.0	18.6	18.6	0.0	24.8
Armament/Wpns Design, Prototyp & Int	1.7	4.1	0.0	0.8	76.1
Composites Development Lab	0.0	1.0	0.0	0.0	8.6
Data Link Development Lab	1.2	1.9	0.0	0.0	12.4
Electronic Warfare Integration Lab	0.6	0.0	0.0	0.0	5.1
Fuze Development Lab	0.0	5.5	0.0	0.0	63.5
Laser Seeker Integration & Test Facility	0.0	0.0	0.0	0.0	0.0
Missile/Rocket Motor Assembly Facility	0.0	3.5	0.0	0.0	4.2
Ordnance Assembly Facility	0.0	1.7	0.0	0.0	1.4
Telemetry Development Lab	0.0	9.2	0.0	0.0	36.8
TSSAM Mission Planning Facility	0.0	0.0	0.0	0.0	0.0
Warhead/Bomb Assem/Integration Fac	0.0	14.9	0.0	1.7	16.5
Weapons Guidance/Control/Seeker IL	0.5	10.0	0.0	0.0	14.5
WSSF, A-6	1.4	14.6	0.0	0.0	31.0
WSSF, AH-1	0.2	1.8	0.0	0.0	2.2
WSSF, AV-8	1.1	9.0	0.0	0.0	17.9
WSSF, F/A-18	2.1	18.0	0.0	0.0	32.9
Subtotal	**8.8**	**114.8**	**18.6**	**2.5**	**368.2**
Hardware In The Loop					
Mk 45 TDD Engineering Dev HITL Lab	0.0	6.9	0.0	0.0	10.4
Simulation Laboratory - Missile HITL	0.0	2.1	0.0	0.0	8.2
TSSAM Hardware In the Loop	0.8	7.2	0.0	0.0	8.0
Subtotal	**0.8**	**16.2**	**0.0**	**0.0**	**26.6**
Open Air Ranges					
Air/Ground Range	3.5	97.6	2.3	11.5	3.2
Electronic Combat Range	0.5	14.3	29.2	0.0	9.0
Flight Test Capability (2)	0.0	58.7	1.8	0.0	0.0
NAWCWPNS - White Sands	0.0	115.4	0.0	0.0	20.4
Subtotal	**4.0**	**286.0**	**33.3**	**11.5**	**32.6**
FY 92 TOTALS	**36.7**	**595.2**	**52.2**	**22.6**	**747.7**

Workload - FY92 (Workyears) (Contd.)

Pac./Cap.	Air Vehicles	Armament/ Weapons	Electronic Combat	Other Tests	Other
Sled Tracks	1.6	18.5	0.0	0.0	0.0
Strategic Propulsion Test Complex	0.0	6.7	0.0	0.0	0.0
Tactical Propulsion Test Facility	0.0	13.6	0.0	0.0	0.0
VHF Anechoic Chamber	0.0	0.3	0.2	0.1	3.1
Weapons Signal Proc Design Complex	0.0	8.9	0.0	0.0	80.5
Weapons Survivability Lab (WSL)	7.5	0.0	0.0	0.0	29.9
Subtotal	**12.9**	**162.6**	**0.2**	**7.9**	**237.8**
Integration Lab					
Actuator and Power Systems Lab	0.0	1.1	0.0	0.0	20.2
Anti-Rad Missile Integration Complex	0.0	37.2	0.0	0.0	24.8
Armament/Wpns Design, Prototyp & Int	1.7	4.2	0.0	0.8	78.0
Composites Development Lab	0.0	0.2	0.0	0.0	2.2
Data Link Development Lab	1.2	1.9	0.0	0.0	12.4
Electronic Warfare Integration Lab	0.6	0.0	0.0	0.0	0.0
Fuze Development Lab	0.0	5.5	0.0	0.0	63.5
Laser Seeker Integration & Test Facility	0.0	0.0	0.0	0.0	0.0
Missile/Rocket Motor Assembly Facility	0.0	3.5	0.0	0.0	4.2
Ordnance Assembly Facility	0.0	1.7	0.0	0.0	1.4
Telemetry Development Lab	0.0	9.2	0.0	0.0	36.8
TSSAM Mission Planning Facility	0.0	0.0	0.0	0.0	0.0
Warhead/Bomb Assem/Integration Fac	0.0	14.9	0.0	1.7	16.5
Weapons Guidance/Control/Seeker IL	0.6	11.3	0.0	0.0	16.4
WSSF, A-6	1.6	14.4	0.0	0.0	0.0
WSSF, AH-1	0.2	1.7	0.0	0.0	0.0
WSSF, AV-8	1.0	8.8	0.0	0.0	0.0
WSSF, F/A-18	2.0	18.0	0.0	0.0	0.0
Subtotal	**8.9**	**133.6**	**0.0**	**2.5**	**276.4**
Hardware In The Loop					
Mk 45 TDD Engineering Dev HITL Lab	0.0	6.9	0.0	0.0	10.4
Simulation Laboratory - Missile HITL	0.0	2.1	0.0	0.0	8.2
TSSAM Hardware In the Loop	0.8	7.2	0.0	0.0	8.0
Subtotal	**0.8**	**16.2**	**0.0**	**0.0**	**26.6**
Open Air Ranges					
Air/Ground Range	3.5	97.6	2.3	11.5	3.2
Electronic Combat Range	0.0	0.0	31.8	0.0	(2) 21.2
Flight Test Capability (3)	0.0	55.0	1.7	0.0	0.0
NAWCWPNS - White Sands	0.0	115.4	0.0	0.0	20.4
Subtotal	**3.5**	**268.0**	**35.8**	**11.5**	**44.8**
FY 92 TOTALS	**27.1**	**607.0**	**36.0**	**21.9**	**657.0** = 1,349
	2.0%	45.0%	2.7%	1.6%	48.7%

0028

Workload - FY93 (Workyears)

Pac./Cap.	Air Vehicles	Armament/ Weapons	Electronic Combat	Other Tests	Other (1)
Digital Modeling & Simulation					
C27 Explosive and Ordnance Modeling	0.0	0.2	0.0	0.0	1.5
C291 Air Weapon Digital Model & Sim	0.0	3.5	0.0	0.0	14.2
Strike Simulation & Modeling	0.5	7.8	0.0	0.0	16.9
Strike Software/Simulation Facility	0.0	2.0	0.0	0.0	9.6
Sys Modeling & Signal Processing Fac	0.0	4.1	0.0	0.0	12.4
Wep & Tactics Analy Ctr (WEPTAC)	0.3	5.1	0.3	0.0	21.4
Subtotal	**0.8**	**22.8**	**0.3**	**0.0**	**76.0**
Measurement Facilities					
Aeroheat Test Facility	0.0	1.2	0.0	0.0	0.0
Air Breathing Propulsion Lab	0.0	0.3	0.0	0.0	1.4
Anti-Rad Missile Seeker Test Complex	0.0	1.4	0.0	0.0	2.1
Cactus Flats Ordnance Test Area	0.0	7.2	0.0	0.0	0.8
Chemical Analysis Research Facility	0.0	1.5	0.0	0.1	7.4
Detonation Physics Lab	0.0	1.8	0.0	0.0	1.2
Dynamic Properties Measure Complex	0.2	0.1	0.0	0.0	0.9
Energetic Materials Properties Lab	0.0	1.3	0.0	0.0	11.7
Environmental Test Complex	3.6	27.9	0.0	3.0	23.7
Foreign Mat Explotation & Balloon Test	0.3	1.6	0.0	0.2	6.1
Guidance Components T&A Complex	0.3	5.4	0.0	0.0	7.5
High Hazard Propulsion Test Facility	0.0	10.5	0.0	0.0	0.0
IR Seeker, GCS DDT&E Complex	1.5	5.3	0.0	0.0	20.0
Junction Ranch Radar Cross Sec Range	5.5	0.1	0.0	3.6	0.0
Materials Eng /Failure Analysis Fac	1.0	10.5	0.0	0.0	7.6
Med Cal Gun & Ammo Ball Test Lab	0.0	1.1	0.0	0.0	1.4
Missile Engagement Sim Arena (MESA)	0.0	2.2	0.0	0.0	8.8
Non-Destructive Ordnance Test Facility	0.0	5.2	0.0	0.0	0.0
Optics & Laser Research Facility	0.1	0.3	0.0	0.7	12.6
Ord & Prop Foreign Mat Exploit Lab	0.0	1.0	0.0	0.0	18.8
Ordnance Test Complex	0.0	22.2	0.0	0.0	0.0
RF Seeker/Guid/Cntrl DDT&E Complex	1.0	4.5	0.0	0.0	26.5
Sensor & Targeting Technology Facility	0.3	3.0	0.0	0.3	23.5
Sled Tracks	3.0	22.0	0.0	0.0	0.0
Strategic Propulsion Test Complex	0.0	6.0	0.0	0.0	0.0
Tactical Propulsion Test Facility	0.0	12.3	0.0	0.0	0.0
VHF Anechoic Chamber	0.0	0.3	0.0	0.0	2.0
Weapons Signal Proc Design Complex	0.0	1.4	0.0	1.4	24.8
Weapons Survivability Lab (WSL)	6.6	0.0	0.0	0.0	26.4
Subtotal	**23.2**	**157.4**	**0.0**	**9.3**	**235.3**

Workload - FY93 (Workyears)

Pac./Cap.	Air Vehicles	Armament/ Weapons	Electronic Combat	Other Tests	Other
Digital Modeling & Simulation					
C27 Explosive and Ordnance Modeling	0.0	0.7	0.0	0.0	1.5
C291 Air Weapon Digital Model & Sim	0.0	3.5	0.0	0.0	14.2
Strike Simulation & Modeling	1.1	16.6	0.0	0.0	35.8
Strike Software/Simulation Facility	0.0	0.6	0.0	0.0	2.7
Sys Modeling & Signal Processing Fac	0.0	4.1	0.0	0.0	12.4
Wep & Tactics Analy Ctr (WEPTAC)	0.0	1.9	0.0	0.0	5.8
Subtotal	**1.1**	**27.4**	**0.0**	**0.0**	**72.4**
Measurement Facilities					
Aeroheat Test Facility	0.0	1.2	0.0	0.0	0.0
Air Breathing Propulsion Lab	0.0	0.6	0.0	0.0	2.3
Anti-Rad Missile Seeker Test Complex	0.0	1.4	0.0	0.0	2.1
Cactus Flats Ordnance Test Area	0.0	7.2	0.0	0.0	0.8
Chemical Analysis Research Facility	0.0	1.5	0.0	0.1	7.4
Detonation Physics Lab	0.0	1.8	0.0	0.0	1.2
Dynamic Properties Measure Complex	0.2	0.1	0.0	0.0	0.9
Energetic Materials Properties Lab	0.0	1.2	0.0	0.0	10.8
Environmental Test Complex	2.1	16.4	0.0	1.7	14.0
Foreign Mat Explotation & Balloon Test	5.4	16.3	0.0	5.4	81.3
Guidance Components T&A Complex	0.3	5.4	0.0	0.0	7.5
High Hazard Propulsion Test Facility	0.0	10.5	0.0	0.0	0.0
IR Seeker, GCS DDT&E Complex	1.5	5.3	0.0	0.0	20.0
Junction Ranch Radar Cross Sec Range	0.0	30.1	0.0	0.0	0.0
Materials Eng /Failure Analysis Fac	1.0	10.5	0.0	0.0	7.6
Med Cal Gun & Ammo Ball Test Lab	0.0	1.2	0.0	0.0	1.5
Missile Engagement Sim Arena (MESA)	0.0	2.2	0.0	0.0	8.8
Non-Destructive Ordnance Test Facility	0.0	5.2	0.0	0.0	0.0
Optics & Laser Research Facility	0.1	0.3	0.0	0.7	12.6
Ord & Prop Foreign Mat Exploit Lab	0.0	1.0	0.0	0.0	18.8
Ordnance Test Complex	0.0	22.2	0.0	0.0	0.0
RF Seeker/Guid/Cntrl DDT&E Complex	0.6	3.3	0.0	0.0	19.5
Sensor & Targeting Technology Facility	0.3	3.0	0.3	0.0	23.5
Sled Tracks	2.0	23.0	0.0	0.0	0.0
Strategic Propulsion Test Complex	0.0	6.0	0.0	0.0	0.0
Tactical Propulsion Test Facility	0.0	12.3	0.0	0.0	0.0
VHF Anechoic Chamber	0.0	0.4	0.3	0.1	4.6
Weapons Signal Proc Design Complex	0.0	8.3	0.0	0.0	74.8
Weapons Survivability Lab (WSL)	6.6	0.0	0.0	0.0	26.4
Subtotal	**20.0**	**197.9**	**0.5**	**8.1**	**346.5**

Workload - FY93 (Workyears) (Contd.)

Pac./Cap.	Air Vehicles	Armament/ Weapons	Electronic Combat	Other Tests	Other
Integration Lab					
Actuator and Power Systems Lab	0.0	0.9	0.0	0.0	16.2
Anti-Rad Missile Integration Complex	0.0	21.7	0.0	0.0	14.5
Armament/Wpns Design, Prototyp & Int	1.5	3.7	0.0	0.7	68.4
Composites Development Lab	0.0	0.2	0.0	0.0	2.2
Data Link Development Lab	1.1	1.7	0.0	0.0	11.2
Electronic Warfare Integration Lab	0.6	0.0	0.0	0.0	0.0
Fuze Development Lab	0.0	5.3	0.0	0.0	60.7
Laser Seeker Integration & Test Facility	0.0	0.0	0.0	0.0	0.0
Missile/Rocket Motor Assembly Facility	0.0	3.2	0.0	0.0	3.9
Ordnance Assembly Facility	0.0	1.7	0.0	0.0	1.4
Telemetry Development Lab	0.0	7.0	0.0	0.0	28.2
TSSAM Mission Planning Facility	0.0	0.0	0.0	0.0	0.0
Warhead/Bomb Assem/Integration Fac	0.0	14.0	0.0	1.6	15.5
Weapons Guidance/Control/Seeker IL	0.4	8.9	0.0	0.0	13.0
WSSF, A-6	1.0	8.6	0.0	0.0	0.0
WSSF, AH-1	0.3	2.7	0.0	0.0	0.0
WSSF, AV-8	0.7	6.3	0.0	0.0	0.0
WSSF, F/A-18	1.8	16.4	0.0	0.0	0.0
Subtotal	**7.4**	**102.3**	**0.0**	**2.3**	**235.0**
Hardware In The Loop					
Mk 45 TDD Engineering Dev HITL Lab	0.0	6.9	0.0	0.0	10.4
Simulation Laboratory - Missile HITL	0.0	1.6	0.0	0.0	6.6
TSSAM Hardware In the Loop	0.9	8.2	0.0	0.0	9.1
Subtotal	**0.9**	**16.7**	**0.0**	**0.0**	**26.1**
Open Air Ranges					
Air/Ground Range	3.2	91.3	2.1	8.6	2.1
Electronic Combat Range	0.0	0.0	34.6	0.0	(2) 23.1
Flight Test Capability (3)	0.0	35.9	1.1	0.0	0.0
NAWCWPNS - White Sands	0.0	111.1	0.0	0.0	19.6
Subtotal	**3.2**	**238.3**	**37.9**	**8.6**	**44.8**
FY 93 TOTALS	**32.6**	**582.6**	**38.4**	**18.9**	**724.8** = 1,391.3
	2.3%	41.9%	2.7%	1.4%	51.9%

NOTES:
1. "Other" category denotes all work performed by a facility that is not part of test, i.e. research & development, training, etc.
2. Includes approximately 7 workyears of training.
3. Does not include military labor.

$\frac{1381.8}{2746.3}$ = 50% Rel, TRS

0030

Workload - FY93 (Workyears) (Contd.)

Pac./Cap.	Air Vehicles	Armament/ Weapons	Electronic Combat	Other Tests	Other (1)
Integration Lab					
Actuator and Power Systems Lab	0.0	0.9	0.0	0.0	16.2
Anti-Rad Missile Integration Complex	0.0	10.9	10.9	0.0	14.5
Armament/Wpns Design, Prototyp & Int	1.4	3.6	0.0	0.7	66.5
Composites Development Lab	0.0	1.0	0.0	0.0	8.6
Data Link Development Lab	1.1	1.7	0.0	0.0	11.2
Electronic Warfare Integration Lab	0.6	0.0	0.0	0.0	5.1
Fuze Development Lab	0.0	5.3	0.0	0.0	60.7
Laser Seeker Integration & Test Facility	0.0	0.0	0.0	0.0	0.0
Missile/Rocket Motor Assembly Facility	0.0	3.2	0.0	0.0	3.9
Ordnance Assembly Facility	0.0	1.7	0.0	0.0	1.4
Telemetry Development Lab	0.0	7.0	0.0	0.0	28.2
TSSAM Mission Planning Facility	0.0	0.2	0.0	0.0	0.5
Warhead/Bomb Assem/Integration Fac	0.0	14.0	0.0	1.6	15.5
Weapons Guidance/Control/Seeker IL	0.4	3.0	0.0	0.0	11.6
WSSF, A-6	0.8	8.7	0.0	0.0	18.5
WSSF, AH-1	0.3	2.8	0.0	0.0	3.4
WSSF, AV-8	0.8	6.4	0.0	0.0	12.8
WSSF, F/A-18	1.9	16.3	0.0	0.0	29.8
Subtotal	**7.3**	**91.7**	**10.9**	**2.3**	**308.4**
Hardware In The Loop					
Mk 45 TDD Engineering Dev HITL Lab	0.0	6.9	0.0	0.0	10.4
Simulation Laboratory - Missile HITL	0.0	1.6	0.0	0.0	6.6
TSSAM Hardware In the Loop	0.9	8.2	0.0	0.0	9.1
Subtotal	**0.9**	**16.7**	**0.0**	**0.0**	**26.1**
Open Air Ranges					
Air/Ground Range	3.2	91.3	2.1	6.4	5.4
Electronic Combat Range	0.6	15.6	31.7	0.0	9.8
Flight Test Capability (2)	0.0	38.3	1.2	0.0	0.0
NAWCWPNS - White Sands	0.0	111.1	0.0	0.0	19.6
Subtotal	**3.8**	**256.3**	**34.0**	**6.4**	**34.8**
FY 93 TOTALS	**36.0**	**544.9**	**45.2**	**18.0**	**680.6**

NOTES:
1. "Other" category denotes all work performed by a facility that is not part of test, i.e. research & development, training, etc.
2. Does not include military labor.

Document Separator

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 Appendix A.*

The following interpretations concerning the instructions for calculating Unconstrained Capacity were made:
Column 5, Tests at One Time: Total for the column represents the simultaneous tests (collectively) that can be performed.
Column 6, Workload Per Test per Facility Hour: Direct labor hours (where used) include all the time the test customer would use the facility for the specified test (i.e., preparation (if in or on the facility), actual test conduct, clean up). Units for all entries in this column have to be the same (their products are summed in column 7).

Unconstrained capacity for each of the NAWCWPNS China Lake 60 facilities/capabilities are given in the Determination of Unconstrained Capacity forms in Appendix A, Tabs 1 through 60. The total unconstrained capacity at NAWCWPNS China Lake by T&E Test Facility Category is listed in the following table and summarizes the data in Appendix A.

T&E TEST FACILITY CATEGORY	Unconstrained Capacity (Hours)
Modeling and Simulation	1,797,454
Hardware-in-the-Loop	345,792
Integration Laboratory	4,208,933
Measurement	6,455,181
Open Air	7,496,504
TOTAL	20,303,864

2.2 UNCONSTRAINED CAPACITY

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T&E TEST FACILITY CATEGORY	Unconstrained Capacity (Hours)
Modeling and Simulation	1,807,455
Hardware-in-the-Loop	345,792
Integration Laboratory	4,133,403
Measurement	5,870,459
Open Air	5,304,298
TOTAL	17,461,407

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

No. From an installation point-of-view, China Lake has great potential for expansion. Approximately 300,000 square feet of excess laboratory and hangar space is currently available; adequate utility systems and roads are already in place, in land areas contiguous to the present industrial plant, to permit expansion under favorable cost conditions; and energy self sufficiency is being pursued, with geothermal development on the Station already contributing substantially to savings in electrical utility costs. Our relative remoteness, with the resulting freedom from encroachment and environmental problems, also contributes to our ability to increase workload—especially in those areas requiring large hazardous footprints and isolation.

Answers to 2.2.B for each of the NAWCWPNS China Lake 60 facilities/capabilities are given in the Determination of Unconstrained Capacity forms in Appendix A, Tabs 1 through 60.

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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.*

One facility, the Strike Software/Simulation Facility, has a wartime role defined in The Electronic Warfare Reprogrammable Laboratories (EWRL) Instruction 3430.23. The remaining 59 T&E facilities do not have explicitly defined roles; however, NAWCWPNS China Lake does have a mobilization plan defining our responsibilities during wartime/contingency situations.

The most recent civilian mobilization plan for China Lake was prepared in September 1991 as a result of Exercise Proud Eagle. Under this plan, NAWCWPNS China Lake would continue to support the functional areas of our mission. China Lake would accelerate completion and Fleet introduction of technology that is already under development, particularly those projects that have completed Milestone II. China Lake would also increase its involvement in the development of integrated logistics support (ILS) requirements. There would also be an increase of in-house ILS documentation and ILS functional performance that would include interim spares procurement and management, initial and continued training for selected systems, and the conversion of resident industrial facilities to perform some levels of maintenance repair for damaged Fleet hardware. In addition, there would be an increase in technological solutions that are "on the shelf" but that have not been purchased or deployed due to peacetime priorities.

Quick reaction technical response capabilities from the recent Desert Shield/Storm experience illustrate the support provided under mobilization conditions. The High-Speed Antiradiation Mission (HARM) responds to radar emissions from targets such as surface-to-air missile sites. Its seeker responds to target signals (threat files) that had to be rapidly modified and tested to accommodate targets faced in Iraq. By using an anechoic chamber at China Lake, the Multiple Agile Radar Threat Simulator (MARTS), and conducting flight tests over the China Lake ranges with geo-tailored software, actual flight conditions were replicated against simulated threats, and the results were rapidly introduced to Fleet squadrons.

Likewise, updating of the electronic threat files of the ALR-67 Radar Warning Receiver and the ALQ-126 Jammer and introducing the latest operational flight programs for the A-6E and F/A-18 aircraft dealt with unique weapons delivery conditions in Iraq. Because of available test facilities, old proximity fuzes for general purpose bombs were updated for current mission requirements; Navy and Air Force retrofits for the Sidewinder, Tomahawk, and SLAM missiles were developed; and propulsion and warhead tests were completed for ordnance use aboard carriers. These examples from the China Lake site demonstrate the importance and capability of RDT&E expertise, corporate memory, and unique facilities that can be rapidly applied to mobilization and technical assistance requirements, such as those originating from the recent Persian Gulf experience.

A major China Lake asset is the air and land space (24,056 square statute miles of special use airspace, 1,713 square statute miles of land) now used for extensive weapon/aircraft system flight test ranges and component test facilities. The two fully instrumented, overland ranges, the air/ground range and the ECR, plus a complete Navy airfield, would be instantly available. The ranges would support T&E requirements related to rapid Fleet introduction of new weapons, and testing "fixes" to existing weapons. The realistic surface-to-air threat weapons scenarios that can be simulated at the ECR could be available on a 24-hour basis for both training of Fleet pilots and for T&E/tactics development of airborne electronic countermeasure systems. Air- and ground-range operations could be readily expanded to provide an around-the-clock training site for air-to-air and air-to-surface (both missiles and bombs) weapons. Simultaneously the sled tracks, static

warhead/propulsion/environmental test facilities, and the radar cross section ranges could be used for development and proof/certification testing.

China Lake's aircraft support facilities and runways could be used for Fleet operations. The Station would increase the emphasis on response to Fleet requests for problem solving. The Naval Science Assistance Program would be greatly expanded to provide on-site technical expertise to Fleet operating units and commands.

China Lake could absorb an estimated 2,594 permanent-party personnel over and above its present workforce without additional MILCON by means of more affordable renovation of 378,000 available square feet. If necessary, 3,910 acres (adjacent to the excess housing, existing roads, and utilities) are readily available for development of additional Station facilities without causing encroachment problems. For mobilization purposes, existing available infrastructure can accommodate temporary tent cities and over 400 miles of roads exist to accommodate transportation needs of heavy equipment and machinery.

There are 692 active family housing units at China Lake of which 84 units are currently vacant. Renovation of existing excess Station housing would provide additional housing for military personnel. The city of Ridgecrest, with its 8.2% housing vacancy rate, could immediately provide approximately 950 housing units and as of February 1994, could provide 351,489 gross square feet of commercial space (industrial, office, and retail).

The Naval Air Weapons Station (NAWS) China Lake operates a full-spectrum Morale, Welfare, and Recreation (MWR) program. All of the MWR programs/functions can accommodate a large influx of both military and civilian personnel without major modifications.

Furthermore, China Lake has few encroachment issues to deal with in relation to Air Installation Compatibility Use Zone (AICUZ). This is due, in part, to the relatively sparse population in the areas surrounding China Lake. Not only are there no restrictions that would prevent carrying out mobilization missions, there are unique features at China Lake that would enhance mobilization mission requirements. These include the following:

- China Lake can expand its capability for the development and testing of high-performance aircraft and tactical weapons in future years when encroachment problems and environment issues will be severely impacting operations at geographically smaller and less remote locations.
- China Lake has the potential to absorb an increase in the numbers of onboard personnel.
- China Lake provides some of the best flying weather (year round) in the continental U.S. with visibility of 50 miles or greater on an average of 340 days a year.
- China Lake's remoteness also provides a high degree of natural security for classified naval activities.
- China Lake is centrally located among a number of Fleet operational and training bases as well as RDT&E facilities. With the growing significance of joint programs, close proximity to other bases and facilities is advantageous and will facilitate collaborative efforts.
- China Lake has significant geothermal resources in which the Station benefits from substantially reduced electric energy rates. The output from these geothermal resources could be accelerated to handle increased Station usage.
- China Lake's noncorrosive climate (low humidity and dry weather) is ideal for temporary outdoor storage.

-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?*

Each of the three questions presented above are answered below for each of the 60 facilities/capabilities located at NAWCWPNS China Lake.

MODELING AND SIMULATION

AIR WEAPON DIGITAL MODELING & SIMULATION
B. Yes.
B.1. Yes.
B.2. Yes.
This facility maintains the reference simulation and provides continuing simulation support for all current variants of Sidewinder, RAM, and Sparrow.

EXPLOSIVE AND ORDNANCE MODELING
B. No.
B.1. No.
B.2. No.

STRIKE SIMULATION & MODELING
B. Yes.
B.1. Yes.
B.2. Yes.
This facility is part of the Electronic Warfare Reprogramming Libraries (EWRL) program. As such, the ability to rapidly and accurately reprogram Fleet ARMs, RWRs, and jammers is a product provided by this facility. Facility provides access to the latest TAMPS software that the Weapon Module Developers need to assess their current module development against TAMPS core changes. The facility also provides software validation and survivability assessment for SLAM/Harpoon Weapon Systems. Operational effectiveness of the systems would degrade if the services were not provided. This facility provides the computers necessary to supply the U.S. Navy and Air Force with weapon kinematics performance data for the following missiles: HARM, Shrike, SideARM, Laser Guided Bombs, Skipper, JSOW, and JDAM.

STRIKE SOFTWARE/SIMULATION FACILITY
B. Yes.
B.1. Yes.
B.2. Yes.
Provides verification and validation of ELINT files for the HARM Command Launch Computer generated on a rapid turnaround for Fleet users around the world. War-time contingency roll established in EWRL Instruction. T&E on HARM can't be performed without ELINT files. Test mission of OPTEVOR and EA-6B community impact. Tactical software cannot be used by the Fleet without successful completion of IV&V, and this is the only facility performing this function.

SYSTEM MODELING & SIGNAL PROCESSING FACILITY
B. Yes.
B.1. No.
B.2 No.
Modeling and simulation effort is key to helping select from a realm of complicated weapon proposals. Removing this capability would not allow us to evaluate contractors' proposals for newly proposed weapon systems. The simulations allow us to do flyout performance evaluation and assess risk for short range air-to-air missile guidance and control.

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)
B. No.
B.1. No.
B.2. No.

MEASUREMENT

AEROHEAT TEST FACILITY
B. Yes.
B.1. No.
B.2. No.
This facility provides critical support to the core competency of missile RDT&E located at China Lake.

AIR BREATHING PROPULSION LABORATORY
B. Yes.
B.1. Yes.
B.2. Yes.
This facility conducts RDT&E of missile propulsion systems. This is the mission of the Ordnance Systems Department, which is part of NAWCWPNS. If the RDT&E is not accomplished, the missile programs could not produce weapons systems for the armed forces.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
B. Yes.
B.1. Yes.
B.2. Yes.
NTA-4F BuNo 152102 aircraft is dedicated to HARM Missile Systems T & E and contains an ARM weapon system less missile motor, wings, and actuators. It is used to evaluate seeker performance in free space under dynamic conditions. Instrumented A-6E and F/A-18A and C aircraft are used to evaluate the seeker interface with onboard avionics under dynamic flight conditions. The laboratory contains a shielded RF Anechoic chamber, 20 by 40 feet, and contains equipment to evaluate seeker performance from 500 Mhz to 20 GHz.

CACTUS FLATS ORDNANCE TEST AREA
B. Yes.
B.1. Yes.
B.2. Yes.
This facility performs sympathetic detonation tests in support of insensitive munitions and performs magazine testing for NAVFAC and the Air Force. It also performs guns propellant testing for U.S. Army and hazard quantity distance testing for DDESB and NATO.

CHEMICAL ANALYSIS RESEARCH FACILITY
B. Yes.
B.1. Yes.
B.2. Yes.
The facility plays a critical role in SSPO Trident Program for C-4 & D-5 propellant aging. It is also developing (with SSPO & Lockheed) a China Lake site for large-scale rocket motor burn facility. Provides certified analyses to Environmental Projects Office and other programs. Provides chemical and structural analyses for HARM and Sidewinder Programs.

DETONATION PHYSICS LABORATORY
B. No.
B.1. No.
B.2. No.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
B. Yes.
B.1. Yes.
B.2. No.
The complex performs dynamic properties measurements of modal frequencies and shapes, weight, center of gravity, moment of inertia, and product of inertia of objects, which is necessary to design and to obtain flight clearance. These measurements can improve safety of flight and accuracy and range of weapons.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
B. Yes.
B.1. Yes.
B.2. Yes.
The laboratory provides safety data for the New Materials Board and to the formulators. Without such data, testing would pose a great threat to human operations. Performance data is provided to engineering to size propellant nozzles for optimum range.

ENVIRONMENTAL TEST COMPLEX
B. Yes.
B.1. Yes.
B.2. Yes.
Testing involves shock, vibration, climatic, and electromagnetic exposure on items including live ordnance, such as missiles, bombs, and all-up rounds. These tests are required to gain approval for Range flights, and service operational validation of the items under test. All service (Army, Air Force, Navy) ordnance items are tested. Without testing, items could not be certified for use in weapon system/delivery modes.

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
B. Yes.
B.1. Yes.
B.2. Yes.
The Foreign Material Exploitation (FME) Facility provides countermeasure information critical to the mission success of the operational forces. Primarily inputs are provided to the Navy, Air Force, and Marines, with some vital information also passed to the Army. The Balloon portion of the complex supports the only tethered (up to 12,000 feet AGL) balloon capability in the U.S., with tethered manned balloon capability to 2000 feet AGL. Tethered manned balloon flights allow the test and development community the opportunity to test all modes of various air-to-surface missile seeker systems. These missile seeker systems are tested as if they were in the actual flight

mode. Thus they have the same background and clutter response that the actual missile systems encounter during their flight into the test target. These actual end-game encounters can be made on numerous occasions during balloon flight test. Missile parameters can also be changed quite readily by the missile seeker operator that is in the manned tethered balloon. This capability has the potential to save the missile program office time and money in the development of the final seeker designs. ARM Countermeasures programs have also used the tethered balloon for multiple test sequences. The ARM test seeker is mounted in the balloon, and several different ARM seeker settings are used to test the RADAR protection schemes. Several hundred different ARM settings can be tested in a day using this technique. All of the previously mentioned tests can be performed using an actual flight test aircraft, but by using this technique only a limited number of flight tests can be performed in a day, whereas the tethered balloon can perform a multitude of this type of test during one manned balloon test flight.

GUIDANCE COMPONENTS T&E COMPLEX
B. Yes.
B.1. Yes.
B.2. No.
The complex provides testing of actuators and gas generators for missile systems and aircraft integration. Safety certification is critical to the weapons platforms which carry thermal batteries, either in on-board systems or in attached missiles. The Electronics Assembly T & A facility is used for assembly and check out of the Gator KMU System Tester and future Gator ATE. ATE computer assets are also used for statistical modeling studied as applies to Navy/Air Force Gator air-dropped weapons.

HIGH HAZARD PROPULSION TEST FACILITY
B. Yes.
B.1. Yes.
B.2. Yes.
This facility allows for high hazard testing of rocket motors. The support is critical to the core competency of the Navy's missile RDT&E efforts at China Lake and at other services sites. Bay III is also being used to support rocket motor disposal technology development that is needed for all services.

IR SEEKER, GCS DDT&E COMPLEX
B. Yes.
B.1. Yes.
B.2. Yes.
This facility provides a wide range of measurements services which support the development, integration, and test including troubleshooting, repair and system characterization. This capability provides for quick reaction in wartime situations such as Desert Storm. In addition, this facility is used to provide the complete exploitation of foreign systems.

JUNCTION RANCH RADAR CROSS SECTION RANGE
B. Yes.
B.1. Yes.
B.2. Yes.
The Junction Ranch (JR) RCS range is the only test facility at China Lake to support low observable and very low observable work. The Look Down Range is the only site in the free world for RCS measurements of ship models in a simulated ocean environment with a slant range between the radar and the target of 17,000 feet.

MATERIALS ENGINEERING/FAILURE ANALYSIS FACILITY
B. Yes.
B.1. No.
B.2. Yes.
The facility performs materials engineering and failure analysis of developing and deployed systems required for rapid turnaround of weapon systems. China Lake is principal weapons materials engineering laboratory within the Navy.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
B. Yes.
B.1. Yes.
B.2. Yes.
This facility performs production lot acceptance tests for the single manager procuring Navy 20-mm and 25-mm ammunition. At the present time this is the only facility configured to perform these tests.

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
B. Yes.
B.1. Yes.
B.2. Yes.
The MESA is a unique facility that provides support for tri-service and multinational munitions effectiveness and air vehicle survivability testing. Without this facility costly flight testing would be required.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
B. Yes.
B.1. Yes.
B.2. Yes.
NDT facilities are essential in supporting the core competency of missile RDT&E. The computer tomography (CT) system is required to provide 100% inspection of Trident assets tested at China Lake. The CT facility is also the software improvement test bed for supporting Trident Fleet inspection operations.

OPTICS & LASER RESEARCH FACILITY
B. Yes.
B.1. No.
B.2. No.
The Large Optics Test Facility directly supports the Navy's High Energy Laser Weapons Program (SPAWAR 23) at the High Energy Laser System Test Facility (HELSTF).

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
B. No.
B.1. No.
B.2. No.

ORDNANCE TEST COMPLEX
B. Yes.
B.1. Yes
B.2. Yes.
If facility were removed, no on-site ordnance testing could be accomplished, and extensive costs to perform elsewhere for developmental or production proofing testing would occur. Other services typically use these test services and areas for testing of their unique items, and if unavailable, these

services (Air Force, Army, NASA) would have to look elsewhere for testing. The test results produced by the tests performed here will verify or validate ordnance operations, and allow continuation of development or upgrade of service adoption assignment.

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
B. Yes.
B.1. Yes.
B.2. Yes.
The complex provides a Weapons Guidance Control laboratory measurement facility and test equipment to test quick reaction upgrade kits and reworked Guidance and Control Sections for deployment in a wartime situations such as Desert Storm.

SENSOR & TARGETING TECHNOLOGY FACILITY
B. Yes.
B.1. No.
B.2. Yes.
The RF Sensor Active Array Laboratory has unique data collection and test environment designed for active electronically scanned antennas and radar systems. The RF Sensor Development Laboratory develops active arrays for RF sensors and the modes to be used by the sensors. Initial T&E is performed before moving the RF sensor to another facility for more qualitative tests. The RF Sensor Near Field Laboratory has unique data collection capability to gather amplitude and phase data close to antennas. The Signals Exploitation Development Laboratory employs a full range of support to develop, build, test, install, and maintain Fleet hardware. The Laser Sensors Facility provides analysis to predict as well as explain electro-optic system performance such as laser designation range envelopes and seeker dome performance. The Multisensor Integration/Correlation Laboratory performs R&D of advanced image processing techniques, which have resulted in enhanced air-to-air and air-to-ground mission effectiveness through upgrades to aircraft operational flight programs. Simulation facilities have enhanced efficiency of T&E by reducing the required number of test flight hours.

SLED TRACKS
B. Yes
B.1. No.
B.2. No.
Approximately 80% of the historical workload of the NAWCWPNS Sled Track Facility has been in support of work in progress in the NAWCWPNS R&D Laboratories. Closure of the track testing facilities would adversely impact the budgets of these R&D programs, as well as the timely performance of related test work. Track testing schedules are frequently adjusted on short notice to accommodate local developmental work in progress. Loss of the G-4 track capability would eliminate a unique-in-the nation capability to launch items into free flight over a 500-foot-deep dry lake bed.

STRATEGIC PROPULSION TEST COMPLEX
B. Yes.
B.1. Yes.
B.2. Yes.
Facility provides the capability to static fire Trident motors and other service strategic motors in support of aging and surveillance or development programs. Periodic firings are necessary to ensure SLBM and ICBM missiles are not developing performance or safety problems during aging. Also, critical RDT&E programs are served, such as the Army STARS program, and loss would have significant impact on the flight test program for SDIO applications.

TACTICAL PROPULSION TEST FACILITY
B. Yes.
B.1. Yes.
B.2. Yes.
Bay IV provides the major capacity at the Skytop complex for static firing of tactical size rocket motors. Loss of this firing bay would be detrimental to the core competency of China Lake. Rocket motors undergoing environmental qualification are routinely fired in Bay IV after environmental treatments to gather performance data. Loss of this capability would be detrimental to the multiservice programs supported by having integrated environmental and performance test capability.

VHF ANECHOIC CHAMBER
B. Yes.
B.1. Yes.
B.2. Yes.
This facility has the capability to test multiple frequency systems that require frequency operating ranges down into the 150 MHz region. All other anechoic chambers are equipped with high-frequency anechoic materials and do not have the throat taper capability that exists with this chamber. This anechoic chamber can be used to test all manner of electronic receiving and radiation signals over an extremely wide band of frequencies.

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
B. Yes.
B.1. Yes.
B.2. Yes.
The complex provides design, analysis, and evaluation of ARM (Shrike, Standard ARM, HARM, HARM LCS, Sidearm, ERASE, etc.) seekers (U.S. and Foreign) for the Navy, Air Force, and Army. Analysis and design information was used during the Desert Storm activities. The complex also aids in development of advanced ARM guidance section concepts for future Navy missile programs.

WEAPONS SURVIVABILITY LABORATORY (WSL)
B. Yes.
B.1. No.
B.2. Yes.
Congressionally mandated Live Fire Testing for aircraft and weapon systems survivability is a mission of the host installation. No other facility in the DOD or commercial sector can provide the capability required to meet the legislated test requirement.

not! true!

how do you know this?

INTEGRATION LABORATORY

ACTUATOR AND POWER SYSTEMS LABORATORY
B. Yes.
B.1. Yes.
B.2. Yes.
Static and dynamic testing of actuation, control, and power systems for developmental, production or in-service hardware and software. Provides ability to verify performance of critical weapon components at subcomponent level prior to installation in full assembly.

ANTIRADIATION MISSILE INTEGRATION COMPLEX
B. Yes.
B.1. Yes.
B.2. Yes.
This facility services multiple Fleet, reserve, USAF, USMC, and FMS test and evaluation ARM missions. Those organizations or countries are dependent on the capabilities and assets of this facilities to do ARM integration in a timely manner. This facility conducts all Navy research, development, development testing (DT) with aircraft weapon software support activities, and operational testing (OT) with the VX-5 attached activity for ARM work.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
B. No.
B.1. No.
B.2. No.

COMPOSITES DEVELOPMENT LABORATORY
B. No.
B.1. No.
B.2. No.

DATA LINK DEVELOPMENT LABORATORY
B. Yes.
B.1. Yes.
B.2. Yes.
The facility provides data link expertise and support for T&E activities of weapon systems including SLAM, Tomahawk Block Improvement Program, and, in the near future, JSOW. The facility also provides technical and hardware support of various flight test demonstrations at NSWC, Fallon, NV; NAWCWPNS Point Mugu; and other activities.

ELECTRONIC WARFARE INTEGRATION LABORATORY
B. Yes.
B.1. Yes.
B.2. Yes.
Radar Warning Receivers (RWRs) are used for situational awareness. They are used to improve the chances of a pilot reaching his target and returning home in his aircraft. The Electronic Warfare Integration Laboratory (EWIL) is used in the integration of the RWR with all of the required aircraft avionics, weapons, and EW suites. The EWIL was utilized 24 hours a day during the Gulf War in aid of the military forces.

FUZE DEVELOPMENT LABORATORY
B. Yes.
B.1. No.
B.2. No.
Evaluations and test set ups of explosive devices and safety are performed at this facility prior to use on several NAWCWPNS test range facilities. Without these services these other ranges would not be able to support the full spectrum of tests that they do currently.

LASER SEEKER INTEGRATION AND TEST FACILITY
B. Yes.
B.1. Yes.
B.2. No.
To the best of our knowledge, this is the only facility within the Government capable of dynamically simulating the laser energy seen by a semiactive laser guided weapon as it closes on a target.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
B. Yes.
B.1. Yes.
B.2. Yes.
This facility has a vital role as part of the rocket motor/missile fabrication capability of the NAWCWPNS pilot plant. Integration and continuity tests are vital to support test range and static test operations at NAWCWPNS. Integration testing of JSOW is critical to both Navy and Air Force test operations with JSOW considered critical to operational effectiveness of U.S. armed forces.

ORDNANCE ASSEMBLY FACILITY
B. Yes.
B.1. No.
B.2. No.
This facility performs weapon assembly and functional checkout for weapons to be loaded on aircraft for flight test and software verification.

TELEMETRY DEVELOPMENT LABORATORY
B. Yes.
B.1. Yes.
B.2. Yes.
Loss of the capability means elimination of the following. Insure/certify Range-compatible and interoperable telemetry and flight-termination systems. Design, development, and standardization of telemetry encryption techniques compatible with NSA and weapons-development data requirements. Insure/certify contractor-developed telemetry systems are interoperable on the T&E Ranges. Support NAWCWPNS weapons/platform R&D development and evaluation with quick response design/development of telemetry and related instrumentation. Support the Range Commander's Council for development of Range Standards for Range Safety, Telemetry, Telecommunication, Frequency Management, and Optical Systems. Development of standard picture video digitization techniques.

TSSAM MISSION PLANNING FACILITY
B. Yes.
B.1. Yes.
B.2. No.
This facility provides for the development and test of contractor- and Government-developed mission planning software for the TSSAM weapon system. This is an integral part of the overall system.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
B. No.
B.1. No.
B.2. No.

WEAPONS GUIDANCE/CONTROL/SEEKER IL
B. Yes.
B.1. Yes.
B.2. Yes.
Provides quick reaction incorporation of upgrade kits into weapon guidance/control for deployment in a wartime situations (i.e., Desert Storm). Provide upgrades to weapons guidance/control systems to counter Fleet threats. Retrofit Kits are manufactured and provided to rework facilities for installation into weapons guidance/control sections. Quick-reaction weapons guidance/control analysis/simulation to evaluate and provide counter-countermeasures (CCM) to Fleet threats in wartime situations. DTE/IOT&E/OTE/FOT&E support requires testing/trouble-shooting/repair/checkout of guidance/control systems, seekers (IR/EO/RF), and other subsystems.

WEAPONS SYSTEM SUPPORT FACILITY, A-6
B. Yes.
B.1. No.
B.2. No.
NAWCWPNS' primary mission is to design, develop and test and evaluate weapon systems. It is critical to have the A-6 aircraft and its embedded computer test facilities readily available to perform integration, development, and tests for each weapon carried on the A-6 host platform.

WEAPONS SYSTEM SUPPORT FACILITY, AH-1
B. Yes.
B.1. No.
B.2. No.
NAWCWPNS' primary mission is to design, develop and test and evaluate weapon systems. It is critical to have the AH-1 aircraft and its embedded computer test Facilities readily available to perform integration, development, and tests for each weapon and system carried on the AH-1 host platform.

WEAPONS SYSTEM SUPPORT FACILITY, AV-8
B. Yes.
B.1. No.
B.2. No.
NAWCWPNS' primary mission is to design, develop and test and evaluate weapon systems. It is critical to have the AV-8 aircraft and its embedded computer test Facilities readily available to perform integration, development, and tests for each weapon carried on the AV-8 host platform.

WEAPONS SYSTEM SUPPORT FACILITY, F/A-18
B. Yes.
B.1. No.
B.2. No.
NAWCWPNS' primary mission is to design, develop and test and evaluate weapon systems. It is critical to have the F/A-18 aircraft and its embedded computer test Facilities readily available to perform integration, development, and tests for each weapon carried on the F/A-18 host platform.

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
B. Yes.
B.1. Yes.
B.2. Yes.

The host installation would not be able to act as the Technical Direction Agent for the SM proximity fuze. The absence of this facility would impact support of in-service and test evaluations of flight test firing data conducted by NAWC and NSWC. It would harm NAVSEA's mission to arm surface ships with the Standard Missile Mk 45 TDD and respond to crisis or contingency analysis and modifications in response to new/evolving threats, contingency, crisis, or war.

SIMULATION LABORATORY—MISSILE HITL
B. Yes.
B.1. No.
B.2. No.
The China Lake Missile Simulation Laboratory (SIMLAB) is a state-of-the-art hardware-in-the-loop (HITL) simulation facility for RF, IR, EO, and dual mode guided weapons. Several of the targeting systems provide unique target signature generation capability. In addition, a link between the F/A 18 WSSF (Weapon System Support Facility) and the SIMLAB is now being completed which will provide a unique capability for testing integrated weapon systems for the F/A-18 aircraft. This real-time linking of the avionics test facility with the missile HITL facility will allow full testing of an integrated missile/aircraft avionics weapon system including captive carry, launch, missile flyout, post launch data link, and terminal guidance. Without the SIMLAB capability, China Lake's ability to test, analyze, develop and evaluate missile systems and components and to support missile flight testing would be severely impacted. The collocation of this HITL facility with the extensive digital modeling and simulation capability, avionics test facilities, and open air range capability at China Lake furnishes a unique integrated support function which promotes a tight loop between design, development, simulation, and flight testing. Of particular value is the ability to take HITL test data and actual flight test data and immediately feed that data back into post-flight analysis, system and component design improvement, and use it to validate and refine the digital models in a continuing evolution. Many of the analysts doing digital simulation also do HWIL simulation and support flight testing, and are able to bring hardware insights and flight test data to the digital models. The SIMLAB is an integral part of this function.

TSSAM HARDWARE-IN-THE-LOOP
B. Yes.
B.1. Yes.
B.2. Yes.
This is a one-of-a-kind facility to support both the Navy and Air Force development and test of the TSSAM weapon system.

OPEN AIR

AIR/GROUND RANGE
B. Yes.
B.1. No.
B.2. Yes.
Approximately 75% of the current range workload is in direct support of the R&D labs on center. Elimination of this range would have a significant effect on these customers—both in cost and scheduling. The North Range provides over land and terminal data for Feet-launched Tomahawk missiles, being the only test range that allows impact test of inert Land Attack Cruise Missile Conventional (TLAM-C) and the Dispense Variant (TLAM-D) after launch from operational platforms. ?

ELECTRONIC COMBAT RANGE (ECR)
B. Yes.
B.1. Yes.
B.2. Yes.
ECR is part of the Navy's tri-lab program which provides free space, laboratory, and hybrid laboratories for DT&E and OT&E testing and analysis to the developers, integrators, testers, and users of systems and technologies that counter or penetrate air defenses. Since ECR is the only OAR that can provide land and sea threats capable of simulating a littoral scenario, its elimination would directly impact these other laboratories ability to provide realistic test scenarios.

The ECR has unique capability not duplicated elsewhere. The ECR is the only Navy free-space (open air) test range for aircraft/airborne systems and techniques designed to sense, counter or penetrate threat air defense systems. It is the only DOD EC range with the ability to test against naval air defense systems and combinations of land and naval systems either individually or as part of an integrated air defense system. The ECR provides synergy to the NAWCWPNS R&D functions in EW development, ARM weapon development, and aircraft integration (WSSA). The ECR is a dedicated EC test range. It operates on 1000 square miles of withdrawn land, under 1200 square mile unlimited altitude restricted airspace, and does not compete for land or airspace assets with other test facilities. The ECR is located in a region selected for its remoteness and relative absence of population and offers high security with minimum electromagnetic interference either with test operations or with other military or civilian communities. The ECR provides for unlimited use of expendables and decoys.

If the function were lost at this site, Navy EW test operations would have to be accomplished at an Air Force range since the Navy has no other alternative. This alternative would require the build up of the naval threat systems at another site since the capability does not exist elsewhere. If the function were lost to NAWCWPNS there would also be an issue whether air and land space utilization would justify the continued land withdrawal or the restricted airspace. There is continued pressure to expand wilderness areas and national parks and to release restricted airspace to civilian use. Loss of R-2524, R-2509, and the Randsburg Wash/Mojave-B areas would create additional pressure on the other range and weapons development areas of China Lake. Also lost would be the opportunities for the western area Fleet units to participate in EW training missions at the ECR. Also lost would be the synergy of interconnectivity to the rest of the western test ranges including Edwards AFB, Fort Irwin, NTC, NAWCWPNS Point Mugu, and the Nellis AFB test range complex.

FLIGHT TEST CAPABILITY
B. Yes.
B.1. Yes.
B.2. Yes.
Being collocated with China Lake's ranges and R&D laboratories, the airfield flight-test support service is an integral support element of the effectiveness and efficient accomplishment of the NAWCWPNS mission. The airfield also provides flight-test support to all aviation squadrons deployed to China Lake for use of ranges and airspace. The mission of VX-9 (tenant) is directly critical to operational effectiveness of U.S. armed forces for air-launched weaponry.

NAWCWPNS-WHITE SANDS
B. No.
B.1. Yes.
B.2. No.
NAWCWPNSDETWS facilities/equipment support open-air research, development, engineering, test, and evaluation of surface-to-air, air-to-surface, guns, high energy laser, and theater missile defense (TMD) weapons and weapon systems. NAWCWPNSDETWS is a tenant activity at the U.S. Army White Sands Missile Range (WSMR). The facility/equipment mission is critical to the following programs:

Navy Standard Missile Program Office. The Standard Missile/Vertical Launching System (VLS) Test Complex is the Land Based Test Site for the Standard Missile. This test complex is the Navy's only site, including Navy ships, capable of firing all versions of Standard Missile. Developmental firings of new or updated versions of Standard Missile are always fired from this Test Complex prior to being fired at sea. Other features of the complex are extensive instrumentation across the entire flight path and recovery of missile and target hardware for post-test lethality or failure analysis.

Navy Rolling Airframe Missile Program Office and NATO Seasparrow Program Office. The Ship Self Defense Test Complex is currently the only Navy site capable of performing land based firings for Rolling Airframe Missile (RAM) and Vertical Launch NATO Seasparrow. Other features of this land-based test site are extensive instrumentation across the entire flight path and recovery of missile and target hardware for post-test lethality or failure analysis.

Ballistic Missile Defense Organization (BMDO), Army Space and Strategic Defense Command (SSDC), and Navy Standard Missile Program Office. NAWCWPNSDETWS facilities support technology demonstration, development, and target requirements of the TMD community. WSMR is the only overland range capable of supporting TMD testing; NAWCWPNSDETWS has the only facilities capable of overland launch of both the STORM TMD target and the BMDO Lightweight Exo-Atmospheric Projectile (LEAP). These facilities uniquely provide high altitude (>100 miles) suborbital targets for TMD interceptors in an environment with extensive instrumentation support and recovery of intercept debris.

Navy Advanced Gun Program Office. Facilities/equipment at NAWCWPNSDETWS are essential to the conduct of Advanced Gun Weapon System program long-range (up to 100 miles) test requirements that can not be adequately accomplished elsewhere.

Navy High Energy Laser Program Office. The High Energy Laser Experimental Test System (HELETS) located at NAWCWPNSDETWS is the only DOD operational high energy (multi-megawatt class) laser capable of both dynamic (flying target) engagements and laboratory damage and vulnerability testing. The laser's beam director optical system is also used to support TMD testing at WSMR as a passive infrared instrument to collect high quality radiometric imagery of not only intercepts of TMD targets, but also imagery of various rocket and missile launches.

Document Separator

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.*

We have chosen to answer the four questions posed under 3.1.A.1 using the following format
(a) Percentage of workload
(b) List of facilities interconnected
(c) How many are simultaneous
(d) Which are internal and external
For this question, "site" is assumed to be geographical location; i.e., China Lake for all facilities except NAWCWPNS-White Sands, for which the site is WSMR.

-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.*

Answers to 3.1.A.1 and 3.1.A.2 for the 60 facilities/capabilities at NAWCWPNS China Lake begin on page 54 below.

<u>INSTALLATION INTERCONNECTIVITY.</u>
NAWCWPNS China Lake as an installation, has an extensive communications system that facilitates both internal and external linkages. Interconnectivity of facilities/capabilities is supported by three extensive fiber optic communications systems and a microwave transmission system. Of the three fiber systems, the Fiber Optic Trunk System (FOTS) is maintained and operated by the Information Systems Department, the Optical Range Communications System (ORCS) is

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Answers to 3.1.A.1 and 3.1.A.2 for the 60 facilities/capabilities at NAWCWPNS China Lake begin on page 7 below.

INSTALLATION INTERCONNECTIVITY.
NAWCWPNS China Lake as an installation, has an extensive communications system that facilitates both internal and external linkages. Interconnectivity of facilities/capabilities is

Corrected Page

maintained and operated by the Range Department, and the Fiber Optic Distribution System (FODS) is maintained and operated by the Electronic Combat Range (ECR) Department. The Test Range Microwave System (TRMS) is maintained and operated by the Range Department. The ORCS and TRMS are an integral part of the Integrated Range Communications System (IRCS). Together, the China Lake Communications System provides connectivity and access to external services. These three systems are integrated as illustrated in the following figure. The ORCS and FODS are an integral part of the Air/Ground Range and the Electronic Combat Range facilities/capabilities discussed below. Additional details of the corporate network are provided in the next paragraph.

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0049

Added Page

SECTION 3: MEASURES OF MERIT

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CRITERION 4: The cost and manpower implications.

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<u>INSTALLATION INTERCONNECTIVITY</u>.
NAWCWPNS China Lake as an installation, has an extensive communications system that facilitates both internal and external linkages. Interconnectivity of facilities/capabilities is supported by three extensive fiber optic communications systems and a microwave transmission system. Of the three fiber systems, the Fiber Optic Trunk System (FOTS) is maintained and operated by the Information Systems Department, the Optical Range Communications System (ORCS) is maintained and operated by the Range Department, and the Fiber Optic Distribution System (FODS) is maintained and operated by the Electronic Combat Range (ECR) Department. The Test Range Microwave System (TRMS) is maintained and operated by the Range Department. The ORCS and TRMS are an integral part of the Integrated Range Communications System (IRCS). Together, the China Lake Communications System provides connectivity and access to external services. These three systems are integrated as illustrated in the following figure. The ORCS and FODS are an integral part of the Air/Ground Range and the Electronic Combat Range facilities/capabilities discussed below. Additional details of the corporate network are provided in the next paragraph.

10-4-94

FAX TO CDR MARK SAMUELS - BSAT

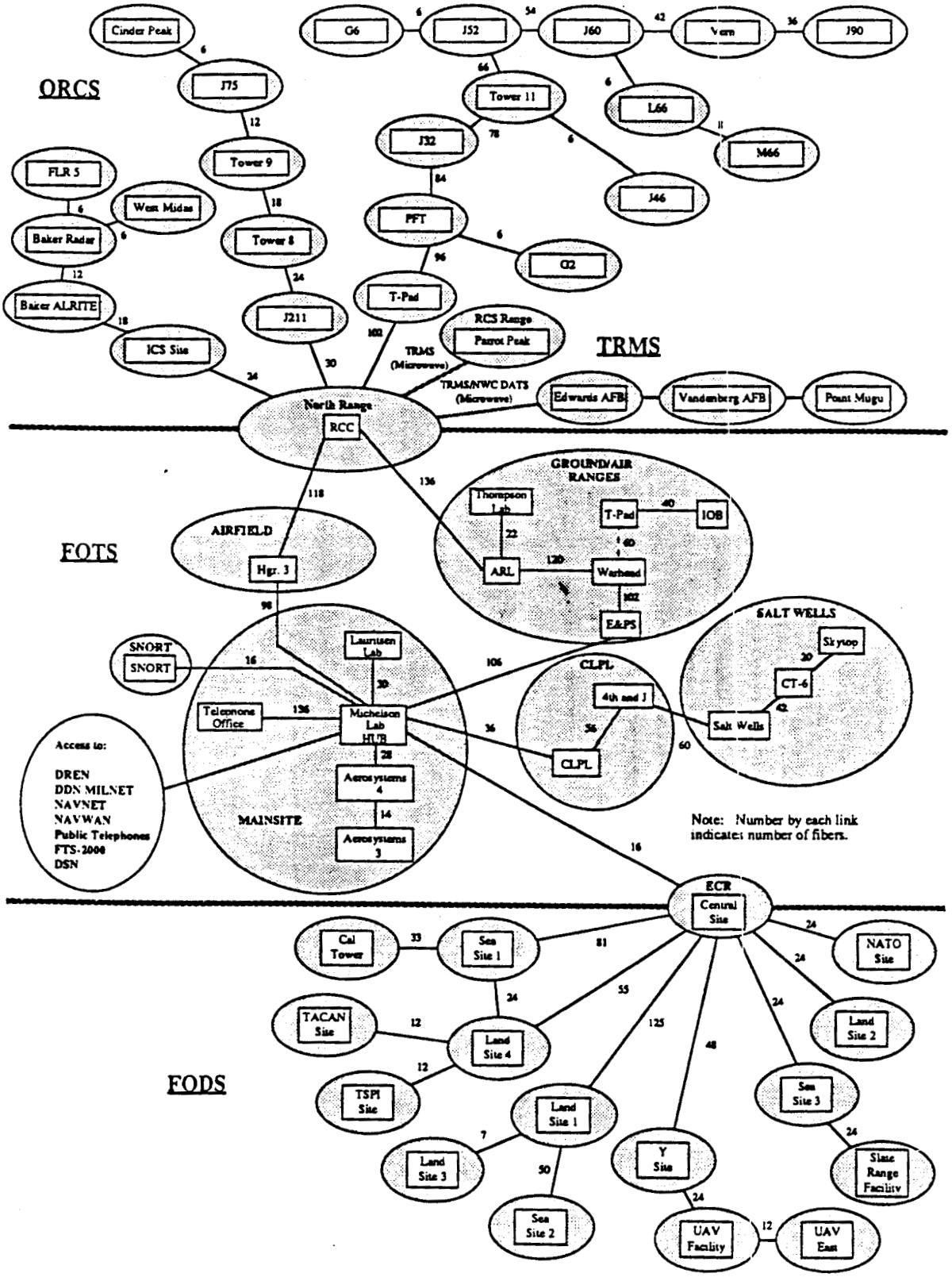
ENCLOSED ARE —
COPIES OF FOUR ILLUSTRATIONS WHICH WERE INADVERTANTLY OMITTED FROM DATA CALL #13 WHEN IT WAS REWRITTEN ON 13 SEPT 1994. THE ILLUSTRATIONS HAVE NOT CHANGED SINCE THE ORIGINAL DATA CALL WAS SUBMITTED IN MAY 1994 — THE ONLY PROBLEM IS THAT THEY DID NOT GET PRINTED, SO THE REVISED DATA CALL OF 13 SEPT INCLUDED "BLANK" PAGES FOR PAGE #S: 49R, 51R, 53R AND 151R.
THOSE CORRECTED PAGES ARE ENCLOSED:

FROM MATT ANDERSON NAWCWPNS
(619) 927-1839
FAX (619) 939-0145.

COPY TO NAWC-21

This does not pertain to page 51 A(1)

INSERTED 11/18/94 TPB



China Lake Communications System

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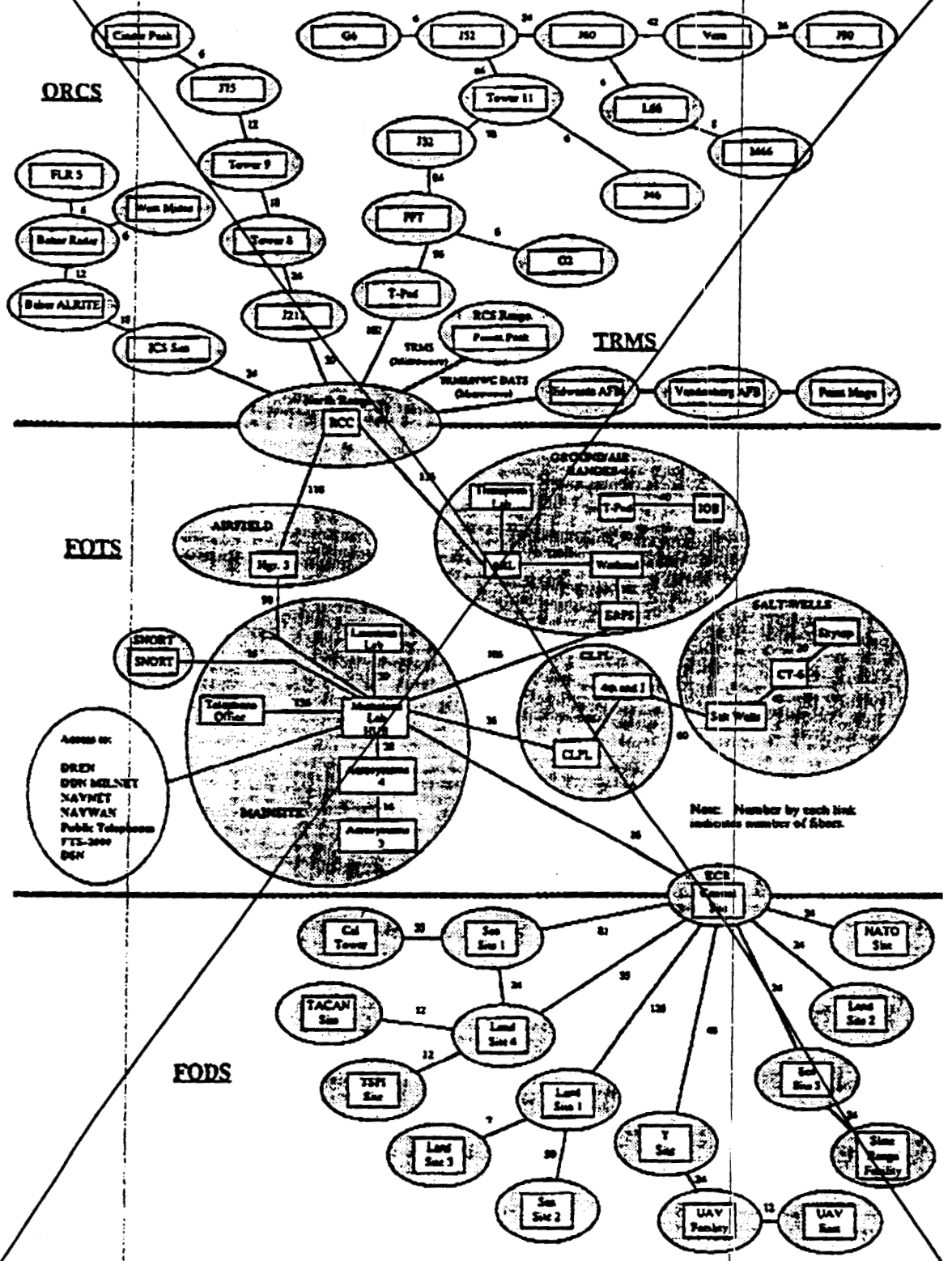
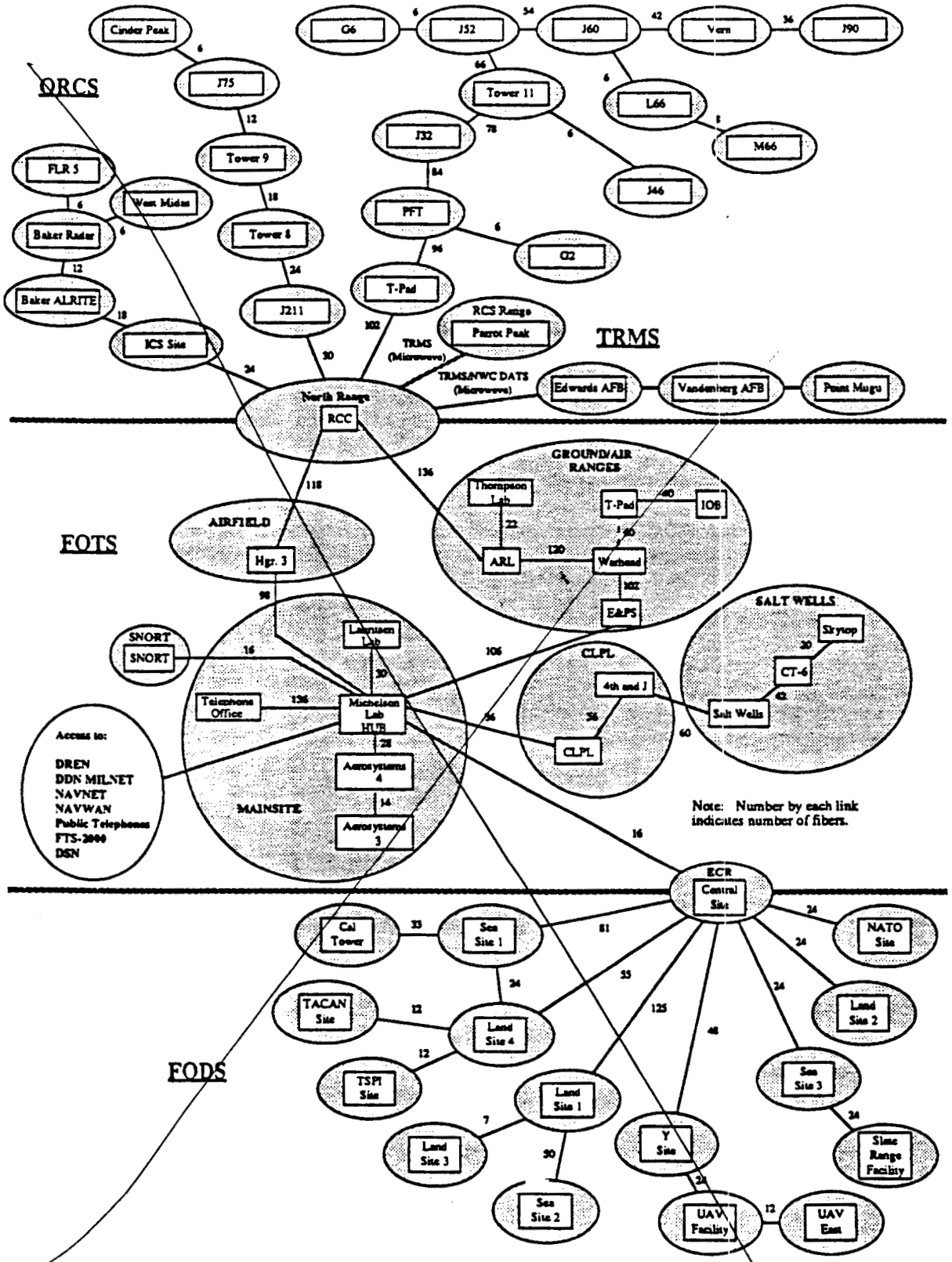
Figure: 2 China Lake communications system



0051A (2)

Figure: 2 China Lake communications system

See page 0051



China Lake Communications System

0051

The Integrated Corporate Network supports voice telecommunications and data, video, and imaging transmissions throughout the site using a primary backbone composed of a fiber optic cable loop among the major population centers. The corporate data network portion is a transparent, multiprotocol, digital network. It is a three-tier network, centered on the Ethernet and fiber distributed data interface (FDDI) standard with connectivity to all departments and significant buildings. There are 225 Ethernet segments with 3100 Ethernet devices and 250 AppleTalk LANS on the net with over 5000 AppleTalk devices. It has a DREN node connection with the DDN MILnet node connection as a backup, a dedicated NAVNET (IDNX 90) T-1 connection to Point Mugu, and a dedicated data connection to the NAVAIR/NAVWAN. With the current implementation of FDDI, the network has significant expansion capacity. The video portion of the network is composed of an analog broadband transmission system over fiber optics, video switching systems, two Video Teleconferencing Centers, and the training video distribution system. Four satellite earth station receivers are on-site from which video is fed into the network. The voice portion consists of an all-new telecommunications plant including ISDN capable digital switches, new inside and outside cabling, telephone sets, and voice mail system. As well as voice, the telecommunications system can handle low speed data and compressed video. It is connected to the Defense Switched Network and FTS-2000 as well as to the commercial telephone system. The telecommunications system has significant expansion capacity. The following figure provides an illustration of the Corporate Network at the China Lake site.

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0052

Corrected Page

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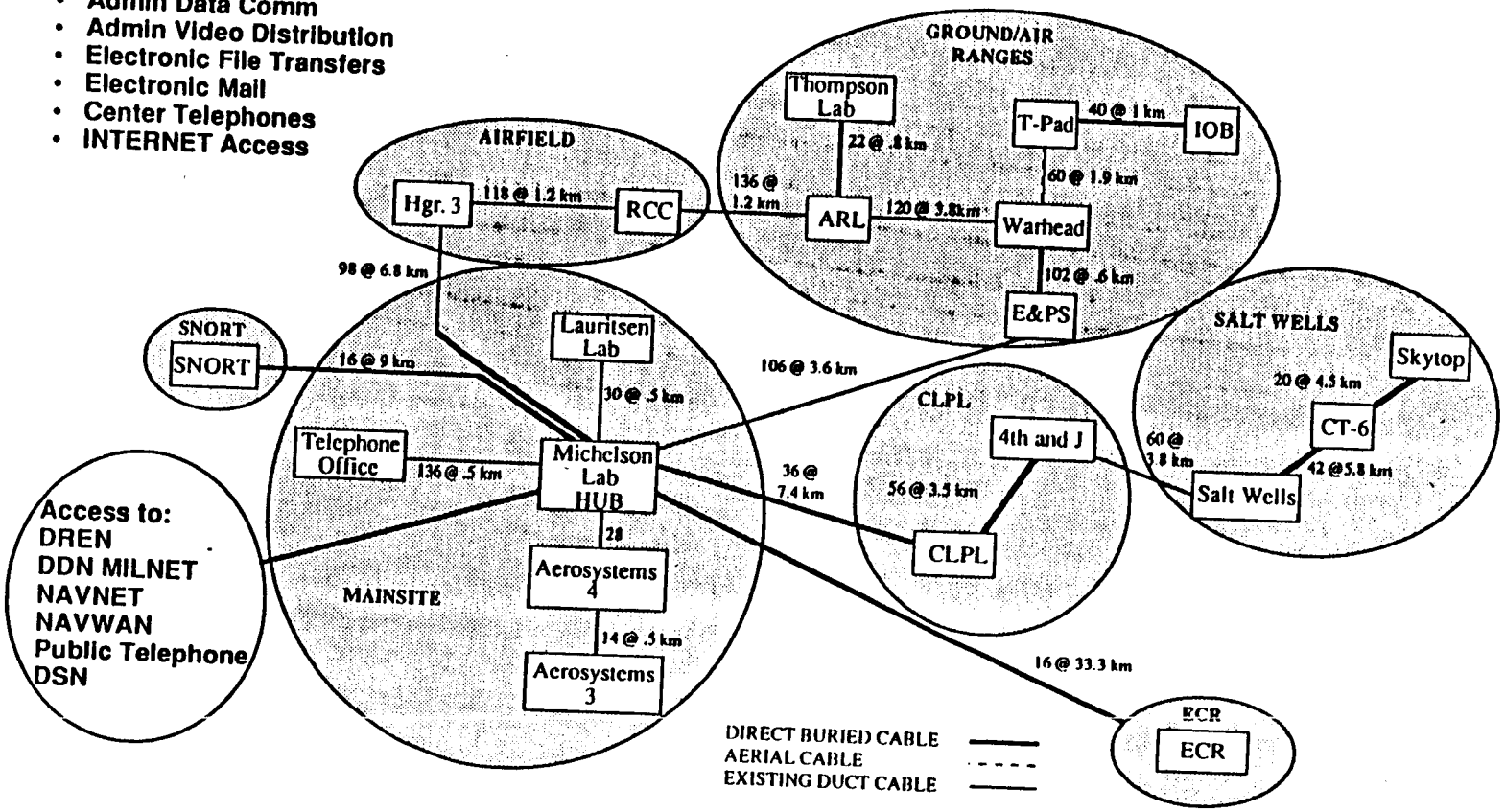
FOTS NODES AND FIBER CONNECTIVITY

Fiber Cable Plant Supports:

- Admin Data Comm
- Admin Video Distribution
- Electronic File Transfers
- Electronic Mail
- Center Telephones
- INTERNET Access



China Lake Corporate Network

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Figure: 3. China Lake corporate network

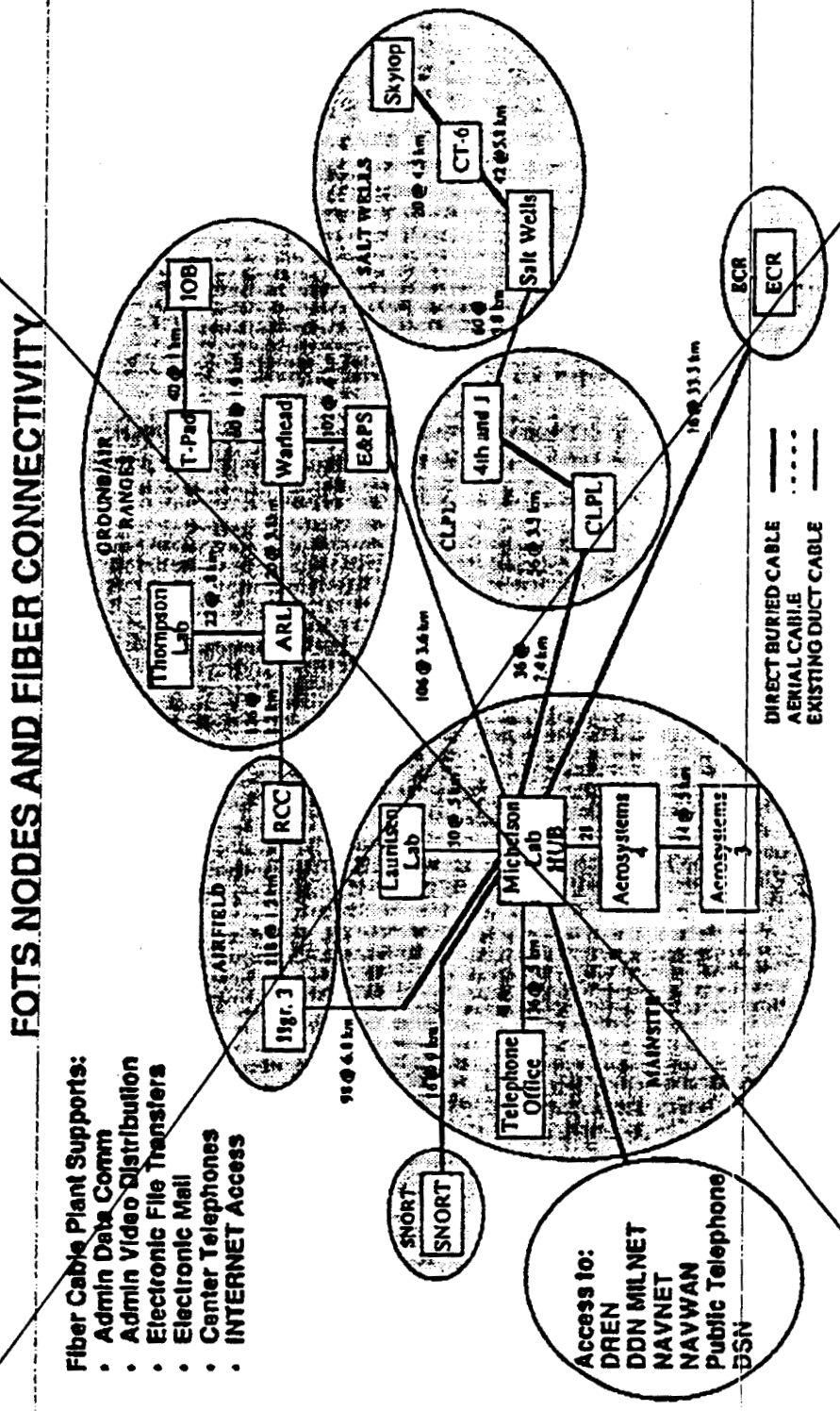

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Figure: 3. China Lake corporate network

See page 0054

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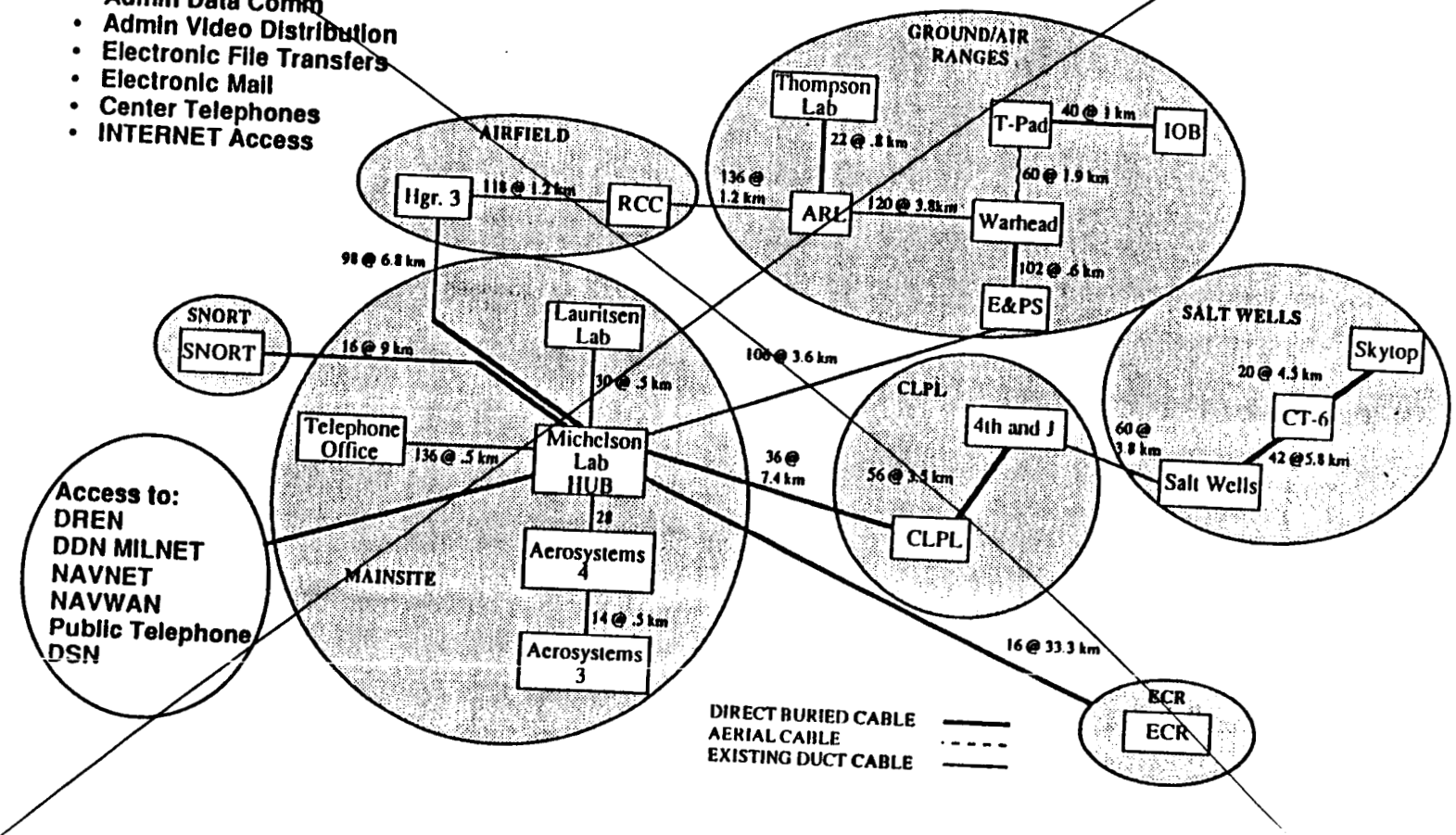

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Integrated Range Communications System (IRCS)
The hub for the IRCS is located in the Range Control Center and connects the North Range communications system to the China Lake corporate fiber optic trunk system (FOTS), the Electronic Combat Range, and other Western Test Ranges through a microwave systems to Edwards AFB. The microwave system includes three microwaves. One system is utilized for the distribution of analog PCM telemetry data from China Lake receiving facilities to Edwards AFB and other Western Ranges.

A second microwave system, a 12.928 Mbps (DSA) system, is used for two-way transmission of voice and data circuits between the China Lake North Range, the Electronic Combat Range, and other Western Ranges including Edwards AFB, Vandenberg AFB, and NAWCWPNS Point Mugu. This system is utilized for numerous aircraft tests conducted between the North Ranges and Edwards AFB, and between the Electronic Combat Range and Edwards AFB. This system is also used for Tomahawk testing, providing connectivity for voice and data circuits between the North Range and the Point Mugu Sea Range.

The first two systems are part of the Test Range Microwave System and provide connectivity between Western Ranges including China Lake, Edwards AFB, Vandenberg AFB, Utah Test and Training Range (UTTR), and Point Mugu.

The third microwave system, a 3.088 Mbps system, is used to support the Federal Aviation Administration (FAA) air traffic control system. This system supports three "gap filler" radars and provides aircraft tracking information for the China Lake air traffic controllers. This system is used full time and is critical for air surveillance of the R-2505 restricted air space.

The Electronic Combat Range is connected to the North Range through dedicated fibers between the two ranges. The fiber facilities are part of the corporate network, FOTS. The ranges provide, operate, and maintain the end equipment used over the corporate fibers. This agreement provides for wideband width capability between the two ranges. The existing system capacity is 135 Mbps and is planned to be replaced with a 565 Mbps system that will be capable of up to 12 video channels and 576 voice or data (up to 64 Kbps) channels.

A wideband system, 45 Mbps (DS3), is planned for installation between the ranges at Point Mugu, Edwards AFB, China Lake, Fort Huachuca, and Eglin AFB. The first phase of this program will utilize multiple 1.544 Mbps circuits and is scheduled to be installed and tested FY95. As the requirement for metric quality video between ranges materializes, the 45 Mbps capability will be installed. The system will be expanded in the future to include White Sands and other ranges as needed.

Additional data transmission capability for post-test processing and transfer of data to other ranges is provided through the corporate computing network. This interface provides access to all other facilities internetted through the corporate facilities. These systems are illustrated in the following figure.

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Corrected Page

Integrated Range Communications System (IRCS)

The hub for the IRCS is located in the Range Control Center and connects the North Range communications system to the China Lake corporate fiber optic trunk system (FOTS), the Electronic Combat Range, and other Western Test Ranges through a microwave systems to Edwards AFB. The microwave system includes three microwaves. One system is utilized for the distribution of analog PCM telemetry data from China Lake receiving facilities to Edwards AFB and other Western Ranges.

A second microwave system, a 12.928 Mbps (DSA) system, is used for two-way transmission of voice and data circuits between the China Lake North Range, the Electronic Combat Range, and other Western Ranges including Edwards AFB, Vandenberg AFB, and NAWCWPNS Point Mugu. This system is utilized for numerous aircraft tests conducted between the North Ranges and Edwards AFB, and between the Electronic Combat Range and Edwards AFB. This system is also used for Tomahawk testing, providing connectivity for voice and data circuits between the North Range and the Point Mugu Sea Range.

The first two systems are part of the Test Range Microwave System and provide connectivity between Western Ranges including China Lake, Edwards AFB, Vandenberg AFB, Utah Test and Training Range (UTTR), and Point Mugu.

The third microwave system, a 3.088 Mbps system, is used to support the Federal Aviation Administration (FAA) air traffic control system. This system supports three "gap filler" radars and provides aircraft tracking information for the China Lake air traffic controllers. This system is used full time and is critical for air surveillance of the R-2505 restricted air space.

The Electronic Combat Range is connected to the North Range through dedicated fibers between the two ranges. The fiber facilities are part of the corporate network, FOTS. The ranges provide, operate, and maintain the end equipment used over the corporate fibers. This agreement provides for wideband width capability between the two ranges. The existing system capacity is 135 Mbps and is planned to be replaced with a 565 Mbps system that will be capable of up to 12 video channels and 576 voice or data (up to 64 Kbps) channels.

A wideband system, 45 Mbps (DS3), is planned for installation between the ranges at Point Mugu, Edwards AFB, China Lake, Fort Huachuca, and Eglin AFB. The first phase of this program will utilize multiple 1.544 Mbps circuits and is scheduled to be installed and tested FY95. As the requirement for metric quality video between ranges materializes, the 45 Mbps capability will be installed. The system will be expanded in the future to include White Sands and other ranges as needed.

Additional data transmission capability for post-test processing and transfer of data to other ranges is provided through the corporate computing network. This interface provides access to all other facilities internetted through the corporate facilities. These systems are illustrated in the following figure.

0056

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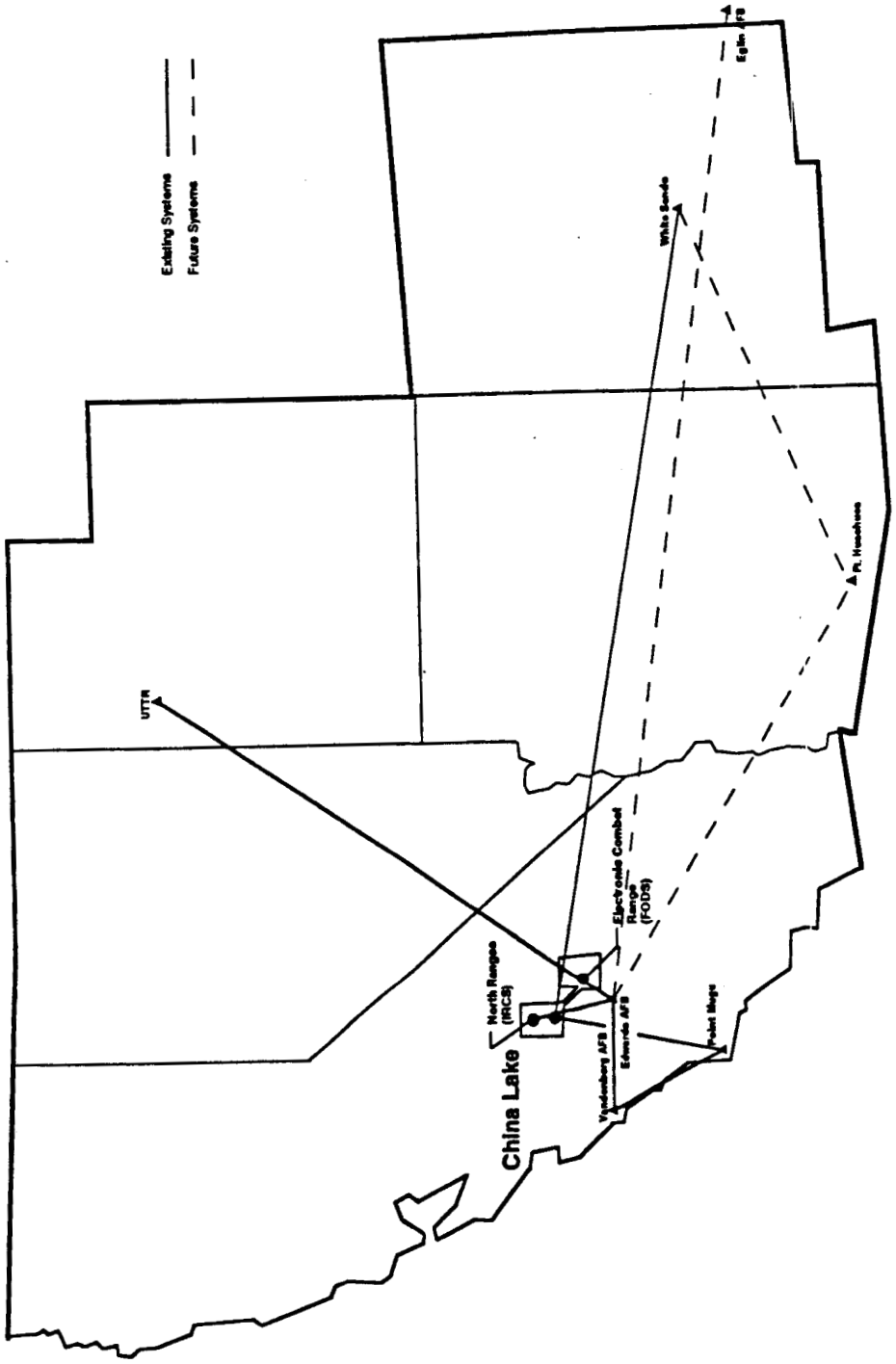


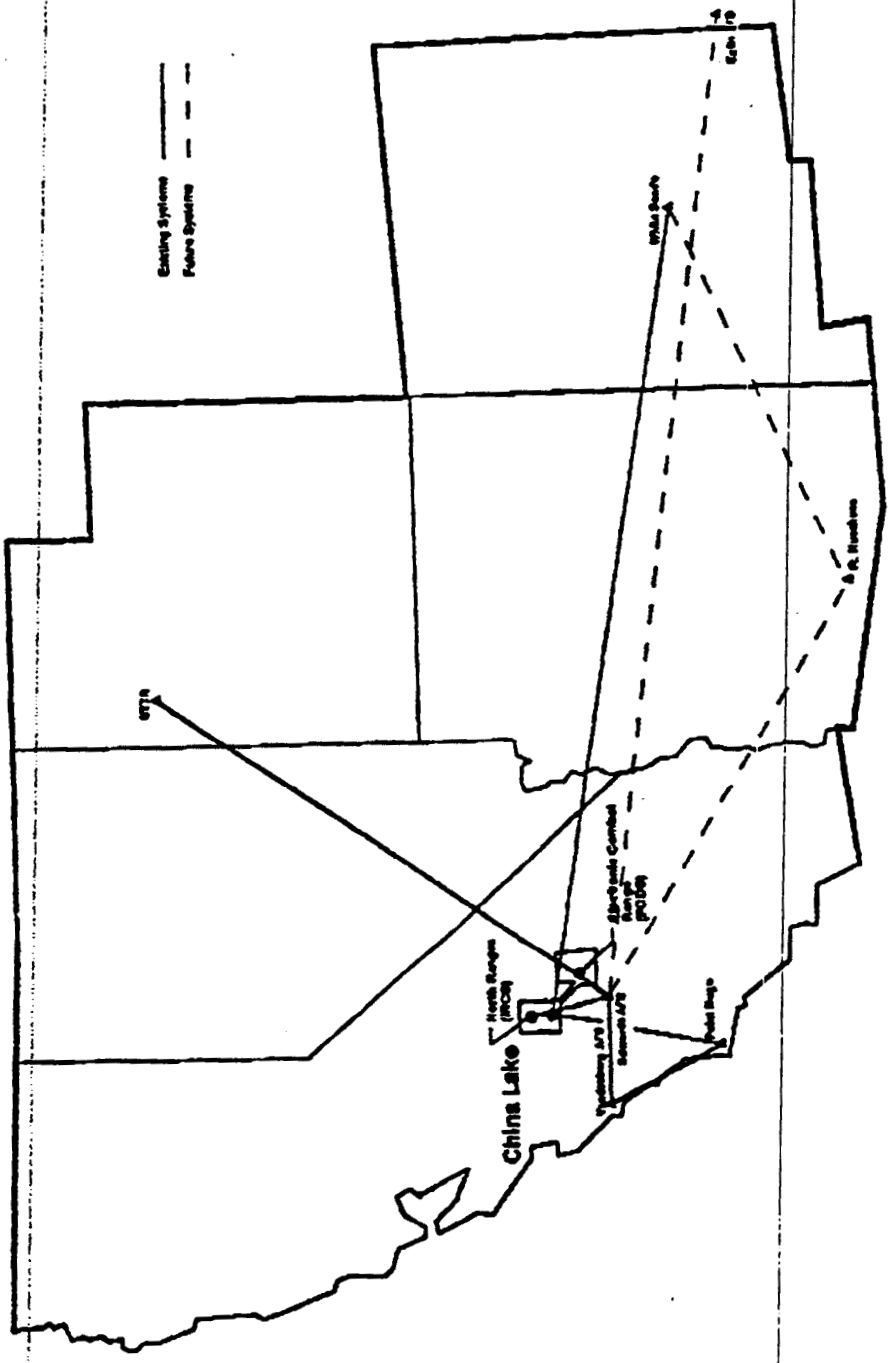
China Lake Interconnectivity

0057 A (1)

BRAC 95 DATA CALL #13

ACTIVITY UIC: 60530

Figure: China Lake interconnectivity

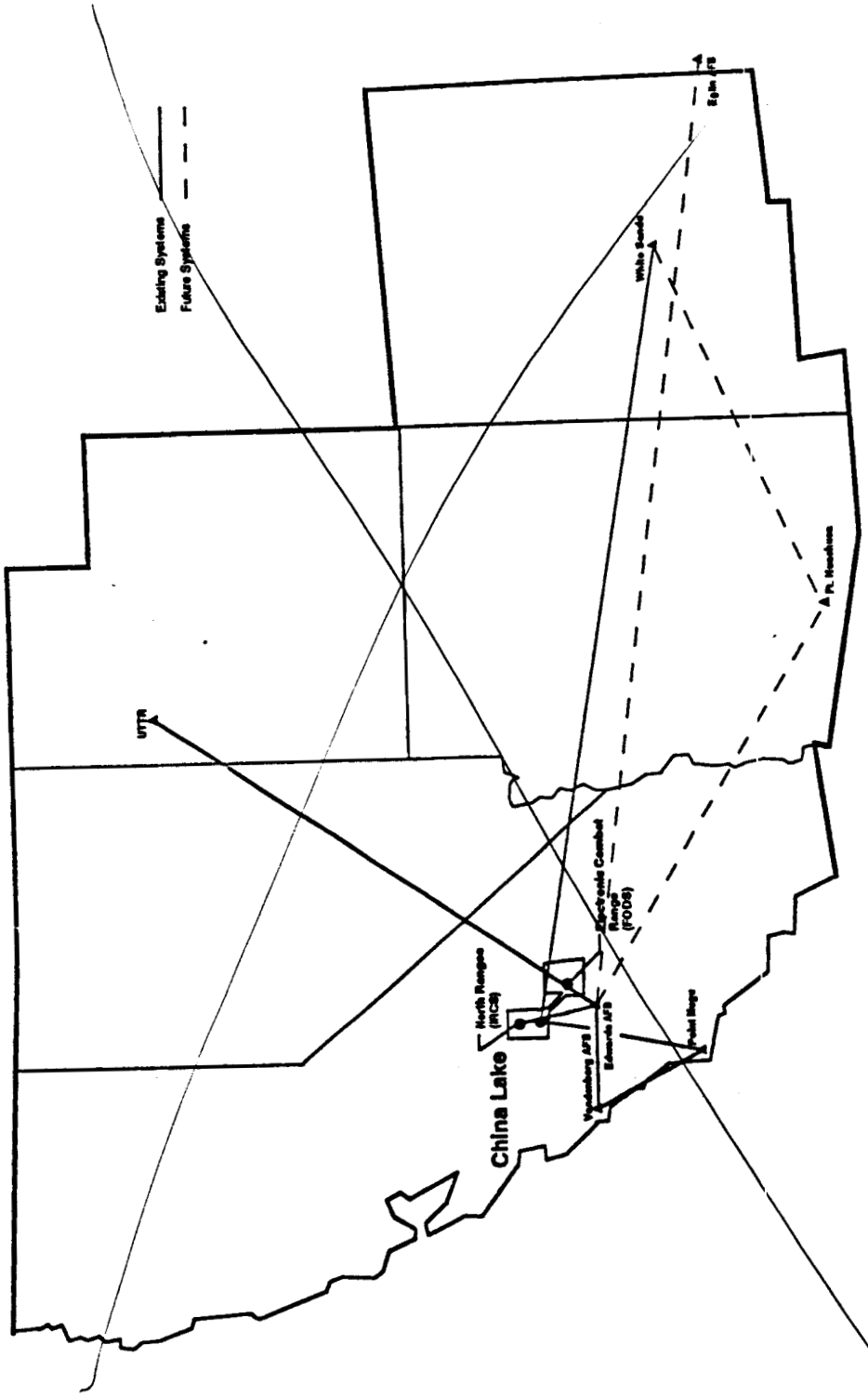


13 September 1994

0057A (2)

Figure: China Lake interconnectivity

See page 0057



China Lake Interconnectivity

0057

IMPACT ON INTERCONNECTED ACTIVITIES IF INSTALLATION IS CLOSED.
Even before consolidation, Point Mugu's sea range and China Lake's land range complex had initiated collaborative efforts (e.g., Tomahawk missile testing involves launch from offshore and flight termination at China Lake). The impact of the loss of China Lake's ranges would mean an end to this and a need to seek other land range facilities to sustain necessary testing, as well as a need to reconstitute instrumentation at new sites.

Internetting of the major military facilities in the Mojave Desert and Nevada, including China Lake, Fort Irwin, Nellis AFB, Edwards AFB, and Twenty-Nine Palms, would be disrupted, and the Navy's role would be eliminated as far as tactical air is concerned. Since these immense western land ranges are among the last available areas where high-performance aircraft can operate in a weapons-delivery mode without encountering encroachment and environmental problems, and these areas are additionally among the last available areas where large-scale live warhead weapon testing can be conducted over land, the Navy's role in RDT&E of tactical air weapons and in development of over-land tactics would largely disappear. Simultaneously, the ability of the major Air Force and Army activities in the California/Nevada complex to use China Lake's heavily instrumented land ranges in joint training exercises and for testing purposes would be destroyed.

Consolidation with Point Mugu has created, among other things, a merging of some administrative and support functions. Point Mugu's UNISYS mainframe capability has been cut, and its financial data processing is done at China Lake. Management of a number of administrative areas has been sited at China Lake. Point Mugu administrative operations are no longer stand-alone and would require augmentation and restructuring in order to function effectively. The efficiencies gained by consolidating these administrative functions would be lost.

Extent of linkage and impacts if closed for each of the 60 facilities/capabilities at NAWCWPNS China Lake is shown below.

MODELING AND SIMULATION

AIR WEAPON DIGITAL MODELING & SIMULATION
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

EXPLOSIVE AND ORDNANCE MODELING
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

IMPACT ON INTERCONNECTED ACTIVITIES IF INSTALLATION IS CLOSED.
Even before consolidation, Point Mugu's sea range and China Lake's land range complex had initiated collaborative efforts (e.g., Tomahawk missile testing involves launch from offshore and flight termination at China Lake). The impact of the loss of China Lake's ranges would mean an end to this and a need to seek other land range facilities to sustain necessary testing, as well as a need to reconstitute instrumentation at new sites.

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Extent of linkage and impacts if closed for each of the 60 facilities/capabilities at NAWCWPNS China Lake is shown below.

MODELING AND SIMULATION

AIR WEAPON DIGITAL MODELING & SIMULATION
3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

EXPLOSIVE AND ORDNANCE MODELING
3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

0058

Corrected Page

IMPACT ON INTERCONNECTED ACTIVITIES IF INSTALLATION IS CLOSED.
Even before consolidation, Point Mugu's sea range and China Lake's land range complex had initiated collaborative efforts (e.g., Tomahawk missile testing involves launch from offshore and flight termination at China Lake). The impact of the loss of China Lake's ranges would mean an end to this and a need to seek other land range facilities to sustain necessary testing, as well as a need to reconstitute instrumentation at new sites.

Internetting of the major military facilities in the Mojave Desert and Nevada, including China Lake, Fort Irwin, Nellis AFB, Edwards AFB, and Twenty-Nine Palms, would be disrupted, and the Navy's role would be eliminated as far as tactical air is concerned. Since these immense western land ranges are among the last available areas where high-performance aircraft can operate in a weapons-delivery mode without encountering encroachment and environmental problems, and these areas are additionally among the last available areas where large-scale live warhead weapon testing can be conducted over land, the Navy's role in RDT&E of tactical air weapons and in development of over-land tactics would largely disappear. Simultaneously, the ability of the major Air Force and Army activities in the California/Nevada complex to use China Lake's heavily instrumented land ranges in joint training exercises and for testing purposes would be destroyed.

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Extent of linkage and impacts if closed for each of the 60 facilities/capabilities at NAWCWPNS China Lake is shown below.

MODELING AND SIMULATION

AIR WEAPON DIGITAL MODELING & SIMULATION
3.1.A.1. None.
3.1.A.2. No.

EXPLOSIVE AND ORDNANCE MODELING
3.1.A.1 None.
3.1.A.2. No.

STRIKE SIMULATION & MODELING
3.1.A.1 5%. The Strike Simulation and Modeling facility is an aggregation of nine computer based laboratories. The majority of the computer processing in the nine laboratories is classified so the interconnectivity is limited at the present. As higher-bandwidth secure communication becomes practical, the plan is to not only connect the nine laboratories but to also establish secure connections with other facilities. This results in a division of the workload, with each facility critical to accomplishing the overall task (i.e., Warbreaker, Mission Planning, real-time flight test analysis, Concurrent Engineering Analysis, etc.). Currently, two of the nine laboratories (Strike Technology Laboratory and the Simulation Development Laboratory) interconnect with other facilities. Five percent of the FY93 workload involved near real-time exchange with other facilities. Internal facilities include Lauritsen Laboratory (image processing) and the ranges (flight test data processing). External connections were with the Point Mugu TAMPS development facility.

STRIKE SIMULATION & MODELING

3.1.A.1. (a) 5%

(b) Secure Image Processing Laboratory
Air/Ground Range OAR
Point Mugu TAMPS (Tactical Aircraft Mission Planning System) Development Facility

(c) None of the above are simultaneous activities.

(d) The Secure Image Processing Laboratory is internal to the site.
The Air/Ground Range OAR is internal to the site.
The Point Mugu TAMPS (Tactical Aircraft Mission Planning System) Development Facility is external to the site.

The Strike Simulation and Modeling facility is an aggregation of nine computer based laboratories. The majority of the computer processing in the nine laboratories is classified so the interconnectivity is limited at the present. As higher-bandwidth secure communication becomes practical, the plan is to not only connect the nine laboratories but to also establish secure connections with other facilities. This results in a division of the workload, with each facility critical to accomplishing the overall task (i.e., Warbreaker, Mission Planning, real-time flight test analysis, Concurrent Engineering Analysis, etc.). Currently, two of the nine laboratories (Strike Technology Laboratory and the Simulation Development Laboratory) interconnect with other facilities.

3.1.A.2. Yes. Closing any of the nine laboratories that comprise the Strike Simulation and Modeling Facility would critically affect tasks because of the distributed nature of the workload. In addition, current plans site the facilities where the expertise is and provide for concurrent development through secure interconnects; disruption of that would be expensive and delay the development process.

STRIKE SOFTWARE/SIMULATION FACILITY

3.1.A.1. (a) 0%

(b) Connected to no other facilities

(c) N/A

(d) N/A

3.1.A.2. TLAM Simulation Laboratory: This is the only facility of its kind at China Lake. Currently, because of security requirements, no interconnections have been established to this laboratory.

SYSTEM MODELING & SIGNAL PROCESSING FACILITY

3.1.A.1. (a) 0%

(b) Connected to no other facilities

(c) N/A

(d) N/A

3.1.A.2. Presently this facility is not totally interconnected, but is planned to be networked in the future.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

STRIKE SIMULATION & MODELING

3.1.A.1. (a) 5%

(b) Secure Image Processing Laboratory
Air/Ground Range OAR
Point Mugu TAMPS (Tactical Aircraft Mission Planning System) Development Facility

(c) None of the above are simultaneous activities. R

(d) The Secure Image Processing Laboratory is internal to the site.
The Air/Ground Range OAR is internal to the site.
The Point Mugu TAMPS (Tactical Aircraft Mission Planning System) Development Facility is external to the site.

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STRIKE SOFTWARE/SIMULATION FACILITY

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(b) Connected to no other facilities R

(c) N/A

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SYSTEM MODELING & SIGNAL PROCESSING FACILITY

3.1.A.1. (a) 0%

(b) Connected to no other facilities R

(c) N/A

(d) N/A

3.1.A.2. Presently this facility is not totally interconnected, but is planned to be networked in the future.

0060

Corrected Page

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3.1.A.1 None.
3.1.A.2. TLAM Simulation Laboratory: This is the only facility of its kind at China Lake. Currently, because of security requirements, no interconnections have been established to this laboratory.

SYSTEM MODELING & SIGNAL PROCESSING FACILITY
3.1.A.1. None.
3.1.A.2. Presently this facility is not totally interconnected, but is planned to be networked in the future.

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)
3.1.A.1 The Weapons and Tactics Analysis Center (WEPTAC) in FY93 was not linked with any other facility in support of testing. However, there are two efforts under way (i.e., programmed) in order to facilitate real-time exchange of data in support of testing.

The Internetted Range Interactive Simulation (IRIS) project is a 2-year FY93 effort funded by the Defense Modeling and Simulation Office (DMSO). The purpose of the project is to link the Point Mugu Sea Range, the F/A-18 Weapon System Support Facility (WSSF), and the WEPTAC simulation using Distributed Interactive Simulation (DIS) protocols and standards. The resulting capability will be used to provide a synthetic environment in which to perform more robust and operationally significant test and evaluation as well as training and analysis. The capability will be operational in October 1994.

The second effort is a 2-year FY94 effort also funded by DMSO. The purpose of the project is to link the following facilities: the WEPTAC facility at China Lake; the Sea Range at Point Mugu; the RESA simulation, the ENWGS simulation, and the TADIL J SIF at NRaD; the TACCSF simulation at Kirtland Air Force Base; the White Sands Missile Range; the REDCAP facility; the EXCAP facility at Los Angeles; the JITC facility at Fort Huachuca; and the EA-6B Simulator at NAWCAD. This effort provides an initial architecture, test suite, and toolset for Joint Interoperability Testing (JIT), training, and analysis. The WEPTAC facility offers an opportunity to apply modeling and simulation to augment and, in some cases, replace live testing operations.

All connectivity is via the DIS protocols and standards. These interconnectivities, again, are to be used together to provide greater flexibility and capability in performing more robust and operationally significant test and evaluation as well as training and analysis.

Percent of total test workload in FY93: 0 %.

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)

3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A

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All connectivity is via the DIS protocols and standards. These interconnectivities, again, are to be used together to provide greater flexibility and capability in performing more robust and operationally significant test and evaluation as well as training and analysis.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
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All connectivity is via the DIS protocols and standards. These interconnectivities, again, are to be used together to provide greater flexibility and capability in performing more robust and operationally significant test and evaluation as well as training and analysis.

0062

Corrected Page

Facilities Interconnect List; Programmed Capabilities:

FACILITY	TYPE	MISSION
NAWCWPNS China Lake, CA F/A-18 WSSF	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
NAWCWPNS Point Mugu, CA Battle Management Interoperability Center (BMIC)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
NRaD, San Diego, CA Enhanced Naval Wargaming System (ENWGS) Research, Evaluation, and Systems Analysis (RESA) JTIDS System Integration Facility (SIF)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Kirtland Air Force Base, Albuquerque, NM Theater Air Command and Control Simulation Facility (TACCSF)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Falcon AFB, Colorado Springs, CO National Test Facility (NTF)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
REDCAP, Buffalo, NY Real-time Electromagnetic Digitally Controlled Analyzer and Processor (REDCAP)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
EXCAP, Los Angeles, CA Exercise Capability (EXCAP)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
White Sands, NM White Sands Missile Range (WSMR)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Fort Huachuca, AZ Joint Integrated Test Center (JITC)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
NAWCAD Patuxent River, MD EA-6B Simulator	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis

3.1.A.2 The Weapons and Tactics Analysis Center provides an interactive man-in-the-loop capability to provide operational players to participate in the distributed testing environment. The WEPTAC facility augments the distributed interactive simulation environment to provide a more realistic operational testing environment through the simulation. It allows modeling and simulation

Facilities Interconnect List: Programmed Capabilities

FACILITY	TYPE	MISSION
NAWCWPNS China Lake, CA F/A-18 WSSF	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
NAWCWPNS Point Mugu, CA Battle Management Interoperability Center (BMIC)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
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Kirtland Air Force Base, Albuquerque, NM Theater Air Command and Control Simulation Facility (TACCSF)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Falcon AFB, Colorado Springs, CO National Test Facility (NTF)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
REDCAP, Buffalo, NY Real-time Electromagnetic Digitally Controlled Analyzer and Processor (REDCAP)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
EXCAP, Los Angeles, CA Exercise Capability (EXCAP)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
White Sands, NM White Sands Missile Range (WSMR)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Fort Huachuca, AZ Joint Integrated Test Center (JITC)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
NAWCAD Patuxent River, MD EA-6B Simulator	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis

3.1.A.2. The Weapons and Tactics Analysis Center provides an interactive man-in-the-loop capability to provide operational players to participate in the distributed testing environment. The WEPTAC facility augments the distributed interactive simulation environment to provide a more realistic operational testing environment through the simulation. It allows modeling and simulation

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

Facilities Interconnect List: Programmed Capabilities

FACILITY	TYPE	MISSION
NAWCWPNS China Lake, CA F/A-18 WSSF	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
NAWCWPNS Point Mugu, CA Battle Management Interoperability Center (BMIC)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
NRaD, San Diego, CA Enhanced Naval Wargaming System (ENWGS) Research, Evaluation, and Systems Analysis (RESA) JTIDS System Integration Facility (SIF)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Kirtland Air Force Base, Albuquerque, NM Theater Air Command and Control Simulation Facility (TACCSF)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Falcon AFB, Colorado Springs, CO National Test Facility (NTF)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
REDCAP, Buffalo, NY Real-time Electromagnetic Digitally Controlled Analyzer and Processor (REDCAP)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
EXCAP, Los Angeles, CA Exercise Capability (EXCAP)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
White Sands, NM White Sands Missile Range (WSMR)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Fort Huachuca, AZ Joint Integrated Test Center (JITC)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
NAWCAD Patuxent River, MD EA-6B Simulator	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis

3.1.A.2 The Weapons and Tactics Analysis Center provides an interactive man-in-the-loop capability to provide operational players to participate in the distributed testing

Corrected Page

to interact with and augment live testing. Those features inherent to the simulation itself (i.e., operational player in the loop, operational flexibility and complexity) would be missing from the architecture for Joint Interoperability Testing (JIT), training, and analysis that the aforementioned IRIS and JETTA programs are to provide. All the facilities mentioned above would be impacted if this facility were not available to support this architecture.

