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U. S. NAVY LABORATORIES

BOOK NUMBER 3 OF 8

H. Naval Air Warfare Center, Paxtuxent River, MD
I. Naval Surface Warfare Center, Louisville, KY

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BRAC 95 DATA CALL #12

ACTIVITY UIC: 00421

"LAB" JOINT CROSS-SERVICE GROUP
DATA CALL #12

NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
PAX RIVER

Complete Data Call Revision

This Data Call is provided as a replacement for all previous submissions of Data Call #12. This submission supersedes all previous submissions and incorporates responses to questions raised by the BSAT on 1 August, 9 August, and 12 August 1994.

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Section I. Introduction

Navy Fixed and Rotary Wing aircraft operating from ships are exposed to a broad spectrum of physical conditions, constraints, and requirements ranging from the harsh at-sea environment and space limitations aboard ship to takeoff and landings on an aircraft carrier deck in every conceivable type of weather condition. These operational requirements translate into unique design requirements such as increased structural strength, size and weight limits, corrosion resistance, ability to perform in both the high speed strike role as well as in low speed shipboard landing regimes, and invulnerability to high intensity electromagnetic fields aboard ships. In addition, the Navy has unique Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASUW) missions. Because of the critical performance requirements associated with operation aboard ship, Navy aircraft and their associated systems must be developed and tested in the sea-level maritime environment.

NAWCAD Patuxent River Complex has the singular combination of required laboratory, ground and flight test facilities for conducting full RDT&E of Maritime aircraft and their associated systems. **Patuxent River posseses the unique facilities required to ensure that maritime aircraft are suitable for aircraft carrier and air-capable ship operations.** These facilities include but are not limited to: the catapult and arrestment facility; electromagnetic environmental effects test facilities including the shielded hangar, Electromagnetic Pulse facility, Hazard of Electromagnetic Radiation to Ordnance (HERO) facility, and the Air Combat Environment Test and Evaluation Facility (ACETEF); installed engine test facility; ASW/ASUW test facility; Ship Ground Station; helicopter/shipboard integration and test facility; and a modern, highly automated radar cross section and Electronic Warfare flight test range. **These facilities, combined with numerous other laboratories, ground and flight test facilities make Patuxent River the only DoD activity with the capability to provide fully integrated maritime aircraft system RDT&E and Fleet Support.**

The DoD Bottom Up Review sustained the need for 12 aircraft carriers and sea-based aviation. New Navy aircraft under development (V-22 and F-18E/F), the DoD acknowledgment of the requirement for a Naval variant of the Joint Advanced Strike Technology aircraft, and the continual upgrades and service life extensions for existing aircraft will continue to place demands on the Navy Research, Development, Test and Evaluation (RDT&E) infrastructure.

To better respond to both the continuing demand to develop and test highly capable aircraft at affordable costs and to downsize the defense infrastructure, the Navy has consolidated RDT&E and in-service support functions around the Patuxent River Hub. The relocation of the Naval Air Systems Command, the former Naval Air Development Center (Warminster), and the former Naval Air Propulsion Center (Trenton) to Patuxent River consolidates the majority of its aircraft acquisition, development and test team. The resultant integration of these activities is providing a more efficient workforce and, more importantly, it is allowing its RDT&E facilities to be used by a far broader spectrum of Navy RDT&E engineers and aircraft development contractors.

Enclosure (1)

The information contained in this data call focuses on the R&D capabilities and facilities at Patuxent River. The ongoing relocation of the Warminster and Trenton RDT&E functions and facilities to Patuxent River adds a far broader spectrum of capability to the continuum of RDT&E functions to be performed at the site. The result will be the combining of several current facilities that have similar functionality and the obviating of the need for investment in certain new facilities were the activities were to remain separated. This data call focuses only on the R&D capability of the various activities wherein another data call focuses on the T&E facilities. Assessment of capabilities in these focused areas can lead to sub optimal recommendations and decisions. Therefore, information on the T&E facilities is also included as an appendix in this data call so that a better picture of the complete spectrum of capability can be seen.

NAWCAD PATUXENT RIVER

DATA CALL TWELVE

COMPLETE RESUBMIT 8-15-94
SUPERCEDES ALL PREVIOUS SUBMITS FOR DC 12

"LAB" JOINT CROSS-SERVICE GROUP GUIDANCE PACKAGE

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SECTION I: TASKING

In accordance with the Deputy Secretary of Defense memorandum dated 7 Jan 94, the Laboratory Joint Cross-Service Group (LJCSG) with DOD components should, where operationally and cost effective, strive to: retain in only one Service militarily unique capabilities used by two or more Services; consolidate workload across the Service to reduce capacity; and assign operational units from more than one Service to a single base. Specifically, the purpose of the LJCSG is:

- Determine common support functions and bases to be addressed by LJCSG
- Establish guidelines, standards, assumptions, measures of merit, data elements and milestone schedules for DOD Component conduct of cross-service analysis of common support functions
- Review excess capacity analysis
- Develop closure or realignment alternatives
- Analyze cross-service trade-offs

The following information identifies to the Services common support functions and data element requirements necessary to support the cross-service analysis of these common support functions.

1.1 Guidelines

Because the DOD components are organized differently, "Lab" activities are considered to be those involved in the following life cycle efforts: Science and technology, and/or engineering development, and/or in-service engineering.

Service missions and force structure will be as stipulated in the FY1995-2000 Defense Planning Guidance and Interim Force Structure Plan.

The Military Departments will use the projected funding in the FY95 President's Budget Submission (Future Years Defense Plan -- FYDP) and an estimate of funds that will be received from outside the military department for execution.

If "lab" excess capacity exists, the Military Departments will start to reduce it where operationally and cost effective through a combination of downsizing in place within the departments, internal service consolidation, and cross service alternatives.

The Military Departments will gather, exchange, and analyze data collected per this guidance call for Common Support Functions (Appendix C) at "lab" activities (Appendix B) in accordance with the milestones and schedule dates identified in Appendix A.

Cross-service alternatives will result in an aggregate reduction in the overall "lab" infrastructure across the Military Departments -- personnel/funding/facilities and equipment.

Common cross-service Measures of Merit will be consistently applied for all cross-service alternatives.

Integration of weapon systems/components into operational forces will remain with the individual Military Departments responsible for those forces.

1.2 Standards

Evaluation of cross-service alternatives will be consistent with PL 101-510 (as amended) and the eight BRAC criteria. Only certified data will be used.

The COBRA cost model will be used to calculate estimated costs, estimated savings, and Return on Investment (ROI) of alternatives leading to proposed closures and realignments. Common inputs will be used for Military COBRA runs incorporating cross-service alternatives.

Military value analysis will be conducted by the Military Departments IAW Title 10, USC responsibilities.

1.3 Assumptions

"Lab" Common Support Functions and activities identified herein represent the major opportunities for developing cross-service alternatives. The Military Departments are not precluded from proposing other cross-service alternatives to reduce excess capacity as they assess the full complement of "lab" functions.

Previous BRAC decisions will be factored into cross-service alternatives.

"Lab" capacity will be based on budgeted workyears. A workyear is considered to be 2080 hours adjusted for time not on the job (e.g. sick leave, annual leave, etc.)

1.4 Measures of Merit

The following Measures of Merit represent the outcome from the DOD component final realignment and closure recommendations that are supported by the capabilities data which will be gathered by activity and common support function in Section III of this guidance.

- Reduction of "lab" infrastructure
- Return on investment (COBRA)
- Military value (BRAC criteria 1-4) -- the composite assessment of the quality of the remaining "lab" infrastructure

1.5 Activities

The Military Departments will collect capacity data for each "lab" activity identified in Appendix B. The "lab" activities were selected by considering all individual aggregates of personnel and facilities located at one base, under the same commander, performing predominantly science and technology (S&T), engineering development, and/or in-service engineering work. Small subelements of these "lab" activities were included with the activity. Larger subelements were broken out and defined as separate activities. The list of activities was then narrowed down to the list in Appendix B based on a joint Military Department assessment of common support functions with cross-service potential.

1.6 Common Support Functions

The common support functions (CSFs) were selected as shown in Appendix C based on a joint Military Department assessment of commonalty and cross-servicing potential. Common support functions which were already consolidated and being cross serviced were not included.

Common Support Functions are divided into two categories: product and pervasive. Product functions include all S&T, engineering development, and in-service engineering efforts associated with a product from all funding sources. Pervasive functions only include those efforts that are S&T funded, i.e. Technology Base (6.1)/Exploratory Development (6.2)/Advanced Development (6.3).

SECTION II: CAPACITY OF DOD COMPONENTS

2.1 **Workload.** Use the following table to describe historic and projected workload at each activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Projected funding will be derived from FY95 President's Budget Submission (Then year dollars). Past fiscal year data shall begin with FY86 or at the inception of the activity as it existed on 1 Oct 93. (BRAC Criteria I & IV).

This Chart reflects NAWCAD Patuxent River after BRAC 91/93 Realignments

Information Required	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Prog ($M)	274.8	287.1	293.7	329.8	344.0	447.5	420.2	430.8	793.1	762.4	1004.8	981.5
Total Actual Funds ($M)	265.5	280.5	320.7	353.8	409.1	426.9	440.0	522.5				
Prog WYs	3892	3863	3994	4039	4207	4242	4308	3861	4804	4618	6183	5873
Actual WYs	3922	3887	4015	4078	4251	4283	4338	4372				

- Budgeted workyears are the selected indicator of the "lab" infrastructure's capacity at an aggregate level for each Military Department. They include both workyears funded directly by the Military Department and the workyears funded from organizations outside the Military Department.

Workyears = government personnel and on-site FFRDCs and SETAs

2.2 Excess "Lab" Capacity -- Measured at the DOD Component Level

- Excess "Lab" Capacity = Sum of the Peak Workyears - Sum of the Projected Workyears
  -- Peak at each activity = Highest value between FY86 (or since inception of organization) and FY93
  -- Projected at each activity = Estimated at FY97

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

The information contained in this section focuses on the R&D capabilities and facilities at Patuxent River in the 1996 timeframe. The ongoing relocation of the Warminster and Trenton RDT&E functions and facilities to Patuxent River adds a far broader spectrum of capability to the continuum of RDT&E functions to be performed at the site. The result will be the combining of several current facilities that have similar functionality and the obviating of the need for investment in certain new facilities were the activities were to remain separated. This data call focuses only on the R&D capability of the various activities wherein another data call focuses on the T&E facilities. Assessment of capabilities in these focused areas can lead to sub optimal recommendations and decisions. Therefore, information on the T&E facilities is also included as an appendix in this data call so that a better picture of the complete spectrum of capability can be seen.

Under BRAC-91, the Naval Air Warfare Center Aircraft Division, Warminster is being realigned to become part of the Naval Air Warfare Center at Patuxent River, MD and is scheduled to be relocated in the 1995/96 timeframe. This submission addresses the personnel, missions and facilities anticipated to be relocated under that realignment.

Current Missions

- **Air Undersea Warfare Systems and Sensors**
- **Aircraft-installed Reconnaissance and Surveillance Systems**
- **Air Vehicle Systems, materials and Processes**
- **Tactical Aircraft Systems (Pre-deployment) and Sensors**
- **Aircrew Systems and Human Factors**
- **Management and execution of the majority of the Naval Aviation Technology Base programs.**

As a result of BRAC-91 and BRAC-93 the following NAWCAD Trenton functions will become part of the Patuxent River Complex: Small engine air-breathing propulsion systems, power drive systems, fuels and lubricants. This capability will serve the Naval Air Systems Command and other U.S. and international customers.

Particular mission tasks include:

- **Test and evaluate all small aviation engines (turboprop, trainer, turboshaft, UAV, and cruise missile) at operational speeds and altitudes.**
- **Test and evaluation small engines under unusual operating conditions such as gyroscopic loads and variable attitudes;**
- **Test and evaluate helicopter gearboxes, transmissions and drive trains under simulated operational loads;**
- **Test and evaluate critical turbine engine rotating parts for strength and life under simulated operating loads and fatigue cycles;**
- **Test and evaluate aircraft engine accessories, such as starters and auxillary power units under simulated operating conditions;**
- **Test and evaluate aircraft fuels and lubricants.**

The following functions are scheduled to remain at Webster Field and transfer to NAWCAD, Patuxent River as a result of BRAC 93.

- **MATCALS testing which is uniquely sited with the instrumented landing systems testing facility at NAWCAD Patuxent River.**

- **Specialized communications support for Joint Command Systems Element mobile platforms.**

- **Wide Area Network design and development for the Special Operations Community (Navy, Air Force, Joint).**

- **Communications design and integration of vans for Special Operations Forces (Army, Navy, Air Force).**

- **Communications design and integration of vans for White House Communications Agency.**

- **Communications engineering and technical support for the Lighweight Deployable Communications (LDC) Program for USASOC.**

- **Communications design and integration of unique surface platforms for Special Forces (Special Boats, etc., Riverine Assult Craft, High Speed Boats).**

- **Develop, test, evaluate and provide software support for the Fleet Area Control and Surveillance Facility (FACSFAC).**

ADVANCED MATERIAL

Unique NAWCAD Warminster mission capabilities that will be expanded at Patuxent River in the 1996 timeframe due to BRAC 91 to include:

- o AIR VEHICLES
  - **Conduct research, development and acquisition support for Air Vehicles materials, structures, and processes**
  - **Prototype and evaluate advanced high risk aircraft subsystems**
    - **Electrical**
    - **Hydraulic**
    - **Flight Control**
    - **Aerial Refueling Stores**
  - **Research and Develop, prototype and limited production of aircraft materials**
    - **Aircraft Paints**
    - **avionics coolants**
    - **lubricants**
    - **cleaners**
    - **composite repair processes**
    - **protective coatings**
    - **signature reduction systems**

- o TECHNOLOGY BASE
  - **Perform the majority of the in-house Naval Aviation technology base work**
    - **Air Vehicles (manned and unmanned)**
    - **Airborne Materials (structural and non-structural)**

Unique NAWCAD Trenton mission capabilities that will be expanded at Patuxent River in the 1996 timeframe due to BRAC 91 to include:

- **Test and evaluate critical turbine engine rotating parts for strength and life under simulated operating loads and fatigue cycles;**

AIR VEHICLES, FIXED, AVIONICS

Unique NAWCAD Warminster mission capabilities that will be expanded at Patuxent River in the 1996 timeframe due to BRAC 91 to include:

- AIRBORNE UNDERSEA WARFARE
  - Navy's Lead for Development and Major Update of Air ASW Systems and Sensors
  - Conducts Research & Development for new air ASW Sensor/system Integration - Unique collocation of Sensor Development/Software/ Aircraft Integration expertise
  - Conducts Software Support Activity for all Air ASW System Platforms with unique high fidelity Laboratory assets
  - Conduct governmental engineering and acquisition activities for major ASW System and Sensor Developments
    - P-3, S-3, H-60
    - ASW Mission Planning Systems
    - Sonobuoys
  - Develop Acoustic ASW System Software
  - Develop acoustic algorithms & processing software
  - Develop sensor simulation software for Platform tests

- SENSORS AND MISSION AVIONICS
  - Develop Undersea technology concepts and systems compatible with unique airborne ASW mission requirements
  - Conduct all Navy airborne ASW Acoustic Sensor and Signal Processor R&D and Developmental T&E
  - Develop Navy unique RF Sensor performance specifications
  - Develop RF technology to address AAW, AEW, ASW, non-cooperative target identification
  - Develop Radar, antennas, radomes and signature control
  - Conduct airborne environmental & performance measurements

- RECONNAISSANCE AND SURVEILLANCE
  - Perform R&D, Developmental T&E, Acquisition and Fleet Support for all all Navy Airborne Reconnaissance and Surveillance Systems
  - Conduct in-house Development of Navy airborne concepts and systems
    - Infrared Search and Track (IRST)
    - Airborne Reconnaissance systems
    - F-14 Tactical Airborne RECCE POD Systems
    - F-18 Conformal Pallet
    - Expendable Unmanned Aerial Vehicle Real-time RECCE
    - Tactical Optical Surveillance System (TOSS & NATO TOSS)
  - Provide expertise and In-house engineering for Definition, specification and evaluation of:
    - IRST, Advanced Reconnaissance sensors and Optics
    - RECCE and Surveillance Systems enhancement and Upgrades

- On-call Support and Fleet Training
- Operate Navy Unique Large Aperture collinator

o TACTICAL AIRCRAFT SYSTEMS
- Formulate new system concepts/designs
- Prepare system specifications
- Conduct engineering & acquisition activities for major development (e.g. F/A-18E/F, A-X)
- Develop and Updates TACAIR support systems
  - mission planning systems
  - tactical simulations for development & training
  - imagery and identification systems
  - electronic warfare decoys/expendables
- Conduct system engineering (Tri-service) for all Unmanned Aerial Vehicle's (UAV's)
- Assure transfer of new technology into in-service platforms, e.g.:
  - F-14 Infrared Search & Track
  - F-14 Heads Up Display
  - F-14 and F-18 Reconnaissance systems
  - High speed fiber optic busses

o TECHNOLOGY BASE
- Perform the majority of the in-house Naval Aviation technology base work
  - Air Vehicles (manned and unmanned)
  - Airborne Electronic Warfare (expendables)
  - Airborne Surveillance (micro-wave and electro-optics)
  - Air USW Surveillance (acoustics, non-acoustics & signal processing)

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

Unique NAWCAD Warminster mission capabilities that will be expanded at Patuxent River in the 1996 timeframe due to BRAC 91 to include:

° AIRBORNE UNDERSEA WARFARE
- Navy's Lead for Development and Major Update of Air ASW Systems and Sensors
- Conducts Research & Development for new air ASW Sensor/system Integration - Unique collocation of Sensor Development/Software/ Aircraft Integration expertise
- Conducts Software Support Activity for all Air ASW System Platforms with unique high fidelity Laboratory assets
- Conduct governmental engineering and acquisition activities for major ASW System and Sensor Developments
  - P-3, S-3, H-60
  - ASW Mission Planning Systems
  - Sonobuoys

- Develop Acoustic ASW System Software
- Develop acoustic algorithms & processing software
- Develop sensor simulation software for Platform tests

° SENSORS AND MISSION AVIONICS
- Develop Undersea technology concepts and systems compatible with unique airborne ASW mission requirements
- Conduct all Navy airborne ASW Acoustic Sensor and Signal Processor R&D and Developmental T&E
- Develop Navy unique RF Sensor performance specifications
- Develop RF technology to address AAW, AEW, ASW, non-cooperative target identification
- Develop Radar, antennas, radomes and signature control
- Conduct airborne environmental & performance measurements

o AIR VEHICLES
- Conduct research, development and acquisition support for Air Vehicles materials, structures, and processes
- Prototype and evaluate advanced high risk aircraft subsystems
  - Electrical
  - Hydraulic
  - Flight Control
  - Aerial Refueling Stores
- Research and Develop, prototype and limited production of aircraft materials
  - Aircraft Paints
  - avionics coolants
  - lubricants
  - cleaners
  - composite repair processes
  - protective coatings
  - signature reduction systems
- Track and analyze the fatigue life of all Navy tactical aircraft in fleet to insure flight safety
- Develop Navy and Threat aircraft mission performance estimates for use in NATOPS Manuals and intelligence estimates

- Analyze, model, compute and prepare Navy aircraft Flight Dynamics
  - Prepare flying quality specifications
  - Prepare Design Handbooks
  - Provide Crew-carried performance charts
  - Develop aircraft mission planning data

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- o TACTICAL AIRCRAFT SYSTEMS
  - Formulate new system concepts/designs
  - Prepare system specifications
  - Conduct engineering & acquisition activities for major development (e.g. F/A-18E/F, A-X)
  - Develop and Updates TACAIR support systems
    - mission planning systems
    - tactical simulations for development & training
    - imagery and identification systems
    - electronic warfare decoys/expendables
  - Conduct system engineering (Tri-service) for all Unmanned Aerial Vehicle's (UAV's)
  - Assure transfer of new technology into in-service platforms, e.g.:
    - F-14 Infrared Search & Track
    - F-14 Heads Up Display
    - F-14 and F-18 Reconnaissance systems
    - High speed fiber optic busses

- o TECHNOLOGY BASE
  - Perform the majority of the in-house Naval Aviation technology base work
    - Air Vehicles (manned and unmanned)
    - Airborne Materials (structural and non-structural)
    - Airborne Electronic Warfare (expendables)
    - Aircrew Systems and human factors
    - Airborne Surveillance (micro-wave and electro-optics)
    - Air USW Surveillance (acoustics, non-acoustics & signal processing)
    - Propulsion

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Unique NAWCAD Trenton mission capabilities that will be expanded at Patuxent River in the 1996 timeframe due to BRAC 91 to include:

- **Test and evaluate all small aviation engines (turboprop, trainer, turboshaft, UAV, and cruise missile) at operational speeds and altitudes.**
- **Test and evaluation small engines under unusual operating conditions such as gyroscopic loads and variable attitudes;**
- **Test and evaluate critical turbine engine rotating parts for strength and life under simulated operating loads and fatigue cycles;**
- **Test and evaluate aircraft engine accessories, such as starters and auxillary power units under simulated operating conditions;**
- **Test and evaluate aircraft fuels and lubricants.**

AIR VEHICLES, FIXED STRUCTURES

Unique NAWCAD Warminster mission capabilities that will be expanded at Patuxent River in the 1996 timeframe due to BRAC 91 to include:

- o AIR VEHICLES
  - **Conduct research, development and acquisition support for Air Vehicles materials, structures, and processes**
  - **Prototype and evaluate advanced high risk aircraft subsystems**
    - **Electrical**
    - **Hydraulic**
    - **Flight Control**
    - **Aerial Refueling Stores**
  - **Research and Develop, prototype and limited production of aircraft materials**
    - **Aircraft Paints**
    - **avionics coolants**
    - **lubricants**
    - **cleaners**
    - **composite repair processes**
    - **protective coatings**
    - **signature reduction systems**
  - **Track and analyze the fatigue life of all Navy tactical aircraft in fleet to insure flight safety**

- Develop Navy and Threat aircraft mission performance estimates for use in NATOPS Manuals and intelligence estimates
- Analyze, model, compute and prepare Navy aircraft Flight Dynamics
  - Prepare flying quality specifications
  - Prepare Design Handbooks
  - Provide Crew-carried performance charts
  - Develop aircraft mission planning data

o TACTICAL AIRCRAFT SYSTEMS
- Formulate new system concepts/designs
- Prepare system specifications
- Conduct engineering & acquisition activities for major development (e.g. F/A-18E/F, A-X)
- Conduct system engineering (Tri-service) for all Unmanned Aerial Vehicle's (UAV's)

o TECHNOLOGY BASE
- Perform the majority of the in-house Naval Aviation technology base work
  - Air Vehicles (manned and unmanned)
  - Airborne Materials (structural and non-structural)

AIR VEHICLES, ROTARY, AVIONICS

Unique NAWCAD Warminster mission capabilities that will be expanded at Patuxent River in the 1996 timeframe due to BRAC 91 to include:

° AIRBORNE UNDERSEA WARFARE
- Navy's Lead for Development and Major Update of Air ASW Systems and Sensors
- Conducts Research & Development for new air ASW Sensor/system Integration - Unique collocation of Sensor Development/Software/ Aircraft Integration expertise
- Conducts Software Support Activity for all Air ASW System Platforms with unique high fidelity Laboratory assets
- Conduct governmental engineering and acquisition activities for major ASW System and Sensor Developments
  - P-3, S-3, H-60
  - ASW Mission Planning Systems
  - Sonobuoys
- Develop Acoustic ASW System Software
- Develop acoustic algorithms & processing software
- Develop sensor simulation software for Platform tests

° SENSORS AND MISSION AVIONICS
- Develop Undersea technology concepts and systems compatible with unique airborne ASW mission requirements
- Conduct all Navy airborne ASW Acoustic Sensor and Signal Processor

R&D and Developmental T&E
- Develop Navy unique RF Sensor performance specifications
- Develop RF technology to address AAW, AEW, ASW, non-cooperative target identification
- Develop Radar, antennas, radomes and signature control
- Conduct airborne environmental & performance measurement

° RECONNAISSANCE AND SURVEILLANCE
- Perform R&D, Developmental T&E, Acquisition and Fleet Support for all all Navy Airborne Reconnaissance and Surveillance Systems
- Conduct in-house Development of Navy airborne concepts and systems
- Provide expertise and In-house engineering for Definition, specification and evaluation of:
  - IRST, Advanced Reconnaissance sensors and Optics
  - RECCE and Surveillance Systems enhancement and Upgrades
  - On-call Support and Fleet Training
  - Operate Navy Unique Large Aperture collinator

o AIRCREW SYSTEMS
- Design, Develop, Acquire and Support all Naval Aircrew, Life Support, Escape and Survival systems
  - Environmental protective clothing
  - Anti-exposure Gear
  - G-Suits
  - Helmet Oxygen systems
  - Laser Eye Protection
  - Night Vision Devices
  - All Life protection/Survival Equipment (except man-rated parachutes)
  - Life Vests
  - Rafts
  - Survival gear, etc.
  - Operate the World's largest, most sophisticated human centrifuge as a Dynamic Flight Simulator (Unique in Free World)
  - Fully equipped, outside world view Pilots cockpit
  - Continuous motion control
  - Rapidly Changing G-field simulation
  - Operate Only man-rated ejection system evaluation Tower that is used by USN and USAF

o TECHNOLOGY BASE
- Perform the majority of the in-house Naval Aviation technology base work
  - Air Vehicles (manned and unmanned)
  - Airborne Materials (structural and non-structural)
  - Airborne Electronic Warfare (expendables)
  - Aircrew Systems and human factors
  - Airborne Surveillance (micro-wave and electro-optics)

- Air USW Surveillance (acoustics, non-acoustics & signal processing)

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

As a result of BRAC-91 and BRAC-93 the following NAWCAD Trenton functions will become part of the Patuxent River Complex: Small engine air-breathing propulsion systems, power drive systems, fuels and lubricants. This capability will serve the Naval Air Systems Command and other U.S. and international customers.