MEASUREMENT

AEROHEAT TEST FACILITY
3.1.A.1. None.
3.2.A.2. No.

AIR BREATHING PROPULSION LABORATORY
3.1.A.1. None.
3.1.A.2. No.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
3.1.A.1. Real-time interface occurs 80% of the time with tactical aircraft and the Air/Ground Range Telemetry Station.
3.1.A.2. No. The complex is a stand-alone test complex. The test van provides a unique capability of stand-alone seeker/target data collection with post-test data analysis. The NTA-4F provides for collection of seeker performance data in an environment free of reflections from wings, pylons, intakes, and other stores. On-board data recording provides independent data collection in noninstrumented/RF silent/hostile areas. Telemetry links airborne system data to displays at T-Pad for use in conducting flight tests.

CACTUS FLATS ORDNANCE TEST AREA
3.1.A.1. None.
3.1.A.2. No.

CHEMICAL ANALYSIS RESEARCH FACILITY
3.1.A.1. Approximately 30%.
3.1.A.2. Yes. The Chemical Analysis Facility not only plays a critical role in SSPO's large-scale rocket motor burn activities, but also provides significant support to the Environmental Projects Office, Safety and Industrial Hygiene.

DETONATION PHYSICS LABORATORY
3.1A.1. None.
3.1.A.2. No.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
3.1.A.1. None.
3.1.A.2. No.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
3.1 A.1. None.
3.1.A.2. No.

ENVIRONMENTAL TEST COMPLEX
3.1.A.1. None.
3.1.A.2. No.

environment. The WEPTAC facility augments the distributed interactive simulation environment to provide a more realistic operational testing environment through the simulation. It allows modeling and simulation to interact with and augment live testing. Those features inherent to the simulation itself (i.e., operational player in the loop, operational flexibility and complexity) would be missing from the architecture for Joint Interoperability Testing (JIT), training, and analysis that the aforementioned IRIS and JETTA programs are to provide. All the facilities mentioned above would be impacted if this facility were not available to support this architecture.

MEASUREMENT

AEROHEAT TEST FACILITY
3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.2.A.2. No.

AIR BREATHING PROPULSION LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
3.1.A.1 (a) 80%
(b) Air/Ground Range Telemetry Station R
(c) The Air/Ground Range Telemetry Station is not a simultaneous activity.
(d) The Air/Ground Range Telemetry Station is internal to the site.
3.1.A.2. No. The complex is a stand-alone test complex. The test van provides a unique capability of stand-alone seeker/target data collection with post-test data analysis. The NTA-4F provides for collection of seeker performance data in an environment free of reflections from wings, pylons, intakes, and other stores. On-board data recording provides independent data collection in noninstrumented/RF silent/hostile areas. Telemetry links airborne system data to displays at T-Pad for use in conducting flight tests.

CACTUS FLATS ORDNANCE TEST AREA
3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

CHEMICAL ANALYSIS RESEARCH FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A

0066

Corrected Page

to interact with and augment live testing. Those features inherent to the simulation itself (i.e., operational player in the loop, operational flexibility and complexity) would be missing from the architecture for Joint Interoperability Testing (JIT), training, and analysis that the aforementioned IRIS and JETTA programs are to provide. All the facilities mentioned above would be impacted if this facility were not available to support this architecture.

MEASUREMENT

AEROHEAT TEST FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.2.A.2. No.

AIR BREATHING PROPULSION LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
3.1.A.1 (a) 80%
(b) Air/Ground Range Telemetry Station
(c) The Air/Ground Range Telemetry Station is not a simultaneous activity.
(d) The Air/Ground Range Telemetry Station is internal to the site.
3.1.A.2. No. The complex is a stand-alone test complex. The test van provides a unique capability of stand-alone seeker/target data collection with post-test data analysis. The NTA-4F provides for collection of seeker performance data in an environment free of reflections from wings, pylons, intakes, and other stores. On-board data recording provides independent data collection in noninstrumented/RF silent/hostile areas. Telemetry links airborne system data to displays at T-Pad for use in conducting flight tests.

CACTUS FLATS ORDNANCE TEST AREA
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

CHEMICAL ANALYSIS RESEARCH FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. Yes. The Chemical Analysis Facility not only plays a critical role in SSPO's large-scale rocket motor burn activities, but also provides significant support to the Environmental Projects Office, Safety and Industrial Hygiene.

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
3.1.A.1. None.
3.1.A.2. No.

GUIDANCE COMPONENTS T&A COMPLEX
3.1.A.1. None. The capability exists for real-time data transfer. However, the facility has not been used in this mode.
3.1.A.2. Yes. Actuator T&A: The actuator test facilities include a remote building (Firing Bay) certified for testing of Class 1 Division 4 type explosives as designated by NAVSEA OP 5 Volume I, Chapter 7-1. This facility provides for full instrumentation of actuator and gas generator ignition tests, and is also used for testing thermal batteries. Inertial Component T&A: The computer-based testbed has full GPI connectivity and thus has excellent flexibility of configuration, permitting the test and measurement hardware to be used for other in-house applications such as test program development, and actuator control systems. Inertial Test Lab: All equipment in this laboratory is networked to the NAWCWPNS corporate Ethernet and is accessible by integration laboratories and hardware-in-the-loop laboratories throughout NAWC, such as F/A-18 WSSA and F/A-18 Navigation Lab (with 10 mb/second data rate). Thermal Battery T&A: Full instrumentation and control is available in a remote Firing Bay which is used for destructive tests. This building is also used for Actuator T&E. Electronics Assembly T&A: Interconnectivity with other sites has not been established, but a low-level effort is under way to establish a modem link with the Gator KMU test systems located at the Iowa Army Ammunition Plant (IAAP) and the Lone Star Army Ammunition Plane (LSAAP). Establishment of these modem links will allow the computer to control and monitor the test sequence of the Gator KMU test system, in real time, at these depot sites.

HIGH HAZARD PROPULSION TEST FACILITY
3.1.A.1. Yes. 20% Interconnectivity to Main Control Room, also controlling Strategic Propulsion Test facility. Real-time exchange of data between propulsion test bays and control room is inherent. Data between propulsion test bays and control room is inherent. Data are not exchanged between propulsion test bays and high-hazard test bays, but some common data and control lines exist. No simultaneous test activities at any two test bays. All interconnectivity internal to the Skytop site encompassing all propulsion test bays.
3.1.A.2. Yes. Facility is linked to the Main Control Room (16079) for control and data acquisition purposes. Nearby support facilities include LN2, X-Ray, Computer Tomography, temperature-controlled storage, transducer calibration laboratory, buildup and prep facilities, and general shop capabilities. Facility can support any classification of programs.

IR SEEKER, GCS DDT&E COMPLEX
3.1.A.1. None.
3.1.A.2. No.

JUNCTION RANCH RADAR CROSS SECTION RANGE
3.1.A.1. None.
3.1.A.2. No. JR is currently implementing the RCS Common Data Format, which will allow direct data interchange between JR and other DOD RCS ranges.

MATERIALS ENGINEERING / FAILURE ANALYSIS FACILITY
3.1.A.1. None.
3.1.A.2. No.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
3.1.A.1. None.
3.1.A.2. No.

0067

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CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

3.1.A.2. Yes. The Chemical Analysis Facility not only plays a critical role in SSPO's large-scale rocket motor burn activities, but also provides significant support to the Environmental Projects Office, Safety and Industrial Hygiene.

0068

Corrected Page

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
3.1.A.1. None.
3.1.A.2. No.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
3.1.A.1. None.
3.1.A.2. No.

OPTICS & LASER RESEARCH FACILITY
3.1.A.1. None.
3.1.A.2. Yes. The Large Laser Optics facility is critical to the operations of the High Energy Laser System Test Facility (HELSTF) at White Sands. The Large Laser Optics facility provides quality assurance measurements on laser optics that are not duplicated elsewhere.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
3.1.A.1. None.
3.1.A.2. No.

ORDNANCE TEST COMPLEX
3.1.A.1. None.
3.1.A.2. No.

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
3.1.A.1. None.
3.1.A.2. No.

SENSOR & TARGETING TECHNOLOGY FACILITY
3.1.A.1. None.
3.1.A.2. No.

SLED TRACKS
3.1.A.1. None.
3.1.A.2. No.

STRATEGIC PROPULSION TEST COMPLEX
3.1.A.1 Yes. 20% interconnectivity to Main Control Room, also controlling Strategic Propulsion Test facility. Real-time exchange of data between propulsion test bays and control room is inherent. Data between propulsion test bays and control room is inherent. Data is not exchanged between propulsion test bays and high-hazard test bays, but some common data and control lines exist. No simultaneous test activities at any two test bays. All interconnectivity internal to the Skytop site encompassing all propulsion test bays.
3.1.A.2. No.

TACTICAL PROPULSION TEST FACILITY
3.1.A.1. None.
3.1.A.2. No.

VHF ANECHOIC CHAMBER
3.1.A.1. None.
3.1.A.2. No.

0069

DETONATION PHYSICS LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

ENVIRONMENTAL TEST COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

DETONATION PHYSICS LABORATORY
3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

ENVIRONMENTAL TEST COMPLEX
3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

0070

Corrected Page

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
3.1.A.1. None.
3.1.A.2. No.

WEAPONS SURVIVABILITY LABORATORY (WSL)
3.1.A.1. None.
3.1.A.2. No.

INTEGRATION LABORATORY

ACTUATOR AND POWER SYSTEMS LABORATORY
3.1.A.1. None.
3.1.A.2. No.

ANTIRADIATION MISSILE INTEGRATION COMPLEX
3.1.A.1. None.
3.1.A.2. No.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
3.1.A.1. None.
3.1.A.2. Facility connected to Ethernet/Internet. All other T&E and non-T&E facilities can gain access to various resources via the internet using standard TCP/IP protocols.

COMPOSITES DEVELOPMENT LABORATORY
3.1.A.1. None.
3.1.A.2. No.

DATA LINK DEVELOPMENT LABORATORY
3.1.A.1. Approximately 50% of the Development Laboratory involves real-time data transfer. Facilities include Weapons Development Laboratory, Aircraft and Mobile Instrumentation.
3.1.A.2. Yes. Closure of this facility would have a significant adverse impact to the Data Link activities at the NAWCAD, Indianapolis.

ELECTRONIC WARFARE INTEGRATION LABORATORY
3.1.A.1. None.
3.1.A.2. No.

FUZE DEVELOPMENT LABORATORY
3.1.A.1. None.
3.1.A.2. No.

LASER SEEKER INTEGRATION AND TEST FACILITY
3.1.A.1. None.
3.1.A.2. No.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
3.1.A.1. None.
3.1.A.2. No.

ORDNANCE ASSEMBLY FACILITY
3.1.A.1. None.
3.1.A.2. No.

GUIDANCE COMPONENTS T&A COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
The capability exists for real-time data transfer. However, the facility has not been used in this mode.

3.1.A.2. Yes. Actuator T&A: The actuator test facilities include a remote building (Firing Bay) certified for testing of Class 1 Division 4 type explosives as designated by NAVSEA OP 5 Volume I, Chapter 7-1. This facility provides for full instrumentation of actuator and gas generator ignition tests, and is also used for testing thermal batteries. Inertial Component T&A: The computer-based testbed has full GPI connectivity and thus has excellent flexibility of configuration, permitting the test and measurement hardware to be used for other in-house applications such as test program development, and actuator control systems. Inertial Test Lab: All equipment in this laboratory is networked to the NAWCWPNS corporate Ethernet and is accessible by integration laboratories and hardware-in-the-loop laboratories throughout NAWC, such as F/A-18 WSSA and F/A-18 Navigation Lab (with 10 mb/second data rate). Thermal Battery T&A: Full instrumentation and control is available in a remote Firing Bay which is used for destructive tests. This building is also used for Actuator T&E. Electronics Assembly T&A: Interconnectivity with other sites has not been established, but a low-level effort is under way to establish a modem link with the Gator KMU test systems located at the Iowa Army Ammunition Plant (IAAP) and the Lone Star Army Ammunition Plane (LSAAP). Establishment of these modem links will allow the computer to control and monitor the test sequence of the Gator KMU test system, in real time, at these depot sites.

HIGH HAZARD PROPULSION TEST FACILITY
3.1.A.1. (a) 20%
(b) Main Control Room, which also serves the Strategic Propulsion Test Facility.
(c) The Main Control Room is not a simultaneous activity.
(d) The Main Control Room is internal to the site.
3.1.A.2. Yes. Facility is linked to the Main Control Room (16079) for control and data acquisition purposes. Nearby support facilities include LN2, X-Ray, Computer Tomography, temperature-controlled storage, transducer calibration laboratory, buildup and prep facilities, and general shop capabilities. Facility can support any classification of programs.

IR SEEKER, GCS DDT&E COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

JUNCTION RANCH RADAR CROSS SECTION RANGE
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No. JR is currently implementing the RCS Common Data Format, which will allow direct data interchange between JR and other DOD RCS ranges.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

GUIDANCE COMPONENTS T&A COMPLEX

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

The capability exists for real-time data transfer. However, the facility has not been used in this mode.

3.1.A.2. Yes. Actuator T&A: The actuator test facilities include a remote building (Firing Bay) certified for testing of Class 1 Division 4 type explosives as designated by NAVSEA OP 5 Volume I, Chapter 7-1. This facility provides for full instrumentation of actuator and gas generator ignition tests, and is also used for testing thermal batteries. Inertial Component T&A: The computer-based testbed has full GPI connectivity and thus has excellent flexibility of configuration, permitting the test and measurement hardware to be used for other in-house applications such as test program development, and actuator control systems. Inertial Test Lab: All equipment in this laboratory is networked to the NAWCWPNS corporate Ethernet and is accessible by integration laboratories and hardware-in-the-loop laboratories throughout NAWC, such as F/A-18 WSSA and F/A-18 Navigation Lab (with 10 mb/second data rate). Thermal Battery T&A: Full instrumentation and control is available in a remote Firing Bay which is used for destructive tests. This building is also used for Actuator T&E. Electronics Assembly T&A: Interconnectivity with other sites has not been established, but a low-level effort is under way to establish a modem link with the Gator KMU test systems located at the Iowa Army Ammunition Plant (IAAP) and the Lone Star Army Ammunition Plane (LSAAP). Establishment of these modem links will allow the computer to control and monitor the test sequence of the Gator KMU test system, in real time, at these depot sites.

HIGH HAZARD PROPULSION TEST FACILITY

3.1.A.1. (a) 20%
(b) Main Control Room, which also serves the Strategic Propulsion Test Facility. R
(c) The Main Control Room is not a simultaneous activity.
(d) The Main Control Room is internal to the site.

3.1.A.2. Yes. Facility is linked to the Main Control Room (16079) for control and data acquisition purposes. Nearby support facilities include LN2, X-Ray, Computer Tomography, temperature-controlled storage, transducer calibration laboratory, buildup and prep facilities, and general shop capabilities. Facility can support any classification of programs.

IR SEEKER, GCS DDT&E COMPLEX

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

3.1.A.2. No.

JUNCTION RANCH RADAR CROSS SECTION RANGE

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

0072

Corrected Page

TELEMETRY DEVELOPMENT LABORATORY
3.1.A.1. None.
3.1.A.2. No.

TSSAM MISSION PLANNING FACILITY
3.1.A.1. None.
3.1.A.2. This facility may be used by other programs with similar mission planning requirements.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
3.1.A.1. None.
3.1.A.2. No.

WEAPONS GUIDANCE/CONTROL/SEEKER IL
3.1.A.1. The IR rate tables interconnect with the Signal-Processor in the Loop (SPIL) Facility and exchange data real-time about 10% of the time. The Dual Mode Facility (to be completed first quarter FY95) will interconnect with the MHIP Common Seeker Test Facility for real-time data exchange about 15% of the time.
3.1.A.2. Capability for direct classified data link between rate table test stations and the SPIL laboratory. The Dual Mode Facility can be connected with the MHIP Common Seeker Test Facility to allow for better IR target presentation and sensor data fusion. Support guidance/control integration with other missile components and Navy and Air Force fixed wing aircraft and Army rotary aircraft for any missile system.

WEAPON SYSTEMS SUPPORT FACILITY, A-6
3.1.A.1. None.
3.1.A.2. No.

WEAPONS SYSTEM SUPPORT FACILITY, AH-1
3.1.A.1. None.
3.1.A.2. No.

WEAPONS SYSTEM SUPPORT FACILITY, AV-8
3.1.A.1. None.
3.1.A.2. No.

WEAPON SYSTEM SUPPORT FACILITY, F/A-18
3.1.A.1. In order to perform higher levels of system testing a number of facilities are currently in the process of being interconnected. The technology is being developed and demonstrated using the F/A-18 Weapon System Support Facility (WSSF), and will be extended to the AV-8 WSSF during FY95. The WSSF has been internetted with the F/A-18 Sensors Laboratory to provide FLIR and radar data to the aircraft's' fire-control systems. This data will enable Multisource Sensor Fusion Integration to be performed in the facility. The F/A-18 WSSF was connected to the Electronic Combat Range to enable EW equipment to be tested against actual and simulated threat radar systems, and yet use the WSSFs to provide the remainder of the avionic systems. The F/A-18 WSSF has been internetted with the NAWCWPNS Inertial Navigation Lab's GPS Satellite simulator to provide cost-effective dynamic test capability for the GPS receiver. The WSSF also is being linked to the missile hardware-in-the-loop SIMLAB to provide pre-flight integration weapons testing, including captive carry, launch, and post-launch data link. The IRIS Project (Internetted Range Interactive Simulations) is currently in the development phase with a demonstration test scheduled for October 1994. IRIS will link the WSSF with the Weapons and Tactics Analysis Center (WEPTAC) and the Battle Management Interoperability Center at Point

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

3.1.A.2. No. JR is currently implementing the RCS Common Data Format, which will allow direct data interchange between JR and other DOD RCS ranges.

0074

Corrected Page

Mugu to work out the technical issues and investigate benefits obtained by linking real, virtual, and constructive systems and simulations together. The infrastructure established by IRIS can be used as leverage to bridge the gap in using modeling and simulation in T&E and Training scenarios. The F/A-18 is also participating in a Joint Advanced Distributed Simulation test where it will be linked with an AMRAAM HWIL facility at Eglin AFB. Additionally, the F/A-18 WSSF is investigating establishing links with other DOD Contractors to perform R&D testing; for example, with Northrup to perform development of a new generation of Tactical Training Systems. The F/A-18 Sensor Facility has established a T-1 connectivity with Hughes El Segundo for exchange of technical information and flight software. In addition to the above internetting, the WSSFs have also been linked to actual aircraft using the platform radios to perform data-linking and communication tests.

The majority of the established links are internal to the China Lake site. Single-node failure for the WSSFs would impact linked platform testing efforts. Real-time integration testing may be impacted by induction of larger time latencies induced because of the increased network distances.

Facilities Interconnect List: Existing Capabilities:

Facility	Type	Mission
NAWCWPNS China Lake, CA		
Electronic Combat Range (ECR)	1553 T-1/Ethernet Ext	Avionics Integration
F/A-18 Sensors Laboratory		
GPS Integration Test Lab	1553 T-1/Ethernet Ext	Avionics Integration
Live Aircraft	1553 T-1/Ethernet Ext	Avionics Integration
	Communications Radio	Data Link and Communication Tests

Programmed Capabilities:

Facility	Type	Mission
NAWCWPNS China Lake, CA HWIL SIMLAB Weapons and Tactics Analysis Center (WEPTAC)	1553 T-1/Ethernet Ext Distributed Interactive Simulation (DIS) Note: See WEPTAC entry for additional facility connectivities using DIS.	Avionics Integration Synthetic Environment for Testing, Training, Analysis
NAWCWPNS Point Mugu, CA Battle Management Interoperability Center (BMIC)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Eglin, AFB AMRAAM HWIL	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis

3.1.A.2. Yes. China Lake is the principal site for F/A-18 and AV-8B testing. As such, it is vital to keep the Weapon System Support Facilities and test aircraft collocated. The facilities share the aircraft avionics assets, provide flight rehearsal and playback capability, and are the primary tool that enables a reduction in the number of flight tests that need to be performed. In addition, much of the real-time network testing that is being developed would not be possible if associated facilities and land ranges were not collocated. For instance, after missile launch, the RF data link between

MATERIALS ENGINEERING / FAILURE ANALYSIS FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

OPTICS & LASER RESEARCH FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. Yes. The Large Laser Optics facility is critical to the operations of the High Energy Laser System Test Facility (HELSTF) at White Sands. The Large Laser Optics facility provides quality assurance measurements on laser optics that are not duplicated elsewhere.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

ORDNANCE TEST COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

MATERIALS ENGINEERING / FAILURE ANALYSIS FACILITY
3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A R
(d) N/A
3.1.A.2. No.

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

OPTICS & LASER RESEARCH FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. Yes. The Large Laser Optics facility is critical to the operations of the High Energy Laser System Test Facility (HELSTF) at White Sands. The Large Laser Optics facility provides quality assurance measurements on laser optics that are not duplicated elsewhere.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

ORDNANCE TEST COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A

0076

Corrected Page

the missile and aircraft requires close proximity. This is a technical issue that will be investigated during the Joint Advanced Distributed Simulation test mentioned previously. To preserve the integrity of real-time testing, the responses between the remote aircraft subsystems need to be received within one Mission Computer (MC) cycle time (50 milliseconds). For example, the F/A-18 WSSF-Electronic Combat Range (ECR) current 40-mile link has a response time of 13 milliseconds. If the WSSF is moved a large distance away from the ECR, such that the response time exceeds the 50 millisecond MC cycle time, they could not be linked together for real-time tests.

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
3.1.A.1. None.
3.1.A.2. No.

SIMULATION LABORATORY—MISSILE HITL
3.1.A.1. The China Lake Missile Simulation Laboratory (SIMLAB) is a state-of-the-art hardware-in-the-loop simulation facility for missile system test, development, and evaluation. The SIMLAB consists of three RF facilities, two IR/EO facilities, an inertial flight table for testing inertial sensor packages, an imaging systems laboratory, and an assortment of real-time simulation computers and engineering work stations.

A fiber optic data link, networking hardware, and special purpose hardware and software interfaces between the SIMLAB and the China Lake F/A-18 Weapon System Support Facility (WSSF) will be in place by the end of FY94, which will allow real-time testing of an integrated weapon/platform system.

This interconnect is still in the final stages of development at this time. Therefore it was not involved in any FY 93 work.

This linkage uses the China Lake fiber optic trunk system (NETWORK). While this system has a demonstrated reliability, it represents a single-node failure potential.

Facilities Interconnect List: Programmed Capabilities:

Facility	Type	Mission
NAWCWPNS China Lake, CA F/A-18 WSSF	1553 T-1/Ethernet Ext	Avionics Integration Total weapon system performance/evaluation

3.1.A.2. Yes. The link between the F/A-18 WSSF and the SIMLAB will provide a unique capability for testing integrated weapon systems for the F/A-18 aircraft. In order to accomplish this link, there are critical timing requirements that must be satisfied. To preserve the integrity of real-time testing, the responses between the aircraft subsystems need to be received within one mission computer cycle time (50 milliseconds).This puts a severe constraint on the maximum allowable distance between the facilities. Single-node failure or loss of the SIMLAB would severely impact linked platform testing efforts.

0077

3.1.A.2. No.

0078

Corrected Page

TSSAM HARDWARE-IN-THE-LOOP
3.1.A.1. None.
3.1.A.2. This facility is used in conjunction with TSSAM Mission Planning facilities and local aircraft assets to provide an end-to-end system capability for the TSSAM weapon system. The HITL may also be used by other systems with similar type components.

IOPEN AIR

AIR/GROUND RANGE
3.1.A.1. The China Lake ranges are all linked together through a variety of communications networks including fiber optics. The ranges are also linked to the Weapons System Support Facilities (WSSF) with additional connections planned for other lab facilities in the near future. Internally these ranges communicate and transfer data in real-time daily. Externally the ranges are linked with Edwards AFB, Vandenberg AFB, and Point Mugu through a well established data link. This link is used routinely in conjunction with the Point Mugu Sea Range to perform ship launched, long range, low level cruise missile operations which impact at China Lake. China Lake has also participated in joint exercised with Fort Irwin, UTTR, and Edwards AFB. Although these type of operations have become routine over the past several years they account for less than 1% of the total test workload, as most tests can be performed within China Lake's boundaries.
3.1.A.2. The China Lake complex of laboratories, engineering facilities, air and ground ranges, and a myriad of other test facilities are all inter-related and inter-dependent on each other in providing the Navy's principal RDT&E center for air warfare systems.

The China Lake ranges provide a vital link in the operational testing of cruise missiles and in the operation and maintenance of the R-2508 airspace complex. The Air/Ground Ranges provide the only West Coast capability for instrumented, over land, and terminal data for Fleet-launched Tomahawk missiles. China Lake is also the only facility that allows impact testing of inert Land Attack Cruise Missile Conventional (TLAM-C) and the Dispense Variant (TLAM-D) after launch from operational platforms.

China Lake similarly provides routine support to the other services, particularly those located in the western U.S. Edwards AFB, Nellis AFB, Fort Irwin, Twenty Nine Palms, etc.—when a well equipped and instrumented land range is required. For example, Edwards routinely uses China Lake ranges to conduct ordnance test operations. Bombers have conducted numerous scenarios over the China Lake ranges, the F-22 fired the first Sidewinder here, and the AC-130 gun ship currently does weekly test operations at this facility.

ELECTRONIC COMBAT RANGE (ECR)
3.1.A.1. ECR is interconnected by a DS-3 Digital data link to the NAWCWPNS Corporate Data Network. Through this network ECR has been interconnected by multiple T-1 links with the F/A-18 WSSA at China Lake and the China Lake North Range Control Center (RCC). This network provides connectivity with the worldwide DOD data network and ECR data has been passed to various places over this network. ECR also receives data through this network on the current R-2508 air situation from the Edwards AFB. ECR has a three runway airfield with a hanger and support facilities which are used for testing of UAV systems. ECR also has a Parachute Drop Zone that can be used

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

SENSOR & TARGETING TECHNOLOGY FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

SLED TRACKS
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

STRATEGIC PROPULSION TEST COMPLEX
3.1.A.1. (a) 20%
(b) Main Control Room, which also serves the High Hazard Propulsion Test Facility
(c) The Main Control Room is not a simultaneous activity.
(d) The Main Control Room is internal to the site.
3.1.A.2. No.

TACTICAL PROPULSION TEST FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

VHF ANECHOIC CHAMBER
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

SENSOR & TARGETING TECHNOLOGY FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

SLED TRACKS
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

STRATEGIC PROPULSION TEST COMPLEX
3.1.A.1. (a) 20%
(b) Main Control Room, which also serves the High Hazard Propulsion Test Facility R
(c) The Main Control Room is not a simultaneous activity.
(d) The Main Control Room is internal to the site.
3.1.A.2. No.

TACTICAL PROPULSION TEST FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

VHF ANECHOIC CHAMBER
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

0080

Replacement Page

3.1.A.2. Loss of this facility would impact a number of other facilities in the following ways:
Air/Ground—Loss of spatial diversity for both TSPI and telemetry task areas in support of air-to-air and air-to-surface weapons testing. Loss of situational awareness (safety) on joint range test activities.
F/A-18 WSSA—Loss of capability to expose avionics (EW) subsystems to live threat environment during system integration activities associated with the F/A-18 WSSA—exposure to the actual threat environment will be deferred to actual flight test phase.
Thompson Lab—Loss of capability to accelerate range integration activities for TSPI, performance data, video and audio tasks associated with threat radar development efforts.
BMIC—Loss of spatial diversity and inclusion of the EW threat environment into joint training (BITE) exercises.
San Nicolas Island—Loss of spatial diversity and enhancement of the EW threat environment in the littoral warfare area.
Edwards AFB—Limited. The purpose of this link was to provide data to ECR; however, planned follow-up activities to develop this into a full duplex connection would eliminate access to ECR TSPI (radar and GPS) and telemetry for processing centers located at Edwards AFB. Prototype circuits for transfers of GPS and telemetry data to Edwards AFB have been successful.

Facilities Interconnect List: Existing Capabilities

NAWCWPNS China Lake Land Range

Facility	Type	Mission
Range Control Center (RCC)	Telemetry (PCM)	Joint Range Live Fire
Range Control Center (RCC)	TSPI Track (4-Nike) 2 - 56 KB Channels	Joint Range Live Fire
Range Control Center (RCC)	TSPI Track (GPS) 56 KB Channel	Joint Range Live Fire
Range Control Center (RCC)	Video (Two)	Joint Range Live Fire
Range Control Center (RCC)	Audio (4 wire E&M)	Joint Range Live Fire

NOTE: RCC Circuits can be extended to additional facilities via Data Acquisition Test System (DATS) microwave system.

NAWS China Lake Airfield

Facility	Type	Mission
F/A-18 WSSA	1553 T-1/Ethernet Ext	Avionics Integration
Airfield Tower	Audio (Ringdown Ckt)	Flight Coordination

NAWCWPNS China Lake

Facility	Type	Mission
Thompson Laboratory	TSPI/Data (56K channel)	Threat Radar Integration
Thompson Laboratory	Video (1 Compressed)	Threat Radar Integration
Thompson Laboratory	Audio (1 channel)	Threat Radar Integration

0081

WEAPONS SURVIVABILITY LABORATORY (WSL)
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

INTEGRATION LABORATORY

ACTUATOR AND POWER SYSTEMS LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

ANTIRADIATION MISSILE INTEGRATION COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. Facility connected to Ethernet/Internet. All other T&E and non-T&E facilities can gain access to various resources via the internet using standard TCP/IP protocols.

COMPOSITES DEVELOPMENT LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.
DATA LINK DEVELOPMENT LABORATORY
3.1.A.1. (a) Approximately 50%
(b) Weapons Development Laboratory
Aircraft
Mobile Instrumentation
(c) All of the above are simultaneous activities.
(d) All of the above are internal to the site.
3.1.A.2. Yes. Closure of this facility would have a significant adverse impact to the Data Link activities at the NAWCAD, Indianapolis.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

WEAPONS SURVIVABILITY LABORATORY (WSL)
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

INTEGRATION LABORATORY

ACTUATOR AND POWER SYSTEMS LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

ANTIRADIATION MISSILE INTEGRATION COMPLEX
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. Facility connected to Ethernet/Internet. All other T&E and non-T&E facilities can gain access to various resources via the internet using standard TCP/IP protocols.

COMPOSITES DEVELOPMENT LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

DATA LINK DEVELOPMENT LABORATORY
3.1.A.1. (a) Approximately 50%
(b) Weapons Development Laboratory R
Aircraft
Mobile Instrumentation
(c) All of the above are simultaneous activities.
(d) All of the above are internal to the site.
3.1.A.2. Yes. Closure of this facility would have a significant adverse impact to the Data Link activities at the NAWCAD, Indianapolis.

0082

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FY94 In-Progress Capabilities

NAWCWPNS Point Mugu

Facility	Type	Mission
Battle Management Interoperability Center (BMIC)	Link 11/4a	Joint Range BITE Exercise
San Nicolas Island	TSPI/Data (Multiple T-1)	Spatial Diversity/Littoral Environment
San Nicolas Island	Video (multiple Compressed)	Spatial Diversity/Littoral Environment
San Nicolas Island	Audio (4 wire E&M)	Spatial Diversity/Littoral Environment

Edwards AFB

Facility	Type	Mission
Ridley Mission Control	TECCS T-1/Ethernet	Air Surveillance/Situation Awareness

Temporary Capabilities

Facility	Type	Mission
Third Fleet Afloat Elements	Link 11	System Integration
Edwards AFB	TSPI Track (GPS) ethernet	Joint Range Integration Concept Exploration
Edwards AFB	Telemetry (PCM) (Loopback Test)	Joint Range Integration Concept Exploration
Northrop–Hawthorne CA	TSPI Track (GPS) Telco Modem	System Integration AFTI
Northrop–Orlando FL Modeling and Simulation Conference	TSPI Track (GPS) Telco Modem	Concept Exploration Distributive Interactive Simulation Integration

FLIGHT TEST CAPABILITY

3.1.A.1. The very nature of airfield operations requires that 100% of the control of the aircraft providing flight test support be exchanged between airfield air traffic control (ATC), the aircraft pilot, and the test sites receiving the flight test support. ATC controls launching and recovery of the aircraft and coordinates aircraft movements in ranges with air surveillance center and in airspace complex with Joshua approach. ATC requires that interconnectivity (aircraft control) be both internal and external to the site with respect to the controlling activity for the airspace being utilized by launched aircraft.

3.1.A.2. China Lake's airfield, test activities, and laboratories are located inside the R-2505 and R-2508 Airspace and therefore are closely integrated with airspace and RDT&E activities. The interplay between the airfield, laboratory personnel, and the test ranges is constant. The result is coordinated T&E within R-2505 and R-2508 that includes an airfield and T&E laboratories and that does not exist anywhere else in DOD. Loss of the airfield functional capability of this technical center would wrench most of the T&E out of the NAWCWPNS' RDT&E, would result in the loss

0083

ELECTRONIC WARFARE INTEGRATION LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

FUZE DEVELOPMENT LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

LASER SEEKER INTEGRATION AND TEST FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

ORDNANCE ASSEMBLY FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

TELEMETRY DEVELOPMENT LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

TSSAM MISSION PLANNING FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. This facility may be used by other programs with similar mission planning requirements.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

ELECTRONIC WARFARE INTEGRATION LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

FUZE DEVELOPMENT LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

LASER SEEKER INTEGRATION AND TEST FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

ORDNANCE ASSEMBLY FACILITY
3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

TELEMETRY DEVELOPMENT LABORATORY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. No.

TSSAM MISSION PLANNING FACILITY
3.1.A.1. (a) 0%
(b) Connected to no other facilities R
(c) N/A
(d) N/A
3.1.A.2. This facility may be used by other programs with similar mission planning requirements.

0084

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WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

WEAPONS GUIDANCE/CONTROL/SEEKER IL
3.1.A.1. (a) 10%
(b) Signal-Processor in the Loop (SPIL) Facility
(c) The Signal-Processor in the Loop (SPIL) Facility is not a simultaneous activity.
(d) The Signal-Processor in the Loop (SPIL) Facility is internal to the site.
The Dual Mode Facility (to be completed first quarter FY95) will interconnect with the MHIP Common Seeker Test Facility for real-time data exchange about 15% of the time.

3.1.A.2. Capability for direct classified data link between rate table test stations and the SPIL laboratory. The Dual Mode Facility can be connected with the MHIP Common Seeker Test Facility to allow for better IR target presentation and sensor data fusion. Support guidance/control integration with other missile components and Navy and Air Force fixed wing aircraft and Army rotary aircraft for any missile system.

WEAPON SYSTEMS SUPPORT FACILITY, A-6
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

WEAPONS SYSTEM SUPPORT FACILITY, AH-1
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

WEAPONS SYSTEM SUPPORT FACILITY, AV-8
3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A
3.1.A.2. No.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

3.1.A.2. No.

WEAPONS GUIDANCE/CONTROL/SEEKER IL

3.1.A.1. (a) 10%
(b) Signal-Processor in the Loop (SPIL) Facility R
(c) The Signal-Processor in the Loop (SPIL) Facility is not a simultaneous activity.
(d) The Signal-Processor in the Loop (SPIL) Facility is internal to the site.

The Dual Mode Facility (to be completed first quarter FY95) will interconnect with the MHIP Common Seeker Test Facility for real-time data exchange about 15% of the time.

3.1.A.2. Capability for direct classified data link between rate table test stations and the SPIL laboratory. The Dual Mode Facility can be connected with the MHIP Common Seeker Test Facility to allow for better IR target presentation and sensor data fusion. Support guidance/control integration with other missile components and Navy and Air Force fixed wing aircraft and Army rotary aircraft for any missile system.

WEAPON SYSTEMS SUPPORT FACILITY, A-6

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

3.1.A.2. No.

WEAPONS SYSTEM SUPPORT FACILITY, AH-1

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

3.1.A.2. No.

WEAPONS SYSTEM SUPPORT FACILITY, AV-8

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

3.1.A.2. No.

0085

Added Page

WEAPON SYSTEM SUPPORT FACILITY, F/A-18

3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A

In order to perform higher levels of system testing a number of facilities are currently in the process of being interconnected. The technology is being developed and demonstrated using the F/A-18 Weapon System Support Facility (WSSF), and will be extended to the AV-8 WSSF during FY95. The WSSF has been internetted with the F/A-18 Sensors Laboratory to provide FLIR and radar data to the aircraft's' fire-control systems. This data will enable Multisource Sensor Fusion Integration to be performed in the facility. The F/A-18 WSSF was connected to the Electronic Combat Range to enable EW equipment to be tested against actual and simulated threat radar systems, and yet use the WSSFs to provide the remainder of the avionic systems. The F/A-18 WSSF has been internetted with the NAWCWPNS Inertial Navigation Lab's GPS Satellite simulator to provide cost-effective dynamic test capability for the GPS receiver. The WSSF also is being linked to the missile hardware-in-the-loop SIMLAB to provide pre-flight integration weapons testing, including captive carry, launch, and post-launch data link. The IRIS Project (Internetted Range Interactive Simulations) is currently in the development phase with a demonstration test scheduled for October 1994. IRIS will link the WSSF with the Weapons and Tactics Analysis Center (WEPTAC) and the Battle Management Interoperability Center at Point Mugu to work out the technical issues and investigate benefits obtained by linking real, virtual, and constructive systems and simulations together. The infrastructure established by IRIS can be used as leverage to bridge the gap in using modeling and simulation in T&E and Training scenarios. The F/A-18 is also participating in a Joint Advanced Distributed Simulation test where it will be linked with an AMRAAM HWIL facility at Eglin AFB. Additionally, the F/A-18 WSSF is investigating establishing links with other DOD Contractors to perform R&D testing; for example, with Northrup to perform development of a new generation of Tactical Training Systems. The F/A-18 Sensor Facility has established a T-1 connectivity with Hughes El Segundo for exchange of technical information and flight software. In addition to the above internetting, the WSSFs have also been linked to actual aircraft using the platform radios to perform data-linking and communication tests.

The majority of the established links are internal to the China Lake site. Single-node failure for the WSSFs would impact linked platform testing efforts. Real-time integration testing may be impacted by induction of larger time latencies induced because of the increased network distances.

Facilities Interconnect List: Existing Capabilities:

Facility	Type	Mission
NAWCWPNS China Lake, CA		
Electronic Combat Range (ECR)	1553 T-1/Ethernet Ext	Avionics Integration
F/A-18 Sensors Laboratory		
GPS Integration Test Lab	1553 T-1/Ethernet Ext	Avionics Integration
Live Aircraft	1553 T-1/Ethernet Ext	Avionics Integration
	Communications Radio	Data Link and Communication Tests

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

WEAPON SYSTEM SUPPORT FACILITY, F/A-18

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

In order to perform higher levels of system testing a number of facilities are currently in the process of being interconnected. The technology is being developed and demonstrated using the F/A-18 Weapon System Support Facility (WSSF), and will be extended to the AV-8 WSSF during FY95. The WSSF has been internetted with the F/A-18 Sensors Laboratory to provide FLIR and radar data to the aircraft's fire-control systems. This data will enable Multisource Sensor Fusion Integration to be performed in the facility. The F/A-18 WSSF was connected to the Electronic Combat Range to enable EW equipment to be tested against actual and simulated threat radar systems, and yet use the WSSFs to provide the remainder of the avionic systems. The F/A-18 WSSF has been internetted with the NAWCWPNS Inertial Navigation Lab's GPS Satellite simulator to provide cost-effective dynamic test capability for the GPS receiver. The WSSF also is being linked to the missile hardware-in-the-loop SIMLAB to provide pre-flight integration weapons testing, including captive carry, launch, and post-launch data link. The IRIS Project (Internetted Range Interactive Simulations) is currently in the development phase with a demonstration test scheduled for October 1994. IRIS will link the WSSF with the Weapons and Tactics Analysis Center (WEPTAC) and the Battle Management Interoperability Center at Point Mugu to work out the technical issues and investigate benefits obtained by linking real, virtual, and constructive systems and simulations together. The infrastructure established by IRIS can be used as leverage to bridge the gap in using modeling and simulation in T&E and Training scenarios. The F/A-18 is also participating in a Joint Advanced Distributed Simulation test where it will be linked with an AMRAAM HWIL facility at Eglin AFB. Additionally, the F/A-18 WSSF is investigating establishing links with other DOD Contractors to perform R&D testing; for example, with Northrup to perform development of a new generation of Tactical Training Systems. The F/A-18 Sensor Facility has established a T-1 connectivity with Hughes El Segundo for exchange of technical information and flight software. In addition to the above internetting, the WSSFs have also been linked to actual aircraft using the platform radios to perform data-linking and communication tests.

The majority of the established links are internal to the China Lake site. Single-node failure for the WSSFs would impact linked platform testing efforts. Real-time integration testing may be impacted by induction of larger time latencies induced because of the increased network distances.

Facilities Interconnect List: Existing Capabilities:

Facility	Type	Mission
NAWCWPNS China Lake, CA		
Electronic Combat Range (ECR)	1553 T-1/Ethernet Ext	Avionics Integration
F/A-18 Sensors Laboratory		
GPS Integration Test Lab	1553 T-1/Ethernet Ext	Avionics Integration
Live Aircraft	1553 T-1/Ethernet Ext	Avionics Integration
	Communications Radio	Data Link and Communication Tests

0086

Added Page

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

Programmed Capabilities:

Facility	Type	Mission
NAWCWPNS China Lake, CA HWIL SIMLAB Weapons and Tactics Analysis Center (WEPTAC)	1553 T-1/Ethernet Ext Distributed Interactive Simulation (DIS) Note: See WEPTAC entry for additional facility connectivities using DIS.	Avionics Integration Synthetic Environment for Testing, Training, Analysis
NAWCWPNS Point Mugu, CA Battle Management Interoperability Center (BMIC)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Eglin, AFB AMRAAM HWIL	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis

3.1.A.2. Yes. China Lake is the principal site for F/A-18 and AV-8B testing. As such, it is vital to keep the Weapon System Support Facilities and test aircraft collocated. The facilities share the aircraft avionics assets, provide flight rehearsal and playback capability, and are the primary tool that enables a reduction in the number of flight tests that need to be performed. In addition, much of the real-time network testing that is being developed would not be possible if associated facilities and land ranges were not collocated. For instance, after missile launch, the RF data link between the missile and aircraft requires close proximity. This is a technical issue that will be investigated during the Joint Advanced Distributed Simulation test mentioned previously. To preserve the integrity of real-time testing, the responses between the remote aircraft subsystems need to be received within one Mission Computer (MC) cycle time (50 milliseconds). For example, the F/A-18 WSSF-Electronic Combat Range (ECR) current 40-mile link has a response time of 13 milliseconds. If the WSSF is moved a large distance away from the ECR, such that the response time exceeds the 50 millisecond MC cycle time, they could not be linked together for real-time tests.

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

3.1.A.2. No.

0087

Added Page

Programmed Capabilities:

Facility	Type	Mission
NAWCWPNS China Lake, CA HWIL SIMLAB Weapons and Tactics Analysis Center (WEPTAC)	1553 T-1/Ethernet Ext Distributed Interactive Simulation (DIS) Note: See WEPTAC entry for additional facility connectivities using DIS.	Avionics Integration Synthetic Environment for Testing, Training, Analysis
NAWCWPNS Point Mugu, CA Battle Management Interoperability Center (BMIC)	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis
Eglin, AFB AMRAAM HWIL	Distributed Interactive Simulation (DIS)	Synthetic Environment for Testing, Training, Analysis

3.1.A.2. Yes. China Lake is the principal site for F/A-18 and AV-8B testing. As such, it is vital to keep the Weapon System Support Facilities and test aircraft collocated. The facilities share the aircraft avionics assets, provide flight rehearsal and playback capability, and are the primary tool that enables a reduction in the number of flight tests that need to be performed. In addition, much of the real-time network testing that is being developed would not be possible if associated facilities and land ranges were not collocated. For instance, after missile launch, the RF data link between the missile and aircraft requires close proximity. This is a technical issue that will be investigated during the Joint Advanced Distributed Simulation test mentioned previously. To preserve the integrity of real-time testing, the responses between the remote aircraft subsystems need to be received within one Mission Computer (MC) cycle time (50 milliseconds). For example, the F/A-18 WSSF-Electronic Combat Range (ECR) current 40-mile link has a response time of 13 milliseconds. If the WSSF is moved a large distance away from the ECR, such that the response time exceeds the 50 millisecond MC cycle time, they could not be linked together for real-time tests.

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY

3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A

3.1.A.2. No.

SIMULATION LABORATORY—MISSILE HITL

3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A

The China Lake Missile Simulation Laboratory (SIMLAB) is a state-of-the-art hardware-in-the-loop simulation facility for missile system test, development, and evaluation. The SIMLAB consists of three RF facilities, two IR/EO facilities, an inertial flight table for testing inertial sensor packages, an imaging systems laboratory, and an assortment of real-time simulation computers and engineering work stations.

A fiber optic data link, networking hardware, and special purpose hardware and software interfaces between the SIMLAB and the China Lake F/A-18 Weapon System Support Facility (WSSF) will be in place by the end of FY94, which will allow real-time testing of an integrated weapon/platform system.

This interconnect is still in the final stages of development at this time. Therefore it was not involved in any FY 93 work.

This linkage uses the China Lake fiber optic trunk system (NETWORK). While this system has a demonstrated reliability, it represents a single-node failure potential.

Facilities Interconnect List: Programmed Capabilities

Facility	Type	Mission
NAWCWPNS China Lake, CA F/A-18 WSSF	1553 T-1/Ethernet Ext	Avionics Integration Total weapon system performance/evaluation

3.1.A.2. Yes. The link between the F/A-18 WSSF and the SIMLAB will provide a unique capability for testing integrated weapon systems for the F/A-18 aircraft. In order to accomplish this link, there are critical timing requirements that must be satisfied. To preserve the integrity of real-time testing, the responses between the aircraft subsystems need to be received within one mission computer cycle time (50 milliseconds).This puts a severe constraint on the maximum allowable distance between the facilities. Single-node failure or loss of the SIMLAB would severely impact linked platform testing efforts.

TSSAM HARDWARE-IN-THE-LOOP

3.1.A.1. (a) 0%
(b) Connected to no other facilities
(c) N/A
(d) N/A

3.1.A.2. This facility is used in conjunction with TSSAM Mission Planning facilities and local aircraft assets to provide an end-to-end system capability for the TSSAM weapon system. The HITL may also be used by other systems with similar type components.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

SIMULATION LABORATORY—MISSILE HITL

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

The China Lake Missile Simulation Laboratory (SIMLAB) is a state-of-the-art hardware-in-the-loop simulation facility for missile system test, development, and evaluation. The SIMLAB consists of three RF facilities, two IR/EO facilities, an inertial flight table for testing inertial sensor packages, an imaging systems laboratory, and an assortment of real-time simulation computers and engineering work stations.

A fiber optic data link, networking hardware, and special purpose hardware and software interfaces between the SIMLAB and the China Lake F/A-18 Weapon System Support Facility (WSSF) will be in place by the end of FY94, which will allow real-time testing of an integrated weapon/platform system.

This interconnect is still in the final stages of development at this time. Therefore it was not involved in any FY 93 work.

This linkage uses the China Lake fiber optic trunk system (NETWORK). While this system has a demonstrated reliability, it represents a single-node failure potential.

Facilities Interconnect List: Programmed Capabilities

Facility	Type	Mission
NAWCWPNS China Lake, CA F/A-18 WSSF	1553 T-1/Ethernet Ext	Avionics Integration Total weapon system performance/evaluation

3.1.A.2. Yes. The link between the F/A-18 WSSF and the SIMLAB will provide a unique capability for testing integrated weapon systems for the F/A-18 aircraft. In order to accomplish this link, there are critical timing requirements that must be satisfied. To preserve the integrity of real-time testing, the responses between the aircraft subsystems need to be received within one mission computer cycle time (50 milliseconds).This puts a severe constraint on the maximum allowable distance between the facilities. Single-node failure or loss of the SIMLAB would severely impact linked platform testing efforts.

TSSAM HARDWARE-IN-THE-LOOP

3.1.A.1. (a) 0% R
(b) Connected to no other facilities
(c) N/A
(d) N/A

3.1.A.2. This facility is used in conjunction with TSSAM Mission Planning facilities and local aircraft assets to provide an end-to-end system capability for the TSSAM weapon system. The HITL may also be used by other systems with similar type components.

0088

Added Page

OPEN AIR

AIR/GROUND RANGE
3.1.A.1. (a) <1%
(b) Edwards AFB
Vandenberg AFB
NAWCWPNS Point Mugu
Electronic Combat Range
(c) All of the above are simultaneous activities.
(d) Edwards AFB is external to the site.
Vandenberg AFB is external to the site.
NAWCWPNS Point Mugu is external to the site.
Electronic Combat Range is internal to the site.

The China Lake ranges are all linked together through a variety of communications networks including fiber optics. The ranges are also linked to the Weapons System Support Facilities (WSSF) with additional connections planned for other lab facilities in the near future. Internally these ranges communicate and transfer data in real-time daily. Externally the ranges are linked with Edwards AFB, Vandenberg AFB, and Point Mugu through a well established data link. This link is used routinely in conjunction with the Point Mugu Sea Range to perform ship launched, long range, low level cruise missile operations which impact at China Lake. China Lake has also participated in joint exercised with Fort Irwin, UTTR, and Edwards AFB. Although these type of operations have become routine over the past several years they account for less than 1% of the total test workload, as most tests can be performed within China Lake's boundaries.

3.1.A.2. The China Lake complex of laboratories, engineering facilities, air and ground ranges, and a myriad of other test facilities are all inter-related and inter-dependent on each other in providing the Navy's principal RDT&E center for air warfare systems.

The China Lake ranges provide a vital link in the operational testing of cruise missiles and in the operation and maintenance of the R-2508 airspace complex. The Air/Ground Ranges provide the only West Coast capability for instrumented, over land, and terminal data for Fleet-launched Tomahawk missiles. China Lake is also the only facility that allows impact testing of inert Land Attack Cruise Missile Conventional (TLAM-C) and the Dispense Variant (TLAM-D) after launch from operational platforms.

China Lake similarly provides routine support to the other services, particularly those located in the western U.S. Edwards AFB, Nellis AFB, Fort Irwin, Twenty Nine Palms, etc.—when a well equipped and instrumented land range is required. For example, Edwards routinely uses China Lake ranges to conduct ordnance test operations. Bombers have conducted numerous scenarios over the China Lake ranges, the F-22 fired the first Sidewinder here, and the AC-130 gun ship currently does weekly test operations at this facility.

ELECTRONIC COMBAT RANGE (ECR)
3.1.A.1. (a) Approximately 1%
(b) Air/Ground Range
Battle Management Interoperability Center
(c) Both of the above are simultaneous activities.
(d) Air/Ground Range is internal to the site.
Battle Management Interoperability Center is external to the site (NAWCWPNS Point Mugu)

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OPEN AIR

AIR/GROUND RANGE

3.1.A.1. (a) <1% R
(b) Edwards AFB
Vandenberg AFB
NAWCWPNS Point Mugu
Electronic Combat Range
(c) All of the above are simultaneous activities.
(d) Edwards AFB is external to the site.
Vandenberg AFB is external to the site.
NAWCWPNS Point Mugu is external to the site.
Electronic Combat Range is internal to the site.

The China Lake ranges are all linked together through a variety of communications networks including fiber optics. The ranges are also linked to the Weapons System Support Facilities (WSSF) with additional connections planned for other lab facilities in the near future. Internally these ranges communicate and transfer data in real-time daily. Externally the ranges are linked with Edwards AFB, Vandenberg AFB, and Point Mugu through a well established data link. This link is used routinely in conjunction with the Point Mugu Sea Range to perform ship launched, long range, low level cruise missile operations which impact at China Lake. China Lake has also participated in joint exercised with Fort Irwin, UTTR, and Edwards AFB. Although these type of operations have become routine over the past several years they account for less than 1% of the total test workload, as most tests can be performed within China Lake's boundaries.

3.1.A.2. The China Lake complex of laboratories, engineering facilities, air and ground ranges, and a myriad of other test facilities are all inter-related and inter-dependent on each other in providing the Navy's principal RDT&E center for air warfare systems.

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China Lake similarly provides routine support to the other services, particularly those located in the western U.S. Edwards AFB, Nellis AFB, Fort Irwin, Twenty Nine Palms, etc.—when a well equipped and instrumented land range is required. For example, Edwards routinely uses China Lake ranges to conduct ordnance test operations. Bombers have conducted numerous scenarios over the China Lake ranges, the F-22 fired the first Sidewinder here, and the AC-130 gun ship currently does weekly test operations at this facility.

ELECTRONIC COMBAT RANGE (ECR)

3.1.A.1. (a) Approximately 1% R
(b) Air/Ground Range
Battle Management Interoperability Center
(c) Both of the above are simultaneous activities.
(d) Air/Ground Range is internal to the site.

0089

Added Page

ECR is interconnected by a DS-3 Digital data link to the NAWCWPNS Corporate Data Network. Through this network ECR has been interconnected by multiple T-1 links with the F/A-18 WSSA at China Lake and the China Lake North Range Control Center (RCC). This network provides connectivity with the worldwide DOD data network and ECR data has been passed to various places over this network. ECR also receives data through this network on the current R-2508 air situation from the Edwards AFB. ECR has a three runway airfield with a hanger and support facilities which are used for testing of UAV systems. ECR also has a Parachute Drop Zone that can be used

3.1.A.2. Loss of this facility would impact a number of other facilities in the following ways:
Air/Ground—Loss of spatial diversity for both TSPI and telemetry task areas in support of air-to-air and air-to-surface weapons testing. Loss of situational awareness (safety) on joint range test activities.
F/A-18 WSSA—Loss of capability to expose avionics (EW) subsystems to live threat environment during system integration activities associated with the F/A-18 WSSA—exposure to the actual threat environment will be deferred to actual flight test phase.
Thompson Lab—Loss of capability to accelerate range integration activities for TSPI, performance data, video and audio tasks associated with threat radar development efforts.
BMIC—Loss of spatial diversity and inclusion of the EW threat environment into joint training (BITE) exercises.
San Nicolas Island—Loss of spatial diversity and enhancement of the EW threat environment in the littoral warfare area.
Edwards AFB—Loss of R-2508 situational awareness. The active portion of this link currently provides R-2508 situational awareness data from Edwards AFB to ECR. Planned upgrades to develop this into a full duplex connection providing TSPI (radar and GPS) and telemetry data exchanged between processing centers at both facilities would be lost. Prototype circuits for transfer of GPS and telemetry data to Edwards AFB have been successful.

Facilities Interconnect List: Existing Capabilities

NAWCWPNS China Lake Land Range

Facility	Type	Mission
Range Control Center (RCC)	Telemetry (PCM)	Joint Range Live Fire
Range Control Center (RCC)	TSPI Track (4-Nike) 2 - 56 KB Channels	Joint Range Live Fire
Range Control Center (RCC)	TSPI Track (GPS) 56 KB Channel	Joint Range Live Fire
Range Control Center (RCC)	Video (Two)	Joint Range Live Fire
Range Control Center (RCC)	Audio (4 wire E&M)	Joint Range Live Fire

NOTE: RCC Circuits can be extended to additional facilities via Data Acquisition Test System (DATS) microwave system.

NAWS China Lake Airfield

Facility	Type	Mission
F/A-18 WSSA	1553 T-1/Ethernet Ext	Avionics Integration
Airfield Tower	Audio (Ringdown Ckt)	Flight Coordination

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Battle Management Interoperability Center is external to the site (NAWCWPNS Point Mugu)

ECR is interconnected by a DS-3 Digital data link to the NAWCWPNS Corporate Data Network. Through this network ECR has been interconnected by multiple T-1 links with the F/A-18 WSSA at China Lake and the China Lake North Range Control Center (RCC). This network provides connectivity with the worldwide DOD data network and ECR data has been passed to various places over this network. ECR also receives data through this network on the current R-2508 air situation from the Edwards AFB. ECR has a three runway airfield with a hanger and support facilities which are used for testing of UAV systems. ECR also has a Parachute Drop Zone that can be used

3.1.A.2. Loss of this facility would impact a number of other facilities in the following ways:
Air/Ground—Loss of spatial diversity for both TSPI and telemetry task areas in support of air-to-air and air-to-surface weapons testing. Loss of situational awareness (safety) on joint range test activities.
F/A-18 WSSA—Loss of capability to expose avionics (EW) subsystems to live threat environment during system integration activities associated with the F/A-18 WSSA—exposure to the actual threat environment will be deferred to actual flight test phase.
Thompson Lab—Loss of capability to accelerate range integration activities for TSPI, performance data, video and audio tasks associated with threat radar development efforts.
BMIC—Loss of spatial diversity and inclusion of the EW threat environment into joint training (BITE) exercises.
San Nicolas Island—Loss of spatial diversity and enhancement of the EW threat environment in the littoral warfare area.
Edwards AFB—Limited, since the purpose of this link will be to receive data from Edwards at the ECR operations center. There are plans to develop this link into a send/receive connection. Elimination of the send/receive link would prevent access to ECR TSPI (Radar & GPS) and Telemetry data to Edwards AFB processing centers. Prototype circuits for transfer of GPS and Telemetry data to Edwards AFB have been successful.

Facilities Interconnect List: Existing Capabilities

NAWCWPNS China Lake Land Range

Facility	Type	Mission
Range Control Center (RCC)	Telemetry (PCM)	Joint Range Live Fire
Range Control Center (RCC)	TSPI Track (4-Nike) 2 - 56 KB Channels	Joint Range Live Fire
Range Control Center (RCC)	TSPI Track (GPS) 56 KB Channel	Joint Range Live Fire
Range Control Center (RCC)	Video (Two)	Joint Range Live Fire
Range Control Center (RCC)	Audio (4 wire E&M)	Joint Range Live Fire

NOTE: RCC Circuits can be extended to additional facilities via Data Acquisition Test System (DATS) microwave system.

NAWS China Lake Airfield

Facility	Type	Mission

0090

Added Page

NAWCWPNS China Lake

Facility	Type	Mission
Thompson Laboratory	TSPI/Data (56K channel)	Threat Radar Integration
Thompson Laboratory	Video (1 Compressed)	Threat Radar Integration
Thompson Laboratory	Audio (1 channel)	Threat Radar Integration

Edwards AFB

Facility	Type	Mission
Ridley Mission Control	TECCS T-1/Ethernet	Air Surveillance/Situation Awareness

FY94 In-Progress Capabilities

NAWCWPNS Point Mugu

Facility	Type	Mission
Battle Management Interoperability Center (BMIC)	Link 11/4a	Joint Range BITE Exercise
San Nicolas Island	TSPI/Data (Multiple T-1)	Spatial Diversity/Littoral Environment
San Nicolas Island	Video (multiple Compressed)	Spatial Diversity/Littoral Environment
San Nicolas Island	Audio (4 wire E&M)	Spatial Diversity/Littoral Environment

(Material deleted.)

Temporary Capabilities

Facility	Type	Mission
Third Fleet Afloat Elements	Link 11	System Integration
Edwards AFB	TSPI Track (GPS) ethernet	Joint Range Integration Concept Exploration
Edwards AFB	Telemetry (PCM) (Loopback Test)	Joint Range Integration Concept Exploration
Northrop–Hawthorne CA	TSPI Track (GPS) Telco Modem	System Integration AFTI
Northrop–Orlando FL Modeling and Simulation Conference	TSPI Track (GPS) Telco Modem	Concept Exploration Distributive Interactive Simulation Integration

BRAC 95 DATA CALL #13 T&E ACTIVITY UIC: 60530

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NAWCWPNS China Lake

Facility	Type	Mission
Thompson Laboratory	TSPI/Data (56K channel)	Threat Radar Integration
Thompson Laboratory	Video (1 Compressed)	Threat Radar Integration
Thompson Laboratory	Audio (1 channel)	Threat Radar Integration

FY94 In-Progress Capabilities

NAWCWPNS Point Mugu

Facility	Type	Mission
Battle Management Interoperability Center (BMIC)	Link 11/4a	Joint Range BITE Exercise
San Nicolas Island	TSPI/Data (Multiple T-1)	Spatial Diversity/Littoral Environment
San Nicolas Island	Video (multiple Compressed)	Spatial Diversity/Littoral Environment
San Nicolas Island	Audio (4 wire E&M)	Spatial Diversity/Littoral Environment

Edwards AFB

Facility	Type	Mission
Ridley Mission Control	TECCS T-1/Ethernet	Air Surveillance/Situation Awareness

Temporary Capabilities

Facility	Type	Mission
Third Fleet Afloat Elements	Link 11	System Integration
Edwards AFB	TSPI Track (GPS) ethernet	Joint Range Integration Concept Exploration
Edwards AFB	Telemetry (PCM) (Loopback Test)	Joint Range Integration Concept Exploration
Northrop–Hawthorne CA	TSPI Track (GPS) Telco Modem	System Integration AFTI
Northrop–Orlando FL Modeling and Simulation Conference	TSPI Track (GPS) Telco Modem	Concept Exploration Distributive Interactive Simulation Integration

0091

Added Page

FLIGHT TEST CAPABILITY

3.1.A.1. (a) 100%
(b) Air/Ground Range
Electronic Combat Range
R-2508 Complex Control
(c) All of the above are simultaneous activities.
(d) Air/Ground Range is internal to the site.
Electronic Combat Range is internal to the site.
R-2508 Complex Control is external to the site (Edwards AFB)

The very nature of airfield operations requires that 100% of the control of the aircraft providing flight test support be exchanged between airfield air traffic control (ATC), the aircraft pilot, and the test sites receiving the flight test support. ATC controls launching and recovery of the aircraft and coordinates aircraft movements in ranges with air surveillance center and in airspace complex with Joshua approach. ATC requires that interconnectivity (aircraft control) be both internal and external to the site with respect to the controlling activity for the airspace being utilized by launched aircraft.

3.1.A.2. China Lake's airfield, test activities, and laboratories are located inside the R-2505 and R-2508 Airspace and therefore are closely integrated with airspace and RDT&E activities. The interplay between the airfield, laboratory personnel, and the test ranges is constant. The result is coordinated T&E within R-2505 and R-2508 that includes an airfield and T&E laboratories and that does not exist anywhere else in DOD. Loss of the airfield functional capability of this technical center would wrench most of the T&E out of the NAWCWPNS' RDT&E, would result in the loss of synergism that now benefits both the weapons developers and the weapons testers, and would significantly increase cost of weapons development.

NAWCWPNS-WHITE SANDS

3.1.A.1. (a) 5%
(b) White Sands Missile Range
(c) White Sands Missile Range is not a simultaneous activity.
(d) White Sands Missile Range is internal to the site.

3.1.A.2. No.

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

FLIGHT TEST CAPABILITY

3.1.A.1. (a) 100%

(b) Air/Ground Range R
Electronic Combat Range
R-2508 Complex Control

(c) All of the above are simultaneous activities.

(d) Air/Ground Range is internal to the site.
Electronic Combat Range is internal to the site.
R-2508 Complex Control is external to the site (Edwards AFB)

The very nature of airfield operations requires that 100% of the control of the aircraft providing flight test support be exchanged between airfield air traffic control (ATC), the aircraft pilot, and the test sites receiving the flight test support. ATC controls launching and recovery of the aircraft and coordinates aircraft movements in ranges with air surveillance center and in airspace complex with Joshua approach. ATC requires that interconnectivity (aircraft control) be both internal and external to the site with respect to the controlling activity for the airspace being utilized by launched aircraft.

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NAWCWPNS-WHITE SANDS

3.1.A.1. (a) 5%

(b) White Sands Missile Range R

(c) White Sands Missile Range is not a simultaneous activity.

(d) White Sands Missile Range is internal to the site.

3.1.A.2. No.

0092

Added Page

of synergism that now benefits both the weapons developers and the weapons testers, and would significantly increase cost of weapons development.

NAWCWPNS-WHITE SANDS
3.1.A.1. 5%. White Sands Missile Range.
3.1.A.2. No.

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.

Current and planned status for each of the NAWCWPNS China Lake 60 facilities/capabilities are given in the Facility Condition forms in Appendix A, Tabs 1 through 60.

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.

Current and planned status for each of the NAWCWPNS China Lake 60 facilities/capabilities are given in the Facility Condition forms in Appendix A, Tabs 1 through 60.

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.

No. Many environmental and encroachment issues place some type of constraints on T&E operations. However, these are not limits that will stop any operations, but rather considerations that must be observed to minimize the effects of the operations. The following sections explain the programs China Lake has implemented to address these considerations.

ENVIRONMENTAL PERMITS.
Several types of environmental permits are required for activities at China Lake. The permits can be broken down into the following categories: air emissions, hazardous waste, fuel storage, and wastewater. The Environmental Project Office has a wide variety of experience in all of these permitting processes. Generally, any existing permit can be modified to account for changing conditions. Permits for new operations may involve more work, but are usually obtainable. The main constraint on this process is the labor available to prepare the documents. The number and scope of these documents prepared by China Lake can be increased by supplying additional labor or funding for contractor support.

Air Emissions. Most operations that involve air emissions will require a permit. The permits have constraints based on the quantity and toxicity of air emissions. These constraints are driven by the Federal Clean Air Act, so they apply nationwide. China Lake already has a large number of air emission permits. These permits may be modified to accommodate increases in operations. New operations can be permitted either directly, depending on location of source, or through tradeoffs of existing similar permitted emissions.

Hazardous Waste. Hazardous waste management at China Lake operates around a large (11,000-square-foot) treatment, storage and disposal facility (TSD). This TSD operates under a Resource Conservation and Recovery Act (RCRA) Part B permit and is authorized to store up to 27,720 gallons of hazardous wastes for 1 year. It is presently working at or below 60% of its through-put capacity and could easily expand the workload by increasing the contracted waste pickups and/or adding more hazardous waste workers to the facility. Presently, the permit does not allow for biological wastes to be stored in the TSD, but it could be modified to include these wastes if needed. The permit also does not allow storage of PCB and reactive wastes. These wastes are covered by other permits.

A revised Part B permit application for storage of PCB wastes in a separate storage building is currently under regulatory review. The permit should be issued in the near future. It will allow for 1-year storage of PCB wastes. The permit limits the quantity of PCB wastes for storage to the maximum size of the building (approximately 1300 gallons of PCB waste fluid). Expansion of the building is not possible. However, another existing building could be designated and permitted for PCB waste storage.

The Burro Canyon Facility is used for treatment of reactive wastes by open burning or open detonation. The facility operates under a RCRA interim status permit for treatment of 300,000 pounds of reactive wastes a year. An interim status permit modification to increase the quantity of wastes treated at the facility to 500,000 pounds per year was requested from the regulatory

6095 A

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.

No. Many environmental and encroachment issues place some type of constraints on T&E operations. However, these are not limits that will stop any operations, but rather considerations that must be observed to minimize the effects of the operations. The following sections explain the programs China Lake has implemented to address these considerations.

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Several types of environmental permits are required for activities at China Lake. The permits can be broken down into the following categories: air emissions, hazardous waste, fuel storage, and wastewater. The Environmental Project Office has a wide variety of experience in all of these permitting processes. Generally, any existing permit can be modified to account for changing conditions. Permits for new operations may involve more work, but are usually obtainable. The main constraint on this process is the labor available to prepare the documents. The number and scope of these documents prepared by China Lake can be increased by supplying additional labor or funding for contractor support.

Air Emissions. Most operations that involve air emissions will require a permit. The permits have constraints based on the quantity and toxicity of air emissions. These constraints are driven by the Federal Clean Air Act, so they apply nationwide. China Lake already has a large number of air emission permits. These permits may be modified to accommodate increases in operations. New operations can be permitted either directly, depending on location of source, or through tradeoffs of existing similar permitted emissions.

Hazardous Waste. Hazardous waste management at China Lake operates around a large (11,000-square-foot) treatment, storage and disposal facility (TSD). This TSD operates under a Resource Conservation and Recovery Act (RCRA) Part B permit and is authorized to store up to 27,720 gallons of hazardous wastes for 1 year. It is presently working at or below 60% of its through-put capacity and could easily expand the workload by increasing the contracted waste pickups and/or adding more hazardous waste workers to the facility. Presently, the permit does not allow for biological wastes to be stored in the TSD, but it could be modified to include these wastes if needed. The permit also does not allow storage of PCB and reactive wastes. These wastes are covered by other permits.

A revised Part B permit application for storage of PCB wastes in a separate storage building is currently under regulatory review. The permit should be issued in the near future. It will allow for 1-year storage of PCB wastes. The permit limits the quantity of PCB wastes for storage to the maximum size of the building (approximately 1300 gallons of PCB waste fluid). Expansion of the building is not possible. However, another existing building could be designated and permitted for PCB waste storage.

The Burro Canyon Facility is used for treatment of reactive wastes by open burning or open detonation. The facility operates under a RCRA interim status permit for treatment of 300,000 pounds of reactive wastes a year. An interim status permit modification to increase the quantity of wastes treated at the facility to 500,000 pounds per year was requested from the regulatory

agencies and is being actively pursued. In addition, the Part B permit application is under regulatory review.

Fuel Storage and Wastewater Discharge. Operations that involve these two categories require permits, but these are easily obtained.

ENDANGERED SPECIES AND HISTORIC RESOURCES MANAGEMENT.
China Lake is committed to the protection and conservation of our natural and cultural resources as we implement our mission. We have developed and implemented a number of resource management plans that allow China Lake to conduct operations and avoid or mitigate adverse impacts on protected resources. We also work closely with project managers so resource issues are considered early in the planning process. This process minimizes the constraints imposed on all parties by Federal law and applicable implementing regulations. A main constraint in dealing with potential resource impacts is the labor available from the Environmental Project Office to ensure that the resource management protocols are followed. The scope and efficiency of this effort can be increased by supplying additional labor and/or funding for contractor support.

ENCROACHMENT CONCERNS. The following describes potential impacts from encroachment and China Lake's efforts to mitigate these impacts. All projects that involve operations outside China Lake's land area can be potentially affected by these issues. Any project that depends on air visibility could be constrained by the atmospheric degradation issue.

California Desert Protection Act. Senate Bill S. 21, the California Desert Protection Act, which proposes to establish more than 6.3 million acres of National Parks and wilderness areas in the California desert, was passed by the U.S. Senate on 13 April 1994. The Bill now goes the U.S. House of Representatives where it is expected to be approved in some similar form. China Lake and other DOD facilities in the region had significant concerns regarding overflight restrictions and the potential for prohibition of future expansion of test ranges, and the potential for increased public pressure to use DOD test and training ranges for mining, recreation, etc. The language of the document passed by the Senate addressed and mitigated all of China Lake's major concerns; therefore, S. 21 is no longer viewed as a significant threat to the China Lake present mission or as a major limiting factor to expansion of that mission. A positive impact of the bill would be to prohibit private development on land around our ranges that is protected by the bill.

Development and Growth of the City of Ridgecrest. The Navy purchased private lands and established restrictive land development agreements and right-of-way reservations with the Bureau of Land Management and North American Chemical Co. to provide a land/air corridor both east and west of Ridgecrest for ingress/egress to the airfield and ranges. The Station maintains an active and positive relationship with the City regarding land use and development. Other positive steps taken by the Station to assure land use compatibility include: (1) participation in interagency work groups for land use planning and coordination with local and regional agencies and other interested parties; (2) participation in the review of general and specific development plans by local cities, county agencies, and private sector interests; (3) participation in regional military environmental planning groups to share information and lessons learned in encroachment management and mitigation; and (4) participation as nonvoting members of the County (Kern) Airport Land Use Commission and Aviation Technical Advisory Committee for compatible military and civil aviation zoning.

Atmospheric Degradation (Visibility) at DOD T&E. China Lake manages a 10-year interservice program, the Air Visibility Program (AVP), in partnership with Edwards AFB to preserve our excellent air visibility. The goal of the program is to identify and mitigate air visibility impacts in the R-2508 airspace. The AVP actively participates with local/regional regulatory agencies and

agencies and is being actively pursued. In addition, the Part B permit application is under regulatory review.

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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.*

Since workload increases can be accommodated by the methods described above, environmental characteristics are not expected to be a limiting factor. Nor are there any known encroachment limitations. The environmental and encroachment programs are designed to accommodate our operations while minimizing their impacts. The few programs that do have numerical limits (such as the hazardous waste TSD permit) can be modified to increase their limits.

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- **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. However, all temporary permits are renewable as explained in the following descriptions.

ENVIRONMENTAL PERMITS.
Air Quality. China Lake currently holds approximately 318 permits issued by local air-pollution-control districts. Each of these permits has a life of 1 year. However, the renewal process is extremely simple. Along with most DOD installations, China Lake will be submitting applications for one or more "umbrella" Operating Permits in late 1995 as required under Title V of the Federal Clean Air Amendments of 1990. Once issued, these permits will have a life of 5 years.

Hazardous Waste Management. China Lake holds an RCRA Part B permit for storage of up to 27,720 gallons of hazardous wastes for 1 year. The permit currently allows for storage of most types of hazardous wastes, except polychlorinated biphenyl (PCB), biological, and reactive wastes. The permit expires 13 June 1996. However, renewal of the permit for 5 years is standard procedure and will more than likely be granted from the regulatory agencies. China Lake also holds an RCRA interim status permit for treatment of 300,000 pounds of reactive wastes by open burning and open detonation. An expiration date is not included as part of the interim status permit. An interim status permit modification to increase the quantity of wastes treated at the facility to 500,000 pounds per year was requested from the regulatory agencies and is being actively pursued. In addition, an application for a Part B permit for the facility is under regulatory review.

Underground Storage Tank Permits. China Lake holds 5 permits to operate 12 underground storage tanks. Permits are issued by the counties and are renewed annually.

California-Only Permits For Treatment Of Hazardous Waste. California regulation requires permits for treatment of hazardous wastes that are exempt under Federal regulation, e.g., treatment of hazardous wastes prior to discharge into the domestic sewer system. Treatment systems for the following facilities operate under this type of permit: Plating Shop, Photoprocessing Labs, Printed Wiring Board Shop, acid neutralization for Explosive Scale-Up Facility, silver recovery units, and oil/water separators. The permits are renewed annually.

VOLUNTARY AGREEMENTS.
Desert Tortoise Habitat Management Plan. Biological Opinion approving the Programmatic Habitat Management Plan for the Desert Tortoise at China Lake, December 1992. This plan provides the approach and protocols for the management of Desert Tortoise at China Lake. This agreement has no expiration date.

Biodiversity Data Base Management. Cooperative Agreement between NAWCWPNS China Lake and the Nature Conservancy (TNC) for cooperative resource management planning and maintenance of a biodiversity data base by TNC, December 1988. This agreement has no expiration date.

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Wild Horse and Burro Management. Memorandum of Understanding (MOU) between NAWCWPNS China Lake and the Bureau of Land Management (BLM) for Wild Horse and Burro Management at China Lake, November 1991. This agreement has no expiration date.

Management of Livestock Grazing. MOU between NAWCWPNS China Lake and the BLM for the management of livestock grazing on China Lake lands, November 1959. This agreement has no expiration date.

COSO GEOTHERMAL DEVELOPMENT AND OPERATIONS AGREEMENT.
The property within the Geothermal Industrial Area of the China Lake North Range is managed in compliance with applicable environmental requirements through a number of Memorandums and Letters of Agreement. None of the Coso agreements have specific termination dates. These agreements include:

- MOU between NAWCWPNS China Lake, Department of the Navy, and the BLM, Department of the Interior, for "Geothermal Leases in Coso Geothermal Area," December 1977, amended July 1980.
- MOU between NAWCWPNS China Lake and the BLM for "Cultural Resources Compliance Procedures in the Coso Geothermal Lease Area, China Lake NAWCWPNS China Lake," May 1987.
- Letter of Agreement between NAWCWPNS China Lake, the BLM, and the California Department of Fish and Game for "Mitigation of Impacts to Mohave Ground Squirrel at Coso Known Geothermal Resource Area," November 1988.
- Letter of Agreement between NAWCWPNS China Lake and the BLM for "Revegetation Plan at Coso Known Geothermal Resource Area," December 1988.
- Programmatic Memorandum of Agreement between NAWCWPNS China Lake and the California State Historic Preservation Officer and the Advisory Council on Historic Preservation, December 1979.
- MOU between NAWCWPNS China Lake, the BLM, and the Great Basin Unified Air Pollution Control District for compliance with the California Environmental Quality Act, November 1987.
- MOU between NAWCWPNS China Lake and the Owens Valley Paiute Shoshone Band of Indians in compliance with the National Historic Preservation Act and the American Indian Religious Freedom Act, June 1979.
- Sugarloaf Archaeological District Cultural Resources Management Plan, November 1991, directs compliance procedures and protocols for activities within the Sugarloaf District.

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0100

- 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 = 77,000
- 100 mile radius = 1,493,000
- 150 mile radius = 18,426,000
- 200 mile radius = 19,423,000

- 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.*

Jet Route 110 (J-110) crosses portions of the R-2508 Restricted Area Complex. Areas traversed include R-2508 and the Isabella, Owens, Saline, and Panamint Air Traffic Control Assigned Airspaces (ATCAAs). J-110 does not impact the military mission in R-2508 because aircraft are permitted to cross the R-2508 complex only on a real-time "noninterference with military mission" basis by the FAA controlling agency. J-110 altitudes are from 29,000 (minimum en route altitude) to 45,000 feet (upper limit of jet routes). In FY93, approximately 10,000 civilian air carrier aircraft transited J-110 without negative impact to the military mission.

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

No missions have been 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?*

No test missions have been canceled due to encroachment.

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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 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.*

-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?*

NAWCWPNS China Lake, as an installation, has all the necessary "specialized facilities" for full T&E support. In addition to the 60 T&E Facilities Capabilities specifically addressed below, these include:

Advanced Gun System Complex
Air to Surface Target Complex
Antiradiation Missile (ARM) Targets
China Lake Ordnance & Propulsion Pilot Plant
Development Projects Lab
Energetic Materials Synthesis and Scaleup Lab
Engineering Prototype Facility
High Energy Laser Experimental Test System
Materials and Processes Research Facility
Metrology Facility
Ordnance & Propulsion Plant Support Shops
Ordnance Breakdown Facility
Ordnance Packaging Facility
Ordnance Stowage Facilities
Propellants and Explosive Formulation Labs
Research Rockets Launch Complex
Signature Measurements & Evaluation
TARIF/Combat Environment
TDD DDT&E Complex
TDD Exploratory Development Facility
TDD Performance Evaluation Laboratory

Answers to the above three specialized facilities/targets questions are presented below for each of the 60 NAWCWPNS China Lake T&E facilities/capabilities.

<u>MODELING AND SIMULATION</u>

AIR WEAPON DIGITAL MODELING & SIMULATION
D.1. No.
D.2. No.
D.2 A. N/A.

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.*

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High Energy Laser Experimental Test System
Materials and Processes Research Facility
Metrology Facility
Ordnance & Propulsion Plant Support Shops
Ordnance Breakdown Facility
Ordnance Packaging Facility
Ordnance Stowage Facilities
Propellants and Explosive Formulation Labs
Research Rockets Launch Complex
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<u>MODELING AND SIMULATION</u>

AIR WEAPON DIGITAL MODELING & SIMULATION
D.1. No.
D.2. No.
D.2.A. N/A.

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EXPLOSIVE AND ORDNANCE MODELING
D.1. No.
D.2. No.
D.2.A. N/A.

STRIKE SIMULATION & MODELING
D.1. Yes. Mission Planning Facility—TAMPS system; Survivability Laboratory; Encounter Simulation Laboratory (Fuzing).
D.2. No. The Threat Information Laboratory relies on current threat databases provided on a quarterly basis by DOD intelligence agencies.
D.2.A. No. We have a Desk Top Computer (DTC)-2 and a Tactical Advanced Computer (TAC)-3 system for the performance of the Tactical Mission Aircraft Planning System (TAMPS). We also have software running on Silicon Graphics and Sun workstations to support image exploitation and mission rehearsal roles.

STRIKE SOFTWARE/SIMULATION FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

SYSTEM MODELING & SIGNAL PROCESSING FACILITY
D.1. Yes. Temperature and humidity controlled environment.
D.2. No.
D.2.A. N/A.

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)
D.1. No.
D.2. No.
D.2.A. N/A.

MEASUREMENT

AEROHEAT TEST FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

AIR BREATHING PROPULSION LABORATORY
D.1. Yes. Fuel storage tanks, high- and low-pressure air tanks, vacuum systems, air heaters.
D.2. No.
D.2.A. No.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
D.1. Yes. Standard aircraft support/maintenance personnel. NAWCWPNS Calibration Laboratory for repair of commercial equipment. Hanger for aircraft repair.
D.2. No.
D.2.A. N/A.

CACTUS FLATS ORDNANCE TEST AREA
D.1. Yes. Explosive storage.
D.2. No.
D.2.A. No.

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D.2.A. N/A.

CACTUS FLATS ORDNANCE TEST AREA
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D.2. No.
D.2.A. No.

CHEMICAL ANALYSIS RESEARCH FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

DETONATION PHYSICS LABORATORY
D.1. Yes. Explosive storage, explosive assembly area.
D.2. No.
D.2.A. N/A.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
D.1. Yes. Overhead crane, ordnance certified facility, 220-volt 3-phase power.
D.2. No.
D.2.A. N/A.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
D.1. Yes. Machine shops to make test fixtures for SSCB, LCB, ISO testing, friction and impact sensitivity testing.
D.2. No.
D.2.A. N/A.

ENVIRONMENTAL TEST COMPLEX
D.1. Yes. Facilities must be ordnance safety certified, validated, and sited for ordnance operations. Currently, the facilities are sited for the following maximum ordnance limits (net explosive weight). Dynamics: 8,000 lbs Class 1.1, 5,000 lbs Class 1.2, 100,000 lbs Class 1.3; Climatics: 30,000 lbs Class 1.1, 5,000 lbs Class 1.2, 100,000 lbs Class 1.3.
D.2. No.
D.2.A. N/A

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
D.1. Yes. Missile breakdown building—to inert and disassemble live ordnance from FME hardware. Anechoic chambers—to characterize and test FME missile seekers. Skytop rocket propulsion facility—to test live rocket motors for FME hardware. Non-destructive x-ray facility—to perform x-rays on FME hardware nondestructively to aid in exploitation. FME reverse engineering labs—several labs with hoists (overhead). RCS test facility—remote, secure outdoor range for characterizing RCS of missiles. Salt Wells chemical analysis lab—secure lab facility. Fuze exploitation lab—secure lab facility. HWIL facility—three RF chambers (including air-to-air simulation) for testing FME missile hardware. Warhead Blast Arena—remote warhead test facility with instrumentation. Balloon portion of complex—telemetry receiving station for the balloons and balloon tether support vehicles.
D.2. No.
D.2.A. N/A.

GUIDANCE COMPONENTS T&A COMPLEX
D.1. The actuator T&A facilities are sited and certified for storage, handling, and testing of Class 1 Division 4 type explosives as designated by NAVSEA OP 5 Volume I, Chapter 7-1, and provide for full instrumentation of gas generator ignition and related thermal battery tests. Main facility (Bldg 01680) also contains a vented fume hood for handling of caustic exhaust gases.
D.2. No.
D.2.A. N/A.

CHEMICAL ANALYSIS RESEARCH FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

DETONATION PHYSICS LABORATORY
D.1. Yes. Explosive storage, explosive assembly area.
D.2. No.
D.2.A. N/A.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
D.1. Yes. Overhead crane, ordnance certified facility, 220-volt 3-phase power.
D.2. No.
D.2.A. N/A.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
D.1. Yes. Machine shops to make test fixtures for SSCB, LCB, ISO testing, friction and impact sensitivity testing.
D.2. No.
D.2.A. N/A.

ENVIRONMENTAL TEST COMPLEX
D.1. Yes. Facilities must be ordnance safety certified, validated, and sited for ordnance operations. Currently, the facilities are sited for the following maximum ordnance limits (net explosive weight). Dynamics: 8,000 lbs Class 1.1, 5,000 lbs Class 1.2, 100,000 lbs Class 1.3; Climatics: 30,000 lbs Class 1.1, 5,000 lbs Class 1.2, 100,000 lbs Class 1.3.
D.2. No.
D.2.A. N/A

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
D.1. Yes. Missile breakdown building—to inert and disassemble live ordnance from FME hardware. Anechoic chambers—to characterize and test FME missile seekers. Skytop rocket propulsion facility—to test live rocket motors for FME hardware. Non-destructive x-ray facility—to perform x-rays on FME hardware nondestructively to aid in exploitation. FME reverse engineering labs—several labs with hoists (overhead). RCS test facility—remote, secure outdoor range for characterizing RCS of missiles. Salt Wells chemical analysis lab—secure lab facility. Fuze exploitation lab—secure lab facility. HWIL facility—three RF chambers (including air-to-air simulation) for testing FME missile hardware. Warhead Blast Arena—remote warhead test facility with instrumentation. Balloon portion of complex—telemetry receiving station for the balloons and balloon tether support vehicles.
D.2. No.
D.2.A. N/A.

GUIDANCE COMPONENTS T&A COMPLEX
D.1. The actuator T&A facilities are sited and certified for storage, handling, and testing of Class 1 Division 4 type explosives as designated by NAVSEA OP 5 Volume I, Chapter 7-1, and provide for full instrumentation of gas generator ignition and related thermal battery tests. Main facility (Bldg 01680) also contains a vented fume hood for handling of caustic exhaust gases.
D.2. No.
D.2.A. N/A.

HIGH HAZARD PROPULSION TEST FACILITY
D.1. Yes. Bay III, has a CBAT (Confined Burn Assessment Test) chamber installed on the MS-3 pad. This chamber allows for the burning of rocket motors at low pressures and low mass flows to assess the combustion by-products in order to develop technology necessary to achieve an economical means of environmentally safe disposal techniques. These studies will result in a full-scale facility design capable of environmentally clean disposal of hundreds of strategic size motors each year.
D.2. No.
D.2.A. N/A.

IR SEEKER, GCS DDT&E COMPLEX
D.1. Yes. Calibration lab (Metrology).
D.2. Yes. IR CCM targets.
D.2.A. Yes. AGMC through the NAWCWPNS Metrology Lab.

JUNCTION RANCH RADAR CROSS SECTION RANGE
D.1. Yes. The 4,000-foot Horizontal Bounce Range is required to conduct a significant portion of the RCS workload at Junction Ranch. Also, the Salt Water Pond, the Tilt Deck, and the Parrot Peak radar system are required portions of the Look Down Range.
D.2. No.
D.2.A. N/A.

MATERIALS ENGINEERING/FAILURE ANALYSIS FACILITY
D.1. Yes. Equipment and facilities dedicated to materials engineering and failure analysis unique to weapon systems. Laboratory has been established to dedicate personnel and equipment to this unique function.
D.2. N/A.
D.2.A. N/A.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
D.1. Yes. Ammunition storage magazines.
D.2. No.
D.2.A. N/A.

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
D.1. No.
D.2. Yes. Both full-scale and subscale target models are used at the MESA.
D.2.A. No.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
D.1. Yes. Railroad loading dock located approximately 12 miles to the south. The dock allows for the off loading of Trident II assets from rail cars, which is the only Department of Transportation or DOD approved method for transporting the Trident II, D5, rocket motors.
D.2. No.
D.2.A. N/A.

OPTICS & LASER RESEARCH FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

HIGH HAZARD PROPULSION TEST FACILITY
D.1. Yes. Bay III, has a CBAT (Confined Burn Assessment Test) chamber installed on the MS-3 pad. This chamber allows for the burning of rocket motors at low pressures and low mass flows to assess the combustion by-products in order to develop technology necessary to achieve an economical means of environmentally safe disposal techniques. These studies will result in a full-scale facility design capable of environmentally clean disposal of hundreds of strategic size motors each year.
D.2. No.
D.2.A. N/A.

IR SEEKER, GCS DDT&E COMPLEX
D.1. Yes. Calibration lab (Metrology).
D.2. Yes. IR CCM targets.
D.2.A. Yes. AGMC through the NAWCWPNS Metrology Lab.

JUNCTION RANCH RADAR CROSS SECTION RANGE
D.1. Yes. The 4,000-foot Horizontal Bounce Range is required to conduct a significant portion of the RCS workload at Junction Ranch. Also, the Salt Water Pond, the Tilt Deck, and the Parrot Peak radar system are required portions of the Look Down Range.
D.2. No.
D.2.A. N/A.

MATERIALS ENGINEERING/FAILURE ANALYSIS FACILITY
D.1. Yes. Equipment and facilities dedicated to materials engineering and failure analysis unique to weapon systems. Laboratory has been established to dedicate personnel and equipment to this unique function.
D.2. N/A.
D.2.A. N/A.

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D.1. Yes. Ammunition storage magazines.
D.2. No.
D.2.A. N/A.

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D.1. No.
D.2. Yes. Both full-scale and subscale target models are used at the MESA.
D.2.A. No.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
D.1. Yes. Railroad loading dock located approximately 12 miles to the south. The dock allows for the off loading of Trident II assets from rail cars, which is the only Department of Transportation or DOD approved method for transporting the Trident II, D5, rocket motors.
D.2. No.
D.2.A. N/A.

OPTICS & LASER RESEARCH FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
D.1. Yes. Radiographic test facilities, secure ordnance storage facilities, maintenance facilities for ordnance operations.
D.2. No.
D.2.A. N/A.

ORDNANCE TEST COMPLEX
D.1. Yes. Fuel delivery and setup at the CT-4 and CT-1 fast cookoff pits require extreme environmental protection measures be taken to protect the soil during tests. These pits are classified as specialized facilities, since the environmental protection methods have become dominant for pretest conditioning in recent years.
D.2. No.
D.2.A. N/A.

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
D.1. Yes. Metrology Laboratory to calibrate and certify instrumentation in test equipment to NIST standards. Microelectronics fabrication facility.
D.2. Yes. Calibrated IR sources for rate table test facilities.
D.2.A. Yes. IR source calibration through Metrology Laboratory to AGMC.

SENSOR & TARGETING TECHNOLOGY FACILITY
D.1. Yes. Fabrication shop to build RF sensor and radar exciters and receivers and unique fixtures to support active array and other system tests. Two vaults certified to Top Secret SCI/TEMPEST requirements; a hardware lab equipped with specially developed test sets and equipment; and a software lab equipped with special software development hardware, software, and custom-tailored emulators. The Laser facility contains secure (Secret) data-processing equipment. These facilities contain secure data links to outside organizations requiring an interface to the work performed here. There are also numerous digital signal analyzers that allow the incorporation of actual sensor data into software simulations of laser rangefinder performance. The Night Vision Goggles Laboratory needs a light-tight room.
D.2. Yes. The Night Vision Goggles Laboratory needs a boresight alignment tool and special eye and color charts.
D.2.A. Yes. Wright-Patterson AFB and Industry Standards.

SLED TRACKS
D.1. Yes.

Explosive storage magazine for test items and rocket motors	Cameras and camera tracking equipment
Telemetry receiving station	Machine shop
Ordnance preparation buildings	Film processing laboratory
Heavy lifting equipment (e.g. crane)	TSPI systems
Calibration laboratory equipment	Ordnance transportation and handling
Communications center	Data reduction facilities

D.2. Yes. Individual programs frequently require specialized targets in support of their tests. In nearly all cases the targets are supplied by the program.
D.2.A. Yes. Individual programs validate their own targets.

STRATEGIC PROPULSION TEST COMPLEX
D.1. No.
D.2. No.
D.2.A. N/A.

0106 A

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
D.1. Yes. Radiographic test facilities, secure ordnance storage facilities, maintenance facilities for ordnance operations.
D.2. No.
D.2.A. N/A.

ORDNANCE TEST COMPLEX
D.1. Yes. Fuel delivery and setup at the CT-4 and CT-1 fast cookoff pits require extreme environmental protection measures be taken to protect the soil during tests. These pits are classified as specialized facilities, since the environmental protection methods have become dominant for pretest conditioning in recent years.
D.2. No.
D.2.A. N/A.

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
D.1. Yes. Metrology Laboratory to calibrate and certify instrumentation in test equipment to NIST standards. Microelectronics fabrication facility.
D.2. Yes. Calibrated IR sources for rate table test facilities.
D.2.A. Yes. IR source calibration through Metrology Laboratory to AGMC.

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D.2. Yes. The Night Vision Goggles Laboratory needs a boresight alignment tool and special eye and color charts.
D.2.A. Yes. Wright-Patterson AFB and Industry Standards.

SLED TRACKS
D.1. Yes.

Explosive storage magazine for test items and rocket motors	Cameras and camera tracking equipment
Telemetry receiving station	Machine shop
Ordnance preparation buildings	Film processing laboratory
Heavy lifting equipment (e.g. crane)	TSPI systems
Calibration laboratory equipment	Ordnance transportation and handling
Communications center	Data reduction facilities

D.2. Yes. Individual programs frequently require specialized targets in support of their tests. In nearly all cases the targets are supplied by the program.
D.2.A. Yes. Individual programs validate their own targets.

STRATEGIC PROPULSION TEST COMPLEX
D.1. No.
D.2. No.
D.2.A. N/A.

0106

TACTICAL PROPULSION TEST FACILITY
D.1. Yes. Facility is linked to Bay IV Control Room for control and data acquisition purposes. Nearby support facilities include LN2, x-ray, computer tomography, temperature controlled storage, transducer calibration laboratory, buildup and prep facilities, and general shop capabilities.
D.2. No.
D.2.A. N/A.

VHF ANECHOIC CHAMBER
D.1. No.
D.2. Yes. Both broadband and narrowband source antennas are utilized in this facility; from 30 MHz to 94 GHz in various bands and bandwidth ratios.
D.2.A. Yes. Ramtec utilized calibrated source antennas in this chamber during 1990 and 1991.

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
D.1. Yes. Microwave anechoic chambers, microwave RF component measurement equipment, field programmable high speed digital development systems, embedded computer development workstations, high performance analog design and measurement station, and IF circuit design and measurement test equipment. Specialized antenna modeling high performance workstation and software programs. This facility has the electronics testing, maintenance, and repair equipment needed to support the Microwave Radiometer Laboratory and the trained and experienced personnel needed to perform these tasks.
D.2. Yes. Specific classified targets for evaluation of terminal RF seeker performance. This work is conducted at the Electronic Combat Range at NAWCWPNS China Lake.
D.2.A. Yes. Some targets are actual foreign hardware and others are ECR-verified targets.

WEAPONS SURVIVABILITY LABORATORY (WSL)
D.1. Yes. High Velocity Airflow System (HIVAS)—Four TF33 engines mounted on a turret capable of rotating to provide up to 520 knots airflow over three different test pads. Fuel Farm—provides test pads with jet fuel for extended time operations for both HIVAS and remotely operating aircraft. Paint Booth—permitted by Mojave Desert AQMD; 16' X 18' X 32' Bay. Oil/Water Separator System—Permitted by CALEPA Department Of Toxic Substances Control; Capable of handling 20,000 gallons of fuel and water mixed from test pads. On-Site Fabrication Facilities available to perform test specimen repair and buildup. Storage: almost unlimited space for storage of large test articles.
D.2. No.
D.2.A. N/A.

INTEGRATION LABORATORY

ACTUATOR AND POWER SYSTEMS LABORATORY
D.1. Yes. Requires maintenance facilities capable of dealing with areas that utilize energetic materials.
D.2. No.
D.2.A. No.

TACTICAL PROPULSION TEST FACILITY
D.1. Yes. Facility is linked to Bay IV Control Room for control and data acquisition purposes. Nearby support facilities include LN2, x-ray, computer tomography, temperature controlled storage, transducer calibration laboratory, buildup and prep facilities, and general shop capabilities.
D.2. No.
D.2.A. N/A.

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D.1. No.
D.2. Yes. Both broadband and narrowband source antennas are utilized in this facility; from 30 MHz to 94 GHz in various bands and bandwidth ratios.
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D.2.A. Yes. Some targets are actual foreign hardware and others are ECR-verified targets.

WEAPONS SURVIVABILITY LABORATORY (WSL)
D.1. Yes. High Velocity Airflow System (HIVAS)—Four TF33 engines mounted on a turret capable of rotating to provide up to 520 knots airflow over three different test pads. Fuel Farm—provides test pads with jet fuel for extended time operations for both HIVAS and remotely operating aircraft. Paint Booth—permitted by Mojave Desert AQMD; 16' X 18' X 32' Bay. Oil/Water Separator System—Permitted by CALEPA Department Of Toxic Substances Control; Capable of handling 20,000 gallons of fuel and water mixed from test pads. On-Site Fabrication Facilities available to perform test specimen repair and buildup. Storage: almost unlimited space for storage of large test articles.
D.2. No.
D.2.A. N/A.

INTEGRATION LABORATORY

ACTUATOR AND POWER SYSTEMS LABORATORY
D.1. Yes. Requires maintenance facilities capable of dealing with areas that utilize energetic materials.
D.2. No.
D.2.A. No.

0107

ANTIRADIATION MISSILE INTEGRATION COMPLEX
D.1. Yes. This facility is dependent on the Echo and George ranges, airfield and airspace capabilities, aircraft assets/maintenance, weapons system support activities (WSSA), electronic intelligence capabilities, and electronic warfare suite test capabilities for ARM integration.
D.2. Yes. Specialized targets are located at NAWCWPNS China Lake (Echo and George ranges), NAWCWPNS Point Mugu (sea-based targets), Nellis AFB test range, Fort Bliss test range, and White Sands Missile Range.
D.2.A. Yes. Range test managers of cognizant ranges.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
D.1. Yes. Electronic/mechanical check-out shop located on Hangar III flight deck. Proximity necessary/unique for operational aircraft and specially developed test sets and instrumentation. Unique aspects include ability to conduct aircraft and signal checks prior to loading weapon on aircraft; ability to secure assets and facility; ability to handle large airframes and other hardware. Also, unique fiber optic cable pay-out and winding machines, and a fiber pay-out, pneumatically actuated high-speed rail gun system.
D.2. No.
D.2.A. N/A.

COMPOSITES DEVELOPMENT LABORATORY
D.1. Yes. Clean air for layups, temperature control, overhead lifts, high-voltage electricity, vacuum system, cooling water, nitrogen, compressed air.
D.2. No.
D.2.A. N/A.

DATA LINK DEVELOPMENT LABORATORY
D.1. Yes. Roof-mounted steerable antenna and communications antennas at edge of test range airspace to enable data link development testing. Also, location above ground floor with optical-quality glass in windows and view of terrain at distance of several miles to enable weapon seeker work necessary for video data link development.
D.2. Yes. Billboard targets at calibrated range from lab for assessment of image resolution through video data link.
D.2.A. No.

ELECTRONIC WARFARE INTEGRATION LABORATORY
D.1. No.
D.2. No.
D.2.A. N/A.

FUZE DEVELOPMENT LABORATORY
D.1. No.
D.2. No.
D.2.A. N/A.

LASER SEEKER INTEGRATION AND TEST FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

ANTIRADIATION MISSILE INTEGRATION COMPLEX
D.1. Yes. This facility is dependent on the Echo and George ranges, airfield and airspace capabilities, aircraft assets/maintenance, weapons system support activities (WSSA), electronic intelligence capabilities, and electronic warfare suite test capabilities for ARM integration.
D.2. Yes. Specialized targets are located at NAWCWPNS China Lake (Echo and George ranges), NAWCWPNS Point Mugu (sea-based targets), Nellis AFB test range, Fort Bliss test range, and White Sands Missile Range.
D.2.A. Yes. Range test managers of cognizant ranges.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
D.1. Yes. Electronic/mechanical check-out shop located on Hangar III flight deck. Proximity necessary/unique for operational aircraft and specially developed test sets and instrumentation. Unique aspects include ability to conduct aircraft and signal checks prior to loading weapon on aircraft; ability to secure assets and facility; ability to handle large airframes and other hardware. Also, unique fiber optic cable pay-out and winding machines, and a fiber pay-out, pneumatically actuated high-speed rail gun system.
D.2. No.
D.2.A. N/A.

COMPOSITES DEVELOPMENT LABORATORY
D.1. Yes. Clean air for layups, temperature control, overhead lifts, high-voltage electricity, vacuum system, cooling water, nitrogen, compressed air.
D.2. No.
D.2.A. N/A.

DATA LINK DEVELOPMENT LABORATORY
D.1. Yes. Roof-mounted steerable antenna and communications antennas at edge of test range airspace to enable data link development testing. Also, location above ground floor with optical-quality glass in windows and view of terrain at distance of several miles to enable weapon seeker work necessary for video data link development.
D.2. Yes. Billboard targets at calibrated range from lab for assessment of image resolution through video data link.
D.2.A. No.

ELECTRONIC WARFARE INTEGRATION LABORATORY
D.1. No.
D.2. No.
D.2.A. N/A.

FUZE DEVELOPMENT LABORATORY
D.1. No.
D.2. No.
D.2.A. N/A.

LASER SEEKER INTEGRATION AND TEST FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

0108

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
D.1. Yes. Requires maintenance facilities capable of dealing with areas that utilize energetic materials.
D.2. No.
D.2.A. N/A.

ORDNANCE ASSEMBLY FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

TELEMETRY DEVELOPMENT LABORATORY
D.1. Yes. Environmental Engineering Laboratory and Weapons Integration Labs for testing of telemetry systems.
D.2. No.
D.2.A. N/A.

TSSAM MISSION PLANNING FACILITY
D.1. Yes. The mission planning facility has a direct interface to the TSSAM Hardware-in-the-Loop Laboratory for system-level testing.
D.2. No.
D.2.A. N/A.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
D.1. Yes. Requires support from NAWCWPNS China Lake centralized magazine area of the Weapons Department for shipping/receiving/temporary storage of explosive ordnance materials for explosive ordnance testing programs.
D.2. No.
D.2.A. N/A.

WEAPONS GUIDANCE/CONTROL/SEEKER IL
D.1. Yes. Metrology Laboratory to calibrate and certify laboratory equipment to NIST standards and guidance/control specifications.
D.2 Yes. Calibrated IR sources for rate table test facilities.
D.2.A. Yes. IR source calibration through Metrology Laboratory to AGMC.

WEAPONS SYSTEM SUPPORT FACILITY, A-6
D.1. No.
D.2. No.
D.2.A. N/A.

WEAPONS SYSTEM SUPPORT FACILITY, AH-1
D.1. No.
D.2. No.
D.2.A. N/A.

WEAPONS SYSTEM SUPPORT FACILITY, AV-8
D.1. No.
D.2. No.
D.2.A. N/A.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
D.1. Yes. Requires maintenance facilities capable of dealing with areas that utilize energetic materials.
D.2. No.
D.2.A. N/A.

ORDNANCE ASSEMBLY FACILITY
D.1. No.
D.2. No.
D.2.A. N/A.

TELEMETRY DEVELOPMENT LABORATORY
D.1. Yes. Environmental Engineering Laboratory and Weapons Integration Labs for testing of telemetry systems.
D.2. No.
D.2.A. N/A.

TSSAM MISSION PLANNING FACILITY
D.1. Yes. The mission planning facility has a direct interface to the TSSAM Hardware-in-the-Loop Laboratory for system-level testing.
D.2. No.
D.2.A. N/A.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
D.1. Yes. Requires support from NAWCWPNS China Lake centralized magazine area of the Weapons Department for shipping/receiving/temporary storage of explosive ordnance materials for explosive ordnance testing programs.
D.2. No.
D.2.A. N/A.

WEAPONS GUIDANCE/CONTROL/SEEKER IL
D.1. Yes. Metrology Laboratory to calibrate and certify laboratory equipment to NIST standards and guidance/control specifications.
D.2 Yes. Calibrated IR sources for rate table test facilities.
D.2.A. Yes. IR source calibration through Metrology Laboratory to AGMC.

WEAPONS SYSTEM SUPPORT FACILITY, A-6
D.1. No.
D.2. No.
D.2.A. N/A.

WEAPONS SYSTEM SUPPORT FACILITY, AH-1
D.1. No.
D.2. No.
D.2.A. N/A.

WEAPONS SYSTEM SUPPORT FACILITY, AV-8
D.1. No.
D.2. No.
D.2.A. N/A.

0109

WEAPONS SYSTEM SUPPORT FACILITY, F/A-18
D.1. No.
D.2. No.
D.2.A. N/A.

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
D.1. No.
D.2. Yes. In order to run missile encounter scenarios on the test sets, data taken from special targets (various antiship and TBM missiles) is required. The target data is taken at the Encounter Simulation Laboratory, Corona, CA.
D.2.A. Yes. Encounter Simulation Laboratory, Corona, CA, and their classified suppliers.

SIMULATION LABORATORY—MISSILE HITL
D.1. No.
D.2. No.
D.2.A. N/A.

TSSAM HARDWARE-IN-THE-LOOP
D.1. Yes. There are mission planning facilities and aircraft resources available that are necessary to perform the full system-level tests that are the mission of this facility.
D.2. No.
D.2.A. N/A.

OPEN AIR

AIR/GROUND RANGE
D.1. Yes. The following specialized facilities exist in support of North Range test operations.
- Test Control facility
- Ordnance storage, buildup, and teardown facilities
- Airfield
- Towers for conducting fuze/sensor tests
- Parachute drying towers

D.2. Yes. Available targets include:
- Antiradiation targets that are "unique" in their geographic positioning and multiple threat capabilities
- Static and dynamic ground targets
- Subscale and full-scale aerial targets
- SAM sites, bridges, tunnels, convoys, and other specialized targets as required

D.2.A. Yes. Intelligence community.

ELECTRONIC COMBAT RANGE (ECR)
D.1. Yes. The ECR has approximately 20 permanent buildings (about 73,000 net square feet) and 80 vans and trailers (about 25,000 net square feet). The vans and trailers are used primarily to house radar control consoles and for radar maintenance space. There are numerous substations and transformers which provide shore power for the facilities and equipment. Other facilities include collimation towers and radar mounds. Some of the specialized and unique facilities are described below.

WEAPONS SYSTEM SUPPORT FACILITY, F/A-18
D.1. No.
D.2. No.
D.2.A. N/A.

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
D.1. No.
D.2. Yes. In order to run missile encounter scenarios on the test sets, data taken from special targets (various antiship and TBM missiles) is required. The target data is taken at the Encounter Simulation Laboratory, Corona, CA.
D.2.A. Yes. Encounter Simulation Laboratory, Corona, CA, and their classified suppliers.

SIMULATION LABORATORY—MISSILE HITL
D.1. No.
D.2. No.
D.2.A. N/A.

TSSAM HARDWARE-IN-THE-LOOP
D.1. Yes. There are mission planning facilities and aircraft resources available that are necessary to perform the full system-level tests that are the mission of this facility.
D.2. No.
D.2.A. N/A.

OPEN AIR

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D.1. Yes. The following specialized facilities exist in support of North Range test operations.
- Test Control facility
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- Airfield
- Towers for conducting fuze/sensor tests
- Parachute drying towers

D.2. Yes. Available targets include:
- Antiradiation targets that are "unique" in their geographic positioning and multiple threat capabilities
- Static and dynamic ground targets
- Subscale and full-scale aerial targets
- SAM sites, bridges, tunnels, convoys, and other specialized targets as required

D.2.A. Yes. Intelligence community.

ELECTRONIC COMBAT RANGE (ECR)
D.1. Yes. The ECR has approximately 20 permanent buildings (about 73,000 net square feet) and 80 vans and trailers (about 25,000 net square feet). The vans and trailers are used primarily to house radar control consoles and for radar maintenance space. There are numerous substations and transformers which provide shore power for the facilities and equipment. Other facilities include collimation towers and radar mounds. Some of the specialized and unique facilities are described below.

- Operations Center (70049). The nerve center of the Electronic Combat Range. Houses computers, test operations display center, fiber optic hub, telemetry and GPS ground station, C2 operations, and recording center.

- Sea Site 1 (70080 & P-342). Sea Site 1 is the main location for most ECR sea-based threat simulators. The "ship" is the home of two long-range search and acquisition radars, three medium/long-range surface-to-air fire-control radars, three gun control radars, and a close-in-air-defense fire-control radar. The facility houses radar control consoles, maintenance areas, and range instrumentation systems.

- Sea Site 2 (70085). Sea Site 2 was developed to field emitter-only threat simulators used to more fully populate the RF environment during testing. Currently the site has one emitter-only system and is also home to the ROLAND close-in-air defense fire-control radar. Also located at Sea Site 2 is the missile seeker portion of the Semi-Active Threat Simulation (SATS).

- Sea Site 3/Engineering Support Facility (MILCON P-454). Sea Site 3 and the Engineering Support Facility are the latest in a series of ECR MILCONs focused at upgrading range capabilities. Sea Site 3 will be the third "ship" in the ECR Integrated Naval Air Defense Simulation. Sea Site 3 will house an existing ECR naval search and acquisition radar, a gun control radar, and an IR seeker simulator currently located at various locations throughout the range, and will be home for future systems. Additionally, ECR's latest land-based long-range fire-control radar will be installed at the site.

- The Engineering Support Facility is being built at ECR Central Site and will house engineering staff, laboratories, and a High Bay facility to be used for radar integration, maintenance, repair and Foreign Material Exploitation. The ESF will also house the ECR classified material library. Sea Site 3 and the ESF are scheduled to be completed in August 94.