- Test and evaluate all small aviation engines (turboprop, trainer, turboshaft, UAV, and cruise missile) at operational speeds and altitudes.
- Test and evaluation small engines under unusual operating conditions such as gyroscopic loads and variable attitudes;
- Test and evaluate helicopter gearboxes, transmissions and drive trains under simulated operational loads;
- Test and evaluate critical turbine engine rotating parts for strength and life under simulated operating loads and fatigue cycles;
- Test and evaluate aircraft engine accessories, such as starters and auxillary power units under simulated operating conditions;
- Test and evaluate aircraft fuels and lubricants.

HUMAN SYSTEM

Unique NAWCAD Warminster mission capabilities that will be expanded at Patuxent River in the 1996 timeframe due to BRAC 91 to include:

o AIRCREW SYSTEMS
  - Design, Develop, Acquire and Support all Naval Aircrew, Life Support, Escape and Survival systems
    - Environmental protective clothing
    - Anti-exposure Gear
    - G-Suits
    - Helmet Oxygen systems
    - Laser Eye Protection
    - Night Vision Devices
    - All Life protection/Survival Equipment (except man-rated parachutes)
    - Life Vests
    - Rafts
    - Survival gear, etc.
    - Operate the World's largest, most sophisticated human centrifuge as a Dynamic Flight Simulator (Unique in Free World)
    - Fully equipped, outside world view Pilots cockpit
    - Continuous motion control

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- Rapidly Changing G-field simulation
- Operate Only man-rated ejection system evaluation Tower that is used by USN and USAF

o TECHNOLOGY BASE
- Aircrew Systems and human factors

AIR VEHICLES, FIXED, PROPULSION R

- PROVIDE ENGINEERING EXPERTISE AND PROGRAM MANAGEMENT FOR NAVY - DOD FIXED-WING AIRCRAFT AND PROPULSION - POWER SYSTEMS THROUGH
  - Advancment of the current state-of-art
  - R & D engineering
  - In-service engineering support

INTERCONNECTIVITY WITH AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

AIR VEHICLES, ROTARY, PROPULSION R

- HELICOPTER TRANSMISSION/DRIVE SYSTEMS
  - Evaluate advanced concepts for drive systems
  - Provide Engineering support for current and future sytems

- PROVIDE ENGINEERING EXPERTISE FOR NAVAL HELICOPTER/PATROL AIRCRAFT PROPULSION SYSTEMS TO:
  - Advance the current state-of-the-art
  - Conduct engineering development efforts
  - Support propulsion ISE

INTERCONNECTIVITY WITH AIR VEHICLE FIXED PROPULSION

WEAPONS, CRUISE MISSILE (UAV AIR-BREATHING PROPULSION) R

- PROVIDE ENGINEERING EXPERTISE AND PROGRAM MANAGEMENT FOR NAVY - DOD CRUISE MISSILE AND UNMANNED AERIAL VEHICLE PROPULSION - POWER SYSTEMS THROUGH
  - Advancment of the current state-of-art
  - R & D engineering
  - In-service engineering support

INTERCONNECTIVITY WITH AIR VEHICLES ROTARY AND FIXED PROPULSION AND FLIGHT SUB-SYSTEMS.

WEAPONS, GUIDED PROJECTILES R

Unique Air Combat Environment Test and Evaluation Facility (ACETEF) capabilities include:

- ELECTROMAGNETIC ENVIRONMENT EFFECTS (E3)
  - Electromagnetic Compatibility
  - Electromagnetic Vulverability
  - Electromagnetic Interferrence

WC

NAWCHQ Change
VBC 9/20/94
NAWC-21D

C4I SYSTEMS, FIXED GROUND-BASED C4I

The following functions are scheduled to remain at Webster Field and transfer to NAWCAD, Patuxent River as a result of BRAC 93.

- MATCALS testing which is uniquely sited with the instrumented landing systems testing facility at NAWCAD Patuxent River.
- Specialized communications support for Joint Command Systems Element mobile platforms.
- Wide Area Network design and development for the Special Operations Community (Navy, Air Force, Joint).
- Communications design and integration of vans for Special Operations Forces (Army, Navy, Air Force).
- Communications design and integration of vans for White House Communications Agency.
- Communications engineering and technical support for the Lighweight Deployable Communications (LDC) Program for USASOC.
- Communications design and integration of unique surface platforms for Special Forces (Special Boats, etc., Riverine Assult Craft, High Speed Boats).
- Develop, test, evaluate and provide software support for the Fleet Area Control and Surveillance Facility (FACSFAC).

3.1 Location

3.1.1 **Geographic/Climatological Features:** Describe any geographic/climatological features in and around your activity that are relevant to each CSF. Indicate and justify those that are required versus those that just serve to enhance accomplishing the mission of the activity. For example, clear air at high altitude that increases quality of atmospheric, ground-based laser experiments in support of the weapons CSF. (BRAC Criteria I) R

ADVANCED MATERIALS

The preponderance of effort associated with the Patuxent River complex is the RDT&E of Aviation systems. The research and Development process requires a series of well equipped laboratories and skilled personnel to produce the product. The synergism with T&E allows for an efficient transition from laboratory to Airborne development test and back to the laboratory for further refinements as necessary. In addition the in-service engineering functions conducted under R&D generally require validation of development efforts prior to deployment to the fleet. Therefore the predominant geographic constraints are those associated with the conduct of flight operations in support of the R&D process.

The preponderance of R&D efforts at Patuxent River consist of Laboratory efforts and the validation of the developed items through flight testing in a design and redesign process. The laboratory efforts are not affected by the geographical/climatological features at the base, but rather enhanced by the facilities available. The airborne testing of the R&D products is a significant part of the design, test and redesign, a part of research and development. The airborne testing is enhanced by the unconstrained airspace, proximity to the Chesapeake Test Range and the varied terrain features that can be used to simulate situations found in littoral warfare.

AIR VEHICLES, FIXED, AVIONICS

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NAWCHQ Change
VBC 9/20/94
NAWC-210

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WEAPONS, CRUISE MISSILE

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C4I SYSTEMS, AIRBORNE C4I

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C4I SYSTEMS, FIXED GROUND-BASED C4I

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AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

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AIR VEHICLES, FIXED, STRUCTURES

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AIR VEHICLES, ROTARY, AVIONICS

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AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

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HUMAN SYSTEMS

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3.1.2 **Licenses & permits:** Describe and list the licenses or permits (e.g., environmental, safety, etc.) that your activity currently holds and justify why they are required to allow tests, experiments, or other special capabilities at your location for each CSF. For example, permit to store and use high explosives. (BRAC Criteria I)

The following Licenses/permits and MOU'S are currently in effect for the Naval Air Station, Patuxent River Maryland. The BRAC 91/93 final implementation is scheduled for completion in October 96. Until final implementation these licenses & permits apply to the Test and Evaluation workload currently being performed at the Patuxent River site. It is unknown at this time whether the licenses/ permits and MOU'S will be applicable to the Common Support Funtions addressed in this data call. Therefore, they will appear under each CSF. R

We operate under several permits that require periodic renewal. The renewal process is automatic and subject to fulfillment of reporting requirements and fees. These permits include:

ADVANCED MATERIALS

ACOE Nationwide Permit	RR-90-03766-1	Flow controls at Supply Pond
ACOE Dredging 1488	RR-85-0595	Dredge Structures 656, 317, &
Boiler Operation	18-00017	Boiler Operations at Bldg 501
County Open Burning	28-89	Req'd for Open Burning @ Landfill
Const. (PMB unit at B307)	18-9-0012N	Permit to construct PMB Unit
Air Stripper Operation	18-9-0013N	Permit/Air Stripper @ Fuel Farm
Const (Paint Booth/B104)	18-6-0017N	Const/Paint Booth @ B104
Const (Air Stripper/B106)	APPL	Const/Air Stripper @ B106
Const (Boiler B2188)	18-5-0001N	Const/Boiler B2188
Const (2 Boilers B111A)	18-4-0095/96 R	Const/2 Boilers B111A
Const (2 Boilers B110A)	18-4-0093/94 R	Const/2 Boilers B110A
Const (2 Boilers B109A)	18-4-0091/92 R	Const/2 Boilers B109A
Const (2 Boilers B101A)	18-4-0087/88 R	Const/2 Boilers B101A
Const (Boiler B104)	18-4-0090 R	Const/Boiler B104
Const (Boiler B103)	18-4-0089 R	Const/Boiler B103
Const (Boiler B177)	18-4-0098 R	Const/Boiler B177
Const (Boiler B117)	18-4-0097 R	Const/Boiler B117
Const (Boiler B2119)	18-4-0086N	Const/Boiler B2119
Const (Boiler/Water Heat B2188	18-5-0011/12N	Const/Boiler/Water Heater B2188
Const (2 Boilers @ B115A/201A	18-5-0002/0003N	Const/2 Boilers @ B115A/201A
Const (2 Boilers B2185	18-5-0006/0007N	Const/2 Boilers B2185
Const (A.). Smith Boiler 1.25MBTU/hr B2187	18-5-0010	Const A.O. Smith Boiler B2187
Const (Cleaver Brooks, 12.56 MBTU/hr B2187	18-5-0004/0005	Const/2 C. Brooks Boilers B2187
Const (Weil McLain 1.67		

NAWC HQ Change
VBC 9/20/94
NAWC-21D

We are currently operating under several voluntary agreements that deal with the environment. All, however, are cooperative agreements of a positive nature such as MOU's and MOA's with other resource management agencies to facilitate cooperative efforts and even cost sharing. Most of these agreements do not have expiration dates, but terminate only at the request of either participating party. Examples are:

An MOU with the Southern Maryland Resource Conservation and Development Board for assistance in designing and executing natural resources conservation programs.

A cooperative fish and wildlife management agreement with the Maryland Department of Natural Resources and the U.S. Fish and Wildlife Service.

An MOU with the Maryland Historical Trust for assistance in designing and executing archaeological research and historic preservation projects.

An MOU with the University of Maryland's Coastal Research Lab for assistance in studying coastal erosion problems.

An MOU with the Natural Heritage Program office of Maryland Department of Natural Resources to conduct endangered species surveys.

A cooperative agreement with the National Park Service and Clemson University for assistance in developing and implementing outdoor recreation programs.

None of these MOU's will have an impact on the prosecution of R&D at Patuxent River.