- GPS Pod Shop. The GPS pod shop located at the NAWS China Lake Air Field is dedicated to the set-up, maintenance, and repair of GPS Pods mounted on test aircraft. The pod shop will support testing at all China Lake ranges.

- Slate Range Facility. The SRF is located at an elevation of 4700 feet MSL overlooking the ECR complex. The Slate Range Facility provides signal monitoring for ECR, generates synthetic static and dynamic radar return signals used during radar alignment, calibration, and diagnostic testing, and is the heart of the Hardware-in-the-Loop Moving Target Simulation. The facility houses equipment used for producing time, spectral, and power measurements for all ECR radars. SRF also has a direction finding capability used to locate undesirable emissions. Static and dynamic radar targets are generated via computer-controlled digital RF memories and associated RF hardware. The Moving Target Simulation allows ECM/ECCM testers to evaluate equipment in a simulated dynamic environment without the use of test aircraft. This closed loop, hardware-in-the-loop simulation is extremely valuable for determining system effectiveness prior to developing flight qualified hardware.

- Parachute Drop Zone. The Parachute Drop Zone (DZ) located at ECR east of Central Site is utilized approx. 4 times a month. The purpose of this DZ is to have a safe and sanitized area for the jumpers to utilize. The customers are from NAWS China Lake and other Special Forces of all U.S. military forces. They test new parachute rigging, fast delivery (Special Forces), new material and numerous other crew training and advanced techniques. The DZ is a circle 500 feet in radius.

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- Inert Bombing Support Facility and Range (Superior Valley). Superior Valley, located within the R-2508 complex and joined with the Electronic Combat Range, has over 35 square miles of secluded land and airspace. Over 60 scoreable and diverse targets, including surface-to-air missile (SAM), antiaircraft artillery (AAA), and convoy targets, are available for inert ordnance delivery. This area is also used for flight of unmanned air vehicles (UAVs), training courses for Light Attack Vehicle - Air Defense (LAVADs), and an Operations Area for Special Forces Groups.

- UAV Runway and Support Facility. The ECR has an area to flight test unmanned air vehicles (UAV). This facility enables ECR users to test UAVs in an electronic threat environment without the need to fly outside of restricted airspace R-2524. The need for chase aircraft is eliminated by containing the operations within R-2524. Located at the UAV site are three runways and a maintenance/hangar building. Additional facilities are available for use as office space.

D.2. No.
D.2.A. N/A.

FLIGHT TEST CAPABILITY
D.1. Yes.
CCN 211-75 Parachute/Survival Equipment Shop
CCN-211-89 Power Check Pad without Sound Suppression
CCN-211-96 Maintenance, Aircraft Spares Storage
CCN-116-10 Airfield Washrack Pavement
CCN-218-60 Aircraft Ground Support Equipment
CCN-843-20 Hazardous Materials Storage
CCN-390-11 Aircraft Storage Facility
CCN-111-20- Landing Pads
CCN-124-30 Fuel Storage
CCN-421-xx Ammunition Storage
CCN-113-20 Parking Aprons
CCN-116-56 Combat Aircraft Ordnance Loading Area
CCN-116-20 Compass Rose
CCN-311-25 Aircraft Laboratory (SCIF Hangars)
D.2. No.
D.2.A. N/A.

NAWCWPNS-WHITE SANDS
D.1. Yes. Specialized facilities include the following:

The Missile Assembly Facility (MAF) is a state-of-the-art ordnance assembly and test facility. It houses specialized test equipment and facilities for complete end-to-end testing of Standard Missile. Specifically the Mk 612 Missile Test Equipment is integrated into a specialized test cell in the MAF, which is explosively isolated and contains a restraint fixture so that the Standard Missile under test can be completely ground tested (from launch to intercept) prior to missile firings. The MAF is a multiuse facility, supporting assembly and test of missiles, targets, and rockets for Army, NASA, and commercial programs as well as for Navy programs.

The Standard Missile/VLS Test Complex is specifically configured with fire-control equipment and fire-control software as well as launchers to be able to support firing tests of all versions of Standard Missile.

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The Ship Self Defense Test Complex is uniquely configured to support land-based missile firings for the Rolling Airframe Missile (RAM).

Theater Missile Defense (TMD) and Research Rocket blockhouses, launchers, launch pads, ordnance assembly areas, ordnance storage, clean rooms, etc., are specialized in design and configuration to meet TMD/Research Rocket target buildup and launch requirements. These facilities include specially built/configured facilities for hypergolic (liquid) fueling of LEAP interceptors. Launcher enclosures are 60 feet high and are moved away from the launcher on tracks just before target launch. Facilities owned by NASA augment these Navy facilities with 60-foot-high bays providing for vertical assembly, spin balance, vibration, bend testing, collimation, etc.

The Advanced Gun System Complex will have (FY95 MILCON) the capability to house experimental gun barrels and mix experimental propellants in support of Advanced Gun System testing. This test complex will also have an Electro Thermal Chemical (ETC) Gun installed for testing of ETC gun concepts.

D.2.

Yes. Multiple target types are required for testing of Standard Missile, RAM, SLAM, TMD, High Energy Laser, and the Advanced Gun System. Targets include ground and airborne, subsonic and supersonic, subscale and full scale. Both airborne and ground targets are customized (jammers, radar cross section, etc.) to meet requirements of individual test missions. Additionally, foreign assets are presented as targets.

Subscale targets include BQM-34 (subsonic) and AQM-37C (supersonic). Customization includes radar cross section, infrared and radar frequency emitting pods, and jammer pods.

Full-scale targets include foreign asset cruise missiles and VANDAL (supersonic). In addition, the Range is capable of presenting the QF-4 and QF-106 as targets.

Ground targets include live submunition impact areas, customized warhead arenas (including static target), and simulated military command posts/administrative targets for smart munitions/submunitions.

TMD target vehicles launched from NAWCWPNSDETWS facilities are uniquely designed and configured to provide threat-representative exoatmospheric reentry trajectories, velocities, maneuverability, cross sections, and warheads (including chemical simulants).

D.2.A.

Yes. Navy subscale targets are under NAVAIR configuration control with specialized augmentation/performance requirements validated by the Standard Missile Program Office, the Rolling Airframe Missile Program Office, and NAWCWPNS Point Mugu. The Ballistic Missile Defense Organization (BMDO) validates TMD targets. Fixed ground targets are validated by NAWCWPNSDETWS and the cognizant program office.

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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.*

Potential for expansion at China Lake in all T&E functional areas is exceptionally high. Approximately 300,000 square feet of excess laboratory and hangar space is currently available. Also, adequate utility systems and roads are already in place, in land areas contiguous to the present industrial plant, to permit expansion under favorable cost conditions. Energy self sufficiency is being pursued, with geothermal development on the base already contributing substantially to savings in electrical utility costs. Significant expansion of the geothermal power source is planned, and underground hot water resources are being explored to further contribute to energy independence.

Encroachment and Environmental Issues. An important advantage of China Lake's isolation is relative freedom from encroachment and environmental problems. In these areas, China Lake's problems are minor compared to those in other more populated areas.

These issues will necessarily influence the placement of future military RDT&E. Attack and fighter aircraft operational requirements will be more difficult to achieve in the future at military facilities in or near urban areas where commercial air traffic from growing commerce and increases in population are occurring. When overland testing and training are needed, environmental pressures will tend to drive them to the large and relatively remote land areas controlled by the military services. As encroachment and environmental controls progressively force curtailment or closure upon military activities in the more densely populated areas, all three services are going to rely more heavily on these vast land areas and usable airspace.

Demographic Considerations. The demographic structure of the area could support additional project work. The area has experienced relatively mild population growth over the past decade, and national merchandisers moved into the area during the1980s defense buildup. However, drawdown in workload has led to population decreases in recent years. The resulting excess capacity in residential, commercial, and light industrial space would accommodate considerable population and service growth without additional construction. The extent of this excess capacity is illustrated by the following data from a local realtor.

Type Space	Avail. Square Feet
Light Industrial	41,150
Professional Office/Retail	27,580
Professional Office	103,830
Retail	149,471
Service	22,658

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In addition, on-base power supply reserves are good; utilities in general are in good condition and are capable of absorbing added load. China Lake is proceeding toward energy self-sufficiency with its geothermal program. Its self-contained water system is presently being reworked with new mains and refurbished storage tanks. There are a number of sites at China Lake, ranging in size from 60 acres to over 500 acres, that are close to utilities and could be economically developed to accommodate new construction.

Expansion potential for each of the 60 NAWCWPNS China Lake facilities/capabilities is presented below:

MODELING AND SIMULATION

AIR WEAPON DIGITAL MODELING & SIMULATION
E.1. Yes. Facility could easily be augmented with additional computers and personnel to accommodate additional work.
E.1.A. Yes. ECM—threat modeling; Air Vehicles—autopilot and flight controls, UAV performance analysis.

EXPLOSIVE AND ORDNANCE MODELING
E.1. No.
E.1.A. Yes. The design modeling capability is now 100% utilized. Any weapon design model could be modeled using the tools available. Modeling, using the capabilities of the existing software, could be used to reduce the number of engineering hardware tests performed.

STRIKE SIMULATION & MODELING
E.1. Yes. Processors, memory, and storage disks can be added easily. It is a rack-mounted system and we can easily double or triple the number of CPUs; with associated support equipment and personnel we could increase the facility "through-put" by a factor of 30. The text material could be put on CDs; the automated databases could be put on any number of PCs or on a secure network depending on what is more cost efficient. We can add hardware-in-the-loop testing of the complete weapon system using this facility along with the C29 Simlab and C28 GPS Laboratory, and the Aircraft WSSAs. New missions and workloads can be accepted because the workload for the HARM missile is winding down.
E.1.A. Yes. Imbedded weapons systems software; Computer algorithms and weapons guidance solutions; Armaments/weapons; Integration Laboratories (IL); hardware-in-the-loop (HWIL); air vehicles; integration laboratories (IL); measurement facilities (MF)—provide "blessed" reference data. (Much of the information in the threat databases is not required or used by our current customers.) Can accept general analysis tasking and software written in VAX or Unix operating systems. Use of main computing facilities has dropped off due to procurement of more efficient and cost effective small Silicon Graphics workstations. Our computing capacity is such that many additional scientific roles could be entertained, particularly in the area of image exploitation and realistic scene generation, or the generation of real scenes with the insertion of target models for mission rehearsals and flythroughs for both aircraft and missiles.

STRIKE SOFTWARE/SIMULATION FACILITY
E.1. Yes. Hardware in-the-loop and additional workstations hosting the simulation program can expand the facility workload capacity.
E.1.A. No.

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SYSTEM MODELING & SIGNAL PROCESSING FACILITY
E.1. Yes. Expansion of this facility may be achieved via terminal additions to the existing network with its associated network services such as disk storage, archiving, etc.
E.1.A. Yes. Landing Force Equipment and Systems, Coastal/Special Warfare Support, Multiplatform, Weapons Navigation Systems.

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)
E.1. Yes. Facility is currently manned, operated 40 hours/week. Maximum capacity is 24 hours/day, 7 days/week, if required. (This would require additional personnel support.) Capacity is not limited by weather.
E.1.A. Yes. Depending on the ability of other T&E ranges to interface through internetting with synthetic WEPTAC wargaming, it will be feasible to support T&E in all functional areas—air vehicles, weapon test, etc.

MEASUREMENT

AEROHEAT TEST FACILITY
E.1. No.
E.1.A. No.

AIR BREATHING PROPULSION LABORATORY
E.1. Yes. Specialized facilities indicated above allow expansion into turbine engine testing for all Navy turbine or turbojet engines.
E.1.A. Yes. Turbine engine and component testing, ducted rocket testing, scramjet testing.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
E.1. No.
E.1.A. Yes. Aircraft instrumentation will support test of other ARM seekers such as dual mode.

CACTUS FLATS ORDNANCE TEST AREA
E.1. No.
E.1.A. Yes. Gun (up to 40-mm), ballistic testing, fuze/sensor testing, battle damage assessment testing.

CHEMICAL ANALYSIS RESEARCH FACILITY
E.1. Yes. The ability to handle energetic materials (certified) allow enhanced testing/analysis of explosives and propellants. Collocation and interactions with diverse R&D activities provide great flexibility. NMR instrumentation expandable to magnetic resonance imaging work.
E.1.A. Yes. Armaments and weapons. Increased role in determining hazard properties of energetic materials. Analytical support for waste destruction projects especially those associated with energetic materials and shipboard wastes. New materials development and testing of replacements for ozone-depleting substances. Expanded test methods in support of NADEP facilities. Magnetic resonance imaging of energetic and structural composites. Environmental monitoring.

DETONATION PHYSICS LABORATORY
E.1. No.
E.1.A. No.

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E.1.A. No.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
E.1. Yes. Equipment can test any items within its load and size limitations.
E.1.A. Yes. Air vehicles, armament weapons.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
E.1. No.
E.1.A. Yes. Can perform production acceptance testing on propellants and explosives. Positioning to become a "wet" analysis lab for the EPA.

ENVIRONMENTAL TEST COMPLEX
E.1. Yes. Additional equipment can be installed at each site to accommodate additional workload. Each piece of equipment is general purpose in nature and can handle new/different test items or perform different test functions.
E.1.A. Limited air vehicle structural testing, air vehicle avionics and propulsion testing. Additional test types could include production acceptance testing (GLAT, PRAT, PVT), reliability demonstration testing (RDT, RGDT, MTBF), and environmental stress screening.

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
E.1. Yes. Capable of expanding to additional FME assets of all types, including hardware and software. Capable of including more counter- and counter-countermeasures testing. Present FME work has been concentrated on one country and language. This could be expanded to several other nations' products. The balloon portion of the facility could be expanded to handle several different lighter-than-air manned vehicles.
E.1.A. Yes. Functional Areas: air vehicles and electronic combat test types, integration laboratories, hardware-in-the-loop.

GUIDANCE COMPONENTS T&A COMPLEX
E.1. No.
E.1.A. Yes. Weapons Systems: launchers, propulsion, guided missiles. Navigation: aircraft navigation systems, weapons navigation systems. Sensors and Surveillance: special sensors. Platforms: aircraft. C3I: nontactical data systems.

HIGH HAZARD PROPULSION TEST FACILITY
E.1. No.
E.1.A. Yes. Any type of rocket motor test within T&E, S&T, DE, or IE functional areas.

IR SEEKER, GCS DDT&E COMPLEX
E.1. No.
E.1.A. Yes. Characterization tests of IRST and FLIR optics and detectors. Exploitation of foreign systems in the following areas: Landing Force equipment and systems, Coastal/Special Warfare support, Multiplatform, and Weapons Navigation Systems.

JUNCTION RANCH RADAR CROSS SECTION RANGE
E.1. Yes. The Elan radar data acquisition systems and the 386/486 data reduction PCs at Junction Ranch are fully capable of supporting additional RCS workload beyond the single-shift operation that has presently been implemented.
E.1.A. Yes. Dynamic RCS measurements of air vehicles and armament/weapons.

MATERIALS ENGINEERING/FAILURE ANALYSIS FACILITY
E.1. No.
E.1.A. Yes. Air vehicles, materials engineering, and failure analysis.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
E.1. No.
E.1.A. No.

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
E.1. No.
E.1.A. No.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
E.1. No.
E.1.A. No.

OPTICS & LASER RESEARCH FACILITY
E.1. Yes. Because much of the current work is in S&T, the utilization is typically less than optimum. More T&E work could be taken on.
E.1.A. Yes. Many of the elements making up this facility could be used to support significantly more air vehicle and ship-related optical testing.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
E.1. No.
E.1.A. Yes. Armaments & Weapons: integration testing, mass properties testing, squib tests, thermal battery safety tests.

ORDNANCE TEST COMPLEX
E.1. Yes. At CT-1, CT-4, and Burro Canyon, there is ample room for expansion to other specialized or general test arenas within control and data line capability of the control rooms. Another three to four areas at each could be emplaced, if necessary, with minimal startup costs.
E.1.A. Yes. Armaments/Weapons T&E for different types of weapons. Specialized, developmental, special purpose testing (aircraft fire analysis, fuselage buildup for test, etc.) can be accomplished as test conditions dictate; i.e., safety testing of ordnance can be expanded to fire safety, ballistic protection tests, etc., as required.

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
E.1. Yes. The Antenna Range is in a remote location with an ability to expand the far-field outdoor range for miles thereby increasing its measurement accuracy and operational frequency range. This antenna range can measure two entirely different antennas simultaneously because of an indoor near-field range and an outdoor far-field range. Measurement configurations are flexible to meet customers' needs. The instrumentation and computer resources in the Antenna/Radome Test Facility allow simultaneous operation of the near field and far field ranges.
E.1.A. Yes. Electronic Combat—radar decoy devices. Air Vehicles—antenna and radome measurements. Electronic Combat—antenna and radome measurements. Air Vehicles (Fixed and Rotary)—weapons integration special testing.

SENSOR & TARGETING TECHNOLOGY FACILITY
E.1. Yes. Back-up antenna positioners and measurement systems can be reallocated to provide additional test capability. The data links available would allow this facility to operate with other labs. There is additional room with some of the computing spaces for additional systems.
E.1.A. Yes. Armament/Weapons—RF sensors, seekers, fire-control radars, data links, image processing testing of imaging stand-off weapons. Electronic Combat—EW receivers, antiradiation missile seekers, jammers, radar warning receivers, ESM equipment. Air Vehicles—next generation Night Vision Goggles.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
E.1. Yes. Equipment can test any items within its load and size limitations.
E.1.A. Yes. Air vehicles, armament weapons.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
E.1. No.
E.1.A. Yes. Can perform production acceptance testing on propellants and explosives. Positioning to become a "wet" analysis lab for the EPA.

ENVIRONMENTAL TEST COMPLEX
E.1. Yes. Additional equipment can be installed at each site to accommodate additional workload. Each piece of equipment is general purpose in nature and can handle new/different test items or perform different test functions.
E.1.A. Limited air vehicle structural testing, air vehicle avionics and propulsion testing. Additional test types could include production acceptance testing (GLAT, PRAT, PVT), reliability demonstration testing (RDT, RGDT, MTBF), and environmental stress screening.

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
E.1. Yes. Capable of expanding to additional FME assets of all types, including hardware and software. Capable of including more counter- and counter-countermeasures testing. Present FME work has been concentrated on one country and language. This could be expanded to several other nations' products. The balloon portion of the facility could be expanded to handle several different lighter-than-air manned vehicles.
E.1.A. Yes. Functional Areas: air vehicles and electronic combat test types, integration laboratories, hardware-in-the-loop.

GUIDANCE COMPONENTS T&A COMPLEX
E.1. No.
E.1.A. Yes. Weapons Systems: launchers, propulsion, guided missiles. Navigation: aircraft navigation systems, weapons navigation systems. Sensors and Surveillance: special sensors. Platforms: aircraft. C3I: nontactical data systems.

HIGH HAZARD PROPULSION TEST FACILITY
E.1. No.
E.1.A. Yes. Any type of rocket motor test within T&E, S&T, DE, or IE functional areas.

IR SEEKER, GCS DDT&E COMPLEX
E.1. No.
E.1.A. Yes. Characterization tests of IRST and FLIR optics and detectors. Exploitation of foreign systems in the following areas: Landing Force equipment and systems, Coastal/Special Warfare support, Multiplatform, and Weapons Navigation Systems.

JUNCTION RANCH RADAR CROSS SECTION RANGE
E.1. Yes. The Elan radar data acquisition systems and the 386/486 data reduction PCs at Junction Ranch are fully capable of supporting additional RCS workload beyond the single-shift operation that has presently been implemented.
E.1.A. Yes. Dynamic RCS measurements of air vehicles and armament/weapons.

MATERIALS ENGINEERING/FAILURE ANALYSIS FACILITY
E.1. No.
E.1.A. Yes. Air vehicles, materials engineering, and failure analysis.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
E.1. No.
E.1.A. No.

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
E.1. No.
E.1.A. No.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
E.1. No.
E.1.A. No.

OPTICS & LASER RESEARCH FACILITY
E.1. Yes. Because much of the current work is in S&T, the utilization is typically less than optimum. More T&E work could be taken on.
E.1.A. Yes. Many of the elements making up this facility could be used to support significantly more air vehicle and ship-related optical testing.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
E.1. No.
E.1.A. Yes. Armaments & Weapons: integration testing, mass properties testing, squib tests, thermal battery safety tests.

ORDNANCE TEST COMPLEX
E.1. Yes. At CT-1, CT-4, and Burro Canyon, there is ample room for expansion to other specialized or general test arenas within control and data line capability of the control rooms. Another three to four areas at each could be emplaced, if necessary, with minimal startup costs.
E.1.A. Yes. Armaments/Weapons T&E for different types of weapons. Specialized, developmental, special purpose testing (aircraft fire analysis, fuselage buildup for test, etc.) can be accomplished as test conditions dictate; i.e., safety testing of ordnance can be expanded to fire safety, ballistic protection tests, etc., as required.

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
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E.1. Yes. Back-up antenna positioners and measurement systems can be reallocated to provide additional test capability. The data links available would allow this facility to operate with other labs. There is additional room with some of the computing spaces for additional systems.
E.1.A. Yes. Armament/Weapons—RF sensors, seekers, fire-control radars, data links, image processing testing of imaging stand-off weapons. Electronic Combat—EW receivers, antiradiation missile seekers, jammers, radar warning receivers, ESM equipment. Air Vehicles—next generation Night Vision Goggles.

SLED TRACKS
E.1. Yes. This facility is located on the China Lake land ranges. The expansion capability is limited only by the station boundaries, which cover an area of approximately 900 square miles.
E.1.A. No.

STRATEGIC PROPULSION TEST COMPLEX
E.1. No.
E.1.A. Yes. Armaments/Munitions T&E functional area.

TACTICAL PROPULSION TEST FACILITY
E.1. No.
E.1.A. Yes. Any type of rocket motor test within T&E, S&T, DE, or IE functional areas.

VHF ANECHOIC CHAMBER
E.1. N/A.
E.1.A. Yes. This facility has the capability to perform in any area requiring anechoic chamber facilities.

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
E.1. Yes. Software tools developed here and the flexibility of the hardware allow a broad spectrum of applications. The expertise of the personnel, combined with the hardware, has already been applied several times outside the general scope of neural networks. Specific classified targets for evaluation of terminal seeker performance. This work was conducted at the Electronic Combat Range at NAWCWPNS China Lake. The Microwave Radiometer Laboratory can expand to several times its current size to accommodate additional workload or new missions.
E.1.A. Yes. Functional Areas: Air Vehicles and Electronic Combat; Test Types: integration laboratories, Hardware-in-the-Loop.

WEAPONS SURVIVABILITY LABORATORY (WSL)
E.1. Yes. Excellent year-round weather conditions (350 days per year of clear skies). Remote site security. Existing ordnance magazine storage in close proximity to test facilities. Existing facilities nearby capable of additional support to test facilities. The Weapons Survivability Laboratory occupies over 8 square miles of property. An additional test site on the existing property is feasible, and planning for such an expansion has taken place.
E.1.A. Yes. Ship, Land, and Space Vehicle Survivability.

<u>INTEGRATION LABORATORY</u>

ACTUATOR AND POWER SYSTEMS LABORATORY
E.1. Yes. Capacity is now constrained by available test equipment. Equipment to be installed in FY95 and later will add greatly to capacity. There is also physical space for additional growth.
E.1.A. Yes. Armaments and Weapons: thermal battery safety testing, squib testing, mass properties tests, missile integration tests.

ANTIRADIATION MISSILE INTEGRATION COMPLEX
E.1. Yes. Capabilities can be expanded by extended work hours and parallel tasking of personnel and expansion of fundamental hardware and software.
E.1.A. Yes. The capabilities are applicable to any existing or new arm system of any complexity.

SLED TRACKS
E.1. Yes. This facility is located on the China Lake land ranges. The expansion capability is limited only by the station boundaries, which cover an area of approximately 900 square miles.
E.1.A. No.

STRATEGIC PROPULSION TEST COMPLEX
E.1. No.
E.1.A. Yes. Armaments/Munitions T&E functional area.

TACTICAL PROPULSION TEST FACILITY
E.1. No.
E.1.A. Yes. Any type of rocket motor test within T&E, S&T, DE, or IE functional areas.

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E.1.A. Yes. The capabilities are applicable to any existing or new arm system of any complexity.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
E.1. No.
E.1.A. Yes. Accept and perform T&E on air vehicles, electro/mechanical systems, armament/weapon system integration, and electronic combat.

COMPOSITES DEVELOPMENT LABORATORY
E.1. No.
E.1.A. No.

DATA LINK DEVELOPMENT LABORATORY
E.1. No.
E.1.A. No.

ELECTRONIC WARFARE INTEGRATION LABORATORY
E.1. No.
E.1.A. No.

FUZE DEVELOPMENT LABORATORY
E.1. Yes. The facility is located in an area with essentially unlimited space for future expansion and near a significant number of under-utilized buildings which could be incorporated into the T&E function if required. It is also located in a remote and very lightly populated area that is ideal for ordnance related T&E functions.
E.1.A. Yes. Armament and weapons functional area for explosive component and weapons fuzing.

LASER SEEKER INTEGRATION AND TEST FACILITY
E.1. No.
E.1.A. No.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
E.1. Yes. If more equipment were available for use in other buildings not currently utilized for these operations (but that have been used for these operations in the past), more capacity would be available.
E.1.A. Yes. Armaments and weapons: burst/pressure tests, thermal battery safety tests, squib firing tests.

ORDNANCE ASSEMBLY FACILITY
E.1. No.
E.1.A. No.

TELEMETRY DEVELOPMENT LABORATORY
E.1. No.
E.1.A. No.

TSSAM MISSION PLANNING FACILITY
E.1. Yes. This facility has been designed to support the TSSAM weapon system as well as other systems that may share similar or common planning requirements.
E.1.A. No.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
E.1. No.
E.1.A. No.

0120A

WEAPONS GUIDANCE/CONTROL/SEEKER IL
E.1. Yes. Each test/integration area was designed to allow for additional requirements/systems to be added when needed. Analysis/evaluation capabilities can be expanded due to data processing network. Additional processors can be added to workstations to improve execution speed and provide a lower simulation turn-around time. RF and IR/RF missile guidance/control testing and integration can be provided to any RF or IR/RF missile, from 5- to 15-inch diameter, with minimal cost.
E.1.A. Yes. Air Vehicles—assemble, checkout, and repair IRSTs and FLIRs; flight test support, aircraft integration, missile build-up, and manufacturing; Avionics; ECM modeling.

WEAPON SYSTEMS SUPPORT FACILITY, A-6
E.1. Yes. Although, the A-6 aircraft is in a draw-down phase, additional aircraft platform integration and test efforts can be accommodated in the A-6 Weapons System Support Facility (WSSF) for the A-6 platform, or the current A-6 resources can be utilized in support of other or new weapons integration and test efforts.
E.1.A. Yes. The A-6 WSSF is unique and modeled after the A-6 aircraft. Currently the A-6 WSSF provides all weapons and integration testing for the A-6 platform. New work in this area could be in support of other aircraft platforms. A new or relocated facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.

WEAPON SYSTEMS SUPPORT FACILITY, AH-1
E.1. Yes. Additional aircraft platform integration and test efforts for the AH-1 could be accommodated in the AH-1 WSSF using the real-time internetting concepts developed locally in the WSSF.
E.1.A. Yes. The AH-1 WSSF is unique and modeled after the AH-1 aircraft configurations. Currently the AH-1 WSSF provides all weapons and systems integration testing for the AH-1 platform. New work in this area could be in support of other aircraft platforms. A new or relocated facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.

WEAPON SYSTEMS SUPPORT FACILITY, AV-8
E.1. Yes. Additional aircraft platform integration and test efforts for the AV-8 could be accommodated in the AV-8 WSSF using the real-time internetting concepts developed locally in the WSSF.
E.1.A. Yes. The AV-8 WSSF is unique and modeled after the AV-8 aircraft configurations. Currently the AV-8 WSSF provides all weapons and radar integration testing for the AV-8 platform. New work in this area could be in support of other aircraft platforms. A new or relocated Facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.

WEAPON SYSTEMS SUPPORT FACILITY, F/A-18
E.1. Yes. Additional aircraft platform integration and test efforts for the F/A-18 could be accommodated in the F/A-18 WSSF using the real-time internetting concepts developed locally in the WSSF.
E.1.A. Yes. The F/A-18 WSSF is unique and modeled after the F/A-18 configurations. Currently the F/A-18 WSSF provides all weapons and radar integration testing for the F/A-18 platform. New work in this area could be in support of other aircraft platforms. A new or relocated facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.

0121.A.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
E.1. No.
E.1.A. Yes. Accept and perform T&E on air vehicles, electro/mechanical systems, armament/weapon system integration, and electronic combat.

COMPOSITES DEVELOPMENT LABORATORY
E.1. No.
E.1.A. No.

DATA LINK DEVELOPMENT LABORATORY
E.1. No.
E.1.A. No.

ELECTRONIC WARFARE INTEGRATION LABORATORY
E.1. No.
E.1.A. No.

FUZE DEVELOPMENT LABORATORY
E.1. Yes. The facility is located in an area with essentially unlimited space for future expansion and near a significant number of under-utilized buildings which could be incorporated into the T&E function if required. It is also located in a remote and very lightly populated area that is ideal for ordnance related T&E functions.
E.1.A. Yes. Armament and weapons functional area for explosive component and weapons fuzing.

LASER SEEKER INTEGRATION AND TEST FACILITY
E.1. No.
E.1.A. No.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
E.1. Yes. If more equipment were available for use in other buildings not currently utilized for these operations (but that have been used for these operations in the past), more capacity would be available.
E.1.A. Yes. Armaments and weapons: burst/pressure tests, thermal battery safety tests, squib firing tests.

ORDNANCE ASSEMBLY FACILITY
E.1. No.
E.1.A. No.

TELEMETRY DEVELOPMENT LABORATORY
E.1. No.
E.1.A. No.

TSSAM MISSION PLANNING FACILITY
E.1. Yes. This facility has been designed to support the TSSAM weapon system as well as other systems that may share similar or common planning requirements.
E.1.A. No.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
E.1. No.
E.1.A. No.

WEAPONS GUIDANCE/CONTROL/SEEKER IL
E.1. Yes. Each test/integration area was designed to allow for additional requirements/systems to be added when needed. Analysis/evaluation capabilities can be expanded due to data processing network. Additional processors can be added to workstations to improve execution speed and provide a lower simulation turn-around time. RF and IR/RF missile guidance/control testing and integration can be provided to any RF or IR/RF missile, from 5- to 15-inch diameter, with minimal cost.
E.1.A. Yes. Air Vehicles—assemble, checkout, and repair IRSTs and FLIRs; flight test support, aircraft integration, missile build-up, and manufacturing; Avionics; ECM modeling.

WEAPON SYSTEMS SUPPORT FACILITY, A-6
E.1. Yes. Although, the A-6 aircraft is in a draw-down phase, additional aircraft platform integration and test efforts can be accommodated in the A-6 Weapons System Support Facility (WSSF) for the A-6 platform, or the current A-6 resources can be utilized in support of other or new weapons integration and test efforts.
E.1.A. Yes. The A-6 WSSF is unique and modeled after the A-6 aircraft. Currently the A-6 WSSF provides all weapons and integration testing for the A-6 platform. New work in this area could be in support of other aircraft platforms. A new or relocated facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.

WEAPON SYSTEMS SUPPORT FACILITY, AH-1
E.1. Yes. Additional aircraft platform integration and test efforts for the AH-1 could be accommodated in the AH-1 WSSF using the real-time internetting concepts developed locally in the WSSF.
E.1.A. Yes. The AH-1 WSSF is unique and modeled after the AH-1 aircraft configurations. Currently the AH-1 WSSF provides all weapons and systems integration testing for the AH-1 platform. New work in this area could be in support of other aircraft platforms. A new or relocated facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.

WEAPON SYSTEMS SUPPORT FACILITY, AV-8
E.1. Yes. Additional aircraft platform integration and test efforts for the AV-8 could be accommodated in the AV-8 WSSF using the real-time internetting concepts developed locally in the WSSF.
E.1.A. Yes. The AV-8 WSSF is unique and modeled after the AV-8 aircraft configurations. Currently the AV-8 WSSF provides all weapons and radar integration testing for the AV-8 platform. New work in this area could be in support of other aircraft platforms. A new or relocated Facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.

WEAPON SYSTEMS SUPPORT FACILITY, F/A-18
E.1. Yes. Additional aircraft platform integration and test efforts for the F/A-18 could be accommodated in the F/A-18 WSSF using the real-time internetting concepts developed locally in the WSSF.
E.1.A. Yes. The F/A-18 WSSF is unique and modeled after the F/A-18 configurations. Currently the F/A-18 WSSF provides all weapons and radar integration testing for the F/A-18 platform. New work in this area could be in support of other aircraft platforms. A new or relocated facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
E.1. Yes. The software and hardware architecture allows capability to expand as the workload and mission requirements evolve. The test set could be modified to test other RF proximity fuze systems. The test set has the unique capability to use captured data to create realistic encounter scenarios. The test set also has the capability to test fuze-versus-production specifications.
E.1.A. No.

SIMULATION LABORATORY—MISSILE HITL
E.1. Yes. Collocation of multiple HITL facilities make it very cost effective to construct additional HITL facilities and support them with existing trained personnel. RF, IR, and dual mode targets could be upgraded to provide substantially more capability and take advantage of existing investment in flight tables, anechoic chambers, computers and buildings. Collocation of facilities at China Lake make it possible to construct additional real time links with other avionics support facilities, as well as with the Electronic Combat Range and North Ranges for further total system testing capability. Proximity to Edwards AFB makes it possible to pursue real time links to the Benefield Anechoic Facility, the F16 support facility, and potentially the F-22 facility.
E.1.A. Yes. ECM—threat warning, IRCM. Air Vehicles—sensor evaluation, cruise missile and UAV HITL, autopilots and flight controls.

TSSAM HARDWARE-IN-THE-LOOP
E.1. Yes. This facility has unique simulated targeting capabilities that can be used to support other weapon systems with similar capabilities.
E.1.A. Yes. The facility can (and is currently planning to) accept new T&E testing of systems using similar or common systems and subsystems.

OPEN AIR

AIR/GROUND RANGE
E.1. Yes. There is virtually no encroachment,. Most of the surrounding land is vacant and is in the military or public domain. The range is also completely surrounded by restricted airspace. Additionally, the weather is usually clear and the visibility is among the best in the country, allowing for ideal testing throughout the year.
E.1.A. No.

ELECTRONIC COMBAT RANGE (ECR)
E.1. Yes. This facility (R-2524 restricted airspace) can be expanded to include Military Operational Areas (MOAs within R-2508) greatly increasing usable test airspace. Proximity and connectivity to other installations facilitate joint exercise tests (HARM live firings, Battle Management Interoperability Tests (BITE & FLEETEX), Cruise Missile tests). Geographic isolation and terrain features broaden the scope of range usage (Joint Task Force (drug interdiction) and Special Operations Forces (SOFI) exercises and training). Development of the Superior Valley weapons scoring capability will allow users to combine electronic combat (EC), air vehicle, and armament/weapons testing in a fully realistic, tactical environment.

0122.A.

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
E.1. Yes. The software and hardware architecture allows capability to expand as the workload and mission requirements evolve. The test set could be modified to test other RF proximity fuze systems. The test set has the unique capability to use captured data to create realistic encounter scenarios. The test set also has the capability to test fuze-versus-production specifications.
E.1.A. No.

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E.1.A. Yes. ECM—threat warning, IRCM. Air Vehicles—sensor evaluation, cruise missile and UAV HITL, autopilots and flight controls.

TSSAM HARDWARE-IN-THE-LOOP
E.1. Yes. This facility has unique simulated targeting capabilities that can be used to support other weapon systems with similar capabilities.
E.1.A. Yes. The facility can (and is currently planning to) accept new T&E testing of systems using similar or common systems and subsystems.

OPEN AIR

AIR/GROUND RANGE
E.1. Yes. There is virtually no encroachment,. Most of the surrounding land is vacant and is in the military or public domain. The range is also completely surrounded by restricted airspace. Additionally, the weather is usually clear and the visibility is among the best in the country, allowing for ideal testing throughout the year.
E.1.A. No.

ELECTRONIC COMBAT RANGE (ECR)
E.1. Yes. This facility (R-2524 restricted airspace) can be expanded to include Military Operational Areas (MOAs within R-2508) greatly increasing usable test airspace. Proximity and connectivity to other installations facilitate joint exercise tests (HARM live firings, Battle Management Interoperability Tests (BITE & FLEETEX), Cruise Missile tests). Geographic isolation and terrain features broaden the scope of range usage (Joint Task Force (drug interdiction) and Special Operations Forces (SOFI) exercises and training). Development of the Superior Valley weapons scoring capability will allow users to combine electronic combat (EC), air vehicle, and armament/weapons testing in a fully realistic, tactical environment.

E.1.A. Yes. Other EW T&E testing such as LPI, bi- and multi-static testing, test tools that are capable of simulating potential threat technologies, dynamic RCS measurements; in addition to the following;

- Other training and tactics development
- Projects that require visual and RF discretion
- High power microwave
- Surface-to-air weapons testing (short- and medium-range only)
- Air-to-air weapons testing
- Air-to-ground weapons delivery testing

FLIGHT TEST CAPABILITY

E.1. Yes. Adequate facilities exist to support additional aircraft types. Reference for this information is BRAC 95 Data Call #13 (this document) Section 3.2.B.6, ramp and hangar space.
E.1.A. Yes. Flight test support is generic T&E support capability available to all T&E functional areas.

NAWCWPNS-WHITE SANDS

E.1. Yes. Expandability of the NAWCWPNSDETWS facility is addressed below. However, as NAWCWPNSDETWS is a tenant activity at the U.S. Army White Sands Missile Range (WSMR), please refer to the U.S. Army BRAC 95 input for WSMR constraints related to expandability.

The Desert Ship contains the Mk 41 Vertical Launching System (VLS) and therefore it could perform testing of other missile systems that are launched from the VLS. Tomahawk is the only VLS-capable missile that is presently not using this test complex. Future versions of Tomahawk and Evolved Seasparrow can be tested from this test complex.

The Theater Missile Defense (TMD)/Research Rocket complex can be expanded to include the TMD HERA (maneuvering) target. As currently configured, this complex can also accommodate additional NASA and/or commercial launches of suborbital payloads for science and technology or for materials development in space.

Advanced gun system test areas, existing and planned (FY95 MILCON), will be able to support all types of 5- to 8-inch gun testing, including barrels, propellants, projectiles, submunitions, etc.

The High Energy Laser Experimental Test System (HELETS) is housed at the U.S. Army's High Energy Laser System Test Facility (HELSTF) at WSMR. With the capacity to accept other lasers in a stand-alone mode or integrated with existing support and operational facilities, the existing flexible optical-train switching capability readily integrates additional lasers into current indoor/outdoor/vacuum chamber test areas. Through dual-use arrangements, this capability could provide academic and commercial sectors with an exceptional opportunity for relatively low-cost access to a unique and high-dollar-value laser test complex. Currently there are two low-power lasers located at this complex, in addition to the high-energy laser.
E.1.A. Yes. Armaments and Weapons, Air-to-Air.

E.1.A. Yes. Other EW T&E testing such as LPI, bi- and multi-static testing, test tools that are capable of simulating potential threat technologies, dynamic RCS measurements; in addition to the following;

- Other training and tactics development
- Projects that require visual and RF discretion
- High power microwave
- Surface-to-air weapons testing (short- and medium-range only)
- Air-to-air weapons testing
- Air-to-ground weapons delivery testing

FLIGHT TEST CAPABILITY

E.1. Yes. Adequate facilities exist to support additional aircraft types. Reference for this information is BRAC 95 Data Call #13 (this document) Section 3.2.B.6, ramp and hangar space.
E.1.A. Yes. Flight test support is generic T&E support capability available to all T&E functional areas.

NAWCWPNS-WHITE SANDS

E.1. Yes. Expandability of the NAWCWPNSDETWS facility is addressed below. However, as NAWCWPNSDETWS is a tenant activity at the U.S. Army White Sands Missile Range (WSMR), please refer to the U.S. Army BRAC 95 input for WSMR constraints related to expandability.

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E.1.A. Yes. Armaments and Weapons, Air-to-Air.

-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.*

Yes. China Lake enjoys the use of a very large and relatively unencumbered piece of airspace that is restricted for DOD use: the R-2508 complex, which includes R-2505, R-2506, and R-2524 under direct China Lake control. The R-2508 complex is jointly managed and controlled by the Commanders of NAWCWPNS, Edwards AFB, and the National Training Center at Fort Irwin. Both airspace and landspace adjacent to the R-2505 Restricted Area and the R-2524 Electronic Combat Range are available for expansion to support new missions or increased footprints. R-2505 is restricted from surface to infinity and overlies DOD-controlled land. R-2505 is within the Restricted Airspace R-2508; however, R-2508 is only restricted above 20,000 feet. Areas within R-2508 below the restricted altitude, over both public and private land, are presently used for the flight testing of cruise missiles and unmanned aerial vehicles that can be kept under visual observation and can be controlled from chase aircraft. However, there are requirements for longer flights of weapon systems that cannot be kept under visual observation by chase aircraft due to the weapon systems' speed or altitude. The area within R-2508 available for expansion of launch points for such systems is located north of R-2505. Controlled Firing Areas (CFAs) could be established within this expansion area that could give direct flight ranges of 70 to 90 miles from launch to impact within R-2505. A CFA is an airspace approved by the FAA wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground. If this CFA is below 3,000 feet AGL, or supersonic flight is required, a formal environmental assessment is required. Additionally, approval for the possibility of launch debris or a nonfunctioning missile impacting the landspace under the launch point would be required from the land owner. This land area north of R-2505 is sparsely populated and is composed, to a large extent, of public lands under the control of the Bureau of Land Management (BLM).

The Electronic Combat Range located at the Randsburg Wash/ Mojave B Test range is surrounded by public land managed by the Department of the Interior (BLM) on the northern, western, and southern sides. On the eastern side, ECR adjoins the U.S. Army National Training Center, Fort Irwin, which is withdrawn DOD land. If required in the future, threat sites for ECR could be located on Fort Irwin to expand the geographical coverage of the ECR, but use of these sites would be impacted by the training schedules of the National Training Center. Also, the Desert Protection Act passed by the Senate in April 1994 includes the provision to expand the Randsburg Wash complex by withdrawing BLM land to the western side of Randsburg Wash to the DOD.

The ECR is a part of China Lake's range complex, which consists of the land and overhead restricted airspaces R-2505, R-2506, and R-2524. The ECR is located approximately 20 air miles from Armitage Field. The airspace available for ECR operations is the 1043-square-mile (statute) R-2524 Complex. R-2524 is dedicated to EW testing and is scheduled and controlled by the ECR. The R-2508 Airspace Complex overlying all of NAWCWPNS China Lake is approximately 24,056 square miles (statute) and can be scheduled through the tri-service Central Control Facility (CCF) at Edwards AFB, as necessary, to support ECR testing. On the eastern side, the air space R-2502N (over Fort Irwin) and to the southwest the airspace R-2515 (which belongs to Edwards AFB) can be scheduled through the R-2508 CCF at Edwards AFB, as necessary, to support present and additional ECR testing as well.

Deep Springs ATCAA on the northern boundary of the R-2508 Complex extends from 24,000 feet to 60,000 feet. Airspace underlying Deep Springs ATCAA is suited for an Air Combat Maneuvering (ACM) area from 5,000 feet to 24,000 feet. Informal discussion with the Federal

0124. A.

-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.*

Yes. China Lake enjoys the use of a very large and relatively unencumbered piece of airspace that is restricted for DOD use: the R-2508 complex, which includes R-2505, R-2506, and R-2524 under direct China Lake control. The R-2508 complex is jointly managed and controlled by the Commanders of NAWCWPNS, Edwards AFB, and the National Training Center at Fort Irwin. Both airspace and landspace adjacent to the R-2505 Restricted Area and the R-2524 Electronic Combat Range are available for expansion to support new missions or increased footprints. R-2505 is restricted from surface to infinity and overlies DOD-controlled land. R-2505 is within the Restricted Airspace R-2508; however, R-2508 is only restricted above 20,000 feet. Areas within R-2508 below the restricted altitude, over both public and private land, are presently used for the flight testing of cruise missiles and unmanned aerial vehicles that can be kept under visual observation and can be controlled from chase aircraft. However, there are requirements for longer flights of weapon systems that cannot be kept under visual observation by chase aircraft due to the weapon systems' speed or altitude. The area within R-2508 available for expansion of launch points for such systems is located north of R-2505. Controlled Firing Areas (CFAs) could be established within this expansion area that could give direct flight ranges of 70 to 90 miles from launch to impact within R-2505. A CFA is an airspace approved by the FAA wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground. If this CFA is below 3,000 feet AGL, or supersonic flight is required, a formal environmental assessment is required. Additionally, approval for the possibility of launch debris or a nonfunctioning missile impacting the landspace under the launch point would be required from the land owner. This land area north of R-2505 is sparsely populated and is composed, to a large extent, of public lands under the control of the Bureau of Land Management (BLM).

The Electronic Combat Range located at the Randsburg Wash/ Mojave B Test range is surrounded by public land managed by the Department of the Interior (BLM) on the northern, western, and southern sides. On the eastern side, ECR adjoins the U.S. Army National Training Center, Fort Irwin, which is withdrawn DOD land. If required in the future, threat sites for ECR could be located on Fort Irwin to expand the geographical coverage of the ECR, but use of these sites would be impacted by the training schedules of the National Training Center. Also, the Desert Protection Act passed by the Senate in April 1994 includes the provision to expand the Randsburg Wash complex by withdrawing BLM land to the western side of Randsburg Wash to the DOD.

The ECR is a part of China Lake's range complex, which consists of the land and overhead restricted airspaces R-2505, R-2506, and R-2524. The ECR is located approximately 20 air miles from Armitage Field. The airspace available for ECR operations is the 1043-square-mile (statute) R-2524 Complex. R-2524 is dedicated to EW testing and is scheduled and controlled by the ECR. The R-2508 Airspace Complex overlying all of NAWCWPNS China Lake is approximately 24,056 square miles (statute) and can be scheduled through the tri-service Central Control Facility (CCF) at Edwards AFB, as necessary, to support ECR testing. On the eastern side, the air space R-2502N (over Fort Irwin) and to the southwest the airspace R-2515 (which belongs to Edwards AFB) can be scheduled through the R-2508 CCF at Edwards AFB, as necessary, to support present and additional ECR testing as well.

Deep Springs ATCAA on the northern boundary of the R-2508 Complex extends from 24,000 feet to 60,000 feet. Airspace underlying Deep Springs ATCAA is suited for an Air Combat Maneuvering (ACM) area from 5,000 feet to 24,000 feet. Informal discussion with the Federal

Aviation Administration indicates a willingness to consider this airspace as an addition to the R-2508 Complex.

The proximity of other military bases, with their complementary missions, also facilitates support of new missions and increased footprints. For example when additional range is required, the inland IR-200 route between NAWCWPNS Point Mugu, Edwards AFB, and Utah Test and Training Range is also available. This route has frequently been used for T&E of long-range, low-level cruise missiles with ranges in excess of 1,000 miles. A data link is available between Point Mugu, Edwards, and China Lake to facilitate these interrange tests.

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-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)?*

The topography, geographical location, and isolation of NAWCWPNS China Lake are ideal for many types of highly classified testing. There are parts of the air/ground ranges and the Electronic Combat Range that are well removed from the local population, well away from traveled roads and recreational areas, and fenced or easily patrolled and guarded. These canyons, mesas, and remote, secluded areas are available and presently used for tests of all classifications. Also, the optical and radar tracking aids in use at China Lake can all be augmented with IR cameras for testing at night. All of these test areas are under the umbrella of restricted airspace, and that airspace can be monitored for airborne intruders at all times.

In addition to the various facilities approved for classified testing through Top Secret, as indicated in the following list, NAWCWPNS China Lake also has over 40 Special Compartmented Information Facilities (SCIFs), amounting to over 155,000 square feet to support extensive involvement in these critical advanced technology programs. These facilities were designed to meet DIAM 50-3 security requirements. These include engineering laboratories, classified storage facilities, ordnance assembly buildings, secure hangars, secure data-reduction and -analysis facilities, and computer facilities. Some of these facilities are specially designed and constructed to meet strict TEMPEST requirements. Radar cross-section laboratories and chambers are utilized for these special projects. In addition, nondedicated secure working areas have been established, including test control rooms, telemetry processing and display areas, and data-reduction and -analysis facilities.

To support classified special-projects data reduction and analysis, several VAX computers and their workstations have been provided that are specially configured to process highly classified data in accordance with all relevant regulations. These stand-alone computer systems are completely dedicated to special projects. In addition, unique telemetry-processing equipment, computers, and facilities are approved on a nondedicated basis for special projects use. Missile testing laboratories are equipped with special missile test equipment that is utilized by special projects.

Previous discussions of the synergy between R&D and T&E are particularly relevant in this area. Many of the programs are joint-service efforts that independently selected the China Lake site for program execution because their security requirements can be met on the ranges as well as in the laboratories.

This very large volume of highly classified work, which, by its nature, cannot be discussed in any detail, is inextricably woven into the RDT&E process leading to the production and integration of weapons, aircraft, and EW systems.

These programs are a significant portion of the RDT&E work at NAWCWPNS China Lake. Although factors related to capacity, facilities details, cost or feasibility of relocation, criticality and uniqueness, funding levels and sources, and numbers and types of personnel assigned by program cannot be listed here, they must be a major factor in decisions based on these facilities data.

It is strongly recommended that an analysis of the volume and nature of these programs be conducted as part of the BRAC process.

The answers to 3.1.E.3 for each of the 60 NAWCWPNS China Lake facilities/capabilities are as follows.

0126-A.

-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)?*

The topography, geographical location, and isolation of NAWCWPNS China Lake are ideal for many types of highly classified testing. There are parts of the air/ground ranges and the Electronic Combat Range that are well removed from the local population, well away from traveled roads and recreational areas, and fenced or easily patrolled and guarded. These canyons, mesas, and remote, secluded areas are available and presently used for tests of all classifications. Also, the optical and radar tracking aids in use at China Lake can all be augmented with IR cameras for testing at night. All of these test areas are under the umbrella of restricted airspace, and that airspace can be monitored for airborne intruders at all times.

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This very large volume of highly classified work, which, by its nature, cannot be discussed in any detail, is inextricably woven into the RDT&E process leading to the production and integration of weapons, aircraft, and EW systems.

These programs are a significant portion of the RDT&E work at NAWCWPNS China Lake. Although factors related to capacity, facilities details, cost or feasibility of relocation, criticality and uniqueness, funding levels and sources, and numbers and types of personnel assigned by program cannot be listed here, they must be a major factor in decisions based on these facilities data.

It is strongly recommended that an analysis of the volume and nature of these programs be conducted as part of the BRAC process.

The answers to 3.1.E.3 for each of the 60 NAWCWPNS China Lake facilities/capabilities are as follows.

MODELING AND SIMULATION.

AIR WEAPON DIGITAL MODELING & SIMULATION
E.3. Yes. Secret.

EXPLOSIVE AND ORDNANCE MODELING
E.3. No.

STRIKE SIMULATION & MODELING
E.3. Yes. Secret.

STRIKE SOFTWARE/SIMULATION FACILITY
E.3. Yes. Top Secret.

SYSTEM MODELING & SIGNAL PROCESSING FACILITY
E.3. Yes. Secret.

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)
E.3. Yes. Top Secret, Multi-Compartmented.

MEASUREMENT.

AEROHEAT TEST FACILITY
E.3. Yes. Top Secret.

AIR BREATHING PROPULSION LABORATORY
E.3. Yes. Secret.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
E.3. Yes. Secret.

CACTUS FLATS ORDNANCE TEST AREA
E.3. Yes. Top Secret.

CHEMICAL ANALYSIS RESEARCH FACILITY
E.3. Yes. Secret.

DETONATION PHYSICS LABORATORY
E.3. Yes. Confidential.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
E.3. Yes. Secret.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
E.3. Yes. Confidential.

ENVIRONMENTAL TEST COMPLEX
E.3. Yes. Secret. Top Secret with site approval.

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
E.3. Yes. Top Secret.

0127. A.

MODELING AND SIMULATION.

AIR WEAPON DIGITAL MODELING & SIMULATION
E.3. Yes. Secret.

EXPLOSIVE AND ORDNANCE MODELING
E.3. No.

STRIKE SIMULATION & MODELING
E.3. Yes. Secret.

STRIKE SOFTWARE/SIMULATION FACILITY
E.3. Yes. Top Secret.

SYSTEM MODELING & SIGNAL PROCESSING FACILITY
E.3. Yes. Secret.

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)
E.3. Yes. Top Secret, Multi-Compartmented.

MEASUREMENT.

AEROHEAT TEST FACILITY
E.3. Yes. Top Secret.

AIR BREATHING PROPULSION LABORATORY
E.3. Yes. Secret.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
E.3. Yes. Secret.

CACTUS FLATS ORDNANCE TEST AREA
E.3. Yes. Top Secret.

CHEMICAL ANALYSIS RESEARCH FACILITY
E.3. Yes. Secret.

DETONATION PHYSICS LABORATORY
E.3. Yes. Confidential.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
E.3. Yes. Secret.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
E.3. Yes. Confidential.

ENVIRONMENTAL TEST COMPLEX
E.3. Yes. Secret. Top Secret with site approval.

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
E.3. Yes. Top Secret.

0127

GUIDANCE COMPONENTS T&A COMPLEX
E.3. Yes. Secret.

HIGH HAZARD PROPULSION TEST FACILITY
E.3. Yes. Top Secret.

IR SEEKER, GCS DDT&E COMPLEX
E.3. Yes. Secret.

JUNCTION RANCH RADAR CROSS SECTION RANGE
E.3. Yes. Top Secret.

MATERIALS ENGINEERING/FAILURE ANALYSIS FACILITY
E.3. Yes. Secret.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
E.3. Yes. Confidential.

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
E.3. Yes. Top Secret.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
E.3. Yes. Top Secret.

OPTICS & LASER RESEARCH FACILITY
E.3. Yes. Secret.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
E.3. Yes. Secret.

ORDNANCE TEST COMPLEX
E.3. Yes. Top Secret.

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
E.3. Yes. Top Secret.

SENSOR & TARGETING TECHNOLOGY FACILITY
E.3. Yes. Top Secret.

SLED TRACKS
E.3. Yes. Top Secret.

STRATEGIC PROPULSION TEST COMPLEX
E.3. Yes. Top Secret.

TACTICAL PROPULSION TEST FACILITY
E.3. Yes. Top Secret.

VHF ANECHOIC CHAMBER
E.3. Yes. Top Secret.

0128.A.

GUIDANCE COMPONENTS T&A COMPLEX
E.3. Yes. Secret.

HIGH HAZARD PROPULSION TEST FACILITY
E.3. Yes. Top Secret.

IR SEEKER, GCS DDT&E COMPLEX
E.3. Yes. Secret.

JUNCTION RANCH RADAR CROSS SECTION RANGE
E.3. Yes. Top Secret.

MATERIALS ENGINEERING/FAILURE ANALYSIS FACILITY
E.3. Yes. Secret.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
E.3. Yes. Confidential.

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
E.3. Yes. Top Secret.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
E.3. Yes. Top Secret.

OPTICS & LASER RESEARCH FACILITY
E.3. Yes. Secret.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
E.3. Yes. Secret.

ORDNANCE TEST COMPLEX
E.3. Yes. Top Secret.

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
E.3. Yes. Top Secret.

SENSOR & TARGETING TECHNOLOGY FACILITY
E.3. Yes. Top Secret.

SLED TRACKS
E.3. Yes. Top Secret.

STRATEGIC PROPULSION TEST COMPLEX
E.3. Yes. Top Secret.

TACTICAL PROPULSION TEST FACILITY
E.3. Yes. Top Secret.

VHF ANECHOIC CHAMBER
E.3. Yes. Top Secret.

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
E.3. Yes. Top Secret.

WEAPONS SURVIVABILITY LABORATORY (WSL)
E.3. Yes. Top Secret.

INTEGRATION LABORATORY

ACTUATOR AND POWER SYSTEMS LABORATORY
E.3. Yes. Secret.

ANTIRADIATION MISSILE INTEGRATION COMPLEX
E.3. Yes. Secret.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
E.3. Yes. Top Secret.

COMPOSITES DEVELOPMENT LABORATORY
E.3. Yes. Secret.

DATA LINK DEVELOPMENT LABORATORY
E.3. Yes. Secret.

ELECTRONIC WARFARE INTEGRATION LABORATORY
E.3. Yes. Secret.

FUZE DEVELOPMENT LABORATORY
E.3. Yes. Secret.

LASER SEEKER INTEGRATION AND TEST FACILITY
E.3. Yes. Secret.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
E.3. Yes. Secret.

ORDNANCE ASSEMBLY FACILITY
E.3. Yes. Secret.

TELEMETRY DEVELOPMENT LABORATORY
E.3. Yes. Top Secret.

TSSAM MISSION PLANNING FACILITY
E.3. Yes. Top Secret.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
E.3. Yes. Secret.

WEAPONS GUIDANCE/CONTROL/SEEKER IL
E.3. Yes. Top Secret.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, A-6
E.3. Yes. Secret.

0129. A.

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
E.3. Yes. Top Secret.

WEAPONS SURVIVABILITY LABORATORY (WSL)
E.3. Yes. Top Secret.

INTEGRATION LABORATORY

ACTUATOR AND POWER SYSTEMS LABORATORY
E.3. Yes. Secret.

ANTIRADIATION MISSILE INTEGRATION COMPLEX
E.3. Yes. Secret.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
E.3. Yes. Top Secret.

COMPOSITES DEVELOPMENT LABORATORY
E.3. Yes. Secret.

DATA LINK DEVELOPMENT LABORATORY
E.3. Yes. Secret.

ELECTRONIC WARFARE INTEGRATION LABORATORY
E.3. Yes. Secret.

FUZE DEVELOPMENT LABORATORY
E.3. Yes. Secret.

LASER SEEKER INTEGRATION AND TEST FACILITY
E.3. Yes. Secret.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
E.3. Yes. Secret.

ORDNANCE ASSEMBLY FACILITY
E.3. Yes. Secret.

TELEMETRY DEVELOPMENT LABORATORY
E.3. Yes. Top Secret.

TSSAM MISSION PLANNING FACILITY
E.3. Yes. Top Secret.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
E.3. Yes. Secret.

WEAPONS GUIDANCE/CONTROL/SEEKER IL
E.3. Yes. Top Secret.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, A-6
E.3. Yes. Secret.

0129

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, AH-1
E.3. No.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, AV-8
E.3. Yes. Secret.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, F/A-18
E.3. Yes. Secret.

HARDWARE-IN-THE-LOOP.

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
E.3. Yes. Secret.

SIMULATION LABORATORY—MISSILE HITL
E.3. Yes. Secret.

TSSAM HARDWARE-IN-THE-LOOP
E.3. Yes. Secret.

OPEN AIR

AIR/GROUND RANGE
E.3. Yes. Top Secret.

ELECTRONIC COMBAT RANGE (ECR)
E.3. Yes. Top Secret.

FLIGHT TEST CAPABILITY
E.3. Yes. Top Secret.

NAWCWPNS-WHITE SANDS
E.3. Yes. Secret.

0130. A.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, AH-1
E.3. No.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, AV-8
E.3. Yes. Secret.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, F/A-18
E.3. Yes. Secret.

HARDWARE-IN-THE-LOOP.

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
E.3. Yes. Secret.

SIMULATION LABORATORY—MISSILE HITL
E.3. Yes. Secret.

TSSAM HARDWARE-IN-THE-LOOP
E.3. Yes. Secret.

OPEN AIR

AIR/GROUND RANGE
E.3. Yes. Top Secret.

ELECTRONIC COMBAT RANGE (ECR)
E.3. Yes. Top Secret.

FLIGHT TEST CAPABILITY
E.3. Yes. Top Secret.

NAWCWPNS-WHITE SANDS
E.3. 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.*

The following improvements under way or planned for the installation will change our total T&E capacity/capability.

NOTE 1: MILCON Projects currently under construction or programmed in the FYDP (CNO Resource Sponsor program):

MILCON PROJECT: P-289
SPONSOR/PROG. YR.: N091/FY99
TITLE: GUIDED MISSILE ORDNANCE RANGE FACILITIES
COST: $5.10M
SIZE: 13,984 SF
TYPE: REPLACEMENT/NEW
BLDGS/SQ FT REPL.: 2 BLDGS/5,922 SF
DESCRIPTION: This project constructs a complex of facilities located in the remotely situated guided missile range area, and includes one 7,000-square-foot guided missile assembly/check-out building; a 2,184-square-foot facility to house two high-explosive guided missile test cells, including a control room; and a 4,800-square-foot rocket/gun ammunition ordnance assembly building. The project will provide new capabilities and improve current operations.
ESTIMATED AWARD DATE: 1999
PLANED BENEFICIAL OCCUPANCY DATE: 2001

MILCON PROJECT: P-356
SPONSOR/PROG. YR.: N1/FY97
TITLE: CHILD DEVELOPMENT CENTER
COST: $3.70M
SIZE: 19,466 SF
TYPE: REPLACEMENT/NEW
BLDGS./SQ FT REPL.: 5 BLDGS/17,592 SF
DESCRIPTION: This project constructs a 19,466-square-foot building to consolidate the Station's child care program currently operating in five geographically dispersed and substandard facilities into a safe and modern facility to accommodate 238 children, infants to 5 years old. The new, modern facility will meet current health and safety standards; reduce the number of personnel required to adequately supervise the children; and at the same time increase the operational capacity, be an added inducement for recruitment, boost morale of both the military and civilian personnel, and improve retention of employees.
PROJECT UNDER DESIGN
ESTIMATED AWARD DATE: 1997
PLANNED BENEFICIAL OCCUPANCY DATE: 1998

0131.A.

-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.*

The following improvements under way or planned for the installation will change our total T&E capacity/capability.

NOTE 1: MILCON Projects currently under construction or programmed in the FYDP (CNO Resource Sponsor program):

MILCON PROJECT: P-289
SPONSOR/PROG. YR.: N091/FY99
TITLE: GUIDED MISSILE ORDNANCE RANGE FACILITIES
COST: $5.10M
SIZE: 13,984 SF
TYPE: REPLACEMENT/NEW
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DESCRIPTION: This project constructs a complex of facilities located in the remotely situated guided missile range area, and includes one 7,000-square-foot guided missile assembly/check-out building; a 2,184-square-foot facility to house two high-explosive guided missile test cells, including a control room; and a 4,800-square-foot rocket/gun ammunition ordnance assembly building. The project will provide new capabilities and improve current operations.
ESTIMATED AWARD DATE: 1999
PLANED BENEFICIAL OCCUPANCY DATE: 2001

MILCON PROJECT: P-356
SPONSOR/PROG. YR.: N1/FY97
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PROJECT UNDER DESIGN
ESTIMATED AWARD DATE: 1997
PLANNED BENEFICIAL OCCUPANCY DATE: 1998

6131

MILCON PROJECT: P-369
SPONSOR: N091
TITLE: MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
COST: $16.85M
SIZE: 92,910 SF
TYPE: NEW
BLDGS/SQ FT REPL: N/A
DESCRIPTION: This project consists of a 73,200-square-foot High-Bay test arena, a 15,260-square-foot Low-Bay support area, and a 4,450-square-foot loft. The MESA will provide a large indoor arena for measuring the performance of advanced fusing and guidance technologies against physical models of airborne threats. The MESA provides a unique capability for the Department of Defense providing for testing of missile fusing, missile guidance, and sensor programs assigned to China Lake and in support of programs for the joint services, other services, and industry. This facility replaces the Encounter Simulation Lab (ESL) located at Corona, CA. The ESL is a 34,472-square-foot facility that was constructed in 1967 and has become obsolete in supporting advanced technologies.
EQUIPMENT OVER $500,000: Control system ($600,000) and radar system ($600,000)
PROJECT UNDER CONSTRUCTION
PLANNED BENEFICIAL OCCUPANCY DATE: 18 Sep 1994

MILCON PROJECT: P-428
SPONSOR/PROG. YR.: N091/FY99
TITLE: SECURE PROJECTS FACILITY
COST: $12.90M
SIZE: 33,750 SF
TYPE: NEW
BLDGS/SQ FT REPL: N/A
DESCRIPTION: This project provides for construction of a new 33,750-square-foot facility including building, security fencing, employee parking lot, and utilities in order to support special secure programs at the Station. This facility will provide vaulted work spaces, laboratories, and conference space in accordance with DIAM 50-3, "Physical Security Standard for Sensitive Compartmented Information Facility," to meet the growing workload for special secure programs.
DESIGN ON HOLD AT 35%
ESTIMATED AWARD DATE: Mar 1999
PLANNED BENEFICIAL OCCUPANCY DATE: Mar 2001

MILCON PROJECT: P-431
SPONSOR: N88
TITLE: ADVANCED SYSTEMS LABORATORY
COST: $ 14.0 M
SIZE: 84,000 SF
TYPE: NEW
BLDGS/SQ FT REPL: N/A
DESCRIPTION: The Advanced Weapons Laboratory, under construction, is a multiprogram Weapons Systems Support Facility that provides secure, computer-type laboratories, personnel offices, and aircraft spaces to support the F/A-18 program. This facility will contain upgraded current computerized software development/validation systems that were built to support the A/B and C/D aircraft, and secure spaces that will support the new F/A-18 E/F aircraft. In addition, this facility is provided with a multilevel tower to support radar, IR, and EW development/validation sensor testing.
PROJECT UNDER CONSTRUCTION
PLANNED BENEFICIAL OCCUPANCY DATE: 1994

0132. A.

MILCON PROJECT: P-369
SPONSOR: N091
TITLE: MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
COST: $16.85M
SIZE: 92,910 SF
TYPE: NEW
BLDGS/SQ FT REPL: N/A
DESCRIPTION: This project consists of a 73,200-square-foot High-Bay test arena, a 15,260-square-foot Low-Bay support area, and a 4,450-square-foot loft. The MESA will provide a large indoor arena for measuring the performance of advanced fusing and guidance technologies against physical models of airborne threats. The MESA provides a unique capability for the Department of Defense providing for testing of missile fusing, missile guidance, and sensor programs assigned to China Lake and in support of programs for the joint services, other services, and industry. This facility replaces the Encounter Simulation Lab (ESL) located at Corona, CA. The ESL is a 34,472-square-foot facility that was constructed in 1967 and has become obsolete in supporting advanced technologies.
EQUIPMENT OVER $500,000: Control system ($600,000) and radar system ($600,000)
PROJECT UNDER CONSTRUCTION
PLANNED BENEFICIAL OCCUPANCY DATE: 18 Sep 1994

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SPONSOR/PROG. YR.: N091/FY99
TITLE: SECURE PROJECTS FACILITY
COST: $12.90M
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TYPE: NEW
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DESIGN ON HOLD AT 35%
ESTIMATED AWARD DATE: Mar 1999
PLANNED BENEFICIAL OCCUPANCY DATE: Mar 2001

MILCON PROJECT: P-431
SPONSOR: N88
TITLE: ADVANCED SYSTEMS LABORATORY
COST: $ 14.0 M
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TYPE: NEW
BLDGS/SQ FT REPL: N/A
DESCRIPTION: The Advanced Weapons Laboratory, under construction, is a multiprogram Weapons Systems Support Facility that provides secure, computer-type laboratories, personnel offices, and aircraft spaces to support the F/A-18 program. This facility will contain upgraded current computerized software development/validation systems that were built to support the A/B and C/D aircraft, and secure spaces that will support the new F/A-18 E/F aircraft. In addition, this facility is provided with a multilevel tower to support radar, IR, and EW development/validation sensor testing.
PROJECT UNDER CONSTRUCTION
PLANNED BENEFICIAL OCCUPANCY DATE: 1994

MILCON PROJECT: P-454
SPONSOR: N091
TITLE: INTEGRATED NAVAL AIR DEFENSE (INADS) FACILITIES
COST: $12.76M
SIZE: 38,300 SF
TYPE: REPLACEMENT/NEW
BLDGS/SQ FT REPL: 6,240 SF (TRAILERS)
Description: This project provides facilities for six additional threat radars and five emitter simulator (ES) systems at the Sea Site 3 Detection Systems Laboratory. In addition, the separate Engineering Support Facility provides space to maintain all the threat, emitter simulator, gun-control, acquisition, and reference radars valued at over $500M (replacement cost) that comprise the Electronic Combat Range. This facility also provides new space well suited to Foreign Material Exploitation (FME).
EQUIPMENT OVER $500,000: CGR/SATS missile threat system, close support missile/gun weapon system radar, pulse Doppler (TAR/TER) weapon system radar, C^3 long-range early warning radar, and multifrequency generator emitter simulator.
PROJECT UNDER CONSTRUCTION
PLANNED BENEFICIAL OCCUPANCY DATE: 12 Aug 1994

MILCON PROJECT: P-469
SPONSOR/PROG. YR.: N091/FY95
TITLE: AIRCRAFT READY FUEL STORAGE FACILITY
COST: $ 6.10M (1995)
SIZE: N/A
TYPE: REPLACEMENT/NEW
BLDGS/SQ FT REPL: N/A
DESCRIPTION: This project provides for new above ground steel fuel storage tanks, combined storage capacity of 400,000 gallons of JP-8 fuel, with associated piping and appurtenances, aircraft truck fueling and receiving facility, site work, roads, fencing, testing laboratory/office, and support facilities. The new tanks will comply with State, local and National regulations for storage of jet fuel, which will not allow us to operate out of existing facilities after 1995.
PROJECT UNDER DESIGN
ESTIMATED AWARD DATE: Jan 1995
PLANNED BENEFICIAL OCCUPANCY DATE: Jun 1996

MILCON PROJECT: P-484
SPONSOR/PROG. YR.: N091/FY96
TITLE: CLPL/SW INDUSTRIAL WASTEWATER COLLECTION/TREATMENT SYSTEM
COST: $3.64M
SIZE: N/A
TYPE: REPLACEMENT
BLDGS./SQ FT REPL.: N/A
DESCRIPTION: The project provides for the collection, treatment, and disposal of industrial wastewater from existing R&D facilities in China Lake Propulsion Laboratory (CLPL) and the Salt Wells (SW) area in accordance with Federal, State, and local environmental regulations.
ESTIMATED AWARD DATE: 1996
BENEFICIAL OCCUPANCY DATE: 1997

0133. A.

MILCON PROJECT: P-454
SPONSOR: N091
TITLE: INTEGRATED NAVAL AIR DEFENSE (INADS) FACILITIES
COST: $12.76M
SIZE: 38,300 SF
TYPE: REPLACEMENT/NEW
BLDGS/SQ FT REPL: 6,240 SF (TRAILERS)
Description: This project provides facilities for six additional threat radars and five emitter simulator (ES) systems at the Sea Site 3 Detection Systems Laboratory. In addition, the separate Engineering Support Facility provides space to maintain all the threat, emitter simulator, gun-control, acquisition, and reference radars valued at over $500M (replacement cost) that comprise the Electronic Combat Range. This facility also provides new space well suited to Foreign Material Exploitation (FME).
EQUIPMENT OVER $500,000: CGR/SATS missile threat system, close support missile/gun weapon system radar, pulse Doppler (TAR/TER) weapon system radar, C^3 long-range early warning radar, and multifrequency generator emitter simulator.
PROJECT UNDER CONSTRUCTION
PLANNED BENEFICIAL OCCUPANCY DATE: 12 Aug 1994

MILCON PROJECT: P-469
SPONSOR/PROG. YR.: N091/FY95
TITLE: AIRCRAFT READY FUEL STORAGE FACILITY
COST: $ 6.10M (1995)
SIZE: N/A
TYPE: REPLACEMENT/NEW
BLDGS/SQ FT REPL: N/A
DESCRIPTION: This project provides for new above ground steel fuel storage tanks, combined storage capacity of 400,000 gallons of JP-8 fuel, with associated piping and appurtenances, aircraft truck fueling and receiving facility, site work, roads, fencing, testing laboratory/office, and support facilities. The new tanks will comply with State, local and National regulations for storage of jet fuel, which will not allow us to operate out of existing facilities after 1995.
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BLDGS./SQ FT REPL.: N/A
DESCRIPTION: The project provides for the collection, treatment, and disposal of industrial wastewater from existing R&D facilities in China Lake Propulsion Laboratory (CLPL) and the Salt Wells (SW) area in accordance with Federal, State, and local environmental regulations.
ESTIMATED AWARD DATE: 1996
BENEFICIAL OCCUPANCY DATE: 1997

NOTE 2: Special Projects currently programmed in the FYDP which will influence infrastructure:

SCN#: C02-4304
SP#: E66-94
TITLE: CONSTRUCT WASTEWATER SYSTEM, BLDG. NO. 00005
COST: $500K
TYPE: NEW INSTALLATION
DESCRIPTION: Installation of package unit for treatment of hazardous waste.
ESTIMATED AWARD DATE: Sep 1994
ESTIMATED CONST. START: Jan 1995
BENEFICIAL OCCUPANCY DATE: Aug 1995

SCN#: C29-4308
SP#: CA50-94
TITLE: CONSTRUCT ENGR. SUPPORT FACILITY
COST: $300K
SIZE: 3000 SF
TYPE: NEW
DESCRIPTION: New Construction.
ESTIMATED AWARD DATE: Jul 1994
ESTIMATED CONST. START: Aug 1994
BENEFICIAL OCCUPANCY DATE: Dec 1994

SCN#: C29-4307
SP#: CA49-94
TITLE: CONSTRUCT LAB FACILITY
COST: $300K
SIZE: 3,000 SF
TYPE: NEW
DESCRIPTION: New Construction.
ESTIMATED AWARD DATE: Jul 1994
ESTIMATED CONST. START: Aug 1994
BENEFICIAL OCCUPANCY DATE: Dec 1994

SCN#: C28-4203
SP#: CA45-94
TITLE: CONSTRUCT SECURE FME BLDG.
COST: $300K
SIZE: 3,000 SF
TYPE: NEW
DESCRIPTION: New Construction.
ESTIMATED AWARD DATE: Sep 1994
ESTIMATED CONST. START: Oct 1994
BENEFICIAL OCCUPANCY DATE: Feb 1995

NOTE 2: Special Projects currently programmed in the FYDP which will influence infrastructure:

SCN#: C02-4304
SP#: E66-94
TITLE: CONSTRUCT WASTEWATER SYSTEM, BLDG. NO. 00005
COST: $500K
TYPE: NEW INSTALLATION
DESCRIPTION: Installation of package unit for treatment of hazardous waste.
ESTIMATED AWARD DATE: Sep 1994
ESTIMATED CONST. START: Jan 1995
BENEFICIAL OCCUPANCY DATE: Aug 1995

SCN#: C29-4308
SP#: CA50-94
TITLE: CONSTRUCT ENGR. SUPPORT FACILITY
COST: $300K
SIZE: 3000 SF
TYPE: NEW
DESCRIPTION: New Construction.
ESTIMATED AWARD DATE: Jul 1994
ESTIMATED CONST. START: Aug 1994
BENEFICIAL OCCUPANCY DATE: Dec 1994

SCN#: C29-4307
SP#: CA49-94
TITLE: CONSTRUCT LAB FACILITY
COST: $300K
SIZE: 3,000 SF
TYPE: NEW
DESCRIPTION: New Construction.
ESTIMATED AWARD DATE: Jul 1994
ESTIMATED CONST. START: Aug 1994
BENEFICIAL OCCUPANCY DATE: Dec 1994

SCN#: C28-4203
SP#: CA45-94
TITLE: CONSTRUCT SECURE FME BLDG.
COST: $300K
SIZE: 3,000 SF
TYPE: NEW
DESCRIPTION: New Construction.
ESTIMATED AWARD DATE: Sep 1994
ESTIMATED CONST. START: Oct 1994
BENEFICIAL OCCUPANCY DATE: Feb 1995

0134.A

SCN#: C32-4655
SP#: CA53-94
TITLE: CONSTRUCT VEHICLE BUILD-UP SHOP
COST: $220K
SIZE: 3,000 SF
TYPE: NEW
DESCRIPTION: New Construction.
ESTIMATED AWARD DATE: Jul 1994
ESTIMATED CONST. START: Aug 1994
BENEFICIAL OCCUPANCY DATE: Dec 1994

SCN#: C03-4000
SP#: RM35-94
TITLE: MISC. PAVING AND REPAIR
COST: $500K
SIZE: N/A
TYPE: REPAIR
DESCRIPTION: Includes milling, overlay, crack-fill, and rubber chip seal repairs to base road system.
ESTIMATED AWARD DATE: Jan 1994
ESTIMATED CONST. START: Feb 1994
BENEFICIAL OCCUPANCY DATE: Aug 1994

SCN#: C08-5006
SP#: R41-94
TITLE: REPLACE PCB TRANSFORMERS
COST: $300K
SIZE: N/A
TYPE: REPAIR
DESCRIPTION: Replacement of PCB-contaminated transformers.
ESTIMATED AWARD DATE: FY 95

SCN#: C28-4901
SP#: CA46-94
TITLE: CONSTRUCT AERODYNAMICS FACILITY
COST: $300K
SIZE: 3,700 SF
TYPE: NEW
DESCRIPTION: Provide laboratory office space via new construction.
ESTIMATED AWARD DATE: Dec 1993
ESTIMATED CONST. START: Jan 1994
BENEFICIAL OCCUPANCY DATE: Aug 1994

0135. A.

SCN#: C32-4655
SP#: CA53-94
TITLE: CONSTRUCT VEHICLE BUILD-UP SHOP
COST: $220K
SIZE: 3,000 SF
TYPE: NEW
DESCRIPTION: New Construction.
ESTIMATED AWARD DATE: Jul 1994
ESTIMATED CONST. START: Aug 1994
BENEFICIAL OCCUPANCY DATE: Dec 1994

SCN#: C03-4000
SP#: RM35-94
TITLE: MISC. PAVING AND REPAIR
COST: $500K
SIZE: N/A
TYPE: REPAIR
DESCRIPTION: Includes milling, overlay, crack-fill, and rubber chip seal repairs to base road system.
ESTIMATED AWARD DATE: Jan 1994
ESTIMATED CONST. START: Feb 1994
BENEFICIAL OCCUPANCY DATE: Aug 1994

SCN#: C08-5006
SP#: R41-94
TITLE: REPLACE PCB TRANSFORMERS
COST: $300K
SIZE: N/A
TYPE: REPAIR
DESCRIPTION: Replacement of PCB-contaminated transformers.
ESTIMATED AWARD DATE: FY 95

SCN#: C28-4901
SP#: CA46-94
TITLE: CONSTRUCT AERODYNAMICS FACILITY
COST: $300K
SIZE: 3,700 SF
TYPE: NEW
DESCRIPTION: Provide laboratory office space via new construction.
ESTIMATED AWARD DATE: Dec 1993
ESTIMATED CONST. START: Jan 1994
BENEFICIAL OCCUPANCY DATE: Aug 1994

0/35

SCN#: C28-4905
SP#: CA47-94
TITLE: CONSTRUCT MECHANICAL FACILITY
COST: $300K
SIZE: 3,700 SF
TYPE: NEW
DESCRIPTION: Provide laboratory office space via new construction.
ESTIMATED AWARD DATE: Dec 1993
ESTIMATED CONST. START: Jan 1994
BENEFICIAL OCCUPANCY DATE: Aug 1994

SCN#: C83-2452
SP#: R50-93
TITLE: REPLACE GAS LATERALS, CAPEHART B
COST: $1.4M
SIZE: N/A
TYPE: REPAIR
DESCRIPTION: Replaces deteriorated gas laterals in family housing.
ESTIMATED AWARD DATE: Sep 1993
ESTIMATED CONST. START: Oct 1993
BENEFICIAL OCCUPANCY DATE: Aug 1994

SCN#: C83-5108
SP#: MR60-94
TITLE: REPAIR ROADS, STATION WIDE
COST: $500K
SIZE: N/A
TYPE: REPAIR
DESCRIPTION: Includes rubber chip seal and patching.
ESTIMATED AWARD DATE: FY95

SCN#: C83-3010
SP#: R28-93
TITLE: REPLACE WATER MAINS AND VALVES (PHASE 3)
COST: $300K
SIZE: N/A
TYPE: REPAIR
DESCRIPTION: Replaces deteriorated water mains at Mainsite.
ESTIMATED AWARD DATE: On hold.

0136. A.

SCN#: C28-4905
SP#: CA47-94
TITLE: CONSTRUCT MECHANICAL FACILITY
COST: $300K
SIZE: 3,700 SF
TYPE: NEW
DESCRIPTION: Provide laboratory office space via new construction.
ESTIMATED AWARD DATE: Dec 1993
ESTIMATED CONST. START: Jan 1994
BENEFICIAL OCCUPANCY DATE: Aug 1994

SCN#: C83-2452
SP#: R50-93
TITLE: REPLACE GAS LATERALS, CAPEHART B
COST: $1.4M
SIZE: N/A
TYPE: REPAIR
DESCRIPTION: Replaces deteriorated gas laterals in family housing.
ESTIMATED AWARD DATE: Sep 1993
ESTIMATED CONST. START: Oct 1993
BENEFICIAL OCCUPANCY DATE: Aug 1994

SCN#: C83-5108
SP#: MR60-94
TITLE: REPAIR ROADS, STATION WIDE
COST: $500K
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SCN#: C83-3010
SP#: R28-93
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COST: $300K
SIZE: N/A
TYPE: REPAIR
DESCRIPTION: Replaces deteriorated water mains at Mainsite.
ESTIMATED AWARD DATE: On hold.

NOTE 3: Quality of Life improvements (includes major repairs) that are scheduled for near-term completion and that should be considered in relation to expanded capacity/capability are

TITLE: REHAB NIMITZ BACHELOR QUARTERS
COST: $2,600K
DESCRIPTION: Major repairs and alterations to buildings 02242 and 02244, approximately 27,000 square feet.
STATUS: Under construction.

TITLE: REHAB TRANSIENT QUARTERS
COST: $1,300K
DESCRIPTION: Major repairs and alterations to existing buildings.
STATUS: Construction start projected for August 1994.

TITLE: NEW COMMISSARY
COST: $2,500K
DESCRIPTION: Constructs a new 20,000-square-foot. Commissary .
STATUS: Construction start projected for May 1994.

TITLE: REHAB SENIOR TRANSIENT BOQ
COST: $500K
DESCRIPTION: Major repairs and alterations to buildings 00660 and 00661, approximately 5.000 square feet.
STATUS: Projected for FY94 funding.

TITLE: REHAB TENNIS COURTS
COST: $250K
DESCRIPTION: BUPERS/NAF funding. Repairs existing tennis courts.
STATUS: Projected for FY94 funding.

TITLE: CONSTRUCT AND REPAIR BIKE PATHS
COST: $500K
DESCRIPTION: Constructs new and repairs existing bicycle paths.
STATUS: Projected for FY94 or early FY95 funding.

TITLE: REHAB HARPOON BQS
COST: $1,351K
DESCRIPTION: Major repairs and alterations to building 02340, approx. 14,000 square feet.
STATUS: Projected for FY94 or early FY95 funding.

TITLE: GOLF COMPLEX
COST: $2,600K
DESCRIPTION: BUPERS/NAF funding. Constucts a new clubhouse and repairs the existing irrigation system.
STATUS: Projected for FY95 funding.

0137A.

NOTE 3: Quality of Life improvements (includes major repairs) that are scheduled for near-term completion and that should be considered in relation to expanded capacity/capability are

TITLE: REHAB NIMITZ BACHELOR QUARTERS
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TITLE: REHAB HARPOON BQS
COST: $1,351K
DESCRIPTION: Major repairs and alterations to building 02340, approx. 14,000 square feet.
STATUS: Projected for FY94 or early FY95 funding.

TITLE: GOLF COMPLEX
COST: $2,600K
DESCRIPTION: BUPERS/NAF funding. Constucts a new clubhouse and repairs the existing irrigation system.
STATUS: Projected for FY95 funding.

TITLE: NEW NAVY EXCHANGE
COST: $4,000K
DESCRIPTION: Constructs a new Navy Exchange, approximately 20,000 square feet.
STATUS: Projected for FY97 funding

TITLE: NEIGHBORHOODS OF EXCELLENCE (NOE) PROJECTS
COST: $40,000K
DESCRIPTION: Major repair, alteration, and construction projects in relation to Military Family Housing improvements funded through the NOE program.
STATUS: Projected funding from FY94 through FY01.

The answers to 3.1.E.4 for each of the 60 NAWCWPNS China Lake facilities/capabilities are as follows

MODELING AND SIMULATION.

AIR WEAPON DIGITAL MODELING & SIMULATION
E.4. No.

EXPLOSIVE AND ORDNANCE MODELING
E.4. No.

STRIKE SIMULATION & MODELING
E.4. Yes. More processors. Planned upgrade to TAC-3 and DTC-2 to maintain "field template" configuration. No additional increase in capacity planned. Capacity is adequate for planned workload in the near future.

STRIKE SOFTWARE/SIMULATION FACILITY
E.4. Yes. Hardware integrated test set.

SYSTEM MODELING & SIGNAL PROCESSING FACILITY
E.4. Yes. One laboratory will become a secure vault. Expand network support via departmental funds.

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)
E.4. Yes. FY95 funded projects will provide internetting capability, allowing WEPTAC to link with other, similarly equipped facilities and ranges. WEPTAC is currently not internetted; it will be at the end of FY94. Additionally, WEPTAC Phase 2 (newest) capability will continue to be capitalized in the outyears.

MEASUREMENT.

AEROHEAT TEST FACILITY
E.4. No.

AIR BREATHING PROPULSION LABORATORY
E.4. Yes. Additional air provided by air system repairs will allow increased flight altitudes and Mach conditions such as longer turbojet flights.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
E.4. No.

0138.A.

TITLE: NEW NAVY EXCHANGE
COST: $4,000K
DESCRIPTION: Constructs a new Navy Exchange, approximately 20,000 square feet.
STATUS: Projected for FY97 funding

TITLE: NEIGHBORHOODS OF EXCELLENCE (NOE) PROJECTS
COST: $40,000K
DESCRIPTION: Major repair, alteration, and construction projects in relation to Military Family Housing improvements funded through the NOE program.
STATUS: Projected funding from FY94 through FY01.

The answers to 3.1.E.4 for each of the 60 NAWCWPNS China Lake facilities/capabilities are as follows

MODELING AND SIMULATION.

AIR WEAPON DIGITAL MODELING & SIMULATION
E.4. No.

EXPLOSIVE AND ORDNANCE MODELING
E.4. No.

STRIKE SIMULATION & MODELING
E.4. Yes. More processors. Planned upgrade to TAC-3 and DTC-2 to maintain "field template" configuration. No additional increase in capacity planned. Capacity is adequate for planned workload in the near future.

STRIKE SOFTWARE/SIMULATION FACILITY
E.4. Yes. Hardware integrated test set.

SYSTEM MODELING & SIGNAL PROCESSING FACILITY
E.4. Yes. One laboratory will become a secure vault. Expand network support via departmental funds.

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E.4. Yes. Additional air provided by air system repairs will allow increased flight altitudes and Mach conditions such as longer turbojet flights.

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
E.4. No.

CACTUS FLATS ORDNANCE TEST AREA
E.4. Yes. Upper Cactus—Work is underway to establish a large-scale-magazine/high-explosive-test arena in upper Cactus Flats.

CHEMICAL ANALYSIS RESEARCH FACILITY
E.4. No.

DETONATION PHYSICS LABORATORY
E.4. No.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
E.4. No.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
E. 4. No.

ENVIRONMENTAL TEST COMPLEX
E.4. No.

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
E.4. Yes. An Additional new 50,000-square-foot FME building is to be constructed near the present FME building site.

GUIDANCE COMPONENTS T&A COMPLEX
E.4. No.

HIGH HAZARD PROPULSION TEST FACILITY
E.4. Yes. New cabling from the main control room to the Bay III area, including on-site computer preprocessing installation to accommodate the confined burn chamber testing for Trident Strategic Programs.

IR SEEKER, GCS DDT&E COMPLEX
E.4. Yes. One laboratory will become a secure vault. Upgrade to specialize test equipment.

JUNCTION RANCH RADAR CROSS SECTION RANGE
E.4. Yes. The planned purchase of RCS radar spares will minimize range downtime when failures occur during testing.

MATERIALS ENGINEERING/FAILURE ANALYSIS FACILITY
E.4. No.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
E.4. No.

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
E.4. No.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
E.4. Yes. Preparation for installation of a second L6000 X-ray film machine to accommodate horizontal motor scans without resorting to remounting the primary computer tomography L6000 to view test motors in this manner when the customer desires so. Efficiency of operation will increase dramatically.

0139A

CACTUS FLATS ORDNANCE TEST AREA
E.4. Yes. Upper Cactus—Work is underway to establish a large-scale-magazine/high-explosive-test arena in upper Cactus Flats.

CHEMICAL ANALYSIS RESEARCH FACILITY
E.4. No.

DETONATION PHYSICS LABORATORY
E.4. No.

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
E.4. No.

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
E. 4. No.

ENVIRONMENTAL TEST COMPLEX
E.4. No.

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TELEMETRY DEVELOPMENT LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes.
The Telemetry Development Laboratory provides the following: Insure/certify range compatible and interoperable telemetry and flight-termination systems. Design, development, and standardization of telemetry encryption techniques compatible with NSA and weapons-development data requirements. Insure/certify contractor developed telemetry systems are interoperable on the T&E ranges. Support NAWCWPNS weapons/platform R&D development and evaluation with quick response design/development of telemetry and related instrumentation. Support the Range Commander's Council for development of Range Standards for Range Safety, Telemetry, Telecommunication, Frequency Management, and Optical Systems. Development of standard picture video digitization techniques.
F.2. Yes. Army 7%
Air Force 3%

TSSAM MISSION PLANNING FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. None.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Air Force 10%

WEAPONS GUIDANCE/CONTROL/SEEKER IL
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. RF and RF/IR missile guidance systems integration/test of any RF and RF/IR missile from 5 to 15 inches in diameter is done in one facility. Systems not previously tested can be done without building an entire test set. Sidewinder development/test/evaluation, engineering/manufacturing development, and in-service engineering are provided by this Laboratory. Simultaneous Line-of-Sight (LOS) rate and roll rate testing done on one modified rate table permits evaluation of short-range IR guidance/control systems under laboratory conditions that would otherwise require expensive captive carriage flight testing on board an aircraft. The resident signature library used for the Special Signal Processing Laboratory is unique.
F.2. Yes. Army 3%
Air Force 15%

WEAPON SYSTEMS SUPPORT FACILITY, A-6
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. NAWCWPNS is the principal site for the A-6 aircraft's Weapon System Support Activity. As such, system level integration and test facilities are located at China Lake. The A-6 WSSF is unique to the configuration of the A-6 aircraft platform. The A-6 WSSF consists of 2 primary workstations, Navigation and Weapons Consoles. The uniqueness of A-6's avionics dictate that the WSSF workstations be specifically tailored for the A-6 aircraft. The U.S. Navy is the only agency that has a requirement to support avionics integration on Navy attack aircraft. The A-6's prime contractor uses the A-6 Facility for design, development and system integration

testing. Additionally, the A-6 WSSF is used exclusively for verification and validation testing of U.S. Navy versions of Operational Flight Software.
F.2. None.

WEAPON SYSTEMS SUPPORT FACILITY, AH-1
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. NAWCWPNS is the principal site for the AH-1 aircraft Weapon System Support Activity. As such, system level integration and test facilities are located at China Lake. The AH-1 WSSF is unique to the configuration of the AH-1 aircraft platform. The AH-1 WSSF consists of one Control Display System Hot Bench, one combination integrated Global Positioning System (GPS) and Inertial Navigation System (INS), and one Night Targeting System Hot Bench. The uniqueness of AH-1's avionics dictates that the WSSF be specifically tailored to the AH-1 aircraft. The U.S. Navy is the only agency that has a requirement to support avionics integration on Navy fighter and attack aircraft. Additionally, the AH-1 WSSF is used exclusively for verification and validation testing of U.S. Navy versions of Operational Flight Software.
F.2. None.

WEAPON SYSTEMS SUPPORT FACILITY, AV-8
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The AV-8 WSSF is unique and modeled after the AV-8 aircraft configurations. Currently the AV-8 WSSF provides all weapons and radar integration testing for the AV-8 platform. New work in this area could be in support of other aircraft platforms. A new or relocated Facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.
F.2. None.

WEAPON SYSTEMS SUPPORT FACILITY, F/A-18
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. NAWCWPNS is the principal site for the F/A-18 aircraft. As such, the F/A-18 Weapon System Support Activity, system level integration, and test facilities are located at China Lake. The F/A-18 Weapon System Support Facility (WSSF) is unique to the configuration of the F/A-18 aircraft platform. The F/A-18 WSSF consists of five primary laboratories; Night Attack Lab, Validation Lab, Integration Lab, Radar Lab, and FLIR Lab. The uniqueness of F/A-18's avionics dictates that the WSSF Labs be specifically tailored to the F/A-18 aircraft. The U.S. Navy is the only agency that has a requirement to support avionics integration on Navy fighter, attack, and Foreign Military Sales (FMS) aircraft. The F/A-18's prime contractor has development facilities to perform lower level module and integration tests. The prime contractor and FMS countries use the F/A-18 Facility for design, development and system integration testing. Additionally, the F/A-18 WSSF is used exclusively for verification and validation testing of U.S. Navy and FMS versions of Operational Flight Software.
F.2. None.

0157. A.

testing. Additionally, the A-6 WSSF is used exclusively for verification and validation testing of U.S. Navy versions of Operational Flight Software.
F.2. None.

WEAPON SYSTEMS SUPPORT FACILITY, AH-1
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. NAWCWPNS is the principal site for the AH-1 aircraft Weapon System Support Activity. As such, system level integration and test facilities are located at China Lake. The AH-1 WSSF is unique to the configuration of the AH-1 aircraft platform. The AH-1 WSSF consists of one Control Display System Hot Bench, one combination integrated Global Positioning System (GPS) and Inertial Navigation System (INS), and one Night Targeting System Hot Bench. The uniqueness of AH-1's avionics dictates that the WSSF be specifically tailored to the AH-1 aircraft. The U.S. Navy is the only agency that has a requirement to support avionics integration on Navy fighter and attack aircraft. Additionally, the AH-1 WSSF is used exclusively for verification and validation testing of U.S. Navy versions of Operational Flight Software.
F.2. None.

WEAPON SYSTEMS SUPPORT FACILITY, AV-8
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The AV-8 WSSF is unique and modeled after the AV-8 aircraft configurations. Currently the AV-8 WSSF provides all weapons and radar integration testing for the AV-8 platform. New work in this area could be in support of other aircraft platforms. A new or relocated Facility could be established, building on the established infrastructure, simulation, stimulus, and data collection tool set architecture in support of other aircraft platforms.
F.2. None.

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F.1.A. Yes.
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F.2. None.

0157

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The test sets are the only ones in existence for all variants of the Mk 45 that use real sea and target data and simulation data outputs to create missile encounter simulations for the Mk 45 hardware.
F.2. None.

SIMULATION LABORATORY—MISSILE HITL
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The target generation equipment and Simulation Laboratory-WSSF real-time data link are unique. In addition, the combination of the HITL Simlab and collocated digital modeling and simulation capability, design capability, aircraft avionics facilities, and open-air range testing, provides a total weapons RDT&E capability that exists no where else. This collocation of facilities substantially multiplies the effective productivity, efficiency, and output of the facilities.
F.2. None.

TSSAM HARDWARE-IN-THE-LOOP
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This is the only existing facility that can fully exercise the TSSAM weapon system in a laboratory environment using actual system hardware and software.
F.2. Yes Air Force 20%

OPEN AIR

AIR/GROUND RANGE
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The Range is unique in that it contains several facilities that are "one-of-a-kind", including

- The RF target array —a large array, 60+, of shootable RF targets. These targets are constructed and geographically positioned to simulate real world threat scenarios. Additionally, many of the targets are capable of replicating multiple threats.
- G6 Point Defense Site—Hardened test site approximately 700 feet above the valley floor allowing for launch / testing of weapons, at co-altitude with test site, were there is a significant risk of either the launch item or target impacting the test site. The site is designed to safely sustain impact from full-scale aerial target.
- Randsburg Wash Towers and Fuze Range—Two wooden towers are capable of suspending full-scale targets 250 feet above the ground, allowing gun fuze testing to be performed in a realistic environment.
- Cruise Impact Testing—This is the only range that allows impact test of U/RGM-109 D and C (surface and subsurface launch of Tomahawk) after having flown an operationally realistic track from launch at sea to impact (IR-200 route).
- G-4 Track—This facility allows a test item to be launched off the end of a track which looks out over a valley floor several hundred feet below. The facility allows cost-effective, free-flight testing of weapons and retardation devices prior to aircraft flight testing.

HARDWARE-IN-THE-LOOP

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
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F.1.A. Yes.
F.1.B. Yes. The test sets are the only ones in existence for all variants of the Mk 45 that use real sea and target data and simulation data outputs to create missile encounter simulations for the Mk 45 hardware.
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F.2. None.

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F.1.B. Yes. This is the only existing facility that can fully exercise the TSSAM weapon system in a laboratory environment using actual system hardware and software.
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- G-4 Track—This facility allows a test item to be launched off the end of a track which looks out over a valley floor several hundred feet below. The facility allows cost-effective, free-flight testing of weapons and retardation devices prior to aircraft flight testing.

0158

- Collocation with one of DOD's primary weapons RDT&E laboratories—This provides for a convenient and effective interchange between T&E and R&D including
  -Test conduct without travel time and expense.
  -The ability to test experimental ordnance without off-Station shipping expense and coordination
  -Quick turnaround of data, data analyses, and re-test.
- Electronic link between China Lake, Edwards, Vandenberg, and Point Mugu—This link allows interchange of data and interrange testing of systems requiring capabilities beyond one range—for example, cruise missile testing.
- Good weather and visibility (about 357 flying days per year)—these conditions provide excellent photo-optical data coverage and test conditions.

F.2. Yes. Army 5%
Air Force 10%

ELECTRONIC COMBAT RANGE (ECR)
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The ECR has unique capability not duplicated elsewhere. The ECR is the only Navy free-space (open air) test range for aircraft/airborne systems and techniques designed to sense, counter or penetrate threat air defense systems. It is the only DOD EC range with the ability to test against naval air defense systems and combinations of land and naval systems (Littoral Threat) either individually or as part of an integrated air defense system (IADS). It is the only DOD EC range with the capability to simulate the advanced unique Russian double digit threats SA-10 (SA N-6) and SA-12. The ECR clearly provides synergy to the NAWCWPNS R&D functions in EW development, ARM weapon development, and aircraft integration (WSSA). The ECR is a dedicated EC test range. It operates on 1150 square miles of withdrawn land, under 1200 square mile unlimited altitude restricted airspace, and does not compete for assets with other test facilities. The ECR is located in a region selected for its remoteness and relative absence of population and offers high security with minimum electromagnetic interference either with test operations or with other military or civilian communities. The ECR provides for unlimited use of expendables and decoys.
F.2. Yes. Army 1% and 20%
Air Force 38% and 30%

FLIGHT TEST CAPABILITY
F.1. No.
F.1.A. No.
F.1.B. No.
By itself, the site's airfield flight-test support capability is not unique. But being sited with China Lake's ranges, airspace, and R&D laboratories does provide uniqueness for efficiency and effectiveness of T&E operations. Additionally, since NAWCWPNS command is dual-sited (China Lake and Point Mugu sites), NAWCWPNS has the flexibility to combine flight-test support resources at both sites to accomplish complex T&E operations.
F.2. Yes. Army/Air Force combined: 4.8%

NAWCWPNS-WHITE SANDS
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The NAWCWPNSDETWS facility is unique in terms of land area available at White Sand Missile Range (nominally 40 by 100 miles) supporting long-range overland flight, land usage supporting live submunitions testing and recovery of test articles/debris, and DOD controlled/restricted airspace.

0159-A

- Collocation with one of DOD's primary weapons RDT&E laboratories—This provides for a convenient and effective interchange between T&E and R&D including
  -Test conduct without travel time and expense.
  -The ability to test experimental ordnance without off-Station shipping expense and coordination
  -Quick turnaround of data, data analyses, and re-test.
- Electronic link between China Lake, Edwards, Vandenberg, and Point Mugu—This link allows interchange of data and interrange testing of systems requiring capabilities beyond one range—for example, cruise missile testing.
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F.2. Yes. Army 1% and 20%
Air Force 38% and 30%

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F.1.A. No.
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F.1.A. Yes.
F.1.B. Yes. The NAWCWPNSDETWS facility is unique in terms of land area available at White Sand Missile Range (nominally 40 by 100 miles) supporting long-range overland flight, land usage supporting live submunitions testing and recovery of test articles/debris, and DOD controlled/restricted airspace.

NAWCWPNSDETWS Standard Missile/Vertical Launching System test complex is the Navy's only site, including Navy ships, capable of firing all versions of Standard Missile. It is the only land-based test site for Standard Missile, Vertical Launched NATO Seasparrow, and Vertical Launched ASROC.

The NAWCWPNSDETWS Ship Self Defense test complex is the Navy's only land-based test site for the Rolling Airframe Missile and Vertical Launched NATO Seasparrow.

The NAWCWPNSDETWS Advanced Gun System Complex will provide (FY95 MILCON) long-range gunnery (up to 100 miles) that cannot be provided anywhere else in the U.S.

High Energy Laser Experimental Test System (HELETS) is the nation's only multi-megawatt-class laser weapon system prototype. HELETS can be used for engagement of subsonic and supersonic flying targets; lasing to indoor or outdoor laboratory setups to determine materials, system, and subsystem damage and vulnerability to high energy laser effects; potential commercial applications such as exotic material development (fullerenes, diamond-like carbon, etc.); and scientific research endeavors (high-energy plasma research).

F.2.

Mil Dept	FY92	FY93
Army	6%	6% (includes Ballistic Missile Defense Organization)
Navy	80%	80%
Air Force	0%	0%

NOTE: Non-DOD customers (NASA, commercial) account for 14% of NAWCWPNSDETWS workload.

0160 A.

NAWCWPNSDETWS Standard Missile/Vertical Launching System test complex is the Navy's only site, including Navy ships, capable of firing all versions of Standard Missile. It is the only land-based test site for Standard Missile, Vertical Launched NATO Seasparrow, and Vertical Launched ASROC.

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F.2.

Mil Dept	FY92	FY93
Army	6%	6% (includes Ballistic Missile Defense Organization)
Navy	80%	80%
Air Force	0%	0%

NOTE: Non-DOD customers (NASA, commercial) account for 14% of NAWCWPNSDETWS workload.

0160

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?*

Airspace.
24,056 square statute miles. The R-2508 Complex includes R-2508 Restricted Airspace plus the peripheral airspaces available on call. Restricted for military use from 20,000 feet mean sea level to infinity, this airspace is jointly managed by the Army, Air Force, and Navy. Test and training operations are routinely conducted throughout this area.

19,445 square statute miles. R-2508 Restricted Air Space (without the call up peripherals) overlies the China Lake ranges and is restricted for military use from 20,000 feet mean sea level to infinity. This airspace is jointly managed by the Army, Air Force, and Navy. Test and training operations are routinely conducted throughout this area.

2329 square miles. R-2505, R-2506, and R-2524 directly over the China Lake ranges are within the R-2508 Complex.

NAWCWPNS China Lake is located within the R-2508 Special Use Airspace Complex, which contains six restricted areas and thirteen work areas made up of combinations of Military Operations Areas (MOAs), Air Traffic Control Assigned Airspace Areas (ATCAAAs), and Restricted Area R-2508. The internal restricted airspaces (excludes R-2508) are managed by one of three military commands located within the Complex. Besides NAWCWPNS China Lake, which manages R-2505, R-2506, and R-2524, AFFTC Edwards AFB manages R-2515 and NTC Fort Irwin manages R-2502 (which is further subdivided into north and east areas). The commanders of these three commands combine as the R-2508 Joint Policy and Planning Board to jointly manage R-2508 and the associated work areas. Although R-2508 is jointly managed, the FAA assigns NAWCWPNS China Lake as the Using Agency for R-2508, and this command has annual reporting responsibilities for that airspace and the associated MOAs.

Of those airspaces under independent management of NAWCWPNS China Lake, R-2505 and R-2524 are activated from the surface to infinity on a continuous basis, and R-2506 is active from the surface to 6000 feet MSL, Monday through Friday, sunrise to sunset. These areas segregate nonparticipating military and civil traffic from the hazardous activity that is conducted over the land ranges located beneath them. NAWS China Lake owns or has control over most land areas beneath R-2505 and R-2524. Use of bordering restricted and work area airspace is normally required to support the mission. R-2508 is published active from 20,000 feet MSL to infinity; however, when combined with the underlying MOAs and ATCAAAs, can extend down to 200 feet AGL in most areas. The work areas (combined R-2508, MOAs, and ATCAAAs) are normally active Monday through Friday, 0600 to 2200, but can be coordinated for activation at any time for military use.

When additional range is required, the inland IR-200 route between NAWCWPNS Point Mugu, Edwards AFB, and the Utah Test and Training Range is also available. This route has frequently been used for T&E of long-range, low-level, cruise missiles with ranges in excess of 1,000 miles. A data link is available between Point Mugu, Edwards, and China Lake to facilitate these interrange tests.

Land Space.
1723 square miles under direct control of NAWCWPNS China Lake.

0161. A.

Sea Space.
0

The air and land space are shown in the table below and the following figure.

	Airspace (Square Statute Miles))	Land (Square Statute Miles)
R-2505	1,203	939
R-2506	83	0
R-2524	1,043	783

0161.B.

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?*

Airspace.
24,056 square statute miles. The R-2508 Complex includes R-2508 Restricted Airspace plus the peripheral airspaces available on call. Restricted for military use from 20,000 feet mean sea level to infinity, this airspace is jointly managed by the Army, Air Force, and Navy. Test and training operations are routinely conducted throughout this area.

19,445 square statute miles. R-2508 Restricted Air Space (without the call up peripherals) overlies the China Lake ranges and is restricted for military use from 20,000 feet mean sea level to infinity. This airspace is jointly managed by the Army, Air Force, and Navy. Test and training operations are routinely conducted throughout this area.

2329 square miles. R-2505, R-2506, and R-2524 directly over the China Lake ranges within the R-2508 Complex are restricted from surface to infinity.

When additional range is required, the inland IR-200 route between NAWCWPNS Point Mugu, Edwards AFB, and the Utah Test and Training Range is also available. This route has frequently been used for T&E of long-range, low-level, cruise missiles with ranges in excess of 1,000 miles. A data link is available between Point Mugu, Edwards, and China Lake to facilitate these interrange tests.

Land Space.
1713 square miles under direct control of NAWCWPNS China Lake.

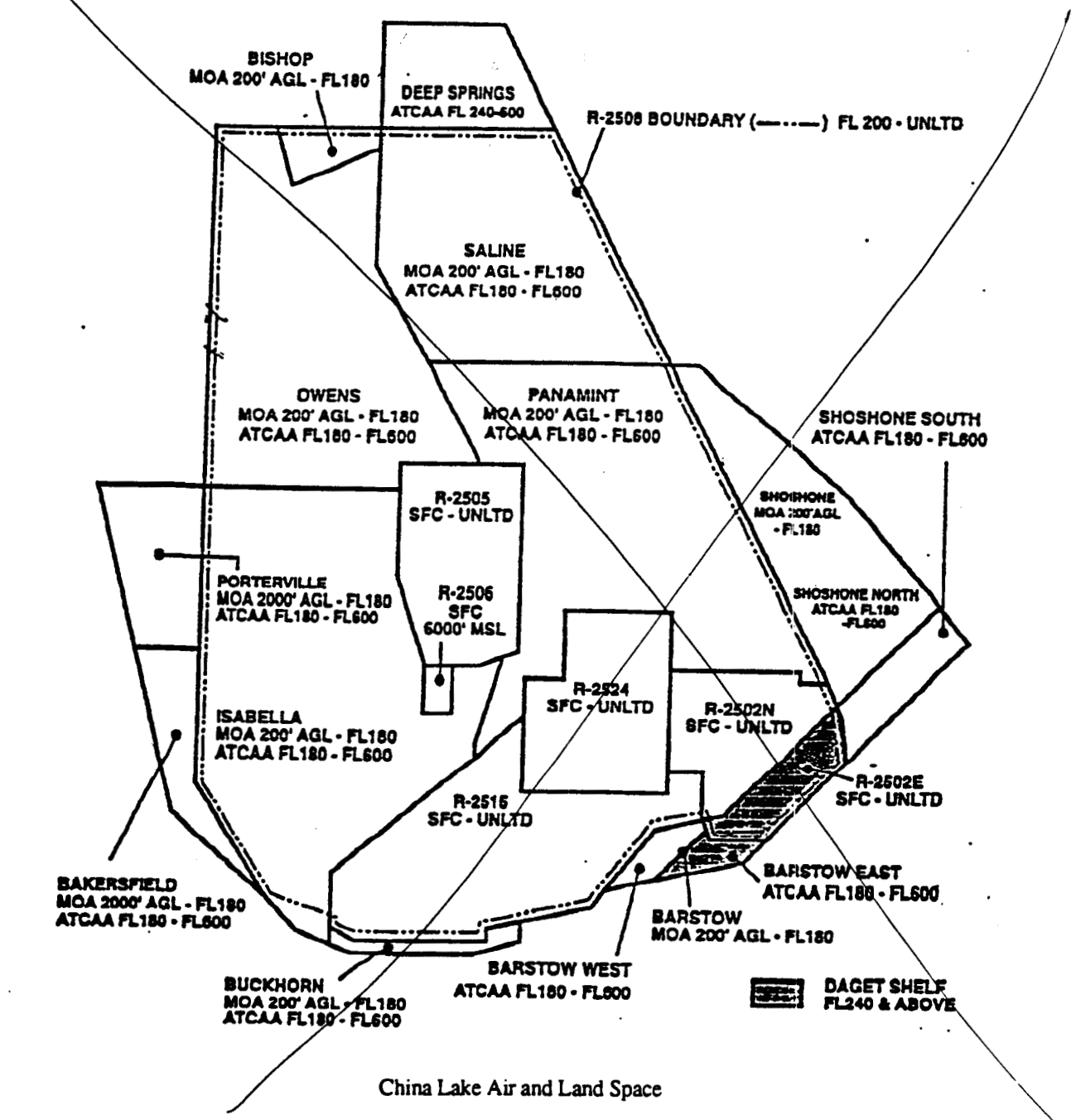
Sea Space.
0

The air and land space are shown in the table below and the following figure.

	Airspace (Square Statute Miles))	Land (Square Statute Miles)
R-2505	1,203	939
R-2506	83	2.3
R-2524	1,843	794

0161

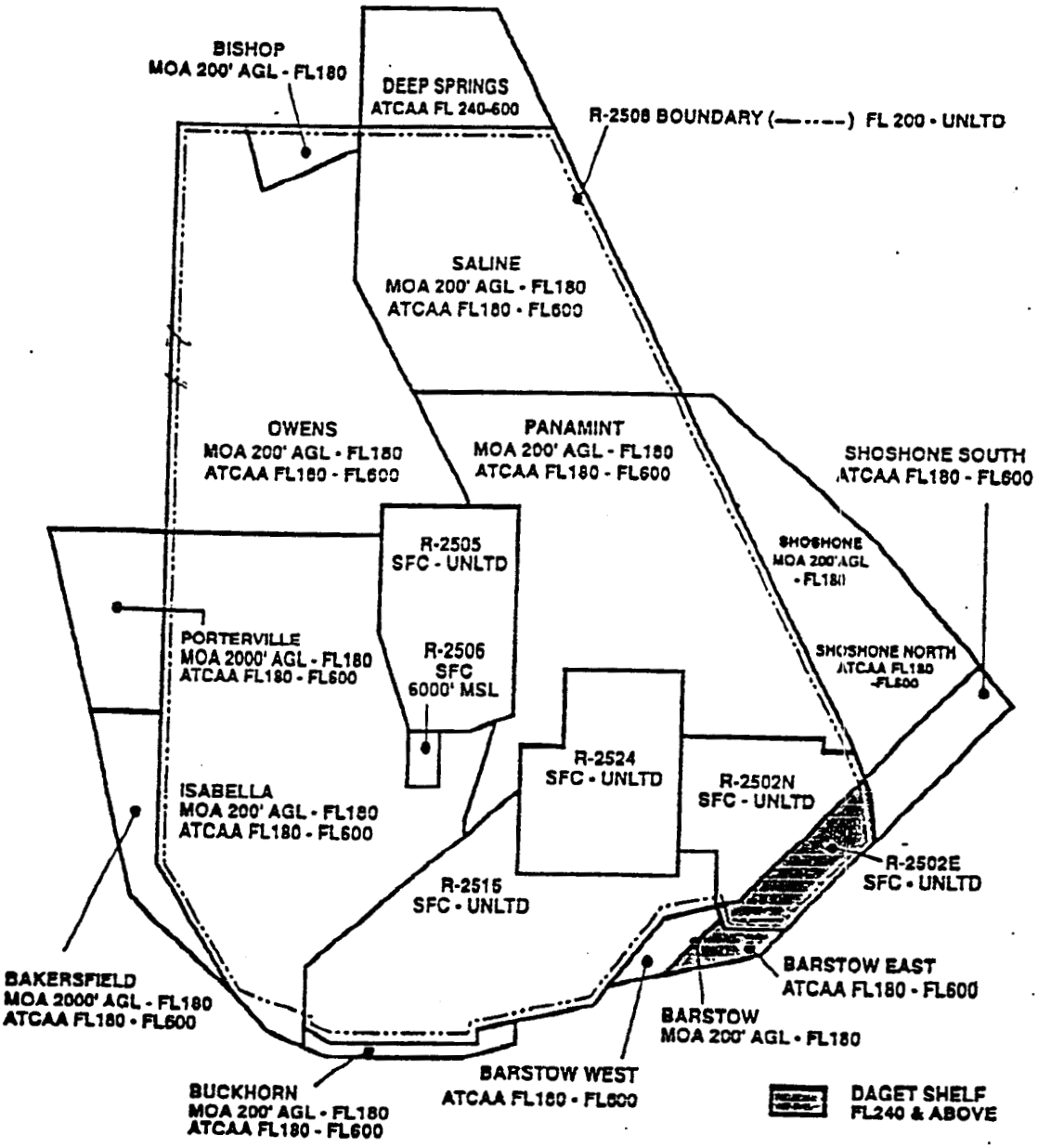
R-2508 COMPLEX



China Lake Air and Land Space

0162

R-2508 COMPLEX



China Lake Air and Land Space

0162. A.

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

NOTE: All areas expressed in square statute miles.

R-2505: land underlying R-2505 is Navy owned (145 square miles), public withdrawn (765 square miles), Bureau of Land Management (264 square miles), and private (29 square miles).

R-2506: land underlying R-2506 is private (8 square miles) and BLM (75 square miles).

R-2524: land underlying R-2524 is Navy owned and public withdrawn (783 square miles) and BLM (260 square miles).

R-2508 : land underlying R-2508 exclusive of internal restricted areas R-2502, R-2505, R-2506, R-2515, and R-2524, is primarily Federal land managed by the Forest Service, National Park Service, and Bureau of Land Management. The remainder is privately owned land.

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

Airspace	Vertical Limits
R-2505	Surface to infinity
R-2506	Surface to 6,000 feet mean sea level
R-2524	Surface to infinity
R-2508	20,000 feet to infinity

0163. A.

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

NOTE: All areas expressed in square statute miles.

R-2505: land underlying R-2505 is Navy owned (138 square miles), public withdrawn land (640 square miles), and Bureau of Land Management (133 square miles).

R-2506: land underlying R-2506 is Navy owned (2.3 square miles), private, and BLM land.

R-2524: land underlying R-2524 is Navy owned, public withdrawn (598 square miles), and BLM land (162 square miles).

R-2508 : land underlying R-2508 exclusive of internal restricted areas R-2502, R-2505, R-2506, R-2515, and R-2524, is primarily Federal land managed by the Forest Service, National Park Service, and Bureau of Land Management. The remainder is privately owned land.

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

Airspace	Vertical Limits
R-2505	Surface to infinity
R-2506	Surface to 6,000 feet mean sea level
R-2524	Surface to infinity
R-2508	20,000 feet to infinity

0163

-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. The special airspaces are shown in the table below.

Special Airspaces

R-2505	RDT&E/OT&E training. See Note #1	Surface to infinity	Yes
R-2506	RDT&E/OT&E training. See Note #32	Surface to 6000 MSL	Yes
R-2524	RDT&E/OT&E training. See Note #3	Surface to infinity	Yes
R-2508	RDT&E/OT&E training. See Note #4	20,000 ft to infinity	Yes
Isabella MOA	RDT&E/OT&E training Note #4	200 ft to 18,000 ft	Yes
Isabella ATCAA	RDT&E/OT&E training Note #4	18,000 ft to 60,000 ft	Yes
Owens MOA	RDT&E/OT&E training Note #4	200 ft to 18,000 ft	Yes
Owens ATCAA	RDT&E/OT&E training Note #4	18,000 ft to 60,000 ft	Yes
Saline MOA	RDT&E/OT&E training Note #4	200 ft to 18,000 ft	Yes
Saline ATCAA	RDT&E/OT&E training Note #4	18,000 ft to 60,000 ft	Yes
Panamint MOA	RDT&E/OT&E training Note #4	200 ft to 60,000 ft	Yes
Panamint	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes

0164. A

-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. The special airspaces are shown in the table below.

Special Airspaces

R-2505	RDT&E/OT&E training. See Note #1	Surface to infinity	Yes
R-2506	RDT&E/OT&E training. See Note #32	Surface to 6000 MSL	Yes
R-2524	RDT&E/OT&E training. See Note #3	Surface to infinity	Yes
R-2508	RDT&E/OT&E training. See Note #4	20,000 ft to infinity	Yes
Isabella MOA	RDT&E/OT&E training Note #4	200 ft to 18,000 ft	Yes
Isabella ATCAA	RDT&E/OT&E training Note #4	18,000 ft to 60,000 ft	Yes
Owens MOA	RDT&E/OT&E training Note #4	200 ft to 18,000 ft	Yes
Owens ATCAA	RDT&E/OT&E training Note #4	18,000 ft to 60,000 ft	Yes
Saline MOA	RDT&E/OT&E training Note #4	200 ft to 18,000 ft	Yes
Saline ATCAA	RDT&E/OT&E training Note #4	18,000 ft to 60,000 ft	Yes
Panamint MOA	RDT&E/OT&E training Note #4	200 ft to 60,000 ft	Yes
Panamint	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes

0164

Special Airspaces (Contd.)

ATCAA	training		
	Note #4		
Bakersfield	RDT&E/OT&E	2,000 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Bakersfield	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #4		
Porterville	RDT&E/OT&E	2,000 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Porterville	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #4		
Shoshone	RDT&E/OT&E	2,000 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Shoshone	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #4		
Buckhorn	RDT&E/OT&E	200 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Buckhorn	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #4		
Barstow	RDT&E/OT&E	200 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Barstow	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #5		
Bishop	RDT&E/OT&E	200 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Deep	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
Springs	training		
ATCAA	Note #4		

0165. A.

Special Airspaces (Contd.)

ATCAA	training		
	Note #4		
Bakersfield	RDT&E/OT&E	2,000 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Bakersfield	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #4		
Porterville	RDT&E/OT&E	2,000 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Porterville	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #4		
Shoshone	RDT&E/OT&E	2,000 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Shoshone	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #4		
Buckhorn	RDT&E/OT&E	200 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Buckhorn	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #4		
Barstow	RDT&E/OT&E	200 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Barstow	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
ATCAA	training		
	Note #5		
Bishop	RDT&E/OT&E	200 ft to 18,000 ft	Yes
MOA	training		
	Note #4		
Deep	RDT&E/OT&E	18,000 ft to 60,000 ft	Yes
Springs	training		
ATCAA	Note #4		

0165

NOTES:

1. RDT&E, OT&E of aircraft avionics; aircrew escape and survivability systems; ground and airborne detection, target recognition and tracking systems; recovery systems; ground and airborne weapons systems; airborne test vehicles and systems integration; lasers, remotely piloted vehicles; tethered balloon; supersonic and nonsupersonic sled tests; range instrumentation testing; experimental rocket engine firings; classified operations; pilot familiarization flights; aircrew and pilot training and tactics development.
2. Loft and low-level bombing maneuvers for training and test and evaluation project to initiate, establish, and prove delivery methods, maneuvers and techniques.
3. RDT&E/OT&E of aircraft systems and weapons systems. electronic countermeasures (ECM), aerial combat maneuvers (ACM), software validation, systems checks, training and tactics development. Parachute jumping, testing of unmanned air vehicles, drone operations, and testing of ground attack vehicle systems.
4. RDT&E, OT&E of aircraft avionics, ground and airborne detection systems, weapons and weapon systems, manned and unmanned aerospace vehicles and test vehicles, radar systems and systems integration, vulnerability testing, ground and airborne systems checks and calibrations, software validations and tactics development, ECM, ACM, pilot familiarization, reconnaissance, functional check flights, aerial refueling, combat tactics and training, proficiency flights, transition formation, close air support, and training.

NOTES:

1. RDT&E, OT&E of aircraft avionics; aircrew escape and survivability systems; ground and airborne detection, target recognition and tracking systems; recovery systems; ground and airborne weapons systems; airborne test vehicles and systems integration; lasers, remotely piloted vehicles; tethered balloon; supersonic and nonsupersonic sled tests; range instrumentation testing; experimental rocket engine firings; classified operations; pilot familiarization flights; aircrew and pilot training and tactics development.
2. Loft and low-level bombing maneuvers for training and test and evaluation project to initiate, establish, and prove delivery methods, maneuvers and techniques.
3. RDT&E/OT&E of aircraft systems and weapons systems. electronic countermeasures (ECM), aerial combat maneuvers (ACM), software validation, systems checks, training and tactics development. Parachute jumping, testing of unmanned air vehicles, drone operations, and testing of ground attack vehicle systems.
4. RDT&E, OT&E of aircraft avionics, ground and airborne detection systems, weapons and weapon systems, manned and unmanned aerospace vehicles and test vehicles, radar systems and systems integration, vulnerability testing, ground and airborne systems checks and calibrations, software validations and tactics development, ECM, ACM, pilot familiarization, reconnaissance, functional check flights, aerial refueling, combat tactics and training, proficiency flights, transition formation, close air support, and training.

0166

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

Over land. Square miles reported in Paragraph 3.1.G.1

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

None known.

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

381 nautical miles. NAWCWPNS Naval Western Test Range (NWTRC) Complex includes R-2508 and Warning Areas off the Southern California coast.

144 nautical miles. R-2508 Complex overlying China Lake Ranges.

140 nautical miles. Available to the NAWCWPNS White Sands Detachment ,which reports to the Land Range Directorate at NAWCWPNS China Lake.

710* nautical miles. IR-200 extending beyond NWTRC Complex to the Utah Test and Training Range.

*NOTE: IR-200 is not a straight-line route. It consist of 38 separate legs designed to avoid congested areas while at the same time provide appropriate terrain and simulated target scenarios. The distance is derived by taking the southwestern most point in W-61 through the R-2508 Complex to the Northern-most point in the UTTR airspace complex.

-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.*

"Public airspace" is assumed to be airspace other than special use airspace; i.e., Restricted Airspace and Military Operating Areas. All tests, other than those involving multiple ranges, are contained within the special use airspaces cited in 3.1.G.4 above.

Cruise missile tests, a typical interrange test, originates with a launch from the NAWCWPNS Point Mugu Sea Range. The missile and chase planes fly inland to NAWCWPNS China Lake and/or to Utah Test and Training Range, Dugway, Utah. Inland flight paths are via designated military instrument routes IR-200 and IR-206. This airspace is specifically designated for use by the military; public NOTAMS are issued, and therefore it is not public airspace during its use.

Weapons testing has been conducted at NAWCWPNS China Lake for over 50 years with an excellent safety record. There have been no problems with the public or the Federal Aviation Administration associated with the military use of this airspace. All airspace currently and formerly used to support weapons testing at NAWCWPNS China Lake is anticipated to continue to be available in the future.

0167.A.

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

Over land. Square miles reported in Paragraph 3.1.G.1

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

None known.

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

881 nautical miles. NAWCWPNS Naval Western Test Range (NWTRC) Complex includes R-2508 and Warning Areas off the Southern California coast.

144 nautical miles. R-2508 Complex overlying China Lake Ranges.

140 nautical miles. Available to the NAWCWPNS White Sands Detachment ,which reports to the Land Range Directorate at NAWCWPNS China Lake.

710* nautical miles. IR-200 extending beyond NWTRC Complex to the Utah Test and Training Range.

*NOTE: IR-200 is not a straight-line route. It consist of 38 separate legs designed to avoid congested areas while at the same time provide appropriate terrain and simulated target scenarios. The distance is derived by taking the southwestern most point in W-61 through the R-2508 Complex to the Northern-most point in the UTTR airspace complex.

-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.*

"Public airspace" is assumed to be airspace other than special use airspace; i.e., Restricted Airspace and Military Operating Areas. All tests, other than those involving multiple ranges, are contained within the special use airspaces cited in 3.1.G.4 above.

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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.*

The climate and geography of these lands are typical of the arid regions of the U.S. Southwest. The weather is usually clear, with very little precipitation and practically unlimited visibility throughout most of the year. The topography of the area ranges from the desert floor to rugged mountain peaks over 8,000 feet high and includes barren dry lake beds, alluvial fans, steep canyons, secluded valleys, and pinion pine forests. The weather conditions also vary, from hot dry summers on the valley floor with an occasional rain squall, to the cold winters with moderate snow cover at the higher elevations. This diversity of terrain and climatic conditions, along with the remoteness of the area, offers ideal conditions for the testing of weapons and sensitive military systems along with service training and tactics development. Of the more than 1 million acres of land, approximately one third is flat desert, or dry lake bed, terrain with the remaining two thirds composed of mountains, valleys, canyons, and washes.

Nearly all the land is used exclusively for test and evaluation or as a buffer between sensitive and hazardous tests and the surrounding nonmilitary lands. Most of the heavily instrumented test facilities are concentrated on or near the vast dry bed of a Pleistocene lake that covers the southwestern quarter of the China Lake area. The bed of the dry lake is flat and bare, well suited to the delivery and recovery of air- or ground-launched ordnance, and is large enough to accommodate several test ranges and missile impact zones.

Outside Station boundaries the land is sparsely populated, equally as diverse in topography and ground cover as China Lake, and, within a radius of 50 miles, mainly in the public domain. The airspace over the test ranges is restricted from surface to infinity; the surrounding lands are overlain by the R-2508 Complex of restricted airspaces (20,000 feet above sea level to infinity), which center on NAWCWPNS China Lake and cover an area larger than the state of Maryland. These restricted airspaces combine with the surrounding desert to provide safe and secure air and ground range operational areas.

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

The local desert environment is ideal for weapons testing, personnel training, and tactics development requiring this type of weather and terrain. A number of test operations requiring conditions similar to the Middle East have been performed at China Lake over the years. The local mountains and valleys also enhance the ability to train and test in varied environments and terrain.

-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. When program requirements exceed those available at a single range, NAWCWPNS China Lake has helped set up and participated in the conduct of interrange test missions. For example, the China Lake ranges routinely work in conjunction with Point Mugu Sea Range to perform ship-launched, long-range cruise missile operations. The ranges have also participated in other joint exercises with Fort Irwin, UTTR, and Edwards AFB. These type of operations have been done numerous times over the past several years; however, annually they account for less than 1% of China Lake's total test missions.

0168 A.

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.*

The climate and geography of these lands are typical of the arid regions of the U.S. Southwest. The weather is usually clear, with very little precipitation and practically unlimited visibility throughout most of the year. The topography of the area ranges from the desert floor to rugged mountain peaks over 8,000 feet high and includes barren dry lake beds, alluvial fans, steep canyons, secluded valleys, and pinion pine forests. The weather conditions also vary, from hot dry summers on the valley floor with an occasional rain squall, to the cold winters with moderate snow cover at the higher elevations. This diversity of terrain and climatic conditions, along with the remoteness of the area, offers ideal conditions for the testing of weapons and sensitive military systems along with service training and tactics development. Of the more than 1 million acres of land, approximately one third is flat desert, or dry lake bed, terrain with the remaining two thirds composed of mountains, valleys, canyons, and washes.

Nearly all the land is used exclusively for test and evaluation or as a buffer between sensitive and hazardous tests and the surrounding nonmilitary lands. Most of the heavily instrumented test facilities are concentrated on or near the vast dry bed of a Pleistocene lake that covers the southwestern quarter of the China Lake area. The bed of the dry lake is flat and bare, well suited to the delivery and recovery of air- or ground-launched ordnance, and is large enough to accommodate several test ranges and missile impact zones.

Outside Station boundaries the land is sparsely populated, equally as diverse in topography and ground cover as China Lake, and, within a radius of 50 miles, mainly in the public domain. The airspace over the test ranges is restricted from surface to infinity; the surrounding lands are overlain by the R-2508 Complex of restricted airspaces (20,000 feet above sea level to infinity), which center on NAWCWPNS China Lake and cover an area larger than the state of Maryland. These restricted airspaces combine with the surrounding desert to provide safe and secure air and ground range operational areas.

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-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. When program requirements exceed those available at a single range, NAWCWPNS China Lake has helped set up and participated in the conduct of interrange test missions. For example, the China Lake ranges routinely work in conjunction with Point Mugu Sea Range to perform ship-launched, long-range cruise missile operations. The ranges have also participated in other joint exercises with Fort Irwin, UTTR, and Edwards AFB. These type of operations have been done numerous times over the past several years; however, annually they account for less than 1% of China Lake's total test missions.

-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?*

Number of days per year average temperature is
- Below 32 degrees F 0
- Between 32 and 95 degrees 365
- Above 95 degrees F 0

-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%?*

Number of days per year the average relative humidity is
- Below 30% 196
- Between 30 and 80% 169
- Above 80% 0 (0.3 days)

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

Number of test missions per year canceled is as follows. Missions listed here are Open Air Range (OAR) testing.
- ~~FY85 126~~
- FY86 129
- FY87 123
- FY88 99
- FY89 116
- FY90 62
- FY91 102
- FY92 69
- FY93 76

776

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

Records are not kept on the number of test days per year canceled due to weather. This number is relatively small because it is unusual for a whole day to be lost due to weather. A good estimate would be on the order of 3 to 5 days per year.

-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?*

Number of days per year visibility is:
- Less than 1 mile 2
- Between 1 and 3 miles 4
- Greater than 3 miles 359

-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.*

Average number of flying days available is 357.7, based upon climatolgy showing ceiling and visibility are below 5,000 feet and/or 3 miles for 7.3 days per year.

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

Three percent based on test event cancellations.

0169. A.

-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?*

Number of days per year average temperature is
- Below 32 degrees F 0
- Between 32 and 95 degrees 365
- Above 95 degrees F 0

-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%?*

Number of days per year the average relative humidity is
- Below 30% 196
- Between 30 and 80% 169
- Above 80% 0 (0.3 days)

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

Number of test missions per year canceled is as follows. Missions listed here are Open Air Range (OAR) testing.
- FY85 126
- FY86 129
- FY87 123
- FY88 99
- FY89 116
- FY90 62
- FY91 102
- FY92 69
- FY93 76

907

776 Functional value adjusments FY86-93

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

Records are not kept on the number of test days per year canceled due to weather. This number is relatively small because it is unusual for a whole day to be lost due to weather. A good estimate would be on the order of 3 to 5 days per year.

-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?*

Number of days per year visibility is:
- Less than 1 mile 2
- Between 1 and 3 miles 4
- Greater than 3 miles 359

-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.*

Average number of flying days available is 357.7, based upon climatolgy showing ceiling and visibility are below 5,000 feet and/or 3 miles for 7.3 days per year.

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

Two percent based on average available flying days.

OPTICS & LASER RESEARCH FACILITY
E.4. No.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
E.4. No.

ORDNANCE TEST COMPLEX
E.4. Yes. Finalization of control and data cabling from all Burro Canyon test arenas to the new control room will be done in FY95.

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
E.4. Yes. The Antenna Range will be changing its data acquisition computer and software from a highly specialized system to a more generic system to reduce data-reduction time and make the data portable from one computer to another. Time domain capability will be added. The Weapons Guidance/Control Laboratory will upgrade to specialized test equipment.

SENSOR & TARGETING TECHNOLOGY FACILITY
E.4. No.

SLED TRACKS
E.4. No.

STRATEGIC PROPULSION TEST COMPLEX
E.4. No.

TACTICAL PROPULSION TEST FACILITY
E.4. Yes. Upgrades to readout instrumentation and control instrumentation in the Bay IV control room to accommodate the new Plume Measurement Facility being installed at the Skytop Area.

VHF ANECHOIC CHAMBER
E.4 Yes. Capital improvements are being planned to both the facility and equipment capabilities. A $250K Capital Improvement Plan is in effect for upgrading the pedestal mount. Capital expenditures to upgrade the electronic test equipment is planned at $200K. These improvements will improve our required time to perform measurement functions.

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
E.4. Yes. Concurrent engineering equipment, networking, workstations, and microwave anechoic chamber up-grade. Intel single-chip computer development station, digital logic programming station, ultra-high-speed digital storage scopes, and general test equipment.

WEAPONS SURVIVABILITY LABORATORY (WSL)
E.4. Yes. Addition of a 100- by 100-foot concrete test pad that will allow for testing of full-scale transport aircraft. Such an improvement is of interest to the USAF and FAA as well as the U.S. Navy. Addition of a fuel pump and tank system to increase fuel available from 5,000 gallons to 20,000 gallons and flow rates available from 170 GPM to 370 GPM at 50 PSI.

INTEGRATION LABORATORY.

ACTUATOR AND POWER SYSTEMS LABORATORY
E.4. Yes. FY95 "Facilities, Equipment & Space" plan calls for creation of Actuator/Thrust Vector Control Dynamic Test Facility.

0140 A.

OPTICS & LASER RESEARCH FACILITY
E.4. No.

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0140

ANTIRADIATION MISSILE INTEGRATION COMPLEX
E.4. Yes. Program funds are being expended for the acquisition of computer hardware and software to improve capacity, capability and efficiency. Program capitalization is funding the increased number of instrumented aircraft and increased data reduction capabilities.

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
E.4. No.

COMPOSITES DEVELOPMENT LABORATORY
E.4. No.

DATA LINK DEVELOPMENT LABORATORY
E.4. No.

ELECTRONIC WARFARE INTEGRATION LABORATORY
E.4. No.

FUZE DEVELOPMENT LABORATORY
E.4. No.

LASER SEEKER INTEGRATION AND TEST FACILITY
E.4. No.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
E.4. No.

ORDNANCE ASSEMBLY FACILITY
E.4. No.

TELEMETRY DEVELOPMENT LABORATORY
E.4. No.

TSSAM MISSION PLANNING FACILITY
E.4. No.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
E.4. No.

WEAPONS GUIDANCE/CONTROL/SEEKER IL
E.4. No.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, A-6
E.4. No.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, AH-1
E.4. No.

WEAPON SYSTEMS SUPPO' T FACILITY COMPLEX, AV-8
E.4. Yes. A MILCON, P-431, is under construction for an Advanced Weapon Laboratory, consisting of an aircraft hangar, computer laboratory, and office complex, thus providing work spaces for development, integration, and testing of weapon systems with highly classified

0141. A.

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0141

equipment configurations. Originally planned for the AX Weapon System Support Activity, the building will house current F/A-18 laboratories along with newly developed workstations to support F/A-18 E/F test requirements. The AV-8 WSSF will back-fill locations and space previously occupied by the F/A-18 WSSA. The additional space for growth capability will enhance the capability and productivity of AV-8 testing.

WEAPON SYSTEMS SUPPORT FACILITY COMPLEX, F/A-18
E.4. Yes. A MILCON, P-431, is under construction for an Advanced Weapon Laboratory, consisting of an aircraft hangar, computer laboratory, and office complex, thus providing work spaces for development, integration, and testing of weapons systems with highly classified equipment configurations. Originally planned for the AX Weapon System Support Activity, the building will house current F/A-18 laboratories along with newly developed workstations to support F/A-18 E/F test requirements. The combination of this facilities capacity and capabilities is unique in DOD. The building has a total of 84,600 square feet composed of 19,500 square feet of a four-bay hangar deck; 9,000 square feet of aircraft support shops; 23,300 square feet of engineering and computer laboratory space; 27,100 square feet of office space; and a 5,700-square-foot sensor tower located on two levels (at 65 and 110 AGL). This facility makes extensive use of high security areas (DIAM 50-3 rated) to permit conduct of many compartment projects in a variety of environments to include laboratory, workshop, hangar, aircraft, and sensor spaces, etc. Full-scale development of combat systems components as well as full-scale integration of these components into complete advanced tactical weapon systems is achieved in this facility.

HARDWARE-IN-THE-LOOP.

MK 45 TDD ENGINEERING DEVELOPMENT HITL/TEST LABORATORY
E.4. Yes. The test set software will be improved to increase test throughput and expand on the simulation capabilities. The increased test throughput will allow more testing to be accomplished in a shorter period of time. The expanded simulation capabilities will allow a more complete test and evaluation of the performance characteristics of the new Mk-45 Mods.

SIMULATION LABORATORY—MISSILE HITL
E.4. Yes. Capital equipment purchases are planned that would substantially expand capability to test high off-boresight seekers and generate complex IR and dual-mode (IR/RF) target signatures. Development of a real-time link to the Electronic Combat Range at China Lake will be initiated.

TSSAM HARDWARE-IN-THE-LOOP
E.4. No.

OPEN AIR.

AIR/GROUND RANGE
E.4. Yes. Improvements are continually taking place and generally fall into the category of enhancing existing capabilities and processes. Telemetry, TSPI, and data-processing-systems improvements are under way, along with organizational streamlining to better and more effectively support our customers. Current I&M programs planned over the next 6 years include

- RIPS rehost ($484K)—computer rehost of Range Instrumentation Processing System (RIPS)
- Communications ($2715K)—enhancements and upgrades to fiber-optic network and other communications systems
- FTS Upgrade ($540K)—Flight Termination System transmitter upgrade
- Tracking Mounts ($5910K)—Replace cinetheodolite/video tracking systems
- Radar Mount Upgrades ($2496K)
- Data Processing ($2140K)—enhancements to data-processing systems

0142 A.

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- Radar Mount Upgrades ($2496K)
- Data Processing ($2140K)—enhancements to data-processing systems

0142

- Telemetry Systems Upgrade ($3470K)
- GPS Improvements/Installation ($5227K)
- Laser Tracker Upgrade ($500K)

ELECTRONIC COMBAT RANGE (ECR)
E.4. Yes.
Improvements currently in progress:

- Sea Site 3/Engineering Support Facility (MILCON P-454). Sea Site 3 will be the third "ship" in the ECR Integrated Naval Air Defense Simulation (INADS). Sea Site 3 will house an existing ECR naval search-and-acquisition radar, a gun-control radar, and an IR seeker simulator currently located at various locations throughout the range, and will be home for future systems. Additionally, ECR's latest land-based long range fire-control radar will be installed at the site.
- The Engineering Support Facility is being built at ECR Central Site and will house engineering staff, laboratories, and a High Bay facility to be used for radar integration, maintenance, repair and Foreign Material Exploitation. The ESF will also house the ECR classified material library. Sea Site 3 and the ESF are scheduled to be completed in August 1994.

In addition, three different funding lines currently have projects underway and planned that will improve ECR. These are:

1. EO602 Simulator Development Program (PE 064256N)

Total Programmed Amount

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
E0602 FUNDING	$11,204 K	$11,415 K	$10,075 K	$12,465 K	$12,262 K	$14,150 K	$13,109 K

Summary Description: Development of numerous threat weapons simulations with a command and control capability to network these simulations together in a realistic manner.

2. CTEIP (REP) Development Projects (PE 0604940D)

Total Programmed Amount

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
TOTAL REP	$2,880 K	$1,767 K	$4,025 K	$2,375 K	$0 K	$0 K	$0 K

Summary Description: Improvements required to meet near term OT&E test requirements. Projects include the procurement of Foreign Military Equipment (FMA); development of a pulse doppler stimulator to enhance EC Countermeasure testing; an emitter simulator system to increase signal density; and acquisition of an I-Hawk system.

3. MRTFB Improvement and Modernization Projects (PE 0604759N)

Total Programmed Amount

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
I&M TOTAL	$1,751 K	$2,554 K	$2,718 K	$3,327 K	$2,681 K	$3,026 K	$2,955 K

Summary Description: Development of a new , expanded operations center; Central Computer system replacement; re-engineering/re-architecture of the Post-Test Analysis Software System; addition of real-time endgame to existing missile flyouts models; expansion of the ECR Fiber Optic

0143.A.

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Communications network; enhancement of the Telemetry Receiving System; and TSPI systems upgrades.

FLIGHT TEST CAPABILITY
E.4. Yes. Replacement of existing aviation fuel farm will bring fuel storage facilities into full compliance with environmental requirements and eliminate possibility of future risks of these requirements impacting operational capability of flight test support services.

NAWCWPNS-WHITE SANDS
E.4. Yes. Advanced Gun System Test Complex FY95 MILCON P-008. This complex will have two each three-story concrete and steel gun test stands to house guns up to 8 inches, a concrete pad, and two work areas.

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3.1.F Uniqueness (MV I) - Measure of Merit: *Extent to which the facility is one-of-a kind.*

Individual unique capabilities of specific facilities/capabilities are described in the individual responses to sections 3.1.F.1.A and 3.1.F.1.B below. Uniqueness of the China Lake site as a whole is discussed here.

Collocation of R&D/T&E. The effectiveness of being able to carry out all phases of weapon system research, development, testing, and follow-on support at one geographic location has been demonstrated repeatedly. It enables the same people and work teams to stay involved in a program as it passes through progressive stages of development and deployment, and it facilitates continuing interface among developers and users. This collocation exists at China Lake and indeed is further enhanced by the presence of the VX-9 Air Development and Test Squadron. The quality of R&D and T&E are both enhanced by the collocation of the Navy's largest cadre of weapons R&D experts (approximately 3000 scientist, engineers, and technicians) and their related R&D facilities with our extensive and very capable T&E facilities and ranges. For example, a test engineer has immediate access to a highly qualified scientist in any field of weaponry to help solve a difficult technical problem. The scientist, for his/her part, working on a small budget, can quickly and easily use the range to acquire "real world" data on such things as the optical signatures of a wide variety of aircraft, or can piggyback the latest fuze detector on a sled test at very little cost.

China Lake has been heavily involved in most Navy air weapons programs and a considerable number of Air Force programs. The Sidewinder series of air-to-air missiles, used by both services and a number of foreign countries, was conceived, designed, and developed at China Lake, as were the widely used Shrike and HARM antiradiation missiles, the Walleye standoff air to ground weapon, the Skipper antiship weapon, and a substantial number of other widely used systems. The full-spectrum capability made possible by China Lake's expanse, remote location, and the heavy investment in facilities and equipment continues to benefit clients/sponsors as evidenced by current development and support programs such as extensive support to the Tomahawk cruise missile, Harpoon antiship missile, and development programs including advanced rockets, a modernized free-fall weapons family, and new standoff air-to-surface systems, such as SLAM and others.

Collocation improves the experience for both research and development and test and evaluation. Test events are frequent and continuing, and are an integral part of development. "Testing" is not something that commences after a system has been completely designed and prototyped; it parallels the design and development process. It is more efficient and economical when test sites are geographically collocated with the laboratory. This saves time as well as money when the designers do not have to travel constantly back and forth to and from a test site that may be a thousand miles away or more. Even more importantly, it facilitates the continuing dialogue between the R&D customer and the T&E performer. About 50% of total test load is in support of local programs. Furthermore, the in-service engineering cadre tightens the linkage to the Fleet with the design engineers.

Unique Aspects of the Technical Work at China Lake. China Lake has designed and developed many of the Navy's tactical missile systems. No other Navy in-house activity has been the principal designer and developer of a missile weapon system. Nor has any Air Force laboratory. China Lake is unique within the Department of Defense as the only in-house activity that designs missiles. Further, activities in the design of aircraft weapon fire-control and avionic systems are unique within the Navy. China Lake has long been involved in the design of air launched free fall weapons (bombs) and again no other in-house laboratory in the Navy community is engaged in this area of effort. Its role in aircraft electronic warfare is again unique, and the existence of the Electronic Combat Range EW complex assures a continued unique role in EW development including tactics and training as well as hardware for all services.

0145A.

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The combination of size, remoteness, freedom from encroachment, and minimal interference from nonmilitary air traffic enables China Lake to sustain a test range workload of over 3,000 events per year. These factors permit maintenance of numerous major test facilities including an array of air and ground ranges where total weapon systems can be tested under realistic conditions; the electronic warfare combat range; the Navy's only supersonic ground test track; radar-cross-section facilities that include a unique long range look-down capability with particular implications for future work in stealth technology; the Navy's largest and most heavily instrumented complex for rocket motor testing; a remote firing facility for testing very large rocket motors (the Navy's only Trident firing stand); and many other special purpose and general purpose facilities.

Geographic Uniqueness. The size of the China Lake ranges and airspace are important considerations. The land area is over 1.1 million acres, or about the size of the State of Delaware. China Lake's ranges make up 38 percent of all Navy landholdings. The R-2508 airspace covers about 19,445 square statute miles. Other than the community immediately south of the base, the areas adjoining the Navy's land are lightly populated and adaptable to low-level aircraft approach operations.

Since major test ranges have to be remotely located, a corollary advantage offered by collocation of R&D work is enhanced security. Security issues are likely to be even more significant in the future than in the past, given a less clear definition of who the opposition may be, and given the likelihood of increased corporate/industrial espionage. The remote location of the China Lake land masses and the mountainous terrain provide a high degree of natural security for highly classified tests and makes them ideal for the high-hazard testing that is a necessary part of weapons R&D.

The ultimate applications of research in air weapon systems are associated with high-performance aircraft. The time is approaching when the military services will have very few places within the continental U.S. where high-performance aircraft operations representative of actual combat conditions can be carried out. High-performance aircraft operational requirements—ample airspace in which to conduct evaluation and training operations, large land and sea areas where low-altitude operations at high speed are permissible, and the capability to launch standoff weapons with associated employment of missile propellants and live warheads, which will become even more demanding in the future—are attainable in only a few places, enabling all-up realistic assessment of developmental systems and proposed tactics for employing them.

High-hazard operations are inherent in R&D work on energetic materials used in rocket motors and warheads as well as the testing of weapons. Rocket motors that have the explosive power of over 100,000 pounds of TNT must be test fired. Other tests have required that over three-quarters of a million pounds of high explosives be detonated. Experimental warheads must be detonated to test their effectiveness. The remoteness and size of China Lake greatly reduce the chances of accidental damage to surrounding life or property.

Two other factors that are important for mission accomplishment at the China Lake location are the desert weather and air clarity. Both are necessary to allow the extensive use of optical instrumentation that is necessary for precise trajectory and miss distance information in missile testing. The desert weather is rarely bad enough to adversely affect the outdoor testing (China Lake enjoys about 357 days per year of good clear flying weather), and the air quality is not endangered from population buildup.

The proximity of other military bases, with their complementary missions, which use the China Lake land and airspace provides an enormous facilities/people synergism. For example, Tomahawk launches from Point Mugu traverse several hundred miles inland and impact at China Lake (or in some cases are recovered at Utah Test and Training Range); aircraft from Edwards

0146 A.

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AFB use the China Lake Electronic Combat Range; tri-services exercises (such as Gallant Eagle at Fort Irwin) benefit; and the R-2508 airspace, within which China Lake is centrally located, is used by Nellis AFB, Edwards AFB, the Navy squadrons at Lemoore, Miramar, Point Mugu, and Fallon, and the Air National Guard based in Fresno, California.

Efficiency/Effectiveness. Geographical, organizational, demographic, climatological, and other factors dictate or influence the number of people and the time required to perform a given task. Some of the factors—many mentioned above—contributing to NAWCWPNS China Lake's excellent efficiency and effectiveness in weapons RDT&E are summarized below:

- Weather. Over 357 flying days per year results in less downtime and more effective utilization of Open Air Ranges (OAR).
- Visibility. Year-round excellent visibility enhances photo-optical coverage of OAR tests. Less downtime and fewer "failures" occur due to lost or poor photo-optical data, a vital aspect of most OAR tests.
- R&D/T&E Synergism. Synergism results in quick solutions to technical problems, reduced deployment costs, shortened development and testing schedules.
- Remoteness. Fewer interruptions and/or delays occurfrom encroachment and general public considerations.
- Topography. Diversity of terrain permits one-stop testing for most programs. Terrain, in conjunction with remoteness, also reduces the cost of implementing security for classified testing.
- Overall T&E capability. Availability of abundant T&E test capability allows one-stop testing for many test customers.
- Organization. NAWCWPNS China Lake is included in the Naval Western Test Range Complex (NWTRC). NWTRC integrates operation and support of several geographically separated NAWCWPNS land and sea ranges and test facilities at China Lake, Point Mugu, and White Sands. This integration increases the testing capabilities and diversity available to the test programs under one organization.
- Location. In addition to the weather, visibility, remoteness, and topography—all of which are the result of geographic location—China Lake also has the advantage of being located near several other military installations with complementary missions. This facilitates interrange testing and interservice cooperative use of testing assets.

The combination of these factors has made NAWCWPNS China Lake a most effective, efficient, and proven site for weapons RDT&E.

0147 A

Lake (or in some cases are recovered at Utah Test and Training Range); aircraft from Edwards AFB use the China Lake Electronic Combat Range; tri-services exercises (such as Gallant Eagle at Fort Irwin) benefit; and the R-2508 airspace, within which China Lake is centrally located, is used by Nellis AFB, Edwards AFB, the Navy squadrons at Lemoore, Miramar, Point Mugu, and Fallon, and the Air National Guard based in Fresno, California.

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The combination of these factors has made NAWCWPNS China Lake a most effective, efficient, and proven site for weapons RDT&E.

-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.*

The answers to 3.1.F.1, 3.1.F.1.A, 3.1.F.1.B, and 3.1.F.2 for each of the 60 NAWCWPNS China Lake facilities/capabilities are as follows.

MODELING AND SIMULATION

AIR WEAPON DIGITAL MODELING & SIMULATION
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. Sidewinder and RAM functions are unique.
F.2. Yes. Air Force 5%

EXPLOSIVE AND ORDNANCE MODELING
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Air Force 25%

STRIKE SIMULATION & MODELING
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This facility is unique in its ability to perform the large number of trajectory runs required to support the HARM missile performance data requirements. Other facilities have the HARM simulation but not the ability to handle the enormous number of trajectory runs demanded by the HARM user community. There are no other known concurrent engineering analysis labs within DOD.
F.2. Yes. Army 2.2%
Air Force 17.8%

STRIKE SOFTWARE/SIMULATION FACILITY
F.1. Yes. This facility is the only facility in U.S. that generates ELINT data for the CP1001 Command Launch Computer.
F.1.A. Yes. This is the only certified 6-DOF simulation that is capable of performing IV&V without modifications. Nuclear critical components (OFS) certifications are performed only at this facility.
F.1.B. Yes. Only facility within DOD that generated OFP software updates for the CP-1001 Command Launch Computer.
F.2. Yes. Air Force 25%

SYSTEM MODELING & SIGNAL PROCESSING FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Army 5%

0148-A

-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.*

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SYSTEM MODELING & SIGNAL PROCESSING FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Army 5%

WEAPONS & TACTICS ANALYSIS CENTER (WEPTAC)
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. WEPTAC provides a capability not duplicated in any other part of the Government, based on the following collective attributes: tactical battle-level interactive wargames, military customer-in-the-loop, top secret, multi-compartmented classification capability, ability to internet with other simulations, an in-house development and maintenance of the facility, and an in-house analysis staff.
F.2. None.

MEASUREMENT

AEROHEAT TEST FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This facility provides a range of heat flux and mass flows that is unique. This facility was included in the recent DOD studies and was not found to be duplicative of any other facility.
F.2. Yes. Army 15%
Air Force 25%

AIR BREATHING PROPULSION LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The remote location, coupled with the equipment, provides safety and security measures that cannot be provided by DOD facilities in highly populated areas.
F.2. Yes. Air Force 20%

ANTIRADIATION MISSILE (ARM) SEEKER TEST COMPLEX
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The van is an ARM-specific asset. No other van exists to support ARM weapons in ground based testing. The NTA-4F is the only aircraft for ARM type weapons capable of projecting the seeker forward of the aircraft body and thus flying the terminal portion of the missile trajectory in free space and recording the seeker DF and wing commands.
F.2. Yes. Air Force 50%

CACTUS FLATS ORDNANCE TEST AREA
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Army 30%
Air Force 30%

CHEMICAL ANALYSIS RESEARCH FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This facility supports a broad range of activities from basic research to advanced development. It is not only state-of-the-art in instrumentation, it is partially accredited to do EPA-certified analyses and is certified to do analyses/testing of energetic materials.
F.2. Yes. Army 1%
Air Force 2%

0149A

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F.2. None.

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Air Force 25%

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F.2. Yes. Air Force 50%

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F.2. Yes. Army 1%
Air Force 2%

0149

DETONATION PHYSICS LABORATORY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. None

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Air Force 5%

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. None.

ENVIRONMENTAL TEST COMPLEX
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The 2-inch stroke capability of two 36,000 force lb electrodynamic shakers and slip table with capability to test 8,000 lbs Class 1.1, 5,000 lbs Class 1.2, or 100,000 lbs Class 1.3 explosives is unique.
F.2. Yes. Army 5%
Air Force 20%

FOREIGN MATERIAL EXPLOITATION (FME) & BALLOON TEST COMPLEX
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The FME portion of complex is capable of performing the complete spectrum of FME work. All other facilities can perform only special tests. All aspects (fuzing, warhead, guidance, propulsion, simulation, flight testing, countermeasures) of missile exploitation can be addressed by the OSD FME Program Office in this facility. The facility has the capability to exploit and analyze MMW, ARM, Laser, RF, IR, and EO missile systems as well as multimode systems. The balloon portion of the complex is the only long tethered test facility using balloons (up to 12,000 AGL) in United States.
F.2. Yes. Army 10%
Air Force 40%

GUIDANCE COMPONENTS T&A COMPLEX
F.1. Yes.
F.1.A. Yes. The Actuator T&A facility is uniquely certified to conduct gas generator actuator tests.
F.1.B. No.
F.2. Yes. Army 3%
Air Force 11%

0150 A

DETONATION PHYSICS LABORATORY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. None

DYNAMIC PROPERTIES MEASUREMENTS COMPLEX
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Air Force 5%

ENERGETIC MATERIALS PROPERTIES ANALYSIS LABORATORY
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F.1.B. No.
F.2. Yes. Army 3%
Air Force 11%

HIGH HAZARD PROPULSION TEST FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. Although there is one other facility capable of conducting high-hazard motor testing the Bay III facility is unique in its ability to fire motors at any attitude, availability of any instrumentation requirement, high flexibility to configuration requirements, and explosive limits. The facility can be used for sympathetic detonations, static firings, thrust cutoff studies, command destruct, or partial burns for flight termination and internal ballistic studies.
F.2. Yes. Army 5%
Air Force 3%

IR SEEKER, GCS DDT&E COMPLEX
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The complex has the expertise and equipment to quickly and efficiently exploit air-to-air and ground-to-air IR systems to determine system capabilities and possible missile countermeasures. No other known facility can exploit an entire weapon system. This facility also contains unique test equipment for specific missiles.
F.2. Yes. Army 6%
Air Force 23%

JUNCTION RANCH RADAR CROSS SECTION RANGE
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The Look Down Range is the only site in the Free World for RCS measurements of ship models in a simulated ocean environment with a slant range between the radar and the target of 17,000 feet.
F.2. Yes. Army 23%
Air Force 12%

MATERIALS ENGINEERING / FAILURE ANALYSIS FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. None.

MEDIUM CALIBER GUN & AMMO BALLISTICS TEST LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This is a unique facility to perform ammunition lot acceptance testing for 25-mm ammunition purchased for the Navy.
F.2. Yes. Army 20%
Air Force 5%

MISSILE ENGAGEMENT SIMULATION ARENA (MESA)
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The Missile Engagement Simulation Arena (MESA), currently under construction, will be a unique test facility used for RDT&E of target detection devices (TDDs). The performance of tactical missile TDDs is evaluated against threat systems. The results of the testing are used to assess the effectiveness of the missile, and investigate upgrades to enhance the performance of the

0151. A.

HIGH HAZARD PROPULSION TEST FACILITY
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F.2. Yes.	Army	5%
	Air Force	3%

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F.1.A. Yes.
F.1.B. Yes. The complex has the expertise and equipment to quickly and efficiently exploit air-to-air and ground-to-air IR systems to determine system capabilities and possible missile countermeasures. No other known facility can exploit an entire weapon system. This facility also contains unique test equipment for specific missiles.

F.2. Yes.	Army	6%
	Air Force	23%

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F.1.A. Yes.
F.1.B. Yes. The Look Down Range is the only site in the Free World for RCS measurements of ship models in a simulated ocean environment with a slant range between the radar and the target of 17,000 feet.

F.2. Yes.	Army	23%
	Air Force	12%

MATERIALS ENGINEERING / FAILURE ANALYSIS FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. None.

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F.1.A. Yes.
F.1.B. Yes. This is a unique facility to perform ammunition lot acceptance testing for 25-mm ammunition purchased for the Navy.

F.2. Yes.	Army	20%
	Air Force	5%

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tactical systems. Additionally, the facility will be used to gather data for missile and aircraft survivability analysis.
F.2. None.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Army 12%
Air Force 25%

OPTICS & LASER RESEARCH FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The optics RDT&E capability assembled in this facility contains integrated capabilities for design, fabrication and testing that do not exist elsewhere in the U.S. For example, the combination of surface finishing by diamond-single-point machining, reactive-sputtering coating, and precision measurement of surface finish and optical performance does not exist elsewhere. The Large Optics Test Facility is duplicated nowhere else in the Government.
F.2. None.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Air Force 25%

ORDNANCE TEST COMPLEX
F.1. Yes.
F.1. A. Yes. With the test arenas at Burro Canyon fully operational, there are no other Government facilities specifically sited for this type of large static firing arena test capability. There are other activation sites, sited at lower explosive limits, at other Government agencies; however encroachment is rapidly taking them over. Burro Canyon and the CT test sites are still capable of expansion for test growth if required.
F.1.B. No.
F.2. Yes. Army 25%
Air Force 25%

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The Diagnostic Chamber is unique in that it has the capability of making radar cross section (RCS) and antenna measurements simultaneously. This is a very important feature because the chamber can be used to reduce the RCS of antennas or measure the RCS with antennas present on the object. The Antenna Range is unique because it has two-way measurement capability, which involves measuring multiple channels simultaneously. The Antenna/Radome Test Facility is unique because it supports multiple programs. The Millimeter Wave Lab's work on solid state devices missile radar transmitters and related components is vital to future weapon systems.
F.2. Yes. Army 19%
Air Force 14%

0152.A.

tactical systems. Additionally, the facility will be used to gather data for missile and aircraft survivability analysis.
F.2. None.

NON-DESTRUCTIVE ORDNANCE TEST FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Army 12%
Air Force 25%

OPTICS & LASER RESEARCH FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The optics RDT&E capability assembled in this facility contains integrated capabilities for design, fabrication and testing that do not exist elsewhere in the U.S. For example, the combination of surface finishing by diamond-single-point machining, reactive-sputtering coating, and precision measurement of surface finish and optical performance does not exist elsewhere. The Large Optics Test Facility is duplicated nowhere else in the Government.
F.2. None.

ORDNANCE & PROPULSION FOREIGN MATERIALS EXPLOITATION LABORATORY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Air Force 25%

ORDNANCE TEST COMPLEX
F.1. Yes.
F.1. A. Yes. With the test arenas at Burro Canyon fully operational, there are no other Government facilities specifically sited for this type of large static firing arena test capability. There are other activation sites, sited at lower explosive limits, at other Government agencies; however encroachment is rapidly taking them over. Burro Canyon and the CT test sites are still capable of expansion for test growth if required.
F.1.B. No.
F.2. Yes. Army 25%
Air Force 25%

RF SEEKER/GUIDANCE/CONTROL DDT&E COMPLEX
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The Diagnostic Chamber is unique in that it has the capability of making radar cross section (RCS) and antenna measurements simultaneously. This is a very important feature because the chamber can be used to reduce the RCS of antennas or measure the RCS with antennas present on the object. The Antenna Range is unique because it has two-way measurement capability, which involves measuring multiple channels simultaneously. The Antenna/Radome Test Facility is unique because it supports multiple programs. The Millimeter Wave Lab's work on solid state devices missile radar transmitters and related components is vital to future weapon systems.
F.2. Yes. Army 19%
Air Force 14%

SENSOR & TARGETING TECHNOLOGY FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The RF Sensor Development Laboratory contains hardware and software to develop and test the country's largest wideband active array.
F.2. None.

SLED TRACKS
F.1. No.
F.1.A. No.
F.1.B. No.
F.2 Air Force FY92 6% FY93 10%

STRATEGIC PROPULSION TEST COMPLEX
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. Bay VI is the only facility of its kind in the U.S. Once installed on the tilt table, a motor can be fired horizontally, or at 45-, 85-, or 90-degree attitudes.
F.2. Yes. Army 17%
Air Force 30%

TACTICAL PROPULSION TEST FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Army 15%
Air Force 10%

VHF ANECHOIC CHAMBER
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. There is no other low-frequency chamber of this type. It was designed by W. Emmerson (based on a U.S. patent) and represents the highest performance chamber for the UHF-VHF frequency range for ARM missiles, precision DF systems and other electronic systems.
F.2. Yes. Army 15%
Air Force 15%

WEAPONS SIGNAL PROCESSING DESIGN COMPLEX
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. Neural Network Workstation: The combination of hardware and experience is not known to be duplicated elsewhere. We have reached a point where we are frequently pushing the technology beyond what its manufacturer envisioned and the manufacturer is looking to us for input. ARM Design, Analysis, and Evaluation: This is the only integrated design, analysis, and evaluation team dedicated to ARM guidance seekers. Microwave Radiometer Laboratory: This is the only Government facility in the U.S. engaged in the test, evaluation, and development of sensors and systems to exploit naturally occurring and unintentional emissions from natural and manmade objects.
F.2. Yes. Army 5%
Air Force 10%

0153 A.

SENSOR & TARGETING TECHNOLOGY FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The RF Sensor Development Laboratory contains hardware and software to develop and test the country's largest wideband active array.
F.2. None.

SLED TRACKS
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F.1.A. No.
F.1.B. No.
F.2 Air Force FY92 6% FY93 10%

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Air Force 30%

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F.1.A. No.
F.1.B. No.
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Air Force 10%

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Air Force 15%

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F.2. Yes. Army 5%
Air Force 10%

WEAPONS SURVIVABILITY LABORATORY (WSL)
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The WSL is a unique resource. Full-scale aircraft and weapons can be tested in dynamic scenarios. The WSL is a one-of-a-kind facility within DOD due to the size and complexity of tests that can be supported. Test results produced at the WSL are used to update data bases and computer simulations used by all three services and the aerospace industry. The WSL facilities are routinely used by all three services to conduct large-scale tests. Industry Independent Research and Development programs also utilize the WSL. The FAA and foreign nationals are expected to utilize the WSL in future joint test programs. In addition to weapons lethality and weapon system survivability testing, the WSL's HIVAS facility is used for weapon separation tests and parachute deployment testing.
F.2. Yes. Army 10%
Air Force 30%

INTEGRATION LABORATORY

ACTUATOR AND POWER SYSTEMS LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. When the planned improvement in FY95 is completed, this laboratory will be the only known facility capable of simulating full dynamic loads on actuators and thrust vector control units.
F.2 Yes. Air Force 5%

ANTIRADIATION MISSILE INTEGRATION COMPLEX
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This is the only facility in the world that provides unique full-cycle testing of ARM weapons capability from lab based research, development testing (DT), and operational testing (OT) to Fleet test and evaluation. This includes fundamental lab based hardware and software development, instrumented aircraft flight/missile firing, and actual measurement of missile impact in relationship to the required impact target (land or sea base) to access probability of kill (Pk) using complex models of warhead pattern on each target.
F.2. Yes. Army 5%
Air Force 45%

ARMAMENT/WEAPONS DESIGN, PROTOTYPING, & INTEGRATION FACILITY
F.1. Yes.
F.1.A. Yes. Hanger deck/lab space for full-scale air vehicle/weapon integration and testing and a fiber-optic-payout rail gun track facility.
F.1.B. No.
F.2 Yes. Air Force 5%

COMPOSITES DEVELOPMENT LABORATORY
F.1. Yes.
F.1.A. No. Within DOD, no other facility possesses the capability to support the entire developmental process, from design of new methodologies and processes all the way through fabrication. No other site has the amount or breadth of equipment and resident capability in the composites design, analysis, fabrication, and testing areas. This is the only facility capable of molding large and complex rocket nozzles and manifolds.
F.1.B. No.
F.2. Yes. Army 5%

WEAPONS SURVIVABILITY LABORATORY (WSL)
F.1. Yes.
F.1.A. Yes.
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F.2. Yes. Army 10%
Air Force 30%

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F.1.A. Yes.
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Air Force 45%

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F.2 Yes. Air Force 5%

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F.1.B. No.
F.2. Yes. Army 5%

DATA LINK DEVELOPMENT LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This is the only weapon data link development facility where actual hardware development is performed and that is located at the edge of a controlled flight test range to enable development flight testing.
F.2. None.

ELECTRONIC WARFARE INTEGRATION LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes.
The EWIL is the only lab with complete end-to-end test/integration for avionics/weapons/EW suites aboard Navy tactical aircraft.
F.2. None.

FUZE DEVELOPMENT LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The C274 Fuze Development/T&E laboratories can provide connections for a full range of safety and arming device, contact fuzing devices, and explosive components T&E, from science and technology through integration and in-service testing. The facilities are collocated with over 80 ordnance engineers and technicians, which is unique to this site within the U.S. The facilities are connected to the NAWCWPNS network via a T-1 link; this permits communication with the remainder of NAWCWPNS and any site in the world with internet access capability. This integrated evaluation facility is invaluable in the development and maintenance of the technical expertise of the personnel. The impact of losing this facility would involve degradation, over time, of the personnel technical skills and ultimately in lower quality fuzing devices in the Fleet.
F.2. Yes. Army 5%
Air Force 2%

LASER SEEKER INTEGRATION AND TEST FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. To the best of our knowledge, this is the only facility of its type still operational.
F.2. None.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This is the only facility capable of handling all-up-round integration and integration testing of JSOW.
F.2. Yes. Air Force 5%

ORDNANCE ASSEMBLY FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Air Force 10%

0155 A

DATA LINK DEVELOPMENT LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This is the only weapon data link development facility where actual hardware development is performed and that is located at the edge of a controlled flight test range to enable development flight testing.
F.2. None.

ELECTRONIC WARFARE INTEGRATION LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes.
The EWIL is the only lab with complete end-to-end test/integration for avionics/weapons/EW suites aboard Navy tactical aircraft.
F.2. None.

FUZE DEVELOPMENT LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. The C274 Fuze Development/T&E laboratories can provide connections for a full range of safety and arming device, contact fuzing devices, and explosive components T&E, from science and technology through integration and in-service testing. The facilities are collocated with over 80 ordnance engineers and technicians, which is unique to this site within the U.S. The facilities are connected to the NAWCWPNS network via a T-1 link; this permits communication with the remainder of NAWCWPNS and any site in the world with internet access capability. This integrated evaluation facility is invaluable in the development and maintenance of the technical expertise of the personnel. The impact of losing this facility would involve degradation, over time, of the personnel technical skills and ultimately in lower quality fuzing devices in the Fleet.

F.2. Yes.	Army	5%
	Air Force	2%

LASER SEEKER INTEGRATION AND TEST FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. To the best of our knowledge, this is the only facility of its type still operational.
F.2. None.

MISSILE/ROCKET MOTOR ASSEMBLY FACILITY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. This is the only facility capable of handling all-up-round integration and integration testing of JSOW.

F.2. Yes.	Air Force	5%

ORDNANCE ASSEMBLY FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.

F.2. Yes.	Air Force	10%

0155

TELEMETRY DEVELOPMENT LABORATORY
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes.
The Telemetry Development Laboratory provides the following: Insure/certify range compatible and interoperable telemetry and flight-termination systems. Design, development, and standardization of telemetry encryption techniques compatible with NSA and weapons-development data requirements. Insure/certify contractor developed telemetry systems are interoperable on the T&E ranges. Support NAWCWPNS weapons/platform R&D development and evaluation with quick response design/development of telemetry and related instrumentation. Support the Range Commander's Council for development of Range Standards for Range Safety, Telemetry, Telecommunication, Frequency Management, and Optical Systems. Development of standard picture video digitization techniques.
F.2. Yes. Army 7%
Air Force 3%

TSSAM MISSION PLANNING FACILITY
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. None.

WARHEAD/BOMB ASSEMBLY/INTEGRATION FACILITIES
F.1. No.
F.1.A. No.
F.1.B. No.
F.2. Yes. Air Force 10%

WEAPONS GUIDANCE/CONTROL/SEEKER IL
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. RF and RF/IR missile guidance systems integration/test of any RF and RF/IR missile from 5 to 15 inches in diameter is done in one facility. Systems not previously tested can be done without building an entire test set. Sidewinder developrnent/test/evaluation, engineering/manufacturing development, and in-service engineering are provided by this Laboratory. Simultaneous Line-of-Sight (LOS) rate and roll rate testing done on one modified rate table permits evaluation of short-range IR guidance/control systems under laboratory conditions that would otherwise require expensive captive carriage flight testing on board an aircraft. The resident signature library used for the Special Signal Processing Laboratory is unique.
F.2. Yes. Army 3%
Air Force 15%

WEAPON SYSTEMS SUPPORT FACILITY, A-6
F.1. Yes.
F.1.A. Yes.
F.1.B. Yes. NAWCWPNS is the principal site for the A-6 aircraft's Weapon System Support Activity. As such, system level integration and test facilities are located at China Lake. The A-6 WSSF is unique to the configuration of the A-6 aircraft platform. The A-6 WSSF consists of 2 primary workstations, Navigation and Weapons Consoles. The uniqueness of A-6's avionics dictate that the WSSF workstations be specifically tailored for the A-6 aircraft. The U.S. Navy is the only agency that has a requirement to support avionics integration on Navy attack aircraft. The A-6's prime contractor uses the A-6 Facility for design, development and system integration

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Document Separator

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.*

Yes. R-2515 Black Mountain and High Altitude Supersonic Corridors, shown in the following figure. Published supersonic corridors or areas are not established in R-2508, R-2505, or R-2524; however, supersonic operations are conducted in R-2505 and R-2524 for RDT&E/OT&E test missions where the test plan requires supersonic flight.

0170. A.

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.

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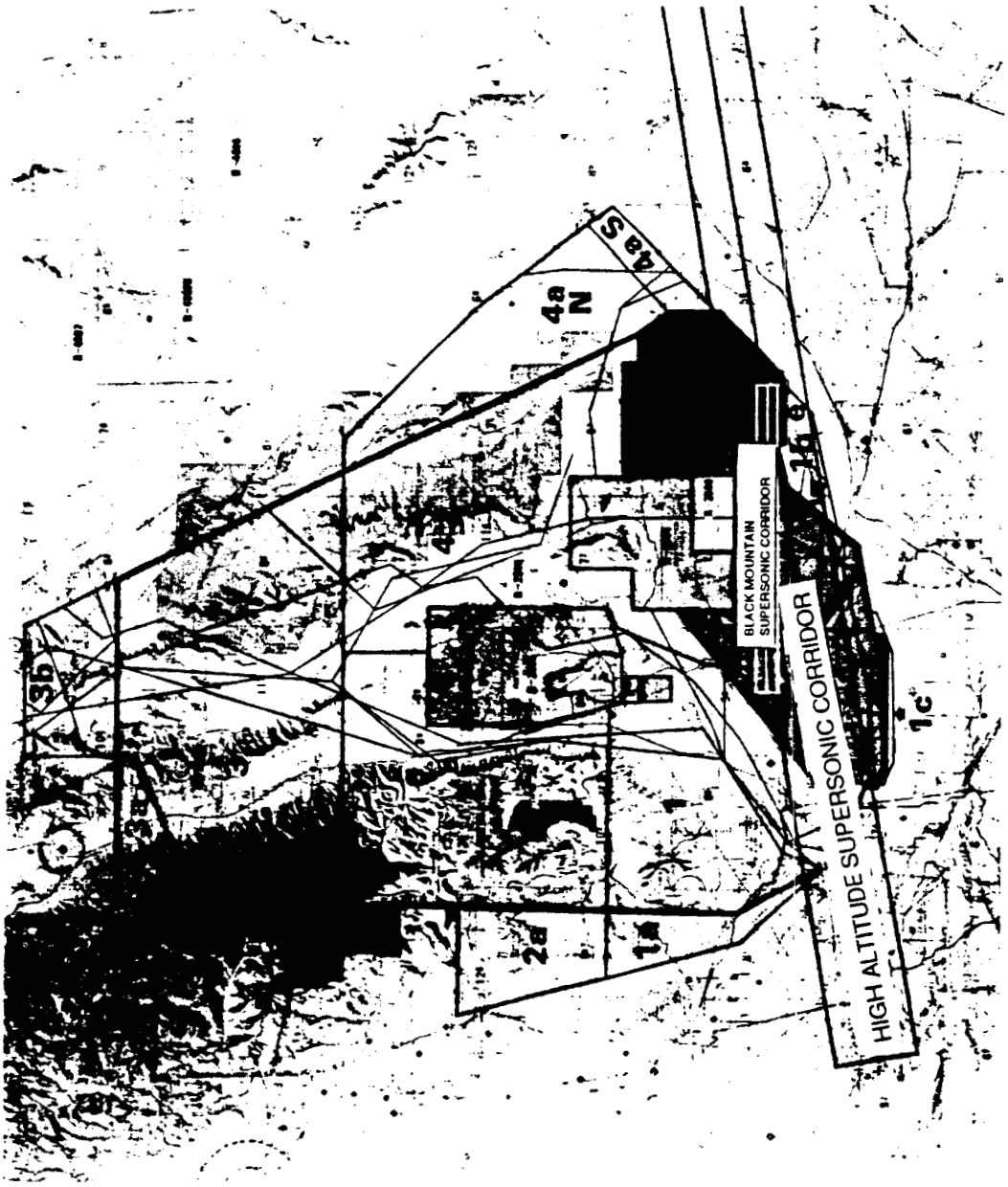

Supersonic Corridors

Figure: 6 Supersonic Corridors.

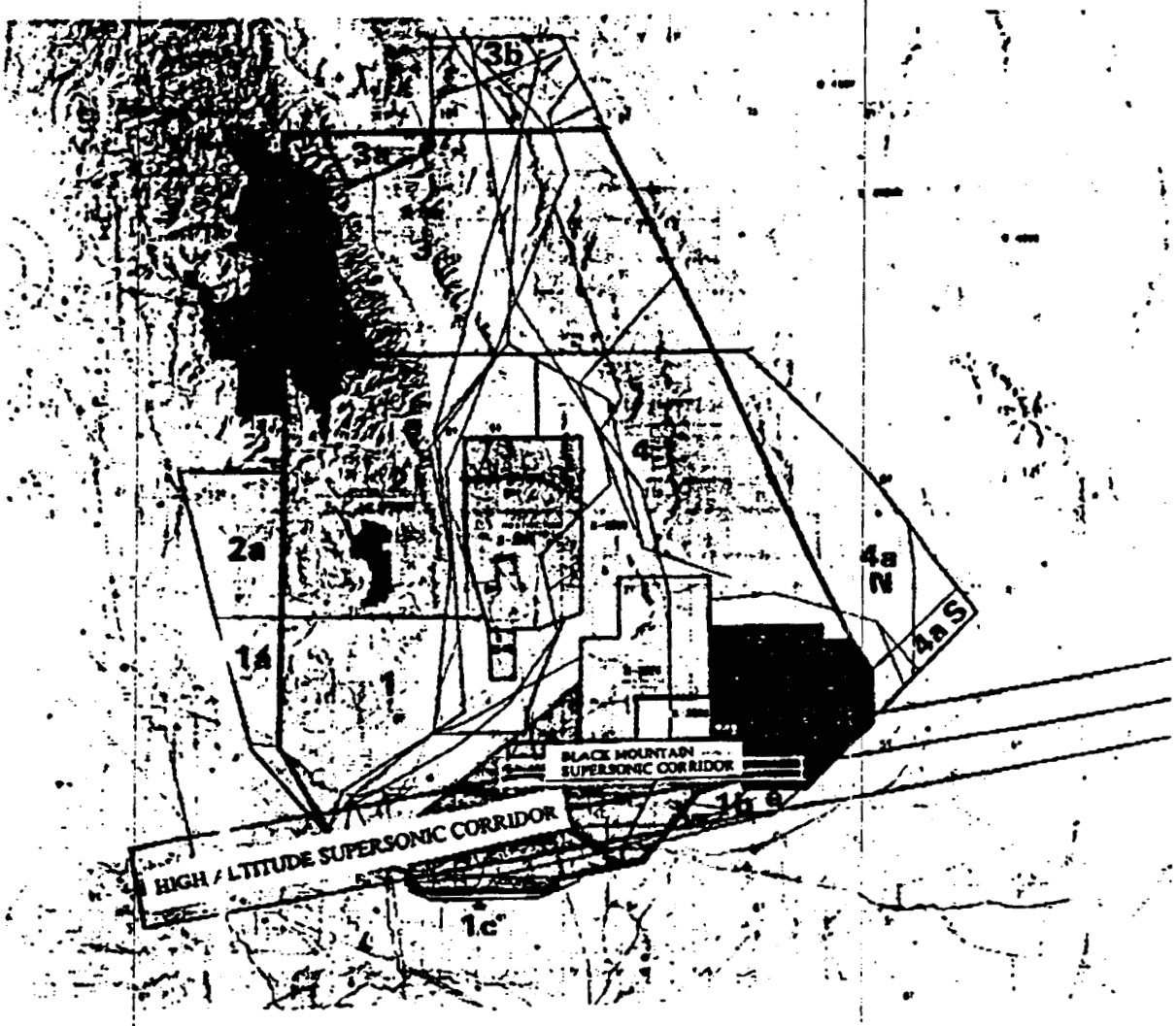

Figure: 6 Supersonic Corridors.

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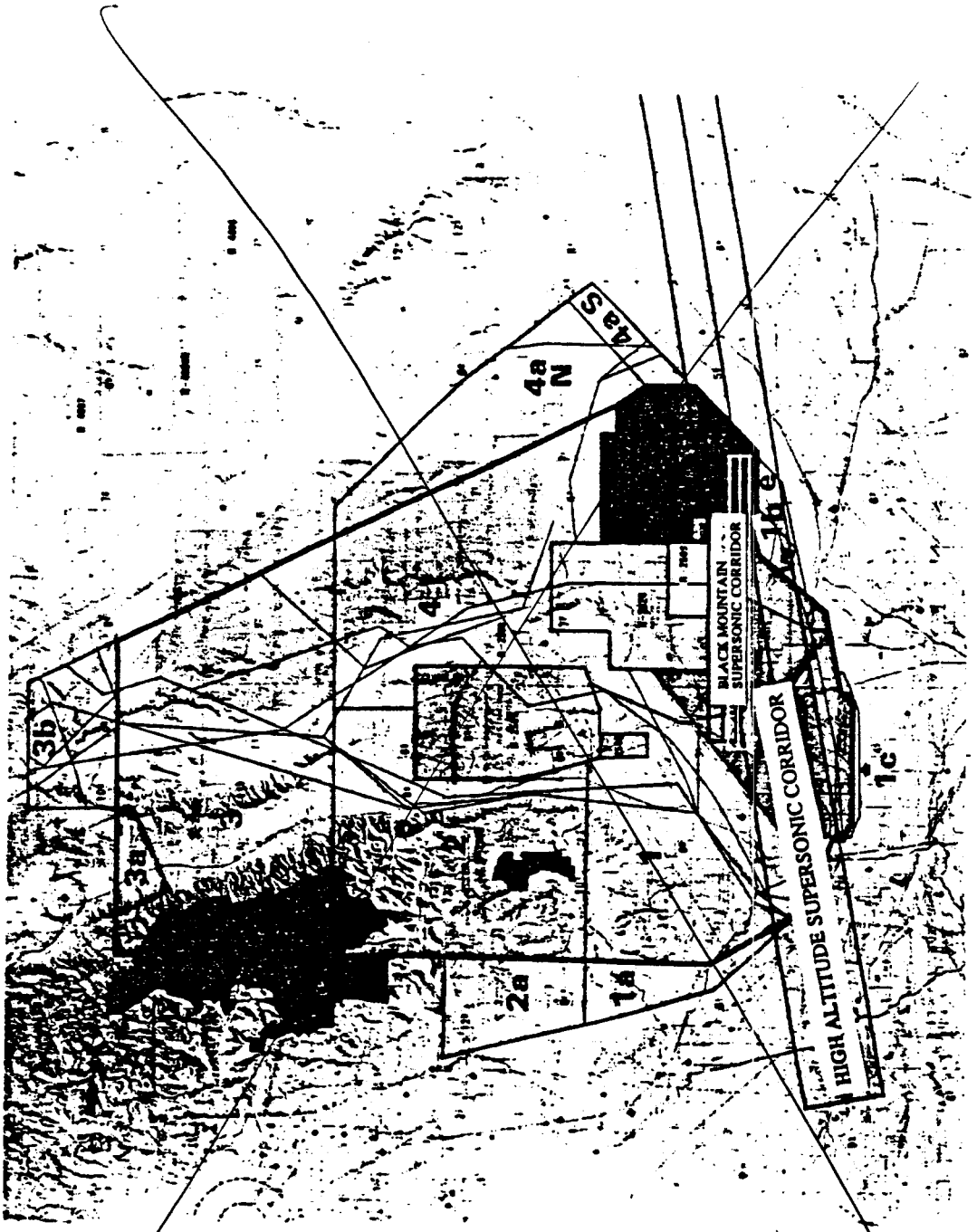

Supersonic Corridors

0171

-3.2.A.2 *Where are they located relative to your airfield?*

Black Mountain Supersonic Corridor: 25 miles south of Armitage Field.
High Altitude Supersonic Corridor: 31 miles south of Armitage Field.
R-2505: Armitage Field is located within R-2505 boundaries.
R-2524: 13 miles southeast of Armitage Field.

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

Black Mountain Supersonic Corridor lower limit: 500 feet, no upper limit.
High Altitude Supersonic Corridor lower limit: 30,000 feet, no upper limit.
R-2505 lower limit: as determined by Range Safety on a case by case basis, no upper limit.
R-2524 lower limit: as determined by Range Safety on a case by case basis, no upper limit.

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

Over land.

Black Mountain Supersonic Corridor: 56 nautical miles (nm) x 8 nm.
High Altitude Supersonic Corridor: 244 nm x 15 nm.
R-2505: length and width as determined by Range Safety.
R-2524: length and width as determined by Range Safety.

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

Yes.

Black Mountain and High Altitude Supersonic Corridors: specified entry/exit points. Must be scheduled with Air Force Flight Test Center, Edwards AFB.

R-2505 and R-2524: supersonic flight must be approved by the Commander, NAWCWPNS, via test plan coordination within the organization.

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

Not specified.

-3.2.A.2 *Where are they located relative to your airfield?*

Black Mountain Supersonic Corridor: 25 miles south of Armitage Field.
High Altitude Supersonic Corridor: 31 miles south of Armitage Field.
R-2505: Armitage Field is located within R-2505 boundaries.
R-2524: 13 miles southeast of Armitage Field.

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

Black Mountain Supersonic Corridor lower limit: 500 feet, no upper limit.
High Altitude Supersonic Corridor lower limit: 30,000 feet, no upper limit.
R-2505 lower limit: as determined by Range Safety on a case by case basis, no upper limit.
R-2524 lower limit: as determined by Range Safety on a case by case basis, no upper limit.

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

Over land.

Black Mountain Supersonic Corridor: 56 nautical miles (nm) x 8 nm.
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R-2505: length and width as determined by Range Safety.
R-2524: length and width as determined by Range Safety.

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Black Mountain and High Altitude Supersonic Corridors: specified entry/exit points. Must be scheduled with Air Force Flight Test Center, Edwards AFB.

R-2505 and R-2524: supersonic flight must be approved by the Commander, NAWCWPNS, via test plan coordination within the organization.

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

Not specified.

-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.*

ARMITAGE FIELD. Armitage Field lies completely within R-2505 airspace. Field elevation is 2,283 MSL. The airfield can support a variety of test profiles. There is immediate entry into T&E ranges from take off, resulting in no transit time. The airfield provides support to full-scale drone operations. A mutual-use agreement exists with Edwards AFB for divert, Gas & Go, and weapons up/download. A 10-plane DET area is provided for range use, weapons test, and R&D support.

RUNWAYS, TAXIWAYS, ETC. All runways have raised variable-intensity edge lights. Taxiways have blue, variable-intensity lights. Thresholds have green/red lights and externally lit bidirectional distance markers. Runway 21 has wave-off lights. All arresting gear are bidirectional. Runways 21 and 14 have portable optical landing systems. Thirty minutes prior notice is required to reposition landing system to runways 32 or 26. Technical specifications for the runways, aprons, ramps, and taxiways are presented in the following two tables.

Field Elevation: 2,283 MSL

Runway	Length (Feet)	Width (Feet)	Lighting				Arresting Gear Type(s)
			F	P	C	N	
3-21	9,991	200		X			E-28 (2)
14-32	9,011	200		X			E-28 (2)
8-26	7,701	200		X			E-28 (1)

NOTES:
F= Full lighting (runway edge, center, and threshold).
P=Partial lighting (less than full).
C=Carrier deck lighting simulated.
N=No lighting.

GENERAL NOTES:

1. The following are standard operating procedures. Due to R-2505 Airspace (Range Usage), inbounds normally enter only from the southeast, and departures all proceed out the 160R until clear of R-2505 then proceed on course. Normal Class D airspace (ATA) is 5 mile radius, when the range becomes "HOT" Class D airspace is reduced to 2.2 nautical miles.
2. Runway 14 departure requires an immediate right turn to avoid overflying inhabited areas of China Lake and the city of Ridgecrest.
3. Runway 21, 26, and 32 require immediate left turns to avoid restricted airspace (C and G range) when activated.
4. Runway 3 and 8 require right turns to avoid restricted areas and base housing. Altitude is restricted to 3000' MSL (700' AGL) until 6 nautical miles south of the airport.
5. Airport traffic area is reduced to 2.2 nautical miles on the Eastern side when restricted areas are activated (G range).
6. All runway surfaces are undergoing a major repair program. Runway 14/32 was resurfaced in FY93. Runway 3/21 was resurfaced in FY93. All runway shoulders were repaired in FY94. Runway 8/26 is scheduled for resurface in FY95.
7. All runway surfaces at Armitage Field are constructed in accordance with MIL-HDBK-1021/4, Section 7.4.2., dated 30 April 1987. The first 1,000 feet of each runway (Primary Traffic Area) is made of Portland Concrete Cement (PCC). The remaining runway interior (Secondary Traffic Area) is constructed of asphaltic/concrete.

0173.A

-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.*

ARMITAGE FIELD. Armitage Field lies completely within R-2505 airspace. Field elevation is 2,283 MSL. The airfield can support a variety of test profiles. There is immediate entry into T&E ranges from take off, resulting in no transit time. The airfield provides support to full-scale drone operations. A mutual-use agreement exists with Edwards AFB for divert, Gas & Go, and weapons up/download. A 10-plane DET area is provided for range use, weapons test, and R&D support.

RUNWAYS, TAXIWAYS, ETC. All runways have raised variable-intensity edge lights. Taxiways have blue, variable-intensity lights. Thresholds have green/red lights and externally lit bidirectional distance markers. Runway 21 has wave-off lights. All arresting gear are bidirectional. Runways 21 and 14 have portable optical landing systems. Thirty minutes prior notice is required to reposition landing system to runways 32 or 26. Technical specifications for the runways, aprons, ramps, and taxiways are presented in the following two tables.

Field Elevation: 2,283 MSL

Runway	Length (Feet)	Width (Feet)	Max Load (Pounds)	Lighting				Arresting Gear Type(s)
				F	P	C	N	
3-21	9,991	200	769,000*		X			E-28 (2)
14-32	9,011	200	769,000*		X			E-28 (2)
8-26	7,701	200	769,000*		X			E-28 (1)

NOTES:
F= Full lighting (runway edge, center, and threshold).
P=Partial lighting (less than full).
C=Carrier deck lighting simulated.
N=No lighting.
* Load based on Twin Delta Tandem (TDT) axle aircraft.

GENERAL NOTES:

1. The following are standard operating procedures. Due to R-2505 Airspace (Range Usage), inbounds normally enter only from the southeast, and departures all proceed out the 160R until clear of R-2505 then proceed on course. Normal Class D airspace (ATA) is 5 mile radius, when the range becomes "HOT" Class D airspace is reduced to 2.2 nautical miles.
2. Runway 14 departure requires an immediate right turn to avoid overflying inhabited areas of China Lake and the city of Ridgecrest.
3. Runway 21, 26, and 32 require immediate left turns to avoid restricted airspace (C and G range) when activated.
4. Runway 3 and 8 require right turns to avoid restricted areas and base housing. Altitude is restricted to 3000' MSL (700' AGL) until 6 nautical miles south of the airport.
5. Airport traffic area is reduced to 2.2 nautical miles on the Eastern side when restricted areas are activated (G range).
6. All runway surfaces are undergoing a major repair program. Runway 14/32 was resurfaced in FY93. Runway 3/21 was resurfaced in FY93. All runway shoulders were repaired in FY94. Runway 8/26 is scheduled for resurface in FY95.
7. All runway surfaces at Armitage Field are constructed in accordance with MIL-HDBK-1021/4, Section 7.4.2., dated 30 April 1987. The first 1,000 feet of each runway (Primary Traffic Area) is made of Portland Concrete Cement (PCC). The remaining runway interior (Secondary Traffic Area) is constructed of asphaltic/concrete.

WC

0173

-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.*

ARMITAGE FIELD. Armitage Field lies completely within R-2505 airspace. Field elevation is 2,283 MSL. The airfield can support a variety of test profiles. There is immediate entry into T&E ranges from take off, resulting in no transit time. The airfield provides support to full-scale drone operations. A mutual-use agreement exists with Edwards AFB for divert, Gas & Go, and weapons up/download. A 10-plane DET area is provided for range use, weapons test, and R&D support.

RUNWAYS, TAXIWAYS, ETC. All runways have raised variable-intensity edge lights. Taxiways have blue, variable-intensity lights. Thresholds have green/red lights and externally lit bidirectional distance markers. Runway 21 has wave-off lights. All arresting gear are bidirectional. Runways 21 and 14 have portable optical landing systems. Thirty minutes prior notice is required to reposition a landing system to runways 32 or 26. Technical specifications for the runways, aprons, ramps, and taxiways are presented in the following two tables.

Field Elevation: 2,283 MSL

Runway	Length (Feet)	Width (Feet)	Max Load (Pounds)	Lighting				Arresting Gear Type(s)
				F	P	C	N	
3-21	9,991	200	769,000*		X			E-28 (2)
14-32	9,011	200	769,000*		X			E-28 (2)
8-26	7,701	200	769,000*		X			E-28 (1)

NOTES:
F= Full lighting (runway edge, center, and threshold).
P=Partial lighting (less than full).
C=Carrier deck lighting simulated.
N=No lighting.
* Load based on Twin Delta Tandem (TDT) axle aircraft.
GENERAL NOTES:
1. The following are standard operating procedures. Due to R-2505 Airspace (Range Usage), inbounds normally enter only from the southeast, and departures all proceed out the 160R until clear of R-2505 then proceed on course. Normal Class D airspace (ATA) is 5-mile radius; when the range becomes "HOT" Class D airspace is reduced to 2.2 nautical miles.
2. Runway 14 departure requires an immediate right turn to avoid overflying inhabited areas of China Lake and the city of Ridgecrest.
3. Runways 21, 26, and 32 require immediate left turns to avoid restricted airspace (C and G Ranges) when activated.
4. Runways 3 and 8 require right turns to avoid restricted areas and base housing. Altitude is restricted to 3000' MSL (700' AGL) until 6 nautical miles south of the airport.
5. Airport traffic area is reduced to 2.2 nautical miles on the eastern side when restricted areas are activated (G Range).
6. All runway surfaces are undergoing a major repair program. Runway 14/32 was resurfaced in FY93. Runway 3/21 was resurfaced in FY93. All runway shoulders were repaired in FY94. Runway 8/26 is scheduled for resurface in FY95.

RAMPS

Ramp Location - ID	Area (Square Feet)	Comp.	Comments
Hgrs 1,2,3	992,999	Conc.	Square-feet measurements taken from NAVFACWESDIV* Report: China Lake, 11 AU, dtd 3/11/92
Hot Line	196,500	Conc.	"
Hgr 4	145,350	Conc.	"
Hgr 5(P-431)	80,160	Conc.	"
Ordnance Loading Area	175,000	Conc.	"
X-Pad	66,861	Conc.	"
Total ramp area 1,656,870 ft^2			

* Naval Facilities Western Division

TAXIWAYS

Taxiway Apron	30,000	Conc.	Square-feet measurements taken from NAVFACWESDIV* Report: China Lake, 11 AU, dtd 3/11/92
Taxiway	403,275	Conc.	"
Taxiway	1,158,265	Asph.	"
Taxiway	349,110	Asph.	"

* Naval Facilities Western

FLIGHTLINE.

(Material deleted.)

- Ramp space for large transport type aircraft (C-5, C-141 etc.) can be augmented by utilization of off-duty/taxiway for overflow parking.
- 10 parking spots (Hotline) are equipped with flightline electrical distribution system (FLEDS) and Wells units for tactical aircraft.
- Combat aircraft ordnance loading area for ordnance up/down load and delivery of hazardous munitions and can be used as overflow parking if there is no conflict with ordnance operations.
- High-power turn-up facility exists equipped with Type XIII aircraft run-up restraint fitting. Proof-load tested to 90,000 pounds, rated for testing of all aircraft and all engines.
- Transient flightline is staffed by terminal personnel providing aircraft parking, refueling, ground support equipment (GSE).
- Limited ground transportation is available for aircrew/passengers.
- Compass rose is available.
- Aircraft wash rack is available.

0174.A.

LOAD BEARING CAPACITIES

The runway and taxiway pavement weight limitations listed below may be exceeded by 50% on an infrequent basis without seriously damaging the pavement. C-5A/B aircraft have twin delta landing gear (28 wheels) and can be allowed to taxi on the field wherever a dual tandem aircraft at maximum weight can taxi (subject to wing span limitations).

Area	Single gear		Dual-wheel	Dual tandem
	150 psi	400 psi		
Runway 3-21	103.000	65.000	134.000	201.000
Runway 14-32	149.000	117.000	233.000	361.000
Runway 8-26	134.000	114.000	205.000	345.000
Taxiway 14-32	38.000	29.000	49.000	74.000
Taxiway 3	132.000	114.000	222.000	333.000
Taxiway 21	137.000	99.000	213.000	320.000
Taxiway 8-26	112.000	69.000	146.000	218.000
Parking area 1	N/A	N/A	N/A	N/A
9" portion	54.000	40.000	90.000	212.000
10" portion	105.000	84.000	193.000	370.000
Parking area 2	57.000	46.000	102.000	214.000
Parking area 3	44.000	35.000	74.000	200.000
Taxiway hgr 4*, 5*	137.000	114.000	222.000	333.000
Parking area hgr 4*, 5*	105.000	84.000	193.000	370.000
Information obtained from NAVFAC P-18 dated September 1977				

*Hangar 4 and 5 taxiway 1 parking areas constructed after issue of P-18 source document.
Data based upon design/construction documentation and P-18 criteria

0174.B.

RAMPS

Ramp Location - ID	Area (Square Feet)	Comp.	Load Bearing Capacity (Pounds)	Comments
Hgrs 1,2,3	992,999	Conc.	769,000	Square-feet measurements taken from NAVFACWESDIV* Report: China Lake, 11 AU, dtd 3/11/92
Hot Line	196,500	Conc.	769,000	"
Hgr 4	145,350	Conc.	769,000	"
Hgr 5(P-431)	80,160	Conc.	769,000	"
Ordnance Loading Area	175,000	Conc.	769,000	"
X-Pad	66,861	Conc.	769,000	"
Total ramp area 1,656,870 ft^2				

* Naval Facilities Western Division

TAXIWAYS

Taxiway Apron	30,000	Conc.	769,000	Square-feet measurements taken from NAVFACWESDIV* Report: China Lake, 11 AU, dtd 3/11/92
Taxiway	403,275	Conc.	769,000	"
Taxiway	1,158,265	Asph.	769,000	"
Taxiway	349,110	Asph.	330,000 to 445,000	"

* Naval Facilities Western Division

FLIGHTLINE.

- Ramp space for large transport type aircraft (C-5, C-141 etc.) can be augmented by utilization of off-duty/taxiway for overflow parking.
- 10 parking spots (Hotline) are equipped with flightline electrical distribution system (FLEDS) and Wells units for tactical aircraft.
- Combat aircraft ordnance loading area for ordnance up/down load and delivery of hazardous munitions and can be used as overflow parking if there is no conflict with ordnance operations.
- High-power turn-up facility exists equipped with Type XIII aircraft run-up restraint fitting. Proof-load tested to 90,000 pounds, rated for testing of all aircraft and all engines.
- Transient flightline is staffed by terminal personnel providing aircraft parking, refueling, ground support equipment (GSE).
- Limited ground transportation is available for aircrew/passengers.
- Compass rose is available.
- Aircraft wash rack is available.

Apron/ramp/taxiway Location - ID	Area (Square Feet)	Comp.	Load Bearing Capacity (Pounds)	Comments
Apron Hgrs 1,2,3	992,999	Conc.	769,000	Square-feet measurements taken from NAVFACWESDIV* Report: China Lake, 11 AU, dtd 3/11/92
Apron Hot Line	196,500	Conc.	769,000	"
Apron Hgr 4	145,350	Conc.	769,000	"
Apron Hgr 5(P-431)	80,160	Conc.	769,000	"
Ordnance Loading Area	175,000	Conc.	769,000	"
X-Pad	66,861	Conc.	769,000	"
Taxiway Apron	30,000	Conc.	769,000	"
Taxiway	403,275	Conc.	769,000	"
Taxiway	1,158,265	Asph.	769,000	"
Taxiway	349,110	Asph.	330,000 to 445,000	"

* Naval Facilities Western Division

FLIGHTLINE.

- Total ramp space of 1,429,863 square feet.
- Ramp space for large transport type aircraft (C-5, C-141, etc.) can be augmented by utilization of off-duty/taxiway for overflow parking.
- Ten parking spots (Hotline) are equipped with flightline electrical distribution system (FLEDS) and Wells units for tactical aircraft.
- Combat aircraft ordnance loading area for ordnance up/down load and delivery of hazardous munitions and can be used as overflow parking if there is no conflict with ordnance operations.
- High-power turn-up facility exists equipped with Type XIII aircraft run-up restraint fitting. Proof-load tested to 90,000 pounds, rated for testing of all aircraft and all engines.
- Transient flightline is staffed by terminal personnel providing aircraft parking, refueling, and ground support equipment (GSE).
- Limited ground transportation is available for aircrew/passengers.
- Compass rose is available.
- Aircraft wash rack is available.

0174

AIR TRAFFIC CONTROL.

(Material deleted.)

- Coordinates aircraft movements in ranges with Air Surveillance Center and in R-2508 Complex with Joshua Approach.
- Provides flight planning and filing service.
- Controls vehicular movement on ground.
- Provides airfield course rules training and vehicle licensing for those require driving privileges on the airfield.
- Provides oversight of security for vehicles requiring access to the flightline.
- Has computer links to FAA ATC system for flight plan filing and coordination.
- Has Service "F" to all local FAA facilities, Service "B" Link to FAA System (teletype).

AIR TERMINAL.

- A 3700 square-foot complex, located at the southwest end of Hangar 2 facing runway 14/32.
- Provides passenger and VIP lounge and cargo processing.
- Has scale for weighing cargo pallets.
- Ramp space can handle up to C-9-type aircraft.
- Staff of enlisted ABH/ABE/IC provide transient parking and limited ground transportation.
- Is point of contact for scheduling compass rose/high-power spot.
- Open to all military logistic/cargo and military-sponsored civilian charter aircraft.
- Has VIP lounge for arrival, departure, and briefing of highly placed officials.
- Weighs and transfers all cargo inbound/outbound by terminal.
- Has radio links with tower, fuel farm, and runway support vehicles.
- Has lens shop for field optical landing system (FOLS) support.
- Maintenance Shop supports E-28 arresting gear.

WEATHER DETACHMENT.

The Naval Pacific Meteorology and Oceanography Detachment (NAVPACMETOC DET) China Lake, is tasked to provide environmental support services for NAWS China Lake. These include weather observations, climatological support, and short- and extended-term forecasts involving aviation operations and research and development for the local ranges as well as the Fleet operating areas along the West Coast. In addition to Armitage Field, support for the NASA Space Shuttle and for the National Parachute Test Facility has frequently been provided.

The wide variety of aircraft and weapons being tested by the DOD, as well as foreign Governments, plus the wide range of meteorological conditions requires detailed knowledge of aircraft weapons as well as an in-depth knowledge of environmental forecasting. The detachment is computer networked through a worldwide communications net which includes DOD, the National Oceanic and Atmospheric Administration (NOAA), and the World Meteorological Organization (WMO).

AIR TRAFFIC CONTROL.

- Provides control of aircraft on ground (taxiing aircraft) and airborne Class D airspace (4.5 nautical miles, 4800 feet MSL).
- Coordinates aircraft movements in ranges with Air Surveillance Center and in R-2508 Complex with Joshua Approach.
- Provides flight planning and filing service.
- Controls vehicular movement on ground.
- Provides airfield course rules training and vehicle licensing for those require driving privileges on the airfield.
- Provides oversight of security for vehicles requiring access to the flightline.
- Has computer links to FAA ATC system for flight plan filing and coordination.
- Has Service "F" to all local FAA facilities, Service "B" Link to FAA System (teletype).

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HANGAR SPACE. NAWS China Lake has five aircraft hangars, as shown in the table below.

Hangar No./ID/ Type	SQD/ModNo. Assignment[1]	Ops and Admin Spaces, Sq. Ft./ Module	Maint Shops SF/ Module, Sq. Ft. (O Level)	Hangar Deck, Sq. Ft./Module	A/C Line Parking Spaces[2,3]		
					No./ Module[4]	Sq. ft	Elec. Pwr.
Hgr 3/20000(I)	NAWCWPNS	21,889	27,982	76,800 [5]	12 ea 24 total	49,920	Yes
Hgr 1/20001(I)	VX-9	9,241	9,734	38,160	10	20,800	Yes
Hgr 2/20002(I)	NAWCWPNS	6,811	14,918	24,321	8	16,640	No
Hgr 4/20242(I)	NAWCWPNS	7,170	4,410	13,448	4	8,320	Yes
Hgr 5/P-431(I)	NAWCWPNS	46,194	23,097	19,200	4	8,320	Yes
TOTAL		91,305	80,141	171,929	50	104,000	

NOTES:

[1]Provide which SQD/Det was assigned to the specific module at receipt of this Data Call. (i.e., VFA-15, Hgr 1, Mod C).

[2]Dedicated aircraft parking spaces per Module and total square feet (SF) of A/C line parking spaces.

[3] Are there A/C line parking spaces supported by permanently installed electric power? (Y/N).

4 Module = Hangar Bay A/C parking spaces.

5 Hangar 3 contains two modules with 12 spaces each (38,400 SF) 12 aircraft may be parked in each module. Additional aircraft may be parked in each module on an emergency/contingency basis.

Hangars 4 and 5 are built to Secure Compartmented Information Facility (SCIF) standards and can provide high-level security to programs that have that requirement. These facilities are remotely situated from the regular flightline and hangar complex. All hangar deck space is assigned on an as-needed-basis; there is no permanently assigned space. Aviation power, compressed air, overhead hoists, and fire-extinguisher systems are available in all hangars.

MAINTENANCE. Non-Depot Maintenance and Repair. NAWCWPNS China Lake has full "O" level capability on all aircraft types assigned. This capability could be expanded to cover other aircraft types with some training of maintenance/support personnel, should that be required to meet project requirements. On-site "I" level repair is limited to wheel/tire build-up, hydraulic component repair, and minor avionics/electrical weapons repairable assembly (WRA) repairs that do not require elaborate test bench facilities. NAWCWPNS has full "I" level capability provided via networking of the logistics pipeline with Lemoore, Whidbey, and Fallon Air Stations. All NAWCWPNS "O" and "I" level maintenance is consolidated under cognizance of one organization and supported by a mix of military and civil service personnel and an omnibus maintenance service contract. This concept allows China Lake to have some of the lowest flight hour rates of any

0176 A

HANGAR SPACE. NAWS China Lake has five aircraft hangars, as shown in the table below.

Hangar No./ID/ Type	SQD/ModNo. Assignment[1]	Ops and Admin Spaces, Sq. Ft./ Module	Maint Shops SF/ Module, Sq. Ft. (O Level)	Hangar Deck, Sq. Ft./Module	A/C Line Parking Spaces[2,3]		
					No./ Module[4]	Sq. ft	Elec. Pwr.
Hgr 3/20000(I)	NAWCWPNS	24,060	26,342	76,800[5]	12 ea 24 total	49,920	Yes
Hgr 1/20001(I)	VX-9	9,339	9,734	38,160	10	20,800	Yes
Hgr 2/20002(I)	NAWCWPNS	6,811	14,180	24,321	8	16,640	No
Hgr 4/20242(I)	NAWCWPNS	8,702	4,410	13,448	4	8,320	Yes
Hgr 5/P-431(I)	NAWCWPNS	46,194	23,097	19,200	4	8,320	Yes
TOTAL		95,106	77,763	170,931	50	104,000	

NOTES: total hangar space = 343,800 DID

[1]Provide which SQD/Det was assigned to the specific module at receipt of this Data Call. (i.e., VFA-15, Hgr 1, Mod C).

[2]Dedicated aircraft parking spaces per Module and total square feet (SF) of A/C line parking spaces.

[3] Are there A/C line parking spaces supported by permanently installed electric power? (Y/N).

[4] Module = Hangar Bay A/C parking spaces.

[5] Hangar 3 contains two modules with 12 spaces each (38,400 SF) 12 aircraft may be parked in each module. Additional aircraft may be parked in each module on an emergency/contingency basis.

Hangars 4 and 5 are built to Secure Compartmented Information Facility (SCIF) standards and can provide high-level security to programs that have that requirement. These facilities are remotely situated from the regular flightline and hangar complex. All hangar deck space is assigned on an as-needed-basis; there is no permanently assigned space. Aviation power, compressed air, overhead hoists, and fire-extinguisher systems are available in all hangars.

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RDT&E facilities in the United States. VX-9 (tenant) provides their own "O" Level maintenance, but relies on NAWCWPNS for all other aviation support.

QUALITY ASSURANCE/SAFETY. NAWCWPNS China Lake has an active quality assurance/safety program, monitoring aircraft maintenance support/operations to ensure quality production. All "O" and "I" level facilities are inspected to ensure compliance with prescribed programs and directives.

FLIGHT TEST SUPPORT.
Mods Mission support. Aircraft modification mission support includes telemetry (TM) ground stations and maintenance of specialized test instrumentation pods and flight-line ground support equipment. Audio and video TM data generated in support of aircraft system and pod testing are controlled by the land range complex using fiber-optic and microwave links. Instrumentation pods are maintained by specialized support groups that are responsible for testing and troubleshooting in accordance with aircraft modification specifications. Flight-line ground support equipment is used to check all systems that interface with aircraft. The ground support equipment includes a variety of power units and tow tractors that are maintained by aircraft certified contractors. All mission support is available to customers for the duration of test programs. The land range complex is linked to all area range complexes, and multiple uses can be supported. Flight-line ground support equipment is used for starting aircraft, powering aircraft for electrical tests of interfacing systems, checking hydraulics of aircraft, and various other types of aircraft maintenance.

Aircraft Mods Design (CAD). Networked computer workstations handle every design task from flow-charting a system to programming a programmable read-only memory (PROM) containing instructions in machine language. Task-specific software is used to mechanize circuit board fabrication accessories such as Gerber-type photo plotters and numerically controlled drill machines. Finished systems are emulated utilizing physical models as well as actual hardware in the loop. Mechanical design, stress analysis, and full aerodynamic analysis are performed. Full 3-D graphics take an idea from a rough sketch to final finished documentation. State-of-the-art computer-aided design and analysis are employed, as well as the ability to optimize the design for a particular parameter. Computational fluid dynamics are utilized early in all designs for load calculations. Networked computer work-stations use, as much as possible, central-server installed software with "floating" licenses. This arrangement allows design engineers at any of seven work-stations to use the necessary software to complete a design. Designs residing on this system can be accessed and viewed or printed to hard copy from any similar workstation at any DOD site. The design group is currently utilizing seven CAD workstations and numerous PCs for hardware design and software development. Standard laboratory test equipment is available for all necessary test functions. Aerodynamic analysis utilizes the main Cray computer as well as several minicomputers for analysis.

Aircraft Mods Fabrication/Installation. Space at Armitage Field includes all necessary support shops, including complete machine shop, sheet metal shop, welding shop, electric shop, and flight test engineering laboratory. In addition to the aircraft metal shops, support is available through the main base machine shop for services such as heat treating, corrosion control, plating, anodizing, electrolytic coating, organic coating, and specialized processes such as electron-beam (EB) welding and solid prototyping. Plastics/composites fabrication facilities support engineering designs and are capable of producing tooling as well as the plastic/composite parts. Nondestructive inspection (NDI) is provided using various techniques. The Electric Shop uses certified aircraft wiring and the latest interconnection technology to fabricate and install cables and harnesses. Hangar space is a shared resource used for aircraft modifications and maintenance. All shop services (Airfield, main base, Salt Wells, etc.) are available to customers needing parts for aircraft and project support. These facilities also fabricate parts for missile systems, rocket motor casings, and numerous other

0177. A.

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Mods Mission support. Aircraft modification mission support includes telemetry (TM) ground stations and maintenance of specialized test instrumentation pods and flight-line ground support equipment. Audio and video TM data generated in support of aircraft system and pod testing are controlled by the land range complex using fiber-optic and microwave links. Instrumentation pods are maintained by specialized support groups that are responsible for testing and troubleshooting in accordance with aircraft modification specifications. Flight-line ground support equipment is used to check all systems that interface with aircraft. The ground support equipment includes a variety of power units and tow tractors that are maintained by aircraft certified contractors. All mission support is available to customers for the duration of test programs. The land range complex is linked to all area range complexes, and multiple uses can be supported. Flight-line ground support equipment is used for starting aircraft, powering aircraft for electrical tests of interfacing systems, checking hydraulics of aircraft, and various other types of aircraft maintenance.

Aircraft Mods Design (CAD). Networked computer workstations handle every design task from flow-charting a system to programming a programmable read-only memory (PROM) containing instructions in machine language. Task-specific software is used to mechanize circuit board fabrication accessories such as Gerber-type photo plotters and numerically controlled drill machines. Finished systems are emulated utilizing physical models as well as actual hardware in the loop. Mechanical design, stress analysis, and full aerodynamic analysis are performed. Full 3-D graphics take an idea from a rough sketch to final finished documentation. State-of-the-art computer-aided design and analysis are employed, as well as the ability to optimize the design for a particular parameter. Computational fluid dynamics are utilized early in all designs for load calculations. Networked computer work-stations use, as much as possible, central-server installed software with "floating" licenses. This arrangement allows design engineers at any of seven work-stations to use the necessary software to complete a design. Designs residing on this system can be accessed and viewed or printed to hard copy from any similar workstation at any DOD site. The design group is currently utilizing seven CAD workstations and numerous PCs for hardware design and software development. Standard laboratory test equipment is available for all necessary test functions. Aerodynamic analysis utilizes the main Cray computer as well as several minicomputers for analysis.

Aircraft Mods Fabrication/Installation. Space at Armitage Field includes all necessary support shops, including complete machine shop, sheet metal shop, welding shop, electric shop, and flight test engineering laboratory. In addition to the aircraft metal shops, support is available through the main base machine shop for services such as heat treating, corrosion control, plating, anodizing, electrolytic coating, organic coating, and specialized processes such as electron-beam (EB) welding and solid prototyping. Plastics/composites fabrication facilities support engineering designs and are capable of producing tooling as well as the plastic/composite parts. Nondestructive inspection (NDI) is provided using various techniques. The Electric Shop uses certified aircraft wiring and the latest interconnection technology to fabricate and install cables and harnesses. Hangar space is a shared resource used for aircraft modifications and maintenance. All shop services (Airfield, main base, Salt Wells, etc.) are available to customers needing parts for aircraft and project support. These facilities also fabricate parts for missile systems, rocket motor casings, and numerous other

programs. Shops support aircraft modifications as well as ground test equipment. NDI also supports organizational and intermediate level maintenance requirements. All standard mechanical strength tests are performed as well as pull tests for composite material strengths. Standard electrical tests are available to support aircraft modifications. A computer-aided manufacturing (CAD/CAM) computerized numerical control (CNC) system is used for machining precision parts. Bending, rolling, punch, and shear machines are employed. All shops use materials certified for use in aircraft modifications. Other equipment and services include autoclaves, filament winder, ovens, vacuums, gas tungsten arc welding, shielded metal arc welding, gas metal arc welding, oxygen acetylene welding, electron beam welding,. X-ray (portable and nonportable), dye , eddy current, magnetic particle processes for NDI. Personnel are certified and trained to perform all necessary tasks in the operation of equipment. Aircraft compatibility analysis (flutter and loads) are performed both by analysis and test. Aerodynamic and structural analysis is performed with state-of-the-art computers and software. A close relationship between the organizations allows easy input of aero load data to structural analysis during design phases. Test facilities include the High Velocity Airflow System (HIVAS) facility and the Supersonic Naval Ordnance Research Track (SNORT) for a wide range of test parameters. Aerodynamic and structural analysis organizations are shared resources used by R&D groups, aircraft modification design groups, and all other T&E organizations. This arrangement enables the acquisition and maintenance of state-of-the-art computer hardware and software. The HIVAS facility is utilized for aircraft survivability. The SNORT facility is shared among design and ordnance organizations within the R&D area as well as the T&E community. The analysis is performed with minicomputers and a Cray supercomputer. The testing is performed with HIVAS and SNORT facilities, which include all necessary instrumentation.

AIRCRAFT INSTRUMENTATION.
Standard aircraft instrumentation support is provided. Full support for instrumentation design, simulation, testing, fabrication, and installation for aircraft modifications are available through mechanical and electrical design laboratories. Support is also available for debugging and trouble-shooting instrumentation systems that interface with aircraft. Static/dynamic test equipment is available. The Flight Test Engineering Laboratory includes over three hundred different line-items of available test equipment and instrumentation hardware. The Electrical Design Laboratory includes necessary test equipment for real-time in-circuit simulation and analysis for both digital and analog emulation. All test equipment is available to customers for the duration of test programs. Available hardware is of the type used for airborne testing and is not usually available in project development laboratories. Therefore, it complements typical customers' instrumentation and test equipment suites and serves to complete the necessary aircraft mod/flight test requirements.

GROUND ELECTRONICS. Maintenance and custody accountability for all airfield mobile and base station radios(including hand-held) and radios for vehicles that require direct access to runways is provided. Maintenance is also done for tower radio/recorders; STU III,;NAVPACMETOC DET; weather reporting equipment; and Navigational Aid Detachment maintenance/upkeep (tactical air navigation (TACAN), very-high omnidirectional range (VOR), nondirectional beacon (NDB)). Input is provided for construction projects concerning potential encroachment to protected airspace.

AIRCRAFT LOGISTICS SUPPORT. China Lake has more than adequate aviation warehousing capabilities to store WRA bench stock and consumables required to support maintenance activities on assigned aircraft. Additional capabilities are available if required. China Lake has the most modern GSE facility on the West Coast, and presently maintains 1089 pieces of support equipment. All major facilities have been built within the past 8 years. Operations currently run 9 hours per day; capacity could be increased by adding a second shift. Weapons logistic support

0178. A.

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0178

(i.e., GSE; training; packaging, handling, and transportation (PH&T); logistic support analysis (LSA); spares; facilities; technical data) for RDT&E programs is provided by the China Lake Engineering Department.

AIR LAUNCHED WEAPONS SUPPORT. NAWS China Lake Weapons Department has a large munitions-assembly complex, located close to Armitage Field, where all scheduled air-launched weapons are assembled and delivered to the flight line for up load. Overnight storage facilities for low-grade explosives are also available near this complex. A civil service assembly crew is trained in build-up and handling of new weapons under development.

ENVIRONMENTAL PROTECTION. NAWS China Lake Aircraft Department has a full-time environmental/hazardous materials (HAZMAT) employee assigned to monitor operations, train personnel, and implement an active program. All facilities have storage containers and HAZMAT disposal compounds. Major water drain areas have environmental traps to ensure that sewage is HAZMAT clean. All chemical use is monitored and controlled. Environmental protection of aviation assets is provided by hangar facilities to provide a comfortable working environment for maintenance crews.

AIRCRAFT STORAGE. Long-term storage of aircraft is provided. An on-site maintenance contractor provides preservation and periodic maintenance of stored aircraft in a secured compound. The storage area is a repository site for Naval Air Systems Command (NAVAIR) aircraft awaiting integration into the Full-Scale Aerial Target Program and assignment to NAWCWPNS Point Mugu after conversion.

ELECTRONIC COMBAT RANGE. The Electronic Combat Range (ECR) has an improved operating area to be used to flight test unmanned aerial vehicles (UAVs). It has three graded and compacted runway surfaces at an elevation of 2,468.3 feet MSL with the following dimensions:
1. 2,000 x 90 feet at 032/212 degrees (true)
2. 1,100 x 75 feet at 163/343 degrees (true)
3. 1,000 x 75 feet at 073.5/253.5 degrees (true)

Located at the site is a 43- by 34-foot hangar with 42- by 11-foot hangar door. Two 54-foot-long trailers are available for office space.

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Located at the site is a 43- by 34-foot hangar with 42- by 11-foot hangar door. Two 54-foot-long trailers are available for office space.

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

Edwards AFB, 175 degrees/49 nautical miles; Palmdale Airport (Air Force Plant 42), 180 degrees/66 nautical miles; NAWS Point Mugu, 210 degrees/120 nautical miles; NAS Lemoore, 275 degrees/117 nautical miles; Inyokern Airport, 239 degrees/7 nautical miles; Mojave Airport, 195 degrees/44 nautical miles. All fields have paved runways 6,700 feet or longer.

The ECR UAV airfield is 23.5 nautical miles from China Lake's Armitage Field.

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

Armitage Field (NAWS China Lake) lies completely within restricted area R-2505 and is near the geographic center of the R-2508 complex. This location provides immediate access to R-2505 and is approximately 14 nautical miles northwest of R-2524.

The ECR UAV airfield is located within R-2524 approximately 1.5 miles from the ECR Operations Center.

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

Mission: The airfield mission is to provide total aviation support (airfield and aircraft operations, aircraft, pilots, maintenance, aircraft modifications and related support functions) to all Air Armament RDT&E activities conducted in the surrounding special use airspace and to deploy this mission support capability to other installations as required.

Location. Sited in the remote High Desert region of the Southwestern United States, the airfield is centrally situated in terrain offering level unobstructed desert/sage brush (2200 feet elevation) to granite composition mountains towering over 14,000 feet. This terrain provides an infinite variety of background environments for radar systems RDT&E. The temperature extremes of 0°F to 120°F provide a vast range of temperature simulations for RDT&E purposes. The airfield's remoteness also affords ease of implementing unusual security measures sometimes required by special programs. Two SCIF level hangar/laboratories exist at the airfield to support these security requirements.