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ACOE Dredging	RR-85-0595	Dredge Structures 656, 317, & 1488
Boiler Operation	18-00017	Boiler Operations at Bldg 501
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Air Stripper Operation	18-9-0013N	Permit/Air Stripper @ Fuel Farm
Const (Paint Booth/B104)	18-6-0017N	Const/Paint Booth @ B104
Const (Air Stripper/B106)	APPL	Const/Air Stripper @ B106
Const (Boiler B2188)	18-5-0001N	Const/Boiler B2188
Const (2 Boilers B111A)	18-4-0095/96 R	Const/2 Boilers B111A
Const (2 Boilers B110A)	18-4-0093/94 R	Const/2 Boilers B110A
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Const (2 Boilers B101A)	18-4-0087/88 R	Const/2 Boilers B101A
Const (Boiler B104)	18-4-0090 R	Const/Boiler B104
Const (Boiler B103)	18-4-0089 R	Const/Boiler B103
Const (Boiler B177)	18-4-0098 R	Const/Boiler B177

MBTU/hr B2187	18-5-0008	Const (Weil McLain Boiler B2187
Const (Weil McLain 1.67		
MBTU/hr B2187	18-5-0009	Const (Weil McLain Boiler B2187
Desg Haz Sub Facility	A-222	Permits Storage of Hazard Wastes
Part "A" Application	MD7170024536	Facility Operates in Interim Status
Part "A" Application Revision	MD7170024536	Facility Operates in Interim Status
Part "B" Application	MD7170024536	Allows for Full Operational Status
Refuse Disposal (Active Landfill)	89-18-08-04A	Controls OPS for Sanitary Landfill
NPDES	92-GP-0001	Allows Discharges from Outfalls
NPDES Modification	90-DP-2518A	Allows Discharges from Outfalls
NPDES	92-GP-0001	General Discharge Permit Solomons
Oil Ops NAS Patuxent River	94-OP-0665	Operation of Oil Transfer Facility
Oil Ops Solomons Annex	94-OP-0670	Operation of Oil Transfer Facility
Water Appropriation	SM-90-G-058	Water Supply to B2100
Water Appropriation	32-GAP-1	Water Supply for 2 Wells @ Solomoons
Water Appropriation	SM-74-G-018	Water Supply from Wells at Pax Using AQUIA
Water Appropriation	SM-74-G-118	Water Supply from Wells at Pax Using Piney Point
Water Appropriation	SM-93-G-005(02)	Fuel Farm Unconfined Aguifer Withdrawal
ACOE Shoreline Proctection/Const	FR-80-0476	Erosion Ctrl Structure at Mattapany
ACOE Construction	F/4-79-0341	Pier/Boat Slips, West Basin Marina
ACOE Dredging	F-74-283	Dredge Seaplane Basin
ACOE Construction	F/4-75-37	Mooring Piles in St. Inigoes Creek
ACOE Construction	F/4-75-243	Targets in St. Mary's River
ACOE Shoreline Protect & Const	F/4-75-243	Rip-Rap Along Patuxent River & Bay
ACOE Dredge Shoreline & Const	F/4-77-0820	Hog Point Shoreline Project
ACOE Construction	F-4-78-0217	Cedar Point Fishing Pier
ACOE Dredging	F/4-77-0236	Dredge West Basin
Boiler Operation	18-00017	Boiler Operation at B501
Designated Has Sub Facility	A-222	Permits Storate of Hazardous Waste
Refuse Disposal	85-18-08-04A	Controls Operation of Sanitary Landfill
Refuse Disposal	Application	Permit to Operate Rubble Landfill
NPDES	MD0020150	Allows Discharges from Various Outfalls
Sewage Sludge Utilization	S-83-18-858-B	Allows Sludge Application to Land
Sewage Sludge Utilization	S-82-18-711-ABE	Allows Sludge Application to Land
Sewage Sludge Utilization	S-89-18-2016-ABE	Allows Sludge Application to Land
Oil Ops NAS Patuxent River	89-OP-0665	Operation of Oil Transfer Facility
Oil Ops Solomons Annex	89-OP-0670	Operation of Oil Transfer Fa cility
Asbestos License		License to Remove Asbestos

Const (Boiler B117)	18-4-0097 R	Const/Boiler B117
Const (Boiler B2119)	18-4-0086N	Const/Boiler B2119
Const (Boiler/Water Heat B2188	18-5-0011/12N	Const/Boiler/Water Heater B2188
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Oil Ops Solomons Annex	89-OP-0670	Operation of Oil Transfer Fa cility
Asbestos License		License to Remove Asbestos

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Const (Air Stripper/B106)	APPL	Const/Air Stripper @ B106

Const (Boiler B2188)	18-5-0001N	Const/Boiler B2188
Const (2 Boilers B111A)	18-4-0095/96 R	Const/2 Boilers B111A
Const (2 Boilers B110A)	18-4-0093/94 R	Const/2 Boilers B110A
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ACOE Dredging	F-74-283	Dredge Seaplane Basin
ACOE Construction	F/4-75-37	Mooring Piles in St. Inigoes Creek
ACOE Construction	F/4-75-243	Targets in St. Mary's River
ACOE Shoreline Protect & Const	F/4-75-243	Rip-Rap Along Patuxent River & Bay
ACOE Dredge Shoreline & Const	F/4-77-0820	Hog Point Shoreline Project
ACOE Construction	F-4-78-0217	Cedar Point Fishing Pier

ACOE Dredging	F/4-77-0236	Dredge West Basin
Boiler Operation	18-00017	Boiler Operation at B501
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NAWC-210

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AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

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R

NAWCHQ Change
VBC 9/20/94
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Const (Boiler B2119)	18-4-0086N	Const/Boiler B2119
Const (Boiler/Water Heat B2188	18-5-0011/12N	Const/Boiler/Water Heater B2188
Const (2 Boilers @ B115A/201A	18-5-0002/0003N	Const/2 Boilers @ B115A/201A
Const (2 Boilers B2185	18-5-0006/0007N	Const/2 Boilers B2185
Const (A.). Smith Boiler 1.25MBTU/hr B2187	18-5-0010	Const A.O. Smith Boiler B2187
Const (Cleaver Brooks, 12.56 MBTU/hr B2187	18-5-0004/0005	Const/2 C. Brooks Boilers B2187
Const (Weil McLain 1.67 MBTU/hr B2187	18-5-0008	Const (Weil McLain Boiler B2187
Const (Weil McLain 1.67 MBTU/hr B2187	18-5-0009	Const (Weil McLain Boiler B2187
Desg Haz Sub Facility	A-222	Permits Storage of Hazard Wastes
Part "A" Application	MD7170024536	Facility Operates in Interim Status
Part "A" Application Revision	MD7170024536	Facility Operates in Interim Status
Part "B" Application	MD7170024536	Allows for Full Operational Status
Refuse Disposal (Active Landfill)	89-18-08-04A	Controls OPS for Sanitary Landfill
NPDES	92-GP-0001	Allows Discharges from Outfalls
NPDES Modification	90-DP-2518A	Allows Discharges from Outfalls
NPDES	92-GP-0001	General Discharge Permit Solomons
Oil Ops NAS Patuxent River	94-OP-0665	Operation of Oil Transfer Facility
Oil Ops Solomons Annex	94-OP-0670	Operation of Oil Transfer Facility
Water Appropriation	SM-90-G-058	Water Supply to B2100
Water Appropriation	32-GAP-1	Water Supply for 2 Wells @ Solomoons
Water Appropriation	SM-74-G-018	Water Supply from Wells at Pax Using AQUIA
Water Appropriation	SM-74-G-118	Water Supply from Wells at Pax Using Piney Point
Water Appropriation	SM-93-G-005(02)	Fuel Farm Unconfined Aguifer Withdrawal
ACOE Shoreline Proctection/Const	FR-80-0476	Erosion Ctrl Structure at Mattapany
ACOE Construction	F/4-79-0341	Pier/Boat Slips, West Basin Marina
ACOE Dredging	F-74-283	Dredge Seaplane Basin
ACOE Construction	F/4-75-37	Mooring Piles in St. Inigoes Creek
ACOE Construction	F/4-75-243	Targets in St. Mary's River
ACOE Shoreline Protect & Const	F/4-75-243	Rip-Rap Along Patuxent River &

C41 SYSTEMS, FIXED GROUND-BASED C4I

ACOE Nationwide Permit	RR-90-03766-1	Flow controls at Supply Pond
ACOE Dredging	RR-85-0595	Dredge Structures 656, 317, & 1488
Boiler Operation	18-00017	Boiler Operations at Bldg 501
County Open Burning	28-89	Req'd for Open Burning @ Landfill
Const. (PMB unit at B307)	18-9-0012N	Permit to construct PMB Unit
Air Stripper Operation	18-9-0013N	Permit/Air Stripper @ Fuel Farm
Const (Paint Booth/B104)	18-6-0017N	Const/Paint Booth @ B104
Const (Air Stripper/B106)	APPL	Const/Air Stripper @ B106
Const (Boiler B2188)	18-5-0001N	Const/Boiler B2188
Const (2 Boilers B111A)	18-4-0095/96 R	Const/2 Boilers B111A
Const (2 Boilers B110A)	18-4-0093/94 R	Const/2 Boilers B110A
Const (2 Boilers B109A)	18-4-0091/92 R	Const/2 Boilers B109A
Const (2 Boilers B101A)	18-4-0087/88 R	Const/2 Boilers B101A
Const (Boiler B104)	18-4-0090 R	Const/Boiler B104
Const (Boiler B103)	18-4-0089 R	Const/Boiler B103
Const (Boiler B177)	18-4-0098 R	Const/Boiler B177
Const (Boiler B117)	18-4-0097 R	Const/Boiler B117
Const (Boiler B2119)	18-4-0086N	Const/Boiler B2119
Const (Boiler/Water Heat B2188	18-5-0011/12N	Const/Boiler/Water Heater B2188
Const (2 Boilers @ B115A/201A	18-5-0002/0003N	Const/2 Boilers @ B115A/201A
Const (2 Boilers B2185	18-5-0006/0007N	Const/2 Boilers B2185
Const (A.). Smith Boiler 1.25MBTU/hr B2187	18-5-0010	Const A.O. Smith Boiler B2187
Const (Cleaver Brooks, 12.56 MBTU/hr B2187	18-5-0004/0005	Const/2 C. Brooks Boilers B2187
Const (Weil McLain 1.67 MBTU/hr B2187	18-5-0008	Const (Weil McLain Boiler B2187
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Oil Ops NAS Patuxent River	94-OP-0665	Operation of Oil Transfer Facility
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Water Appropriation	32-GAP-1	Water Supply for 2 Wells @ Solomoons
Water Appropriation	SM-74-G-018	Water Supply from Wells at Pax Using AQUIA
Water Appropriation	SM-74-G-118	Water Supply from Wells at Pax Using Piney Point
Water Appropriation	SM-93-G-005(02)	Fuel Farm Unconfined Aguifer Withdrawal
ACOE Shoreline Proctection/Const	FR-80-0476	Erosion Ctrl Structure at Mattapany
ACOE Construction	F/4-79-0341	Pier/Boat Slips, West Basin Marina

		Bay
ACOE Dredge Shoreline & Const	F/4-77-0820	Hog Point Shoreline Project
ACOE Construction	F-4-78-0217	Cedar Point Fishing Pier
ACOE Dredging	F/4-77-0236	Dredge West Basin
Boiler Operation	18-00017	Boiler Operation at B501
Designated Has Sub Facility	A-222	Permits Storate of Hazardous Waste
Refuse Disposal	85-18-08-04A	Controls Operation of Sanitary Landfill
Refuse Disposal	Application	Permit to Operate Rubble Landfill
NPDES	MD0020150	Allows Discharges from Various Outfalls
Sewage Sludge Utilization	S-83-18-858-B	Allows Sludge Application to Land
Sewage Sludge Utilization	S-82-18-711-ABE	Allows Sludge Application to Land
Sewage Sludge Utilization	S-89-18-2016-ABE	Allows Sludge Application to Land
Oil Ops NAS Patuxent River	89-OP-0665	Operation of Oil Transfer Facility
Oil Ops Solomons Annex	89-OP-0670	Operation of Oil Transfer Fa cility
Asbestos License		License to Remove Asbestos

We are currently operating under several voluntary agreements that deal with the environment. All, however, are cooperative agreements of a positive nature such as MOU's and MOA's with other resource management agencies to facilitate cooperative efforts and even cost sharing. Most of these agreements do not have expiration dates, but terminate only at the request of either participating party. Examples are:

An MOU with the Southern Maryland Resource Conservation and Development Board for assistance in designing and executing natural resources conservation programs.

A cooperative fish and wildlife management agreement with the Maryland Department of Natural Resources and the U.S. Fish and Wildlife Service.

An MOU with the Maryland Historical Trust for assistance in designing and executing archaeological research and historic preservation projects.

An MOU with the University of Maryland's Coastal Research Lab for assistance in studying coastal erosion problems.

An MOU with the Natural Heritage Program office of Maryland Department of Natural Resources to conduct endangered species surveys.

A cooperative agreement with the National Park Service and Clemson University for assistance in developing and implementing outdoor recreation programs.

None of these MOU's will have an impact on the prosecution of R&D at Patuxent River.