Flying Days. A review of 8 years of historical weather data yields an average of 357.7 fly days per year available for flight testing. This is based upon climatology data showing a ceiling above 5000 feet and/or over 3 miles of visibility. Cancellations of flight test operations due to weather can, therefore, be expected less than 8 days per average year. The low probability of weather impacting operations provides a high degree of reliability in missions planning and accomplishment. In fact, R-2508 overlies Edwards AFB and China Lake's Armitage Field and is used by NASA's Space Shuttle to access Edwards AFB when the primary landing site in Florida is experiencing unfavorable weather conditions.

Special Use Airspace. The R-2508 Complex is a tri-service test complex used by the DOD for the advancement of weapons systems technology and training. Including the internal ranges of China Lake (R-2505, R-2524, and R-2506), Edwards AFB Flight Test Center (R-2515), and the Army's National Training Center (R-2502), there are a total of 19,445 square statute miles (16,879 square nautical miles) of special use airspace. Additionally, the Federal Aviation Administration has designated certain airspace external to the R-2508 boundaries as available for military for special use. Adding this to the R-2508 airspace makes a total of 24,056 square statute miles (20,882

0180.A

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square nautical miles) of special use airspace available for use. This airspace provides a vast arena for attack and fighter aircraft to conduct evaluation and training operations, large land areas where low altitude operations are permissible, and the capability to launch standoff weapons with associated employment of missile propulsion and the use of live warheads, and to conduct air-to-air missile firings against full-scale maneuvering targets.

Unique Synergism. China Lake's work philosophy has always been that R&D progresses most efficiently and effectively when the scientists and engineers can readily witness and participate in tests of equipment and systems they are developing. China Lake's Armitage Field and test activities are centrally located inside the R-2505 and R-2508 airspaces and are therefore closely integrated with airspace and R&D activities. The ECR UAV airfield enables users to test in an electronic-threat environment, without the need to fly outside of restricted airspace, and eliminates the need for chase aircraft. The interplay between Armitage Field, laboratory personnel, and the test ranges is constant. The result is coordinated T&E (within R-2505 and R-2508 and including an airfield and T&E laboratories) that does not exist anywhere else in the DOD. Loss of the functional capability of this technical center would wrench most of the T&E out of the NAWCWPNS' RDT&E, would result in the loss of the synergism that now benefits both the weapons developers and the weapons testers, and would significantly increase the cost of weapons development.

0181-A-

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

There are no aircraft size/weight limitations. All runways/taxiways can handle up to and including C-5 aircraft. Because aircraft parking areas are being sized for tactical aircraft, C-141/C-5 size aircraft are parked on off-duty taxiways/runways. Airfield has full "0" level maintenance capability for assigned aircraft and can be expanded to cover other aircraft types through use of existing omnibus aircraft maintenance contracts. (There is no mission limitation.) The airfield's mission is to provide aircraft and aviation support to all China Lake RDT&E activities operating in the surrounding airspace complexes.

-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?*

FIGHTER SIZE AIRCRAFT. The number of fighter (attack) aircraft supportable at China Lake is principally driven by ramp and hangar space. The following calculations and resulting data were performed in the BRAC 95 Data Call #4 - Tab B (Airfield) Questions #29 (Ramp Space) and #34 (Hangar Space). The data are valid for Data Call 13, question 3.2.B, and indicate the following number of fighter (attack) aircraft could be sited at China Lake.

Fighter Attack Aircraft	Current Number of Aircraft Parked/Stationed	Total Aircraft (based on ramp space)		Total Aircraft (based on hangar space)	
		NAVFAC	Surge	NAVFAC	Surge
F/A-18	25	86	227	77	196
A-6E	6	21	71	19	47
EA-6B	3	10	35	9	23
AV-8B	6	22	71	19	47
A-4	2	7	24	6	16
T-39	1	4	12	3	8
TOTAL	43	150	440	134	338

Using NAVFAC standard measures, the data indicated, without any ramp/hangar improvements, that hangar space limits the number of fighter-size aircraft supportable to 134, while 150 aircraft could be supported by existing ramp space. Using real-world planning factors, or Surge (aircraft carrier operations), the data indicate without any ramp/hangar improvements, that hangar space again limits the number fighter aircraft supportable to 338 while 440 aircraft could be supported by existing ramp space. The difference between 440 and 338 fighters indicates that an additional 102 aircraft could be in a preservation status on the ramp under Surge mode of operations.

0182.A

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

There are no aircraft size/weight limitations. All runways/taxiways can handle up to and including C-5 aircraft. Because aircraft parking areas are being sized for tactical aircraft, C-141/C-5 size aircraft are parked on off-duty taxiways/runways. Airfield has full "0" level maintenance capability for assigned aircraft and can be expanded to cover other aircraft types through use of existing omnibus aircraft maintenance contracts. (There is no mission limitation.) The airfield's mission is to provide aircraft and aviation support to all China Lake RDT&E activities operating in the surrounding airspace complexes.

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RAMP SPACE.
(From BRAC 95 Data Call #4 - Tab B (Airfield) Question #29.)

Aircraft Type	Current Number of Aircraft Parked/Stationed	Maximum Additional Capacity (Number of Aircraft)		Total	
		NAVFAC	Surge	NAVFAC	Surge
F/A-18	25	61	202	86	227
A-6E	6	15	65	21	71
EA-6B	3	7	32	10	35
AV-8B	6	16	65	22	71
A-4	2	5	22	7	24
T-39	1	3	11	4	12
AH-1W	3	7	32	10	35
HH-1N	3	7	32	10	35
TOTAL	49	122	461	171	510

Assumptions.
Ramp areas from TAB B # 2, 35 and 36. For NAVFAC aircraft parking area: F/A-18 = 1080 sq. yd.; A-6E/EA-6B = 1460 sq. yd.; AV-8B = 800 sq. yd.; A-4 = 715 sq. yd.; T-39 =1110 sq. yd.; AH-1 = 1195 sq. yd.: HH-1N = 1195 sq. yd. Peripheral taxilanes are 45 feet wide. Total ramp area with taxiway aprons = 187,430 sq. yd. Total ramp area without taxiway aprons = 184,097 sq. yd. Taxiway aprons are used in the projection. Ramp area includes Cat Code 113-20, 116-56, and excludes 390-11 (aircraft storage facility). All data are rounded to the nearest aircraft.

For Surge Calculations. 24 inches minimum between aircraft, 45 degree angle, wings folded, aircraft carrier operation conditions. Interior taxilanes and peripheral taxilanes are 45 feet wide. Same parking apron spacing as NAVFAC aircraft parking area: F/A-18 = 490 sq. yd.; A-6E/EA-6B = 490 sq. yd.; AV-8B = 274 sq. yd.; A-4 = 262 sq. yd.; T-39 =350 sq. yd.; AH-1 = 259 sq. yd.; HH-1N = 259 sq. yd. Helicopters do not have or use interior taxilanes. Total ramp area with taxiway aprons = 187,430 sq. yd. Total ramp area without taxiway aprons = 184,098 sq. yd. Taxiway aprons are used in the projection. Ramp area includes Cat Code 113-20, 116-56, and excludes 390-11 (aircraft storage facility).

Calculations. The total area required for the existing mix of aircraft was determined by using the aircraft areas from the assumptions above, multiplying the aircraft by the NAVFAC factor for aircraft on the apron versus in the hangar, then by the aircraft areas, and totaling for the facility. The existing facility area was divided into this after the parking apron spacing was subtracted to determine the percentage of utilization. Each aircraft T/M/S in the existing mix of aircraft was then multiplied by the reciprocal of the utilization factor and the reciprocal of the NAVFAC factor for

0183. A

RAMP SPACE.
(From BRAC 95 Data Call #4 - Tab B (Airfield) Question #29.)

Aircraft Type	Current Number of Aircraft Parked/Stationed	Maximum Additional Capacity (Number of Aircraft)		Total	
		NAVFAC	Surge	NAVFAC	Surge
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A-6E	6	15	65	21	71
EA-6B	3	7	32	10	35
AV-8B	6	16	65	22	71
A-4	2	5	22	7	24
T-39	1	3	11	4	12
AH-1W	3	7	32	10	35
HH-1N	3	7	32	10	35
TOTAL	49	122	461	171	510

Assumptions.
Ramp areas from TAB B # 2, 35 and 36. For NAVFAC aircraft parking area: F/A-18 = 1080 sq. yd.; A-6E/EA-6B = 1460 sq. yd.; AV-8B = 800 sq. yd.; A-4 = 715 sq. yd.; T-39 =1110 sq. yd.; AH-1 = 1195 sq. yd.; HH-1N = 1195 sq. yd. Peripheral taxilanes are 45 feet wide. Total ramp area with taxiway aprons = 187,430 sq. yd. Total ramp area without taxiway aprons = 184,097 sq. yd. Taxiway aprons are used in the projection. Ramp area includes Cat Code 113-20, 116-56, and excludes 390-11 (aircraft storage facility). All data are rounded to the nearest aircraft.

For Surge Calculations. 24 inches minimum between aircraft, 45 degree angle, wings folded, aircraft carrier operation conditions. Interior taxilanes and peripheral taxilanes are 45 feet wide. Same parking apron spacing as NAVFAC aircraft parking area: F/A-18 = 490 sq. yd.; A-6E/EA-6B = 490 sq. yd.; AV-8B = 274 sq. yd.; A-4 = 262 sq. yd.; T-39 =350 sq. yd.; AH-1 = 259 sq. yd.; HH-1N = 259 sq. yd. Helicopters do not have or use interior taxilanes. Total ramp area with taxiway aprons = 187,430 sq. yd. Total ramp area without taxiway aprons = 184,098 sq. yd. Taxiway aprons are used in the projection. Ramp area includes Cat Code 113-20, 116-56, and excludes 390-11 (aircraft storage facility).

Calculations. The total area required for the existing mix of aircraft was determined by using the aircraft areas from the assumptions above, multiplying the aircraft by the NAVFAC factor for aircraft on the apron versus in the hangar, then by the aircraft areas, and totaling for the facility. The existing facility area was divided into this after the parking apron spacing was subtracted to determine the percentage of utilization. Each aircraft T/M/S in the existing mix of aircraft was then multiplied by the reciprocal of the utilization factor and the reciprocal of the NAVFAC factor for

aircraft on the apron versus in the hangar to determine the total capacity. For example (using NAVFAC P-80 definitions):

Site utilization % = site utilization factor x 100;
Site utilization factor = required parking apron area existing mix / parking apron area;
Parking apron area = apron area - parking apron spacing area;
Parking apron spacing area = 45 ft by perimeter of apron by .75;
Required parking apron area existing mix = Sum by aircraft type (number of aircraft x NAVFAC factor for aircraft on the apron vs in the hangar x aircraft parking area) - parking apron spacing area.
Total = current number of Aircraft Parked Stationed / (NAVFAC factor for aircraft on the apron versus in the hangar by site utilization factor).
Maximum Additional Capacity = Total - current number of Aircraft Parked Stationed.
Calculations were the same for NAVFAC and Surge with different data from above assumptions. Site utilization was 29% of capacity for NAVFAC factors and was 11% of capacity for Surge factors.

HANGAR SPACE.
(From BRAC 95 Data Call #4 - Tab B (Airfield) Question #34.)

Aircraft Type	Current Number of Aircraft Parked/Stationed	Maximum Additional Capacity (Number of Aircraft)		Total (Current Plus Additional)	
		NAVFAC	Surge	NAVFAC	Surge
F/A-18	25	52	171	77	196
A-6E	6	13	41	19	47
EA-6B	3	6	21	9	23
AV-8B	6	13	41	19	47
A-4	2	4	14	6	16
T-39	1	2	7	3	8
AH-1W	3	6	20	9	23
HH-1N	3	6	20	9	23
TOTAL	49	103	335	152	384

Assumptions.
Hangar areas from TAB B #31. For NAVFAC: We have 50 NAVFAC type I hangar maintenance spaces in five hangars. One space required for every three aircraft assigned except for the T-39, where one space is required for each six aircraft. Aircraft hangar factor = 3, except for T-39 = 6. Each hangar maintenance space = 2080 sq. ft.

For Surge: We have 127 type I hangar maintenance spaces in five hangars. Aircraft packed with wings folded with aircraft carrier type operation of hangar deck. One space required for every three aircraft assigned except for the T-39, where one space is required for each six aircraft. Aircraft

0184-A.

aircraft on the apron versus in the hangar to determine the total capacity. For example (using NAVFAC P-80 definitions):

Site utilization % = site utilization factor x 100;
Site utilization factor = required parking apron area existing mix / parking apron area;
Parking apron area = apron area - parking apron spacing area;
Parking apron spacing area = 45 ft by perimeter of apron by .75;
Required parking apron area existing mix = Sum by aircraft type (number of aircraft x NAVFAC factor for aircraft on the apron vs in the hangar x aircraft parking area) - parking apron spacing area.
Total = current number of Aircraft Parked Stationed / (NAVFAC factor for aircraft on the apron versus in the hangar by site utilization factor).
Maximum Additional Capacity = Total - current number of Aircraft Parked Stationed.
Calculations were the same for NAVFAC and Surge with different data from above assumptions.
Site utilization was 29% of capacity for NAVFAC factors and was 11% of capacity for Surge factors.

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A-4	2	4	14	6	16
T-39	1	2	7	3	8
AH-1W	3	6	20	9	23
HH-1N	3	6	20	9	23
TOTAL	49	103	335	152	384

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Hangar areas from TAB B #31. For NAVFAC: We have 50 NAVFAC type I hangar maintenance spaces in five hangars. One space required for every three aircraft assigned except for the T-39, where one space is required for each six aircraft. Aircraft hangar factor = 3, except for T-39 = 6. Each hangar maintenance space = 2080 sq. ft.

For Surge: We have 127 type I hangar maintenance spaces in five hangars. Aircraft packed with wings folded with aircraft carrier type operation of hangar deck. One space required for every three aircraft assigned except for the T-39, where one space is required for each six aircraft. Aircraft

hangar factor = 3, except for T-39 = 6. With a 1-foot minimum separation each hangar maintenance space = 1350 sq. ft.

Calculations. The total hangar area required for the existing mix of aircraft was determined by using the aircraft areas from the assumptions above, multiplying the aircraft by the hangar maintenance space area, and totaling for the facility. The existing total hangar area was divided into this to determine the percentage of utilization. The existing mix of aircraft was multiplied by the reciprocal of the utilization factor to determine the total capacity. For example:

Site utilization % = site utilization factor x 100;
Site utilization factor = required hangar area existing mix / hangar area;
Required hangar area existing mix = Sum by aircraft type (number of aircraft/aircraft hangar factor x hangar maintenance space).
Total = current number of Aircraft Parked Stationed/Site utilization factor.
Maximum Additional Capacity = Total - Current number of Aircraft Parked Stationed.
Calculations were the same for NAVFAC and Surge with different data from above assumptions. Site utilization was 32% of capacity for NAVFAC factors and was 13% of capacity for Surge factors.

LARGE MULTI-ENGINE AIRCRAFT. Armitage Field has historically evolved (design, construction, etc.) with the mission to provide tactical aircraft support of air armament T&E. Consequently the ramps and hangars are sized to support fighter-attack class aircraft. The capability to support large multi-engine aircraft (P-3, C-130, C-141, C-5, etc.) is limited to overnight parking for two large multi-engine aircraft on runway 26 taxiway. Aircraft of this class would be more ideally suited to Edwards AFB , which is in close proximity to China Lake. Large-size aircraft missions can be easily accomplished by launching from Edwards AFB and utilizing R-2505, R-2508 airspace (shared by China Lake and Edwards AFB) and other vicinity airspace.

ROTARY WING. Referring back to 3.2.B.1 (Fighter Aircraft, above, the same BRAC 95 data call #4 Tab B data yields the following for rotary-wing aircraft.

Rotary Aircraft	Current Number of Aircraft Parked/Stationed	Total Aircraft (based on ramp space)		Total Aircraft (based on hangar space)	
		NAVFAC	Surge	NAVFAC	Surge
AH-1	3	10	35	9	23
HH-1	3	10	35	9	23
TOTAL	6	20	70	18	46

Using NAVFAC standard measures, the data indicated, without any ramp/hangar improvements, that ramp space limits the number rotary-wing aircraft supportable to 18, while 20 aircraft could be supported by existing ramp space. Using real-world planning factors, or Surge (aircraft carrier operations), the data indicate without any ramp/hangar improvements, that hangar space then limits the number of rotary-wing aircraft supportable to 46, while 70 aircraft could be supported by existing ramp space. The difference between 70 and 46 rotary aircraft indicates that 24 aircraft could be in a preservation status on the ramp under Surge mode of operations.

0185-A-

hangar factor = 3, except for T-39 = 6. With a 1-foot minimum separation each hangar maintenance space = 1350 sq. ft.

Calculations. The total hangar area required for the existing mix of aircraft was determined by using the aircraft areas from the assumptions above, multiplying the aircraft by the hangar maintenance space area, and totaling for the facility. The existing total hangar area was divided into this to determine the percentage of utilization. The existing mix of aircraft was multiplied by the reciprocal of the utilization factor to determine the total capacity. For example:

Site utilization % = site utilization factor x 100;
Site utilization factor = required hangar area existing mix / hangar area;
Required hangar area existing mix = Sum by aircraft type (number of aircraft/aircraft hangar factor x hangar maintenance space).
Total = current number of Aircraft Parked Stationed/Site utilization factor.
Maximum Additional Capacity = Total - Current number of Aircraft Parked Stationed.
Calculations were the same for NAVFAC and Surge with different data from above assumptions. Site utilization was 32% of capacity for NAVFAC factors and was 13% of capacity for Surge factors.

LARGE MULTI-ENGINE AIRCRAFT. Armitage Field has historically evolved (design, construction, etc.) with the mission to provide tactical aircraft support of air armament T&E. Consequently the ramps and hangars are sized to support fighter-attack class aircraft. The capability to support large multi-engine aircraft (P-3, C-130, C-141, C-5, etc.) is limited to overnight parking for two large multi-engine aircraft on runway 26 taxiway. Aircraft of this class would be more ideally suited to Edwards AFB , which is in close proximity to China Lake. Large-size aircraft missions can be easily accomplished by launching from Edwards AFB and utilizing R-2505, R-2508 airspace (shared by China Lake and Edwards AFB) and other vicinity airspace.

ROTARY WING. Referring back to 3.2.B.1 (Fighter Aircraft, above, the same BRAC 95 data call #4 Tab B data yields the following for rotary-wing aircraft.

Rotary Aircraft	Current Number of Aircraft Parked/Stationed	Total Aircraft (based on ramp space)		Total Aircraft (based on hangar space)	
		NAVFAC	Surge	NAVFAC	Surge
AH-1	3	10	35	9	23
HH-1	3	10	35	9	23
TOTAL	6	20	70	18	46

Using NAVFAC standard measures, the data indicated, without any ramp/hangar improvements, that ramp space limits the number rotary-wing aircraft supportable to 18, while 20 aircraft could be supported by existing ramp space. Using real-world planning factors, or Surge (aircraft carrier operations), the data indicate without any ramp/hangar improvements, that hangar space then limits the number of rotary-wing aircraft supportable to 46, while 70 aircraft could be supported by existing ramp space. The difference between 70 and 46 rotary aircraft indicates that 24 aircraft could be in a preservation status on the ramp under Surge mode of operations.

UNMANNED AIR VEHICLES (UAV). Flight operations are not compatible with full-scale aircraft operations conducted within the Armitage Field Air Traffic Control Airspace. At China Lake, UAV operations are safely conducted and supported at the Electronic Combat Range (ECR). ECR has an improved operating area to be used to flight test UAVs. It has three graded and compacted runway surfaces at an elevation of 2,468.3 ft MSL with the following dimensions:

1. 2,000 x 90 ft. at 032/212 degrees (true)
2. 1,100 x 75 ft. at 163/343 degrees (true)
3. 1,000 x 75 ft. at 073.5/253.5 degrees (true)

Located at the site is a 43 x 34 ft. hangar with 42 x 11 ft. hangar door. Two 54-foot-long trailers are available for office space. The ECR UAV airfield is 23.5 nautical miles from China Lake's Armitage Field. The ECR UAV airfield is located within R-2524 approximately 1.5 miles from the ECR Operations Center. The ECR UAV airfield enables users to test in an electronic threat environment without the need to fly outside of restricted airspace and eliminates the need for chase aircraft. The ECR UAV airfield cannot support fighter size aircraft, but has supported six rotary wing aircraft and seventeen mid-range UAVs.

CRUISE MISSILES. Questions 3.2.B.6 is not applicable to ramp and hangar capability to support cruise missiles. Cruise missiles are classified as ordnance. In accordance with OP5, ordnance cannot be located in aircraft hangars. Handling of cruise missiles must be identical to handling ordnance. The missiles would be stored in the installations magazines area until loaded on aircraft. Loading onto aircraft would occur at the airfield's Red Label area. There would be no cruise missiles parked on ramp space.

0186. A.

UNMANNED AIR VEHICLES (UAV). Flight operations are not compatible with full-scale aircraft operations conducted within the Armitage Field Air Traffic Control Airspace. At China Lake, UAV operations are safely conducted and supported at the Electronic Combat Range (ECR). ECR has an improved operating area to be used to flight test UAVs. It has three graded and compacted runway surfaces at an elevation of 2,468.3 ft MSL with the following dimensions:

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-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)*

The China Lake ranges can support virtually all types of air vehicle (fixed-wing, rotary-wing, unmanned air vehicles, and Cruise missiles) tests for performance, handling qualities, avionics, electronic combat, and weapons integration and interoperability.

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

Several facilities exist for preflight checkout and rehearsal of test missions. A number of mobile instrumentation vans are available for the preflight TM checkout of F/A-18s, AV-8Bs, Sidewinder missiles, and other weapon systems. Mission rehearsals are performed in the aircraft Weapon System Support Activities (WSSAs) and the Strike Planning Laboratory Equipment is also available for the preflight checkout of full-scale aerial targets.

-3.2.C.3 *What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?*

The range is capable of supporting all kinds of aircraft, including foreign aircraft, and has demonstrated this capability many times over the years; aircraft have included fighters, bombers, rotary-wing, and unmanned air vehicles. The mix of aircraft is entirely dependent on the test scenario. Tests supported include simple single-vehicle operations to more complex scenarios with over a dozen aircraft.

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

There are no unusual hazards or limitations associated with UAV or rotary-wing operations with respect to other test missions.

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

All types of air missions, with the exception of sea level operations, can be and are flown within the China Lake restricted airspace including, air-to-air. air-to-surface, and surface-to-air. Refueling and other aircraft/avionics operations can similarly be performed.

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

NAWCWPNS China currently can support 11 simultaneous missions that require telemetry. In the future, this will be expanded to 12 when the Electronic Combat Range acquires a mobile tracking antenna.

A total of 18 telemetry streams can be received and recorded simultaneously through both fixed and mobile stations. Telemetry capability includes pulse code modulated (PCM), pulse amplitude modulated (PAM), and frequency modulated (FM) receivers. The number of simultaneous missions is dependent on the number of streams per mission.

0187. A.

-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)*

The China Lake ranges can support virtually all types of air vehicle (fixed-wing, rotary-wing, unmanned air vehicles, and Cruise missiles) tests for performance, handling qualities, avionics, electronic combat, and weapons integration and interoperability.

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

Several facilities exist for preflight checkout and rehearsal of test missions. A number of mobile instrumentation vans are available for the preflight TM checkout of F/A-18s, AV-8Bs, Sidewinder missiles, and other weapon systems. Mission rehearsals are performed in the aircraft Weapon System Support Activities (WSSAs) and the Strike Planning Laboratory Equipment is also available for the preflight checkout of full-scale aerial targets.

-3.2.C.3 *What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?*

The range is capable of supporting all kinds of aircraft, including foreign aircraft, and has demonstrated this capability many times over the years; aircraft have included fighters, bombers, rotary-wing, and unmanned air vehicles. The mix of aircraft is entirely dependent on the test scenario. Tests supported include simple single-vehicle operations to more complex scenarios with over a dozen aircraft.

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

There are no unusual hazards or limitations associated with UAV or rotary-wing operations with respect to other test missions.

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

All types of air missions, with the exception of sea level operations, can be and are flown within the China Lake restricted airspace including, air-to-air, air-to-surface, and surface-to-air. Refueling and other aircraft/avionics operations can similarly be performed.

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

A total of 18 telemetry streams can be received and recorded simultaneously through both fixed and mobile stations. Telemetry capability includes pulse code modulated (PCM), pulse amplitude modulated (PAM), and frequency modulated (FM) receivers. The number of simultaneous missions is dependent on the number of streams per mission.

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

The NAWCWPNS China Lake Ranges have supported 8 missions simultaneously. Missions here refers to Open Air Range (OAR) testing missions only; certainly many, many, more missions are performed simultaneously if all the other types of facilities are included.

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

Custodian	No. of Aircraft (PAA*)	Aircraft (T/M/S**)
VX-9	5	F/A-18A
VX-9	1	F/A-18B
VX-9	4	F/A-18C
VX-9	2	F/A-18D
VX-9	2	E/A-6B
VX-9	3	AV-8B
VX-9	4	A-6E
VX-9	2	AH-1W

Custodian	No. of Aircraft (PAA)	Aircraft (T/M/S)
NAWCWPNS CL	3	HH-1N
NAWCWPNS CL	4	F/A-18A
NAWCWPNS CL	1	F/A-18B
NAWCWPNS CL	6	F/A-18C
NAWCWPNS CL	3	F/A-18D
NAWCWPNS CL	6	A-6E
NAWCWPNS CL	3	AV-8B
NAWCWPNS CL	2	TA-4F/J
NAWCWPNS CL	1	AH-1W
NAWCWPNS CL	1	T-39
NAWCWPNS PM (FS***)	1	Y-F4

NOTE: COMOPTEVFOR plans to consolidate the Operational Test & Evaluation Squadrons (VX-5 at China Lake and VX-4 at Point Mugu) into a single squadron (VX-9) headquartered at China Lake. On 29 April 1994 VX-9 officially stood up and VX-5 was disestablished.

0688.A

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

The NAWCWPNS China Lake Ranges have supported 8 missions simultaneously. Missions here refers to Open Air Range (OAR) testing missions only; certainly many, many, more missions are performed simultaneously if all the other types of facilities are included.

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

Custodian	No. of Aircraft (PAA*)	Aircraft (T/M/S**)
VX-9	4	F/A-18A
VX-9	1	F/A-18B
VX-9	5	F/A-18C
VX-9	2	F/A-18D
VX-9	3	E/A-6B
VX-9	3	AV-8B
VX-9	3	A-6E
VX-9	2	AH-1W

Custodian	No. of Aircraft (PAA)	Aircraft (T/M/S)
NAWCWPNS CL	3	HH-1N
NAWCWPNS CL	4	F/A-18A
NAWCWPNS CL	1	F/A-18B
NAWCWPNS CL	5	F/A-18C
NAWCWPNS CL	2	F/A-18D
NAWCWPNS CL	3	A-6E
NAWCWPNS CL	3	AV-8B
NAWCWPNS CL	2	TA-4F/J
NAWCWPNS CL	1	AH-1W
NAWCWPNS CL	1	T-39
NAWS (FS***)	1	Y-F4

NOTE: COMOPTEVFOR plans to consolidate the Operational Test & Evaluation Squadrons (VX-5 at China Lake and VX-4 at Point Mugu) into a single squadron (VX-9) headquartered at China Lake. On 29 April 1994 VX-9 officially stood up and VX-5 was disestablished.

0188

Custodian	No. of Aircraft (PAA)	Aircraft (T/M/S)
Flt. Sys. Int'l	2	MU-2
NAVAIR (FS)	1	QF-4S
NAVAIR (FS)	2	F/A-18A
NAVAIR (FS)	21	F-4N
NAVAIR (FS)	1	A-6E
NAVAIR (FS)	1	RF-4B

*Presently assigned aircraft.
**Type/model/series.
***Denotes Aircraft in preservation status at aircraft storage facility. Storage facility is not on ramp/aprons but has towing access to ramps.

0189 A

Custodian	No. of Aircraft (PAA)	Aircraft (T/M/S)
Flt. Sys. Int'l	3	MU-2
NAVAIR (FS)	1	QF-4
NAVAIR (FS)	2	F/A-18
NAVAIR (FS)	21	F-4N

*Presently assigned aircraft.
**Type/model/series.
***Denotes Aircraft in preservation status at aircraft storage facility. Storage facility is not on ramp/aprons but has towing access to ramps.

Document Separator

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?*

Indoor: Electronic Warfare Integration Laboratory (EWIL)
The EWIL uses the Multiple Agile Radar Threat Simulator (MARTS), the Multiple Agile Radar Simulator (MARS), and other stand-alone simulators to provide low- to medium-fidelity waveforms. The EWIL can simulate 22 threats without pulse deletions and up to 118 threats with pulse deletions.

Outdoor: Electronic Combat Range (ECR)
ECR has the combination of 44 emitter simulators (ESs), emitter receiver processors (ERPs), jammers, and real threats (red and gray) listed below.

1 SPOON REST. The Spoon Rest simulator is a full ERP simulation of the land-based Spoon Rest medium-range search and acquisition radar. This system provides angular position information and also gross height locations. This radar is operated by one person and is fully integrated into the ECR Command and Control system. Near-term plans are to supplement this simulator with its
2 equivalent foreign material exploitation (FME) system. This FME equipment was delivered to ECR in April 1994. These radars also have video outputs of the operator displays.

3 FLAT FACE. The Flat Face simulator is a full ERP simulation of the land-based Flat Face medium-range search and acquisition radar. This system provides angular position information, and also gross height locations. This radar is operated by one person and is fully integrated into the ECR Command and Control system. Near-term plans are to supplement this simulator with its
4 equivalent FME system. This FME equipment was delivered to ECR in April 1994. These radars also have video outputs of the operator displays.

5 5 HAWK BATTERY. The Hawk Battery consists of one pulse acquisition radar, one continuous-wave (CW) acquisition radar, one range-only radar, one high-power illuminator tracking radar,
6 and one battery control central. These are actual U.S.-built Hawk Radar systems that simulate a
7 Phase II Hawk Battery. Very close to initial operating capability (IOC) are some portions of a
8 Basic Hawk Battery. Efforts continue to obtain an Improved Hawk Battery. Medium-range plans
9 are to instrument these systems for digital data and video outputs of the operator displays.

5 10 FAN SONG E. The Fan Song E is a full ERP simulator of the land based SA-2 fire-control system. This medium-/long-range multimode track-while-scan radar is operated by a crew of four and is instrumented to measure and output digital data on the operation of the system. This radar also has boresight video camera output and video outputs of the operator displays.

11 FAN SONG E and C. The Fan Song E and C are ES/ERP simulators of the land based SA-2 system. These simulations are located at Land Site 2 at ECR. These radars have boresight video 12 camera output and video outputs of the operator displays. While these radars are closed-loop tracking systems, they are no longer instrumented to measure and record digital data.

TOP STEER. The Top Steer simulator is a full ERP simulation of the sea-based Top Steer long-13 range search and acquisition radar. This system provides angular position and fine height information on multiple targets using advanced techniques such as pulse compression, frequency agility, and multitransmitter exceedingly high average power. This system will be fully integrated into the ECR Command and Control system. Instrumented to measure and output digital data on the operation of the system, this radar also has video outputs of the operator displays.

POP GROUP. The POP GROUP is a sea-based close-in-air-defense-system consisting of a short-A 14 range acquisition radar and a monopulse fire-control radar. The ECR system is a full ERP simulator operated by a crew of three. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays.

15 POP GROUP ES. This POP GROUP ES simulator is an emitter-only system used to create a more realistic radar frequency (RF) environment during testing. It is directed via time-space-position information (TSPI) from the ECR data chain. The ECR emitter simulator system provides authentic signals in space for the purpose of creating a more realistic threat density during testing. Actual emitters are located throughout the range and controlled from a central point. Several other slaved emitter simulators are in development at this time. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output.

16 FOOTBALL BRAVO. The Football Bravo is a simulator of a sea-based jamming system. It is currently under development/integration at ECR.

Semi-Active Threat Simulation Missile Seeker. The SATS missile seeker is a ground-mounted 17 system simulating the GRUMBLE missile seeker. The system consists of a receiver, data link with S the TOP DOME fire-control radar, and a variable beamwidth antenna used to simulate missile closure on the target. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output.

HAWK SCREECH and SUN VISOR. The HAWK SCREECH/SUN VISOR System simulates 15 two early model sea-based gun-control radar systems. The radars are track-while-scan systems and A are operated by a crew of three. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays.

TOP DOME/FLAP LID/TOMB STONE. The TOP DOME system is a full ERP simulator of the S 19 sea-based SA-N-6 fire-control radar. This radar was the first radar in DOD to be validated in accordance with the OSD standard for Simulator Validation. It is the most modern of the ECR radar systems and utilizes phased array and pulse Doppler technology. The system is capable of tracking and engaging multiple targets simultaneously. It is a key element of the Semi-Active-Threat Simulation. This system is also validated as a simulation of the land-based SA-10 FLAP LID / TOMB STONE fire-control radar system. The entire SATS system is manned by a crew of six. Instrumented to measure and output digital data on the operation of the system, this radar also has multiple boresight video camera outputs and video outputs of the operator displays.

0191

GRILL PAN. The Grill Pan simulator is a full ERP simulator of the sea-based SA-12 fire-control radar. It is one of the most modern of the ECR radar systems and utilizes phased array and pulse Doppler technology. The system is capable of tracking and engaging multiple targets simultaneously. Instrumented to measure and output digital data on the operation of the system, this radar also has a selectable boresight video camera output and video outputs of the operator displays. (1 threat)

STRAIGHT FLUSH. ECR has two Straight Flush threat systems. One Straight Flush is an emitter simulator of the land-based, semiactive SA-6 fire-control radar. This is a short- to medium-range system. The second is a real FME system. (2 threats)

LOW BLOW. The Low Blow simulator is a full ERP simulation of the land-based SA-3 fire-control radar system. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays. (1 threat)

LOW BLOW ES. The Low Blow ES is a emitter simulator of the land-based SA-3 fire-control radar system. (1 threat)

GUN DISH. ECR has two Gun Dish emitter simulators of the land-based ZSU-23 fire-control radar system. One of these radars will be instrumented to measure and output digital data on the operation of the system. These radars also have boresight video camera output and video outputs of the operator displays. (2 threats)

PEEL GROUP. The PEEL GROUP simulator is a full ERP simulation of the sea-based SA-N-1 fire-control radar. This early radar system is a track-while-scan radar operated by a crew of four. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays. (1 threat)

HEADLIGHTS. The HEADLIGHTS simulator is a full ERP simulation of the sea-based SA-N-3 fire-control radar. This medium-/long-range track-while-scan radar is operated by a crew of four. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays. (1 threat)

DRUM TILT. The DRUM TILT simulator is a full ERP simulation of the sea-based DRUM TILT gun-control radar. This system is a track-while-scan radar used to direct close-in gun support and is operated by a crew of three. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays. (1 threat)

HEAD NET C. The HEAD NET C simulator is a full ERP simulation of the sea-based HEAD NET C long-range search-and-acquisition radar. This system provides angular position information, and also gross height locations. This radar is operated by one person and is fully integrated into the ECR Command and Control system. This radar has video outputs of the operator displays. (1 threat)

SPS 48 C. The SPS 48 C simulator is a U.S. Navy radar used as a surrogate of the TOP PLATE long-range search-and-acquisition radar. This radar is operated by a crew of two and is fully integrated into the ECR Command and Control system using a standard NTDS interface package. (1 threat)

GAMMON/GRAIL. The GAMMON/GRAIL simulator is the only ECR infrared (IR) simulator. Two IR seeker simulators are mounted on one pedestal. They simulate the SA-N-5, SA-5, SA-N-8, and the SA-9. It is currently under development. Instrumented to measure and output

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?*

Indoor: Electronic Warfare Integration Laboratory (EWIL)
The EWIL uses the Multiple Agile Radar Threat Simulator (MARTS), the Multiple Agile Radar Simulator (MARS), and other stand-alone simulators to provide low- to medium-fidelity waveforms. The EWIL can simulate 22 threats without pulse deletions and up to 118 threats with pulse deletions.

Outdoor: Electronic Combat Range (ECR)
ECR has the combination of 39 operational emitter simulators (ESs), emitter receiver processors (ERPs), jammers, and real threats (red and gray) listed below. Five more threats are under development or major modification at this time for a total of 44 threat systems.

SPOON REST. The Spoon Rest simulator is a full ERP simulation of the land-based Spoon Rest medium-range search and acquisition radar. This system provides angular position information and also gross height locations. This radar is operated by one person and is fully integrated into the ECR Command and Control system. Near-term plans are to supplement this simulator with its equivalent foreign material exploitation (FME) system. This FME equipment was delivered to ECR in April 1994. These radars also have video outputs of the operator displays. (2 threats)

FLAT FACE. The Flat Face simulator is a full ERP simulation of the land-based Flat Face medium-range search and acquisition radar. This system provides angular position information, and also gross height locations. This radar is operated by one person and is fully integrated into the ECR Command and Control system. Near-term plans are to supplement this simulator with its equivalent FME system. This FME equipment was delivered to ECR in April 1994. These radars also have video outputs of the operator displays. (2 threats)

HAWK BATTERY. The Hawk Battery consists of one pulse acquisition radar, one continuous-wave (CW) acquisition radar, one range-only radar, one high-power illuminator tracking radar, and one battery control central. These are actual U.S.-built Hawk Radar systems that simulate a Phase II Hawk Battery. Very close to initial operating capability (IOC) are some portions of a Basic Hawk Battery. Efforts continue to obtain an Improved Hawk Battery. Medium-range plans are to instrument these systems for digital data and video outputs of the operator displays. (6 threats)

FAN SONG E. The Fan Song E is a full ERP simulator of the land based SA-2 fire-control system. This medium-/long-range multimode track-while-scan radar is operated by a crew of four and is instrumented to measure and output digital data on the operation of the system. This radar also has boresight video camera output and video outputs of the operator displays. (1 threat)

0190. A.

FAN SONG E and C. The Fan Song E and C are ES/ERP simulators of the land based SA-2 system. These simulations are located at Land Site 2 at ECR. These radars have boresight video camera output and video outputs of the operator displays. While these radars are closed-loop tracking systems, they are no longer instrumented to measure and record digital data. (2 threats)

TOP STEER. The Top Steer simulator is a full ERP simulation of the sea-based Top Steer long-range search and acquisition radar. This system provides angular position and fine height information on multiple targets using advanced techniques such as pulse compression, frequency agility, and multitransmitter exceedingly high average power. This system will be fully integrated into the ECR Command and Control system. Instrumented to measure and output digital data on the operation of the system, this radar also has video outputs of the operator displays. (1 threat in development)

POP GROUP. The POP GROUP is a sea-based close-in-air-defense-system consisting of a short-range acquisition radar and a monopulse fire-control radar. The ECR system is a full ERP simulator operated by a crew of three. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays. (1 threat)

POP GROUP ES. This POP GROUP ES simulator is an emitter-only system used to create a more realistic radar frequency (RF) environment during testing. It is directed via time-space-position information (TSPI) from the ECR data chain. The ECR emitter simulator system provides authentic signals in space for the purpose of creating a more realistic threat density during testing. Actual emitters are located throughout the range and controlled from a central point. Several other slaved emitter simulators are in development at this time. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output. (1 threat)

FOOTBALL BRAVO. The Football Bravo is a simulator of a sea-based jamming system. It is currently under development/integration at ECR. (1 threat in development)

Semi-Active Threat Simulation Missile Seeker. The SATS missile seeker is a ground-mounted system simulating the GRUMBLE missile seeker. The system consists of a receiver, data link with the TOP DOME fire-control radar, and a variable beamwidth antenna used to simulate missile closure on the target. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output. (1 threat)

HAWK SCREECH and SUN VISOR. The HAWK SCREECH/SUN VISOR System simulates two early model sea-based gun-control radar systems. The radars are track-while-scan systems and are operated by a crew of three. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays. (2 threats)

TOP DOME/FLAP LID/TOMB STONE. The TOP DOME system is a full ERP simulator of the sea-based SA-N-6 fire-control radar. This radar was the first radar in DOD to be validated in accordance with the OSD standard for Simulator Validation. It is the most modern of the ECR radar systems and utilizes phased array and pulse Doppler technology. The system is capable of tracking and engaging multiple targets simultaneously. It is a key element of the Semi-Active-Threat Simulation. This system is also validated as a simulation of the land-based SA-10 FLAP LID / TOMB STONE fire-control radar system. The entire SATS system is manned by a crew of six. Instrumented to measure and output digital data on the operation of the system, this radar also has multiple boresight video camera outputs and video outputs of the operator displays. (1 threat in major modification)

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GRILL PAN. The Grill Pan simulator is a full ERP simulator of the sea-based SA-12 fire-control radar. It is one of the most modern of the ECR radar systems and utilizes phased array and pulse Doppler technology. The system is capable of tracking and engaging multiple targets simultaneously. Instrumented to measure and output digital data on the operation of the system, this radar also has a selectable boresight video camera output and video outputs of the operator displays.

STRAIGHT FLUSH. The Straight Flush is a emitter simulator of the land-based, semiactive SA-6 fire-control radar. This is a short- to medium-range system. Near-term plans are to supplement this simulator with its equivalent FME system.

LOW BLOW. The Low Blow simulator is a full ERP simulation of the land-based SA-3 fire-control radar system. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays.

LOW BLOW ES. The Low Blow ES is a emitter simulator of the land-based SA-3 fire-control radar system.

GUN DISH. ECR has two Gun Dish emitter simulators of the land-based ZSU-23 fire-control radar system. One of these radars will be instrumented to measure and output digital data on the operation of the system. These radars also have boresight video camera output and video outputs of the operator displays.

PEEL GROUP. The PEEL GROUP simulator is a full ERP simulation of the sea-based SA-N-1 fire-control radar. This early radar system is a track-while-scan radar operated by a crew of four. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays.

HEADLIGHTS. The HEADLIGHTS simulator is a full ERP simulation of the sea-based SA-N-3 fire-control radar. This medium-/long-range track-while-scan radar is operated by a crew of four. Instrumented to measure and output digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays.

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SPS 48 C. The SPS 48 C simulator is a U.S. Navy radar used as a surrogate of the TOP PLATE long-range search-and-acquisition radar. This radar is operated by a crew of two and is fully integrated into the ECR Command and Control system using a standard NTDS interface package.

GAMMON/GRAIL. The GAMMON/GRAIL simulator is the only ECR infrared (IR) simulator. Two IR seeker simulators are mounted on one pedestal. They simulate the SA-N-5, SA-5, SA-N-8, and the SA-9. It is currently under development. Instrumented to measure and output

digital data on the operation of the system, this system also has boresight video camera output that shows seeker track points and video outputs of the operator displays. (1 threat in major modification)

FLYCATCHER. The FLYCATCHER system is a Dutch-built radar used as a surrogate for the KITE SCREECH sea-based gun-control radar. It is the only millimeter wave radar at ECR. Instrumented to measure and output for digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays. (1 threat)

LONG TRACK. ECR has two LONG TRACK EW/ACQ radars. These LONG TRACKs are actual foreign radars. One system is in the process of being instrumented for digital data, and both of these radars will be integrated into the ECR Command and Control system. Both of these radars will have video outputs of the operator displays. (2 threats)

THIN SKIN. ECR has two THIN SKIN height-finding radars that are associated with the LONG TRACK. These THIN SKINs are actual foreign radars. One system is in the process of being instrumented for digital data. Both systems will have video outputs of the operator displays. (2 threats)

LAND ROLL. The LAND ROLL is an actual foreign radar. It is an SA-8 close-in-air-defense fire-control radar. ECR has two of these systems. One will be instrumented to measure and output for digital data on the operation of the system. Both radars will have boresight video camera output and video outputs of the operator displays. The second system (with the digital instrumentation) is in the process of being instrumented for digital data and will be integrated into the ECR Command and Control system. (2 threats)

ROLAND. The ROLAND system is a U.S.-built ROLAND II. It is a close-in-air-defense system. One of ECR's systems is in the process of being instrumented to measure and output digital data on the operation of the system. This radar also has boresight video camera output and video outputs of the operator displays. There are two other noninstrumented, systems that function as emitter simulators. Two more of these systems are at ECR and are being used for spare parts to keep the other three working. (3 threats)

0193.A

digital data on the operation of the system, this system also has boresight video camera output that shows seeker track points and video outputs of the operator displays.

FLYCATCHER. The FLYCATCHER system is a Dutch-built radar used as a surrogate for the KITE SCREECH sea-based gun-control radar. It is the only millimeter wave radar at ECR. Instrumented to measure and output for digital data on the operation of the system, this radar also has boresight video camera output and video outputs of the operator displays.

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-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?*

Indoor: Electronic Warfare Integration Lab (EWIL)
Typically 50 simultaneous threats maximum. Actual number is dependent on event requirements and is impacted by pulse interaction and dropout.
The types of systems that can be simulated are EW/ACQ, AAA, SAM, and Jammer.
The signal density is approximately 400,000 pulses per second.
Power levels range from -10 dbm to 0 dbm.
The frequency (band) ranges are from 0.6 GHz through 18.0 GHz.
EWIL supports both Radiated and Injected signals.

Outdoor: Electronic Combat Range (ECR)
Of the 44 threats listed in 3.3.A.1, 43 could be operated simultaneously. Five more threats are under development or integration at this time.
The types of systems that can be simulated are EW/ACQ, AAA, SAM, and jammer.
The signal density is approximately 435,000 pulses per second.
Power levels range from 20 W to 1.5 MW peak power and 20 W to 50 KW average power for EW/ACQ and tracking radars.
The frequency (band) ranges are from 150 MHz to 35 GHz in the RF band, and up to IR and electro-optical (visible light) trackers.

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

Yes. Four ECR threat radars systems are validated in accordance with the OSD Mandated CROSSBOW-S Simulator Validation Process by DDDR&E (T&E) and three are being validated at this time.

ECR Threat System	OSD Validation Status
TOP DOME	Validated @ IOC.
GRILL PAN	Validated @ design/CDR. IOC validation report is complete pending final approval.
SPS-48C	Validated @ IOC.
TOP STEER	Validated @ IOC.
HEADLIGHTS	Operational validation complete.
POP GROUP	Operational validation report 50% complete.
Command and Control System #1	IOC validation report is complete pending final approval.

0194. A

-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?*

Indoor: Electronic Warfare Integration Lab (EWIL)
Typically 50 simultaneous threats maximum. Actual number is dependent on event requirements and is impacted by pulse interaction and dropout.
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SPS-48C	Validated @ IOC.
TOP STEER	Validated @ IOC.
HEADLIGHTS	Operational validation complete.
POP GROUP	Operational validation report 50% complete.
Command and Control System #1	IOC validation report is complete pending final approval.

All the threat radar systems listed in 3.3.A.1 are validated in accordance with the Navy Simulator Validation Process by NAVAIR PMA-272. The threat software models in use at the ECR underwent a major upgrade in FY89 and FY90. These models have been evaluated by the Office of Naval Intelligence (ONI) and approved as representative of the threat baseline. ONI works closely with ECR to ensure that ECR maintains up-to-date and representative threat flyout models. New intelligence information will force upgrades to several systems in the near future, but this affects all OARs and facilities operating flyout simulations, including ECR. Funded upgrade programs are in place to address intelligence changes.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
Yes, open-loop testing is conducted.
No, reactive testing is not conducted.
No, closed-loop testing is not conducted.

Outdoor: Electronic Combat Range (ECR)
Yes, open-loop testing is conducted.
Yes, reactive testing is conducted.
Yes, closed-loop testing is conducted.

ECM effectiveness tests, including track error measurement, missile and gun miss distance calculations, and probability of engagement, are conducted at ECR. This type of testing can only be done effectively using closed-loop reactive threat simulations. The ECR Slate Moving Target Simulation uses these closed-loop reactive threat systems for free-space hardware-in-the-loop (HWIL) tests. The closed-loop reactive systems are also used to conduct radar-cross-section measurements for air vehicles and expendables as seen by the threat for up to four frequencies simultaneously.

Threat warning receiver tests include accuracy, sensitivity, and logic. Captive antiradiation missile (ARM) weapons seekers and related avionics systems are tested. These tests only require the use of open-loop emitter simulators. A few of the closed-loop systems have special modes called the Signal In Space Mode to generate specific signals required for these types of tests.

Specific types are identified in 3.3.A.1.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
The EWIL can produce approximately 118 low-fidelity non-frequency agile threats with total densities less than or equal to 5,000,000 PPS. Alternately, the EWIL can produce 14 medium-fidelity pulse-to-pulse frequency agile scanning threats plus four medium-fidelity nonfrequency agile scanning threats plus four medium-fidelity non-frequency agile non-scanning threats with a total density of less than or equal to 5,000,000 PPS without pulse deletions.

Outdoor: Electronic Combat Range (ECR)
Threat fidelity of ECR threat systems is very high; all threats meet the minimum of 85% of critical parameters. Twenty of the threat systems are real-world production systems. In most cases, ECR has a single copy of most threat systems. Real-world scenarios would have multiple copies of the same threat systems. Present ECR threat signal density is approximately 435,000 pulses per second.

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All the threat radar systems listed in 3.3.A.1 are validated in accordance with the Navy Simulator Validation Process by NAVAIR PMA-272. The threat software models in use at the ECR underwent a major upgrade in FY89 and FY90. These models have been evaluated by the Office of Naval Intelligence (ONI) and approved as representative of the threat baseline. ONI works closely with ECR to ensure that ECR maintains up-to-date and representative threat flyout models. New intelligence information will force upgrades to several systems in the near future, but this affects all OARs and facilities operating flyout simulations, including ECR. Funded upgrade programs are in place to address intelligence changes.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
Yes, open-loop testing is conducted.
No, reactive testing is not conducted.
No, closed-loop testing is not conducted.

Outdoor: Electronic Combat Range (ECR)
Yes, open-loop testing is conducted.
Yes, reactive testing is conducted.
Yes, closed-loop testing is conducted.

ECM effectiveness tests, including track error measurement, missile and gun miss distance calculations, and probability of engagement, are conducted at ECR. This type of testing can only be done effectively using closed-loop reactive threat simulations. The ECR Slate Moving Target Simulation uses these closed-loop reactive threat systems for free-space hardware-in-the-loop (HWIL) tests. The closed-loop reactive systems are also used to conduct radar-cross-section measurements for air vehicles and expendables as seen by the threat for up to four frequencies simultaneously.

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Outdoor: Electronic Combat Range (ECR)
Threat fidelity of ECR threat systems is very high; all threats meet the minimum of 85% of critical parameters. Twenty of the threat systems are real-world production systems. In most cases, ECR has a single copy of most threat systems. Real-world scenarios would have multiple copies of the same threat systems. Present ECR threat signal density is approximately 435,000 pulses per second.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
Yes. The indoor laboratory can simulate low-fidelity threat signals of all types within the operational constraints and frequency of the programmable voltage controlled oscillators supporting this activity.

Outdoor: Electronic Combat Range (ECR)
Yes. ECR is the only DOD EC open-air range with the ability to test against naval air defense systems and combinations of land and naval systems (littoral threat) either individually or as part of an integrated air defense system (IADS). ECR can use all the threats described above in any combination to simulate scenarios ranging from a pure overland EC engagement to a pure blue-water EC engagement or anything in between.

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

-3.3.A.7.A *Threat lay down?*

Indoor: Electronic Warfare Integration Lab (EWIL)
Any threat dispersion can be simulated within the constraints previously mentioned. Four-quadrant DOA simulation is provided for the AN/ALR-67. DOA simulation is static.

Outdoor: Electronic Combat Range (ECR)
ECR Threat systems have been operated at numerous locations at China Lake. ECR has a number of mobile and transportable threats which can be moved to almost any location required to support tests with required dispersions. ECR threats have been used on the Nellis AFB Complex in the past. The ECR sea-based threats are arranged in a manner similar to how they would be arranged on a ship. The ECR sea-threat sites are spaced at distances that are representative of spacing used by ships at sea sailing in formation.

-3.3.A.7.B *Representative distance?*

Indoor: Electronic Warfare Integration Lab (EWIL)
Minimum simulated distance is limited by the maximum output power of the simulators. Maximum simulated distance is infinity.

Outdoor: Electronic Combat Range (ECR)
ECR Threat systems have been operated at numerous locations at China Lake. ECR has a number of mobile and transportable threats which can be moved to almost any location required to support tests with required dispersions. ECR threats have been used on the Nellis AFB Complex in the past. The ECR sea-based threats are arranged in a manner similar to how they would be arranged on a ship. The ECR sea-threat sites are spaced at distances that are representative of spacing used by ships at sea sailing in formation.

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

-3.3.A.7.A *Threat lay down?*

Indoor: Electronic Warfare Integration Lab (EWIL)
Any threat dispersion can be simulated within the constraints previously mentioned. Four-quadrant DOA simulation is provided for the AN/ALR-67. DOA simulation is static.

Outdoor: Electronic Combat Range (ECR)
ECR Threat systems have been operated at numerous locations at China Lake. ECR has a number of mobile and transportable threats which can be moved to almost any location required to support tests with required dispersions. ECR threats have been used on the Nellis AFB Complex in the past. The ECR sea-based threats are arranged in a manner similar to how they would be arranged on a ship. The ECR sea-threat sites are spaced at distances that are representative of spacing used by ships at sea sailing in formation.

-3.3.A.7.B *Representative distance?*

Indoor: Electronic Warfare Integration Lab (EWIL)
Minimum simulated distance is limited by the maximum output power of the simulators. Maximum simulated distance is infinity.

Outdoor: Electronic Combat Range (ECR)
ECR Threat systems have been operated at numerous locations at China Lake. ECR has a number of mobile and transportable threats which can be moved to almost any location required to support tests with required dispersions. ECR threats have been used on the Nellis AFB Complex in the past. The ECR sea-based threats are arranged in a manner similar to how they would be arranged on a ship. The ECR sea-threat sites are spaced at distances that are representative of spacing used by ships at sea sailing in formation.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
Yes. Threat simulated positions are static during a test sequence. However, the only limitation on simulated position is minimum distance.

Outdoor: Electronic Combat Range (ECR)
Yes. For instrumented tests, under the constrains of the current fiber-optic-based instrumentation communication system, the threats are not mobile within a single test scenario. But between test scenarios a number of the threat systems can be moved to new positions on the instrumentation system. For noninstrumented tests, a few ECR threats are mobile and transportable and can be moved to almost any location required to support tests with required dispersions.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
No.

Outdoor: Electronic Combat Range (ECR)
No.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
Yes. The indoor facility can normally support two Radar Warning Receivers (RWRs), one jammer, one dispenser, and one HARM system simultaneously.

Outdoor: Electronic Combat Range (ECR)
Yes.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
Yes. Threat simulated positions are static during a test sequence. However, the only limitation on simulated position is minimum distance.

Outdoor: Electronic Combat Range (ECR)
Yes. For instrumented tests, under the constrains of the current fiber-optic-based instrumentation communication system, the threats are not mobile within a single test scenario. But between test scenarios a number of the threat systems can be moved to new positions on the instrumentation system. For noninstrumented tests, a few ECR threats are mobile and transportable and can be moved to almost any location required to support tests with required dispersions.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
No.

Outdoor: Electronic Combat Range (ECR)
No.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
Yes. The indoor facility can normally support two Radar Warning Receivers (RWRs), one jammer, one dispenser, and one HARM system simultaneously.

Outdoor: Electronic Combat Range (ECR)
Yes.

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.*

Indoor: Electronic Warfare Integration Lab (EWIL)
Yes. The indoor facility is limited to 4-foot by 4-foot by 6-foot dimensions and weight limitation of approximately 2500 pound per square foot. Removal or improvement of limits would require capital investments in basic facility (building) costs.

Outdoor: Electronic Combat Range (ECR)
There is no limit on airborne EW testing other than that imposed by existing airspace. The Slate Range Facility (SRF) is located at an elevation of 4700 feet MSL overlooking the ECR complex. The SRF provides signal monitoring for ECR; generates synthetic static and dynamic radar return signals used during radar alignment, calibration, and diagnostic testing; and is the heart of the Hardware-In-The-Loop Moving Target Simulation. For ground tests, the SRF can test a variety of EC equipment. If the equipment is capable of being tested without a controlled environment, there is a concrete pad, 50 feet by 55 feet. For equipment requiring controlled environmental conditions, there is space specifically identified for customer testing. Equipment must fit through a 6-foot by 6-foot entry, and not exceed 400 pounds per square foot. The total area for this equipment is 18 feet by 18 feet, with a 10-foot height limit. At this time, no improvements are planned to increase the SRF capability.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
The EWIL's purpose is RWR performance testing and EW suite integration and interference testing. The AN/ALR-67(V)2,3, and 4 , the ALQ-126B, the ALQ-165, the ALE-47, and the HARM systems are all supported in the EWIL for this purpose.

Outdoor: Electronic Combat Range (ECR)
The number is test dependent. There are no quantifiable limits.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
0.5 GHz to 40 GHz.

Outdoor: Electronic Combat Range (ECR)
150 MHz to 40 GHz, infrared, and visible light.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
0.5 GHz to 40 GHz.

Outdoor: Electronic Combat Range (ECR)
From 150 MHz to 40 GHz and the infrared and visible spectrums. ECR has radars operating from 150 MHz to 35 GHz. The actual threat systems have boresight cameras or optical tracking systems that can be used for testing in the visible light region. The GAMMON/GRAIL simulator has test capability in the 1.06 micron region.

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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.*

Indoor: Electronic Warfare Integration Lab (EWIL)
Yes. The indoor facility is limited to 4-foot by 4-foot by 6-foot dimensions and weight limitation of approximately 2500 pound per square foot. Removal or improvement of limits would require capital investments in basic facility (building) costs.

Outdoor: Electronic Combat Range (ECR)
There is no limit on airborne EW testing other than that imposed by existing airspace. The Slate Range Facility (SRF) is located at an elevation of 4700 feet MSL overlooking the ECR complex. The SRF provides signal monitoring for ECR; generates synthetic static and dynamic radar return signals used during radar alignment, calibration, and diagnostic testing; and is the heart of the Hardware-In-The-Loop Moving Target Simulation. For ground tests, the SRF can test a variety of EC equipment. If the equipment is capable of being tested without a controlled environment, there is a concrete pad, 50 feet by 55 feet. For equipment requiring controlled environmental conditions, there is space specifically identified for customer testing. Equipment must fit through a 6-foot by 6-foot entry, and not exceed 400 pounds per square foot. The total area for this equipment is 18 feet by 18 feet, with a 10-foot height limit. At this time, no improvements are planned to increase the SRF capability.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
The EWIL's purpose is RWR performance testing and EW suite integration and interference testing. The AN/ALR-67(V)2,3, and 4 , the ALQ-126B, the ALQ-165, the ALE-47, and the HARM systems are all supported in the EWIL for this purpose.

Outdoor: Electronic Combat Range (ECR)
The number is test dependent. There are no quantifiable limits.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
0.5 GHz to 40 GHz.

Outdoor: Electronic Combat Range (ECR)
150 MHz to 40 GHz, infrared, and visible light.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
0.5 GHz to 40 GHz.

Outdoor: Electronic Combat Range (ECR)
From 150 MHz to 40 GHz and the infrared and visible spectrums. ECR has radars operating from 150 MHz to 35 GHz. The actual threat systems have boresight cameras or optical tracking systems that can be used for testing in the visible light region. The GAMMON/GRAIL simulator has test capability in the 1.06 micron region.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
No.

Outdoor: Electronic Combat Range (ECR)
Yes. Existing scene generation is comprised of 2-D map views in real time without ground terrain or structures. Current FY94/95 capital investments will provide 3-D scene generation capability viewed from any arbitrary position: air-to-ground (pilot view), ground-to-air (threat view), etc. The 3-D software shows aircraft position, threat track position, ground terrain, and ground structures in real time. This software is part of the capital improvements described in 3.1.E.4 above.

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

Indoor: Electronic Warfare Integration Lab (EWIL)
No.

Outdoor: Electronic Combat Range (ECR)
Yes. Existing scene generation is comprised of 2-D map views in real time without ground terrain or structures. Current FY94/95 capital investments will provide 3-D scene generation capability viewed from any arbitrary position: air-to-ground (pilot view), ground-to-air (threat view), etc. The 3-D software shows aircraft position, threat track position, ground terrain, and ground structures in real time. This software is part of the capital improvements described in 3.1.E.4 above.

0199. A

Document Separator

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?

Yes. China Lake's North Range complex has conducted High Energy Laser tests from a 707 aircraft platform against airborne missiles. Maximum range for these tests were approximately 10 nautical miles.

High-power microwave (HPM) sources have been operated against appropriate targets in joint-service tests conducted over a 4-month period in FY93. Range facilities at this installation were selected due to the remoteness and space available and the corresponding tolerance to broadband microwave radiation not available at other service T&E facilities.

The High Energy Laser Experimental Test System (HELETS) located at the White Sands Detachment is used against a wide variety of airborne targets including BQM-34 drones, supersonic Vandal, Styx (SS-N-2), and other tactical cruise missile targets.

0200. A

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?

Yes. China Lake's North Range complex has conducted High Energy Laser tests from a 707 aircraft platform against airborne missiles. Maximum range for these tests were approximately 10 nautical miles.

High-power microwave (HPM) sources have been operated against appropriate targets in joint-service tests conducted over a 4-month period in FY93. Range facilities at this installation were selected due to the remoteness and space available and the corresponding tolerance to broadband microwave radiation not available at other service T&E facilities.

The High Energy Laser Experimental Test System (HELETS) located at the White Sands Detachment is used against a wide variety of airborne targets including BQM-34 drones, supersonic Vandal, Styx (SS-N-2), and other tactical cruise missile targets.

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?*

Total land space available is 1697 square miles (R-2505 and R-2524).

-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.*

An almost infinite number of ranges are available, and new ones are set up and taken down routinely. There are, however, a number of designated "subranges" that can be used independently or collectively as one large range, depending on the test scenario. The total range complex includes over 1.1 million acres of land with the primary subranges shown in the table below.

Range	Approx. Size (Sq Mi)	Primary Usage
George	325	Air and Surface
Baker	90	Air-to-Surface
Charlie	60	Air-to-Surface
Airport Lake	35	Air-to-Surface
Coso	114	Air, Training, Tactics
Mojave B North	265	Air, Training
Mojave B South	230	Air-to-Surface
Randsburg Wash	288	Surface
Area R	3	Warhead
Burro Canyon	3	Warhead
CLP	40	Environment, Safety, Propulsion

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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?*

Total land space available is 1730 square miles (R-2505 and R-2524).

-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.*

An almost infinite number of ranges are available, and new ones are set up and taken down routinely. There are, however, a number of designated "subranges" that can be used independently or collectively as one large range, depending on the test scenario. The total range complex includes over 1.1 million acres of land with the primary subranges shown in the table below.

Range	Approx. Size (Sq Mi)	Primary Usage
George	250	Air and Surface
Baker	75	Air-to-Surface
Charlie	40	Air-to-Surface
Airport Lake	35	Air-to-Surface
Coso	70	Air, Training, Tactics
Mojave B North	220	Air, Training
Mojave B South	175	Air-to-Surface
Randsburg Wash	120	Surface
Area R	3	Warhead
Burro Canyon	3	Warhead
CLP	35	Environment, Safety, Propulsion

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

The maximum range, by type of test is*

- Air-to-surface weapons 60 nautical miles
- Air-to-air weapons 60 nautical miles
- Surface-to-air weapons 60 nautical miles
- Surface-to-surface weapons 60 nautical miles

*Ranges available for on-site testing. Ranges of 1,000 nautical miles are possible for air-to-surface and surface-to-aurface weapons testing by use of the Instrumentation Route IR-200. This route extends from the Point Mugu Sea Range, to Edwards AFB, China Lake, and UTTR. Navy land-based live warhead testing of surface-to-air missile systems (Standard Missile 2 Block IV), air-to-surface stand-off missile systems (Standoff Land Attack Missile), and advanced gun systems can be conducted at NAWCWPNS White Sands with missile-target intercepts occurring at ranges of 88 nautical miles.

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

The maximum range, by type of test is*

- Air-to-surface weapons 60 nautical miles
- Air-to-air weapons 28 nautical miles
- Surface-to-air weapons 28 nautical miles
- Surface-to-surface weapons 28 nautical miles

*Ranges available for on-site testing. Ranges of 1,000 nautical miles are possible for air-to-surface and surface-to-aurface weapons testing by use of the Instrumentation Route IR-200. This route extends from the Point Mugu Sea Range, to Edwards AFB, China Lake, and UTTR. Navy land-based live warhead testing of surface-to-air missile systems (Standard Missile 2 Block IV), air-to-surface stand-off missile systems (Standoff Land Attack Missile), and advanced gun systems can be conducted at NAWCWPNS White Sands with missile-target intercepts occurring at ranges of 88 nautical miles.

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

China Lake

Unguided 2000-pound-class ballistic weapons (FY92)
Live = 8
Inert = 3

Unguided 2000-pound-class ballistic weapons (FY93)
Live = 0
Inert = 0

Guided 2000-pound weapons (FY92)
Live = 0
Inert = 4

Guided 2000-pound weapons (FY93)
Live = 2
Inert = 4

Standoff weapons (FY92)
Live = 12
Inert = 74

Standoff weapons (FY93)
Live = 13
Inert = 52

Short-range missiles (FY92)
Below 5000 feet MSL = 2
Between 5,000 and 20,000 feet MSL = 14
Above 20,000 feet MSL = 1

Short-range missiles (FY93)
Below 5000 feet MSL = 2
Between 5,000 and 20,000 feet MSL = 8
Above 20,000 feet MSL = 1

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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

China Lake
Unguided 2000-pound-class ballistic weapons (FY92)
Live = 8
Inert = 3
Unguided 2000-pound-class ballistic weapons (FY93)
Live = 0
Inert = 0

Guided 2000-pound weapons (FY92)
Live = 0
Inert = 4
Guided 2000-pound weapons (FY93)
Live = 2
Inert = 4

Standoff weapons (FY92)
Live = 12
Inert = 74
Standoff weapons (FY93)
Live = 13
Inert = 52

Short-range missiles (FY92)
Below 5000 feet MSL = 2
Between 5,000 and 20,000 feet MSL = 14
Above 20,000 feet MSL = 1
Short-range missiles (FY93)
Below 5000 feet MSL = 2
Between 5,000 and 20,000 feet MSL = 8
Above 20,000 feet MSL = 1

Long-range missiles (FY92)
Below 5000 feet MSL = 1
Between 5,000 and 20,000 feet MSL = 25
Above 20,000 feet MSL = 4
Long-range missiles (FY93)
Below 5000 feet MSL = 0
Between 5,000 and 20,000 feet MSL = 5
Above 20,000 feet MSL = 0

White Sands
Stand-off weapons (FY92)
Live = 0
Inert = 5
Stand-off weapons (FY93)
Live = 0
Inert = 1

Short-range missiles (FY92) = 5
Short-range missiles (FY93) = 27

Long-range missiles (FY92) = 28
Long-range missiles (FY93) = 40

-3.4.B.2.B *Were flight termination systems required? Yes/no.*

Yes. A small percentage (<2%) of the test events conducted annually have weapons with safety footprints that stretch beyond the R-2505/R-2524 restricted area and/or are launched from outside the restricted areas. These missions have required the use of flight termination equipment.

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

Wherever a zero (0) appears in the above categories, it is because no requests were made to test in that category that fiscal year.

-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.

0204. A.

Long-range missiles (FY92)
Below 5000 feet MSL = 1
Between 5,000 and 20,000 feet MSL = 25
Above 20,000 feet MSL = 4
Long-range missiles (FY93)
Below 5000 feet MSL = 0
Between 5,000 and 20,000 feet MSL = 5
Above 20,000 feet MSL = 0

White Sands
Stand-off weapons (FY92)
Live = 0
Inert = 5
Stand-off weapons (FY93)
Live = 0
Inert = 1

Short-range missiles (FY92) = 5
Short-range missiles (FY93) = 27

Long-range missiles (FY92) = 28
Long-range missiles (FY93) = 40

-3.4.B.2.B *Were flight termination systems required? Yes/no.*

Yes. A small percentage (<2%) of the test events conducted annually have weapons with safety footprints that stretch beyond the R-2505/R-2524 restricted area and/or are launched from outside the restricted areas. These missions have required the use of flight termination equipment.

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

Wherever a zero (0) appears in the above categories, it is because no requests were made to test in that category that fiscal year.

-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.

0204

Document Separator

APPENDIX A: FACILITIES/CAPABILITIES FORMS

CATEGORY	PAGE
Modeling and Simulation	4
Air Weapon Digital Modeling & Simulation	5
Explosive and Ordnance Modeling	13
Strike Simulation & Modeling	21
Strike Software/Simulation Facility	32
System Modeling & Signal Processing Facility	41
Weapons and Tactics Analysis Center (WEPTAC)	50
Measurement	59
Aeroheat Test Facility	60
Air Breathing Propulsion Laboratory	70
Antiradiation Missile (ARM) Seeker Test Complex	79
Cactus Flats Ordnance Test Area	87
Chemical Analysis Research Facility	95
Detonation Physics Laboratory	103
Dynamic Properties Measurements Complex	113
Energetic Materials Properties Analysis Laboratory	122
Environmental Test Complex	132
Foreign Material Exploitation (FME) & Balloon Test Complex	141
Guidance Components T&A Complex	150
High Hazard Propulsion Test Facility	160
IR Seeker, GCS DDT&E Complex	168
Junction Ranch Radar Cross Section Range	176
Materials Engineering/Failure Analysis Facility	185
Medium Caliber Gun & Ammo Ballistics Test Laboratory	193
Missile Engagement Simulation Arena (MESA)	202

0205 A

APPENDIX A: FACILITIES/CAPABILITIES FORMS

CATEGORY	PAGE
Modeling and Simulation	4
Air Weapon Digital Modeling & Simulation	5
Explosive and Ordnance Modeling	13
Strike Simulation & Modeling	21
Strike Software/Simulation Facility	32
System Modeling & Signal Processing Facility	41
Weapons and Tactics Analysis Center (WEPTAC)	50
Measurement	59
Aeroheat Test Facility	60
Air Breathing Propulsion Laboratory	70
Antiradiation Missile (ARM) Seeker Test Complex	79
Cactus Flats Ordnance Test Area	87
Chemical Analysis Research Facility	95
Detonation Physics Laboratory	103
Dynamic Properties Measurements Complex	113
Energetic Materials Properties Analysis Laboratory	122
Environmental Test Complex	132
Foreign Material Exploitation (FME) & Balloon Test Complex	141
Guidance Components T&A Complex	150
High Hazard Propulsion Test Facility	160
IR Seeker, GCS DDT&E Complex	168
Junction Ranch Radar Cross Section Range	176
Materials Engineering/Failure Analysis Facility	185
Medium Caliber Gun & Ammo Ballistics Test Laboratory	193
Missile Engagement Simulation Arena (MESA)	202

A APP

0205

CATEGORY **PAGE**

Non-Destructive Ordnance Test Facility 210
Optics & Laser Research Facility 218
Ordnance & Propulsion Foreign Materials Exploitation Laboratory .. 226
Ordnance Test Complex 234
RF Seeker/Guidance/Control DDT&E Complex 243
Sensor & Targeting Technology Facility 252
Sled Tracks 264
Strategic Propulsion Test Complex 274
Tactical Propulsion Test Facility 283
VHF Anechoic Chamber 292
Weapons Signal Processing Design Complex 301
Weapons Survivability Laboratory (WSL) 311

Integration Laboratory 319
Actuator and Power Systems Laboratory 320
Antiradiation Missile Integration Complex 329
Armament/Weapons Design, Prototyping, & Integration Facility 338
Composites Development Laboratory 347
Data Link Development Laboratory 355
Electronic Warfare Integration Laboratory 363
Fuze Development Laboratory 372
Laser Seeker Integration and Test Facility 381
Missile/Rocket Motor Assembly Facility 389
Ordnance Assembly Facility 398
Telemetry Development Laboratory 406
TSSAM Mission Planning Facility 414
Warhead/Bomb Assembly/Integration Facilities 422
Weapons Guidance/Control/Seeker IL 431
Weapons System Support Facility, A-6 440
Weapons System Support Facility, AH-1 450
Weapons System Support Facility, AV-8 459
Weapons System Support Facility, F/A-18 469

Hardware-in-the-Loop 480
Mk 45 TDD Engineering Development HITL/Test Laboratory 481
Simulation Laboratory—Missile HITL 489
TSSAM Hardware-in-the-Loop 498

0206 A

CATEGORY	PAGE
Non-Destructive Ordnance Test Facility	210
Optics & Laser Research Facility	218
Ordnance & Propulsion Foreign Materials Exploitation Laboratory	226
Ordnance Test Complex	234
RF Seeker/Guidance/Control DDT&E Complex	243
Sensor & Targeting Technology Facility	252
Sled Tracks	264
Strategic Propulsion Test Complex	274
Tactical Propulsion Test Facility	283
VHF Anechoic Chamber	292
Weapons Signal Processing Design Complex	301
Weapons Survivability Laboratory (WSL)	311
Integration Laboratory	319
Actuator and Power Systems Laboratory	320
Antiradiation Missile Integration Complex	329
Armament/Weapons Design, Prototyping, & Integration Facility	338
Composites Development Laboratory	347
Data Link Development Laboratory	355
Electronic Warfare Integration Laboratory	363
Fuze Development Laboratory	372
Laser Seeker Integration and Test Facility	381
Missile/Rocket Motor Assembly Facility	389
Ordnance Assembly Facility	398
Telemetry Development Laboratory	406
TSSAM Mission Planning Facility	414
Warhead/Bomb Assembly/Integration Facilities	422
Weapons Guidance/Control/Seeker IL	431
Weapons System Support Facility, A-6	440
Weapons System Support Facility, AH-1	450
Weapons System Support Facility, AV-8	459
Weapons System Support Facility, F/A-18	469
Hardware-in-the-Loop	480
Mk 45 TDD Engineering Development HITL/Test Laboratory	481
Simulation Laboratory—Missile HITL	489
TSSAM Hardware-in-the-Loop	498

CATEGORY	PAGE
Open Air	506
Air/Ground Range	507
Electronic Combat Range (ECR)	529
Flight Test Capability	540
NAWCWPNS-White Sands	553

CATEGORY	PAGE
Open Air	506
Air/Ground Range	507
Electronic Combat Range (ECR)	529
Flight Test Capability	540
NAWCWPNS-White Sands	553

0207

Document Separator

Modeling and Simulation

Document Separator

Tab 1. Air Weapon Digital Modeling & Simulation

0209

GENERAL INFORMATION

Facility/Capability Title: Air Weapon Digital Modeling & Simulation

Origin Date: 4/22/94

Service: Navy (N) : NAWCWPNS Location: C291

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Modeling and Simulation

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	20	40	40	0	0	0
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	0	0	0	0	0	0
Armament/Weapons	20	40	40	0	0	0
EC	0	0	0	0	0	0
Other	0	0	0	0	0	0

Total in breakout must equal "Percentage Use" on first line.

0210

TECHNICAL INFORMATION

Facility/Capability Title: Air Weapon Digital Modeling & Simulation

Facility Description, including mission statement:

C291 has an extensive array of computing assets, digital simulations, and simulation and modeling tools to support design, development, testing, and evaluation of air- and surface-launched weapons. Simulations developed, used, or maintained by C291 include Sidewinder 9L, 9M, 9M-8/9, 9R, 9X, Sidewinder kinematic reference simulation, 9M and 9M 8/9 detailed seeker, RAM, RAM IRMU 6-DOF and detailed seeker, BOA, MMPT (Multi-Mission Propulsion Technology), GIF (Guidance Integrated Fuzing), Sparrow, AIM/RIM-7M/P/R, MHIP detailed seeker, ESSM (Evolved Seasparrow Missile), JSEM (Joint Service Endgame Model), Standard, and AMRAAM TDD (Target Detection Device). Signal/image processing work includes IR/EO image synthesis and analysis, and wavelet-based tracking and detection algorithm development and simulation for IR and RF systems.

Interconnectivity/Multi-Use of T&E Facility:

Because of the full spectrum of missile technology work done in C291, there is a great deal of synergy and inter-relationship between various simulations and groups. Many simulation modules and components such as targets, backgrounds, basic 6-DOF, aero, guidance, and seeker models are used in multiple simulations and support various applications (requirements definition, COEAs, pre- and post-flight, system performance assessment, etc.) and programs (Sidewinder, RAM, Sparrow, ESSM, MHIP, BMDO, Standard, AAAM, AMRAAM, etc.). Of particular value is the ability to take data from hardware component and system testing and use them to validate and refine digital models.

Type of Test Supported:

Requirements definition, COEAs, pre-and post-flight analysis, system and component performance assessment, flight-test splash pattern.

Summary of Technical Capabilities:

A large number of simulations of varying complexity are used, including IR and EO models of targets, backgrounds (land and sea), and CM in multiple spectral bands; computer-generated imagery for realtime video injection into tracker hardware; atmospheric modeling; detailed seeker models for reticle, focal plane array, and conical scan systems; analysis of autopilots and airframes; optical and opto-mechanical design and analysis; RF models for seeker performance analysis with extended targets, maneuvering targets, multipath/clutter and weather attenuation; and antenna models.

Keywords:

Simulation, IR, RF, EO, modeling, 6-DOF, seekers, system performance, signal processing.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Air Weapon Digital Modeling & Simulation

T&E FUNCTIONAL AREA		FISCAL YEAR							
		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	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
ARMAMENT/WEAPONS	DIRECT LABOR	24000	25000	26000	27000	28000	29000	30000	31000
	TEST HOURS	24000	25000	26000	27000	28000	29000	30000	31000
	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

0272

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Air Weapon Digital Modeling & Simulation

ANNUAL HOURS OF DOWNTIME (1) 400

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 1

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 828
DMS	36	1	36	
				ANNUAL UNCONSTRAINED CAPACITY (9) 302,220

"TYPICAL"

TOTAL 36

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

02/3

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Air Weapon Digital Modeling & Simulation

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0	0	0	0	0	0	
Enlisted	0	0	0	0	0	0	0
Civilian	36	37	40	40	42	42	42
Contractor	0	0	0	0	0	0	0
Total	36	37	40	40	42	42	42

Total Square Footage 6100

Test Area Square Footage 2500

Office Space Square Footage 3600

Tonnage of Equipment: 18

Volume of Equipment: 1200

Annual Maintenance Cost: 500K

Estimated Moving Cost: 440K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
50	50	50	50	75	75	75
25	25	25	25	40	40	40

024 A

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Air Weapon Digital Modeling & Simulation

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0	0	0	0	0	0	
Enlisted	0	0	0	0	0	0	0
Civilian	36	37	40	40	42	42	42
Contractor	0	0	0	0	0	0	0
Total	36	37	40	40	42	42	42

Total Square Footage 1100

Test Area Square Footage 3600

Office Space Square Footage 2500

Tonnage of Equipment: 18

Volume of Equipment: 400

Annual Maintenance Cost: 100000

Estimated Moving Cost: 200K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
50	50	50	50	75	75	75
25	25	25	25	40	40	40

0214

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Air Weapon Digital Modeling & Simulation

AGE: 20 REPLACEMENT VALUE: $2.9M (Bldg. $860K)

MAINTENANCE AND REPAIR BACKLOG: N/A

DATE OF LAST UPGRADE: 1/1/92

NATURE OF LAST UPGRADE: Simulation support building constructed

MAJOR UPGRADES PROGRAMMED

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

0525 A

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Air Weapon Digital Modeling & Simulation

AGE: 20 REPLACEMENT VALUE: $2670K (Bldg. $560K)

MAINTENANCE AND REPAIR BACKLOG: N/A

DATE OF LAST UPGRADE: 1/1/92

NATURE OF LAST UPGRADE: Simulation support building constructed

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: N/A

   TOTAL PROGRAMMED AMOUNT: N/A

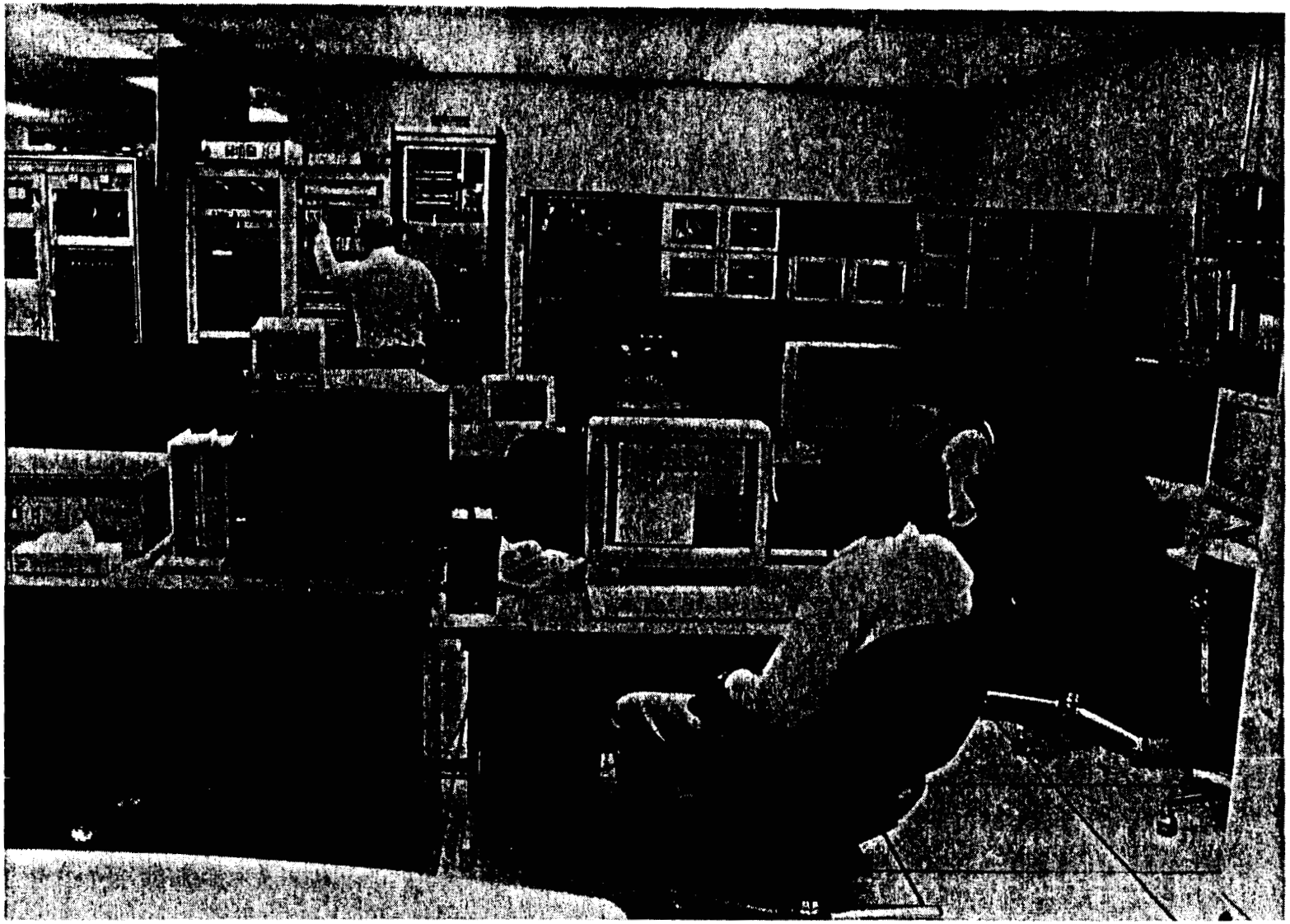
   SUMMARY DESCRIPTION: N/A

2. UPGRADE TITLE: N/A

   TOTAL PROGRAMMED AMOUNT: N/A

   SUMMARY DESCRIPTION: N/A

0245



Air Weapon Digital Modeling & Simulation

0276

Document Separator

Tab 2. Explosive and Ordnance Modeling

GENERAL INFORMATION

Facility/Capability Title: Explosive and Ordnance Modeling

Origin Date: 4/20/94

Service: Navy Organization/Activity: NAWCWPNS Location: China Lake, CA

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Modeling and Simulation

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	10	25	35	5	0	25
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	0	0	0	0	0	0
Armament/Weapons	10	25	35	5	0	25
EC	0	0	0	0	0	0
Other	0	0	0	0	0	0

Total in breakout must equal "Percentage Use" on first line.

0216 A

GENERAL INFORMATION

Facility/Capability Title: Explosive and Ordnance Modeling

Origin Date: 4/20/94

Service: Navy Organization/Activity: NAWCWPNS Location: China Lake, CA

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Modeling and Simulation

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	30	20	25	5	0	20
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	0	0	0	0	0	0
Armament/Weapons	30	20	25	5	0	20
EC	0	0	0	0	0	0
Other	0	0	0	0	0	0

Total in breakout must equal "Percentage Use" on first line.

0258

TECHNICAL INFORMATION

Facility/Capability Title: Explosive and Ordnance Modeling

Facility Description, Including Mission Statement: C27 uses a networked system of personal computers and workstations to model various ordnance performance characteristics. These characteristics include ordnance and propulsion section responses to shock waves (sympathetic detonation), hard target penetration of warheads, and solid modeling for design studies.
Interconnectivity/Multi-Use of T&E Facility: Most of the computers within C27 are linked with various protocols to form the C27 network. The C27 network is connected to the NAWC Corporate Network via a T1 link.
Type of Test Supported: Tests the designs before building prototype hardware.
Summary of Technical Capabilities: Modeling of penetration dynamics, modeling of explosive events and reactions.
Keywords: NA

0219

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Explosive and Ordnance Modeling

T&E FUNCTIONAL AREA		FISCAL YEAR 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	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
ARMAMENT/WEAPONS	DIRECT LABOR	0	0	0	0	400	1200	2640	3840
	TEST HOURS	0	0	0	0	40	120	264	384
	MISSIONS	0	0	0	0	5	15	33	48
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

0320 A

T&E

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Explosive and Ordnance Modeling

T&E FUNCTIONAL AREA		FISCAL YEAR 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	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
ARMAMENT/WEAPONS	DIRECT LABOR	0	0	0	0	400	1200	2640	3840
	TEST HOURS	0	0	0	0	40	120	264	384
	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

0220

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Explosive and Ordnance Modeling

ANNUAL HOURS OF DOWNTIME (1) 80

AVERAGE DOWNTIME PER DAY (LINE 1∏ 365) (2) .2

AVERAGE HOURS AVAILABLE PER DAY (24—LINE 2) (3) 23.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 190.4
SMERF	1	1	1	
Dyna	2	1	2	ANNUAL UNCONSTRAINED CAPACITY (9) 69,496
PEngr	3	1	3	
CTH	2	1	2	
"TYPICAL"				
		TOTAL	8	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? No

If yes, explain:

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Explosive and Ordnance Modeling

ANNUAL HOURS OF DOWNTIME (1) 80

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) .2

AVERAGE HOURS AVAILABLE PER DAY (24—LINE 2) (3) 23.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 190.4
SMERF	1	1	1	
Dyna	2	1	2	ANNUAL UNCONSTRAINED CAPACITY (9) 52122
PEngr	3	1	3	
CTH	2	1	2	
"TYPICAL"				
		TOTAL	8	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? No

If yes, explain:

0221

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Explosive and Ordnance Modeling

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	5	5	5	5	5	5	5
Contractor	0	0	0	0	0	0	0
Total	5	5	5	5	5	5	5

Total Square Footage 1000

Test Area Square Footage 500

Office Space Square Footage 500

Tonnage of Equipment: 5

Volume of Equipment: 2500

Annual Maintenance Cost: $150K

Estimated Moving Cost: $60K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$194K	$315K	$239K	$187K	$276K	0	0
0	0	0	0	0	0	0

0222

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Explosive and Ordnance Modeling

AGE: 7

REPLACEMENT VALUE: $600K (Bldgs: $30K)

MAINTENANCE AND REPAIR BACKLOG: There is no maintenance and repair backlog.

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE: The modeling capability is undergoing constant incremental improvements. These improvements include extending the network to additional sites, upgrading software, providing faster file transfer, etc.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: N/A

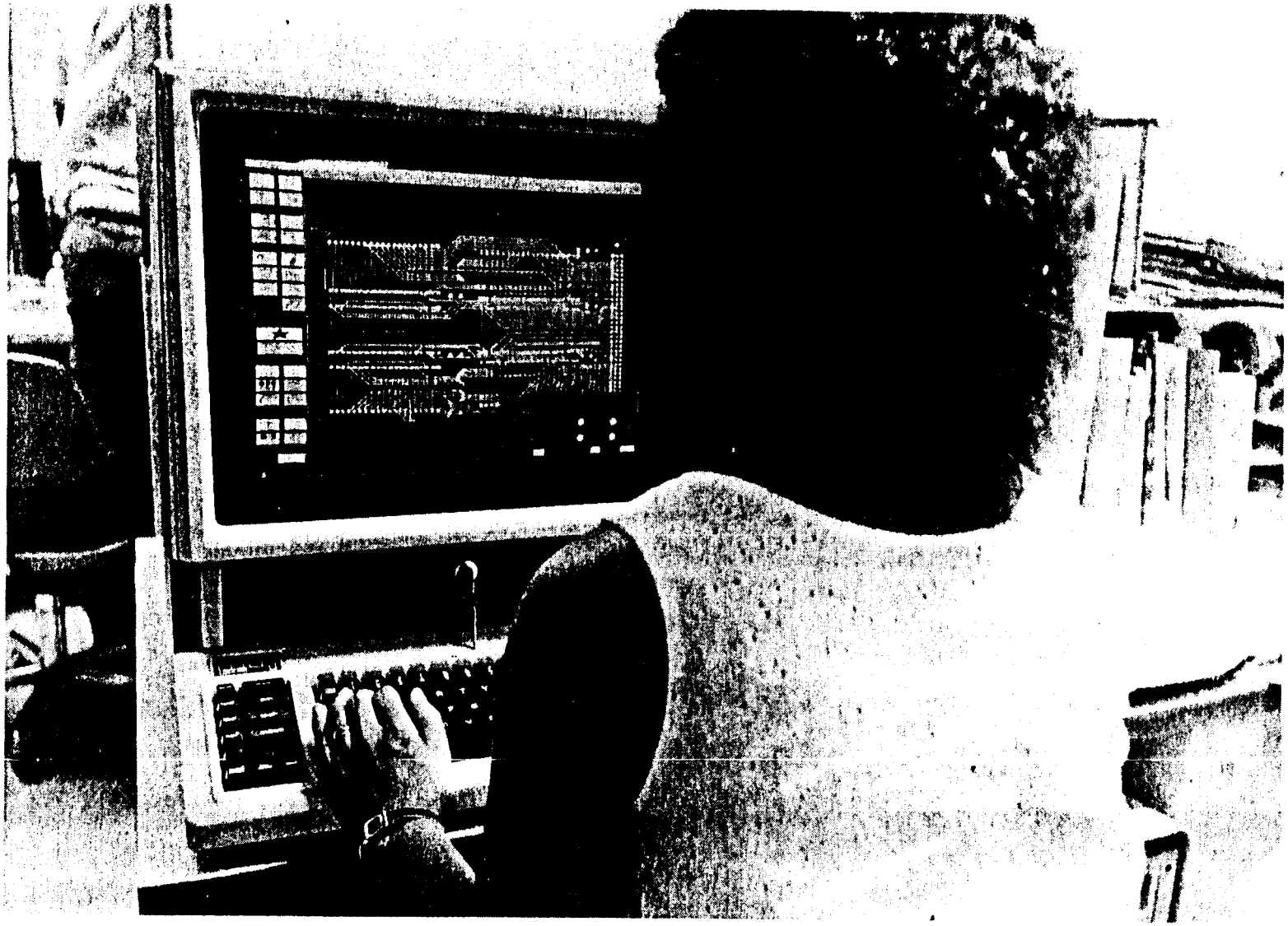
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



Explosive and Ordnance Modeling

Document Separator

Tab 3. Strike Simulation & Modeling

0225

GENERAL INFORMATION

Facility/Capability Title: Strike Simulation & Modeling

Origin Date: 4/23/94

Service: Navy : NAWCWPNS, China Lake Location: C281/C2895/C2892/C2823

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Modeling and Simulation

	T&E	S&T	D&E	IE	T&D	OTHER	
PERCENTAGE USE:	33	44	20	0	3	0	
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	1.5	1.5	.76	0	0	0	3.76
Armament/Weapons	31.37 36.57%	33.92	18.48	0	2	0 ~~8~~	85.77
EC	.13	8.58	.76	0	1	0	10.47
Other	0	0	0	0	0	0	

Total in breakout must equal "Percentage Use" on first line.

TECHNICAL INFORMATION

Facility/Capability Title: Strike Simulation & Modeling

Facility Description, including mission statement:

Mission: This facility is comprised of many labs that are located at various building sites at NAWCWPNS China Lake to provide a computer computational capability in support of development and testing of strike weapons. This computation capability supports threat information development, trajectory simulation/kinematics envelope definition, tactics development, CFD, COEA support, 6-DOF studies, Pk analysis, target recognition analysis, HARM test support, weapon survivability analysis, weapon module development for TAMPS, flight test support and evaluation, and estimates of aerodynamics of various types of airframes. These labs consist of the Strike Technology Laboratory, Strike Warfare Simulation Laboratory, C281 Concurrent Engineering Laboratory (CEL), Threat Information Laboratory, Simulation Development Laboratory, High-Performance Computing Access (HPC) Laboratory, C281 Computing Laboratory, HARM Simulation Laboratory, and CFD Development Laboratory.

Interconnectivity/Multi-Use of T&E Facility:

•Secure facsimile.
•One computer is hooked up to Ethernet.
•Multiuse: Flight Test Analysis, Simulation Development.
•Remote Access to C-90, M-90 Supercomputers.
•This is a standalone classified facility. It has no outside connections at this time. ?
•Currently: Standalone secure network of a mainframe node and nine workstations.
•Planned: Secure link with the "Strike Technology Laboratory"; Mission Planning (TAMPS).
Secure link with the "Warbreaker" network.
•Unattended classified processing on multiple networked computers.
•NAWCWD, Pt. Mugu, CA: Networked to Pt. Mugu TAMPS facility via a Network Encryption System (NES) for the transfer of updated TAMPS software.
•NAWCWPNS China Lake: Internal networking to Lauritsen Laboratory via NES system to allow access to the image exploitation software and computing power in the Strike Technology Laboratory.

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0227

Strike Simulation & Modeling

Type of Test Supported:

•Detailed radar simulations to support R&D, DT, OT of ARMs, RWRs, jammers.
•Developmental flight tests of air-to-surface missiles.
•Fleet/Squadron flight test of air-to-surface missiles.
•Data reduction and analysis
•6-DOF flight simulations for weapons, COEA analysis, target recognition research, in-flight mission planning research, weapon effectiveness (Pk) analysis, and other scientific research as required.
•HARM simulation to determine missile miss distance and footprint.
•Store separation flight tests.
•Secure (up to Secret) studies supporting effectiveness, weapons mix, and system upgrade trade-offs; COEAs required for weapon system milestone decisions.
•Graphic capability (up to virtual reality) for flight test analysis and texture mapping.
•Flight software checking, system simulation, and ground-to-air radar simulation and ground-to-air missile simulation. Point defense simulations.
•Weapon or aircraft module integration into the TAMPS core software.
•High-resolution image exploitation and target model insertion into scenes.
•Mission fly-throughs and rehearsals.

0228

Strike Simulation & Modeling

Summary of Technical Capabilities:

•Using the resources located at this single location, it is possible to determine the radar equipment located at a specific geographic area and determine the correct parameters to be used in reprogramming a specific RWR, jammer, or ARM to detect, jam, or destroy it.
•Simulation development of air-to-surface weapon systems.
•Flight test analysis of air-to-surface missiles.
•Two 300 MFLOP processors, 1 Gb main memory, 38 Gb disk storage; upgrading to 3.6 GFLOPS.
•Major computing assets: Silicon Graphics computers (4D/280/GTX (1) and 4D/240/GTX (2)) and VAX workstation 4000-100A (1), Silicon Graphics Indigo workstations (2).
•Other equipment: Video digitizing capability and various workstations and monitors to log into mainframe computers.
•Personnel experienced in the prediction of aerodynamics and store separation from aircraft.
•The computer facility was designed as a highly integrated software development environment to support analysis, design, code, and test of the HARM and other missile software.
•Computer support equipment.
•Mainframe (Node): S.G. Onyx Reality Engine 2—Rack mount (expandable; four CPUs, 8 Gb disk drive, CD-ROM; graphic output to video.
•Workstations: (1) S.G. Indigo; 2 Extreme w/CD-ROM; (4) S.G. Indigo Basics; (2) Sun Sparc; (1) Mac and PC.
•Major Computing Assets: Silicon Graphics Skywriter (4D/440/G2), Sun Sparc 2 (6), TAMPS Desktop Computer (DTC)-2, TAMPS Tactical Advanced computer (TAC)-3, and NEC-486/50Te Personal Computer.
•Major Software Packages: GEOSET, BRLCAD, GRIFFON, WINGS, KBVISION, and various ADA, C, and FORTRAN compilers.
•Databases: Digital Terrain Elevation Data (DTED), SPOT data, ARC Digitized Raster Graphics coverage for TPC, ONC, JOG, JNC, and TLM-50.

Keywords:

Tactical Aircraft Mission Planning System (TAMPS); Image Exploitation (IE); Cost and Operational Effectiveness (COEA); Weapons Mix; Tactics Development; Mission Planning; Tradeoff Studies; Taguchi Analysis; Feature Optimization; Software Support Activity (SSA); Survivability Assessment Program (SAP); Simulation; Software Development; COEA; Weapon Effectiveness; 6-DOF; ATR; High Performance Computing; Simulation; 6-DOF Simulation; Flight Dynamics; HARM; Sidearm; Shrike; LGB; Skipper; JDAM; JSOW; Mk 80 Bombs; Electronic Intelligence (ELINT); Databases; Radars; Order of Battle; Threat, Aerodynamics, Store Separation, Computational Fluid Dynamics.

0229

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Strike Simulation & Modeling

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	300	400	300	300	400	200	498.68	498.68
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS	0	0	0	0	0	0	0	0
EC	DIRECT LABOR	0	0	0	0	0	1780	1780	1780
	TEST HOURS	0	0	0	0	0	36	36	36
	MISSIONS	0	0	0	0	0	0	0	0
ARMAMENT/WEAPONS	DIRECT LABOR	32884	66316	14512	53080	42800	33910	38949	41975
	TEST HOURS	25852	47259	33482	35358	28522	21136	15134	24851
	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

0230

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Strike Simulation & Modeling

ANNUAL HOURS OF DOWNTIME (1) 2302

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 6.31

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 17.69

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
(4)	(5)	(6)	(7)
6-DOF	5	1	5
SW Test	6	6	36
Flight SW	2	1	2
System Sim	2	4	4
Ground/Air	1	4	4
Ground Air Missile	2	4	8
Point Defense	2	4	8
Sim Runs	4	1	4
Computer	2	10	20
Analysis STD	12	1	12
DTC-2	2	1	2
TAC-3	1	1	1
SPAR-2	6	5	3
Data Retrieval	3	2	6
ARM/Weapon	5	3.39	16.95
Software "TYPICAL"	2	2	4
		TOTAL	135.95

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 2,404.95

ANNUAL UNCONSTRAINED CAPACITY (9) 877,808.75

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Only 1 simulation can be run at a time per computer.

0231 A

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Strike Simulation & Modeling

ANNUAL HOURS OF DOWNTIME (1) 255

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 69

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.31

TEST TYPES (4)	TESTS AT ONE TIME (5)	WORKLOAD PER TEST PER FACILITY HOUR (6)	WORKLOAD PER FACILITY HOUR (7)	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 3168.99
"TYPICAL"			TOTAL	ANNUAL UNCONSTRAINED CAPACITY (9) 1,156,681.35

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Only 1 simulation can be run at a time per computer.

0231

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Strike Simulation & Modeling

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	2	2	3	3	3	3
Enlisted	0	0	0	0	0	0	0
Civilian	50	57	64.5	68.5	68.5	65.5	65.5
Contractor	2	1	2.3	2	2	2	2
Total	53	60	68.8	73.5	73.5	70.5	70.5

Total Square Footage 16,984

Test Area Square Footage 7,395

Office Space Square Footage 14,034

Tonnage of Equipment: 21.35

Volume of Equipment: 4,505

Annual Maintenance Cost: 551K

Estimated Moving Cost: 899.7K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
745K	1399K	1060K	1350K	1180K	550K	300K
185K	110K	135K	125K	155K	130K	135K

0232

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Strike Simulation & Modeling

AGE: 9 REPLACEMENT VALUE: $6211K

MAINTENANCE AND REPAIR BACKLOG: $0: This estimate is for equipment only. It does not include the building, furniture, or safes. The building is approximately 48 years old.
$30,000 for air conditioning.

DATE OF LAST UPGRADE: 4/01/94

NATURE OF LAST UPGRADE: Software upgrade

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Improved CFD Capability

TOTAL PROGRAMMED AMOUNT: $315K

SUMMARY DESCRIPTION: Increase from one processor to two high-speed processors; increase memory and disk storage

2. UPGRADE TITLE: Concurrent Engineering

TOTAL PROGRAMMED AMOUNT: $105,000

SUMMARY DESCRIPTION: Add a high performance workstation to support added scientific calculations and upgrade the present network to fiber optics.

3. UPGRADE TITLE: Improved Capability

TOTAL PROGRAMMED AMOUNT: $368K

SUMMARY DESCRIPTION: Increase to high speed processors (300 mFLOPS); increase memory and disk storage.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Strike Simulation & Modeling

AGE: 9 REPLACEMENT VALUE: $6211K

MAINTENANCE AND REPAIR BACKLOG: $0: This estimate is for equipment only. It does not include the building, furniture, or safes. The building is approximately 48 years old.
$30,000 for air conditioning.

DATE OF LAST UPGRADE: 4/01/94

NATURE OF LAST UPGRADE: Software upgrade

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Improved CFD Capability

TOTAL PROGRAMMED AMOUNT: $315K

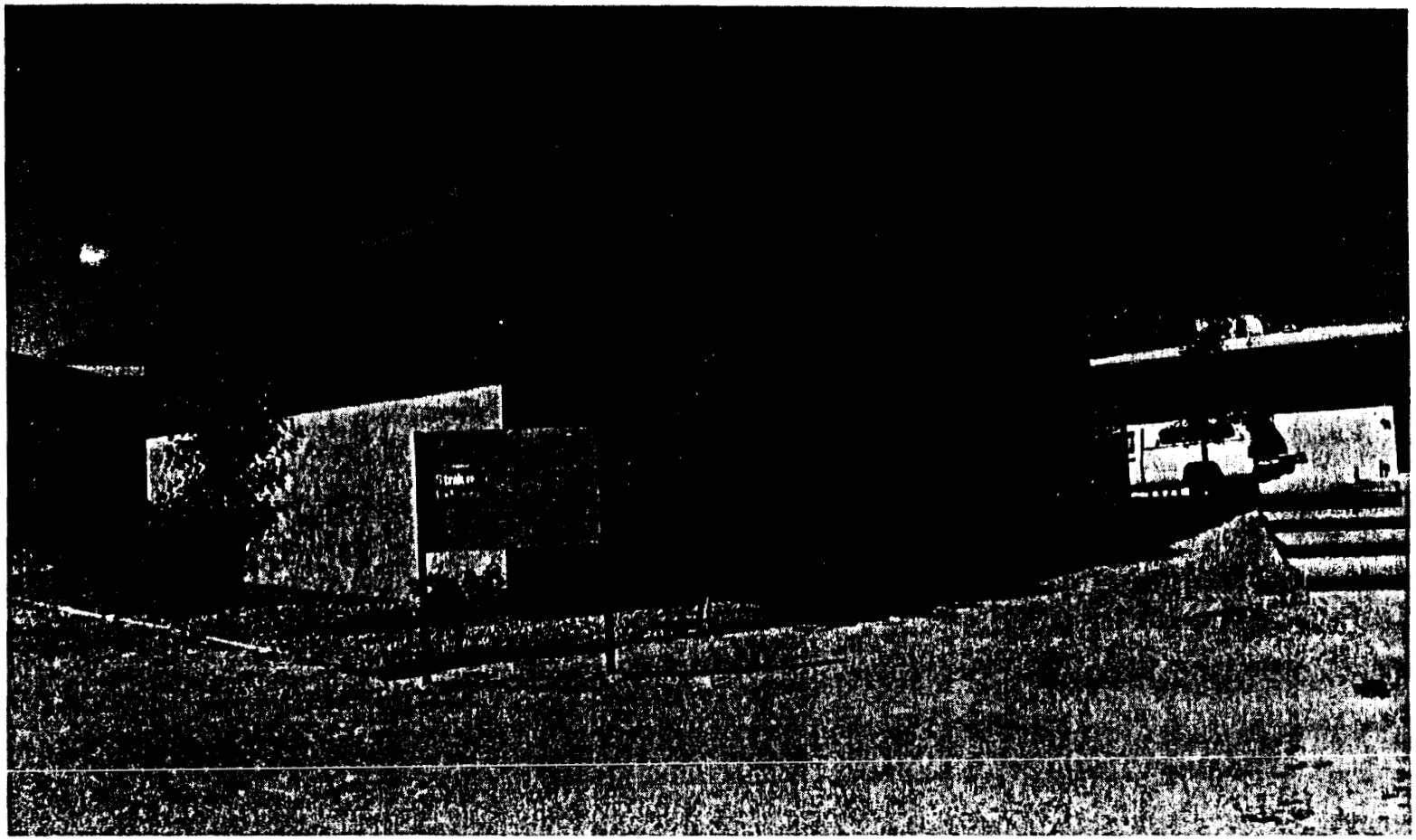
SUMMARY DESCRIPTION: Increase from one processor to two high-speed processors; increase memory and disk storage

2. UPGRADE TITLE: Concurrent Engineering

TOTAL PROGRAMMED AMOUNT: $105,000

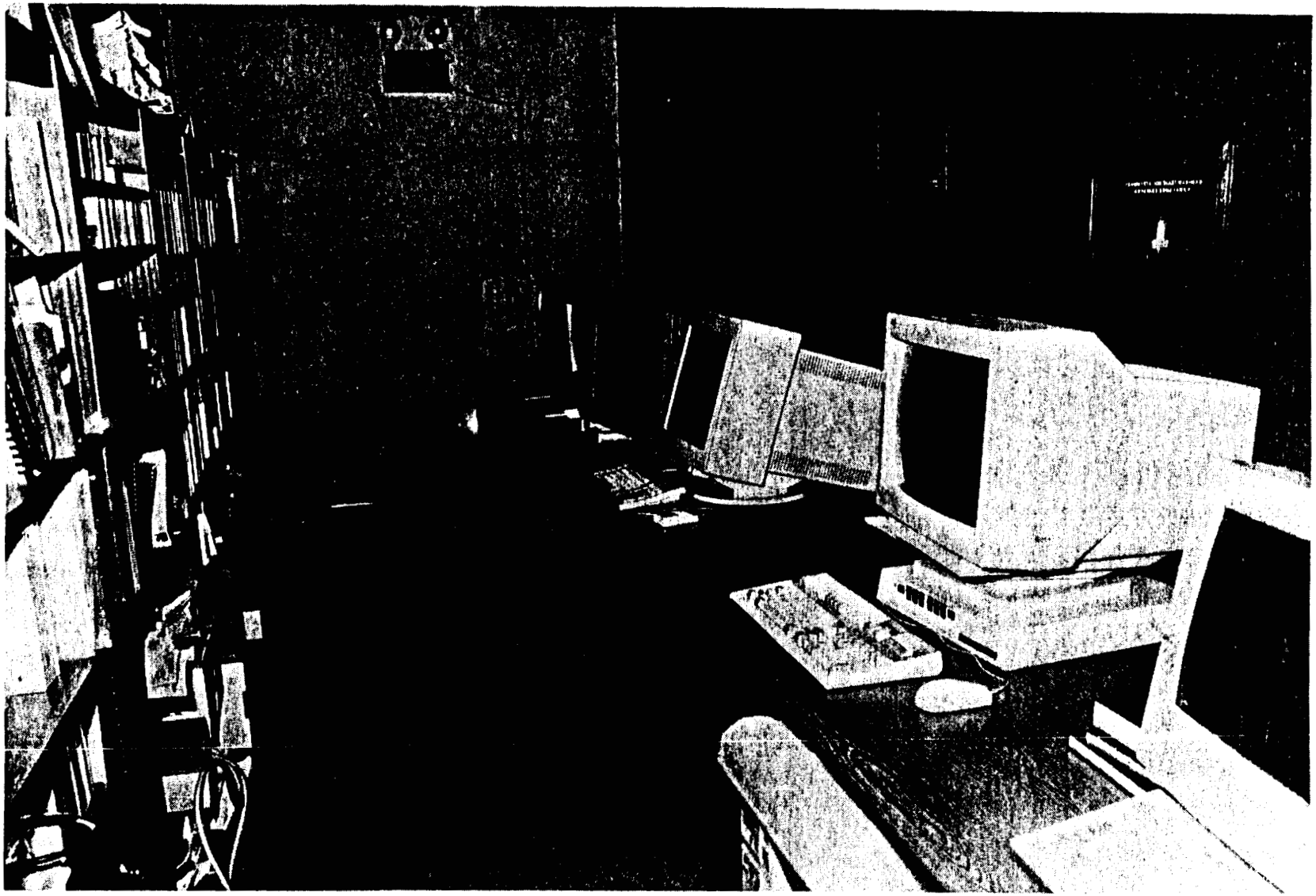
SUMMARY DESCRIPTION: Add a high-performance workstation to support added scientific calculations and upgrade the present network to fiber optics.

0233



Strike Simulation & Modeling

0234



Strike Simulation & Modeling

0235

Document Separator

Tab 4. Strike Software/Simulation Facility

GENERAL INFORMATION

Facility/Capability Title: Strike Software/Simulation Facility

Origin Date: 4/22/93

Service: Navy Organization/Activity: NAWCAD Location: C2815/C2876

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Modeling and Simulation

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	16.5	0	36.5	47	0	0
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	0	0	0	0	0	0
Armament/Weapons	16.5	0	36.5	47	0	0
EC	0	0	0	0	0	0
Other	0	0	0	0	0	0

$16.5/100 = 16.5\%$

Total in breakout must equal "Percentage Use" on first line.

0237

TECHNICAL INFORMATION

Facility/Capability Title: Strike Software/Simulation Facility

Facility Description, including mission statement:

• HARM Software Support Laboratory: The HARM SSF supports DTE, verification and validation, and development of HARM missile, ELINT, and Command Launch Computer tactical software. Life-cycle support and distribution of HARM tactical software is provided. The HARM software support facility is comprised of two Micro VAX 3100 model 80 computers. One VAX is a classified system and used primarily for HARM development/simulation support, data reduction, and HARM software baseline management. The unclassified Micro VAX 3100/80 is used to provide access to the Center's network for Code C28A/C2815 employees and for HARM documentation control and configuration management. A Micro-VAX is used for ELINT file development.
• TLAM Simulation Laboratory: The Software Support Activity for the Tomahawk Land-Attack Missile performs post-deployment software support (PDSS) that includes the following: Independent verification and validation of operational flight software (OFS) and missile identification retrieval software (MIRS), as well as configuration and release management of OFS, MIRS, Digital Scene Matching Area Correlation (DSMAC) flight software (DFS), global positioning system flight software (GFS), and Interpretive Simulation Program (ISP). The SSA provides maintenance of the ISP, facilities, and support tools used to accomplish these tasks.

Interconnectivity/Multi-Use of T&E Facility:

• TLAM Simulation Laboratory: This is the only facility of its kind at China Lake. Currently, because of security requirements, no interconnections have been established to this lab.

Type of Test Supported:

• HARM Software Support Laboratory: Independent Verification and Validation of HARM tactical software. Development Test and Evaluation (DTE) of ELINT Files
• TLAM Simulation Laboratory: Simulated system and functional testing/exercising of the OFS and MIRS. Developmental and Formal Qualification Testing of the ISP.

023

Strike Software/Simulation Facility

Summary of Technical Capabilities:

• HARM Software Support Laboratory: Two Micro VAX 3100 Model 80 computers for software development, DTE, and hosting Q6-DOF missile flight simulation. Two IBM PCs and Memory Loader Verifier for Naval Fleet support by up-loading of HARM tactical software to tactical aircraft. One NEC PC is utilized for Secure Electronic Data Transfer via STU-III telephone for tactical software upgrades to the Fleet. One Micro VAX for ELINT file development.
• TLAM Simulation Laboratory: Instrumentation/assets include: 480 sq. ft. of laboratory space, 5 VAX 4000/90 cluster with peripherals, including mag tape drive, external hard disks, and laser printers which hosts the ISP. Silicon Graphics ONYX system hosts the Tomahawk Graphics Analysis Workstation (TGAW). All FORTRAN simulation of the LC4516C Computer and the missile environment for the Tomahawk Land Attack Missile (TLAM) and its associated launch platforms.

Keywords:

• HARM Software Support Laboratory: High-Speed Antiradiation Missile (HARM), Electronic Intelligence (ELINT)
• TLAM Simulation Laboratory: global positioning, launch, jettison, wings out.

0239 A

Strike Software/Simulation Facility

Summary of Technical Capabilities:

• HARM Software Support Laboratory: Two Micro VAX 3100 Model 80 computers for software development, DTE, and hosting Q6-DOF missile flight simulation. Two IBM PCs and Memory Loader Verifier for Naval Fleet support by up-loading of HARM tactical software to tactical aircraft. One NEC PC is utilized for Secure Electronic Data Transfer vis STU-III telephone for tactical software up-grades to the Fleet. One Micro VAX for ELINT file development.
• TLAM Simulation Laboratory: Instrumentation/assets include: 480 sq. ft. of laboratory space, 5 VAX 4000/90 cluster with peripherals, including mag tape drive, external hard disks, and laser printers which hosts the ISP. Silicon Graphics ONYX system hosts the Tomahawk Graphics Analysis Workstation (TGAW). All FORTRAN simulation of the LC4516C Computer and the missile environment for the Tomahawk Land Attack Missile (TLAM) and its associated launch platforms.

Keywords:

• HARM Software Support Laboratory: High-Speed Antiradiation Missile (HARM), Electronic Intelligence (ELINT)
• TLAM Simulation Laboratory: global positioning, launch, jettison, wings out.

0239

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Strike Software/Simulation Facility
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 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	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
ARMAMENT/WEAPONS	DIRECT LABOR	37750	37750	37750	37750	39500	40375	20250	20250
	TEST HOURS	10600	10600	10600	10600	10600	10600	9000	9000
	MISSIONS	120	120	120	120	120	120	120	120
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

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0240 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Strike Software/Simulation Facility
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 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	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
ARMAMENT/WEAPONS	DIRECT LABOR	27750	27750	27750	27750	29500	30375	10250	5750
	TEST HOURS	10600	10600	10600	10600	10600	10600	9000	9000
	MISSIONS	120	120	120	120	120	120	120	120
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

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DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Strike Software/Simulation Facility

ANNUAL HOURS OF DOWNTIME (1) 138

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) .37

AVERAGE HOURS AVAILABLE PER DAY (24—LINE 2) (3) 23.63

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 141.78
IV & V	1	1	1	
DTE	1	1	1	ANNUAL UNCONSTRAINED CAPACITY (9) 51749.70
OFS	2	1	2	
ISP	2	1	2	
"TYPICAL"				
			TOTAL 6	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? YES

If yes, explain: It is limited by the throughput of the computer and the number of terminals

0241

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Strike Software/Simulation 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	7.5	7.5	10.5	11.5	13.5	13.5	13.5
Contractor	5	4.5	4	4	4	4	4
Total	12.5	12	14.5	15.5	17.5	17.5	17.5

Total Square Footage 3172

Test Area Square Footage 972

Office Space Square Footage 2200

Tonnage of Equipment: 5.5

Volume of Equipment: 2944 cubic ft.

Annual Maintenance Cost: 170K

Estimated Moving Cost: 510K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	0	0	0	0	0	0
230K	130K	130K	50K	50K	50K	50K

0242

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Strike Software/Simulation Facility

AGE: 12 REPLACEMENT VALUE: • HARM Software Support Facility - Building Cost $150K, Total Cost $1550K

MAINTENANCE AND REPAIR BACKLOG: N/A

DATE OF LAST UPGRADE: 12/15/93

NATURE OF LAST UPGRADE: Computer and software for Graphics Visualization System

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Block IV Simulation Upgrade

   TOTAL PROGRAMMED AMOUNT: 100K

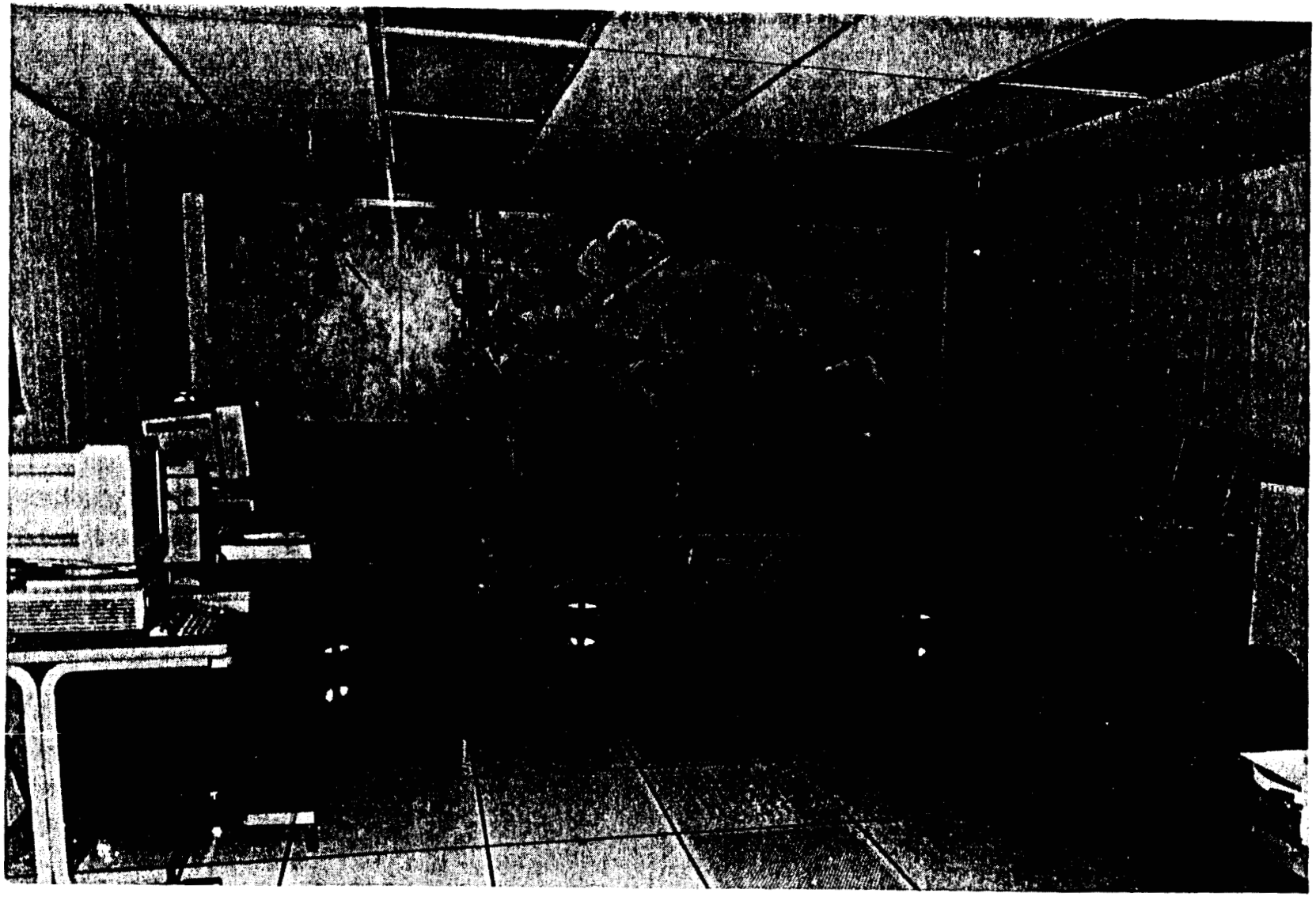
   SUMMARY DESCRIPTION: Upgrade workstation to test Tomahawk Block IV missile improvements

2. UPGRADE TITLE: Hardware Integrated Test Set

   TOTAL PROGRAMMED AMOUNT: 70K

   SUMMARY DESCRIPTION: Add capability to test Tomahawk OFS using integrated missile hardware

0243



Strike Software/Simulation Facility

0244

Document Separator

Tab 5. System Modeling & Signal Processing Facility

0245

GENERAL INFORMATION

Facility/Capability Title: System Modeling & Signal Processing Facility

Origin Date: 4/22/94

Service: Navy Organization/Activity: NAWCWPNS Location: China Lake, CA

T&E Functional Area: Guided Missiles UIC = 60530

T&E Test Facility Category Modeling and Simulation

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	25	25	50	0	0	0
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	0	0	0	0	0	0
Armament/Weapons	25 25/100 = 25%	25	50	0	0	0
EC	0	0	0	0	0	0
Other	0	0	0	0	0	0

Total in breakout must equal "Percentage Use" on first line.

0276

TECHNICAL INFORMATION

Facility/Capability Title: System Modeling & Signal Processing Facility

Facility Description, including mission statement:

This facility is used for developing modeling and simulation for IR weapon systems. The modeling includes the target and atmospherics, as well as a complete model of the seeker and associated signal processing and tracking algorithms. This facility incorporates simulation programs such as SPIRITS, IRSTORM II, EMAT, LOTRAN, and other IR modeling codes. Numerous computer work stations exist for designing these simulations that also allow real target imagery to be evaluated. This capability is to design and develop algorithms used for acquiring and tracking targets in backgrounds such as mountainous, clouds, and urban and rural backgrounds. In addition, such complex problems as reducing susceptibility to countermeasures and endgame tracking of targets are addressed. Infrared trackers have also been designed that include the control loop for slaving and tracking the seeker. Algorithms for interfacing dual-mode weapons infrared (IR) and radio frequency (RF) have been developed here, and the IR portion was built and tested here. Also included are data reduction and analysis of digital video and telemetry data from guidance and control system (GCS) performance tests, including captive flight and free flight (launch) tests, environmental tests, and functional tests utilizing direct digital video and telemetry data link with GCS integration lab rate table test stations. This facility also has the capability for rapid prototyping of electronic printed circuit boards.

Interconnectivity/Multi-Use of T&E Facility:

Presently this facility is not totally interconnected, but is planned to be networked in the future.

Type of Test Supported:

Air-to-air infrared missile simulations, performance limitations, countermeasure susceptibility, missile captive, free flight testing through data reduction and post flight data, GCS rate table tests, simulations of analog and digital circuits

0247

System Modeling & Signal Processing Facility

Summary of Technical Capabilities:

This facility is capable of evaluating air-to-air IR missile performances as modeled. The simulation includes the detector, optics, electronics, signal processing and tracking algorithms. The target and atmospherics are also available. This is the most complete model known to exist for an IR missile. Real target and background imagery can also be inserted to present to the simulation.
The flyout performance. Pg determination, tracking performance under varying background types, countermeasures, and Launch Acceptibility Regions (LARs) can all be assessed. Complete data reduction and analysis are also available. Two rate table stations are available to completely evaluate missile performance.

The design, simulation and documentation of analog and digital electronic circuits, using Sun workstations are performed.

Keywords:

IR, simulation, signal processing, tracking, countermeasure, analysis

0248

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: System Modeling & Signal Processing Facility

T&E FUNCTIONAL AREA		FISCAL YEAR							
		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	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
ARMAMENT/WEAPONS	DIRECT LABOR	19160	20730	27730	29660	34037	33512	26353	28875
	TEST HOURS	3150	3465	4165	4550	5320	4165	6553	5756
	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

0249 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: System Modeling & Signal Processing Facility

T&E FUNCTIONAL AREA		FISCAL YEAR 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	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
ARMAMENT/WEAPONS	DIRECT LABOR	19160	20730	27730	29660	24037	33512	26353	28875
	TEST HOURS	3150	3465	4165	4550	5320	4165	6553	5756
	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

0249

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: System Modeling & Signal Processing Facility

ANNUAL HOURS OF DOWNTIME (1) 201

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 0.550

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.45

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 1.336
Algor	3	6	18	
SPIL Sim	1	3	3	ANNUAL UNCONSTRAINED CAPACITY (9) 487.877
Sim Runs	7	4	28	
Data Red	2	1	2	
Data Anal	3	1	3	
Ckt Sim	1	3	3	
		TOTAL	57	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? YES

If yes, explain: The capacity is determined by the combination or work space available in the physical building and the desks and other equipment spaces. It is also limited by the processing.

0250

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: System Modeling & Signal Processing 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	19	21	25	23	23	23	23
Contractor	1	1	1	1	1	1	1
Total	20	22	26	24	24	24	24

Total Square Footage 3280

Test Area Square Footage 1580

Office Space Square Footage 2027

Tonnage of Equipment: 6.35

Volume of Equipment: 1390

Annual Maintenance Cost: $62K

Estimated Moving Cost: $151.6K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$7K	0	$250K	0	0	0	0
$219K	$78K	$903K	$173K	$204K	$220K	$219K

0251 A

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: System Modeling & Signal Processing 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	19	21	25	23	23	23	23
Contractor	1	1	1	1	1	1	1
Total	20	22	26	24	24	24	24

Total Square Footage 3480

Test Area Square Footage 1580

Office Space Square Footage 1900

Tonnage of Equipment: 6.35

Volume of Equipment: 1390

Annual Maintenance Cost: $62K

Estimated Moving Cost: $151.6K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$7K	0	$250K	0	0	0	0
$219K	$78K	$903K	$173K	$204K	$220K	$219K

0251

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: System Modeling & Signal Processing Facility

AGE: N/A REPLACEMENT VALUE: Building Cost: $420K Total Cost: $972K

MAINTENANCE AND REPAIR BACKLOG: This facility/equipment is located in three different locations and is briefly explained here. The first facility was rehabilitated in 1989 and is like new. The second facility was modified in 1985 to have a secure vault laboratory built. The third facility was built in 1971.

DATE OF LAST UPGRADE: N/A

NATURE OF LAST UPGRADE: N/A

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Secure Vaults

TOTAL PROGRAMMED AMOUNT: $150K

SUMMARY DESCRIPTION: One of the laboratories will be converted into a secure vault with the proper security devices and building codes.

2. UPGRADE TITLE: Integration of three additional Silicon Graphics Stations

TOTAL PROGRAMMED AMOUNT: $650K

SUMMARY DESCRIPTION: Additional supercomputer workstations for AIM-9X flyout performance assessment and support of data reduction and analysis.

0252 A

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: System Modeling & Signal Processing Facility

AGE: N/A

REPLACEMENT VALUE: Building Cost: $972K Total Cost: $506K

MAINTENANCE AND REPAIR BACKLOG: This facility/equipment is located in three different locations and is briefly explained here. The first facility was rehabilitated in 1989 and is like new. The second facility was modified in 1985 to have a secure vault laboratory built. The third facility was built in 1971.

DATE OF LAST UPGRADE: N/A

NATURE OF LAST UPGRADE: N/A

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Secure Vaults

TOTAL PROGRAMMED AMOUNT: $150K

SUMMARY DESCRIPTION: One of the laboratories will be converted into a secure vault with the proper security devices and building codes.

2. UPGRADE TITLE: Integration of three additional Silicon Graphics Stations

TOTAL PROGRAMMED AMOUNT: $650K

SUMMARY DESCRIPTION: Additional supercomputer workstations for AIM-9X flyout performance assessment and support of data reduction and analysis.

0252

System Modeling & Signal Processing Facility

0253

Document Separator

Weapons and Tactics Analysis Center (WEPTAC)

0262

Tab 6. Weapons and Tactics Analysis Center (WEPTAC)

0254

GENERAL INFORMATION

Facility/Capability Title: Weapons and Tactics Analysis Center (WEPTAC)

Origin Date: 4/20/94

Service: N

Organization/Activity: NAWCWPNS C0243 Location: China Lake, CA

T&E Functional Area: Armament / Weapons

UIC = 60530

T&E Test Facility Category Modeling and Simulation

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	21%	57%	0	0	22%	0
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	1.05%	2.85%	0	0	1.10%	0
Armament/Weapons	18.9%	51.3%	0	0	19.8%	0
EC	1.05%	2.85%	0	0	1.10%	0
Other	0	0	0	0	0	0

$\frac{18.9}{90} = 21\%$

Total in breakout must equal "Percentage Use" On first line

0255 A

GENERAL INFORMATION

Facility/Capability Title: Weapons and Tactics Analysis Center (WEPTAC)

Origin Date: 4/20/94

Service: N Organization/Activity: NAWCWPNS C0243 Location: China Lake, CA

T&E Functional Area: Armament / Weapons UIC = 60530

T&E Test Facility Category Modeling and Simulation

	T&E	S&T	D&E	JE	T&D	OTHER
PERCENTAGE USE:	25%	50%	0	0	25%	0
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	0	0	0	0	0	0
Armament/Weapons	25%	50%	0	0	25%	0
EC	0	0	0	0	0	0
Other	0	0	0	0	0	0

Total in breakout must equal "Percentage Use" On first line

0255

TECHNICAL INFORMATION

Facility/Capability Title: Weapons and Tactics Analysis Center (WEPTAC)

Facility Description; Including Mission Statement:

The Weapons and Tactics Analysis Center (WEPTAC), located at China Lake, is an interactive wargaming and analysis capability in use since the early 1980s to support RDT&E. Fleet and other Service tacticians are used as war game players. WEPTAC consists of software engineers, analysis, and wargame operator personnel, conducts projects to the level of Top Secret, conducts compartmented programs, and operates in three physical wargame facilities and three support physical facilities. WEPTAC is used to support T&E of air-to-air and air-surface weapon systems. Ongoing upgrade to Phase 2 WEPTAC effort involves approximately 50% of WEPTAC personnel.

Interconnectivity/Multi-Use of T&E Facility:

A new Phase 2 WEPTAC simulation is coming on line in 1994 and will allow internetting with other, remote simulations (live, virtual, and constructive) to support Joint Service tactics development, training, and live-fire weapon system testing.

Type of Test Supported:

Air-to-air, surface-to-air and air-to-surface weapon systems. WEPTAC man-in-the-loop wargaming will be interlinked to support remotely located live-fire exercises in real time.

Summary of Technical Capabilities:

The WEPTAC wargaming simulation, by itself, is capable of emulating full-sized battle-level scenarios that include platforms, weapon systems, sensors, and functional warfare areas such as electronic warfare and command and control. WEPTAC, interlinked with live exercises and tests, will provide the battle-level backdrop within which narrowly scoped tests of air-to-air/surface and surface-to-air T&E will be conducted.

Keywords:

Wargaming, Analysis, Weapons System T&E, Internetting, Tactics Development, Modeling and Simulation, Software Development

0256

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Weapons and Tactics Analysis Center (WEPTAC)

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	1521	2033	1972	2532	3244	3504	2889	2375
	TEST HOURS	145	94	118	131	124	128	60	40
	MISSIONS	0	0	0	0	0	0	0	0
EC	DIRECT LABOR	1521	2033	1972	2532	3244	3504	2889	2375
	TEST HOURS	145	94	118	131	124	128	60	40
	MISSIONS	0	0	0	0	0	0	0	0
ARMAMENT/WEAPONS	DIRECT LABOR	27371	36590	35502	45582	58398	63063	52001	42754
	TEST HOURS	2601	1694	2118	2358	2237	2298	1088	726
	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

0257 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Weapons and Tactics Analysis Center (WEPTAC)

T&E FUNCTIONAL AREA		FISCAL YEAR 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	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
ARMAMENT/WEAPONS	DIRECT LABOR	5040	10080	25200	38640	25200	33600	13440	13440
	TEST HOURS	360	720	1800	2760	1800	2400	960	960
	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

0257

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Weapons and Tactics Analysis Center (WEPTAC)

ANNUAL HOURS OF DOWNTIME (1) 200 hours

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) .55 hours

AVERAGE HOURS AVAILABLE PER DAY (24—LINE 2) (3) 22.45 hours

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) analysis	(5) 3	(6) 1	(7) 3	(8) 70.35
				ANNUAL UNCONSTRAINED CAPACITY (9) 25,677

"TYPICAL"

TOTAL 3

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0258

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Weapons and Tactics Analysis Center (WEPTAC)

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	40	40	50	50	50	50	50
Contractor	20	20	30	40	40	40	40
Total	60	60	80	90	90	90	90

Total Square Footage 16,200 sq ft

Test Area Square Footage 16,200 sq ft

Office Space Square Footage 8000 sq ft

Tonnage of Equipment: 70 tons

Volume of Equipment: 20,000 cu ft

Annual Maintenance Cost: $100K

Estimated Moving Cost: $2200K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$3200K	$3300K	$2000K	$1400K	$1500K	$1200K	$1200K
0	0	0	0	0	0	0

0259

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Weapons and Tactics Analysis Center (WEPTAC)

AGE: 4.1 yrs. REPLACEMENT VALUE: $9428K

MAINTENANCE AND REPAIR BACKLOG: Total backlog is $0

DATE OF LAST UPGRADE: N/A

NATURE OF LAST UPGRADE: No recent major upgrades for this capability

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: PHASE 2 WARGAME

TOTAL PROGRAMMED AMOUNT: $10.7M

SUMMARY DESCRIPTION: Development of the new version, Phase 2, of the WEPTAC Wargame Simulation. Includes development of all software coding and procurement of simulation hardware.

2. UPGRADE TITLE: ANALYST WORKBENCH ENHANCEMENTS

TOTAL PROGRAMMED AMOUNT: $3.1M

SUMMARY DESCRIPTION: Continuing support of enhancing NAWCWPNS Analyst Workbench tool. Includes modifications of existing software models, development of new software models, and model development hardware.

0260 A

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Weapons and Tactics Analysis Center (WEPTAC)

AGE: 4.1 yrs. REPLACEMENT VALUE: $8000K

MAINTENANCE AND REPAIR BACKLOG: Total backlog is $0

DATE OF LAST UPGRADE: N/A

NATURE OF LAST UPGRADE: No recent major upgrades for this capability

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: PHASE 2 WARGAME

TOTAL PROGRAMMED AMOUNT: $10.7M

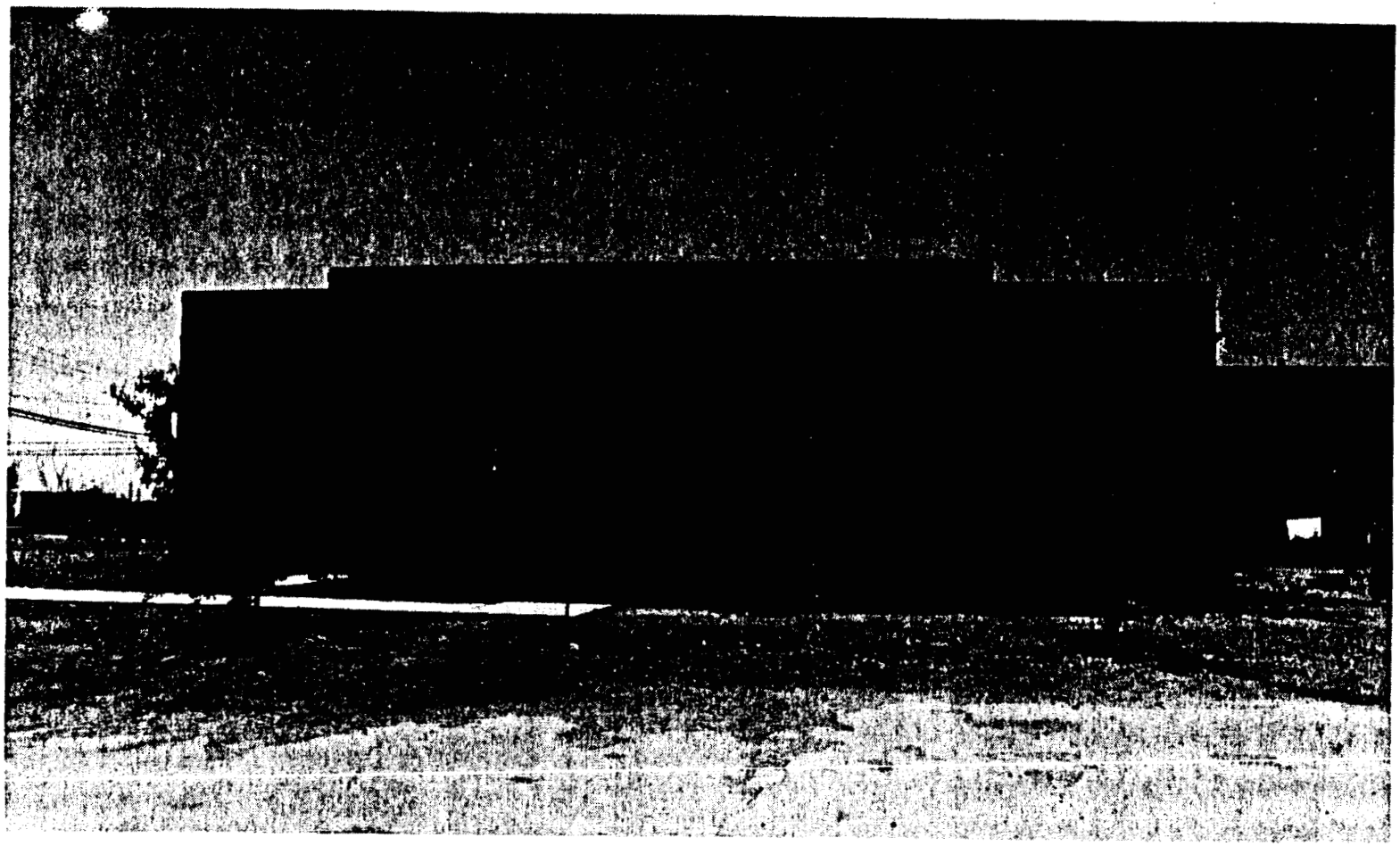
SUMMARY DESCRIPTION: Development of the new version, Phase 2, of the WEPTAC Wargame Simulation. Includes development of all software coding and procurement of simulation hardware.

2. UPGRADE TITLE: ANALYST WORKBENCH ENHANCEMENTS

TOTAL PROGRAMMED AMOUNT: $3.1M

SUMMARY DESCRIPTION: Continuing support of enhancing NAWCWPNS Analyst Workbench tool. Includes modifications of existing software models, development of new software models, and model development hardware.

0260



Weapons and Tactics Analysis Center (WEPTAC)

Document Separator

Measurement

Document Separator

Tab 7. Aeroheat Test Facility

0269

GENERAL INFORMATION

Facility/Capability Title: Aeroheat Test Facility

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC China Lake Location: C321

T&E Functional Area: Armaments/Munitions UIC = 60530

T&E Test Facility Category Measurement Facility

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

Total in breakout must equal "Percentage Use" on first line.

0265

TECHNICAL INFORMATION

Facility/Capability Title: Aeroheat Test Facility

Facility Description, Including Mission Statement:

The aeroheat facility at NAWCWPNS China Lake is used to simulate supersonic flight conditions for materials survivability and to test ramjet propulsion systems and is capable of testing a variety of tactical-sized missiles, both all-up rounds and components. Test stand capabilities include air velocities to Mach 2.9, temperature elevation of blowdown gasses to 2200°F, a maximum mass flow of 150 lb sec, and a range of surface heat flux from 0 to 300 BTU/ft2/sec. The workload currently experienced and envisioned into the near future is directed at supporting both China Lake and other government and contractor programs. This test support currently is made to all phases of acquisition development—RDT&E on new or emerging products, through production follow-on tests supporting product improvements. Approximately 55% of tasking effort is China Lake programs, 15% is other government programs, and 30% is done for contractors that have active Government weapons development contracts. The T-Range facility already supports nearly the full Navy Integrated RDT&E process for all aeroheat tasks generated within the Navy T&E community for small tactical missile material testing. The facility is also part of China Lake's core competency level regarding missile RDT&E.The facility is sited for 200 lbs 1.1, 1.3, 1.4 materials. The Facility consists of Bldgs/Test Pad 16178, 12143, 16020, 16059, 16060, 16061, 16101.

Interconnectivity/Multi-Use of T&E Facility:

The T-Range Aeroheat Facility is a standalone facility for test purposes. However, extensive use of the data is accomplished by co-located analysis capabilities within the Thermal Analysis Branch of the Attack Weapons Department at China Lake. The analyses include in-depth temperature and thermal stress calculations performed with multidimensional nonlinear finite element structural models of missiles and missile components.

Type of Test Supported:

Aeroheating—materials, components, and all-up-rounds
Propulsion—ramjets, solid motors

0266

Aeroheat Test Facility

Summary of Technical Capabilities:

The facility has an explosion-fortified control room with monitoring systems for controlling the tests. The primary data acquisition system is capable of recording up to 120 channels of data (temperatures, pressures, strain gages, etc.) on both analog and digital systems up to 500 Hz. A secondary system acquires up to 32 channels at 20 Hz and graphically displays the data in real time as the test is in progress. Additional instrumentation includes 16 channels at 100 kHz, high-speed cameras, video, pyrometer, and IR imaging systems.

Keywords:

Aeroheat, Climatic, Ground Test, Supersonic, Blowdown, Materials, Missile, Ramjet

0867

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Aeroheat Test Facility

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	2315	2478	2355	2435	2275	2471	2330	2092
	TEST HOURS	1009	1080	1026	1061	991	1077	1191	912
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

≈ 2.3 direct labor / test hr

0268

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Aeroheat Test Facility

ANNUAL HOURS OF DOWNTIME (1) 5318

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 14.6

AVERAGE HOURS AVAILABLE PER DAY (24—LINE 2) (3) 9.4

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 37.6
Areoheat	1	4	4	
				ANNUAL UNCONSTRAINED CAPACITY (9) 13.724

"TYPICAL"

TOTAL 4

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0269

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Aeroheat 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	3	3	3
Contractor	0	0	0	0	0	0	0
Total	3	3	3	3	3	3	3

Total Square Footage 10,525

Test Area Square Footage 273

Office Space Square Footage 480

Tonnage of Equipment: 1,820

Volume of Equipment: 191,681

Annual Maintenance Cost: $70K

Estimated Moving Cost: $1,500K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
50K	0	0	20K	25K	50K	50K
20K	20K	20K	20K	20K	20K	P20K

0220

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Aeroheat Test Facility

AGE: 43 years REPLACEMENT VALUE: $2,165K

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE: Replaced 50% instrumentation for recording and control in the control room at T-range. Also, emplaced assembly building for working on test articles and new test fixtures needed to mate to customer items

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

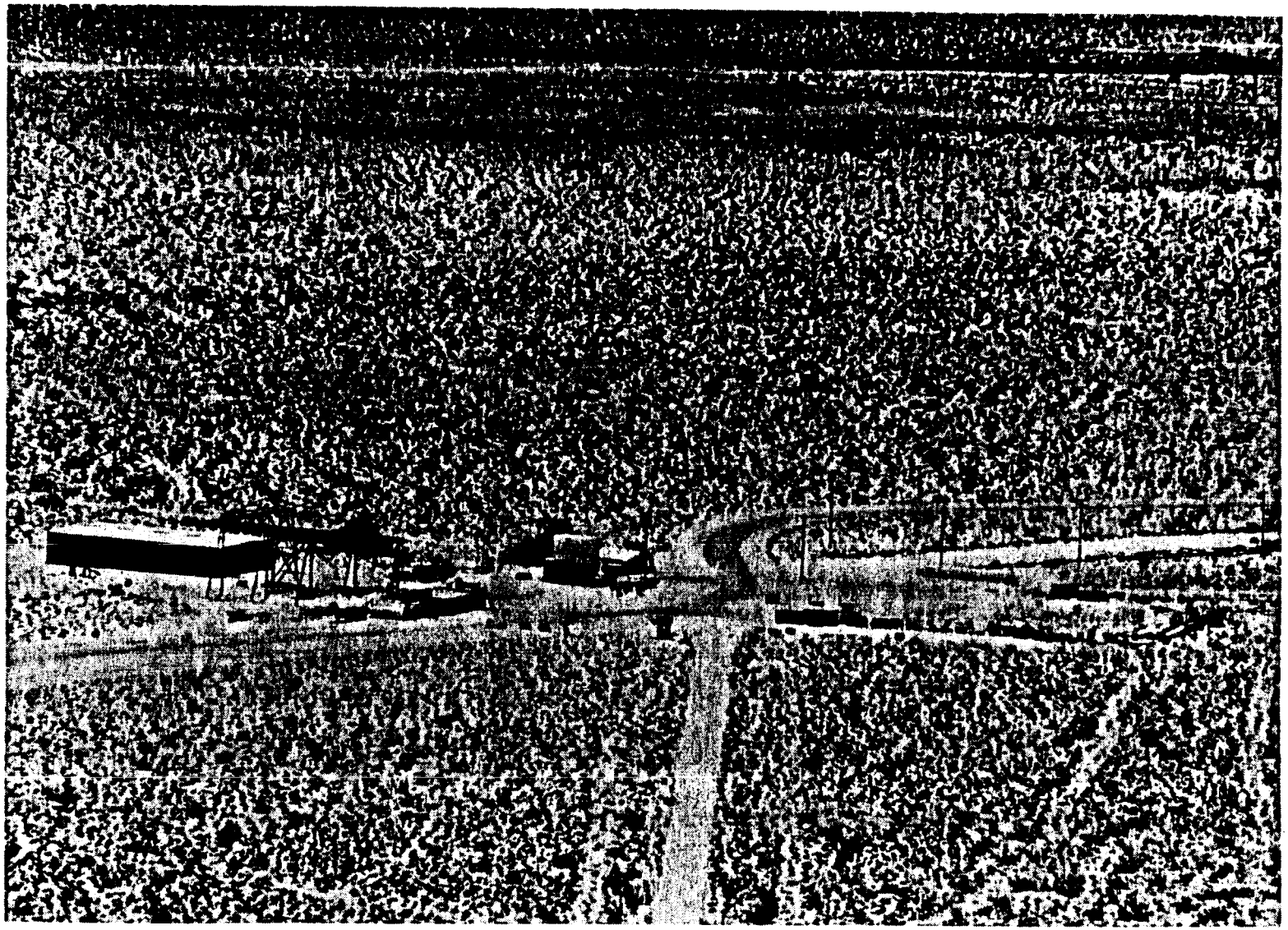
SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

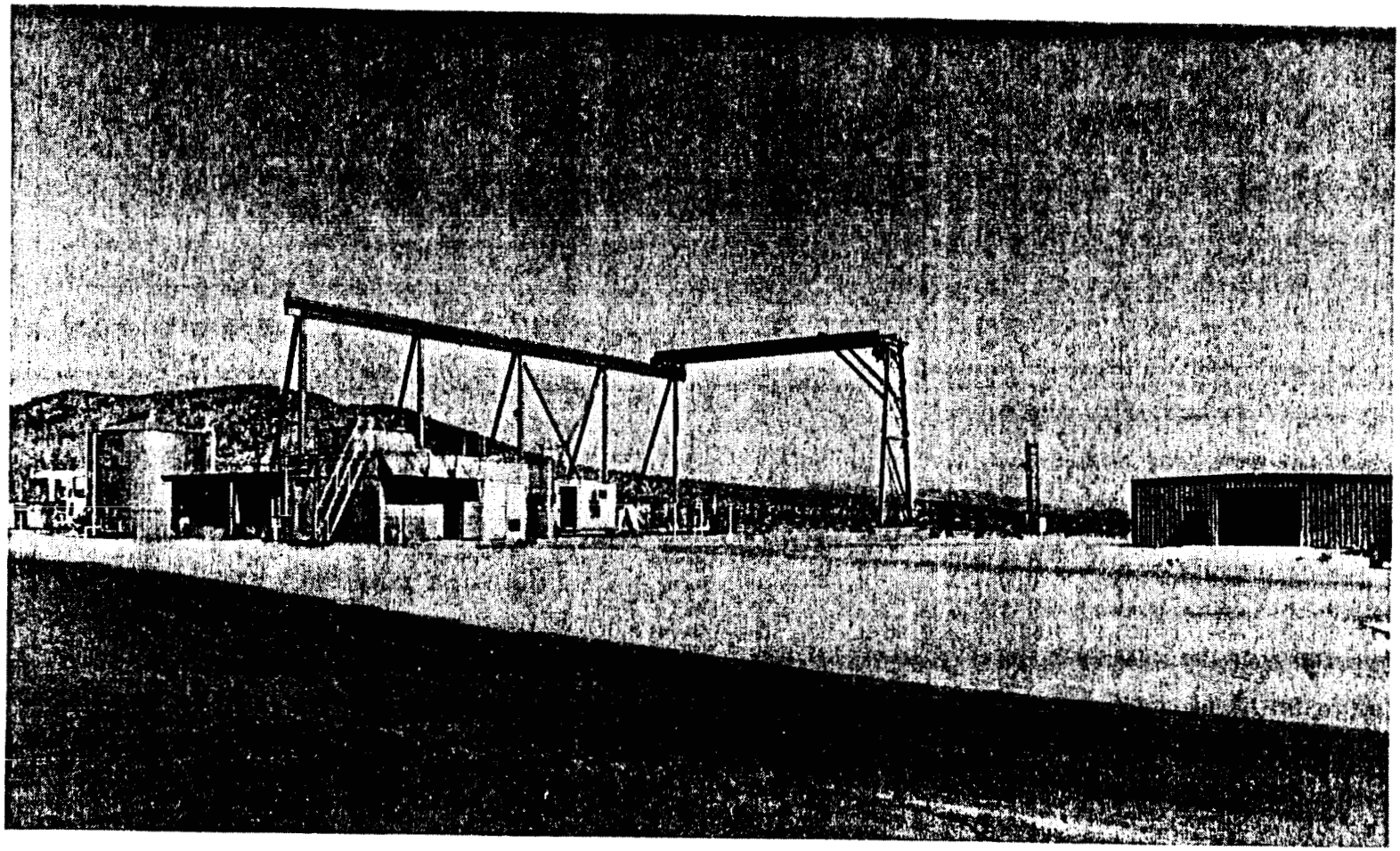
SUMMARY DESCRIPTION:

0271



Aeroheat Test Facility

0272



Aeroheat Test Facility

0273

Tab 8. Air Breathing Propulsion Laboratory

0274

GENERAL INFORMATION

Facility/Capability Title: Air Breathing Propulsion Laboratory

Origin Date: 4/25/94

Service: N Organization/Activity: NAWCWPNS CL Location: Code C27

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	20	70	10	0	0	0

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles			
Armament/Weapons	20	60	10
EC	0		
Other	0	10	

20/90 = 22%

Total in breakout must equal "Percentage Use" on first line.

0225

TECHNICAL INFORMATION

Facility/Capability Title: Air Breathing Propulsion Laboratory

Facility Description, Including Mission Statement:

An open-air facility to static fire and test air-breathing engines and engine components, including fuels, inlets, insulators, combustors, and fuel management systems. This facility can also static fire instrumented rocket motors and pyrotechnic devices up to 20 lbs Class 1.3 or 100mg Class 1.1. The facility can simulate flight conditions up to Mach 5 from sea level to 80, 000 ft . altitude in operational environments of -65 to 200°F with engine sizes less than 8 in. diameter direct-connected to the air supply. The facility has test bays for cold flow and hot firing of liquid and solid fuel ramjets, and for expendable turbine engine testing. Liquid fuels formulation and development and evaluation lab also exists within the facility.

Interconnectivity/Multi-Use of T&E Facility:

Facility is certified for ordnance operations and is in close proximity to other functional, safety, and radiographic test areas and assembly areas to provide for efficient operations. Concurrent operation with an air-breathing engine static firing and a small motor static firing is possible.

Type of Test Supported:

Static firing of air-breathing engines, small rocket motors, and pyrotechnic devices. Functional testing of engine components. Combustion testing for efficiency and emission of Marine incinerators.

Summary of Technical Capabilities:

Load stands to measure thrust, various cranes and hoists, safety check equipment, firing circuitry, engine and component operational sensors including fuel flow, steady and dynamic pressure and temperature, and laser Doppler velocimetry, data-acquisition system for pressure, temperature, and thrust, video cameras, IR and RF measurement equipment, fuel tanks, high and low pressure air supplies, air heaters, vacuum system and tank, temperature-conditioning equipment, ejector systems to simulate high altitudes, hardened control room bunker, firing circuitry,

Keywords:

Air-Breathing, Static Firing, Fuels, Engines, Small Motor, Pyrotechnics.

0276

Document Separator

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Air Breathing Propulsion Laboratory

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	6500	6500	6500	6500	6000	6000	5500	5000
	TEST HOURS	1800	1800	1800	1800	1750	1750	1700	1650
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0227

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Air Breathing Propulsion Laboratory

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	6500	6500	6500	6500	6000	6000	4500	3000
	TEST HOURS	1800	1800	1800	1800	1750	1750	1700	1200
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Air Breathing Propulsion Laboratory

ANNUAL HOURS OF DOWNTIME (1) 1000

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 2.7

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 21.3

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 215
Fuel Vic	1	3	3	
Fuel Mgt	1	3	3	ANNUAL UNCONSTRAINED CAPACITY (9) 78475
Ramjet	.4	4.5	1.8	
Turbine	.3	3	.9	
Rocket	.3	4.5	1.4	
"TYPICAL"				
		TOTAL	10.1	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Safety for personnel in area working with Class 1.1 and 1.3 propellants or fuels.

0278

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Air Breathing Propulsion Laboratory

ANNUAL HOURS OF DOWNTIME (1) 1000

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 2.7

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 21.3

TEST TYPES (4)	TESTS AT ONE TIME (5)	WORKLOAD PER TEST PER FACILITY HOUR (6)	WORKLOAD PER FACILITY HOUR (7)	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 95.85
"TYPICAL"	1	4.5	4.5	ANNUAL UNCONSTRAINED CAPACITY (9) 34,985.25
			TOTAL 4.5	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Safety for personnel in area working with Class 1.1 and 1.3 propellants or fuels.

0278 A

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Air Breathing Propulsion Laboratory

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0						
Enlisted	0						
Civilian	12	13	13	13	13	13	13
Contractor							
Total	12	13	13	13	13	13	13

Total Square Footage 10,000

Test Area Square Footage 25,000

Office Space Square Footage 3,000

Tonnage of Equipment: 12

Volume of Equipment: 12,000

Annual Maintenance Cost: $150,000

Estimated Moving Cost: $850,000

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$150K	0	$207K				
$10K	$10K	$20K				

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Air Breathing Propulsion Laboratory

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0						
Enlisted	0						
Civilian	12	10	11	13	13	13	13
Contractor							
Total	12	10	11	13	13	13	13

Total Square Footage 10,000

Test Area Square Footage 25,000

Office Space Square Footage 3,000

Tonnage of Equipment: 12

Volume of Equipment: 12,000

Annual Maintenance Cost: $150,000

Estimated Moving Cost: $850,000

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$150K	0	$207K				
$10K	$10K	$20K				

0279 A

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Air Breathing Propulsion Laboratory

AGE: 48

REPLACEMENT VALUE: $12,564K = Total, $8,367K=Buildings

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE:

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

    TOTAL PROGRAMMED AMOUNT:

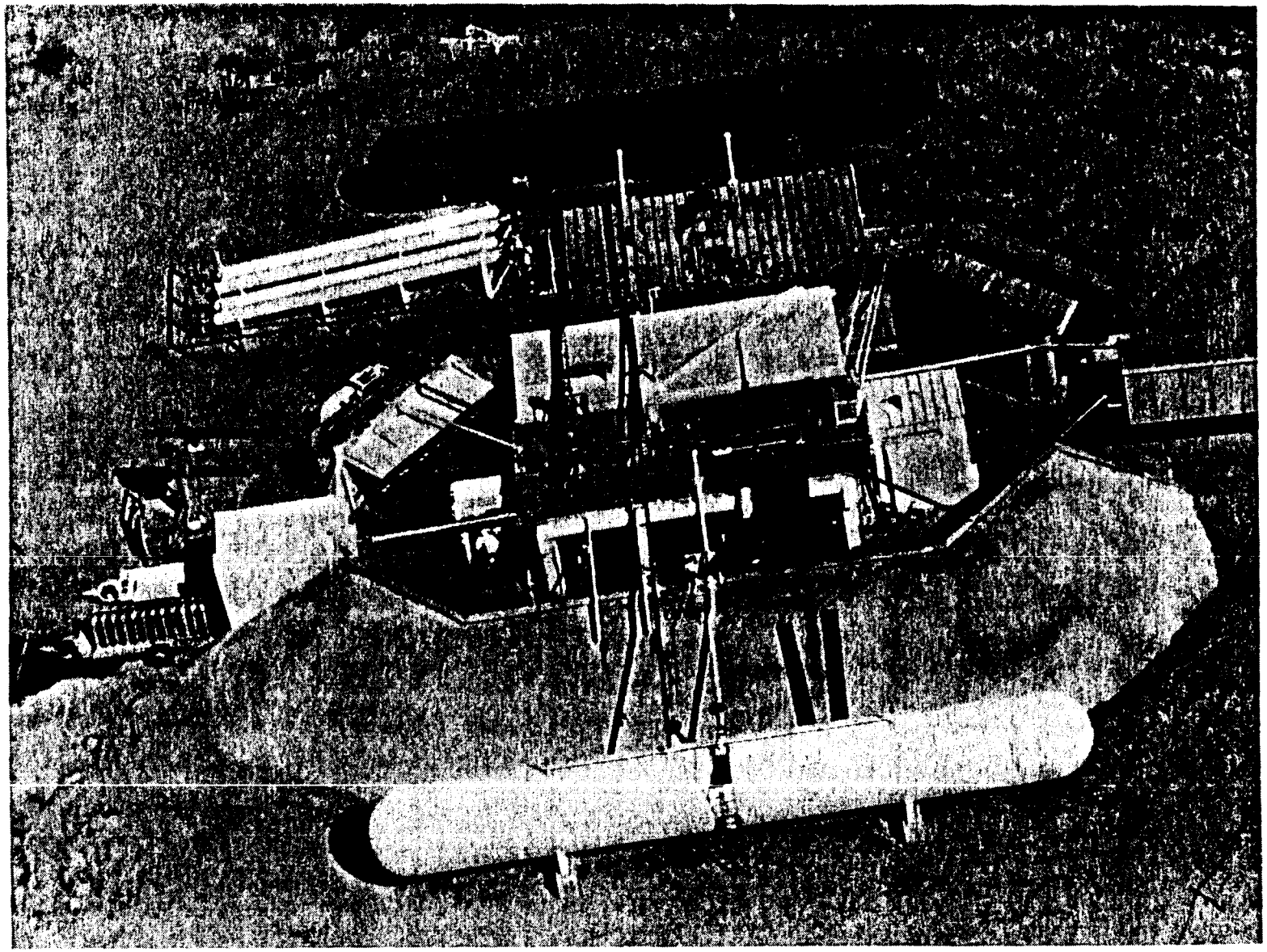
    SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

    TOTAL PROGRAMMED AMOUNT:

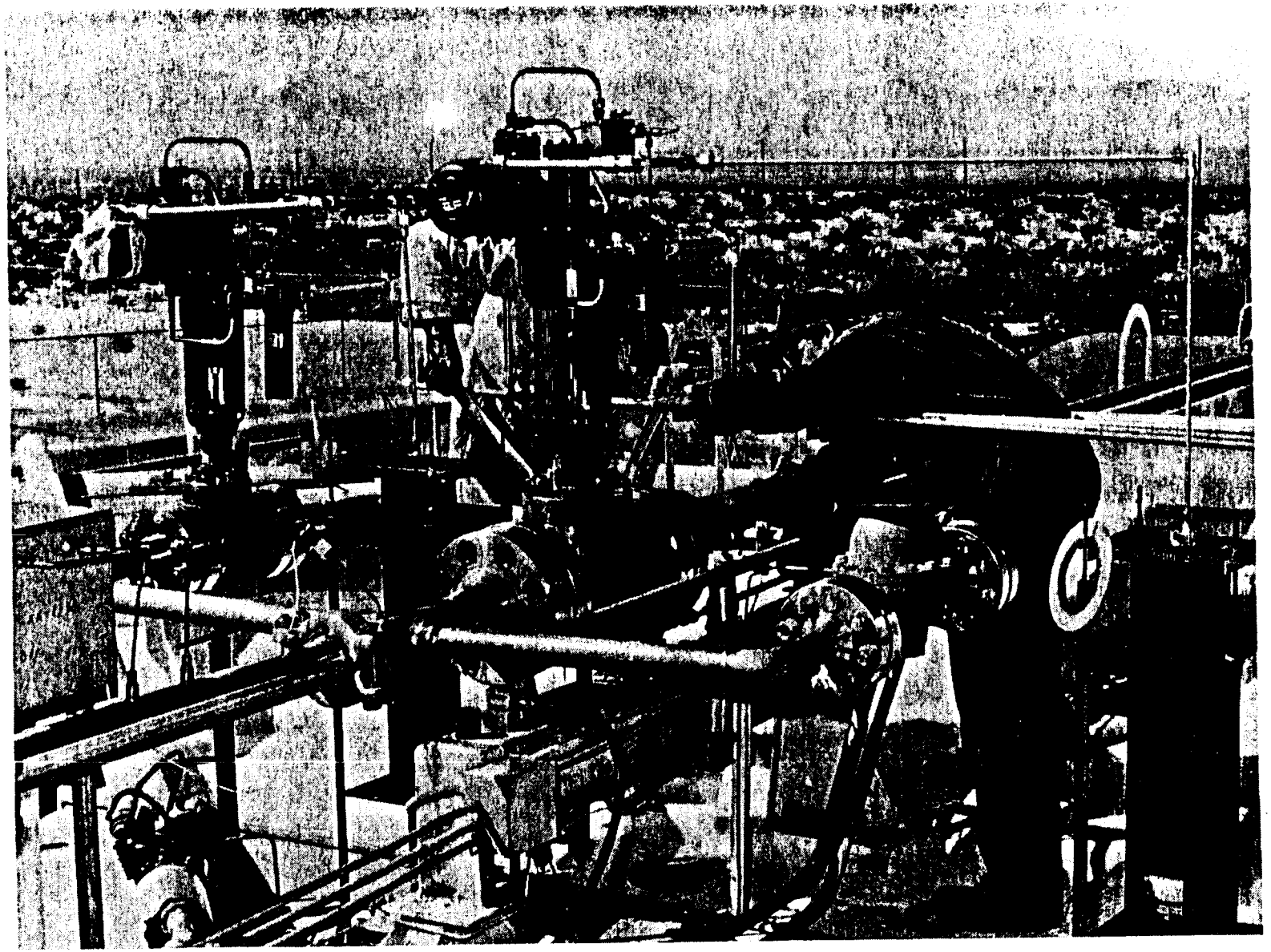
    SUMMARY DESCRIPTION:

0250



Air Breathing Propulsion Laboratory

0281A



Air Breathing Propulsion Laboratory

0287B

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Tab 9. Antiradiation Missile (ARM) Seeker Test Complex

0282

GENERAL INFORMATION

Facility/Capability Title: Antiradiation Missile (ARM) Seeker Test Complex

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC-China Lake Location: C2877

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	40	5	55			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	40	5	55			
EC						
Other						

40/100 = 40%

Total in breakout must equal "Percentage Use" on first line.

0253

TECHNICAL INFORMATION

Facility/Capability Title: Antiradiation Missile (ARM) Seeker Test Complex

Facility Description, Including Mission Statement:

The complex consists of an anechoic chamber/rate table, a test van, an NTA-4F knosy instrument aircraft, and instrumented A-6 and F-18A andC aircraft. The purpose of the complex is DT&E of ARM seekers in laboratory to free space environments.
The shielded RF Anechoic Chamber is 20 by 40 ft and contains equipment to evaluate seeker performance from 500 MHz to 20 GHz. The rate table, along with peripheral equipment, provides the capability to perform end-to-end testing including simulated missile launches. The test van is used to evaluate seeker performance and perform target verification. NTA-4F BuNo 152102 aircraft is dedicated to HARM Missile Systems T&E and contains an ARM weapon system less missile motor, wings, and actuators. It is used to evaluate seeker performance in free space under dynamic conditions. The instrumented A-6E and F-18A and C aircraft are used to evaluate the seeker interface with on board avionics under dynamic flight conditions.

Interconnectivity/Multi-Use of T&E Facility:

The complex is a standalone test complex. The test van provides a unique capability of standalone seeker/target data collection with post-test data analysis. The NTA-4F provides for collection of seeker performance data in an environment free of reflections from wings, pylons, in takes, and other stores. On-board data recording provides independent data collection in noninstrumented/RF silent/hostile areas. Telemetry links airborne system data to displays at T-Pad for use in conducting flight tests.

Type of Test Supported:

Development and evaluation of ARM seeker software and hardware. Test and evaluation of ARM seekers with on-board avionics and electronic warfare equipment. Firing target verification. Host aircraft operational flight program verification and validation.

Summary of Technical Capabilities:

ARM seeker electrical and functional testing encompassing testing in laboratory to free flight environments. Capabilities included an anechoic chamber and associated RF generation equipment from 500 MHz to 20 GHz, a rate table, an instrumented van for remote site testing and target verification, an NTA-4F instrumented aircraft (seeker in the nose), and instrumented A-6 and F-18A andC aircraft.

Keywords:

ARM, seeker, knozy, van, rate table

0254

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Antiradiation Missile (ARM) Seeker Test Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	8529	8929	9228	10657	7257	9743	8000	6058
	TEST HOURS	2140	2181	2680	2910	2368	2422	2802	2116
	MISSIONS	70	90	90	205	234	261	251	208
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Antiradiation Missile (ARM) Seeker Test Complex

ANNUAL HOURS OF DOWNTIME (1) 864

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 2.367

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 21.633

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 108.16
LAB	2	1	2	
VAN	1	1	1	ANNUAL UNCONSTRAINED CAPACITY (9) 39.478
FLT	2	1	2	
"TYPICAL"				
		TOTAL	5	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: The aircraft has scheduled and unscheduled maintenance.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Antiradiation Missile (ARM) Seeker Test Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	6	5	4	5	5	5	5
Contractor	3	2	2	1	1		
Total	9	7	6	6	6	5	5

Total Square Footage 1880

Test Area Square Footage 1080

Office Space Square Footage 50

Tonnage of Equipment: 7.9

Volume of Equipment: 18,700

Annual Maintenance Cost: 131K

Estimated Moving Cost: 3.55M

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
188K	90K	60K	52K	102K	152K	52K

0237

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Anti-Radiation Missile (ARM) Seeker Test Complex

AGE: 10 yrs REPLACEMENT VALUE: $15,570K ($600K)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 3/15/94

NATURE OF LAST UPGRADE: F-18 operational flight program updated to the latest version

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Radar Warning Receiver

   TOTAL PROGRAMMED AMOUNT: 10K

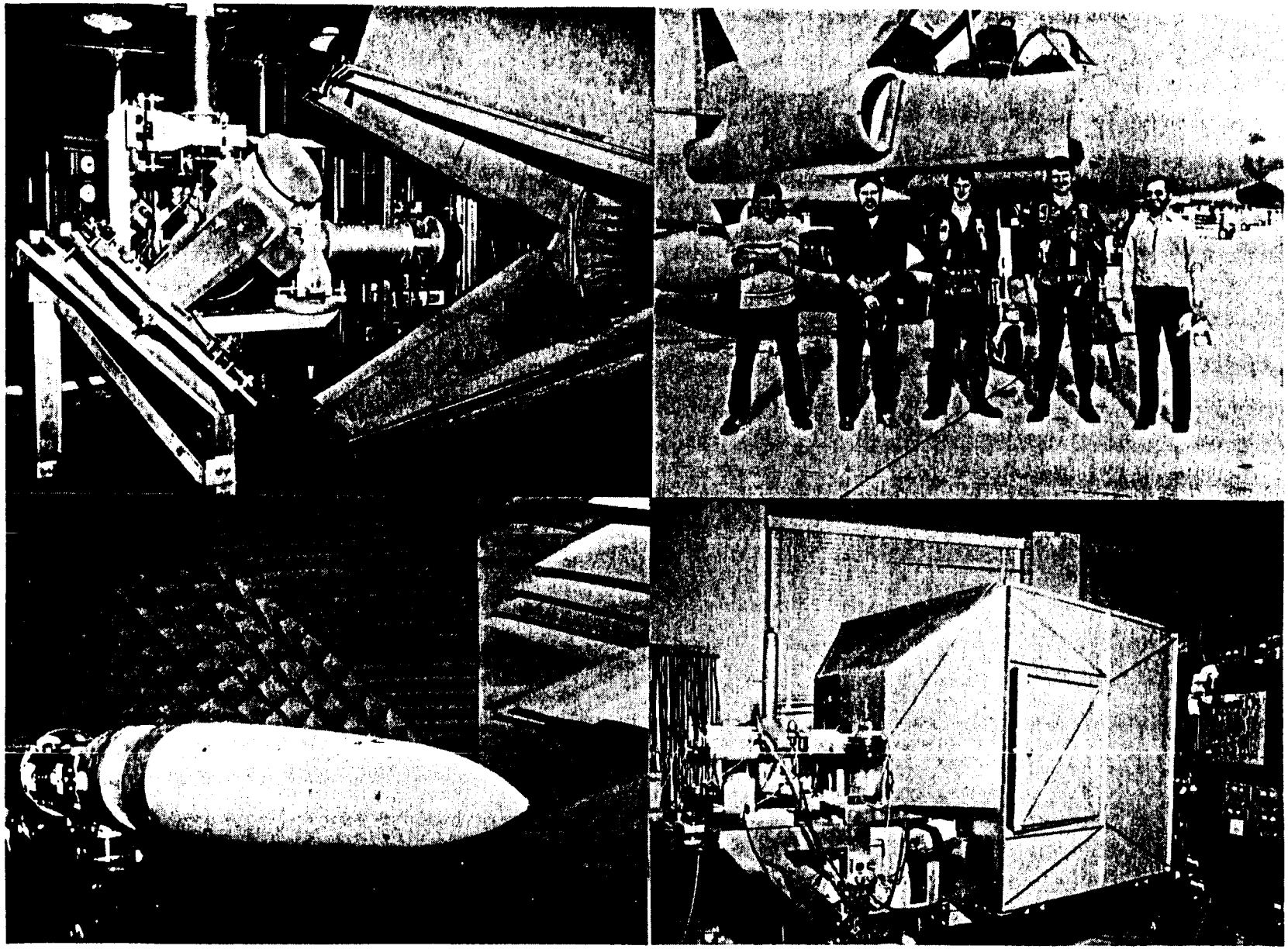
   SUMMARY DESCRIPTION: Add Radar Warning Receiver avionics to test van equipment.

2. UPGRADE TITLE: Millimeter Wave Target Simulation

   TOTAL PROGRAMMED AMOUNT: 150K

   SUMMARY DESCRIPTION: Add transceivers in anechoic chamber to act as a simulated target for the seeker under test.

0258



Antiradiation Missile (ARM) Seeker Test Complex

0289

Document Separator

Tab 10. Cactus Flats Ordnance Test Area

GENERAL INFORMATION

Facility/Capability Title: Cactus Flats Ordnance Test Area

Origin Date: 4/25/94

Service: N

Organization/Activity: NAWCWPNS, CL Location: Code C27

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	90	10				
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	90	10				
EC						
Other						

90/100 = 90%

Total in breakout must equal "Percentage Use" on first line.

0291

TECHNICAL INFORMATION

Facility/Capability Title: Cactus Flats Ordnance Test Area

Facility Description, Including Mission Statement:

This is a 15 sq mi. test arena for conducting large- and small-scale high-explosive tests, as well as gun testing. The test site can handle tests up to 200,000 lbs net explosive weight. Tests supported include survivability of improved magazine designs, quantity-distance/ hazard zone safety tests, sympathetic detonation tests, gun testing (up to 120 mm), and testing of underground explosive storage facilities. Capabilities include high-speed photography, video, pressure measurements, and debris mapping. Mission statement: engineering and development of ordnance programs to determine safety, performance, and storage properties.

Interconnectivity/Multi-Use of T&E Facility:

Gun range and high explosive test arena. Can support other T&E activities that require high-speed cameras, video, still photography, recording for pressure and time of event.

Type Of Test Supported:

Magazine survivability, quantity distance/hazard zone safety testing, explosive and propellant propagation/nonpropagation and safety testing, gun testing, design and testing of underground facilities and magazines.

Summary of Technical Capabilities:

High-speed cameras, video, still photography. Recording for pressure and time of event. Explosive technology testing to include sympathetic detonation, shaped charge technology, explosive formed penetrators (EFP), directional fragmentation warheads design, range cleanup and disposal.

Keywords:

Sympathetic Detonation, EFP, Shaped Charge, Guns, High Explosive Test

0292

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Cactus Flats Ordnance Test Area
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR			12,250	12,250	12,250	12,250	12,250	14,000
	TEST HOURS			1750	1750	1750	1750	1750	1750
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Cactus Flats Ordnance Test Area

ANNUAL HOURS OF DOWNTIME (1) 40

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 0.11

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.89

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) TYPICAL	(5) 3	(6) 11	(7) 33	(8) 788
				ANNUAL UNCONSTRAINED CAPACITY (9) 287,755

"TYPICAL"

TOTAL 33

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0294

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Cactus Flats Ordnance Test Area

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	8	11	15	20	20	20	20
Contractor							
Total	8	11	15	20	20	20	20

Total Square Footage LAB SPACE - 1195

Test Area Square Footage 15 SQUARE MILES

Office Space Square Footage 2390 SQ FT

Tonnage of Equipment: 85.5

Volume of Equipment: 31948 CU FT

Annual Maintenance Cost: $50K

Estimated Moving Cost: $170K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
		65K				
35K	75K	45K	60K	60K	60K	60K

0295

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Cactus Flats Ordnance Test Area

AGE: 49.0 yrs/sf REPLACEMENT VALUE: TOTAL = $1,169K BLDG = $321K

MAINTENANCE AND REPAIR BACKLOG: Total Backlog is $19K

DATE OF LAST UPGRADE: 1-1-49

NATURE OF LAST UPGRADE: The last major upgrade occurred with the construction, in 1949, of Bldg 11180, (3,584 sq ft) Ammo, Explosives, and Toxics Lab.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: No Major Upgrades are Planned

   TOTAL PROGRAMMED AMOUNT:

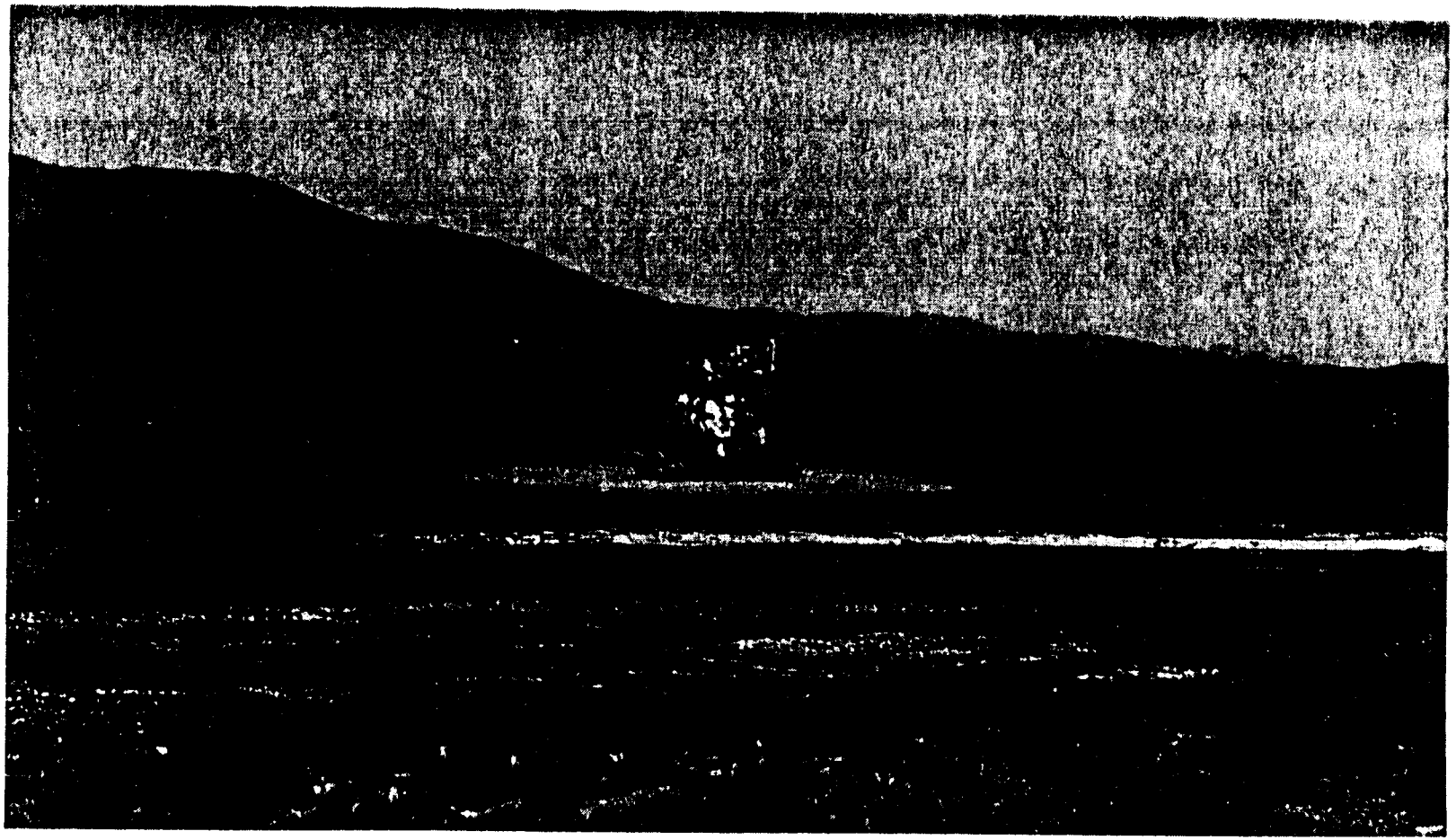
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:

   SUMMARY DESCRIPTION:

0296



Cactus Flats Ordnance Test Area

0297

Document Separator

Tab 11. Chemical Analysis Research Facility

0298

GENERAL INFORMATION

Facility/Capability Title: Chemical Analysis Research Facility

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC China Lake Location: C0235

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER	
PERCENTAGE USE:	18	69	10	2		1	
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles							
Armament/Weapons	17	67	10	1			= 95
EC							
Other	1	2		1		1	= 5

Total in breakout must equal "Percentage Use" on first line.

0299

TECHNICAL INFORMATION

Facility/Capability Title: Chemical Analysis Research Facility

Facility Description, Including Mission Statement:

To provide analytical services, including materials characterization to a large number of in-house and out-house activities including, SSPO(Trident and Chemistry Division research programs in the areas of energetic materials, electronic materials, polymer precursors, foreign materials characterization, failure analyses and general "unknown" determinations. Analytical environmental and hazardous waste samples are critical to the operations of the Environmental Projects Office. Support is also provided to programs engaged in seeking substitutes for ozone depleting substances. This includes Mass Spectrometry and Chromatography Lab, Nmr Lab, Infrared Spectroscopy Lab, Polymer Characterization Lab, and X-Ray Diffraction Lab.

Interconnectivity/Multi-Use of T&E Facility:

The facility is active in diverse areas ranging from in-house support of research programs to support for the Environmental Projects Office to T&E work for SSPO on Trident Programs. Collaborations and joint programs exist for Port Hueneme, NCCOSC, NSWC/WO, Crane, etc. Close ties and joint programs also exist with Lockheed, Hercules, Thiokol, Aerojet, United Technologies, DOE labs, and many universities.

Type of Test Supported:

Mass spectrometry, gas chromatography, liquid chromatography, graphite furnace atomic absorbance spectroscopy, inductively coupled plasma emission spectroscopy, sampling and analysis of chemical unknowns, specific ion electrodes.

Summary of Technical Capabilities:

Chemical analyses for determining identity and/or quantity of chemical constituents. Techniques available at this facility include: high performance liquid chromatography, gas chromatography, mass spectrometry, ion chromatography, atomic absorption, fluorometry, UV/visible/IR/Raman spectroscopy, and inductively coupled plasma emission spectroscopy.

Keywords:

Gas Chromatography, Mass Spectrometry, High Performance Liquid Chromatography, Ion Chromatography

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Chemical Analysis Research Facility
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR							100	
	TEST HOURS							100	
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	13390	13890	14390	14890	14650	16740	16260	15430
	TEST HOURS	14490	14640	14690	15010	14470	20560	20260	19430
	MISSIONS								
OTHER T&E	DIRECT LABOR					100	200	200	200
	TEST HOURS					30	50	60	70
	MISSIONS								
OTHER	DIRECT LABOR					100	200	400	200
	TEST HOURS					20	40	100	50
	MISSIONS								

0391

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Chemical Analysis Research Facility

ANNUAL HOURS OF DOWNTIME (1) 72.1

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 0.20

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 987.5
GC-Sample	16	1	16	
MS	4	2	8	ANNUAL UNCONSTRAINED CAPACITY (9) 360.438
Thermal	10	1.1	11	
GC/RAMAN	2	1	2	
HR/MIC	2	.5	1	
Std	3	.1	.3	
Rtn	3	1	3	
Non-Rtn	1.5	.125	.19	
			TOTAL 41.49	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0302

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Chemical Analysis Research Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	15	13.8	15	16	17	17	18
Contractor	1	.2	2	2	1	2	1
Total	16	14	17	18	18	19	19

Total Square Footage 5941

Test Area Square Footage 4791

Office Space Square Footage 1150

Tonnage of Equipment: 15

Volume of Equipment: 3,200

Annual Maintenance Cost: 157

Estimated Moving Cost: $160K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
293	130	420	180	250	300	300
			50	50	50	100

0303

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Chemical Analysis Research Facility

AGE: 40 REPLACEMENT VALUE: $6,800K ($1,100K)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 1/5/94

NATURE OF LAST UPGRADE: Purchase of new 200-MHz nuclear magnetic resonance spectrometer

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Solid State (400 MHz) and Imaging (200 MHz)

TOTAL PROGRAMMED AMOUNT: $700K

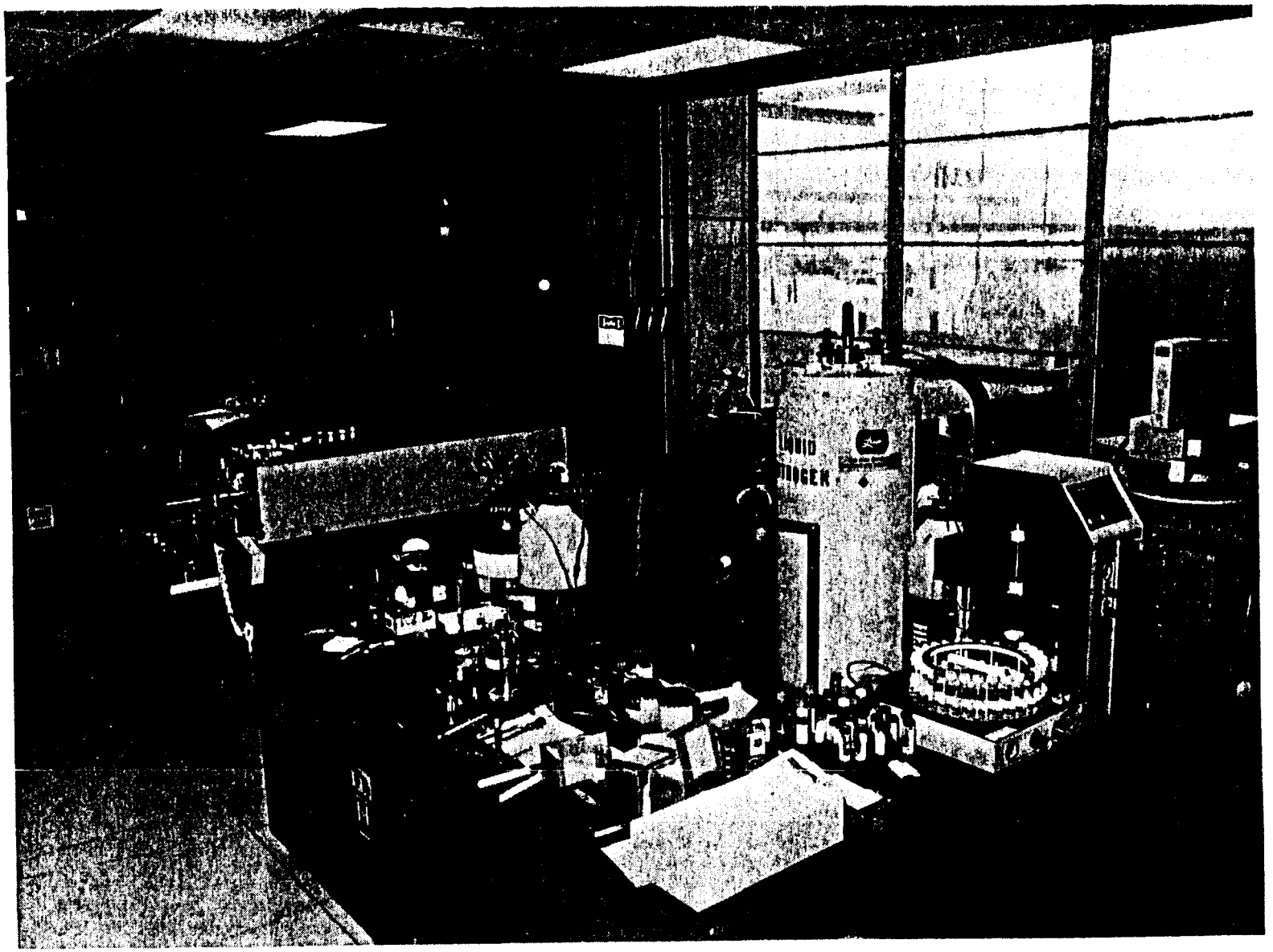
SUMMARY DESCRIPTION: Upgrade of 9.4 Tesla and 4.7 Tesla systems to accommodate solid and imaging experiments

2. UPGRADE TITLE: Imaging and Microimaging

TOTAL PROGRAMMED AMOUNT: $1.4M

SUMMARY DESCRIPTION: 7 Tesla 1-meter bore horizontal NMR imaging system for analysis of solid samples. All necessary hardware and software

0304



Chemical Analysis Research Facility

0305

Document Separator

Tab 12. Detonation Physics Laboratory

GENERAL INFORMATION

Facility/Capability Title: Detonation Physics Laboratory

Origin Date: 4/25/94

Service: N Organization/Activity: NAWCWPNS, CL Location: Code C27

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	60	40				
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	60	40	60/100 = 60%			
EC						
Other						

Total in breakout must equal "Percentage Use" on first line.

0307

TECHNICAL INFORMATION

Facility/Capability Title: Detonation Physics Laboratory

Facility Description, Including Mission Statement:

Facility consists of three test bays; an enclosed test chamber with separate control room, an indoor firing bay and an outdoor firing bay with a common control room. All three bays are instrumented and the ultra-high-speed framing and streak cameras may be used for the indoor and outdoor bays. Precise timing and pressure measurements can also be made. All bays are heavily constructed for work with energetic materials, and control rooms are heated/air conditioned for instrumentation. Support for test facilities include office space, machine shop, wood working shop, electronics lab, chemical lab with fume hoods, and photo lab. Capability to be totally self-sufficient: Make test fixtures, build stands, instrumentation, test, gather data, evaluate data, report results and develop film. Test supported: detonation velocity, detonation pressure, fragment velocity, penetration performance, cap sensitivity, shock sensitivity, and sympathetic detonation, critical diameter, shock sensitivity, failure thickness, and fuel air explosive characterization.
Mission Statement: To determine the quality, safety and operational characteristic of energetic materials through detonation physics testing.

Interconnectivity/Multi-Use of T&E Facility:

Testing is done for many different areas of the base. We test new formulations of both explosives and propellants, testing for the Ordnance Development Division, various project offices, etc. Three separate test bays to handle from 1kg to 5kg of explosives for testing. Instrumentation includes color video monitors, ultra-hig- speed cameras (streak and framing), multiple data lines for precise timing, and pressure measurement and storage oscilloscopes.

Type of Test Supported:

Performance testing: detonation velocity, detonation pressure, fragment velocity, penetration performance.
Safety testing: Bullet impact, electrostatic discharge, cap sensitivity, shock sensitivity, and sympathetic detonation. New Formulations Evaluation: Critical diameter, shock sensitivity, failure thickness.

0308

Detonation Physics Laboratory

Summary of Technical Capabilities:

Field testing of energetic materials, data accumulation, and test support. Testing up to 5kg net explosive weight includes cylinder expansion, explosive reliability, explosive train/propagation, gap testing, sympathetic detonation, detonation velocity, critical diameter (confined and unconfined), failure diameter, failure thickness, wedge test, miniwedge, fragment velocity, explosive logic, solid fuel-air explosive testing, aquarium test, bullet impact. Test support includes machine shop, electronics lab, wood shop and photo lab, (darkroom and black and white film development capabilities).

Keywords:

Detonation Physics, Explosives, FAE Fuel-Air Explosive, Detonation

0309

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Detonation Physics Laboratory
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	10500	8750	8750	7000	7000	5250	3500	5250
	TEST HOURS	1700	1700	1700	1700	1700	1700	1700	1700
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0310 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Detonation Physics Laboratory
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	7000	7000	7000	7000	7000	6000	5250	5250
	TEST HOURS	1700	1700	1700	1700	1700	1700	1700	1700 → ?
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0310

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Detonation Physics Laboratory

ANNUAL HOURS OF DOWNTIME (1) 80

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) .22

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.78

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
(4)	(5)	(6)	(7)
Cylex	.3	3	.9
Gap test	1	2	2
Det Vel	.2 .2	2	.4
Wedge	2	3	.6
Frag Vel	.2	2	.4
Bullet Impact	.2	2	.4
FAE	.3	3	.9
Aquarium	.2	3	.6
Failure Dia	.2	2	.4
Pen Perf	.2	2	.4
		TOTAL	7

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 166

ANNUAL UNCONSTRAINED CAPACITY (9) 60,760

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Limited by number of skilled personnel available and by number of test bays.

0311

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Detonation Physics Laboratory

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	3	3	4	4	5	5	6
Contractor							
Total	3	3	4	4	5	5	6

Total Square Footage 5279

Test Area Square Footage 3547

Office Space Square Footage 1732

Tonnage of Equipment: 6

Volume of Equipment: 4800

Annual Maintenance Cost: $110K

Estimated Moving Cost: $1,580K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
50K		62K	123K	100K	100K	100K
20K	20K	15K	20K	20K	20K	20K

0312

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Detonation Physics Laboratory

AGE: 45.1 yrs/sf REPLACEMENT VALUE: Total = $4,820K; Bldgs. $3,220K

MAINTENANCE AND REPAIR BACKLOG: Total backlog is $90K

DATE OF LAST UPGRADE: 1-1-53

NATURE OF LAST UPGRADE: The last major upgrade occurred with the construction, in 1953, of Bldg 12540 (1,732 sq ft) Ammo, Explosives, and Toxics lab.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Fragmentation Control Barrier, Bldg 12510

TOTAL PROGRAMMED AMOUNT: $32K

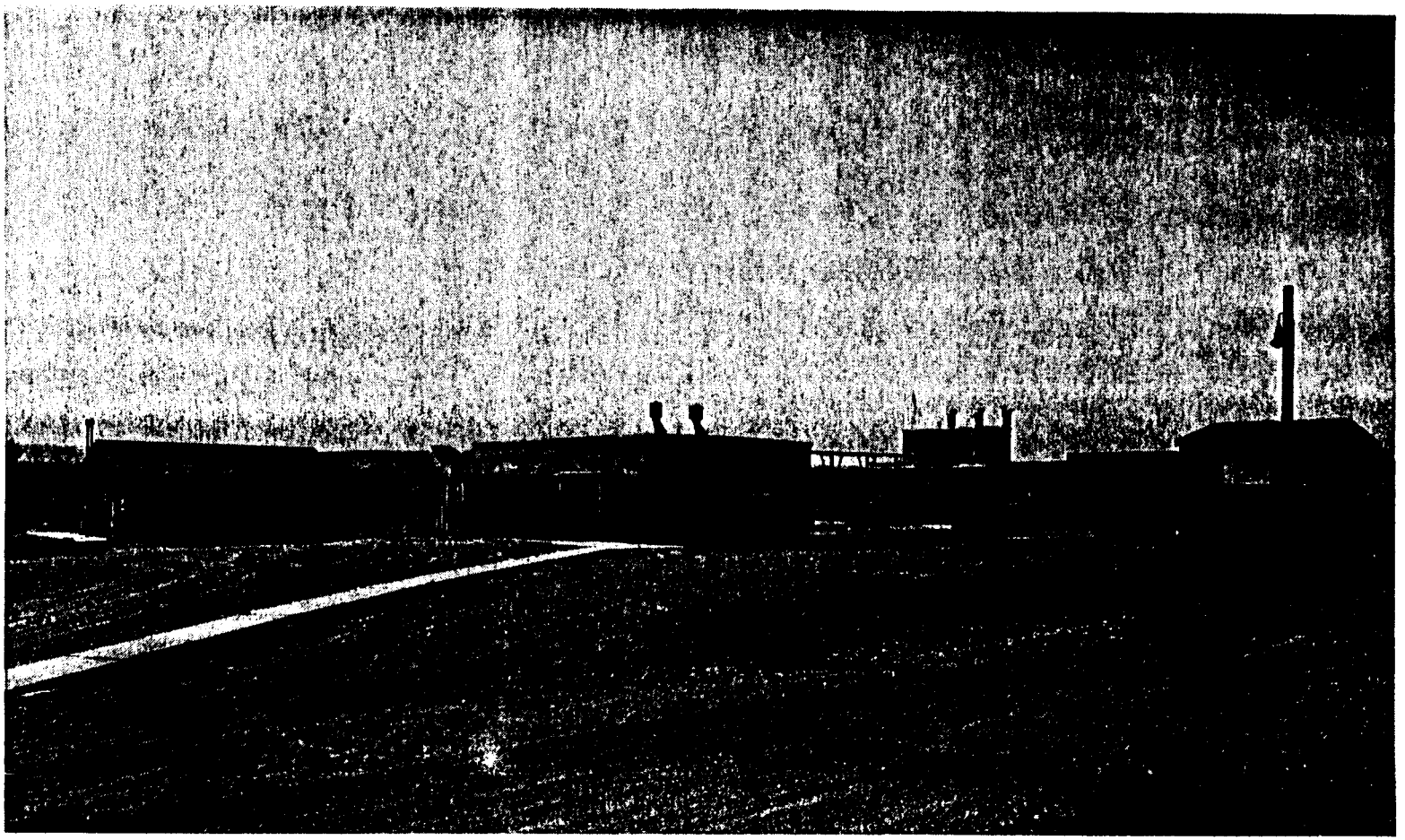
SUMMARY DESCRIPTION: Construct permanent fragment control barrier.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

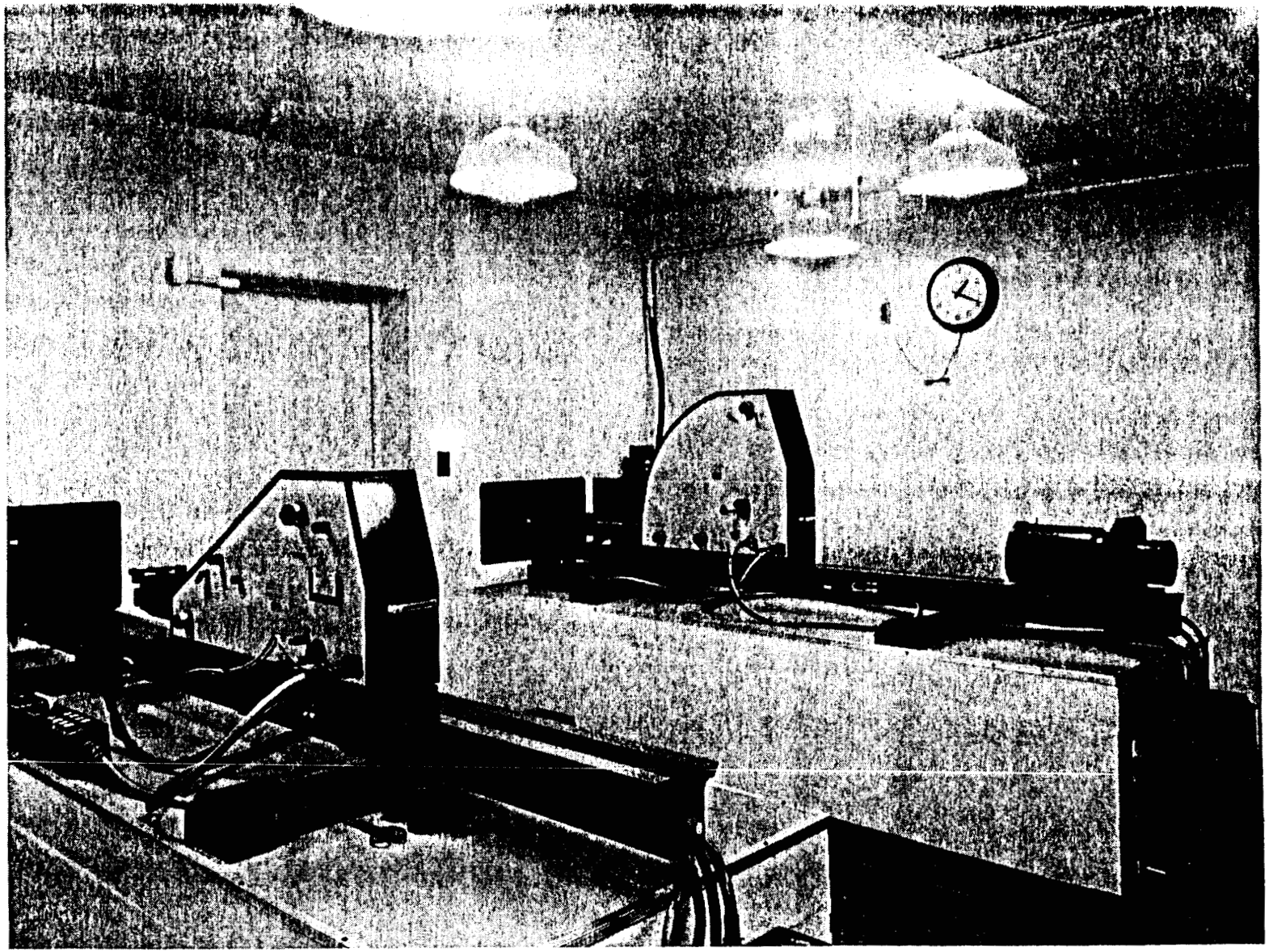
SUMMARY DESCRIPTION:

0313



Detonation Physics Laboratory

0314



Detonation Physics Laboratory

0315

Document Separator

Tab 13. Dynamic Properties Measurements Complex

0316

GENERAL INFORMATION

Facility/Capability Title: Dynamic Properties Measurements Complex

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC-China Lake Location: C2612/C2891

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	25%	20%	55%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	13%		7%			
Armament/Weapons	12%	20%	48%			
EC						
Other						

Total in breakout must equal "Percentage Use" on first line.

20

80

0317

TECHNICAL INFORMATION

Facility/Capability Title: Dynamic Properties Measurements Complex

Facility Description, Including Mission Statement:

Mass Properties Facility--Measure weight, center of gravity, moment of inertia, and product of inertia of items from 2 lbs to 5500 lbs.
Mission Statement--To provide readily available Mass Properties Measurements for any item at a minimum of cost and a maximum of accuracy.
The Structural Dynamics Laboratory is a highly specialized structural analysis resource. The laboratory can perform modal testing and dynamic analysis of structures on both the component and system levels. Analyses are generally performed in the test facility. However, the equipment is fully portable, allowing testing and analyses to be performed on or off site. The data are used to validate computer-aided engineering(CAE) structural dynamics analytical models. The laboratory hardware/software is fully integrated into the overall CAE capability.

Interconnectivity/Multi-Use of T&E Facility:

The items can be components, missiles, bombs, aircraft pods, automobiles or other vehicles, etc. The measurements can improve safety of flight and increase accuracy and range of weapons.
The structural dynamics testing is applicable to any structure or control system in which dynamic behavior is relevant to the performance of the structure.

Type of Test Supported:

Mass Properties: Weight in lbs to 5500 lbs ± .001 Center of Gravity in in. ± .001 in.
Moment of Inertia in lbs in. 2 ±.025% Product of Inertia to ± 1.07%
Modal dynamic structural response(obtain structural frequencies and mode shapes)

Summary of Technical Capabilities:

Able to provide mass properties measurements of weight, center of gravity (C.G.), moment of inertia (MOI) and product of inertia (POI) for any item from 2 to 5500 lbs.
The structural dynamics lab can perform a fully coupled modal test/structural analysis. The computer structural model is analyzed and updated simultaneously with the modal test.

Dynamic Properties Measurements Complex

Keywords:

Weight, Center of Gravity, Moment of Inertia, Product of Inertia, Structural, Dynamic, Modal, Frequency, Mode Shape, Aeroelasticity, Flutter

0329

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Dynamic Properties Measurements Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR						191	262	216
	TEST HOURS						37	80	57
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	–	–	acquire	333	380	759	1046	1832
	TEST HOURS	–	–	equip	67	73	146	320	1205
	MISSIONS								
OTHER T&E	DIRECT LABOR								80
	TEST HOURS								80
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0326

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Dynamic Properties Measurements Complex

ANNUAL HOURS OF DOWNTIME (1) 300 Hours

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) .82 Hours

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.18Hours

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 69.54
Mass Prp	2	1	2	
Struct	1	1	1	ANNUAL UNCONSTRAINED CAPACITY (9) 25.382

"TYPICAL"

TOTAL 3

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0321

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Dynamic Properties Measurements Complex

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	3	3	3
Contractor	0	0	0	0	0	0	
Total	3	3	3	3	3	3	3

Total Square Footage 7400 Sq Ft.

Test Area Square Footage 6800 Sq. Ft.

Office Space Square Footage 600 Sq. Ft.

Tonnage of Equipment: 7 tons

Volume of Equipment: 4000 CU FT.

Annual Maintenance Cost: $17K

Estimated Moving Cost: $40K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$50K	0	$25K	0	0	0	0
0	0	0	0	0	0	0

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Dynamic Properties Measurements Complex

AGE: 5 years REPLACEMENT VALUE: $2230K ($1480K)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 10/30/92

NATURE OF LAST UPGRADE: Upgrade computers, software acquisition and printers

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: None

   TOTAL PROGRAMMED AMOUNT:

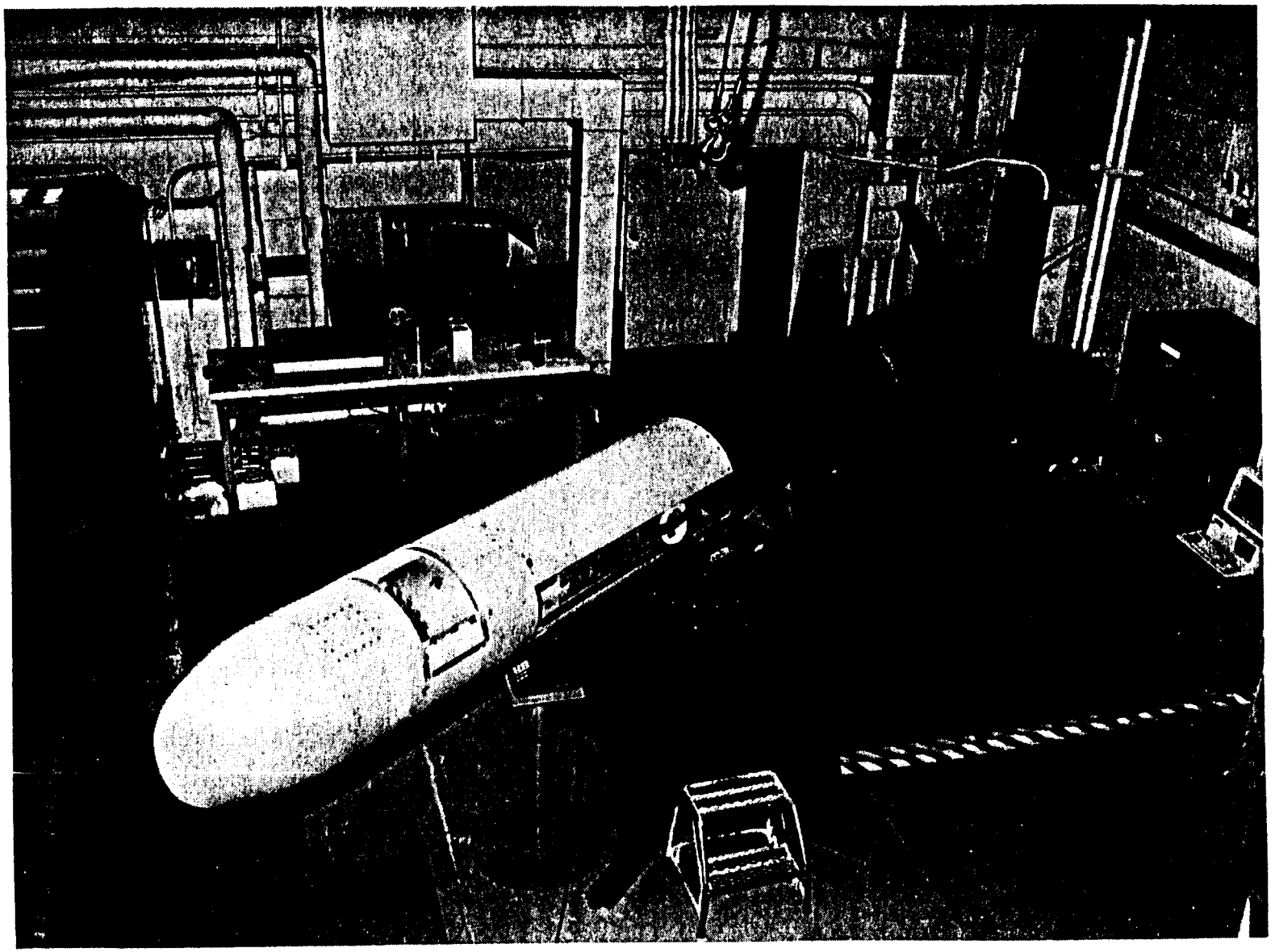
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE: None

   TOTAL PROGRAMMED AMOUNT:

   SUMMARY DESCRIPTION:

0323



Dynamic Properties Measurements Complex

0324

Document Separator

Tab 14. Energetic Materials Properties Analysis Laboratory

GENERAL INFORMATION

Facility/Capability Title: Energetic Materials Properties Analysis Laboratory

Origin Date: 4/25/94

Service: N Organization/Activity: NAWCWPNS, CL Location: Code C27

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	10	90				

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles		
Armament/Weapons	10	90
EC		
Other		

Total in breakout must equal "Percentage Use" on first line.

0325

TECHNICAL INFORMATION

Facility/Capability Title: Energetic Materials Properties Analysis Laboratory

Facility Description, Including Mission Statement:

These facilities are a combination of laboratories and field test sites. The total square footage of the lab spaces is 12,345 sq ft. They are configured in a typical lab setup for WET and DRY chemical analyses and physical properties analysis. This includes proper fume hoods, electrical outlets, uninterrupted power supplies, nonconductive surfaces, inert gas plumbing throughout, chemical, energetic material and hazardous waste storage. All lab facilities are heavily constructed for the explosive environment and are air conditioned/heated for the instrumentation. Instrumentation includes particle size analysis, differential scanning calorimetry, vacuum thermal stability, HPLC, gas chromatograph-mass/spectroscope, reaction rate calorimeter, combustion bomb, thermal gravimetric analysis, IR spectrophotometer, differential thermal analysis, friction sensitivity, electrostatic sensitivity, impact sensitivity propellant strand burning rate, tensile testing, and cure shrinkage measurement. The combined field test sites buildings square footage is 679. They are converted battleship gun turrets and are configured into control rooms and enclosed firing bays. The field test sites are instrumented for the thermal characterization of fast cookoff (open air flame), small-scale cookoff bomb (1lbs), and large scale cookoff bomb (25 lbs) of energetic materials. Steady- and non-steady state thermal cookoff tests as well as open flame fast cookoff tests are conducted. Mission statement: To determine the quality, safe handling, and operational characteristics of energetic materials through state of the art thermal, chemical, and physical analysis.

Interconnectivity/Multi-Use of T&E Facility:

The lab facilities were renovated within the last 10 yrs to current building, safety, and equipment/instrumentation requirements. The lab facilities are also capable of performing analysis on nonenergetic materials and are positioned to apply for EPA certification for hazardous waste materials analysis.
Field test sites are certified to handle energetic material quantities ranging from 1 to 25 lbs for cookoff testing. Each site is instrumented with color video, thermal couple, and PSI transducer data lines, natural gas, and heater ovens. These facilities are designed to conducted testing 24 hrs per day.

Type of Test Supported:

Laboratory Tests: Analytical chemistry, quantitative and qualitative analysis; thermal analysis, physical properties stress/strain, energetic materials sensitivity testing (safety). Propellant performance tests.
Field Tests: Steady and non-steady-state thermal cookoff tests, open flame fast cookoff tests. Explosive quantities up to 25 lbs.

0327

Energetic Materials Properties Analysis Laboratory

Summary of Technical Capabilities:

Perform laboratory analysis and field testing of energetic and non-energetic materials in support of weapons armament. Lab Tests include: Particle size analysis, differential scanning calorimetry, vacuum thermal stability, GC.MS analytical chemistry, reaction rate calorimeter, PARR BOMB (isothermal calorimetry), thermal gravimetric analysis, propellant strand burning, DTA, tensile testing, sensitivity testing (electrostatic, friction, impact), remote cutting, and small-scale sample cutting. Cure shrinkage measurement.

Keywords:

Small-Scale Cookoff Bomb (SSCB), Large-Scale Cookoff Bomb (LCB), Differential Scanning Calorimetry (DSC), Differential Thermal Gravimetric Analysis (DTA), Vacuum Thermal Stability(VTS), PARR BOMB, Reaction Rate Calorimetry (RRC), Gas Chromatograph Mass Spectroscopy (GC/MS), Gas Cookoff (ISO), Friction Test, Electrostatic Test, Impact Test, Tensile

0328

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Energetic Materials Properties Analysis Laboratory
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	24,500	21,000	22,750	24,500	24,500	26,250	26,250	22,750
	TEST HOURS	1900	1900	1900	1900	1900	1900	1900	1400
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0329 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Energetic Materials Properties Analysis Laboratory
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	26,250	25,300	25,300	24,500	24,500	22,750	21,000	21,000
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0329

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Energetic Materials Properties Analysis Laboratory

ANNUAL HOURS OF DOWNTIME (1) 100

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) .27

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.73

TEST TYPES (4)	TESTS AT ONE TIME (5)	WORKLOAD PER TEST PER FACILITY HOUR (6)	WORKLOAD PER FACILITY HOUR (7)
SSCB	.5	2	1
LCB	.5	2	1
ISO	1	2	2
DSC	1	2	2
DTA	2	2	4
PARTICLE SIZE	2	2	4
SAFETY	3	2	6
STRAND BURNING	1	2	2
TENSILE	3	2	6
WET CHEMICAL	6	2	12
TGA	2	2	4
FTIR	1	2	2
VTS	3	2	6
		TOTAL	52

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 1,234

ANNUAL UNCONSTRAINED CAPACITY (9) 450,395

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Space allocation restricts the use of several instruments simultaneously.

0330 A

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Energetic Materials Properties Analysis Laboratory

ANNUAL HOURS OF DOWNTIME (1) 100

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) .27

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.73

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
(4)	(5)	(6)	(7)
SSCB	.5	2	1
LCB	.5	2	1
ISO	1	2	2
DSC	1	2	2
DTA	2	2	4
PARTICLE SIZE	2	2	4
SAFETY	1	2	2
STRAND BURNING	3	2	6
TENSILE	1	2	2
WET CHEMICAL	3	2	6
TGA	8	2	16
FTIR	1	2	2
	1	1	1
	25	TOTAL	49

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 1.163

ANNUAL UNCONSTRAINED CAPACITY (9) 424.411

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Space allocation restricts the use of several instruments simultaneously.

0330

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Energetic Materials Properties Analysis Laboratory

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	12	10	10	11	12	14	15
Contractor							
Total	12	10	10	11	12	14	15

Total Square Footage 13816 bldg; 5 acres open

Test Area Square Footage 11764; 5 acres open

Office Space Square Footage 2052

Tonnage of Equipment: 11.76

Volume of Equipment: 7040

Annual Maintenance Cost: $240K

Estimated Moving Cost: $4.103K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	54k	25k	31k	75k	60k	60k
40k	60k					

0331

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Energetic Materials Properties Analysis Laboratory

AGE: 47.4 yrs/sf REPLACEMENT VALUE: Total = $9,168K, Bldgs. $6,990K

MAINTENANCE AND REPAIR BACKLOG: Total backlog is $95K

DATE OF LAST UPGRADE: 8-22-88

NATURE OF LAST UPGRADE: Repair project costing $127K to provide for the rehab of interior/exterior office and interior laboratory spaces for facility 15560.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: No Major Upgrades are Planned

   TOTAL PROGRAMMED AMOUNT:

   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

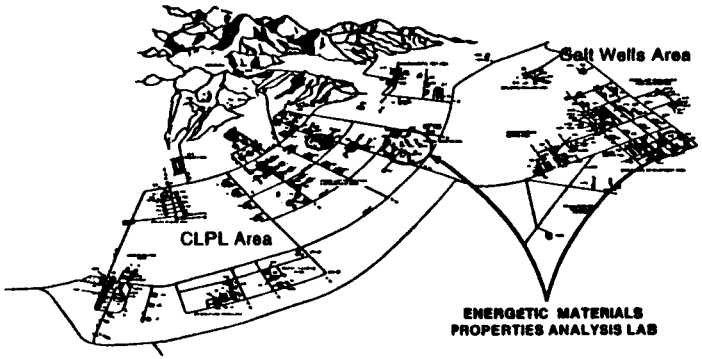
   TOTAL PROGRAMMED AMOUNT:

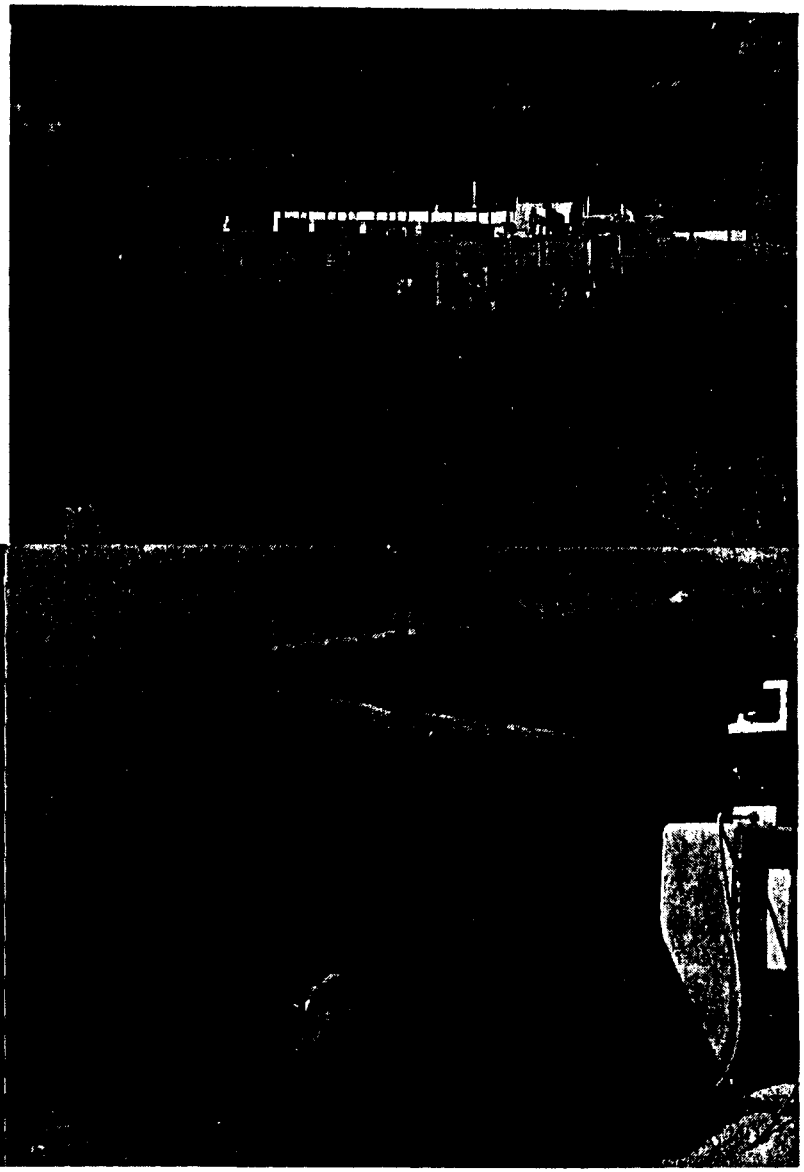
   SUMMARY DESCRIPTION:

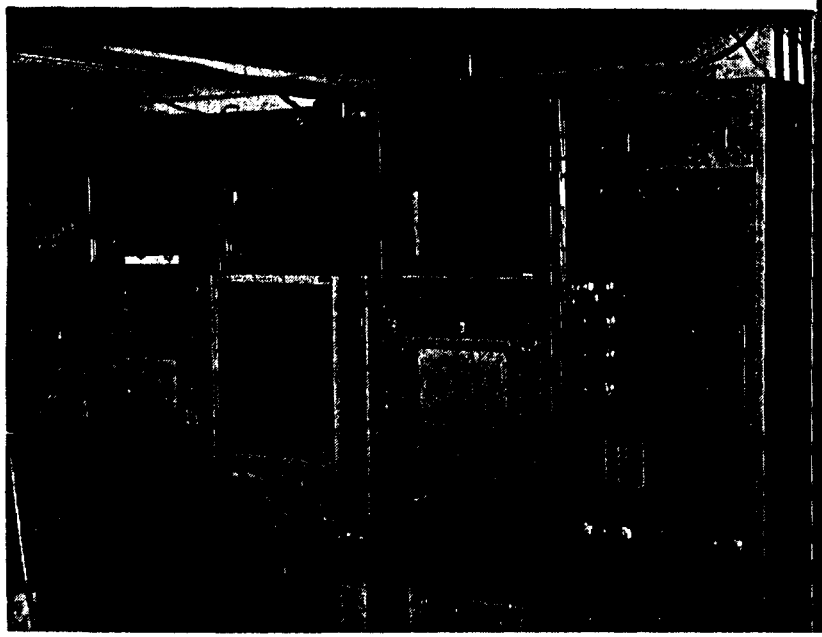
0332

China Lake Ordnance and Propulsion Laboratories

(43 square miles, 200 buildings)

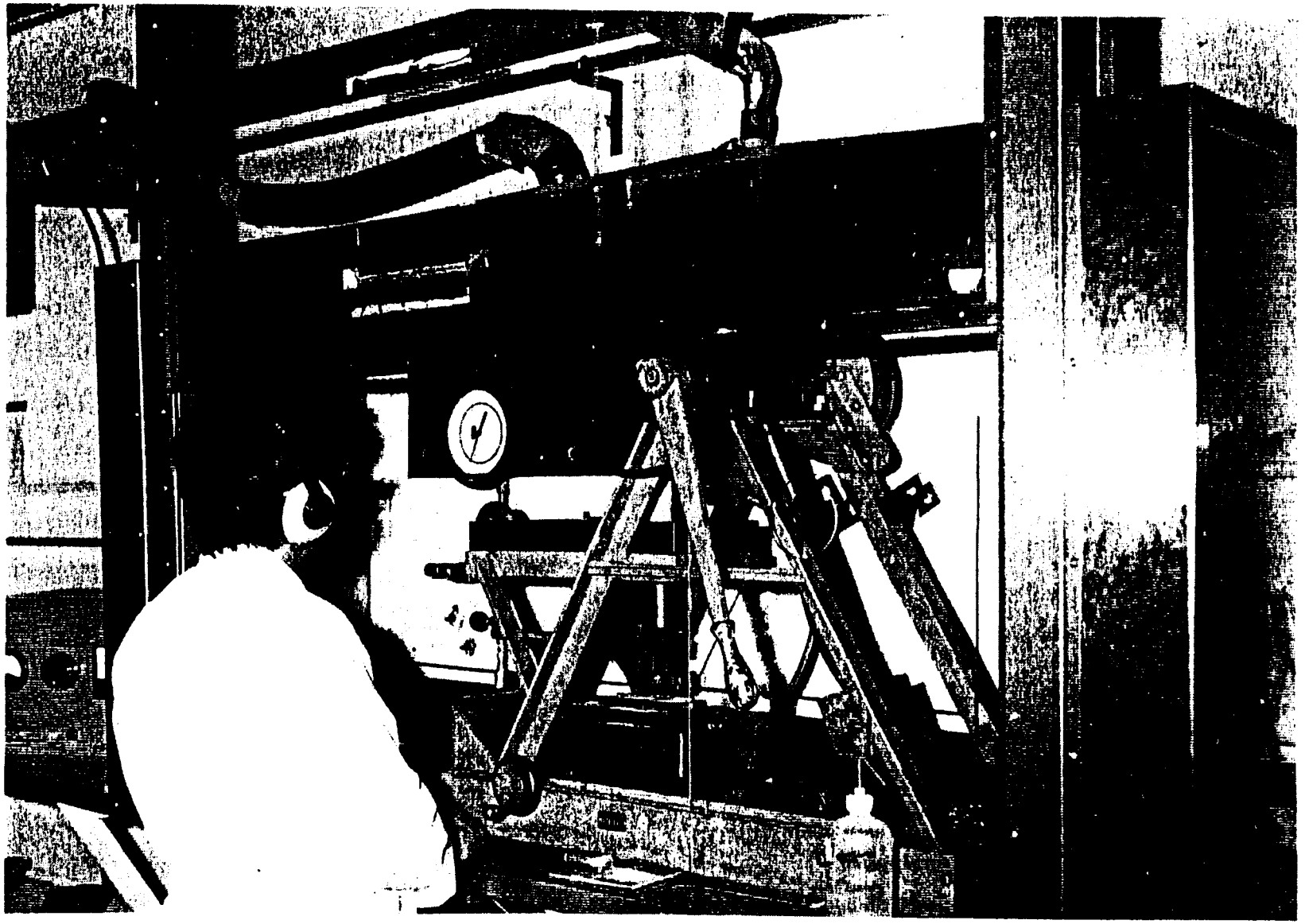






Energetic Materials Properties Analysis Laboratory

0333



Energetic Materials Properties Analysis Laboratory

Document Separator

Tab 15. Environmental Test Complex

0335

GENERAL INFORMATION

Facility/Capability Title: Environmental Test Complex

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC-China Lake Location: C2612/C3212

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	60	10	25	5	0	0
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	6	0	3	1	0	0
Armament/Weapons	47	10	20	3	0	0
EC	2	0	0	0	0	0
Other	5	0	2	1	0	0

Total in breakout must equal "Percentage Use" on first line.