ACOE Dredging	F-74-283	Dredge Seaplane Basin
ACOE Construction	F/4-75-37	Mooring Piles in St. Inigoes Creek
ACOE Construction	F/4-75-243	Targets in St. Mary's River
ACOE Shoreline Protect & Const	F/4-75-243	Rip-Rap Along Patuxent River & Bay
ACOE Dredge Shoreline & Const	F/4-77-0820	Hog Point Shoreline Project
ACOE Construction	F-4-78-0217	Cedar Point Fishing Pier
ACOE Dredging	F/4-77-0236	Dredge West Basin
Boiler Operation	18-00017	Boiler Operation at B501
Designated Has Sub Facility	A-222	Permits Storate of Hazardous Waste
Refuse Disposal	85-18-08-04A	Controls Operation of Sanitary Landfill
Refuse Disposal	Application	Permit to Operate Rubble Landfill
NPDES	MD0020150	Allows Discharges from Various Outfalls
Sewage Sludge Utilization	S-83-18-858-B	Allows Sludge Application to Land
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Asbestos License		License to Remove Asbestos

We are currently operating under several voluntary agreements that deal with the environment. All, however, are cooperative agreements of a positive nature such as MOU's and MOA's with other resource management agencies to facilitate cooperative efforts and even cost sharing. Most of these agreements do not have expiration dates, but terminate only at the request of either participating party. Examples are:

An MOU with the Southern Maryland Resource Conservation and Development Board for assistance in designing and executing natural resources conservation programs.

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An MOU with the Natural Heritage Program office of Maryland Department of Natural Resources to conduct endangered species surveys.

A cooperative agreement with the National Park Service and Clemson University for assistance in developing and implementing outdoor recreation programs.

None of these MOU's will have an impact on the prosecution of R&D at Patuxent River.

3.1.3 **Environmental constraints:** Describe and list the environmental or land use constraints present at your activity which limit or restrict your current scope for each CSF, i.e., would not allow increased "volume" or "spectrum" for the CSF. Example -- Volume: frequency of a type of experiment. Example -- Spectrum: Current permit to detonate high explosives will not allow detonation or storage of increased quantity of explosives without legal waiver (state law) or relocation of surrounding (non-govt.) buildings. (BRAC Criteria II) R

The fundamental ability to provide laboratory resources conducive to quality RDT&E is not limited by any environmental factor. We are currently constructing a modern laboratory complex to house the functions being transferred from Warminster and Trenton and there are no overarching environmental limitations on their use. This syngerism between the laboratories and the Air Operations allowed by the local environment will foster an efficient and effective delivery of products to the Fleet.

Future environmental impacts on air, land, and sea space for research, development testing are difficult to predict. Land use and wildlife refuge/wilderness area overflights are the biggest issues affecting air use and will affect all defense aviation activities. Naval Air Station Patuxent River does not own or control any land ranges. Our water ranges appear secure from environmental impact restrictions. We are pursuing additional National Environment Policy Act documentation to ensure the continued availability of these ranges. Not all Maryland state environmental laws are applicable, but some are. Maryland, relative to other states, is fairly conservative in the application of environmental rules. We are currently in compliance with all known environmental requirements and do not anticipate any unmanageable impacts due to emerging regulations. Naval Air Station Patuxent River has a well-trained staff of environmental professionals to deal with any future requirements.

ADVANCED MATERIALS

NONE

AIR VEHICLES, FIXED, AVIONICS

NONE

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

NONE

AIR VEHICLES, FIXED, STRUCTURES

NONE

AIR VEHICLES, ROTARY, AVIONICS

NONE

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

NONE

HUMAN SYSTEMS

NONE

NAWCHQ change
VBC 9/20/94
NAWC-21D

3.1.4 **Special Support Infrastructure:** List and describe the importance of any mission related special support infrastructure (e.g. utilities) present at your location for your activity. (BRAC Criteria I)

When final implemenation of BRAC 91/93 occurrs in October of 96, the Infrastructure Capacity & Load may apply to any of the Common Support Functions addressed in this data call. R

Table 3.1.4.a Base Infrastructure Capacity & Load for Patuxent River Complex

	On Base Capacity	Off base long term contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	52,575	N/A	18,592	26,644
Natural Gas (CFH)	400,000	N/A	80,000	175,000
Sewage (GPD)	45,000	1,200,000	677,033	856,600
Potable Water (GPD)	6,212,000	N/A	954,878	1,218,000
Steam (PSI & lbm/Hr)	N/A	N/A	N/A	N/A
Long Term Parking	318,060	0	263,989	317,895
Short Term Parking	13,207	0	10,962	13,207

NAWCHQ Change
VBC 9/20/94
NAWC-2ID

HTHW (400 PSI & MBH)	195,000	N/A	65,000	125,000

According to Southern Maryland Electrical Co-op (SMECO) Patuxent River has the capacity to grow 230 percent from its current peak load demand identified in the table above. This additional capability is for the base only and is not affected by growth into other portions of the region.

NOTES:

The following projects will affect utility capacity and loads.

1. **BRAC 91 projects are awarded and will add:**
   a. **20,000 Kilovolt Amperes (KVA) of electrical capacity and 12,000 KVA of electrical peak load.**
   b. **2 new water wells with a capacity of 864,000 Gallons Per Day (GPD) and additional potable water usage of 170,000 GPD.**
   c. **31,000 Cubic Feet per Hour (CFH) of natural gas peak load.**
   d. **123,000 gallons of sewage peak load.**
   e. **Add 61,470 Sq. Yds. of long term and 6,000 Sq. Yds. of short term parking**

2. **BRAC 93 projects will be awarded in FY95 and will add:**
   a. **40,000 KVA of electrical capacity and 16,000 KVA of electrical peak load.**
   b. **Additional potable water peak usage of 127,000 GPD.**
   c. **9,071 CFH of natural gas peak load.**
   d. **92,000 gallons of sewage peak load.**
   e. **Add 69,389 Sq. Yds. long term and 8,090 Sq. Yds. of short term parking.**

3. **Project R29-93, Repair Water Well 5-B and various minor repair projects will provide increases in water well capacity and reliability will improve by repairing/replacing 1943 vintage water wells.**

4. **Project P-505, Sewage Flow Equalization Basin will provide METCOMM (our sewage municipality) with a means to equalize Patuxent River flowrates and reduce the affects of peak flows.**

5. **The State of Maryland will allow increased sewage capacity to 60,000 GPD when the National Pollutant Discharge Elimination System permit is re-issued for Webster Field.**

3.1.5. **Proximity to Mission-Related organizations:** List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC

AIR VEHICLES, FIXED, PROPULSION

NONE

AIR VEHICLES, ROTARY, PROPULSION

NONE

WEAPONS, CRUISE MISSILE

None, No Cruise Missile launches occur at Patuxent River.

WEAPONS, GUIDED PROJECTILES

Work that is done under this CSF does not include live fire test and therefore no constrainsts exist.

C4I SYSTEMS, AIRBORNE C4I

NONE

C4I SYSTEMS, FIXED GROUND-BASED C4I

NONE

Criteria I)

The Patuxent River base is located in an area that is rich in the mission related organizations necessary to carry out a comprehensive program of Aviation RDT&E. The Baltimore-Washington corridor is becoming a high technology corridor with many universities and contractors that enhance the efforts of this activity in performing its assigned mission. The local area in St. Mary's county has a wealth of contract support services that are well suited to carrying out full spectrum R&D and the on-site educational activities promote the furtherance of advanced degrees. Recently the state of Maryland has funded the establishment of a St. Mary's County Higher Education Facility, operated by the state, with major participation by Johns Hopkins University and the University of Maryland. In addition, the base contains operational units that are directly capable of supporting RDT&E. With all these assets available we believe that there are no lack of local facilities that would hinder performance of our mission.

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
NONE					

3.2 Personnel:

3.2.1 **Total Personnel:** What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I).

NOTE: PERSONNEL IDENTIFIED IN THE "OTHER" CATEGORY FOR TRENTON INFLUX IS ACCURATE. DUE TO BRAC 91 & 93 DECISIONS, THE "OTHER" THAT WOULD NORMALLY HAVE BEEN LISTED WERE ELIMINATED AND THE ENGINE TEST WORKLOAD WILL BE DONE UNDER CONTRACT TO AEDC. REMAINDER OF THE "OTHER" REFLECTS WAGE GRADE EMPLOYEES IN DIRECT SUPPORT OF THE CSFS. THE FOLLOWING #'S ACCURATELY REFLECT THE # OF SCIENTIST AND TECHNICAL EMPLOYEES IN DIRECT SUPPORT OF THE CSF'S.

ADVANCED MATERIALS

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	12			
Management (Supv)	1			
Other				

AIR VEHICLES,FIXED, AVIONICS

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	696	5		
Management (Supv)	67	35		
Other				

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

R

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	67	0		0
Management (Supv)	5	1		0
Other	3			0

NAWC HQ Change
VBC 9/20/94
NAWC-21D

AIR VEHICLES, FIXED, STRUCTURES

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	273			
Management (Supv)	33			
Other	40			

AIR VEHICLES, ROTARY, AVIONICS

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	69			
Management (Supv)	8	4		
Other				

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEM

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	*INFO NOT AVAIL-ABLE			
Management (Supv)				
Other				

***THIS INFORMATION IS NOT AVAILABLE. THE WORKLOAD ASSOCIATED WITH AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS FALLS ORGANIZATIONALLY UNDER THE GROUP ASSOCIATED WITH COMMON SUPPORT FUNCTION, AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS . AS SUCH, THERE IS NO MEANS TO IDENTIFY INDIVIDUALS SPECIFICALLY UNDER THIS CSF. ACTUAL WORKYEARS AS SHOWN ON PAGE 99 AND 122 REPRESENT .4 OF A WORKYEAR.**

HUMAN SYSTEMS

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	12	16		
Management (Supv)	2	2		
Other				

R

NAWCHQ Change
VBC 21D
9/20/94

AIR VEHICLES, FIXED, PROPULSION

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	216	4		
Management (Supv)				
Other				

AIR VEHICLES, ROTARY, PROPULSION

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	31			
Management (Supv)	1			
Other				

WEAPONS, CRUISE MISSILE

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	34			
Management (Supv)	2			
Other				

WEAPONS, GUIDED PROJECTILES

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	*			
Management (Supv)				
Other				

***NO FULL-TIME PERSONNEL ARE DEDICATED 100% TO WEAPONS, GUIDED PROJECTILES.**

C4I, SYSTEMS, AIRBORNE C4I

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	4	4		
Management (Supv)				
Other				

C4I, SYSTEM, FIXED GROUND-BASED C4I

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	44	2		61
Management (Supv)	8	0		4
Other	3	0		10

3.2.2 **Education:** What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

AIR VEHICLES, FIXED, AVIONICS

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	41	1	0
Associates	15	1	0
Bachelor	377	43	0
Masters	237	56	0
Doctorate (include Med/Vet/etc.)	31	1	0
TOTAL	701	102	0

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

R

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0	0	2
Associates	0	0	1
Bachelor	35	2	0
Masters	31	3	0
Doctorate (include Med/Vet/etc.)	1	1	0
TOTAL	68	6	3

AIR VEHICLES, FIXED, STRUCTURES

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0	0	40
Associates	0	0	0
Bachelor	157	19	0
Masters	86	12	0
Doctorate (include Med/Vet/etc.)	30	2	0
TOTAL	273	33	40

NAWCHQ Change
VBC 9/20/94
NAWC-21D

AIR VEHICLES, ROTARY, AVIONICS

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0	0	0
Associates	0	0	0
Bachelor	41	6	0
Masters	26	5	0
Doctorate (include Med/Vet/etc.)	2	1	0
TOTAL	69	12	0

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	*(INFORMATION NOT AVAILABLE)		
Associates			
Bachelor			
Masters			
Doctorate (include Med/Vet/etc.)			
TOTAL			

***THIS INFORMATION IS NOT AVAILABLE. THE WORKLOAD ASSOCIATED WITH AIR VEHICLES,ROTARY, FLIGHT SUBSYSTEMS FALLS ORGANIZATIONALLY UNDER THE GROUP ASSOCIATED WITH COMMON SUPPORT FUNCTION, AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS . AS SUCH, THERE IS NO MEANS TO IDENTIFY INDIVIDUALS SPECIFICALLY UNDER THIS CSF. ACTUAL WORKYERS AS SHOWN ON PAGE 99 AND 122 REPRESENT .4 OF A WORKYEAR.**

ADVANCED MATERIALS

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less			
Associates			
Bachelor	7		
Masters	4	1	
Doctorate (include Med/Vet/etc.)	1		
TOTAL	12	1	

HUMAN SYSTEMS

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	17	0	0
Associates	0	0	0
Bachelor	6	0	0
Masters	3	2	0
Doctorate (include Med/Vet/etc.)	2	2	0
TOTAL	28	4	

AIR VEHICLES, FIXED, PROPULSION

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	2		
Associates	86		
Bachelor	110		
Masters	20		
Doctorate (include Med/Vet/etc.)	2		
TOTAL			

AIR VEHICLES, ROTARY, PROPULSION

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0		
Associates			
Bachelor	29	1	
Masters	2		
Doctorate (include Med/Vet/etc.)			
TOTAL			

WEAPONS, CRUISE MISSILE

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0		.5
Associates	2		
Bachelor	29	2	
Masters	3		
Doctorate (include Med/Vet/etc.)			
TOTAL			

WEAPONS, GUIDED PROJECTILES

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	*		
Associates			
Bachelor			
Masters			
Doctorate (include Med/Vet/etc.)			
TOTAL			

*** NO FULL-TIME PERSONNEL DEDICATED 100% TO WEAPONS, GUIDED PROJECTILES.**

C4I SYSTEMS, AIRBORNE C4I

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less			
Associates			
Bachelor	8		
Masters			
Doctorate (include Med/Vet/etc.)			
TOTAL			

C4I SYSTEMS, FIXED GROUND-BASED C4I

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	5	0	2
Associates	0	0	1
Bachelor	39	8	0
Masters	2	0	0
Doctorate (include Med/Vet/etc.)	0	0	0
TOTAL	46	8	3

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

AIR VEHICLES, FIXED, AVIONICS

R

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	5	315	110	80	187
Managment (Supv)	0	2	8	8	78
Total	5	317	118	88	265

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

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Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	0	6	5	13
Management (Supv)	0	0	0	1	0
Total	0	0	6	6	13

AIR VEHICLES, FIXED, STRUCTURES

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	2	136	42	16	77
Management (Supv)	0	3	4	4	22
Other	0	0	6	18	16
Total	2	139	52	38	115

NAWCHQ Change
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AIR VEHICLES, FIXED, PROPULSION

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	2	88	34	19	77
Management (Supv)					
Total	2	88	34	19	77

AIR VEHICLES, ROTARY, PROPULSION

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical		13	14	3	1
Management (Supv)				1	
Total		13	14	4	1

WEAPONS, CRUISE MISSILE

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical		17	9	6	2
Management (Supv)			1	1	
Total		17	10	7	2

WEAPONS, GUIDED PROJECTILES

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	*				
Management (Supv)					
Total					

***NO FULL-TIME PERSONNEL ARE DEDICATED 100% TO WEAPONS, GUIDED PROJECTILES.**

AIR VEHICLES, ROTARY, AVIONICS

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	33	9	7	20
Management (Supv)	0	0	3	2	7
Total	0	33	12	9	27

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	* INFO NOT AVAILABLE				
Management (Supv)					
Total					

***THIS INFORMATION IS NOT AVAILABLE. THE WORKLOAD ASSOCIATED WITH AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS FALLS ORGANIZATIONALLY UNDER THE GROUP ASSOCIATED WITH COMMON SUPPORT FUNCTION, AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS . AS SUCH, THERE IS NO MEANS TO IDENTIFY INDIVIDUALS SPECIFICALLY UNDER THIS CSF. AS SUCH, THERE IS NO MEANS TO IDENTIFY INDIVIDUALS SPECIFICALLY UNDER THIS CSF.**

ADVANCED MATERIALS

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	6	2	1	3
Management (Supv)					1
Total	0	6	2	1	4

HUMAN SYSTEMS

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	13	4	2	9
Management (Supv)	0	0	1	1	2
Total	0	13	5	3	11

C4I SYSTEMS, AIRBORNE C4I

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical					8
Management (Supv)					
Total					

C4I SYSTEMS, FIXED GROUND-BASED C4I

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical		34	4	2	7
Management (Supv)		4	3		4
Total		38	7	2	11

3.2.4 **Accomplishments During FY91-93:** For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
Patents Awarded		**90**	
Patents Applied For		**35**	
Total			

AIR VEHICLES, FIXED, STRUCTURES

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Control Surfaces	**Maurice M. Sevik**	**4,979,455**	**12/25/90**
Method and Apparatus for Measuring Corrosion Beneath Thin Films	**Vinod S. Agarwala; Paul J. Kennedy**	**4,994,159**	**02/19/91**
Interferometric Surface Distortion Detector	**Arthur E. Scotese; Shih L. Huang; Armando J. Gaetano**	**5,000,574**	**03/19/91**
Wing-Extendible Gliding Store	**Samuel Greenhalgh**	**5,074,493**	**12/24/91**
Vibration-Dampling Structural Member	**David J. Barrett**	**5,087,491**	**02/11/92**
Lift Enhancement Device	**Samuel Greenhalgh**	**5,226,618**	**07/13/93**
Dielectric Viscometer Including Fixed and Variable Cells	**John G. Williams; Thomas M. Donnellan; Ronald E. Trabocco**	**5,279,149**	**01/18/94**
Active Vortex Control for a High Performance Wing	**Marvin M. Walters; Steven B. Kern**	**5,282,591**	**02/01/94**

AIR VEHICLES, FIXED, AVIONICS

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Multi-Channel Acoustic Simulator	Marc C. DiLemmo	4,908,800	03/13/90
Fiber Optic Magnetometers for Multiple Order Gradiometers	Lloyd C. Bobb	4,918,371	04/17/90
Optical Fiber Refractometer	Lloyd C. Bobb; Howard D. Krumboltz	4,981,338	01/01/91
Optical Fiber Refractometer Launching Light at a Non-Zero Launch Angle	Lloyd C. Bobb; Howard D. Krumboltz	4,988,863	01/29/91
Hydrophone Deployment System for a Sonobuoy	John R. Dale; Roger A. Holler	4,999,816	03/12/91
Deep Ocean Recoverable Acoustic Sensor Vehicle	Edward J. Cotilla; Joseph M. McCandless; Paul Savitz; Edwin H. Kribbs, Jr.	5,003,514	03/26/91
Air-Surface-Missile Data Link System	John C. Lockhart; Standish C. Hartman; Bruce R. Meuron; Joseph B. Lyons, Jr.	5,004,185	04/02/91
Stationary Probability Integrator System	Paul F. Reimel	5,008,630	04/16/91
Vehicle Steering Device	Bruce W. Travor; Roger A. Holler	5,011,097	04/30/91
Air-to-Subsurface Missile System	Morton L. Metersky; James R. Howard	5,012,717	05/07/91
Data Link and Return Link	Bruce R. Meuron; Joseph B. Lyons	5,018,685	05/28/91
Sonobuoy Suspension System	John R. Dale; Lawrence F. Coar	5,020,032	05/28/91
Lock Means and TV Sync for Air-to-Surface Missile	John C. Lockhart, Jr.	5,022,079	06/04/91

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Sonic Detection and Tracking System	Henry Suter	5,025,425	06/18/91
Video Processor for a Counter-Countermeasure System	Burton L. Hulland	5,027,121	06/25/91
Electro-Optic Line Narrowing of Optical Parametric Oscillators	Bruce O. Boczar	5,028,816	07/02/91
Guideable Stores	Bruce W. Travor; James F. McEachern; Frank P. Marshall	5,042,744	08/27/91
Optical Fiber Sensor for Measuring Physical Properties of Liquids	Lloyd C. Bobb; Barbara J. White; Jon P. Davis	5,047,626	09/10/91
Multi-Sonobuoy Launch Container with Constant Force Spring	Bruce W. Travor; Richard M. Coughlan; Edward J. Cotilla; Frank P. Marshall	5,052,270	10/01/91
Seismic-Acoustic Detection Device	George A. Gimber; Edward J. Cotilla; Salvatore R. Picard; Robert F. Starry	5,054,006	10/01/91
Multi-Sonobuoy Launch Container with Mechanical Actuator	Leo Dragonuk	5,054,364	10/08/91
Superconducting Josephson Junction Gyroscope Apparatus	Francis A. Karwacki	5,058,431	10/22/91
Launch Container for Multiple Stores Using Electrically-Actuated Paddle Assemblies	Frank P. Marshall; Bruce W. Travor; Timothy L. Kraynak	5,063,823	11/12/91
Programmable Pulse Shaper for Sonobuoy Apparatus	Keith S. Rizkowski; David E. Zeidler	5,065,370	11/12/91
Optical Interconnects In The Computer Environment	Todd A. Kline; Warren A. Rosen; William J. Bermingham; Eric A. Alfonsi	5,068,880	11/26/91

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Pneumatically Actuated Multiple Store Launcher	Frank P. Marshall; Bruce W. Travor	5,070,760	12/10/91
Electrically Actuated Multiple Store Launcher	Frank P. Marshall; Bruce W. Travor	5,074,186	12/24/91
Launch Container for Multiple Stores Using Piezo Electrically-Actuated Paddle Assemblies	Frank P. Marshall; Bruce W. Travor; Timothy L. Kraynak	5,076,134	12/31/91
Digital Bottom Mapping	Anthony P. Passamante; Paul A. Labonski; Nancy J. Harned; Timothy B. Hediger; John Ambrose	5,077,699	12/31/91
Doppler Velocity Profiler	Peter T. Shaw; Arthur P. Stevens; Anthony Marino	5,077,700	12/31/91
Nonlinear Optical Acrylic Polymers and Use Thereof in Optical and Electro-Optic Devices	Leslie H. Sperling; Clarence J. Murphy; Warren A. Rosen; Himanshu Jain; Warren N. Herman	5,079,321	01/07/92
Launch Container for Multiple Stores	Bruce W. Travor; James F. McEachern	5,092,221	03/03/92
Tapered Optical Fiber Sensor	Howard D. Krumboltz; Lloyd C. Bobb	5,093,569	03/03/92
Adaptive Filter Technique for Suppression of Wideband or Offset Narrowband Radio Frequency Interference	Jeffry J. Miller	5,097,221	03/17/92
Radial Damper Disk	Martha E. Snyderwine; Saroja Mahadevan	5,097,451	03/17/92
Optoelectronic Devices	Leslie H. Sperling; Clarence J. Murphy; Warren A. Rosen; Himanshu Jain; Warren N. Herman	5,112,531	05/12/92

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Optical Fiber Sensor for Measuring Physical Properties of Fluids	Lloyd C. Bobb; Barbara J. White; Jon P. Davis; Arthur Samouris	5,115,127	05/19/92
Aircraft Controlled Launch Container for Multiple Stores	Frank P. Marshall; Bruce W. Travor; James F. McEachern	5,155,288	10/13/92
Obturator Retaining Means	Bruce W. Travor; Frank P. Marshall; Timothy L. Kraynak	5,160,800	11/03/92
Temperature Compensated Lithium Battery Energy Monitor	Albert M. Bates	5,162,741	11/10/92
Optical Antenna Beam Steering Using Digital Phase Shifter Control	William D. Jemison; Peter R. Herczfeld; Arthur Paolella	5,164,736	11/17/92
Thermal Phase Modulator and Method of Modulation of Light Beams by Optical Means	Lloyd C. Bobb; Howard D. Krumboltz	5,166,988	11/24/92
Cable Pack Winding and Payout System	Roger A. Holler; Peter A. Ulrich	5,183,217	02/02/93
Optically Controlled Active Impedance Element Particularly Suited for a Microwave Oscillator	William D. Jemison; Peter R. Herczfeld	5,198,783	03/30/93
Extending Bandwidth of Optical Emitters Using Active Matching Technique	Vladimir Gershman; Afshin S. Daryoush; Warren A. Rosen	5,214,525	05/25/93
Underwater Transducer	Robert A. DeChico	5,218,576	06/08/93
Buoy Launch Container Extender	Frank P. Marshall; Bruce W. Travor; Saroja Mahadevan	5,222,996	06/29/93

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Optically Controlled Active Impedance Element and Filters Employing the Same	William D. Jemison; Peter R. Herczfeld	5,229,665	07/20/93
Multiplatform Sonar System and Method for Underwater Surveillance	Marvin C. Gaer	5,231,609	07/27/93
Flexible Acoustic Array with Polymer Hydrophones	Robert A. DeChico; James F. McEachern; Timothy L. Kraynak	5,257,243	10/26/93
Corrosion-Inhibiting Coating Composition	Walter E. Knight; Kenneth G. Clark; David L. Gauntt	5,021,489	06/04/91