47/80 = 59%

10
80
2
8

47/80 = .5875

0330

TECHNICAL INFORMATION

Facility/Capability Title: Environmental Test Complex

Facility Description, Including Mission Statement:

The Environmental Test Complex consists of 36,000 sq ft of indoor laboratory (Michelson Lab), for testing inert test items; four remote sites separated by the appropriate explosives quantity distances utilized for climatic and dynamic explosives testing with siting limits up to 30 K lbs Class 1.1 and 100 K lbs Class 1.3; a complex of three steel shielded enclosures (2 Ea 13X20X12-ft and 1 Ea 25X25X12-ft) NVLAP accredited for MIL-STD 461/462 testing; A bounded wave pulse facility providing a peak field strength of 50 K volts/meter over a test area of 125 cubic meters.
The mission of the environmental test complex is to support NAWC and other military programs in all matters, including: gathering environmental data; analyzing, interpreting, and reporting of environmental data; developing environmental specifications and test methods; performing environmental tests; and to evaluate test procedures, methods and equipment.

Interconnectivity/Multi-Use of T&E Facility:

VAX is connected to the NAWC local Ethernet and via Gateway to Internet worldwide; also AppleTalk
Desktop workstations are connected to AppleTalk Quickmail and Technet.
The Environmental Test Complex is part of an integrated T&E process supporting other organizations including Propulsion Test Complex, Nondestructive Ordnance Test Facility, Ordnance Test Complex, and Sled Tracks.

Type of Test Supported:

MIL-STD-810/2105/461/462/781 HERO testing, EMI testing, environmental testing, material testing, hydrostatic burst testing, structural testing, and modal testing on live or inert items ranging in size from small components to AURs.

Summary of Technical Capabilities:

Test equipment and personnel to provide full-spectrum life-cycle testing of inert and explosives, including climatic, dynamic, acoustic, combined environments, structural, high-pressure burst, modal analysis, and high-rate tear and rupture testing. Data analysis, data acquisition, and data transmission (telemetry). The explosives dynamic capability of 2-in. stroke, 36,000-lb force is unique. The EMI capability to test large components and structures is unique.

Keywords:

Climatic Chambers, Vibration Tables, Data Acquisition, Data Analysis, MIL-STD-810, Environmental Test, Structural Test, Modal Test

0337

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Environmental Test Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	3860	3860	3860	3860	3876	5164	4384	3936
	TEST HOURS	1929	1929	1929	1929	755	573	732	613
	MISSIONS								
EC	DIRECT LABOR	250	0	0	886	1333	53	0	0
	TEST HOURS	120	0	0	60	75	15	0	0
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	108710	105337	103253	107698	101711	101663	98971	97121
	TEST HOURS	59998	56742	54971	60032	53006	53958	52350	48657
	MISSIONS								
OTHER T&E	DIRECT LABOR	4242	4242	4242	4242	4259	3544	3352	2726
	TEST HOURS	1307	1307	1307	1307	830	557	734	528
	MISSIONS								
OTHER	DIRECT LABOR	0	0	0	0	0	0	0	0
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS								

0338 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Environmental Test Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	2325	2325	2325	2325	2335	3111	2641	2371
	TEST HOURS	1162	1162	1162	1162	455	345	441	369
	MISSIONS								
EC	DIRECT LABOR	250	0	0	886	1333	53	0	0
	TEST HOURS	120	0	0	60	75	15	0	0
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	63947	61963	60737	63352	59830	59802	58218	57130
	TEST HOURS	35293	33378	32336	35313	31180	31740	30794	28622
	MISSIONS								
OTHER T&E	DIRECT LABOR	2651	2651	2651	2651	2662	2215	2095	1704
	TEST HOURS	817	817	817	817	519	348	459	330
	MISSIONS								
OTHER	DIRECT LABOR	0	0	0	0	0	0	0	0
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS								

0338

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Environmental Test Complex

ANNUAL HOURS OF DOWNTIME (1) 290

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 1.23

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 22.77

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 910.8
Salt Fog	3	1	3	
T/A/H	2	1	2	ANNUAL UNCONSTRAINED CAPACITY (9) 332.442
Centrifug	1	1	1	
MTBF	2	1	2	
Shock	4	1	4	
Static Ld	2	1	2	
Fatigue	2	1	2	
Burst	1	1	1	
TempHum	12	1	12	
Vibration	11	1	11	
		TOTAL	40	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: When testing live ordnance items, safety restrictions exist which limit concurrent operations. Facility shutdown during inclement weather periods is necessary.

0339

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Environmental Test Complex

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	42	38	37	37	38	38	39
Contractor	4.5	4.5	3.5	3.5	4.5	4.5	4.5
Total	46.5	42.5	40.5	40.5	42.5	42.5	43.5

Total Square Footage 58,300

Test Area Square Footage 43,000

Office Space Square Footage 16,200

Tonnage of Equipment: 633 Tons

Volume of Equipment: 65 K

Annual Maintenance Cost: $ 353,000

Estimated Moving Cost: $937,000

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
150K	248K	0	200K	625K	825K	500K
337.3K	52K	30K	10K	10K	0	0

0340

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Environmental Test Complex

AGE: 10 Years REPLACEMENT VALUE: $25240K($11840K)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 12/1/93

NATURE OF LAST UPGRADE: Completion of electromagnetic field measurement instrumentation system. Complete instrumentation rehab of four remote energetic materials climatic and dynamic test facilities. Complete upgrade of vibration controllers and acquisition systems.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Climatics and Dynamics Control Room

TOTAL PROGRAMMED AMOUNT: $250 K

SUMMARY DESCRIPTION: New control room for all explosives climatics and dynamics facilities.

2. UPGRADE TITLE: Facility modification to accommodate Altitude Chamber relocation.

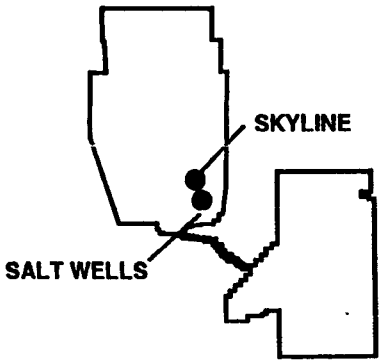
TOTAL PROGRAMMED AMOUNT: $300 K

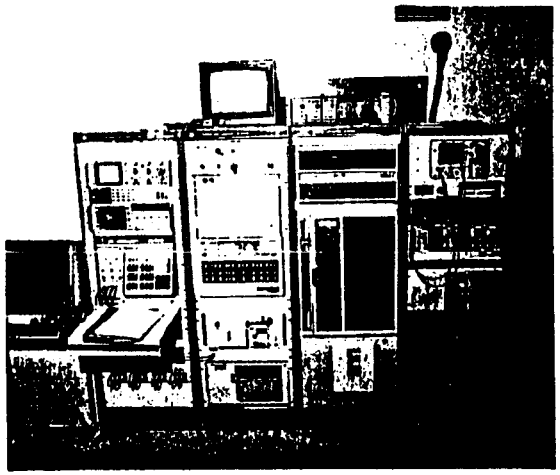
SUMMARY DESCRIPTION: Modify existing facility at remote site to accommodate relocation of altitude chamber. The existing site is currently sited for explosives testing. The relocation will permit altitude testing of live ordnance items.

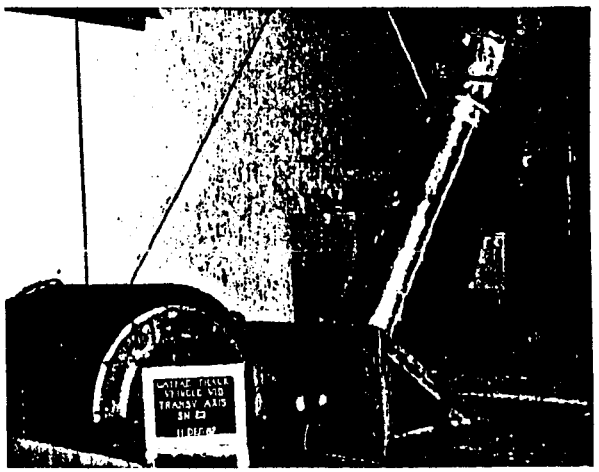
0341

LIVE ORDNANCE TEST FACILITIES

- STOCKPILE-TO-TARGET ENVIRONMENT TESTING
- DYNAMIC (VIBRATION & SHOCK)
- CLIMATIC (TEMPERATURE, HUMIDITY, SALT SPRAY

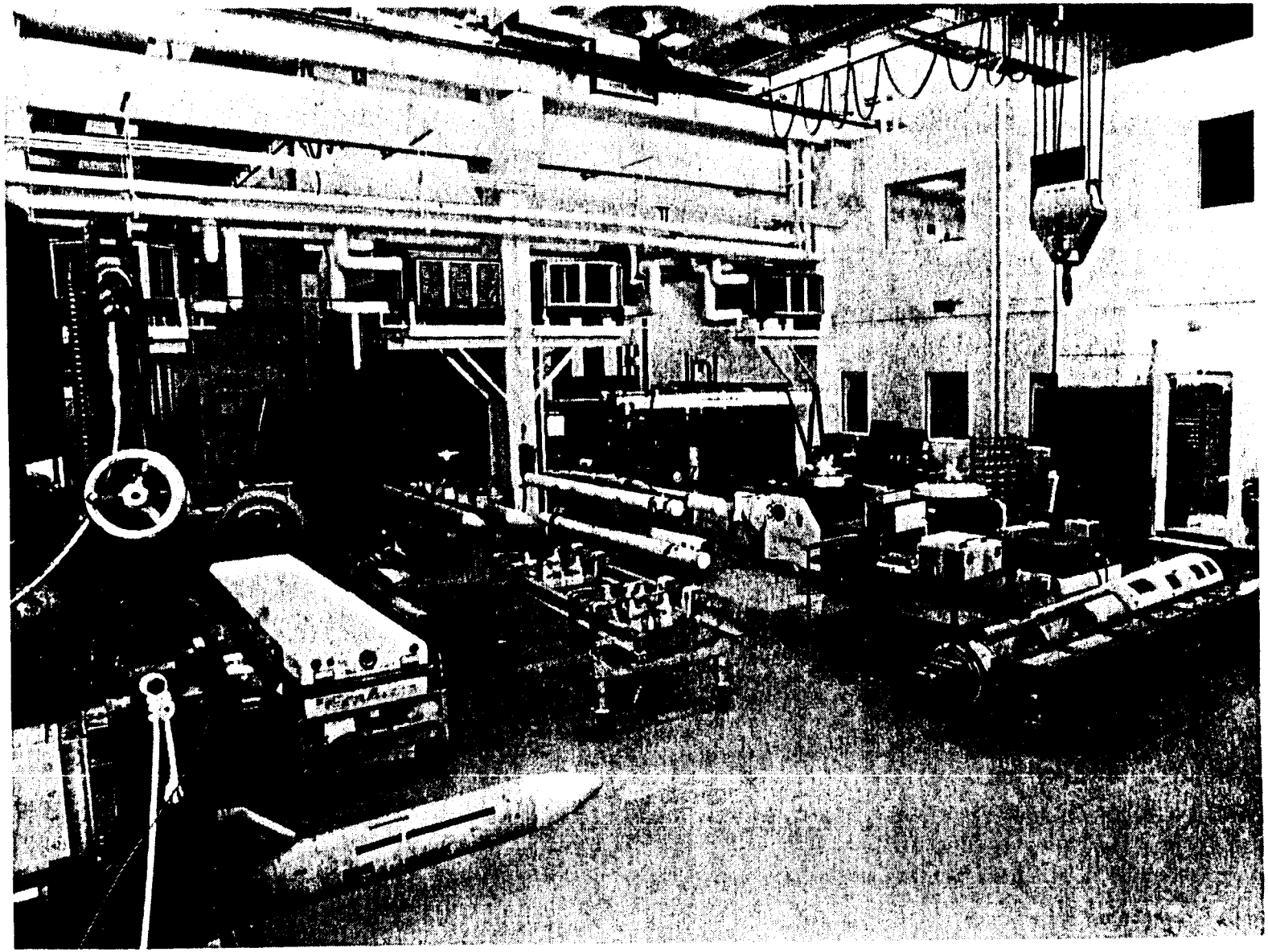






Environmental Test Complex

0342



Environmental Test Complex

0343

Document Separator

Tab 16. Foreign Material Exploitation (FME) & Balloon Test Complex

0344

GENERAL INFORMATION

Foreign Material Exploitation (FME) & Balloon Test Complex

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC China Lake Location: Code C2821

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	25%	15%	60%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	4%	2%	9%			
Armament/Weapons	19%	12%	47%			
EC						
Other	2%	1%	4%			

$\frac{19}{79} = 24\%$

Total in breakout must equal "Percentage Use" on first line.

0345 A

GENERAL INFORMATION

Foreign Material Exploitation (FME) & Balloon Test Complex

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC China Lake Location: Code C2821

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	25%	15%	60%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	5%		10%			
Armament/Weapons	15%	15%	40%			
EC						
Other	5%		10%			

Total in breakout must equal "Percentage Use" on first line.

15

70

15

$\frac{15}{70} = .2142857$

5430

TECHNICAL INFORMATION

Facility/Capability Title: Foreign Material Exploitation (FME) & Balloon Test Complex

Facility Description, Including Mission Statement:

The FME facilities primary purpose is to perform exploitation on all types of foreign weapon systems. This includes all manner of testing, signals analysis, reverse engineering, and report writing, with the associated support facilities and equipment required.

The Balloon Support facilities primary purpose is to test radar, radar attack weapons, IR weapons and sensors, and other sensors and emitters.

Interconnectivity/Multi-Use of T&E Facility:

Multi-use of anechoic chambers by DOD services and DOD contractors. Design and analysis team supports a variety of projects (ALR-67, HARM Program, TPS-75, HAWK radar system, Patriot radar system, and etc.

The facility is located at China Lake and has been involved in simultaneous multiple sensor (passive and active millimeter-wave, microwave, infrared sensors, and electro-optic sensors) tests versus ground targets.

For Balloon Field testing the telemetry facilities on the Ground Ranges are used. Photographic coverage of flight tests are covered by several ground-range operation disciplines.

Type of Test Supported:

Testing of automatic target recognition techniques, utilizing optical computing technologies for a variety of imaging sensors.

Advanced guidance concepts through production testing of ARM and ARM-related technologies (e.g. Shrike, HARM, HARM LCS, Sidearm, and some foreign ARMs) and specialized antenna development tests.

Summary of Technical Capabilities:

Keywords:

0346

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Foreign Material Exploitation (FME) & Balloon Test Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	6468	7246	8240	6743	4863	5426	6219	1582
	TEST HOURS	460	525	446	376	289	344	426	224
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	12686	12828	12465	13466	12444	16868	14800	12400
	TEST HOURS	1645	1410	1398	1542	1248	2890	3212	3120
	MISSIONS								
OTHER T&E	DIRECT LABOR				560	416	423	344	334
	TEST HOURS				484	368	262	256	212
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0347 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Foreign Material Exploitation (FME) & Balloon Test Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	41600	41600	41600	20800	41600	31200	41600	20800
	TEST HOURS	41600	41600	41600	20800	41600	31200	41600	20800
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	31200	83200	40160	83200	83200	83200	124800	166400
	TEST HOURS	8320	8320	8320	8320	8320	16640	16640	12160
	MISSIONS								
OTHER T&E	DIRECT LABOR				4160	4160	4160	20800	2460
	TEST HOURS				4160	4160	4160	20800	2460
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0347

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Foreign Material Exploitation (FME) & Balloon Test Complex

ANNUAL HOURS OF DOWNTIME (1) 360

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) .986

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.01

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 2071.26
System	4	15	60	
Component	20	1.5	30	ANNUAL UNCONSTRAINED CAPACITY (9) 756.009

"TYPICAL"

TOTAL 90

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0348

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Foreign Material Exploitation (FME) & Balloon Test Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	7	12	15	25	35	35	40
Contractor							
Total	7	12	15	25	35	35	40

Total Square Footage 5200 sq. ft.

Test Area Square Footage 4200 sq. ft.

Office Space Square Footage 1000 sq. ft.

Tonnage of Equipment: 54.6 tons

Volume of Equipment: 10,400 cu ft

Annual Maintenance Cost: $150,000

Estimated Moving Cost: $2.5-$3.5 M

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$52,000	$51,000	$50,00	$45,000	$45,000	$40,000	$55,000

0349

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Foreign Material Exploitation (FME) & Balloon Test Complex

AGE: 22years REPLACEMENT VALUE: $3250K ($1750K)

MAINTENANCE AND REPAIR BACKLOG:
There have been no major facility upgrades made to these facilities. Technical Equipment Upgrades periodically have been made. Telephone upgrade, overhead crane certifications, general light and mechanical equipment maintenance.

DATE OF LAST UPGRADE: 04/01/92

NATURE OF LAST UPGRADE:

New helium net balloon envelope procurement.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: FME Building Addition

TOTAL PROGRAMMED AMOUNT: $500K

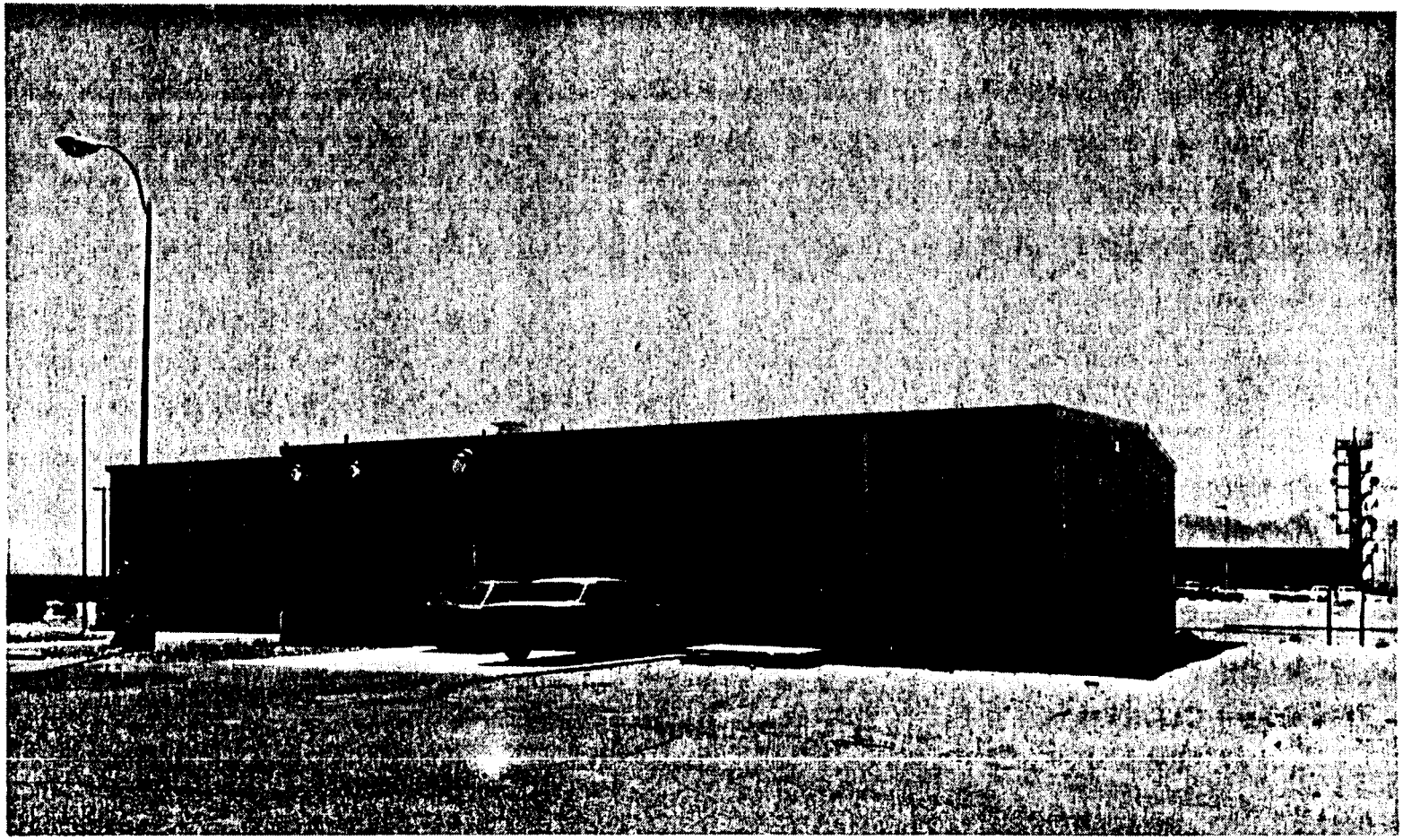
SUMMARY DESCRIPTION:
Expanded work space for foreign material investigations.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

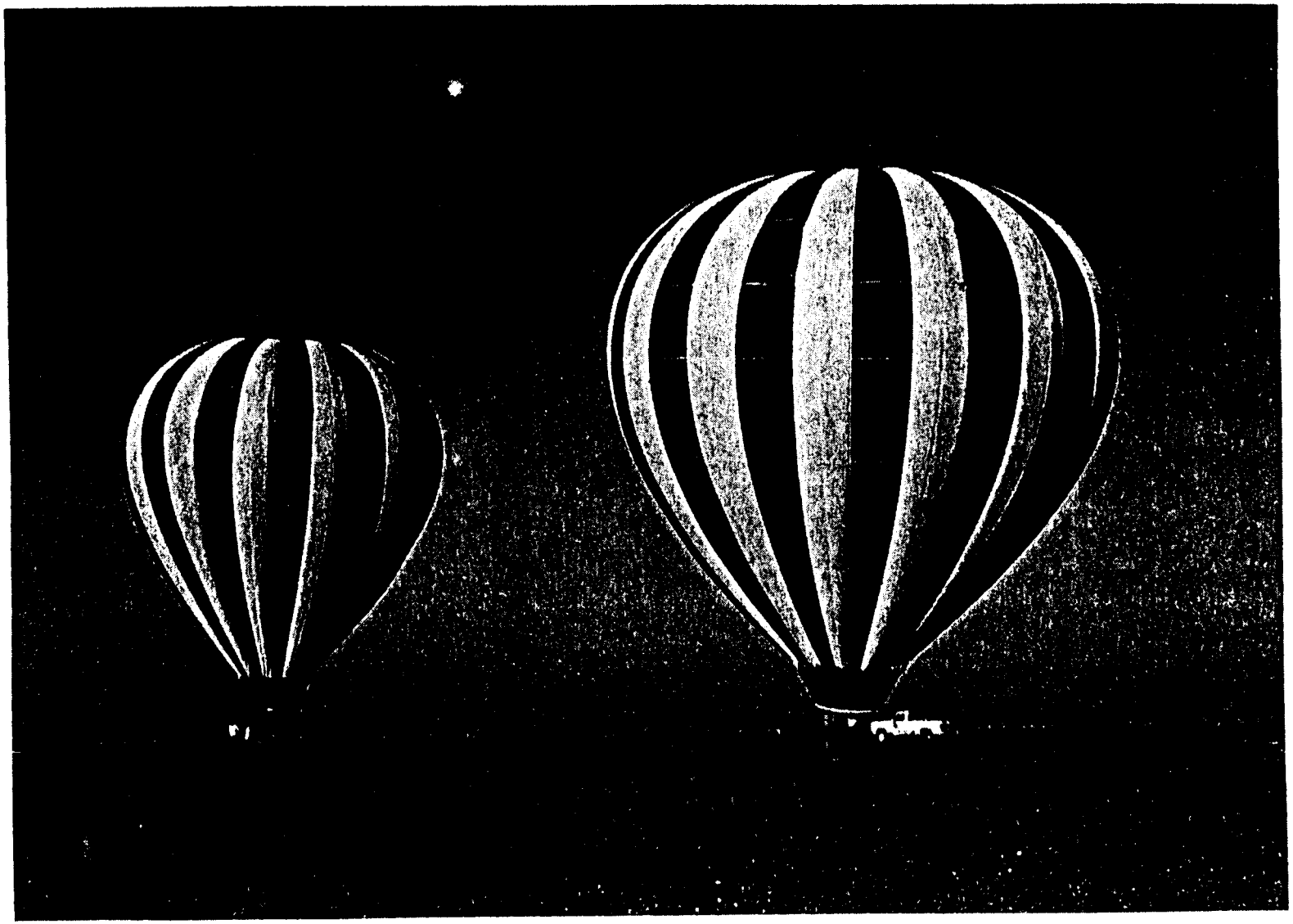
SUMMARY DESCRIPTION:

0350



Foreign Material Exploitation (FME) & Balloon Test Complex

0351



Foreign Material Exploitation (FME) & Balloon Test Complex

0352

Document Separator

Tab 17. Guidance Components T&A Complex

0353

GENERAL INFORMATION

Facility/Capability Title: Guidance Components T&A Complex

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC-China Lake Location: C2614

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	43	4	41	12		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	2		3			
Armament/Weapons	41	4	38	12		
EC						
Other						

Total in breakout must equal "Percentage Use" on first line.

5 ✓

95 ✓

$\frac{41}{95}$ = 43%

0354

TECHNICAL INFORMATION

Facility/Capability Title: Guidance Components T&A Complex

Facility Description, Including Mission Statement:

Guidance Components Test and Analysis (T&A) Complex includes the Actuator, Inertial Component, Thermal Battery, and Electronics Assembly T&As, and the Inertial Test Laboratory.

Descriptions:

Actuator T&A: Approximately 1400 sq. ft. of laboratory and test facility space equipped with multi-axis actuator test stands, power/pneumatic/hydraulic supplies, assembly/disassembly tools and workspace dedicated to the T & E of missile control actuators and gas generators.

Inertial Component T&A: Approximately 450 sq. ft. of laboratory test and workspace for the T&E of gyroscopes and accelerometers. Includes a computer-based testbed to control precision power supplies, signal and waveform synthesis, rate table controllers (2), waveform analysis, and power analysis. Equipment and capabilities for precision and stability tests at milspec temperatures are also installed.

Inertial Test Lab: The Inertial Test Lab is a classified facility with capability of testing gyros, accelerometers, and global positioning system (GPS) receivers, both as individual components and as part of integrated inertial measurement units (IMUs) and integrated IMU/GPS.

Thermal Battery T&A: Approximately 600 sq. ft. of laboratory and test space dedicated to the T&E of thermal batteries used in tactical missiles, bombs and aircraft. Batteries technologies currently under T&E are primarily lithium chemistry, silver-zinc, and calcium chromate technologies. Precisely controlled loads and heating elements are also used to simulate worst-case environments for safety tests of batteries.

Electronics Assembly T&A: The Electronics Assembly T&A Facility is an engineering and development test laboratory within a controlled environmental building. This facility provides a quick turnaround test capability for testing electronic components and subsystems within various weapons systems.

Missions:

Evaluation and characterization of the design and performance of pneumatic, hydraulic, and electro-mechanical missile actuation systems. Performance evaluation of inertial components being considered for application to tactical missile guidance/seeker stabilization. Provide weapons integration support for inertial and GPS navigation systems in Navy air-launched weapons, and support of developmental engineering of new inertial and GPS sensors and to support integration of aircraft inertial and inertial/GPS navigation systems. Functional and safety testing of thermal batteries. Provide a quick turnaround test capability for testing electronic components and subsystems.

0355

Guidance Components T&A Complex

Interconnectivity/Multi-Use of T&E Facility:

Actuator T&A: The actuator test facilities include a remote building (Firing Bay) certified for testing of Class 1 Division 4 type explosives as designated by NAVSEA OP 5 Volume I, Chapter 7-1. This facility provides for full instrumentation of actuator and gas generator ignition tests, and is also used for testing thermal batteries.
Inertial Component T&A: The computer-based testbed has full GPI connectivity and thus has excellent flexibility of configuration, permitting the test and measurement hardware to be used for other in-house applications such as test program development, and actuator control systems.
Inertial Test Lab: All equipment in this laboratory is networked to the NAWCWPNS corporate Ethernet and is accessible by integration laboratories and hardware-in-the-loop laboratories throughout NAWC, such as F-18 WSSA and F-18 Navigation Lab (with 10 mb/second data rate).
Thermal Battery T&A: Full instrumentation and control is available in a remote Firing Bay which is used for destructive tests. This building is also used for Actuator T&E.
Electronics Assembly T&A: Interconnectivity with other sites has not been established, but a low-level effort is under way to establish a modem link with the Gator KMU test systems located at the Iowa Army Ammunition Plant (IAAP) and the Lone Star Army Ammunition Plane (LSAAP). Establishment of these modem links will allow the computer to control and monitor the test sequence of the GATOR KMU test system, in real time, at these depot sites.

Type of Test Supported:

Actuator T&A: Actuator tests include mechanical fit, electronic interface, specific torque, frequency response, time constant, power consumption/efficiency, deadband, backlash.
Inertial Component T&A: Testing of gyroscopes and accelerometers: ≤2000°/sec at mil spec temperatures, frequency response, hysteresis, g-sensitivity, orientation, short/long term stability, power/efficiency.
Inertial Test Lab: Accelerometer, gyro and IMU test types include temperature stability, vibration response and susceptibility, linearity, offset, long-term drift, dynamic range, gyro and accelerometer axial misalignment measurement and calibration, multi-axis multi-rotation tests.
Thermal Battery T&A: Insulation, di-electric tests, standard load profile performance tests (tailored for each platform or system application), safety tests (often destructive).
Electronics Assembly T&A: Weapon System Power Supply Tests: Audio amplifier gain, frequency response and clipping, input and output impedance, output voltage regulation, AC to DC conversion efficiency, risetime, overload characteristics. Gator KMU acceptance testing to support engineering evaluation.

0356

Guidance Components T&A Complex

Summary of Technical Capabilities:

Actuator T&A: Provide analysis, testing, and technical support for various weapons actuators (pneumatic, gas generator, electromagnetic, hydraulic and magnetostrictive). Knowledge of mechanical, electrical, electronic engineering, control theory, component modeling, surveillance techniques, and technical management.
Inertial Component T&A: Performance analysis of gyroscopes and accelerometers. Computer-controlled GPIB test-bed w/ data acquisition and analysis programs.
Inertial Test Lab: The Inertial Test Lab provide capability for complete characterization of inertial measurement units at the subassembly and assembly levels, including effects of temperature, vibration, rotation, and acceleration, and with complete data acquisition and data reduction computers and software.
Thermal Battery T&A: Performance testing and evaluation of thermal batteries (lithium chemistry, calcium chromate, silver-zinc). Remote monitoring (video) and instrumentation of battery safety tests.
Electronics Assembly T&A: Instrumentation Assets: Digitizing Oscilloscopes, Spectrum Analyzer, Precision Digital Voltmeters, Digital Analyzing Voltmeter, Three Phase Power Analyzer, Waveform Function Generators, Programmable VDC Power Supplies, Programmable VDC Electronic Loads, Three Phase Power Source, and 486 PCAT computer. Software Assets: Interactive Test Generator, AXUM Technical Graphics and Analysis, and Jandel Curve fitting software.

Keywords:

Remote Firing Bay, Torque Stands, 3000-psi Air/Gas, VI Test Bed.
Rate Table, GPIB Control and Data Acquisition, Granite Pier, Precise Orientation, Temperature Chamber, IMU, Gyro, Accelerometer, GPS, Remote Firing Bay, Hi-pot tester, Portable X-Ray Unit, Fume Hood, GATOR KMU-Kit Modification Unit

0357

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Guidance Components T&A Complex

T&E FUNCTIONAL AREA		FISCAL YEAR								
		86	87	88	89	90	91	92	93	
AIR VEHICLES	DIRECT LABOR	600	600	600	400	400	350	525	700	
	TEST HOURS	600	600	600	400	400	350	525	700	4175
	MISSIONS									
EC	DIRECT LABOR									
	TEST HOURS									
	MISSIONS									
ARMAMENT/WEAPONS	DIRECT LABOR	25560	26270	26270	26030	24920	24460	23050	22340	
	TEST HOURS	9940	9230	9230	9870	10180	10740	10850	11250	81290
	MISSIONS									
OTHER T&E	DIRECT LABOR									
	TEST HOURS									
	MISSIONS									
OTHER	DIRECT LABOR									
	TEST HOURS									
	MISSIONS									

0358

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Guidance Components T&A Complex

ANNUAL HOURS OF DOWNTIME (1) 448

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 1.23

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 22.77

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
(4)	(5)	(6)	(7)
Actuator	2	2	4
Battery	1	2	2
Stability	1	.5	.5
Rate tbl	1	.5	.5
TC RC	1	1	1
Horiz	1	1	1
Rate tbl	1	1	1
Weapons	1	2	2
		TOTAL	12

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 273.24

ANNUAL UNCONSTRAINED CAPACITY (9) 99732

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Dependent on commercial power for test equipment, building heating/AC, lighting, and humidity control.

0359

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Guidance Components T&A Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	23	19	17	17	17	17	17
Contractor							
Total	23	19	17	17	17	17	17

Total Square Footage 8920

Test Area Square Footage 4570

Office Space Square Footage 4350

Tonnage of Equipment: 20.2

Volume of Equipment: 18600

Annual Maintenance Cost: $33K

Estimated Moving Cost: $825K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$57K	44K	36K	36K	36K	36K	36K
$110K	95K	75K	75K	75K	75K	75K

0360

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Guidance Components T&A Complex

AGE: 10 REPLACEMENT VALUE: $13084K($1784K)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 4/4/94

NATURE OF LAST UPGRADE: Addition of new four-axis Electro-mechanical actuator test interface. Automated Test Equipment computer upgrade.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Replace magazettes

TOTAL PROGRAMMED AMOUNT: $10,000

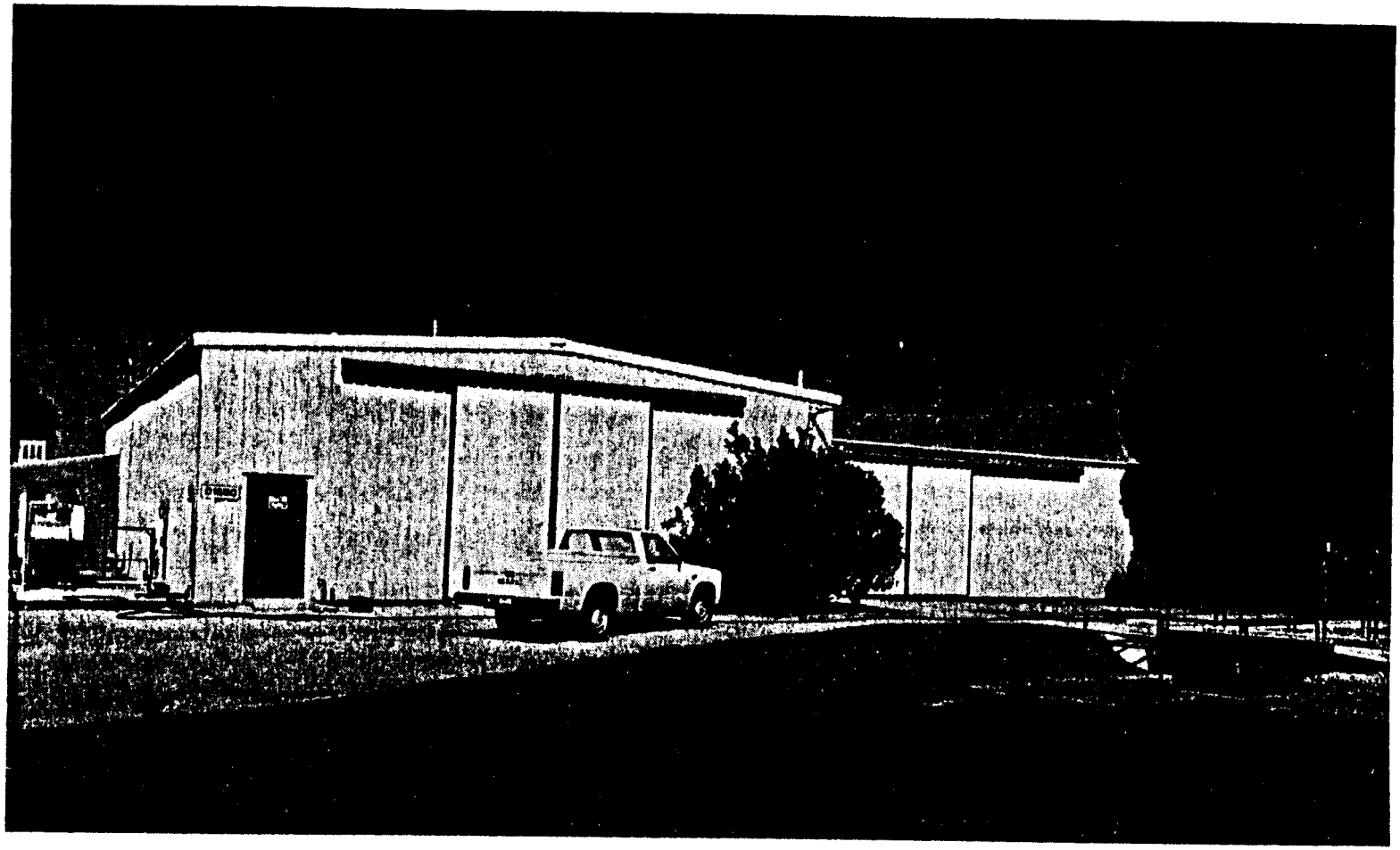
SUMMARY DESCRIPTION: Remove bldgs 02315,6,7,8 and site approval for new portable walk-in storage.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

0351



Guidance Components T&A Complex

0302

Tab 18. High Hazard Propulsion Test Facility

0363

GENERAL INFORMATION

Facility/Capability Title: High Hazard Propulsion Test Facility

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC China Lake Location: C321

T&E Functional Area: Armaments / Munitions UIC = 60530

T&E Test Facility Category Measurement Facility

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

Total in breakout must equal "Percentage Use" on first line.

0364

TECHNICAL INFORMATION

Facility/Capability Title: High Hazard Propulsion Test Facility

Facility Description, Including Mission Statement:

Bay III consists of nine test pads for conducting high hazard of high-energy systems. Motors can be fired in a variety of attitudes. The CBAT chamber at MS-3 is currently supporting technology development for rocket motor disposal studies. The facility is permitted through the Mojave Air Quality Control District for air emissions. No permits are necessary for use of cooling or quench water.
TMDI pads 1 through 4: nozzle-up, 300,000 lbs thrust, sited for 60,000 lbs 1.1 and 1.3.
MS-0: horizontal, 50,000 lbs thrust, sited for 60,000 lbs 1.1 and 1.3.
MS-1: horizontal, 300,000 lbs thrust, sited for 60,000 lbs 1.1 and 1.3.
MS-2: Horizontal and 50o nozzle down, 300,000 lbs thrust, sited for 60,000 lbs 1.1 and 1.3.
MS-3: Vertical, horizontal, confined burn chamber (SS and TS motors only),300,000 lbs thrust, sited for 60,000 lbs 1.1 and1.3.
MS-4: Motor detonation site, sited for 130, 000 lbs 1.1.
The facility numbers for this test area are 16132, 16144, 16147, 16147, 16148, 16152, 16153, 16154.

Interconnectivity/Multi-Use of T&E Facility:

Facility is linked to the Main Control Room (16079) for control and data acquisition purposes. Nearby support facilities include LN2, X-Ray, Computer Tomography, temperature-controlled storage, transducer calibration laboratory, buildup and prep facilities, and general shop capabilities. Facility can support any classification of programs.

Type of Test Supported:

Rocket motor static firing, high hazard testing (partial burns for flight termination and internal ballistics studies, command destruct tests, thrust cutoff tests, motor failure phenomena studies, and detonation testing) , performance testing, aging and surveillance, and qualification testing.

Summary of Technical Capabilities:

Data acquisition channels are available in this bay for recording pressure, force, strain, temperature, position, shock, and vibration data. Instrumentation/Control Channels: Analog (120), Digital (398), signal conditioning amps (80), thermocouples (88), video data lines (27), controls (27), real time displays - analog (48), real time displays - digital (40), film camera controls (4), piezo electric conditioning (36).

Keywords:

Propulsion, Rocket, Static test, RTR, Horizontal, Vertical, High Hazard, Tactical, Strategic, Solid Motors

0365

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: High Hazard Propulsion Test Facility
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	20257	21685	20607	21307	19907	21619	20384	18304
	TEST HOURS	2458	2631	2500	2585	2415	2623	2221	2221
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0300

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: High Hazard Propulsion Test Facility

ANNUAL HOURS OF DOWNTIME (1) 4794

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 13.1

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 10.9

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) High Hazard	(5) 1	(6) 14	(7) 14	(8) 152.6
				ANNUAL UNCONSTRAINED CAPACITY (9) 55,699

"TYPICAL"

TOTAL 14

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Addition of adequate area lighting would allow 24 hour operation.

0367

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: High Hazard Propulsion 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	17	17	17	17	17	17	17
Contractor	0	0	0	0	0	0	0
Total	17	17	17	17	17	17	17

Total Square Footage 44,839

Test Area Square Footage 2,988

Office Space Square Footage 355

Tonnage of Equipment: 1,892

Volume of Equipment: 138,247

Annual Maintenance Cost: 107K

Estimated Moving Cost: $2,148K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
65K	50K	0	45K	100K	100K	10K
450K	300K	2000K	0	0	0	0

0386 A

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: High Hazard Propulsion 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	17	17	17	17	17	17	17
Contractor	0	0	0	0	0	0	0
Total	17	17	17	17	17	17	17

Total Square Footage 4,247

Test Area Square Footage 2,988

Office Space Square Footage 355

Tonnage of Equipment: 1,892

Volume of Equipment: 138,247

Annual Maintenance Cost: 107K

Estimated Moving Cost: $2,148K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
65K	50K	0	45K	100K	100K	10K
450K	300K	2000K	0	0	0	0

0368

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: High Hazard Propulsion Test Facility

AGE: 20 years REPLACEMENT VALUE: $3,269K

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: 06/15/93

NATURE OF LAST UPGRADE: Installation of on-site monitoring instruments to support confined burn chamber operation

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Instrumentation and cabling

TOTAL PROGRAMMED AMOUNT: 450K

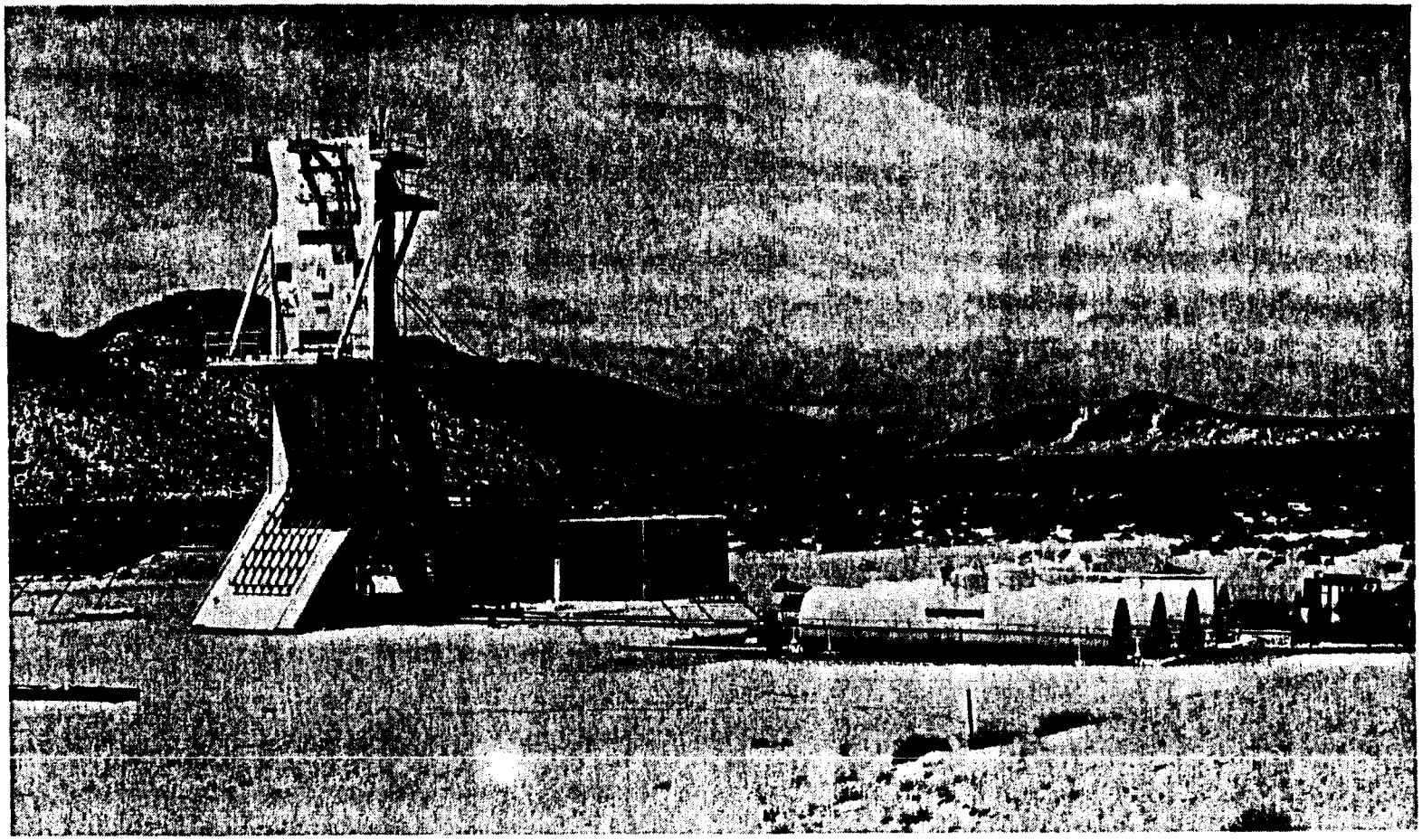
SUMMARY DESCRIPTION: Improve and expand the data transfer capability between Bay III and the main control room in order to accommodate up to 500 channels of data from the confined burn chamber. Install new control readout equipments in the main control room for the same purpose

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

0369



High Hazard Propulsion Test Facility

Document Separator

Tab 19. IR Seeker, GCS DDT&E (Design, Development, Test & Evaluation) Complex

GENERAL INFORMATION

Facility/Capability Title: IR Seeker, GCS DDT&E Complex

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC China Lake Location: C294

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	29	28	38	5		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	10		1			
Armament/Weapons	19	25	35	5		
EC						
Other		3	2			

Total in breakout must equal "Percentage Use" on first line.

11

84

5

19/84

0322

TECHNICAL INFORMATION

Facility/Capability Title: IR Seeker, GCS DDT&E Complex

Facility Description, Including Mission Statement:

The mission of this facility is to support the design, development, test and evaluation, and missile integration of electro-optic seekers, including the exploitation of foreign systems. Laboratories include optics, detector, cryogenics, seeker stability measurement, generic facilities including a Class 100 clean room. There are also laboratories containing specialized and unique equipment for testing specific missile systems and for exploiting foreign systems. Typical equipment includes rate tables, optics benches, detector test sets, cooler (RDU) test sets, various Sidewinder missile test sets, and the MHIP Common Seeker test set.

Interconnectivity/Multi-Use of T&E Facility:

None

Type of Test Supported:

Component level test including detector and optics acceptance and characterization and cooler performance. Seeker level tests including seeker sensitivity, platform stabilization and tracking, and IRCM susceptibility. Missile level guidance and control tests.

Summary of Technical Capabilities:

Optical collimators of various focal lengths, detector/FPA test sets, high vacuum and high pressure gas test equipment, gas purity test sets, precision angular vibration table, precision mechanical/optical measurement equipment, rate tables, IRCCM test sets, and all the computers and electronics required for operation, control and data acquisition.

Keywords:

IR, IRCM, IRCCM, Rate Table, Optics, Detector, FPA, RDU, Vacuum, Cryogenics, Test Set

C373

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: IR Seeker, GCS DDT&E Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	1960	1960	1960	2450	2940	2940	2940	2940
	TEST HOURS	1176	1176	1176	1470	2352	2352	2352	2352
	MISSIONS	19	19	19	19	25	25	25	25
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	35215	36915	35490	38125	42685	42660	42197	45535
	TEST HOURS	9040	9040	9507	12014	17432	17848	18198	21319
	MISSIONS	112	112	112	112	150	150	150	150
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR	175	175	175	175	350	350	350	700
	TEST HOURS	58	58	58	58	117	117	117	234
	MISSIONS								

0374 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: IR Seeker, GCS DDT&E Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93	
AIR VEHICLES	DIRECT LABOR	1960	1960	1960	2450	2940	2940	2940	2940	
	TEST HOURS	1176	1176	1176	1470	3252	3252	3252	3252	18006
	MISSIONS	19	19	19	19	25	25	25	25	
EC	DIRECT LABOR									
	TEST HOURS									
	MISSIONS									
ARMAMENT/WEAPONS	DIRECT LABOR	35215	36915	35490	38125	42685	42660	42197	45535	
	TEST HOURS	9040	9040	9507	12014	17432	17848	18198	21319	114,398
	MISSIONS	112	112	112	112	150	150	150	150	
OTHER T&E	DIRECT LABOR									
	TEST HOURS									
	MISSIONS									
OTHER	DIRECT LABOR	175	175	175	175	350	350	350	350	
	TEST HOURS	58	58	58	58	117	117	117	234	817
	MISSIONS									

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: IR Seeker, GCS DDT&E Complex

ANNUAL HOURS OF DOWNTIME (1) 594

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 1.6

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 22.4

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 1010.24
Optical	12	.9	11.2	
Detector	11	1.3	14	ANNUAL UNCONSTRAINED CAPACITY (9) 368,738
Seeker	12	.7	7.9	
GCS	7	1.3	9	
System "TYPICAL"	3	1	3	
		TOTAL	45.1	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Limited by the number of test stations.

0375 A

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: IR Seeker, GCS DDT&E Complex

ANNUAL HOURS OF DOWNTIME (1) 594

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 1.6

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 22.4

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 1010
Optical	12	.9	11.2	
Detector	11	1.3	14	ANNUAL UNCONSTRAINED CAPACITY (9) 368,650
Seeker	12	.7	7.9	
GCS	7	1.3	9	
System "TYPICAL"	13	1	3	
	55	TOTAL	45.1	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Limited by the number of test stations.

0375

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: IR Seeker, GCS DDT&E Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	28	26	24	25	26	26	26
Contractor	1	3	1	1	2	2	2
Total	29	29	25	26	28	28	28

Total Square Footage 9689

Test Area Square Footage 6363

Office Space Square Footage 3514

Tonnage of Equipment: 67

Volume of Equipment: 17724

Annual Maintenance Cost: $204K

Estimated Moving Cost: $894K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$57K	$30K	$530K	$30K	$40K	$50K	$30K
$1460K	$231K	$244K	$190K	$465K	$440K	$207K

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: IR Seeker, GCS DDT&E Complex

AGE: 11 REPLACEMENT VALUE: $19,900K ($1,626K)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 8/16/93

NATURE OF LAST UPGRADE: Computer controlled off axis drive.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Upgrade for next generation AIM-9 guidance and control section

TOTAL PROGRAMMED AMOUNT: $2,200K

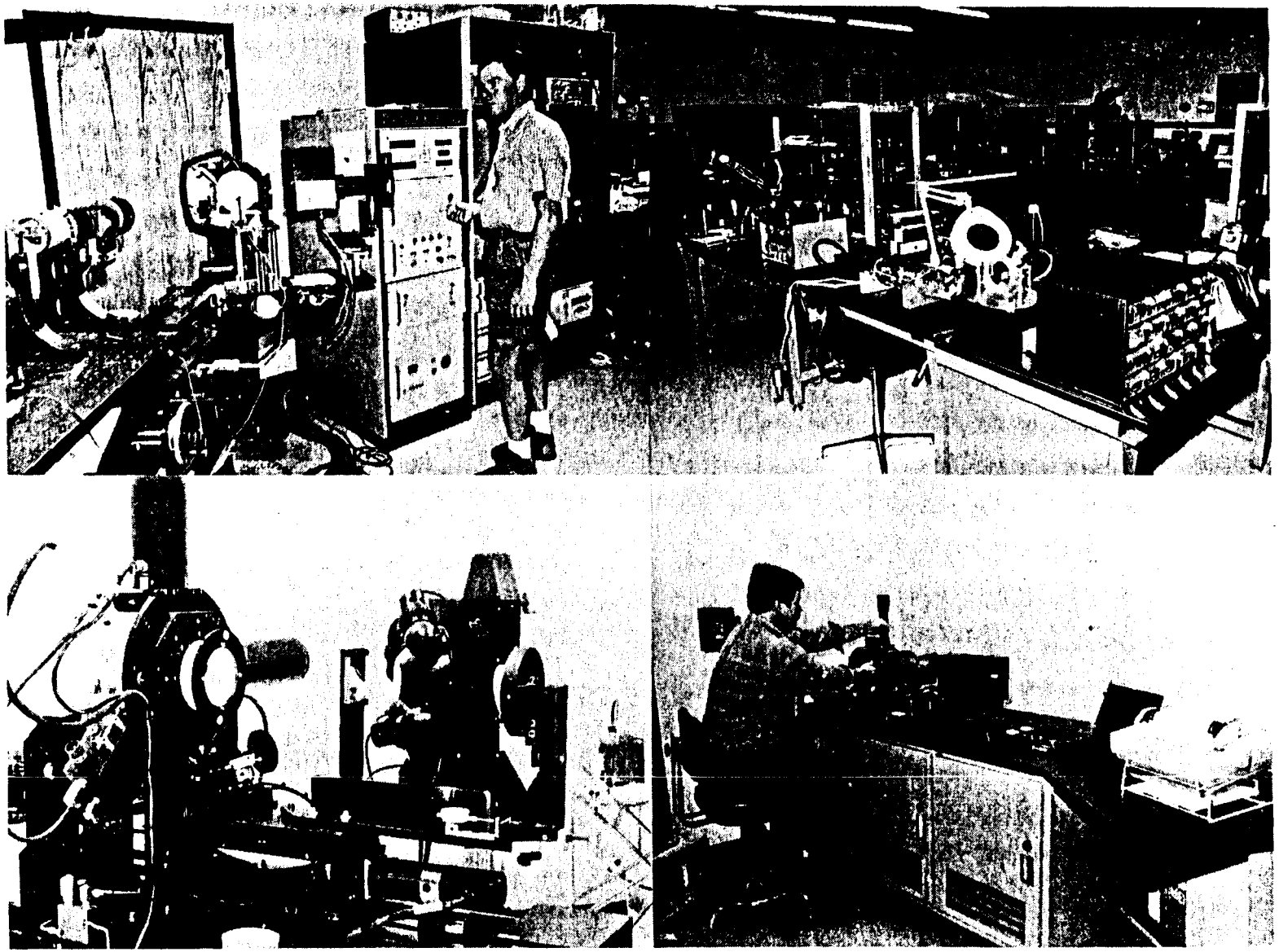
SUMMARY DESCRIPTION: Upgrade special test equipment that is obsolete and customize interface and special classified measurement facility to accommodate next generation AIM-9.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

0377



IR Seeker, GCS DDT&E Complex

0328

Document Separator

Tab 20. Junction Ranch Radar Cross Section Range

0379

GENERAL INFORMATION

Facility/Capability Title: Junction Ranch Radar Cross Section Range

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC China Lake Location: Code C3206

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	100					

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles	60
Armament/Weapons	0.8
EC	
Other **	39.2

Total in breakout must equal "Percentage Use" on first line.

NOTE: The following breakout by T&E functional area represents the "Types of Items Tested" for radar cross section. If it is desired to breakout "How the Data is Used", the breakout would be 100% EC, since the radar cross section data is used in the radar range equation to compute parameters such as survivability of an air vehicle in an electronic combat environment.

**Includes ground vehicles, ship models, and various airborne objects.

0380 A

GENERAL INFORMATION

Facility/Capability Title: Junction Ranch Radar Cross Section Range

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC China Lake Location: C3206

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	100					

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles	
Armament/Weapons	100
EC	
Other	

Total in breakout must equal "Percentage Use" on first line.

0330

TECHNICAL INFORMATION

Facility/Capability Title: Junction Ranch Radar Cross Section Range

Facility Description, Including Mission Statement:

The Junction Ranch (JR) RCS measurement range is located in a remote valley of the China Lake North Range Complex and was built in the late 1970s. The facility occupies approximately 44,000 acres. The 4,000 ft Horizontal Bounce Range generates wideband, coherent monostatic and wideband, coherent bistatic, full scatter matrix RCS data of missiles, aircraft, tanks and trucks, models and components. Frequency coverage is 40-55 MHz, 0.15-18 GHz and 34-36.5 GHz. The 17,000 ft Look Down Range supports wideband monostatic, full scatter matrix testing of ship models and other test items in a simulated ocean or look down environment. Both the 78x110-ft salt water pond and a 78x132-ft tilt deck have 30-ft diameter, 10,000-lb turntables. Almost all JR customers are local China Lake programs. Security is excellent (TS) because of restricted land and air space (R-2508). Visual access is restricted because of the surrounding mountains.

Interconnectivity/Multi-Use of T&E Facility:

JR is currently implementing the RCS Common Data Format which will allow direct data interchange between JR and other DOD RCS ranges.

Type of Test Supported:

Radar cross section testing.

Summary of Technical Capabilities:

JR operates two state-of-the-art Elan RCS radar data acquisition systems. Data reduction is performed using a Silicon Graphics workstation and several 386/486 personal computers.

Keywords:

Radar Cross Section (RCS).

0367

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Junction Ranch Radar Cross Section Range
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	No Data	No Data	No Data	10,177	13,205	15,166	7,247	6,748
	TEST HOURS	1,095	1,533	1,765	1,040	1,257	2,588	1,523	1,610
	MISSIONS	5	7	10	10	11	9	13	9
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	No Data	No Data	No Data	1,021				
	TEST HOURS	327	458	527	105				
	MISSIONS	2	3	4	1				
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR				6,110	4,810	5,055	5,016	9,357
	TEST HOURS				624	458	863	1,054	2,233
	MISSIONS				6	4	3	9	8

* Junction Ranch is 100% EC – per JCSG decision

0382A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Junction Ranch Radar Cross Section Range
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	Data N/A	Data N/A	Data N/A	17,308	18,015	20,221	12,263	52,736
	TEST HOURS	1,422	1,991	2,292	1,769	1,715	3,451	2,577	3,843
	MISSIONS	7	10	14	17	15	12	22	14
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0382

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Junction Ranch Radar Cross Section Range

ANNUAL HOURS OF DOWNTIME (1) 135

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 1

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 322
Arm/Wpn	1	14	14	

ANNUAL UNCONSTRAINED CAPACITY (9) 117,530

"TYPICAL"

TOTAL 14

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0365

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Junction Ranch Radar Cross Section Range

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	17	15	16	16	16	16	16
Contractor	5	7	6	6	6	6	6
Total	22	22	22	22	22	22	22

Total Square Footage 15,560

Test Area Square Footage 560

Office Space Square Footage 15,000

Tonnage of Equipment: 148

Volume of Equipment: 458,120

Annual Maintenance Cost: $58,000.00

Estimated Moving Cost: $300,000.00

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$294K	$0K	$373K	$359K	$300K	$350K	$311K

0384 A

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Junction Ranch Radar Cross Section Range

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	17	17	17	17	17	17	17
Contractor	5	5	5	5	5	5	5
Total	22	22	22	22	22	22	22

Total Square Footage 15,560

Test Area Square Footage 560

Office Space Square Footage 15,000

Tonnage of Equipment: 148

Volume of Equipment: 458,120

Annual Maintenance Cost: $58,000.00

Estimated Moving Cost: $129,000.00

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$294K	$0K	$345K	$0K	$0K	$0K	$2,000K

0384

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Junction Ranch Radar Cross Section Range

AGE: 16 yrs. REPLACEMENT VALUE: $37,400K

MAINTENANCE AND REPAIR BACKLOG: $0K

DATE OF LAST UPGRADE: 3/15/94

NATURE OF LAST UPGRADE: A road was relocated, a drainage culvert and headwalls/raprap were constructed to control the drainage of water from the Horizontal Bounce Strip.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Modify existing radar building

   TOTAL PROGRAMMED AMOUNT: $250K

   SUMMARY DESCRIPTION: Add conference room, working area and bathroom.

2. UPGRADE TITLE: Site management office

   TOTAL PROGRAMMED AMOUNT: $300K

   SUMMARY DESCRIPTION: Add a site management office on site at the Horizontal Bounce Range location.

0365 A

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Junction Ranch Radar Cross Section Range

AGE: 16 yrs. REPLACEMENT VALUE: $3500K

MAINTENANCE AND REPAIR BACKLOG: $0K

DATE OF LAST UPGRADE: 3/15/94

NATURE OF LAST UPGRADE: A road was relocated, a drainage culvert and headwalls/raprap were constructed to control the drainage of water from the Horizontal Bounce Strip.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Modify existing radar building

   TOTAL PROGRAMMED AMOUNT: $250K

   SUMMARY DESCRIPTION: Add conference room, working area and bathroom.

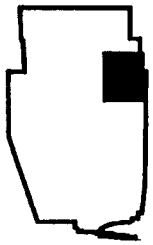
2. UPGRADE TITLE: Site management office

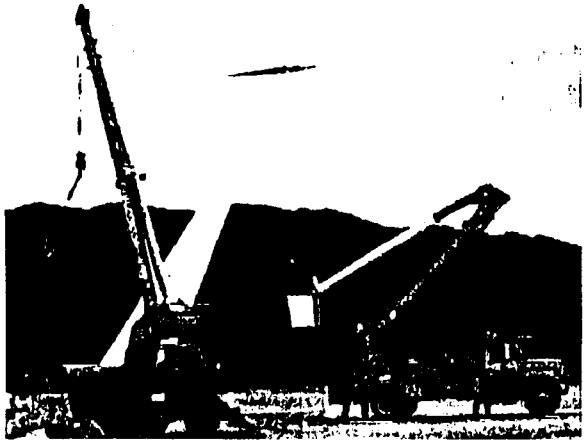
   TOTAL PROGRAMMED AMOUNT: $300K

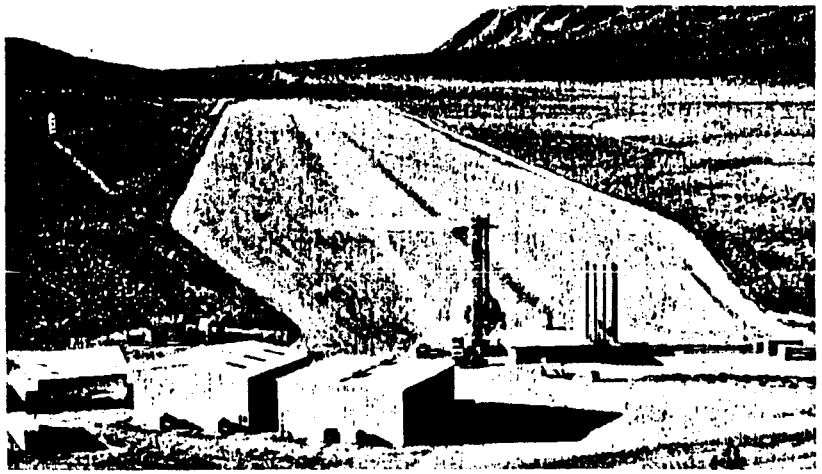
   SUMMARY DESCRIPTION: Add a site management office on site at the Horizontal Bounce Range location.

C385

JUNCTION RANCH RADAR CROSS SECTION RANGE





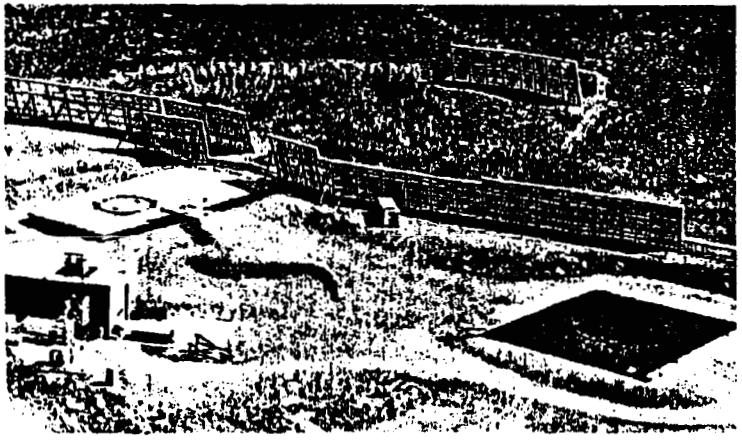


- HORIZONTAL RANGE CHARACTERISTICS
  - 4,000 FT RANGE (HIGH FREQUENCIES)
  - 700 FT RANGE (LOW FREQUENCIES)
  - FREQUENCY COVERAGE 150 MHz-18 GHz PLUS SPOT COVERAGE AT 35 & 94 GHz
  - STATE-OF-THE-ART FULL POLARIMETRIC RADAR
  - MULTI-BAND, MIXED WAVEFORM DATA COLLECTION
  - REMOTE VALLEY SURROUNDED BY MOUNTAINS (EXCELLENT FOR LOW FREQUENCY TESTING AND SECURITY)
  - 40 FT LOW RCS PYLON
    - FAMILY OF PYLON AZ OVER EL ROTATORS (500 - 5,000 LBS)
  - IN-GROUND ROTATORS
    - 10,000 LB AZ OVER EL
    - LOW RCS FOAM COLUMNS
    - TURNTABLE FOR TARGETS TO 100,000 LBS

Junction Ranch Radar Cross Section Range

0330

JUNCTION RANCH RADAR CROSS SECTION RANGE



- LOOK-DOWN RANGE CHARACTERISTICS
  - 17,000 FT SLANT RANGE
  - FREQUENCY COVERAGE - 2-18 GHz PLUS SPOT COVERAGE AT 35 & 94 GHz
  - STATE-OF-THE-ART FULL POLARIMETRIC RADAR
  - MULTI-BAND, MIXED WAVEFORM DATA COLLECTION
- SALT POND
  - 78 X 110 FT
  - 10,000 LB, 30 FT DIAMETER SUBMERSED TURNTABLE
  - 10 DEGREE LOOK-DOWN ANGLE FROM THE RADAR
- TILT DECK
  - 80 X 140 FT CONDUCTING SURFACE
  - 10,000 LB, 30 FT DIAMETER TURNTABLE
  - VARIABLE 5-32 DEGREE LOOK-DOWN ANGLE FROM THE RADAR
- RADAR CLUTTER REDUCTION FENCES

Junction Ranch Radar Cross Section Range

Document Separator

Tab 21. Materials Engineering/Failure Analysis Facility

GENERAL INFORMATION

Facility/Capability Title: Materials Engineering/Failure Analysis Facility

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC-China Lake Location: C2623

T&E Functional Area: Armaments / Weapons systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	60	40				
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	5					
Armament/Weapons	55	25				
EC						
Other		15				

Total in breakout must equal "Percentage Use" on first line.

5

80

15

0359

TECHNICAL INFORMATION

Facility/Capability Title: Materials Engineering/Failure Analysis Facility

Facility Description, Including Mission Statement: The primary mission is to provide materials engineering technical support and consultation; conduct applied research to develop materials and processes for systems applications; provide materials engineering support and failure analysis in the fields of corrosion control, ceramics, composite structures, metallurgy, polymers, nondestructive and destructive testing, and plastics applications. Laboratory equipment and facilities include capabilities for analysis and characterization of materials, specifically metal and metal alloys, polymer-based composites, and semiconductor materials. Facilities are tailored to accommodate component scale units for initial failure analysis assessment and extend into molecular and subgrain regions to determine root causes. Facilities determine bulk properties, molecular structure, and interfacial boundary layer composition. Resources characterize mechanical, electrical, electro-optical and thermal properties or materials used in the fabrication of avionic and missile components
Interconnectivity/Multi-Use of T&E Facility: The facility supports all airborne weapons programs of the Naval Air and Sea Systems Commands. Joint programs with other military branches are supported as required. Development programs utilize resources as needed. All aspects of RDT&E are supported. Approximately 10 - 15% of the facilities and equipment are utilized by non-weapon-specific programs.
Type of Test Supported: Flight tests of developmental and in-service weapon systems. Materials and process evaluations of developmental and in-service weapon systems.
Summary of Technical Capabilities: Materials characterization, failure analysis, materials development, reverse engineering, process development, process analysis
Keywords: Materials Engineering, Failure Analysis, Materials Characterization, Materials Development

0390

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Materials Engineering/Failure Analysis Facility

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	1225	1243	1324	1375	1524	1717	1589	1674
	TEST HOURS	408	414	441	458	508	572	530	558
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	19598	19895	21187	22002	23386	27466	25426	26745
	TEST HOURS	6533	6632	7062	7334	7795	9155	8475	8915
	MISSIONS								
OTHER T&E	DIRECT LABOR	3675	3730	3973	4125	4572	5150	4767	5022
	TEST HOURS	1225	1243	1324	1375	1524	1717	1589	1674
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0391 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Materials Engineering/Failure Analysis Facility

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	1225	1243	1324	1375	1524	1717	1589	1674
	TEST HOURS	1225	1243	1324	1375	1524	1717	1589	1674
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	19598	19895	21187	22002	23386	27466	25426	26745
	TEST HOURS	19598	19895	21187	22002	23386	27466	25426	26745
	MISSIONS								
OTHER T&E	DIRECT LABOR	3675	3730	3973	4125	4572	5150	4767	5022
	TEST HOURS	3675	3730	3973	4125	4572	5150	4767	5022
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Materials Engineering/Failure Analysis Facility

ANNUAL HOURS OF DOWNTIME (1) 640

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 1.75 hours

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 22.25 hours

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) fail anlys	(5) 2	(6) 2	(7) 4	(8) 89 hours

ANNUAL UNCONSTRAINED CAPACITY (9) 32.485 hours

"TYPICAL"

TOTAL 4

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0392

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Materials Engineering/Failure Analysis Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	25	27	23	22	20	20	20
Contractor							
Total	25	27	23	22	20	20	20

Total Square Footage 11,300

Test Area Square Footage 9000

Office Space Square Footage 2300

Tonnage of Equipment: 20 ton

Volume of Equipment: 100,000 cu ft

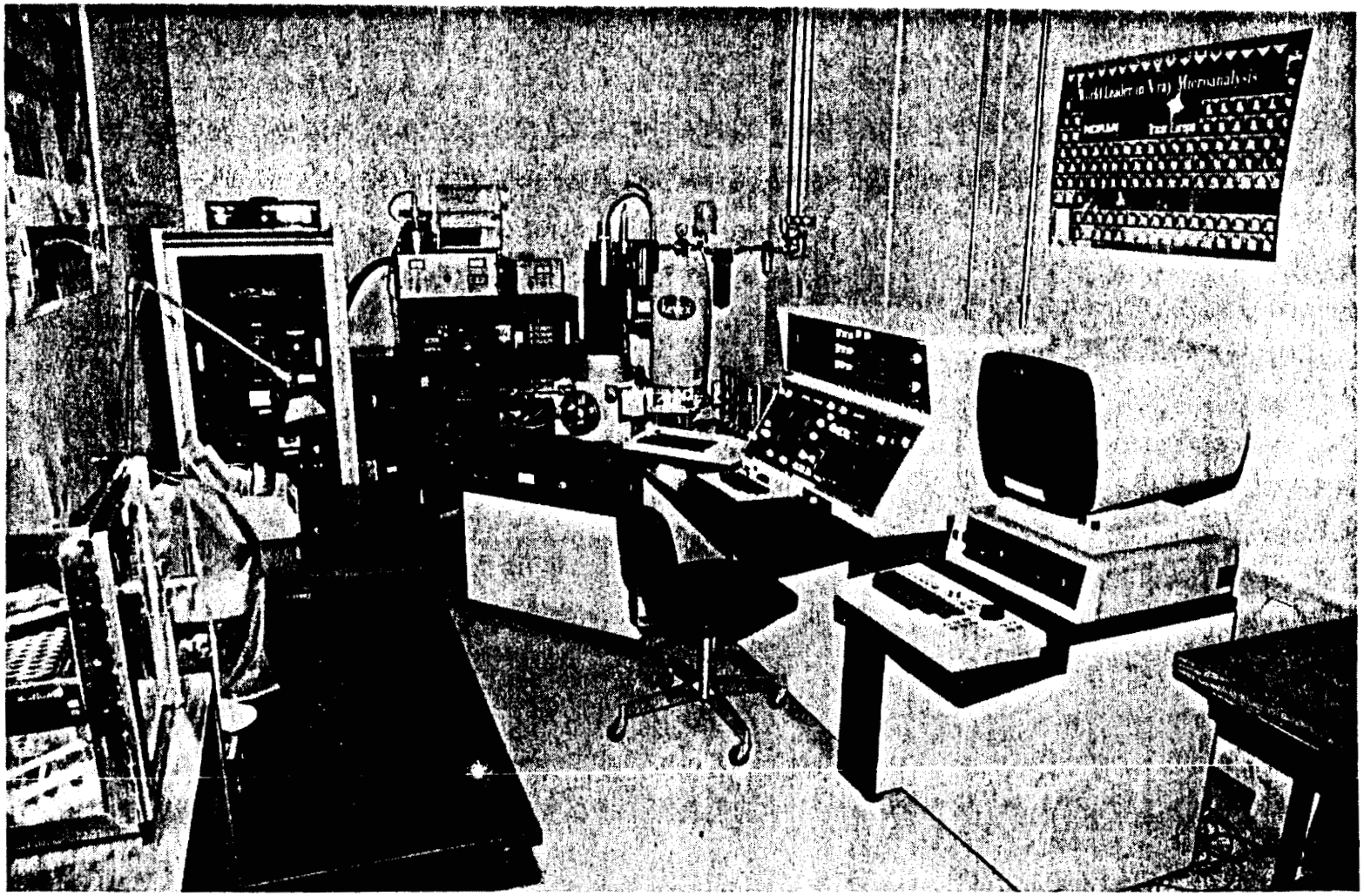
Annual Maintenance Cost: $500K

Estimated Moving Cost: $900 K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$150K	$250K	$200K	$150K	$150K	$200K	$250K
			$150K	$150K	$150K	$150K

0393



Materials Engineering / Failure Analysis Facility

0395

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Materials Engineering/Failure Analysis Facility

AGE: 10 years REPLACEMENT VALUE: $4860K($1360K)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 10/1/84

NATURE OF LAST UPGRADE: new construction

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

0394

Document Separator

Tab 22. Medium Caliber Gun & Ammo Ballistics Test Laboratory

GENERAL INFORMATION

Facility/Capability Title: Medium Caliber Gun & Ammo Ballistics Test Laboratory

Origin Date: 4/25/94

Service: N Organization/Activity: NAWCWPNS, CL Location: Code C27

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	45	35		20		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	45	35		20		
EC						
Other						

45/100 = 45%

Total in breakout must equal "Percentage Use" on first line.

0397 A

GENERAL INFORMATION

Facility/Capability Title: Medium Caliber Gun & Ammo Ballistics Test Laboratory

Origin Date: 4/25/94

Service: N Organization/Activity: NAWCWPNS, CL Location: Code C27

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	MF	D&E	IE	T&D	OTHER
PERCENTAGE USE:	45	35		20		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	45	35		20		
EC						
Other						

Total in breakout must equal "Percentage Use" on first line.

0397

TECHNICAL INFORMATION

Facility/Capability Title: Medium Caliber Gun & Ammo Ballistics Test Laboratory

Facility Description, Including Mission Statement:

The Ballistics Test Laboratory (BTL) has two 150-ft underground firing tunnels that can fire up to 25mm caliber rounds in single shot firings. The BTL also has a 230-ft medium-caliber (up to 30mm) outdoor firing range capable of high-rate automatic gun firing using all-up aircraft gun systems. All firing stations have a broad spectrum of instrumentation. Full-range shop facility for maintenance of gun systems, including intermediate level maintenance for selected systems. Capability exists for small rocket motor and combustion bomb tests.

MISSION: Perform test and evaluation on aircraft gun systems and related ammunition for safety, performance and reliability.

Interconnectivity/Multi-Use of T&E Facility:

Currently standalone. Capability exists for small rocket motor and combustion bomb tests. The facility is capable of conducting single shot tests using Mann barrels as well as high rate firing using all-up aircraft gun systems.

Type of Test Supported:

The BTL is fully capable of conducting a very broad range of performance tests on both aircraft guns and related ammunition. The BTL is also capable of performing some specific environmental land safety tests.

Summary of Technical Capabilities:

Thermocouples, piezo-electric pressure gages (chamber pressure), linear motion measurement (recoil), torque (drive) loads, power (elec) measurements, strain-gage stress measurements, blast pressures, recoil loads, transient data recorders, oscillographs, video camera/recorders, microflash camera systems, flash X-ray , high-speed motion cameras, oehler machine gun chronograph, muzzle velocities, projectile dispersion, firing rates, action time measurements, projectile penetration, fragment dispersion, fuze sensitivity, aeroballistics-Doppler radar (C32 Eq) and computer data processing.

Keywords:

Aircraft Guns, Aircraft Ammunition, Medium Caliber Gun Testing, Medium Caliber Ammunition Testing, Ammunition Lot Acceptance

0398 A

TECHNICAL INFORMATION

Facility/Capability Title: Medium Caliber Gun & Ammo Ballistics Test Laboratory

Facility Description, Including Mission Statement:

The Ballistics Test Laboratory (BTL) has two 150-ft underground firing tunnels that can fire up to 20mm caliber rounds in single shot firings. The BTL also has a 230-ft medium-caliber (up to 30mm) outdoor firing range capable of high-rate automatic gun firing using all-up aircraft gun systems. All firing stations have a broad spectrum of instrumentation. Full-range shop facility for maintenance of gun systems, including intermediate level maintenance for selected systems. Capability exists for small rocket motor and combustion bomb tests.

MISSION: Perform test and evaluation on aircraft gun systems and related ammunition for safety, performance and reliability.

Interconnectivity/Multi-Use of T&E Facility:

Currently standalone. Capability exists for small rocket motor and combustion bomb tests. The facility is capable of conducting single shot tests using Mann barrels as well as high rate firing using all-up aircraft gun systems.

Type of Test Supported:

The BTL is fully capable of conducting a very broad range of performance tests on both aircraft guns and related ammunition. The BTL is also capable of performing some specific environmental land safety tests.

Summary of Technical Capabilities:

Thermocouples, piezo-electric pressure gages (chamber pressure), linear motion measurement (recoil), torque (drive) loads, power (elec) measurements, strain-gage stress measurements, blast pressures, recoil loads, transient data recorders, oscillographs, video camera/recorders, microflash camera systems, flash X-ray , high-speed motion cameras, oehler machine gun chronograph, muzzle velocities, projectile dispersion, firing rates, action time measurements, projectile penetration, fragment dispersion, fuze sensitivity, aeroballistics-Doppler radar (C32 Eq) and computer data processing.

Keywords:

Aircraft Guns, Aircraft Ammunition, Medium Caliber Gun Testing, Medium Caliber Ammunition Testing, Ammunition Lot Acceptance

0398

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Medium Caliber Gun & Ammo Ballistics Test Laboratory

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	3024	2450	2600	5330	5470	4900	2880	4320
	TEST HOURS	504	408	432	888	912	816	480	720
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0399 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Medium Caliber Gun & Ammo Ballistics Test Laboratory

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	3024	2450	2600	5330	5470	4900	2880	4860
	TEST HOURS	168	136	144	296	304	272	160	270
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0389

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Medium Caliber Gun & Ammo Ballistics Test Laboratory

ANNUAL HOURS OF DOWNTIME (1) 1200

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 3.3

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 20.7

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 1118
AMMO	2	18	36	
GUNS	1	18	18	ANNUAL UNCONSTRAINED CAPACITY (9) 408070

"TYPICAL"

TOTAL 54

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Safety and physical layout restricts use to only 3 tests run at same time.

0400

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Medium Caliber Gun & Ammo Ballistics Test Laboratory

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	4.3	5.05	6	6	6	6	6
Contractor	2	1					
Total	6.3	6.05	6	6	6	6	6

Total Square Footage 12570

Test Area Square Footage 8570

Office Space Square Footage 4000

Tonnage of Equipment: 191

Volume of Equipment: 86250

Annual Maintenance Cost: 36K

Estimated Moving Cost: 480K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	50K		56k	100k	50k	50k

0401

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Medium Caliber Gun & Ammo Ballistics Test Laboratory

AGE: 41.2 yrs/sf

REPLACEMENT VALUE: TOTAL = $4,555K, BLDG $3,867K

MAINTENANCE AND REPAIR BACKLOG: Total backlog is $72K

DATE OF LAST UPGRADE: 1-1-91

NATURE OF LAST UPGRADE: The last major upgrade occurred with the construction, in 1991, of Bldg 11091, (2,772 sq. ft.) Ammo, Explosives, and Toxics Facility.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: No Major Upgrades are Planned

   TOTAL PROGRAMMED AMOUNT:

   SUMMARY DESCRIPTION:

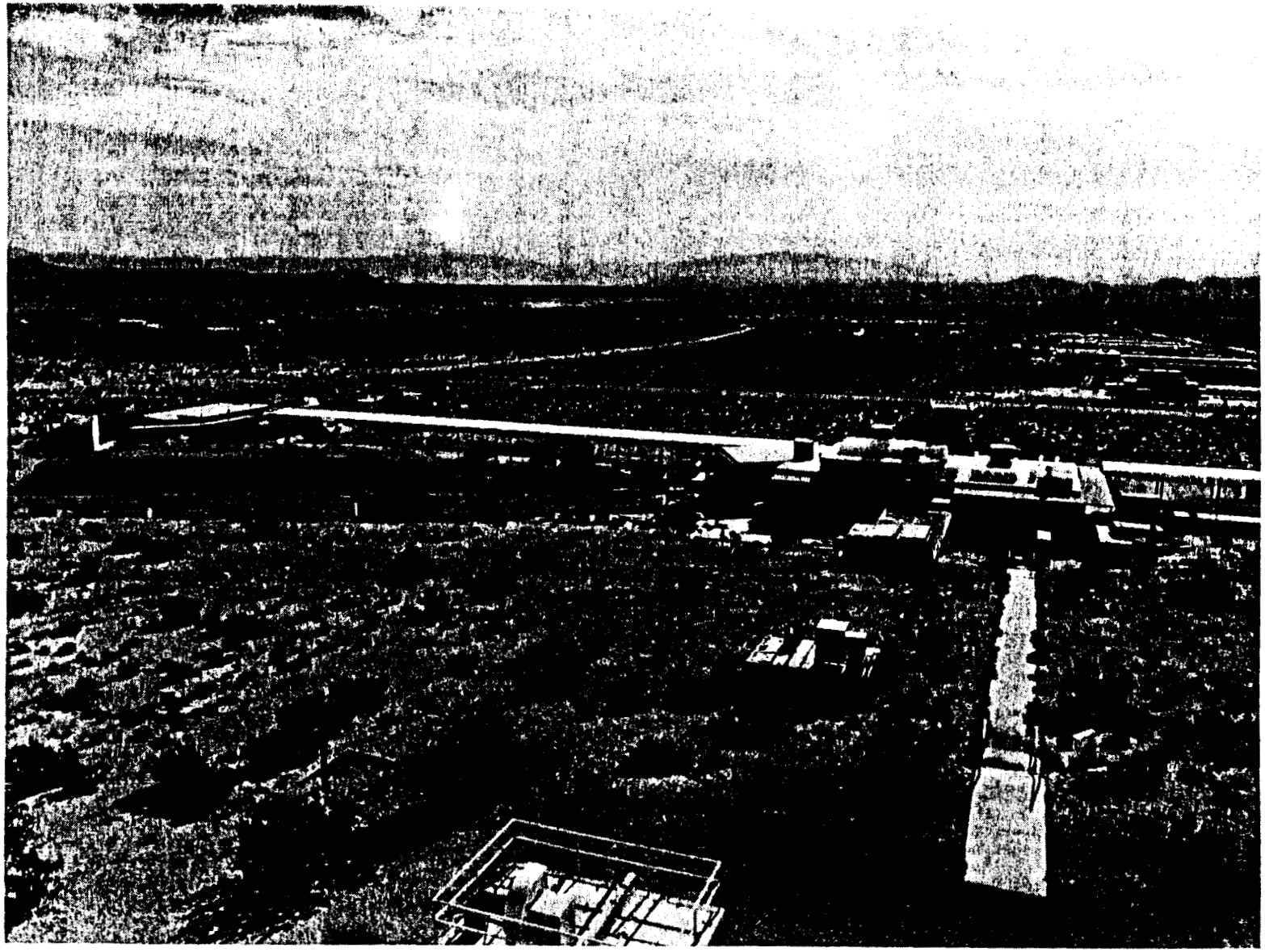
2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:

   SUMMARY DESCRIPTION:

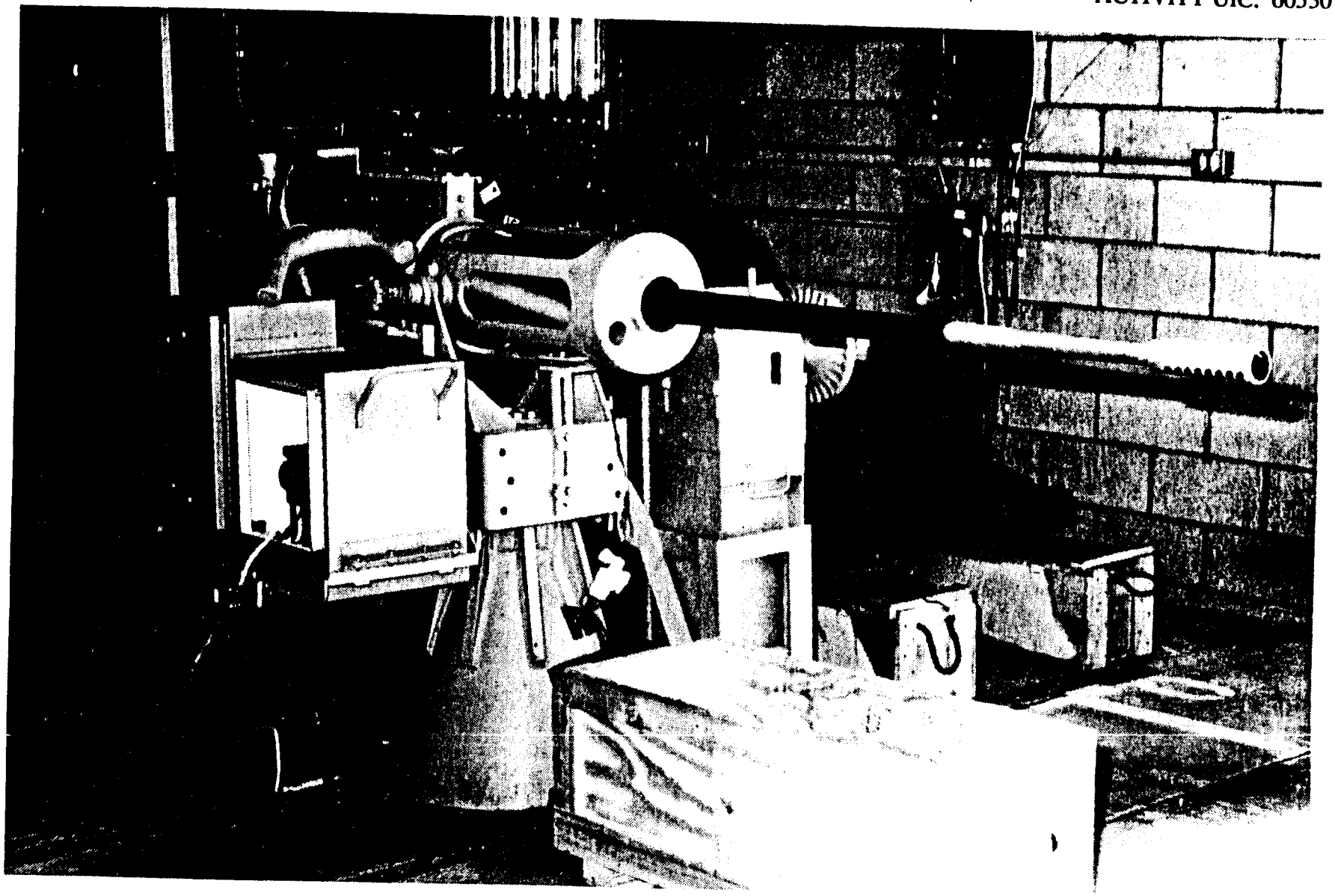
0702

Document Separator



Medium Caliber Gun & Ammo Ballistics Test Laboratory

0403



Medium Caliber Gun & Ammo Ballistics Test Laboratory

Tab 23. Missile Engagement Simulation Arena (MESA)

0405

GENERAL INFORMATION

Facility/Capability Title: Missile Engagement Simulation Arena (MESA)

Origin Date: 4/30/94

Service: N Organization/Activity: NAWCWPNS Location: C291

T&E Functional Area: Armament/Munitions UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	20	60	20	0		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	0	0	0	0		
Armament/Weapons	20	60	20	0		
EC	0	0	0	0		
Other	0	0	0	0		

Total in breakout must equal "Percentage Use" on first line.

0040

TECHNICAL INFORMATION

Facility/Capability Title: Missile Engagement Simulation Arena (MESA)

Facility Description, Including Mission Statement:

The Missile Engagement Simulation Arena (MESA), currently under construction, will be a unique test facility used for RDT&E of target detection devices (TDDs). The MESA facility will replace the Encounter Simulation Laboratory (ESL) Norco, California in February 1995. The performance of tactical missile TDDs is evaluated against threat systems. The facility is used to gather TDD target signature, and post-processing of the signature to determine the warhead burst point. The results of the testing are used to assess the effectiveness of the missile, and investigate upgrades to enhance the performance of the tactical systems. Additionally, the facility will be used to gather data for missile and aircraft survivability analysis.

Interconnectivity/Multi-Use of T&E Facility:

The MESA is a unique facility that supports Tri-Service and Multi-National Munitions Effectiveness and Air Vehicle Survivability testing.

Type of Test Supported:

Munitions Effectiveness
Air Vehicle Survivability

Summary of Technical Capabilities:
The facility can support proximity fuze testing to distances of 75 feet. Targets as large as 25,000 pounds and 80 feet long can be used in the test setups.

Keywords:

Proximity Fuze, Target Detection Device, Survivability, Vulnerability

2040

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Missile Engagement Simulation Arena (MESA) *
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	9,360	11,024	10,816	9,360	11,440	13,520	17,680	19,344
	TEST HOURS	293	783	302	1,081	1,656	1,440	1,613	2,391
	MISSIONS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

*All data submitted for the MESA Facility has combined ESL and MESA information. MESA will replace an existing facility, the ESL located in Corona, CA. When MESA comes on line, the ESL facility will be closed and all work will be transitioned to the new MESA facility. Although MESA is a more capable facility, it performs essentially the same functions as ESL and the ESL customer base will transition to MESA. Rather than submitting inputs for two facilities (ESL andMESA), we chose to repressent ESL and MESA as though they were one facility. The historical information on MESA is ESL data and the MESA projections are based on ESL experience.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Missile Engagement Simulation Arena (MESA)
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	9,360	11,024	10,816	9,360	11,440	13,520	17,680	19,344
	TEST HOURS	293	783	302	1,081	1,656	1,440	1,613	2,391
	MISSIONS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Facility doesn't exist yet -- scheduled to be completed in Feb 95 -- how could it have historical workload

0408

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Missile Engagement Simulation Arena (MESA)

ANNUAL HOURS OF DOWNTIME (1) 864

AVERAGE DOWNTIME PER DAY (LINE 1∏ 365) (2) 2.4

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 21.6

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 64.8
Proximity Fuze Signature Testing	1	3	3	

ANNUAL UNCONSTRAINED CAPACITY (9) 23652

"TYPICAL"

TOTAL 3

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0409A

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Missile Engagement Simulation Arena (MESA)

ANNUAL HOURS OF DOWNTIME (1) 864

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 2.4

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 21.6

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) Proximity Fuze Signature Testing	(5) 1	(6) 3	(7) 1	(8) 21.6

ANNUAL UNCONSTRAINED CAPACITY (9) 23652

"TYPICAL"

TOTAL 1

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0409

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Missile Engagement Simulation Arena (MESA)

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	7	7	7	8	8	8	9
Contractor	1	1	1	1	1	1	1
Total	8	8	8	9	9	9	10

Total Square Footage 73200

Test Area Square Footage 92910

Office Space Square Footage 19710

Tonnage of Equipment: 75 (equipment only)

Volume of Equipment: 30,000 (equipment only)

Annual Maintenance Cost: $200,000

Estimated Moving Cost: $500,000 (equipment only)

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$0.5 M	$6.6 M	$3.2 M	$0.5 M	$0.1 M	$0.1 M	$0.1 M

0710

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Missile Engagement Simulation Arena (MESA)

AGE: NEW—Under Construction REPLACEMENT VALUE: $28 million ($17.5 million bldg.)

MAINTENANCE AND REPAIR BACKLOG: N/A

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE:

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

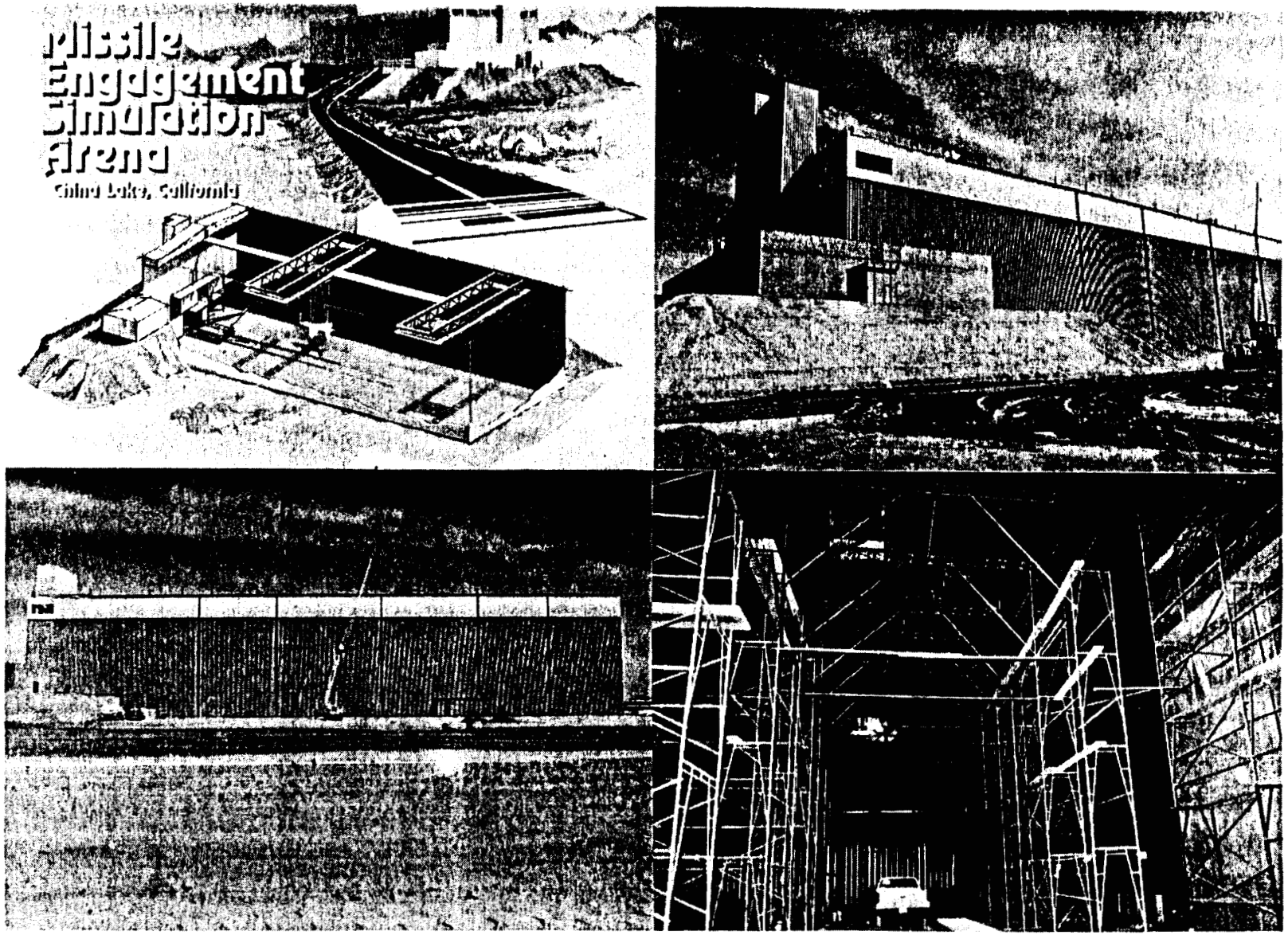
SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

0711



Missile Engagement Simulation Arena (MESA)

0412

Document Separator

Tab 24. Non-Destructive Ordnance Test Facility

0413

GENERAL INFORMATION

Facility/Capability Title: Non-Destructive Ordnance Test Facility

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC China Lake Location: C321

T&E Functional Area: Armaments / Munitions UIC = 60530

T&E Test Facility Category Measurement Facility

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

Total in breakout must equal "Percentage Use" on first line.

0414

TECHNICAL INFORMATION

Facility/Capability Title: Non-Destructive Ordnance Test Facility

Facility Description, Including Mission Statement:

Bldg 15988 - Large high-energy computed tomography inspection system. Currently can inspect items up to 86-in diameter and 24 ft long. System consists of an L-6000 High RAD output linear accelerator that provides a 13,500-rad, 16-Mev energy source, detectors, and an elevator system in a 3-ft-deep pit capable of supporting rocket motors weighing up to 130,000 lbs. In addition to providing two-dimensional digital video data, the facility is capable of producing conventional film X-rays.

Bldgs 15790 and 15800 are standard film X-ray facilities equipped with various X-ray machines, associated film processing, and support capabilities. The facilities can handle a wide range of items from small ordnance items and components to first-stage Polaris motors. Other no-destructive test capabilities exist at these facilities such as helium leak testing or boroscopic inspections.

Facilities are sited as follows: Bldg 15988 225,000 lbs 1.1, 5,000 1.2, 300,000 1.3, 225, 1.4; Bldg 15790 50,000 1.1, 5,000 1.2, 60,000 1.3; Bldg 15800 50,000 1.1, 60,000 1.3
Other facilities that support these operations are 15794, 15804 and 15987.

Interconnectivity/Multi-Use of T&E Facility:

Facilities provide a critical inspection process integrated with other core competencies located at China Lake, including propulsion testing, environmental qualification, safety testing, warhead performance testing, and explosives and propellant RDT&E. Facilities support various tri-service programs (i. e. Trident, Minuteman I, II, and III, SICBM, Army Polaris, UK Polaris, et al.).

Type of Test Supported:

Non-destructive testing, lot acceptance, QA, Environmental Qualification,

Summary of Technical Capabilities:

Provides the capability to inspect all tactical missile systems including warheads, rocket motors, fuzes, S&As, and associated sub-systems. Provides the capability of 100% inspection of strategic rocket motors up to 92-in diameter and 24 ft in length. Longer motors can be inspected but would require two upending evolutions.

Keywords:

Propulsion, Strategic, Tactical, Non-Destructive, Inspection, NDT, Boroscope, Solid Motors, Vertical, Horizontal

0415

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Non-Destructive Ordnance Test Facility

300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	8352	10762	9935	10428	9895	9843	9072	9159
	TEST HOURS	3151	4060	3749	3934	3733	3714	3746	3456
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0416

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Non-Destructive Ordnance Test Facility

ANNUAL HOURS OF DOWNTIME (1) 854

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 2.3

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 21.7

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
(4)	(5)	(6)	(7)
Strategic CT	1	6	6
Tactical CT	1	4	4
Strategic Film	1	4	4
Tactical Film	1	2	2
Boroscope	1	3	3
Leak Test	1	4	4
		TOTAL	23

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 499.1

ANNUAL UNCONSTRAINED CAPACITY (9) 182,171.5

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0417

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Non-Destructive Ordnance 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	9	9	9	9	9	9	9
Contractor	0	0	0	0	0	0	0
Total	9	9	9	9	9	9	9

Total Square Footage 20,033

Test Area Square Footage 15,869

Office Space Square Footage 802

Tonnage of Equipment: 1,155

Volume of Equipment: 614,000

Annual Maintenance Cost: 500K

Estimated Moving Cost: $5,500K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
25K	10K	0	50K	100K	100K	50K
100K	25K	50K	0	0	0	0

0148

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Non-Destructive Ordnance Test Facility

AGE: 9 years REPLACEMENT VALUE: $27,300K

MAINTENANCE AND REPAIR BACKLOG: Drainage from hillside still requires correction. Is awaiting action within PW.

DATE OF LAST UPGRADE: 9/15/90

NATURE OF LAST UPGRADE: Computer control upgrades

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

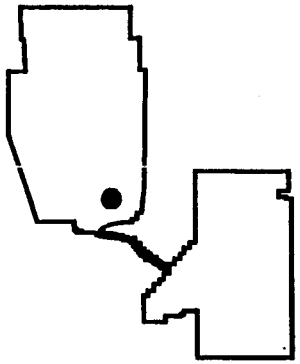
TOTAL PROGRAMMED AMOUNT:

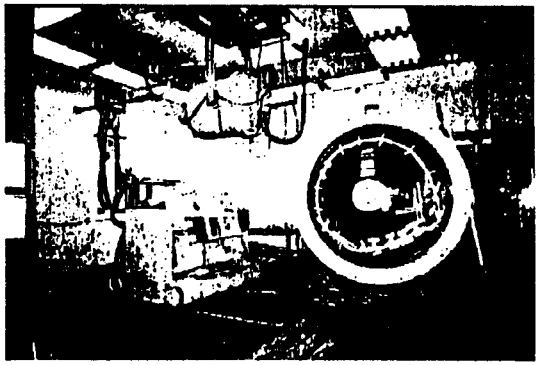
SUMMARY DESCRIPTION:

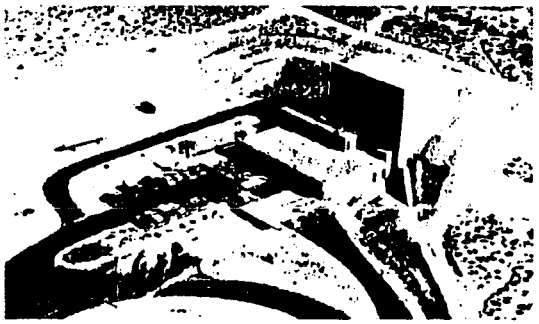
0419

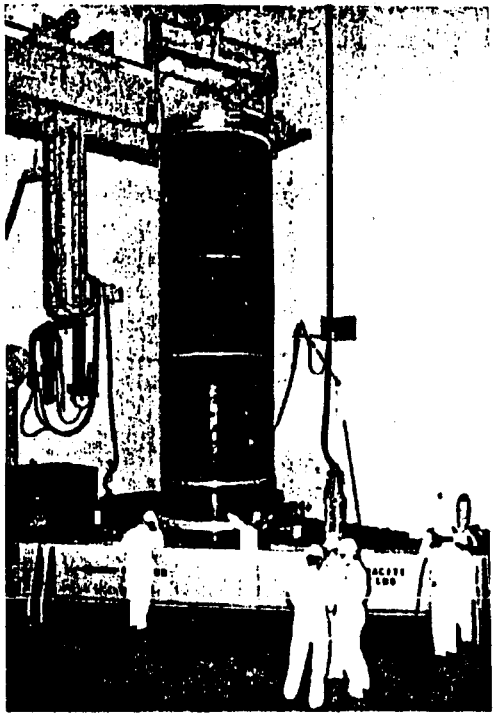
NON-DESTRUCTIVE EVALUATION FACILITIES

- HI-ENERGY COMPUTER-AUTOMATED TOMOGRAPHY (HECT)
- 25 MEV & 250 KVP X-RAYS
- MASS PROPERTY DETERMINATION
- LEAK DETECTION
- BORESCOPIC INSPECTION









Non-Destructive Ordnance Test Facility

0420

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Tab 25. Optics & Laser Research Facility

GENERAL INFORMATION

Facility/Capability Title: Optics & Laser Research Facility

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC China Lake Location: C023

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	8	92				
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	1	3				
Armament/Weapons	2	86				
EC	0					
Other	5	3				

04222

TECHNICAL INFORMATION

Facility/Capability Title: Optics & Laser Research Facility

Facility Description, Including Mission Statement: To conduct RDT&E of optical materials, components, subsystems and systems addressing the requirements of the Navy and DOD. The labs and equipment in this facility provide capability for design, fabrication, characterization and evaluation and research on new optical materials, fabrication and characterization techniques, instrumentation, and specific topics such as laser devices, laser interaction with matter, protection against laser radiation and evaluation of contractor-supplied laser optics in support of the Navy's high-energy laser projects at HELSTF (White Sands Missile Range). Elements include Optical Design and Fabrication, Diamond Turning, Optical Thin-Films, Optical Characterization, Laser Devices and Effects, Laser Spectroscopy, and Large Optics.
Interconnectivity/Multi-Use of T&E Facility: The Large Optics Test element of this facility directly supports the HELSTF Facility. The Laser Devices and Effects supports Energetic Materials T&E facilities.
Type of Test Supported: Optical reflectance, scatter, surface figure, laser damage, surface topography, optical absorption
Summary of Technical Capabilities: Optical design, fabrication analysis, optical component characterization, laser damage assessment, optical system alignment, thermal distortion, dielectric constant determination, optical absorption measurement
Keywords: Optical Figure, Reflectance, Scattering, Optical Fabrication, Laser Damage, Absorption, Optical Design

0423

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Optics & Laser Research Facility

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	900	900	1100	1210	1225	1300	1325	1380
	TEST HOURS	760	790	880	905	1030	1250	1120	1130
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	19500	27630	29750	35570	34020	27770	21010	21300
	TEST HOURS	12150	15065	20625	24585	24565	18280	13810	12655
	MISSIONS								
OTHER T&E	DIRECT LABOR	1300	1300	2300	2300	4300	4300	2300	1300
	TEST HOURS	1170	1170	1170	1170	3870	3870	1170	1170
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0424

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Optics & Laser Research Facility

ANNUAL HOURS OF DOWNTIME (1) 905

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 2.5

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 21.5

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
(4)	(5)	(6)	(7)
Figure (L)	1	3	3
Figure (S)	3	1	3
Reflect.	1	1	1
Scatter	2	1	2
Las. Dam.	4	2	8
Rough.	2	1	2
Absorp	1	1	1
Spectros	1	1	1
Las Ignit.	1	2	2
Polarim.	1	1	1
		TOTAL	24

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 516

ANNUAL UNCONSTRAINED CAPACITY (9) 188,340

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: In certain elements of the facility, space does not permit the full complement of personnel to operate all independent test instruments.