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Helmet-Mounted Head Restraint	Michael H. Patterson	4,909,459	03/20/90
Apparatus for Cooling Electronic Components in Aircraft	Frank E. Altoz; John D. McClure	4,934,154	06/19/90
Engine Block Cylinder Head Bolt Hole Repair	James C. Stafford	5,025,556	06/25/91
Stabilized Square Parachute	Carl T. Calianno	5,037,042	08/06/91
Pivoting Seat for Fighter Aircraft	Chi Tung	5,064,146	11/12/91
Goggles Emergency Release Apparatus	Daniel J. Schmidt; Thomas J. Dillon; Ricky L. Greth	5,176,342	01/05/93
Helmet Visor Support Apparatus	Daniel J. Schmidt; John D. Jacks	5,177,816	01/12/93

HUMAN SYSTEMS

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Production of Monoclonal Antibodies to Treponema Denticola by Hybridoma TDIII, IIIBB2	**Lloyd G. Simonson**	**4,959,304**	**09/25/90**

ADVANCED MATERIALS

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
High Temperature, Corrosion-Preventive Coating	**Stephen J. Spadafora**	**4,960,817**	**10/02/90**
Polymer Composite Preform and Process for Producing Same	**John J. Reilly; Ihab L. Kamel**	**4,960,818**	**10/02/90**
High Gloss Corrosion-Resistant Coatings	**Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng; William J. Green**	**5,043,373**	**08/27/91**
Naval Electrochemical Corrosion Reducer	**Howard L. Clark**	**5,052,962**	**10/01/91**
Epoxy Corrosion-Resistant Coating	**Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng; William J. Green**	**5,059,640**	**10/22/91**
Composition and Method for Producing an Aluminum Alloy Resistant to Environmentally-Assisted Cracking	**John J. DeLuccia**	**5,061,323**	**10/29/91**
Corrosion-Resistant Alkyd Coatings	**Charles R. Hegedus; Donald J. Hirst; William J. Green; Anthony T. Eng**	**5,089,551**	**02/18/92**

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Polymer-Reinforced Metal Matrix Composite	Gilbert J. London; William E. Frazier; John G. Williams	5,100,736	03/31/92
Corrosion-Resistant Acrylic Coatings	Charles R. Hegedus; Donald J. Hirst; William J. Green; Anthony T. Eng	5,100,942	03/31/92
Apparatus for Preparing Thermoplastic Composites	Roland C. Cochran; Edwin L. Rosenweig	5,116,216	05/26/92
Polyurethane Self-Priming Topcoats	Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng	5,124,385	06/23/92
Epoxy Self-Priming Topcoats	Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng	5,130,361	07/14/92
Synthetic Lubricating Oil Greases Containing Metal Chelates of Schiff Bases	Vinod S. Agarwala; Alfeo A. Conte, Jr.; Krishnaswamy S.; Prabir K. Sen	5,147,567	09/15/92
Epoxy Self-Priming Topcoats	Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng	5,202,367	04/13/93
Process for Preparing Thermoplastic Composites	Roland C. Cochran; Edwin L. Rosenzweig	5,236,646	08/17/93
Polyurethane Self-Priming Topcoats	Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng	5,236,983	08/17/93
Strain Sensing Composites	Leonard J. Buckley; Gary C. Neumeister	5,240,643	08/31/93
Stainless Steel Surface Treatment	Georgette B. Gaskin; Gabriel J. Pills; Stanley R. Brown; Robert B. Boak	5,275,696	01/04/94
Polyurethane Self-Priming Topcoats	Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng	5,290,599	03/01/94

TITLE	AUTHOR(S)	PATENT NUMBER	DATE OF ISSUE
Polyurethane Self-Priming Topcoats	**Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng**	**5,290,839**	**03/01/94**
Polyurethane Self-Priming Topcoats	**Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng**	**5,290,840**	**03/01/94**
Trivalent Chromium Conversion Coatings for Aluminum	**Fred Pearlstein; Vinod S. Agarwala**	**5,304,257**	**04/19/94**
Corrosion-Inhibiting Coating Composition	**Walter E. Knight; Kenneth G. Clark; David L. Gauntt**	**5,021,489**	**06/04/91**

AIR VEHICLES, ROTARY, AVIONICS

NONE			

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

NONE			

AIR VEHICLES, FIXED, PROPULSION

Apparatus and method utilizing interference fringes to determine the thermal stability of a licquid	Darrah, S.D., DiGiusseppe, T.D., Marram, E.P., Kamin, R.A., Nowack, C.J., and Steendal, R.	4,842,410	1990

AIR VEHICLES, ROTARY, PROPULSION

NONE			

WEAPONS, CRUISE MISSILE

NONE			

WEAPONS, GUIDED PROJECTILES

NONE			

C4I SYSTEMS, AIRBORNE C4I

NONE			

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C4I SYSTEMS, FIXED GROUND-BASED C4I

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CSF	Disclosures	Awarded	Patent Titles (List)
C4I SYS, FIXED GRD-BASED C4I	1		NCCS 1801 TRANS.MODULE

NAWCHQ Change
VBC 9/20/94
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PATENTS APPLIED FOR
AIR VEHICLES, FIXED, STRUCTURES

TITLE	AUTHOR(S)	NAVY CASE NUMBER	SERIAL NUMBER	DATE FILED
Image Scanning Heterodyne Microinterferometer	William R. Scott	74227	07/827,233	1/29/92
Offset Corrugated Sandwich	Hemen Ray	74298	08/082,069	6/23/93
Corrosivity Sensor	Vinod S. Agarwala, Fred Pearlstein	74845	07/942,914	9/10/92
Josephson Break Junction and Method of Making Same	Ignacio M. Perez, William R. Scott	74889	07/947,022	9/17/92
Lift Enhancement Device	Samuel Greenhalgh	74935	08/067,763	5/26/93
Vibration-Damping Structure Component	David John Barrett	73018	07/800,902	11/26/91
Method of Making an Offset Corrugated Sandwich Construction	Hemen Ray, Lee W. Gause	73384	08/082,068	6/23/93
Lattice Core Sandwich Construction	Hemen Ray, Lee W. Gause	73428	08/082,067	6/23/93
Improved Vibration-Damping Structural Component	David John Barrett	73728	08/025,535	3/3/93
System and Method for Automatic Ship Steering	Jules Kriegsman, Martin E. Leblang	73748	07/758,976	9/6/91
Meniscus Regulator System	Marshall K. Thomas	74028	08/123,944	9/20/93
Corrosivity Sensor	Vinod S. Agarwala, Fred Pearlstein	75524	08/087,237	6/30/93
A Jack Mechanism Having Positive Stop Means for Crank Handle	Watkins Crockett IV, Bernard W. Baird	75876	08/183,707	1/18/94

AIR VEHICLES, FIXED, AVIONICS

TITLE	AUTHOR(S)	NAVY CASE NUMBER	SERIAL NUMBER	DATE FILED
Nonlinear Frequency Conversion Optical Filter	Bruce P. Boczar	74269	08/123,959	9/20/93
A System for Conveniently Producing Load Testing Termination of an AC Power Source Having at Least One Battery	Wilbert J. Morell, III	74934	07/972,701	11/5/92
Ship's Attitude Date Converter (SADC)	Peter J. Konopelski	75037	08/096,088	7/21/93
Wavefront Simulator for Evaluating RF Communication Array Signal Processors	Steven B. Minarik	75055	08/145,352	10/27/93
An Automatic Repeater System for Signal Transmissions	Elliott L. Ressler, Yoram Levy, Douglas Bancroft	72839	08/106,746	8/16/93
Simplified Reuseable Sonobuoy Launcher	Bruce W. Travor, Richard M. Coughlan	73043	08/102,023	7/28/93
Liquid Metal Confinement Cylinder for Optical Discharge Devices	Marie E. Taylor, Edward J. Seibert	73195	08/172,795	12/27/93
Passive Range Measurement System	Walter L. Harriman	73330	07/921,863	7/27/92
Aircraft Control Lever Simulator	G. Terry Thomas	73610	08/130,950	10/4/93
An Elastomeric Electrical Connector	Joseph E. Laska, John T. Oakley, Francis R. Reinert	73688	08/107,431	8/16/93
Apparent Size Passive Range Method	Walter L. Harriman	73890	08/094,663	7/15/93

AIR VEHICLES, FIXED, AVIONICS (CONT'D)

TITLE	AUTHOR(S)	NAVY CASE NUMBER	SERIAL NUMBER	DATE FILED
Cable Multi-Pack	Roger A. Holler, Peter R. Ulrick	75487	08/093,961	6/23/93
Thoriated Tungsten Split Ring Hollow Cathode Electrode for Longitudinal Discharge of Gases and Metal Vapors	Edward J. Seibert, Gerald D. Ferguson, Marie E. Taylor	75523	08/209,345	3/14/94
Ice Penetrating Buoy	Bruce W. Travor; Ronald D. DiGirolamo	73230	08/053,763	05/03/94
Underwater Aeoustic Intensity Probe	Thomas B. Gabrielson, James F. McEachern, Gerald C. Launchle	75162	08/136,637	10/12/93

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

TITLE	AUTHOR(S)	NAVY CASE NUMBER	SERIAL NUMBER	DATE FILED
Oil/Coolant Separator	Jack H. Fentz	75693	08/221,126	3/31/94
Reconfigurable Aircraft Stick Control	Thomas M. Kelso, John K. Kotch, Damon Boyle, David H. Meiser, William Flaherty, Benard Baird	75350	08/129,729	9/29/93

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AIR VEHICLES, FIXED, PROPULSION

NONE			

AIR VEHICLES, ROTARY, PROPULSION

NONE			

WEAPONS, CRUISE MISSILE

NONE			

WEAPONS, GUIDED PROJECTILES

NONE			

C4I SYSTEMS, AIRBORNE C4I

NONE			

C4I SYSTEMS, FIXED GROUND-BASED C4I

NONE			

NTTWCHQ Change
VBC 9/20/94
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ADVANCED MATERIALS

TITLE	AUTHOR(S)	NAVY CASE NUMBER	SERIAL NUMBER	DATE FILED
Johnson Break Junction and Method of Making Same	**Ignacio M. Perez, William R. Scott**	**73325**	**07/777,773**	**10/10/91**
Polyurethane Self-Priming Topcoats	**Charles R. Hegedus, Donald J. Hirst, Anthony T. Eng**	**75351**	**08/207,445**	**3/7/94**
Epoxy Self-Priming Topcoats	**Charles R. Hegedus, Donald J. Hirst, Anthony T. Eng**	**75558**	**08/207,448**	**3/7/94**
Trivalent Chromium Solutions for Sealing Anodized Aluminum	**Fred Pearlstein, Vinod S. Agarwala**	**75647**	**08/134,762**	**10/1/93**
Polyurethane Self-Priming Topcoats	**Charles R. Hegedus; Donald J. Hirst; Anthony T. Eng**	**75419**	**08/062,864**	**05/03/94**

AIR VEHICLES,. ROTARY, AVIONICS

NONE				

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

NONE				

HUMAN SYSTEMS

NONE				

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
		See following pages
TOTAL	**401**	

AIR VEHICLES, FIXED, AVIONICS

* Albano, A. M., A Passamante, and Mary Eileen Farrell, "Using higher-order correlations to define an embedding window," *Physical D* **54**, 85 (1991). R

* Passamante, A. and M. E. Farrell, "Characterizing Attractors Using Local Intrinsic Dimension via Higher Order Statistics," Physical Review,Vol. A 43, 5268, 1991.

* Billmers, R. I. and A. L. Smith, "Ultraviolet-visible absorption spectra of equilibrium sulfar vapor: Molar absorptivity spectra of S3 and S4", Journal of Physical Chemistry, **95** (1991) p. 4242.

* Bobb, L., "Pressure Sensor That Uses Bent Bioconically Tapered Single Mode Fibers," Optics Lett 16, #2, 112 (1991).

* Bobb, L., "Coupling of Modes in Bent Biconically Tapered Single Mode Fibers," Journal of Light Wave Technology, Vol 9, p. 832, July 1991.

* Davis, J. P., A.Smith, C. Giranda and M. Squicciarini, "Laser induced Plasma Formation in Xe, Ar, N, and O at the first four Nd-YAG harmonics", Applied Optics 30m 4358 (1991).

* Ochadlick, A. R., Jr. and N. Engheta, "Magnetic Fields Resulting from Ocean Current Structures Seen in SAR Imagery," Extended abstract in Progress in Electromagnetics Research Symposium (PIERS) Proceedings, Ocean Surface as a Turbulent Scattering Medium II, p. 124, July 1991.

* Passamante, A. and Mary Eileen Farrell, "Characterizing attractors using local intrinsic dimension via higher order statistics," *Physical Review A* **43**, 5268 (1991).