0425

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Optics & Laser Research Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	22	22	23	23	23	23	23
Contractor	1	1	1	1	1	1	1
Total	23	23	24	24	24	24	24

Total Square Footage 24,950

Test Area Square Footage 22,250

Office Space Square Footage 2,700

Tonnage of Equipment: 229 tons

Volume of Equipment: 43,000 cu ft

Annual Maintenance Cost: 75,000 contract and rep

Estimated Moving Cost: 1.6M

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	0	150K	300K	300K	200K	0
50	50	100	100	100	100	75

0420

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Optics & Laser Research Facility

AGE: 40 yrs REPLACEMENT VALUE: $17,600K ($4,700K)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 1/1/92

NATURE OF LAST UPGRADE: Construction of large optic polishing and evaluation laboratory

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Rehab Wing 4, Bldg. 00005, 1995-1996

   TOTAL PROGRAMMED AMOUNT: 1.1M

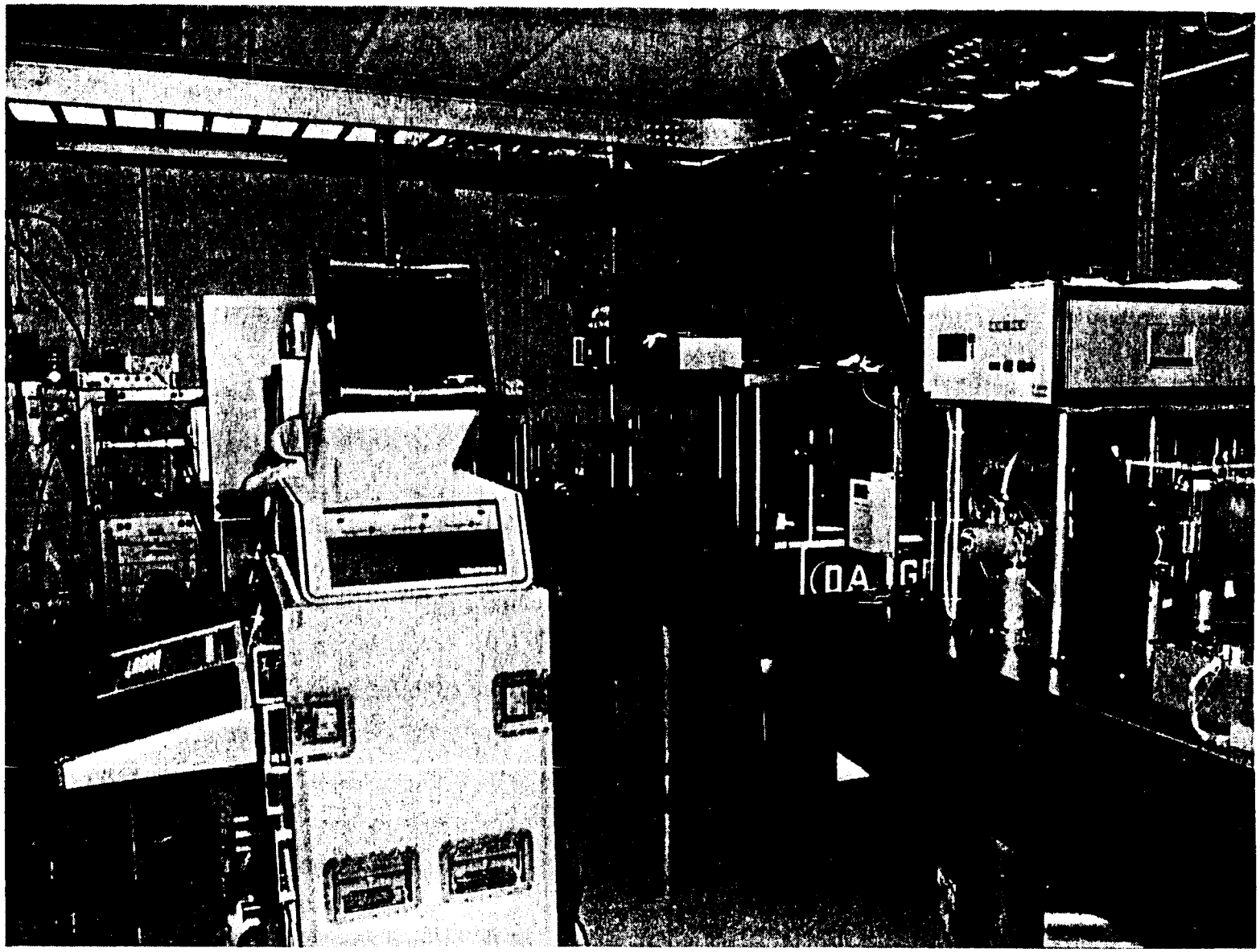
   SUMMARY DESCRIPTION: Upgrade mechanical structure and utilities

2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:

   SUMMARY DESCRIPTION:

0427



Optics & Laser Research Facility

0428

Document Separator

Tab 26. Ordnance & Propulsion Foreign Materials Exploitation Laboratory

0429

GENERAL INFORMATION

Facility/Capability Title: Ordnance & Propulsion Foreign Materials Exploitation Laboratory

Origin Date: 4/25/94

Service: N Organization/Activity: NAWCWPNS, CL Location: Code C27

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	5	10	10	0	0	75
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	0	0	0	0	0	0
Armament/Weapons	5	10	10	0	0	75
EC	0	0	0	0	0	0
Other	0	0	0	0	0	0

Total in breakout must equal "Percentage Use" on first line.

0430

TECHNICAL INFORMATION

Facility/Capability Title: Ordnance & Propulsion Foreign Materials Exploitation Laboratory

Facility Description, Including Mission Statement: A group of buildings in the CLPL area of NAWCWPNS that has the capacity to test and evaluate Foreign Materiel solid and air-breathing motors, warheads, ignition systems, electronics and thrust vector control systems. The facility provides the requisite safety (isolation, certification, process control) and security (isolation, perimeter fence, process control) for the exploitation of hardware up to the Secret level including both class 1.1 and class 1.3 explosives. Ordnance Operation Facility requirements including deluge systems, static grounding systems, and explosive-proof electrical systems. Blow-out panels. Building construction to permit simultaneous operations in adjacent test cells. Safety interlock systems on doors. Special security devices required for some projects.
Interconnectivity/Multi-Use of T&E Facility: Operating buildings are certified for ordnance operations and are in close proximity to other functional, safety and radiographic test areas to provide for efficient operations. Within the operating buildings, separate rooms allow for simultaneous testing and exploitation.
Type of Test Supported: Integration testing, fitment checks, dimensional checks, firing circuit continuity checks, safety inspection. Buildup and tear-down in preparation for radiographic, dissection, and functional testing.
Summary of Technical Capabilities: General and specialized missile handling equipment. Secure energetic storage magazettes. Circuit testing equipment. Circuit analysis equipment. Data recording equipment.
Keywords: FME, Foreign, Materiel, Exploitation

0431

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Ordnance & Propulsion Foreign Materials Exploitation Laboratory
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 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	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
ARMAMENT/WEAPONS	DIRECT LABOR	33250	33250	36750	36750	42750	41450	38150	34550
	TEST HOURS	3000	3100	3250	3500	5300	4700	3900	3700
	MISSIONS								
OTHER T&E	DIRECT LABOR	0	0	0	0	0	0	0	0
	TEST HOURS	0	0	0	0	0	0	0	0
	MISSIONS								
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

0432 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Ordnance & Propulsion Foreign Materials Exploitation Laboratory
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 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	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
ARMAMENT/WEAPONS	DIRECT LABOR	33250	33250	36750	36750	40250	40250	36750	33250
	TEST HOURS	3000	3100	3250	3500	4100	4100	3200	3000
	MISSIONS								
OTHER T&E	DIRECT LABOR	0	0	0	0	2500	1200	1400	1300
	TEST HOURS	0	0	0	0	1200	600	700	700
	MISSIONS								
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

0432

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Ordnance & Propulsion Foreign Materials Exploitation Laboratory

ANNUAL HOURS OF DOWNTIME (1) 580

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 1.59

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 22.41

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 672.33
Fitment	6	3	18	
Continuity	2	2	4	ANNUAL UNCONSTRAINED CAPACITY (9) 245400
TVC elec verification	2	1	2	
Integration	2	3	6	
"TYPICAL"				
		TOTAL	30	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Simultaneous operations are restricted by safety arcs (from size and type of energetic material) and security considerations.

0433

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Ordnance & Propulsion Foreign Materials Exploitation 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	19	17	19	17	17	17	17
Contractor	3	3	1	0	0	0	0
Total	22	20	20	17	17	17	17

Total Square Footage 17550

Test Area Square Footage 7899

Office Space Square Footage 9651

Tonnage of Equipment: 45

Volume of Equipment: 45161

Annual Maintenance Cost: 15000

Estimated Moving Cost: 142000

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
300	0	0	20	0	0	0
0	35	20	0	10	10	10

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Ordnance & Propulsion Foreign Materials Exploitation Laboratory

AGE: 49 REPLACEMENT VALUE: $11359K = TOTAL, $10937K = BUILDINGS

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE:

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

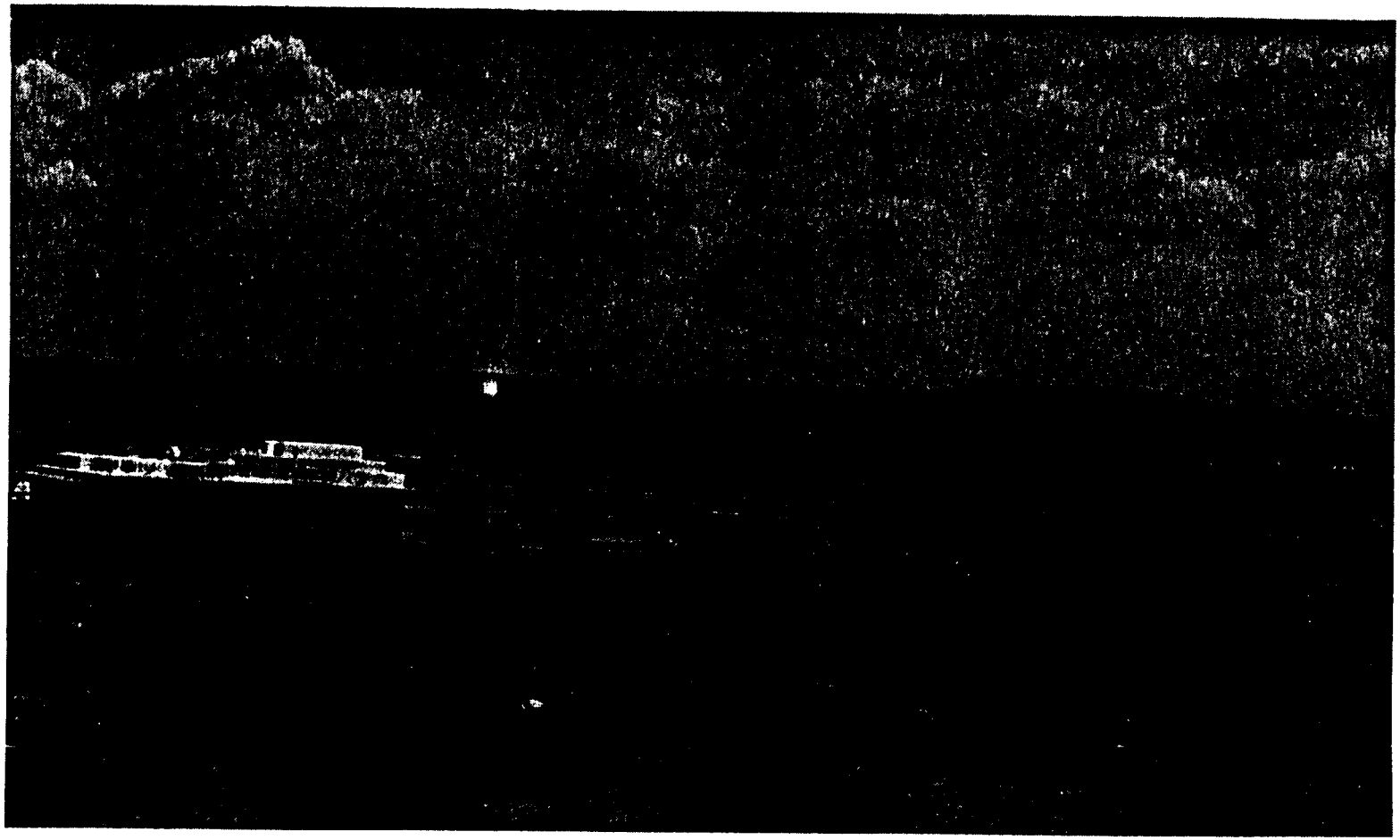
SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

0435



Ordnance & Propulsion Foreign Materials Exploitation Laboratory

0436

Document Separator

Tab 27. Ordnance Test Complex

0437

GENERAL INFORMATION

Facility/Capability Title: Ordnance Test Complex

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC China Lake Location: C32

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

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

Total in breakout must equal "Percentage Use" on first line.

0438

TECHNICAL INFORMATION

Facility/Capability Title: Ordnance Test Complex

Facility Description, Including Mission Statement:

The Ordnance Test Complex consists of five major geographic test areas consisting of 22 separate test sites or bays to perform a full spectrum of ordnance activation tests, including fast and slow cookoff, bullet impact, fragment impact, drop, sympathetic detonation, liquid fuel, and fuel-air explosive mixtures, and large-scale arena detonations. There are 33 structures, including six control rooms supporting these test areas and with associated assembly and storage buildings. The facilities are geographically separated (22 miles maximum road distance), and all have expansion capabilities for future growth if necessary. Area R has the smallest ordnance siting of 200 lbs explosive, classes 1.1 through 1.3 inclusive. Burro Canyon can test to 14,000 lbs of classes 1.1 and 1.2, and 200,000 lbs of 1.3. The CT sites are capable of testing up to 3,000 lbs of all classes. All sites have sensors for test support (pressure, temperature, velocity, etc.) and photo coverage. High-speed photography up to 10,000,000 frames per second is available at Area R.

Interconnectivity/Multi-Use of T&E Facility:

All facilities are capable of control and data acquisition using electronic data lines and video. All data can be acquired in-house and returned to the customers in a very short time period. All facilities are remote, and can be used concurrently as required. Because of the multiple nature of the various test sites within these areas, these resources can be extensively utilized for air, land, sea, and space explosive munitions testing

Type of Test Supported:

MIL-STD-2105 ordnance qualification safety testing for a full spectrum of individual rounds, bombs, missiles, and smaller all-up-rounds. Developmental testing for all phases of ordnance acquisition development and R&D. Tests performed on palleted ordnance, foreign military ordnance, FAE, liquid propellant, and missile motors and warheads

Summary of Technical Capabilities:

All explosive components safety testing for propulsion systems and warheads for air-to-air, air-to-surface, surface-to-air, and surface-to-surface weapons systems, including total life cycle full-spectrum hazard classification activation testing, within ordnance size limits of the site capability

Keywords:

Safety Testing, Ordnance, Multiple Use Area, High Speed Photography, Ordnance Siting Limits, MIL-STD-2105

0439

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Ordnance Test Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	41425	45782	43271	44866	42084	39364	36951	38791
	TEST HOURS	8369	9249	8742	9064	8502	7952	7923	7837
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0440

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Ordnance Test Complex

ANNUAL HOURS OF DOWNTIME (1) 28910

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 79.2

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 64.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 2,138.4
w/h function	1	4	4	
Liq Prop't	1	3	3	ANNUAL UNCONSTRAINED CAPACITY (9) 780,516
FAE	1	4	4	
Bullet Impt	1	5	5	
Fast Cookoff	1	2	2	
Slow Cookoff	1	3	3	
Air Gun	1	4	4	
Arena whd	1	8	8	
			TOTAL 33	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Ordnance Test Complex is capable of conducting (6) operations concurrently. Area R can normally conducting (2) simultaneous operations. However, explosive wgt or frag hazard may limit the site to a single operation. This has been reflected in the "Other " category

0441

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Ordnance Test Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	20	19.5	19	18	16.5	15	15
Contractor							
Total	20	19.5	19	18	16.5	15	15

Total Square Footage 11939

Test Area Square Footage 7766

Office Space Square Footage 955

Tonnage of Equipment: 3495

Volume of Equipment: 736988

Annual Maintenance Cost: $187K

Estimated Moving Cost: $5,001K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
325	260	110	15	0	175	10
0	60	120	20	25	25	25

0442

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Ordnance Test Complex

AGE: 31 (avg) REPLACEMENT VALUE: $5588K w/ equipment

MAINTENANCE AND REPAIR BACKLOG: CT-6: $40K for completion of re-anchoring of photographic towers
Area R: $15K repair to firing facilities on two barricade test areas
CT-1 and 4: $12K misc. repairs to test wiring and pits

DATE OF LAST UPGRADE: 3/15/94

NATURE OF LAST UPGRADE: New air gun control room installed at Area R.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Burro Canyon Data and Control Cabling Installation

TOTAL PROGRAMMED AMOUNT: $350K

SUMMARY DESCRIPTION: Completion of Burro Canyon Complex with the finalization of data and control cable runs from the new blockhouse to all test arenas

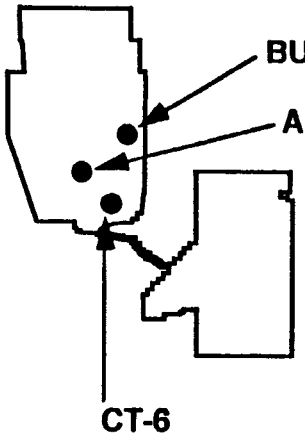
2. UPGRADE TITLE: CT-4 Weld Shop

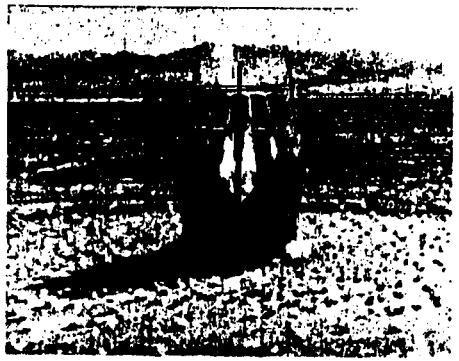
TOTAL PROGRAMMED AMOUNT: $200K

SUMMARY DESCRIPTION: New shop outside the high hazard arc of test sites at CT-4. This is an approved and funded FY94 FES project, and consists of a 2500 sq ft building used as a weld shop to fabricate test items, such as A-frames and witness plates, and repair test-damaged equipment for reuse

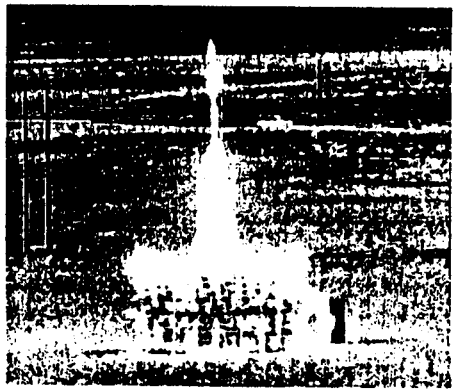
0443

WARHEAD TEST ARENAS





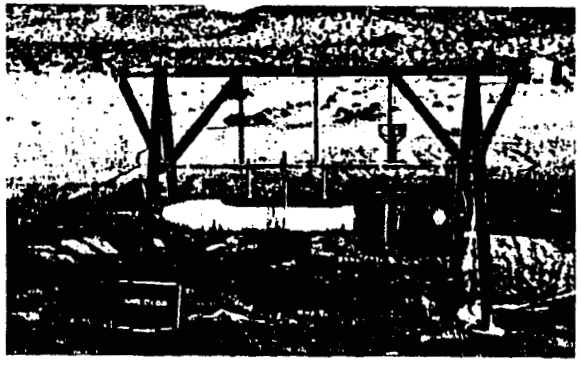
- FRAGMENT DISTRIBUTION/ VELOCITY
- SHOCK/PRESSURE WAVES
- SHAPED-CHARGE PERFORMANCE
- WARHEAD EFFECTIVENESS

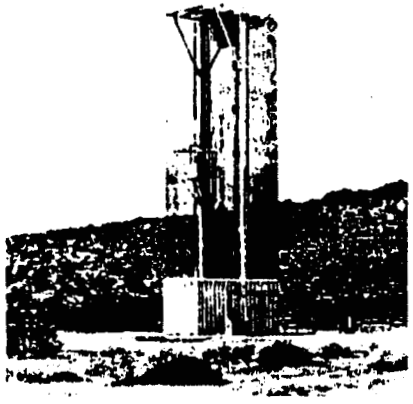


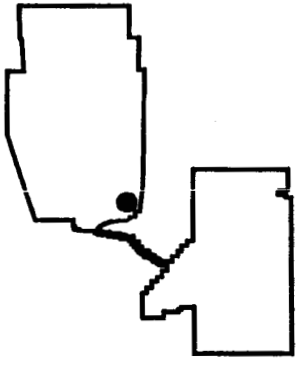
0444

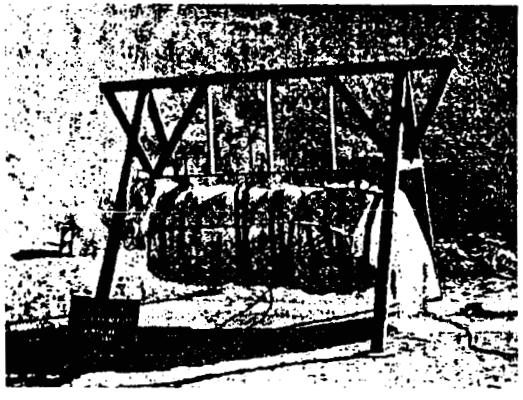
SAFETY TEST FACILITIES

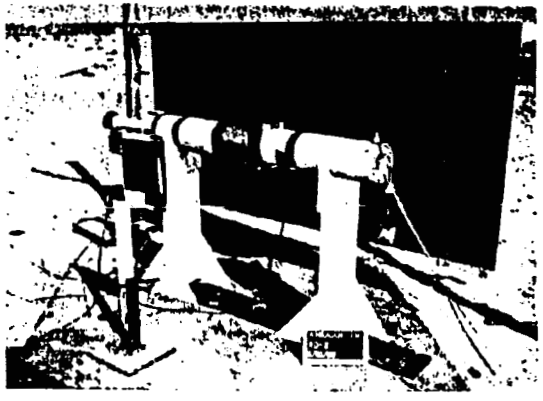
- WEAPONS EVALUATION TO MILITARY HAZARDS
  - COOK-OFF TESTS
  - BULLET/FRAGMENT IMPACT
  - DROP TOWER TESTS
  - EXTERNAL FIRE STACK TESTS
  - SYMPATHETIC DETONATION TESTS











Ordnance Test Complex

0445

Document Separator

Tab 28. RF Seeker/Guidance/Control DDT&E (Design, Development, Test & Evaluation) Complex

0446

GENERAL INFORMATION

Facility/Capability Title: RF Seeker/Guidance/Control DDT&E Complex

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC, China Lake Location: C29

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	16.5%	40.2%	41.3%	1.6%	0.4%	
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	2.5%		0.8%	0.3%		
Armament/Weapons	14%	40.2%	39.3%	1.3%	0.4%	
EC			1.2%			
Other						

Total in breakout must equal "Percentage Use" on first line.

14 15%
95.2

?

0447

TECHNICAL INFORMATION

Facility/Capability Title: RF Seeker/Guidance/Control DDT&E Complex

Facility Description, Including Mission Statement:

The primary purpose of this complex is to perform measurements of missile guidance/control systems, antennas (both missile and target), antenna/radomes; and to perform radar cross section (RCS) measurements of targets. The Diagnostic Chamber provides a powerful diagnostic tool to measure and reduce the effective radar cross section of an object. The Antenna Range supports the measurement and validation of prototype and existing antenna systems (both missile and target). The Antenna/Radome Test Facility provides measurement, evaluation, analysis, design, and prediction/simulation of microwave and millimeter wave antennas and radome subsystems (missile only). The Weapon Guidance/Control Laboratory provides specialized laboratory facilities and test equipment for multi- Sidewinder and RAM missile configurations.

Interconnectivity/Multi-Use of T&E Facility:

All facilities can be operated by a rotating crew or run automated 24 hours a day. The Weapons Guidance/Control Laboratory has semi-automated facility certified by NAWC, Corona for troubleshooting and factory level acceptance testing of guidance/control sections and electronic modules. The Antenna Range has data acquisition, receive systems, and positioners that will not be obsolete until 2024. The Antenna/Radome Test Facility has been used by SPARROW, AMRAAM, PHOENIX, AND OABM/ACIMD missile programs. RAM, Sidearm, and other air-to-air, air-to-ground, and surface-to-air missiles have undergone antenna testing in this facility. This facility is used to validate contractor production facilities/hardware.

Type of Test Supported:

Factory and field level guidance/control system level testing, antenna amplitude patterns, antenna phase patterns, raster scan patterns, swept frequency, radome boresight error and boresight slope, radome insertion loss, radome insertion phase, radar cross section, polarization, cross-polarization rejection, absolute gain, antenna impedances, receiver noise figure, and reciprocity, RCS (radar cross section) measurement of ogives, cones, spheres, RCS measurements of specially treated objects, fuze and guidance antennas, low radar cross section (RCS) antennas, radar simulators, proof-of-concept antennas, telemetry antennas, radar decoy systems, and personnel detection systems.

0448

RF Seeker/Guidance/Control DDT&E Complex

Summary of Technical Capabilities:

WHAT-IV, Motor Fire Simulator, TS-4044/D, DSM-152A, GCU-30/E, DSM-132A, IR rate tables, EO/IR rate table, optics bench, microwave receiver, Vector Network Analyzer, Remote Mixer System, Synthesized Signal Generator, Servo Control System, Data Acquisition and Control System, Spectrum Analyzer, Standard Gain Horns, X/Y positioners, Rotary Antenna Positioners, Microwave Frequency Counter, Microwave Frequency Converters, Frequency Doublers, Microwave Amplifiers, Radome Gimbal Fixtures, Stepper Motor Control System, Laser Interferometer Position Transducer System, Antenna Collimator System.

Keywords:

Antenna, Range, Radar Cross Section (RCS), Measurement, Swept, Frequency, Near-Field, Far-Field, Anechoic Chamber, Antenna, Boresight Error, Polarization, Radome, Millimeter Wave, Microwave, Radiation, Radar, Electromagnetics, E-Fields, H-Fields, Semi-Automated Test, Missile Component Integration, Modification, Guidance/Control, Integration, Missile System

0479

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: RF Seeker/Guidance/Control DDT&E Complex

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	2000	2000	2000	2490	3020	3020	3020	3020
	TEST HOURS	1176	1176	1176	1470	2352	2352	2352	2352
	MISSIONS	19	19	19	19	25	25	25	25
EC	DIRECT LABOR	80	80	80	80	160	160	80	80
	TEST HOURS	70	70	70	70	140	140	70	70
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	34466	34466	40591	44701	47361	47361	47261	47161
	TEST HOURS	19122	19112	19112	22018	27086	27086	26986	26886
	MISSIONS	112	112	112	112	150	150	150	150
OTHER T&E	DIRECT LABOR				120	360	360	120	240
	TEST HOURS				110	340	340	110	220
	MISSIONS								
OTHER	DIRECT LABOR	100	100	100	5330	5330	5330	5330	5330
	TEST HOURS	80	80	80	2705	2705	2705	2705	2705
	MISSIONS								

0450 A

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: RF Seeker/Guidance/Control DDT&E Complex

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	2000	2000	2000	2490	3020	3020	3020	3020
	TEST HOURS	1176	1176	1176	1470	2352	2352	2352	2352
	MISSIONS	19	19	19	19	25	25	25	25
EC	DIRECT LABOR	80	80	80	80	160	160	160	160
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	25716	25716	25716	29826	32486	32486	32386	32286
	TEST HOURS	9012	9012	9012	10818	16226	16226	16226	16226
	MISSIONS	112	112	112	112	150	150	150	150
OTHER T&E	DIRECT LABOR				120	360	360	120	240 ?
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR	100	100	100	5330	5330	5330	5330	5330 ?
	TEST HOURS								
	MISSIONS								

0450

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: RF Seeker/Guidance/Control DDT&E Complex

ANNUAL HOURS OF DOWNTIME (1) 1028

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 2.8

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 21.2

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
(4)	(5)	(6)	(7)
Nearfield	2	2	4
Farfield	2	1.5	3
Antenna	1	1	1
RCS	1	1	1
Rate Table	3	1	3
Optic Bench	1	1	1
Module TS	2	1	2
DSM/TS	3	1	3
MMW	1	1	1
Impulse	1	3	3
		TOTAL	22

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 466 hours

ANNUAL UNCONSTRAINED CAPACITY (9) 170,236 hours

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

1540

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: RF Seeker/Guidance/Control DDT&E Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	15	15	13	13	15	15	15
Contractor	1	1			1	1	1
Total	16	16	13	13	16	16	16

Total Square Footage 24984 sq. ft.

Test Area Square Footage 20924 sq. ft.

Office Space Square Footage 4060 sq. ft.

Tonnage of Equipment: 170 tons

Volume of Equipment: 125168 cu. ft.

Annual Maintenance Cost: $111K

Estimated Moving Cost: $1397K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$180K	$10K	$60K	$15K	$25K	$35K	$15K
$1335K	$245K	$225K	$255K	$435K	$635K	$100K

0452

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: RF Seeker/Guidance/Control DDT&E Complex

AGE: 30 years REPLACEMENT VALUE: $29,800K ($5,403K)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 1/30/94

NATURE OF LAST UPGRADE: Improved scan system for Near Field Range in the Antenna/Radome Test Facility

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Far-field Expansion Approval

TOTAL PROGRAMMED AMOUNT: $1,600K

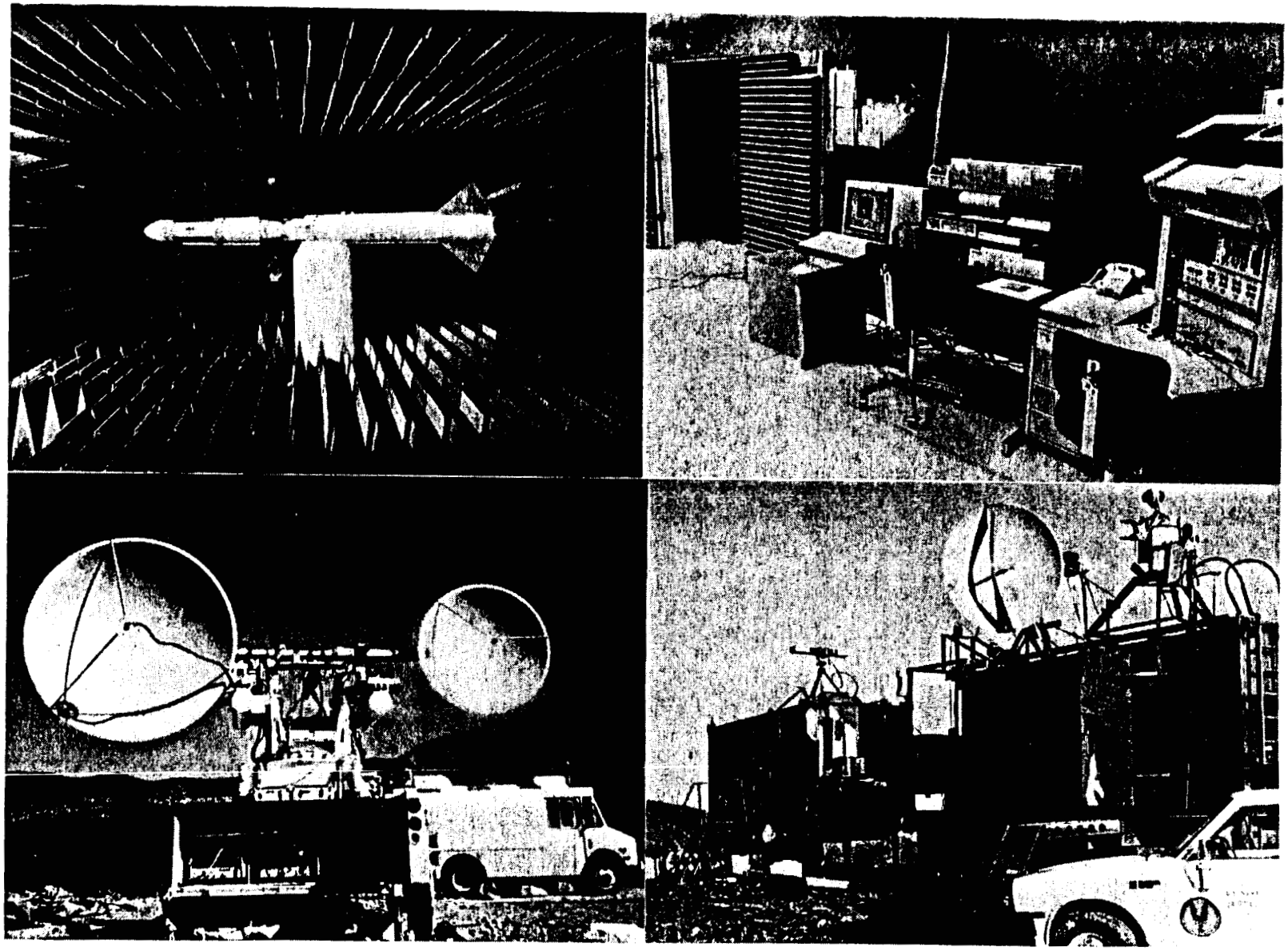
SUMMARY DESCRIPTION: This upgrade would extend the outdoor far-field range from 110 ft. to 3300 ft. Environmental, microwave safety, site survey, frequency management have approved and signed the necessary paperwork, with final approval pending.

2. UPGRADE TITLE: Upgrade for next generation AIM-9 Guidance and Control Section

TOTAL PROGRAMMED AMOUNT: $2,200K

SUMMARY DESCRIPTION: Upgrade special test equipment that are obsolete and customize interface and special classified measurement facilities to accommodate next generation AIM-9.

0453



RF Seeker/Guidance/Control DDT&E Complex

0457

Document Separator

Tab 29. Sensor & Targeting Technology Facility

5540

GENERAL INFORMATION

Facility/Capability Title: Sensor & Targeting Technology Facility

Origin Date: 4/20/94

Service: U.S. Navy Organization/Activity: NAWCWPNS Location: China Lake, CA

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facilities

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	13	57	16	11	3	0
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	1	8	3	0	0	0
Armament/Weapons	11	21	3	1	1	0
EC	0	0	0	0	0	0
Other	1	28	10	10	2	0

11/37 = 30%

Total in breakout must equal "Percentage Use" on first line.

10-3-94

Crossed out in error. DJD

GENERAL INFORMATION

Facility/Capability Title: Sensor & Targeting Technology Facility

Origin Date: 4/20/94

Service: U.S. Navy Organization/Activity: NAWCWPNS Location: China Lake, CA

T&E Functional Area: Armament/Weapons UIC = 60530

T&E Test Facility Category Measurement Facilities

	T&E	S&T	D&E	IE	T&D	OTHER	
PERCENTAGE USE:	13	57	16	11	3	0	
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	1	8	3	0	0	0	12%
Armament/Weapons	11	21	3	1	1	0	37%
EC	1	1	0	4	0	0	6%
Other	0	28	10	10	2	0	50%
				15			105%

Total in breakout must equal "Percentage Use" on first line.

11/37

9540

TECHNICAL INFORMATION

Facility/Capability Title: Sensor & Targeting Technology Facility

Facility Description, Including Mission Statement:

• RF Sensor Active Array Laboratory: Development and T&E of advanced RF sensors and sensor modes for weapons and aircraft. Consists of compact antenna measurement chamber, fabrication and assembly area, RF and lab test equipment, and computer data acquisition equipment. Example activities include RF testing of radome and antenna for AV-8, testing of advanced EW receiver, beamforming experiments with both x-band and wideband active arrays, testing of advanced active array modes, T&E of advanced sensors for weapon seekers.
• RF Sensor Near Field Laboratory: Development and T&E of Advanced RF Sensors for weapons and aircraft.
• Signals Exploitation Development Laboratory: To directly support the Fleet with modern signal processing equipment and information. To provide immediate intelligence for tactical indication and warning as well as up-to-date capability assessment. To accomplish this mission, the facility is equipped with two Top Secret SCI/TEMPEST certified vaults and a variety of special equipment and software. The equipment includes general test equipment and specially-built equipment and stations. The special equipment and software were developed internally to support this specific mission.
• Passive Electro Optical Sensors Laboratory: Facilities and equipment required for the evaluation of Advanced Electro-optic sensor systems and weapons systems
• Multisensor Integration/Correlation Laboratory: Facility and equipment for the development of image processing techniques applied to air-to-ground sensors and weapon systems, and simulation capabilities for evaluating and developing air-to-air multisensor tracker performance.
• Targeting Laboratory: 15 workstations networked together to provide (1) automatic target recognition algorithm and systems development capability, (2) processing of targeting data, and (3) simulation of automatic real-time target selection.
• Night Vision Goggles Laboratory: The lead field activity in life cycle support, development, and T&E for NVGs, including both aircraft navigation and weapon delivery functions. Mission requirements include night capability for tactical systems. In addition, this functional area includes the survivability/lethality aspects of aircraft and weapons at night.
• Laser Sensors Laboratory: The Development and Test facility provides a full spectrum life cycle research, development, integration, test and evaluation of integrated aircraft weapon systems. These tests include basic laser research, beam propagation, target characteristics and array transceiver studies.
The facility includes numerous laboratories approved for eye-hazardous laser emissions. Of note are a light tunnel, a roof top laboratory overlooking the China Lake test ranges and a mobile Land Sea Container with electrical power and environmental conditioning appropriate for optical system usage. Other portions of the facility house a large bistatic optical receiver laboratory.
•Image Processing Laboratory: The facility includes computer, video tape, optical disk and related equipment required to support 6.2 research on sensor integration, image enhancement, and image correlation.

0457

Sensor & Targeting Technology Facility

Interconnectivity/Multi-Use of T&E Facility:

• RF Sensor Active Array Laboratory: The lab has the demonstrated ability to provide customized/specialized T&E and interpretation of measurements. Tests have been conducted for NAWCWD, ARPA, other government agencies, and jointly with contractors.
• RF Sensor Near Field Laboratory: The lab has the ability to provide customized T&E and interpretation of antenna measurements. Test provide customized T&E and interpretation of antenna measurements. Test have been conducted on NAWCWD and ARPA hardware.
• Laser Sensors Laboratory: The secure computing facility has secure data link to the outside world allowing multi-use of the assets within that laboratory.
• Night Vision Goggle Laboratory: The NVG laboratory can be used by Navy, Air Force and Marine services for the integration of weapon specific symbology and NVG imagery on Helmet Mounted Displays. This work is new and will continue to be jointly performed by the services. This facility can be easily adapted to the evaluation of advanced Helmet Mounted Displays.

0454

Sensor & Targeting Technology Facility

Type of Test Supported:

• RF Sensor Active Array Laboratory: Antenna measurements, radome measurements, T/R module calibration, active array beam control measurements, RF system and subsystem measurements, and RCS measurements (not currently done)
• RF Sensor Near Field Laboratory: Antenna pattern measurements, radome phase and amplitude distortions, T/R module calibration, active array back-projection diagnosis.
• Signals Exploitation Development Laboratory: Simulation and modeling of hardware and software under development, and after maintenance and repair, prior to return to the Fleet.
• Passive Electro Optical Sensors Laboratory: Advance E/O Sensor mode evaluation - target discrimination and performance tests, MRT, MTF, Image Quality
• Laser Sensors Laboratory: The measurement capabilities of this facility are utilized in support of F/A-18 and AH-1 laser rangefinder/designator testing. Specific tests supported include evaluation of laser designation performance and FLIR to laser boresight testing.
• Multisensor Integration/Correlation Laboratory: Improved Avionics Tracker evaluation, targeting improvements, MITL weapon guidance improvements.
• Targeting Laboratory: Simulation of automatic target recognition.
• Image Processing Laboratory: Human target detection and identification experiments . Image integration experiments. Pattern matching and recognition experiments.
• Night Vision Goggles Laboratory: Human visual performance during target acquisition and navigation. Optical Efficiency evaluations of NVGs/HMDs. Compability/integration of NVGs/HMDs with advanced weapon systems.

0459

Sensor & Targeting Technology Facility

Summary of Technical Capabilities:

• RF Sensor Active Array Laboratory: The RF Sensor Active Array Laboratory can test systems with up to 40-in antenna from 2 GHz through 50 GHz. The lab can also provide T&E for RF systems and a quiet environment to demonstrate advanced sensor capabilities.
• RF Sensor Development Laboratory S&M: The RF Sensor Development Laboratory can simulate inputs to radar or EW Receivers to verify proper operation. In addition, models fro T/R module phase and amplitude controls can be designed based on test data from actual devices.
• RF Sensor Near Field Laboratory: The RF Sensors Near Field Laboratory can test antennas or radomes from 2 GHz to 18 GHz. The near-field data can be presented as 3-dimensional far-field patterns or projected onto the aperture to provide fault diagnosis.
• Signals Exploitation Development Laboratory: A hardware lab equipped with specially developed test sets and equipment, including wide bandwidth instrumentation recorders. A software lab equipped with special software development hardware, software, and custom-tailored emulators.
• Passive Electro Optical Sensors Laboratory: High analog and digital bandwidth video recorders, calibrated infrared stimulus modules
• Multisensor Integration/Correlation Laboratory: Multisource synchronized aircraft data replay capability
• Targeting Laboratory, 11 Hewlett Packard Model 735/45 (TAC-3) workstations, target recognition algorithms,
6 SUN SPARC II workstations, Ethernet networks,
1 DEC ALPHA Model 3000/400 workstation, S/W program languages, FORTRAN, C, PASCAL, LISP.
50 printers, 8mm tape drives, plotters, disk drives, Macs, etc. S/W operating systems: VMS, UNIX
Target simulation and modeling S/W. Data processing s/w packages.
• Image Processing Laboratory: Capabilities include image collection, digitization, processing, storage and display.
• Night Vision Goggle Laboratory: Aviator vision testing. NVG intensification efficiency. Compatibility of NVGs/HMDs in advanced weapon systems. Optical property evaluations of NVG/HMD hardware. Instrumentation: PCs, photometers, colorimeters, vision testers, NVGs digital spectrometer, NVG signal-to-noise ratio tester.
• Laser Sensors Laboratory: This facility houses high bandwidth digital data recording equipment for laser pulse characterization. The facility contains numerous optical elements necessary for the manipulation of a multitude of optical spectrums. The inventory has been acquired through many years in the Laser Radar business. Other support equipment includes high vacuum pumps, optical table floating on air legs, etc.

0460

Sensor & Targeting Technology Facility

Keywords:

- RF Sensor Active Array Laboratory: Compact Antenna Range, Active Array, Antenna, Radome, Radar, EW
- RF Sensor Development Laboratory S&M: Active Array, AESA, Radar, T/R Module
- RF Sensor Near Field Laboratory: Near-Field Antenna Range, Active Array, Antenna, Radome, Radar EW
- Signals Exploitation Development Laboratory: Signals Exploitation, Intelligence, Electronic Warfare, C41
- Passive Electro Optical Sensors Laboratory: Multisource/Multisensor Integration (MSI), Multisource Correlation (MSC), Forward-Looking Infrared (FLIR)
- Multisensor Integration/Correlation Laboratory: Multisource/Multisensor Integration (MSI), Multisource Correlation (MSC), Forward-Looking Infrared (FLIR)
- Targeting Laboratory: Automatic Target Recognition, Target Modeling And Simulation
- Night Vision Goggle Laboratory: Night Vision Goggles, Helmet Mounted Displays, photometers, colorimeters, spectrometers, weapons integration
- Image Processing Laboratory: Digital Image Processing

0461

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Sensor & Targeting Technology Facility
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	6700	7400	7900	8400	8900	9300	9920	10240
	TEST HOURS	1437	1547	1470	1480	1450	1445	1501	1696
	MISSIONS	2	3	2	2	3	3	2	303
EC	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
ARMAMENT/WEAPONS	DIRECT LABOR	13580	13640	15940	16980	19780	22080	24360	28460
	TEST HOURS	2021	2110	2136	2136	2772	2922	4511	4421
	MISSIONS	15	15	70	30	70	30	74	34
OTHER T&E	DIRECT LABOR	2100	2100	2100	3150	2100	2100	2625	1575
	TEST HOURS	2275	2275	2275	1750	2275	2275	2100	1750
	MISSIONS	0	0	0	0	0	0	0	0
OTHER	DIRECT LABOR	5620	6940	7000	6600	5800	5780	5780	7080
	TEST HOURS	2666	3332	3360	3160	2760	2730	2790	3380
	MISSIONS	0	0	0	0	0	0	0	0

12

6

37

50%

0762

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Sensor & Targeting Technology Facility

ANNUAL HOURS OF DOWNTIME (1) 200

AVERAGE DOWNTIME PER DAY (LINE 1∏ 365) (2) 0.5

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.5

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
(4)	(5)	(6)	(7)
Radar Sim	1	4	4
Antenna	10	1	10
Antenna Msr	5	2	10
Radome Msr	5	1	5
Calibration	1	13	13
Beam Control	4	2	8
RF System	1	13	13
Signal Sim	1	1	1
FLIR Eval	1	1	1
Signal Eval	1	1.5	1.5
Simulation	11	.6	6.6
Modeling	11	.6	6.6
Track Eval	1	.5	.5
Image Corr	1	1	1
Night Goggles	6	1.5	9
		TOTAL	90.2

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 2,119.7

ANNUAL UNCONSTRAINED CAPACITY (9) 773,690.5

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

04631R

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Sensor & Targeting Technology Facility

ANNUAL HOURS OF DOWNTIME (1) 200

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 0.5

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 23.5

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR
(4)	(5)	(6)	(7)
Radar Sim	1	4	4
Antenna	10	1	10
Antenna Msr	5	2	10
Radome Msr	5	1	5
Calibration	1	13	3
Beam Control	4	2	8
RF System	1	13	3
Signal Sim	1	1	1
FLIR Eval	1	1	1
Signal Eval	1	1.5	1.5
Simulation	11	.6	6.6
Modeling	11	.6	6.6
Track Eval	1	.5	.5
Image Corr	1	1	1
Night Goggles	6	1.5	9
	60	TOTAL	70.2

UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 1,649.7

ANNUAL UNCONSTRAINED CAPACITY (9) 602,140

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0463

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Sensor & Targeting Technology Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	.25	0	.25	.25	.25	.25	.25
Enlisted	0	0	0	0	0	0	0
Civilian	40.5	43.5	42	41.25	39.5	35.75	36
Contractor	4.5	15.5	16.75	17.75	17	17	17
Total	45.25	59	59	59.25	56.75	53	53.25

Total Square Footage 17,900

Test Area Square Footage 9,250

Office Space Square Footage 7,800

Tonnage of Equipment: 23

Volume of Equipment: 15,450 cubic ft.

Annual Maintenance Cost: $80K

Estimated Moving Cost: $315K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
250	0	0	0	0	0	0
836	677	552	475	535	451	437

0464

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Sensor & Targeting Technology Facility

AGE: 4 REPLACEMENT VALUE: Building Cost: $3,760K Total Cost: $13,520K

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 06/01/93

NATURE OF LAST UPGRADE: Additional HP and DEC workstations

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Real Time Processor

   TOTAL PROGRAMMED AMOUNT: $250K

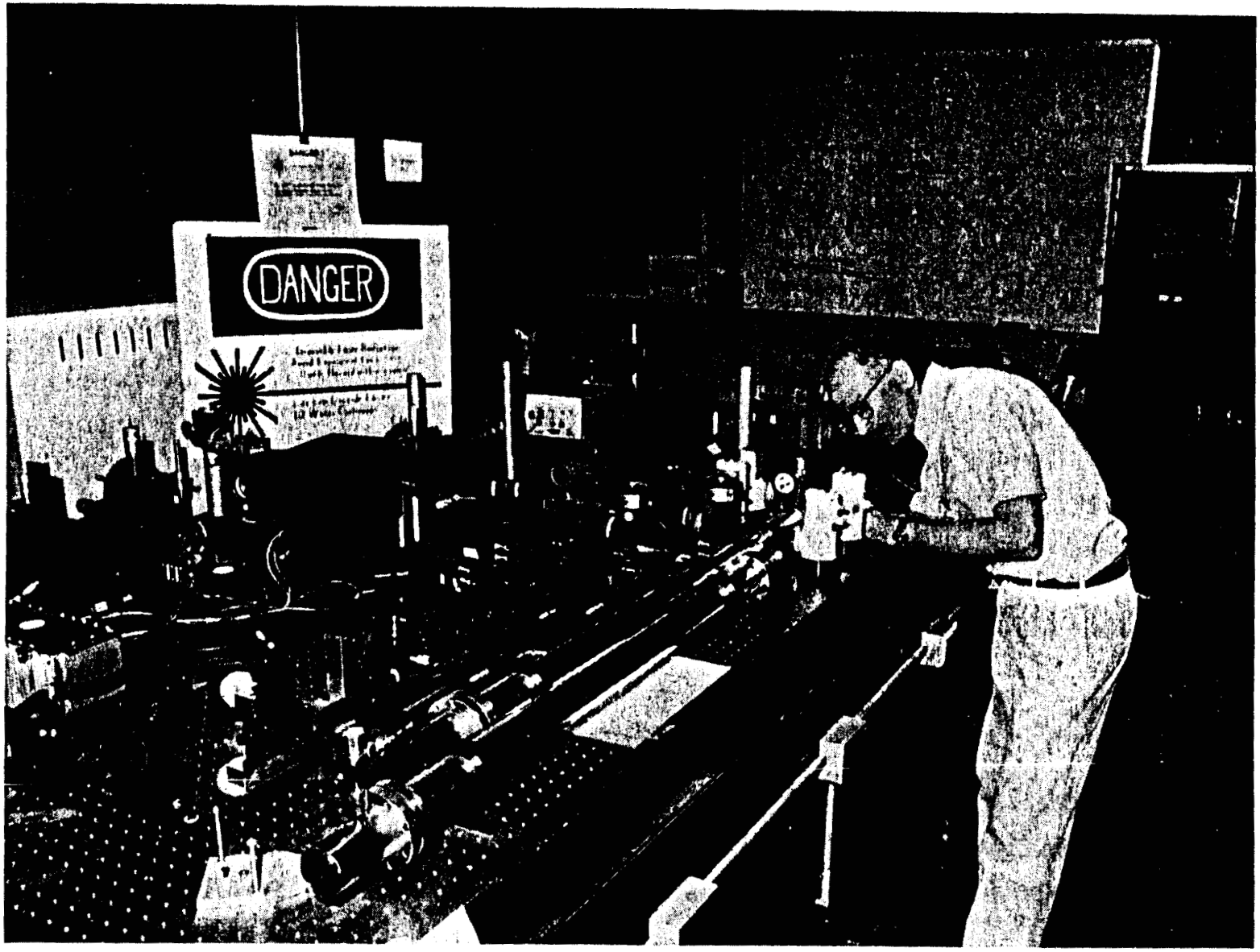
   SUMMARY DESCRIPTION: C40 based processor and associated hardware for real-time simulation

2. UPGRADE TITLE: Video system upgrade

   TOTAL PROGRAMMED AMOUNT: $135K

   SUMMARY DESCRIPTION: Random access optical data storage for up to 500Gb

5240



Sensor & Targeting Technology Facility

0466

Document Separator

Tab 30. Sled Tracks

0467

GENERAL INFORMATION

Facility/Capability Title: Sled Tracks

Origin Date: 04/25/94

Service: Navy - NAWCWPNS Organization/Activity: China Lake Lake CA Location:

T&E Functional Area: Armaments/weapons UIC = 60530

T&E Test Facility Category Measurements Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	100	0	0			0
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	12		0			0
Armament/Weapons	88	88/88 = 100 0	0			0
EC						
Other						

Total in breakout must equal "Percentage Use" on first line.

A 3940

GENERAL INFORMATION

Facility/Capability Title: Sled Tracks

Origin Date: 04/25/94

Service: Navy - NAWCWPNS Organization/Activity: China Lake Lake CA Location:

T&E Functional Area: Armaments/weapons UIC = 60530

T&E Test Facility Category Measurements Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	100	0	0			0
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	8		0			0
Armament/Weapons	92	0	0			0
EC						
Other						

Total in breakout must equal "Percentage Use" on first line.

92

0466

TECHNICAL INFORMATION

Facility/Capability Title: Sled Tracks

Facility Description, Including Mission Statement:

The 4-mile-long dual-rail Supersonic Naval Ordnance Research Track (SNORT) is the second longest DOD sled track. In track testing, payloads and instrumentation are propelled by rocket-powered sleds along a set of straight, heavy-duty crane rails at speeds of up to 4000 feet per second (Mach 3.5). Payloads normally weigh up to 25,000 lbs ; however, depending on mission requirements, heavier payloads are possible. The length of the tracks allows support of relatively long duration runs. A water brake is used to decelerate and recover sleds. A pair of 225-ft-tall steel towers are in place at trackside to suspend items over the track. The muzzle is readily reconfigured as an arena for warhead tests.

Several co-located facilities are operated by the Track Operations workforce and are available for on-demand service. These non-maintained facilities include the G-4 track, an accidental bomb release track, a vehicle barrier facility, a ramp launch facility, and a stationary test facility. The 3000-ft -long dual rail G-4 track is especially significant inasmuch as it has the unique-in-the-nation capability of launching free-flight vehicles over a 500-ft deep dry lake bed.

Major land areas available at all facilities can support detonations and/or free-flight release of weapons. Environmental concerns have not been a significant factor in operations.

Interconnectivity/Multi-Use of T&E Facility:

Physical proximity to the NAWCWPNS Research and Development laboratories that are co-located at China Lake has resulted in an important synergism. Scheduling priorities are readily adjusted on short notice to facilitate local development work in progress.

Type of Test Supported:

Warhead and fuze impact testing; aerodynamic testing; dispense system testing; explosive blast testing (both from stationary platforms and from moving sleds); air launch into free-flight from moving sleds; dynamic testing of crew escape systems; infrared sensor testing; threat scenario testing; fuel-air-explosives testing (FAE).

0469

Sled Tracks

Summary of Technical Capabilities:
IRIG Standard FM/FM and PCM/FM telemetry with real-time data collection and reduction for up to seven simultaneous carriers. Blast overpressure measurement. High frame rate photography, metric photography, and video capability. Full engineering design and fabrication capabilities. Computerized data reduction. Warhead conditioning chamber. Pre-and post-test X-ray capability. Test operation and management support. Simulated rain environments. Heavy equipment. Large solid rocket motor inventory.
Keywords:
Rocket Sleds, Supersonic, Explosive, Impact, Lethality, Dispense, Parachute, Testing, Rain Erosion, Egress, Live Fire.

0420

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Sled Tracks
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	4905	3780	5344	8910	9429	5600	5512	3096
	TEST HOURS	155	124	165	228	217	145	83	93
	MISSIONS	23	12	69	58	39	20	16	60
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	40221	36540	34736	36855	34124	31200	29627	40592
	TEST HOURS	1393	1197	1073	941	786	807	434	1221
	MISSIONS	290	286	241	194	88	114	43	145
OTHER T&E	DIRECT LABOR	2616		668					
	TEST HOURS	83		21					
	MISSIONS	11		2					
OTHER	DIRECT LABOR					449			
	TEST HOURS					10			
	MISSIONS					1			

0471

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Sled Tracks

ANNUAL HOURS OF DOWNTIME (1) 4944.0

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 13.5

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 10.5

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) TRACK TEST	(5) 2	(6) 35	(7) 70	(8) 735

ANNUAL UNCONSTRAINED CAPACITY (9) 268,275

"TYPICAL"

TOTAL 70

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? yes

If yes, explain: 1) Most sled track tests currently need to be run in daylight.
2) Availability of G-4 track is occasionally limited by scheduling conflicts involving other NAWCWPNS Ranges.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Sled Tracks

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	37.4	35	35	35	35	35	35
Contractor	0	0	0	0	0	0	0
Total	37.4	35	35	35	35	35	35

Total Square Footage 49,200 sq-ft (Indoor)

Test Area Square Footage 43,200 sq-ft (Indoor)

Office Space Square Footage 6000 sq-ft

Tonnage of Equipment: 290 tons

Volume of Equipment: 44,280 cu-ft

Annual Maintenance Cost: $750,000

Estimated Moving Cost: $50,000,000

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
127	15	10	7	7	8	8
0	0	0	0	0	0	0

0473 A

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Sled Tracks

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	37.4	35	35	35	35	35	35
Contractor	0	0	0	0	0	0	0
Total	37.4	35	35	35	35	35	35

Total Square Footage 49,200 sq-ft (Indoor)

Test Area Square Footage 43,000 sq-ft (Indoor)

Office Space Square Footage 6000 sq-ft

Tonnage of Equipment: 290 tons

Volume of Equipment: 44,280 cu-ft

Annual Maintenance Cost: $750,000

Estimated Moving Cost: $50,000,000

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
127	15	10	7	7	8	8
0	0	0	0	0	0	0

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Sled Tracks

AGE: Avg. 40.7 yrs/sf

REPLACEMENT VALUE: $64,000,000

MAINTENANCE AND REPAIR BACKLOG: Total backlog is $424K

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE: No recent major upgrades for this capability

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Electrician Shop Replacement

   TOTAL PROGRAMMED AMOUNT: $200K

   SUMMARY DESCRIPTION: Replace 48 year old obsolete facility

2. UPGRADE TITLE: Replace SNORT trackside wiring

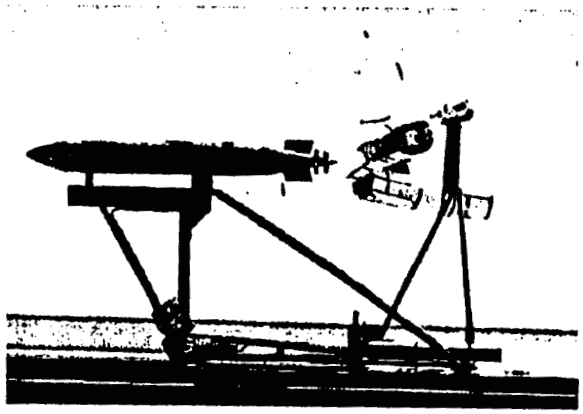
   TOTAL PROGRAMMED AMOUNT: $25K

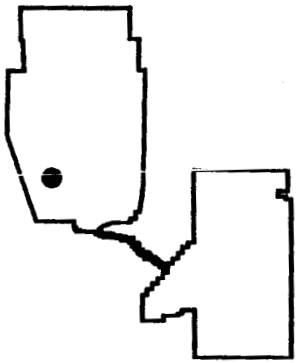
   SUMMARY DESCRIPTION: Cyclical replacement of deteriorated wiring along SNORT track

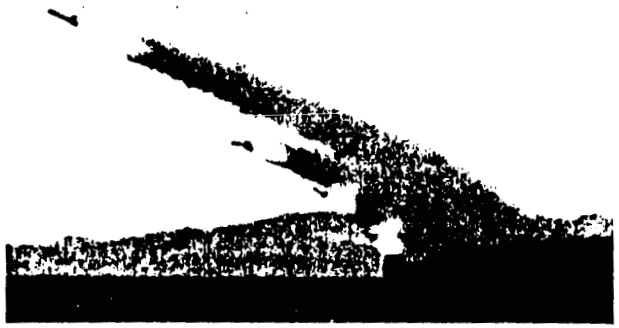
0424

SUPERSONIC NAVAL ORDNANCE RESEARCH TRACK (SNORT)

- 4 MI, DUAL RAIL
- VEHICLES TO 136,000 LBS
- SPEEDS TO 4,500 FT/SEC
- WATER BRAKE
- SIMULATED RAINFIELD





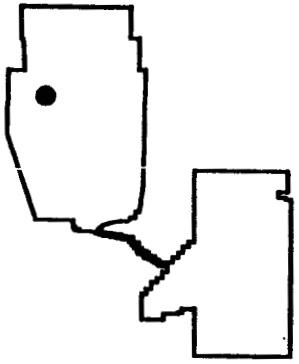


Sled Tracks

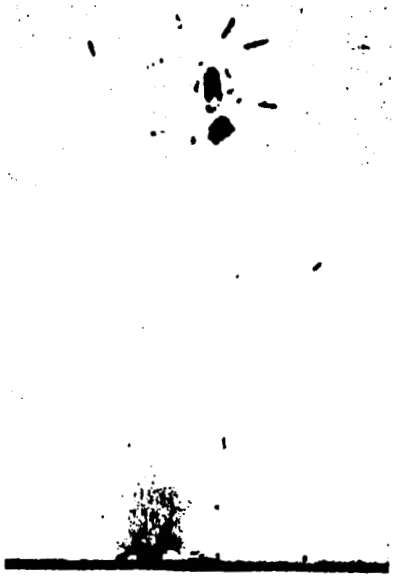
0475

G-4 TRACK

- 3,000 FT, DUAL RAIL
- MUZZLE 500 FT ABOVE AIRPORT LAKE
- VEHICLES TO 10,000 LBS
- SPEEDS TO 4,500 FT/SEC



Sled Tracks



0476

Document Separator

Tab 31. Stragetic Propulsion Test Complex

0477

GENERAL INFORMATION

Facility/Capability Title: Strategic Propulsion Test Complex

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC China Lake Location: C32

T&E Functional Area: Armaments / Munitions UIC = 60530

T&E Test Facility Category Measurement Facility

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

Total in breakout must equal "Percentage Use" on first line.

0478

TECHNICAL INFORMATION

Facility/Capability Title: Strategic Propulsion Test Complex

Facility Description, Including Mission Statement:

This test complex consists of a series of rocket motor test bays with supporting buildings, work pads, flame chutes with quenching capability, each having a unique capability for test of solid rocket motors. Bay I, constructed in 1959, is a horizontal test facility that can test motors up to 1,000,000 lbs of thrust. Bay II, built in 1961, tests rocket motors nozzle down, and with an integral Ormond stand, measures six-component thrusts. Bay IIA is a horizontal multistage pad with temperature conditioning capability. Bay VI is a strategic motor vertical test bay with tiltable firing platform, handling motors up to 1mlb of thrust, and has a movable service building and gantry crane for motor handling. A water deluge system and real-time radiography are capabilities. Bay VII is a horizontal strategic motor test bay, capable of 1.5mlbs of thrust, and provides a movable temperature conditioning building, and uniquely provides the ability to test missile stage electronics and transition ordnance. Ordnance siting ranges to 300,000 lbs, class 1.3

Interconnectivity/Multi-Use of T&E Facility:

Facilities are linked to the Main Control Room for control and data acquisition purposes. Nearby support facilities include LN2, X-Ray, Computer Tomography, temperature controlled storage, transducer calibration laboratory, buildup and prep facilities, and general shop capabilities. Facility can support any classification of programs.

Type of Test Supported:

Rocket motor static firing, performance testing, aging and surveillance, and qualification testing.

Summary of Technical Capabilities:

Data acquisition channels are available in this bay for recording pressure, force, strain, temperature, position, shock, and vibration data. Instrumentation/Control Channels: Analog (60), Digital (524), signal conditioning amps (200), Thermocouples (214), video data lines (48), controls (36), real time displays - analog (20), real time displays - digital (40), film camera controls (8), piezo electric conditioning (36).

Keywords:

Propulsion, Rocket, Static Test, RTR, Horizontal, Vertical, Solid Motors, Tactical, Strategic

0479

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Strategic Propulsion Test Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	11575	12391	11775	12175	11375	12354	11648	10460
	TEST HOURS	554	593	564	583	544	592	558	405
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0450

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Strategic Propulsion Test Complex

ANNUAL HOURS OF DOWNTIME (1) 4975

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 13.6

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 10.4

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) Motor Test	(5) 1	(6) 18	(7) 18	(8) 187.2
				ANNUAL UNCONSTRAINED CAPACITY (9) 68,328

"TYPICAL"

TOTAL 18

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: When test items are in place for test, only ordnance qualified personnel can work within the hazard arc of the test item.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Strategic Propulsion Test Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	22	20	21	19	19	18.5	18
Contractor							
Total	22	20	21	19	19	18.5	18

Total Square Footage 43822

Test Area Square Footage 33236

Office Space Square Footage 1775

Tonnage of Equipment: 8414

Volume of Equipment: 1,439,807

Annual Maintenance Cost: 320K

Estimated Moving Cost: $18,156K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
55	15	0	100	135	265	295
40	60	1500	295	40	0	0

0482

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Strategic Propulsion Test Complex

AGE: 8-33 yr avg REPLACEMENT VALUE: $24311K

MAINTENANCE AND REPAIR BACKLOG: Bay IIA: Flame chute wing walls need repair $20K
Bay II: Flame chute wing walls need repair $35K

DATE OF LAST UPGRADE: 08/15/93

NATURE OF LAST UPGRADE: Bay VI water quench system upgrade (phase 1) completed. Additional water available for quench to protect flame chute of vertical strategic test bay

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Trident D-5 first stage water quench system

TOTAL PROGRAMMED AMOUNT: $1.5M

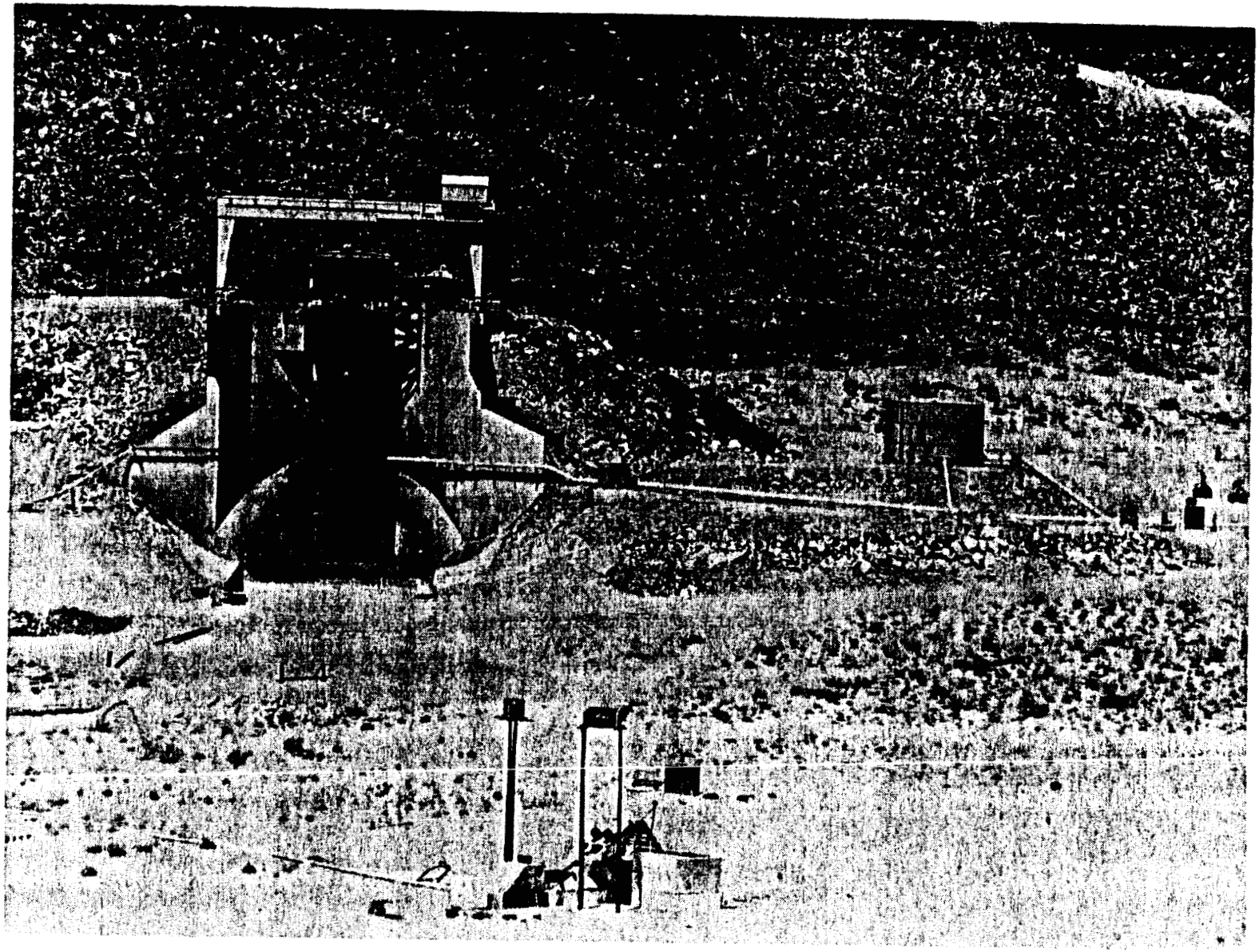
SUMMARY DESCRIPTION: Completion of water quench system at Bay VI to fully protect flame chute hardware and structure during vertical firing tests involving first stage strategic motors.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

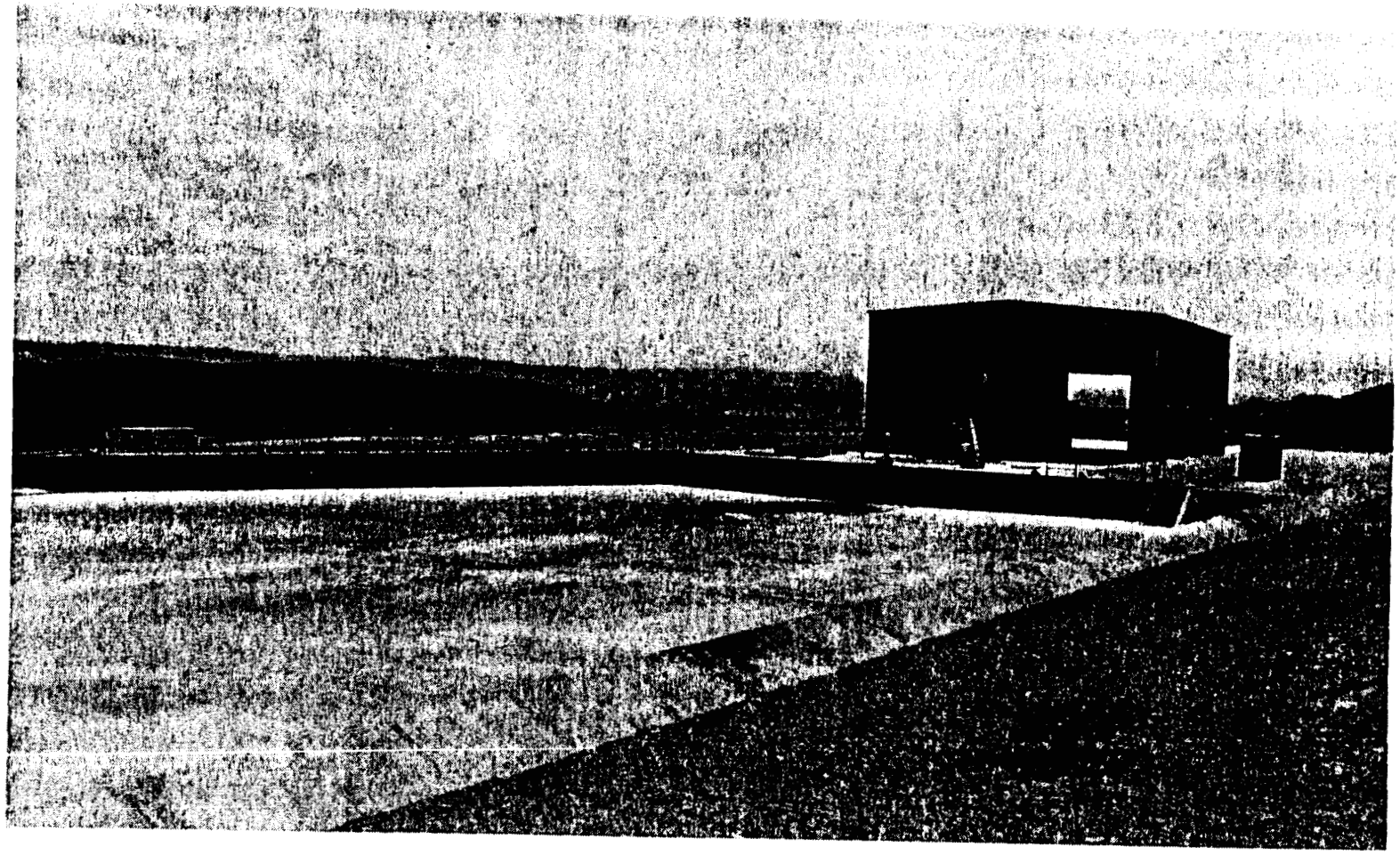
SUMMARY DESCRIPTION:

0463



Strategic Propulsion Test Complex

04494



Strategic Propulsion Test Complex

0465

Document Separator

Tab 32. Tactical Propulsion Test Facility

0436

GENERAL INFORMATION

Facility/Capability Title: Tactical Propulsion Test Facility

Origin Date: 4/25/94

Service: N Organization/Activity: NAWC China Lake Location: C321

T&E Functional Area: Armaments / Munitions UIC = 60530

T&E Test Facility Category Measurement Facility

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

Total in breakout must equal "Percentage Use" on first line.

0487

TECHNICAL INFORMATION

Facility/Capability Title: Tactical Propulsion Test Facility

Facility Description, Including Mission Statement:

Mission of this 8 facility test site is to conduct static firings of rocket motors in support of DOD RDT&E programs. Bay IV provides the capability to static fire tactical-sized rockets up to 80,000 lbs of thrust. It has test pads for firing in both the horizontal and vertical nozzle down attitudes. A wide variety of thrust stands are available, or can be designed and fabricated on site, to handle any DOD tactical-sized motor. Temperature conditioning is provided by portable chambers and conditioning equipment providing a range of -65°F to 185°F. A real-time radiography (RTR) capability is permanently installed in the facility. Bay is currently used for solid rocket motors only. Liquid motors have been fired in the past in Bay IV. The facility is sited for 18,000 lbs of 1.1 or 30,000 lbs of 1.3 materials. The facility is permitted through the Mojave Air Quality Control District for air emissions. No permits are necessary for use of cooling or quench water. The Bay IV control room is scheduled to be upgraded to support the Plume Measurement Facility scheduled for completion in FY97.

Interconnectivity/Multi-Use of T&E Facility:

Facility is linked to Bay IV Control Room (16116) for control and data acquisition purposes. Nearby support facilities include LN2, X-ray, Computer Tomography, temperature controlled storage, transducer calibration laboratory, buildup and prep facilities, and general shop capabilities. Facility can support any classification of programs.

Type of Test Supported:

Rocket motor static firing, performance testing, aging and surveillance, and qualification testing.

Summary of Technical Capabilities:

Instrumentation/Control Channels: Analog (60), Digital (242), signal conditioning amps (60), Thermocouples (50), video data lines (4), controls (16), real time displays - analog (32), real time displays - digital (40), film camera controls (4), piezo electric conditioning (36).

Keywords:

Propulsion, Rocket, Static Test, RTR, Vertical, Horizontal, Solid Motors, Tactical, IR Plume Measurement

0436

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Tactical Propulsion Test Facility
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	23729	25402	24140	24959	23320	25325	23878	21442
	TEST HOURS	1153	1235	1173	1133	1134	1231	1161	831
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0740

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Tactical Propulsion Test Facility

ANNUAL HOURS OF DOWNTIME (1) 4571

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 12.5

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 11.5

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 287.5
Tactical Mtr	1	8	8	
Ignitor	1	3	3	ANNUAL UNCONSTRAINED CAPACITY
				(9) 104,937.5
EVA	1	3	3	
Tactical w/RTR	1	11	11	
"TYPICAL"				
			TOTAL 25	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: Addition of adequate area lighting would allow 24 hour operation.

0490

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Tactical Propulsion 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	10	10	10	10	10	10	10
Contractor	0	0	0	0	0	0	0
Total	10	10	10	10	10	10	10

Total Square Footage 16,337

Test Area Square Footage 6,062

Office Space Square Footage 355

Tonnage of Equipment: 1,674

Volume of Equipment: 107,817

Annual Maintenance Cost: 198K

Estimated Moving Cost: $1,130K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	0	0	50K	50K	150K	0
0	100K	250K	100K	0	0	0

0491

Document Separator

Tab 33. VHF Anechoic Chamber

GENERAL INFORMATION

Facility/Capability Title: VHF Anechoic Chamber

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC China Lake Location: CODE C2821

T&E Functional Area: Armaments / Weapon Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	15%	60%	25%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	11%	44%	18%	11/73 = 15%		
EC	2%	7%	3%			
Other	2%	9%	4%			

Total in breakout must equal "Percentage Use" on first line.

A 7640

GENERAL INFORMATION

Facility/Capability Title: VHF Anechoic Chamber

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC China Lake Location: CODE C2821

T&E Functional Area: Armaments / Weapon Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	15%	60%	25%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	8%	48%	15%			
EC	5%	9%	10%			
Other	2%	3%				

Total in breakout must equal "Percentage Use" on first line.

71

8/71

0496

TECHNICAL INFORMATION

Facility/Capability Title: VHF Anechoic Chamber

Facility Description, Including Mission Statement: The primary purpose of this facility is the Free Space measurement of radio frequency (RF) signals in a signals-free atmosphere. RF Signal can consist of spatial transmissions that are received by a singular antenna or can be a combination of known signals. Thus measurements can be as simple as antenna characteristic measurements up to the complex waveforms required by weapon systems and countermeasures against these systems. It is imperative that whatever signals are being measured can be mathematically described.
Interconnectivity/Multi-Use of T&E Facility:
Type of Test Supported: Antenna measurements, receiver bandwidth tests, RF seeker (ARM) tests, missile EW testing, ARM countermeasure testing, transmitter power testing, directed energy weapon low power testing, antenna development testing.
Summary of Technical Capabilities: Automatic RF signal pattern measurement that is correlated with the pedestal position indication, high temperature superconducting antenna measurements. All-up ARM Missile testing, ARM countermeasure testing
Keywords: Anechoic Chamber, RF Testing, Antenna Measurement, ARM Testing, ARM Countermeasure Testing, Radio

0497

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: VHF Anechoic Chamber

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR	540	425	523	468	244	374	387	297
	TEST HOURS	260	235	212	184	146	214	278	186
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	6475	5680	4430	5763	5478	5684	1264	3433
	TEST HOURS	1360	1274	1187	1208	1456	1325	984	1421
	MISSIONS								
OTHER T&E	DIRECT LABOR	187	460	530	480	547	556	587	486
	TEST HOURS	60	146	212	184	390	282	376	345
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: VHF Anechoic Chamber

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR	5250	5250	3750	3460	3375	4130	1245	3345
	TEST HOURS	5250	5250	3750	3460	3375	4130	1245	3345
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	6475	5680	4430	5763	5478	5684	4460	5790
	TEST HOURS	6475	5680	4430	5763	5478	5684	4460	5790
	MISSIONS								
OTHER T&E	DIRECT LABOR	375	460	530	480	547	556	587	345
	TEST HOURS	375	460	530	480	547	556	587	345
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0428

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: VHF Anechoic Chamber

ANNUAL HOURS OF DOWNTIME (1) 480

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 1.315

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 22.68

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 181.48
Laboratory	1	3	3	
Systems	1	5	5	ANNUAL UNCONSTRAINED CAPACITY
Tests				(9) 66,240
"TYPICAL"			TOTAL 8	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? Yes

If yes, explain: The chamber can only handle one test at a time without interfering. However more than one test may be setup and ready to test.

0499

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: VHF Anechoic Chamber

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	3	3.5	5	5	5	6	6
Contractor							
Total	3	3.5	5	5	5	6	6

Total Square Footage 8500

Test Area Square Footage 100

Office Space Square Footage 0

Tonnage of Equipment: 120 T

Volume of Equipment: 432,000 cu ft

Annual Maintenance Cost: $45K

Estimated Moving Cost: $25M

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
95K	51K	455K	65K	1.25M	95K	85K
25K						

0500

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: VHF Anechoic Chamber

AGE: 27 Years REPLACEMENT VALUE: $22,500K ($19,800K)

MAINTENANCE AND REPAIR BACKLOG: 1993 Pedestal Motors Repaired $10K (Flood Damage)
1994 Cable Runs repaired from the loading room into the chamber area

DATE OF LAST UPGRADE: 6/6/93

NATURE OF LAST UPGRADE: 1992 Anechoic Absorber Material Replaced $1.5M 1993 Automatic Antenna Pattern Measuring Equipment
1992 Ceiling Absorber Panels Replaced $65K put in place $150K
1993 Positioning Amplifier Replaced $65K

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Positioning Equipment Replacement

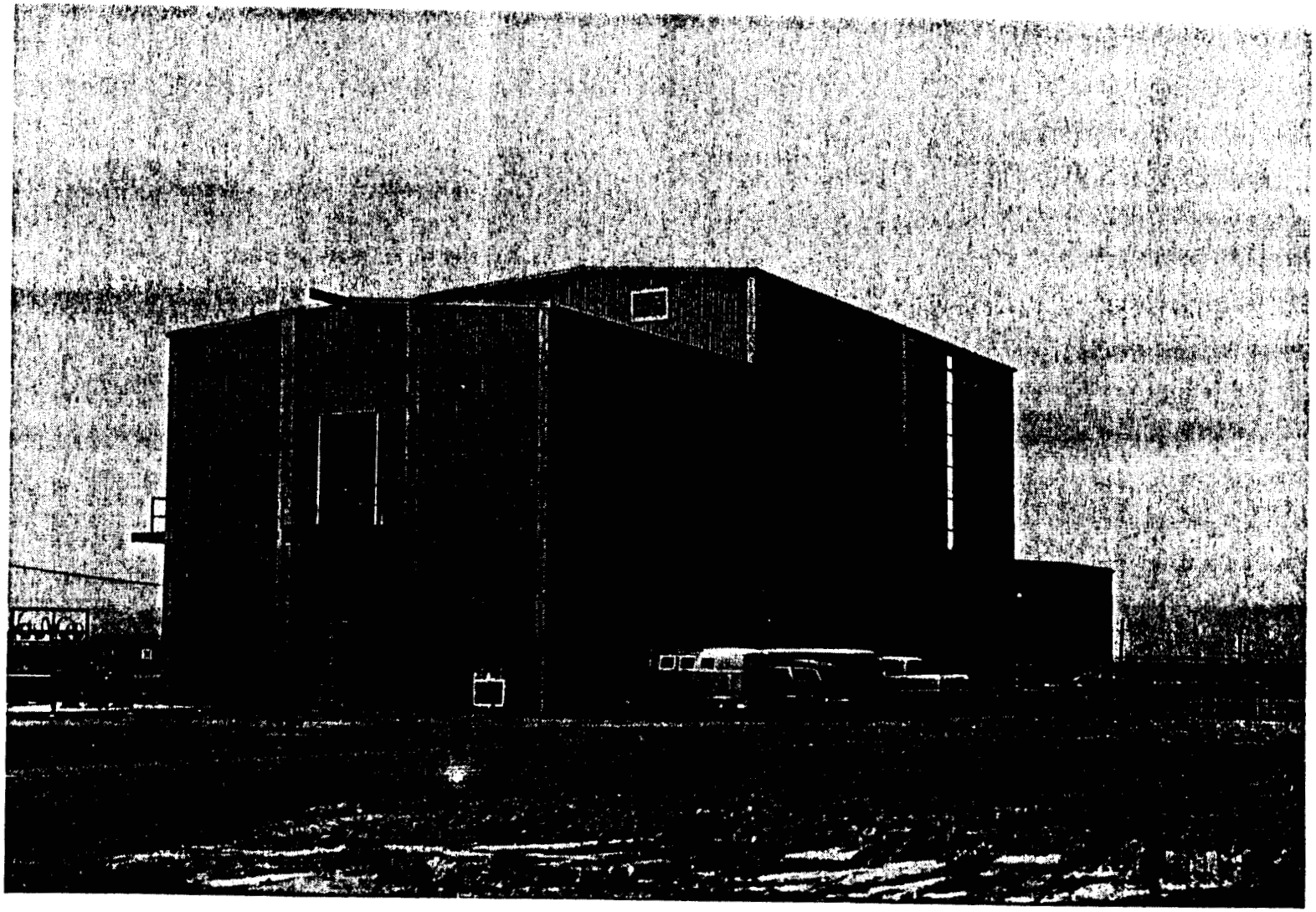
TOTAL PROGRAMMED AMOUNT: $250K

SUMMARY DESCRIPTION: Replace existing pedestal positioning and measurement station (positioning motors, feedback synchros, mechanical hardware rehab, replace all cabling

2. UPGRADE TITLE:

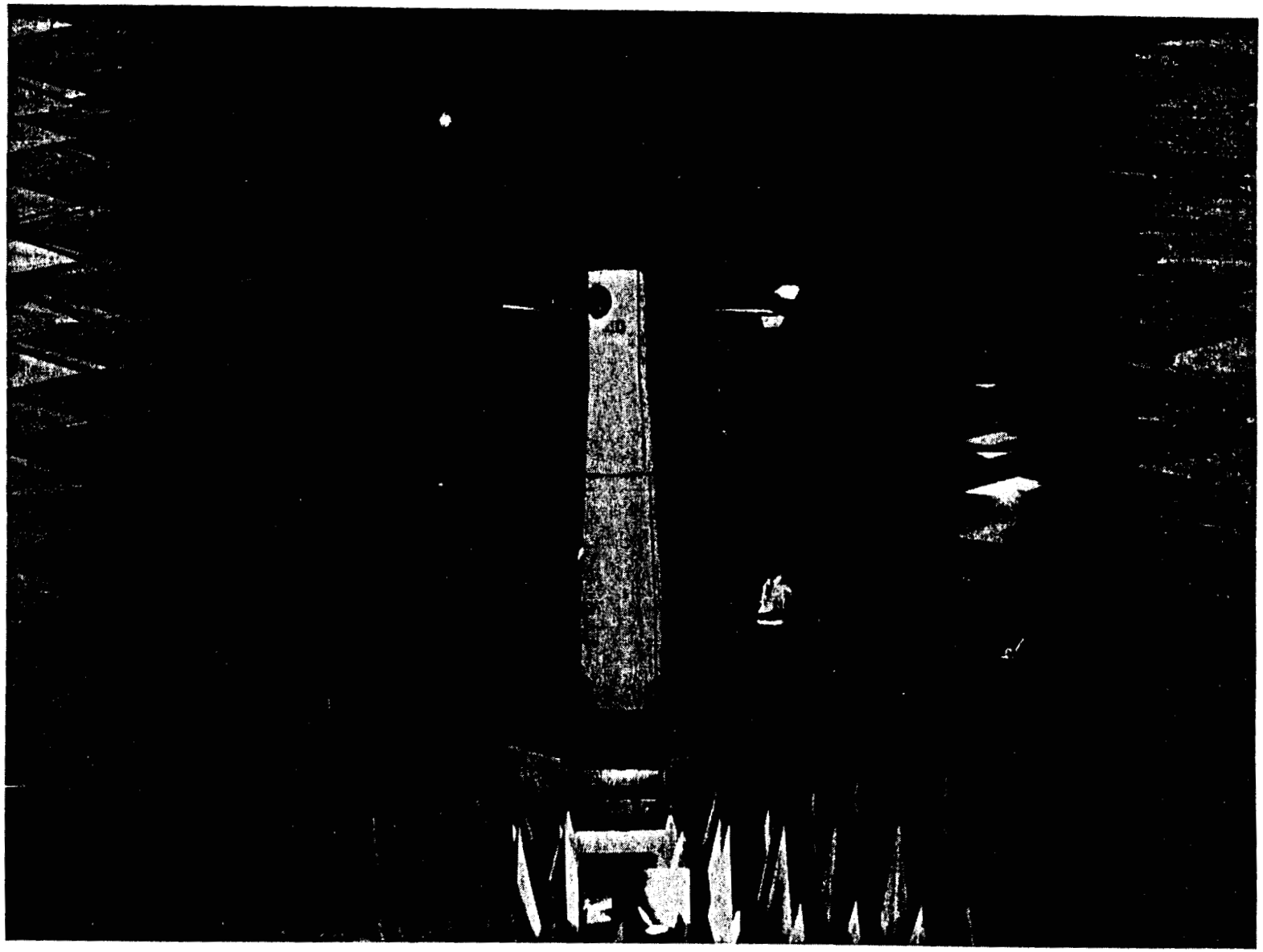
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



VHF Anechoic Chamber

0502



VHF Anechoic Chamber

0503

Document Separator

Tab 34. Weapons Signal Processing Design Complex

0504

GENERAL INFORMATION

Facility/Capability Title: Weapons Signal Processing Design Complex

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC China Lake Location: C2821

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	10%	25%	65%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles		1%	2%			
Armament/Weapons	5%	11%	30%			
EC		1%	2%			
Other	5%	12%	31%			

Total in breakout must equal "Percentage Use" on first line.

GENERAL INFORMATION

Facility/Capability Title: Weapons Signal Processing Design Complex

Origin Date: 04/25/94

Service: N Organization/Activity: NAWC China Lake Location: C2821

T&E Functional Area: Armaments / Weapons Systems UIC = 60530

T&E Test Facility Category Measurement Facility

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	10%	25%	65%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles		5%	5%			
Armament/Weapons	10%	12%	53%			
EC		5%	5%			
Other		3%	2%			

Total in breakout must equal "Percentage Use" on first line.

0505

TECHNICAL INFORMATION

Facility/Capability Title: Weapons Signal Processing Design Complex

Facility Description, Including Mission Statement:

1. The Optical Computing Center—supports the development, testing, and evaluation of automatic target-recognition techniques based on ultra-high speed, real-time optical computing. Sensors that image a target (such as FLIR, Video, Radar and LADAR) can be tested with the optical computing system.
2. Neural Network Workstation—Neural Network/Digital Signal Processing System based on VME bus integrated with image data acquisition hardware. These items are controlled by and the resulting data is evaluated with several standard computer sets, including Sun Sparcstation (an IBM PC-compatible) and a Silicon Graphics work station.
3. ARM Design, Analysis, and Evaluation Facility—Microwave anechoic chambers, high-speed digital development work stations, digital signal signal processing, precision analog test equipment, microwave network analyzers, RF target simulators, concurrent engineering work stations, antenna finite element modeling, and analog and digital circuit modeling work stations. Specialized IF and microwave test equipment and spectrum analyzers.
4. Radiometry Measurement—The Microwave Radiometer Laboratory provides test, evaluation, and development capability for microwave and millimeter-wavelength radiometric sensing for imaging, targeting, and remote sensing. The facility has laboratory space for test and integration of systems, and has access to a variety of ranges and targets for field testing.

Interconnectivity/Multi-Use of T&E Facility:

Equipment is connected to the base Ethernet when nonclassified processing is taking place. This would allow other facilities access, on a properly controlled basis, for a larger coordinated effort if necessary.
Multi-use of anechoic chambers by DOD services and DOD contractors. Design and analysis team supports a variety of projects (ALR-67, HARM Program, TPS-75, HAWK Radar system, Patriot Radar system, and etc.
The facility is located at China Lake and has been involved in simultaneous multiple sensor (passive and active millimeter-wave, microwave, infrared sensors, and electro-optic sensors) tests versus ground targets.

0506

Weapons Signal Processing Design Complex

Type of Test Supported:

Testing of automatic target recognition techniques, utilizing optical computing technologies for a variety of imaging sensors.
Advanced Guidance concepts through production testing of ARM and ARM related technologies (e.g. Shrike, HARM, HARM LCS, Sidearm, and some foreign ARMs) and specialized antenna development tests.
The Microwave Radiometer Laboratory can test sensitivity and angular resolution of millimeter-wave and microwave radiometric sensors in laboratory conditions and field conditions.

Summary of Technical Capabilities:

Design, fabrication and testing of guided missile seekers. Design and analysis of microwave components, high-speed digital circuits, digital signal processing, and high-performance analog circuits. Specialized microwave antenna design and synthesis.
The facility includes a great deal of hardware. It is capable of a great variety of data processing. Part of the facility is a Local Area Network (LAN) which connects a Sun sparcstation, a CNAPS Server, a Silicon Graphics workstation, and image data acquisition and display hardware. Also included are several IBM compatible PCs operating in a stand alone mode used for a variety of functions. When the facility is processing unclassified materials, it is also connected to the Internet which allows for its use, as necessary, from remote locations and by other functions.
The CNAPS Server hardware consists of a controller chip and four CNAPS-1064 chips. Each CNAPS chip contains 64 processors, referred to as processing nodes (PNs), on about 1 sq in. of silicon. The CNAPS hardware is a Single Instruction Multiple Data (SIMD) machine. Each PN has a 32-bit adder, a 24-bit multiplier, a 16-bit logic unit, 4K of memory, 16-bit internal bussing, and several registers. The controller chip is responsible for issuing instructions to the PNs. The server has 16M of memory for local storage of data files, an 8-bit input bus, an 8-bit output bus, a 32-bit command bus, and a 4-bit inter-PN bus. The PNs perform fixed point operations in 1, 8, or 16-bits.
In addition to the hardware, a series of software tools has been designed on site to facilitate the creation of new algorithms and their evaluation. This software is an integral part of the facility's capabilities.
This hardware has allowed the processing of real-world image data, with complex corticomorphic algorithms, in real time at a frame rate of 60 frames per second (on a 128 by 128 8-bit pixel image). It has operated on 128 by 128 patches at speeds as high as 350 frames per second. The speed of the processing is of course algorithm dependent. Non-corticomorphic algorithms such as a 3-D wavelet algorithm (two space and one time dimension) have also been implemented.
The Microwave Radiometer Laboratory has equipment to test receivers and systems, microwave and millimeter-wave sources, and personnel who can modify or develop equipment and systems to fulfill any T&E requirement that arises.

0507

Weapons Signal Processing Design Complex

Keywords:

Automatic Target Recognition, Forward-Looking Infrared (FLIR, Radio Ranging And Detection (Radar), Laser Ranging And Detection (LADAR), Video, Optical Computing, Real Time Computing, Radiometry, Microwave, Millimeter Wave, Anechoic Chamber, Infrared, Digital Signal Processing, Countermeasures, Receivers

ACTIVITY UIC: 60530

AW-094

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Weapons Signal Processing Design Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	1,250	1,100	790	812	425	344	535	424
	TEST HOURS	544	464	388	344	290	288	266	212
	MISSIONS								
EC	DIRECT LABOR	655	943	1680	1530	1160	1234	1276	424
	TEST HOURS	344	323	226	248	434	387	422	266
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	36989	37541	36532	36346	32867	34596	34762	32987
	TEST HOURS	7680	7680	7470	6834	6245	6248	4897	3789
	MISSIONS								
OTHER T&E	DIRECT LABOR	12882	14862	14430	14675	14830	13175	14460	14374
	TEST HOURS	8212	8344	8160	8290	6238	6266	5230	4374
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Weapons Signal Processing Design Complex
300300

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	5,250	5,250	7430	6478	6835	4450	1848	1682
	TEST HOURS	5,250	5,250	7430	6478	6835	4450	1848	1682
	MISSIONS								
EC	DIRECT LABOR	33280	33280	1680	1530	2160	1634	1276	1460
	TEST HOURS	33280	33280	1680	1530	2160	1634	1276	1460
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	176800	176800	174720	168345	162450	162487	148974	137894
	TEST HOURS	176800	176800	174720	168345	162450	162487	148974	137894
	MISSIONS								
OTHER T&E	DIRECT LABOR	4080	4860	4430	4675	4830	3175	4460	4374
	TEST HOURS	4080	4860	4430	4675	4830	3175	4460	4374
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

?

0508

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Weapons Signal Processing Design Complex

ANNUAL HOURS OF DOWNTIME (1) 432

AVERAGE DOWNTIME PER DAY (LINE 1∏ 365) (2) 1.18

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 22.82

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 844.34
Laboratory	4	4	16	
Systems Tests	2	8	16	ANNUAL UNCONSTRAINED CAPACITY (9) 308.184
Field Tests	1	5	5	
"TYPICAL"				
		TOTAL	37	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0510

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Weapons Signal Processing Design Complex

ANNUAL HOURS OF DOWNTIME (1) 432

AVERAGE DOWNTIME PER DAY (LINE 1÷ 365) (2) 1.18

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 22.82

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 387.94
Laboratory Systems Tests	4	4	4	
	2	8	8	ANNUAL UNCONSTRAINED CAPACITY (9) 141,598
Field Tests	1	5	5	
"TYPICAL"				
		TOTAL	17	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

0510

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Weapons Signal Processing Design Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	40	40	35	35	30	30	32
Contractor							
Total	40	40	35	35	30	30	32

Total Square Footage 7166

Test Area Square Footage 5266

Office Space Square Footage 1900

Tonnage of Equipment: 6.5 Ton

Volume of Equipment: 4000 Cu ft

Annual Maintenance Cost: $75 K

Estimated Moving Cost: $1.75M

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$25000	$25000	$125000	$25000	$25000	$25000	$25000

0511

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Weapons Signal Processing Design Complex

AGE: 25 YEARS

REPLACEMENT VALUE: $6,550K ($5,100K)

MAINTENANCE AND REPAIR BACKLOG:

Replaced absorber material in chamber-1992-$450K

Repairs to MM wave sources-$7,500
Software updates- $7,500

DATE OF LAST UPGRADE: 7/5/90

NATURE OF LAST UPGRADE:
Additional work space, new CNAPS software.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

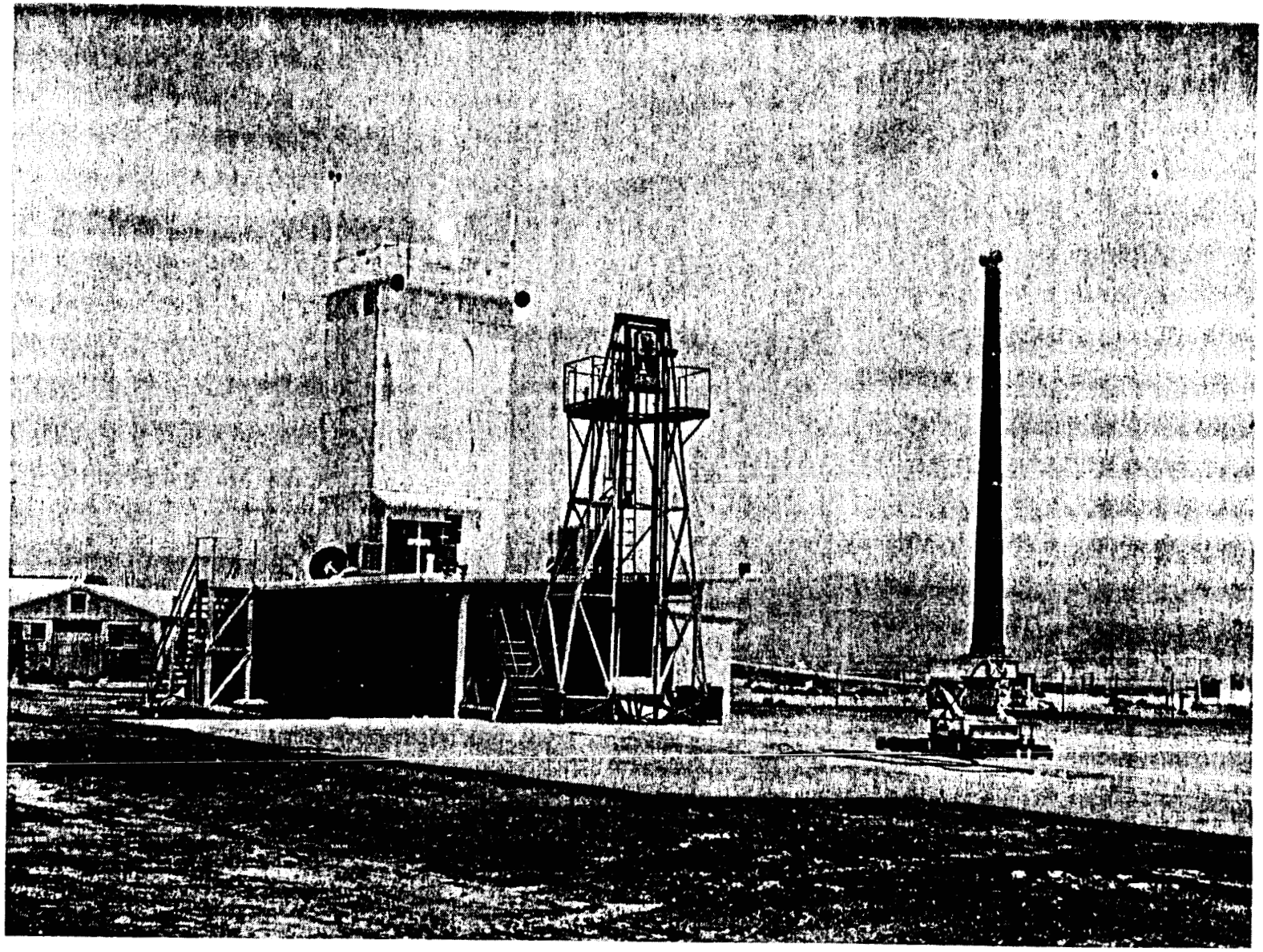
SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

0512



Weapons Signal Processing Design Complex

0513

Document Separator

Tab 35. Weapons Survivability Laboratory (WSL)

0514

GENERAL INFORMATION

Facility/Capability Title: Weapons Survivability Laboratory (WSL)

Origin Date: 4/20/94

Service: Navy Organization/Activity: NAWCWPNS Location: China Lake, California

T&E Functional Area: Armament and Weapons/Air Vehicles UIC = 60530

T&E Test Facility Category Measurement Facilities

	T&E	S&T	D&E	IE	T&D	OTHER
PERCENTAGE USE:	20%	10%	70%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	20%	10%	50%			
Armament/Weapons			20%			
EC						
Other						

Total in breakout must equal "Percentage Use" on first line.

5150

TECHNICAL INFORMATION

Facility/Capability Title: Weapons Survivability Laboratory (WSL)

Facility Description, Including Mission Statement:

The Weapon Survivability Laboratory (WSL) is a complex of test facilities that provide realistic vulnerability and lethality testing of operational aircraft and weapons under simulated dynamic conditions. Used primarily for aircraft vulnerability measurements, aircraft flight are simulated with the High Velocity Airflow System (HIVAS), and ballistic threats from small arms to missile warheads are evaluated against operational test items. The facility also conducts warhead performance. Testing conducted includes fragmentation measurements, lethality measurements, penetration measurements, impact tests, and preliminary stores separation tests. The facility includes office spaces, a machine shop, a full range of instrumentation and recording devices, closed circuit television, high-speed photography, and facilities for storing classified test items.

Interconnectivity/Multi-Use of T&E Facility:

The WSL is a unique, multi-use resource. Full scale aircraft and weapons can be tested in dynamic scenarios. The WSL is a one of a kind facility within DOD due to the size and complexity of tests that can be supported. Test results produced at the WSL are used to update data bases and computer simulations used by all three Services and the aerospace industry. The WSL facilities are routinely used by all three Services to conduct large scale tests. Industry Independent Research and Development programs also utilize the WSL. In addition to weapons lethality and weapon system survivability testing, the WSLs HIVAS facility is used for weapon separation tests and parachute deployment testing.

Type of Test Supported:

Full-scale ballistic (Live Fire Test) developmental and R&D testing of actual threat projectiles and warheads against operational hardware in a simulated flight environment.

Summary of Technical Capabilities:

Test facility that provides realistic vulnerability and lethality testing of operational aircraft and weapons under simulated dynamic conditions. Test Specimen remote control through full operating spectrum. Data Acquisition including up to 200 recordable channels at various bandwidths; 120 instrumentation amps for signal conditioning; pulse code modulation for multiplexing data to tape recorders; wide band instrumentation recorders; data loggers; real time control room data display system and computerized fire control; High speed/documentary motion picture cameras and seven color video systems, IRIG-B time coding. Capability to produce computer generated report quality data plots and data files.

Keywords:

Live Fire Testing, Survivability Testing, Vulnerability Testing, Lethality Testing, Ballistic Testing, Air Flow, Separation, IR Tests

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Weapons Survivability Laboratory (WSL)
300300

T&E FUNCTIONAL AREA		FISCAL YEAR 86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	50,400	50,400	58,800	58,800	64,400	58,800	52,200	46,200
	TEST HOURS	400	400	500	500	600	400	400	440
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	12,600	12,600	14,700	14,700	16,100	14,700	13,100	11,550
	TEST HOURS	100	100	150	150	150	100	100	120
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

0517

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Weapons Survivability Laboratory (WSL)

ANNUAL HOURS OF DOWNTIME (1) 4080

AVERAGE DOWNTIME PER DAY (LINE 1+ 365) (2) 11.2

AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2) (3) 12.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8) 465
Ball. Impact	.8	20	16	
Warhead	.8	20	16	ANNUAL UNCONSTRAINED CAPACITY (9) 169,725
Parachute	.05	10	.5	
Separation	.1	10	1	
IR Studies	.15	12	1.8	
Deploymnt	.1	10	1	
		TOTAL	36.3	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc? NO

If yes, explain:

8150

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Weapons Survivability Laboratory (WSL)

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	10	10	10	10	10	10	10
Contractor	23	23	23	23	23	23	23
Total	33	33	33	33	33	33	33

Total Square Footage 675,000

Test Area Square Footage 8 sq. miles

Office Space Square Footage 9,830

Tonnage of Equipment: 5,500 Tons

Volume of Equipment: 2,600,000 Cubic Feet

Annual Maintenance Cost: $105K

Estimated Moving Cost: $24,000K

CAPITAL EQUIPMENT INVESTMENT ($K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
25K	50K	50K	50K	50K	50K	50K
10K	0	0	0	0	0	0

0519

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Weapons Survivability Laboratory (WSL)

AGE: 20+ Yrs

REPLACEMENT VALUE: $ 70,800K Total, $26,600K Equipment

MAINTENANCE AND REPAIR BACKLOG: Main Pad cracks needs repair - $20K

DATE OF LAST UPGRADE: 4/30/94

NATURE OF LAST UPGRADE: Addition of two oil/water separator systems. Addition of Fire Fighting System (AFFF 6% with water).

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: C-3 Test Pad Construction

   TOTAL PROGRAMMED AMOUNT: $300K

   SUMMARY DESCRIPTION: 100x100 FT concrete pad with retaining wall along east side.

2. UPGRADE TITLE: Fuel Farm Addition

   TOTAL PROGRAMMED AMOUNT: $150K

   SUMMARY DESCRIPTION: Additional pump and new tanks with environmentally sound secondary containment. Blast protection system. Additional plumbing to test pads.

13 September 1994

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Weapons Survivability Laboratory (WSL)

AGE: 20+ Yrs REPLACEMENT VALUE: $ 70,000K Total, $68,000K Equipment

MAINTENANCE AND REPAIR BACKLOG: Main Pad cracks needs repair - $20K

DATE OF LAST UPGRADE: 4/30/94

NATURE OF LAST UPGRADE: Addition of two oil/water separator systems. Addition of Fire Fighting System (AFFF 6% with water).

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: C-3 Test Pad Construction

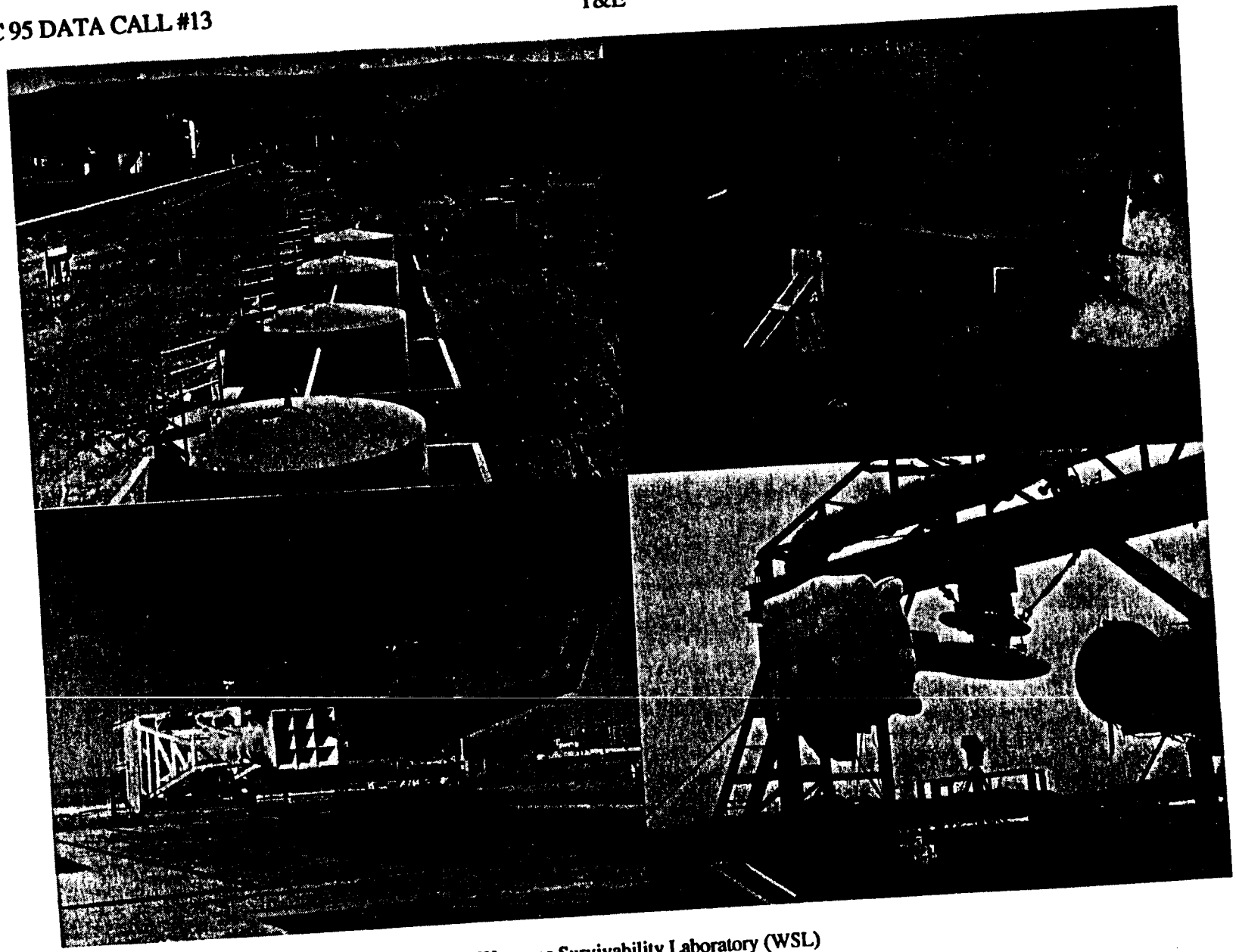
TOTAL PROGRAMMED AMOUNT: $300K

SUMMARY DESCRIPTION: 100x100 FT concrete pad with retaining wall along east side.

2. UPGRADE TITLE: Fuel Farm Addition

TOTAL PROGRAMMED AMOUNT: $150K

SUMMARY DESCRIPTION: Additional pump and new tanks with environmentally sound secondary containment. Blast protection system. Additional plumbing to test pads.



Weapons Survivability Laboratory (WSL)

0521