* Albano, A. M., A. Passamante, T. Hediger, and Mary Eileen Farrell, "Using Neural Nets to Look for Chaos," *Physical D* **58**, 1 (1992).

* Bobb, L. C. and P. M. Shankar, "Tapered Optical Feber Components and Sensors: Microwave Journal 35, #5 218(1992)

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VBC 9/20/94
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AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

NONE

AIR VEHICLES, FIXED, STRUCTURES

NONE

AIR VEHICLES, ROTARY, AVIONICS

NONE

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

NONE

AIR VEHICLES, ROTARY, PROPULSION

NONE

AIR VEHICLES, FIXED, PROPULSION

NONE

WEAPONS, CRUISE MISSILE

NONE

WEAPONS, GUIDED PROJECTILES

NONE

C41 SYSTEM, AIRBORNE C4I

NONE

C4I SYSTEMS, FIXED GROUND-BASED C4I

R

NONE

NAWCHQ change
VBC 9/20/94
NAWC-21D

PAGES 75 R (9-6-94) THRU 97 R (9-6-94) ARE INTENTIONALLY LEFT BLANK DUE TO THE EXTRACTION OF DATA FROM QUESTION 3.2.4.2

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 **Work Year and Lifecycle:** Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

AIR VEHICLES, FIXED, AVIONICS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	209	2.3		
Engineering Development	548.6	2.4		
In-Service Engineering	164.4	1.0		

R

AIR VEHICLES, FIXED, STRUCTURES

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	71.7	0.0		
Engineering Development	43.7	0.0		
In-Service Engineering	8.2	0.0		

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	5.6	0.0		
Engineering Development	51.6	0.0		
In-Service Engineering	29.6	0.0		

NAVCHQ Change
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AIR VEHICLES, ROTARY, AVIONICS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	9.2	0.0		
Engineering Development	33.6	1.3		
In-Service Engineering	37.4	0.0		

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0.0	0.0		
Engineering Development	0.0	0.0		
In-Service Engineering	.4	0.0		

ADVANCED MATERIALS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	13.2	0.0		
Engineering Development	0.0	0.0		
In-Service Engineering	0.0	0.0		

HUMAN SYSTEMS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	27.8	0.0		
Engineering Development	0.0	0.0		
In-Service Engineering	0.0	0.0		

AIR VEHICLES, FIXED, PROPULSION

R

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	**81.1**	**0.0**		
Engineering Development	**170.7**	**0.0**		
In-Service Engineering	**46.2**	**0.0**		

AIR VEHICLES, ROTARY, PROPULSION

R

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	**3**			
Engineering Development	**16.5**			
In-Service Engineering	**12.5**			

WEAPONS, CRUISE MISSILES

R

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	**1.5**			
Engineering Development	**10**			
In-Service Engineering	**22.5**			

NAWCHQ Change
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WEAPONS, GUIDED PROJECTILES

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	*			
Engineering Development				
In-Service Engineering				

R

*** NO FULL-TIME PERSONNEL DEDICATED 100% TO WEAPONS, GUIDED PROJECTILES.**

C41 SYSTEMS, C41 AIRBORNE C41

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology				
Engineering Development				
In-Service Engineering	8			

R

C41 SYSTEMS, FIXED, GROUND-BASED C41

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology				
Engineering Development	5	1		10
In-Service Engineering	50			65

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NAWCHQ change
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3.3.1.2 **Engineering Development By ACAT:** For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

AIR VEHICLES, FIXED, AVIONICS

Engineering Development	Name or Number	Work-years (FY93 Actual)	FY93 Funds Received (Obligation Authority)	
ACAT IC	NAVSTAR GPS EQUIP	17.2	3089.6	EVALUATION OF GPS ANTENNAS AND DETERMINING THE OPTIMUM INSTALLATION ON NAVAL PLATFORMS FOR ACCEPTABLE GPS ANTENNA PERFORMANCE.
AT IC	FIXED DISTRIBUTED SYSTEM	5.9	892.3	PROVIDE TECHNICAL SUPPORT FOR THE DEVELOPMENT OF THE AIR DEPLOYABLE MEMBERS OF THE ADVANCED DEPLOYABLE SYSTEM FAMILY. ON-SITE TECHNICAL SUPPORT AND EVALUATIONS WILL BE PROVIDED TO THE PROGRAM DEVELOPMENT OFFICE (PD80D).

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NAWCHQ Change
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AIR VEHICLES, FIXED, AVIONICS (CONT'D)

ACAT IC	TACTICAL RECON SYSTEM (TACRECCE)	9.2	1932.8	PROVIDE PROJECT MANAGEMENT AND SYSTEM ENGINEERING IN THE DEVELOPMENT AND INTEGRATION OF A RECONNAISSANCE CAPABILITY FOR THE F/A-18(RC) AIRCRAFT.	R
ACAT IC	FLTSATCOM X0731	1.5	1050	DEVELOP, TEST, & EVALUATE NAVY SATELLITE CONTROL STATION INTERFACE UNIT (NIU)	
ACAT ID	F/A-18 VARIANT	.3	40.4	PROVIDE RESPONSIVE MANAGEMENT ENGINEERING SUPPORT, AND BROAD BASE TECHNOLOGY SUPPORT TO NAVAIR FOR DEVELOPMENT, FLEET INTRODUCTION AND NAVY SUPPORT OF THE F/A-18, ITS DERIVATIVES.	
ACAT ID	A/F-X DEVELOPMENT	22.1	3788.8	PRIMARY FOCUS WILL BE SOURCE SELECTION ACTIVITIES IN PREPARATION FOR THE MILESTONE I DAB, THE ASSESSMENT OF CONTRACTOR CE&D RISK REDUCTION ACTIVITIES AND THE PERFORMANCE OF INDEPENDENT IN-HOUSE RISK REDUCTION	
ACAT ID	ASPJ COMMON DEV	1.1	182.1	PROVIDE TECHNICAL SUPPORT TO NAVAIR IN THE HARDWARE DEVELOPMENT OF AIRBORNE SELF PROTECTION JAMMER ASPJ TO INSURE AIRCRAFT GROUP "A" COMPATIBILITY TO DETERMINE GROUP "A" REQUIREMENTS AND TO DEVELOP HARDWARE AND INSTALLATION SPECIFICATIONS REQUIRED FOR AIRCRAFT INSTALLATION.	
ACAT ID	F/A-18E/F UPGRADES	0.9	121.6	PROVIDE RESPONSIVE MANAGEMENT, ENGINEERING SUPPORT, AND BROAD BASE TECHNOLOGY SUPPORT TO NAVAIR FOR DEVELOPMENT, FLEET INTRODUCTION AND NAVY SUPPORT OF THE F/A-18, ITS DERIVATIVES AND TACTICAL MISSION.	R
.T II	EW COUNTER RESPONSE	1.5	208.0	ENHANCE THE NAVY'S CAPABILITY IN ELECTRONIC WARFARE THROUGH THE AN/ALQ 149 AND ALQ-99 PROGRAM	R
ACAT II	F/A-18 RADAR UPGRADE	.3	40.4	PROVIDE RESPONSIVE MANAGEMENT, ENGINEERING SUPPORT AND BROAD BASE TECHNOLOGY SUPPORT TO NAVAIR FOR DEVELOPMENT, FLEET INTRODUCTION AND NAVY SUPPORT OF THE F/A-18, ITS DERIVATIVES AND TACTICAL MISSIONS.	
ACAT II	F-14 UPGRADE	20.0	3665.0	IDENTIFY NEEDS AND VALIDATE RQTS FOR THE F-14 AIR VEHICLE, AVIONICS, AND WEAPON CONTROL/MISSILE ARMAMENT SYSTEM.	R
ACAT II	ASN DEF ECM	4.1	786.1	IMPROVE FLEET TACTICAL SURVIVABILITY IN HOSTILE ENVIRONMENTS. DEVELOP SOFTWARE ALGORITHMS TO CONTROL AND COORDINATE ON-BOARD AND OFF-BOARD COUNTERMEASURES IN RESPONSE TO THREAT SITUATIONS.	R
ACAT IC	V-22	35.4	8177.0	PROVIDE TECHNICAL SUPPORT TO NAVAIR FOR THE FULL SCALE DEVELOPMENT OF THE V-22 ADVANCED VERTICAL LIFT AIRCRAFT.	

NAWCHQ Change
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ACAT III	8	8.8	1994.4	FULL SPECTRUM C4.8
"		46.2	15988.4	ADV ASW SENSORS PROC
		1.2	372.6	ASWOC GENERIC MISN REPLAY
		0.7	207.4	COMBO RADIO
"		8.2	2024.0	ASW SENSORS & PROC
"		5.8	1508.1	TACAMO SUPPORT(BLK UPGRD)
"		48.2	15465.8	AIR DEPLOYED ACTIVE RECEIVER
"		35.0	6872.6	P-3 SENSOR INTEGRATION
IV	3	1.2	361.4	TACT COMBAT TRAINING SYSTEM
"		3.5	531.0	TACT AIR COMB TRNG SYS
"		1.4	267.8	SAHRS
OTHER	119	4.6	1417.0	SPECIAL OPERATIONS A/C
"		1.0	182.0	NASP A540540TG/001C/06326
"		0.6	98.4	TACTS LATR
"		0.2	114.6	TA/AS ICD

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NAWCHQ Change
VBC 9/20/94
NAWC-21D

AIR VEHICLES, FIXED, AVIONICS (CONT'D)

OTHER	0.1	16.2	F/A-18 E/F ARFRM BEARINGS	R
"	6.2	1407.2	TBMD SYSTEM ENGRG	
	0.5	117.1	F/A-18 E/F FUEL SYS	
:	46.2	10056.2	EMSP PROJECT	
"	13.2	3474.2	NGCR	
"	0.5	95.5	F/A-18 E/F ADVANCED SMS	
"	0.3	48.4	F/A-18 E/F NONDESTR TEST	
"	0.7	202.4	F/A-18 E/F COMP TEST	
"	0.3	47.3	F/A-18 E/F AERMET 100 FAT	
"	0.6	84.0	F-14 TAMPS MPM	
"	0.2	30.9	F/A-18 E/F NMET HNCB	
"	0.3	50.0	F/A-18 E/F LOW COST FAB	
"	0.2	58.8	F/A-18 E/F STRUCTURE LOAD	
"	0.3	57.7	F/A-18 E/F ARMAMENT	
"	0.3	51.5	F/A-18 E/F COMP REP DEVEL	
	0.0	15720.2	P-3 SAR TEST AND OPERATIONS	
	0.4	33.9	F/A-18 E/F FIRE PROT ENG	
"	1.9	381.0	UAV SYS ENGR T/S	
"	0.2	49.0	TA/AS TRI-SERVICE	
"	0.4	71.5	F/A-18 E/F ADV COMP DEVEL	
"	0.7	3952.4	UAV(NAWC)MR TECH SUPPT	

NAWCHQ Change
VBC 9/20/94
NAWC-21D

AIR VEHICLES, FIXED, AVIONICS (CONT'D)

OTHER	0.2	27.9	F/A-18 E/F ADV MATLS PROC
"	0.4	65.7	F/A-18 E/F COMP MATL TECH
	1.6	253.8	ASW TACT DECISION AIDS
"	2.4	875.6	AAED
"	1.6	317.4	UTSS
"	1.0	187.3	F/A-18 E/F STAB/CONTROL
"	0.5	120.3	F/A-18 E/F ECS
"	0.2	39.6	TDA-STRIKE
"	2.6	452.4	TA/AS ARMS
"	2.4	408.4	TACTS ACTS SIMS
"	4.2	1484.4	CV-ASWM
"	4.9	949.4	UAV MARITIME T/S
"	0.2	43.7	F/A-18 E/F LANDING GEAR
"	2.3	346.5	UAV TRUS T/S
"	22.6	4545.4	BEARTRAP CORE

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...NC-HQ Change
VBC 9/20/94
NAWC-21D

AIR VEHICLES, FIXED, AVIONICS (CONT'D)

OTHER	0.6	121.2	UAV VLAR T/S	
"	2.0	569.0	SAT	
	0.4	92.8	TA/AS FEI	
"	1.4	248.6	NSTTS	
"	0.2	449.8	RADIANT OUTLAW	
"	2.0	1081.6	ERAPS	
"	0.3	47.4	F/A-18 E/F PROPULSION	
"	0.3	38.8	F/A-18 E/F INT FUEL	
"	0.1	7.5	RDTE UAV VLAR SYSTEM ENGR	
"	0.4	105.0	UAV VTOL MAVUS II T/S	
"	5.8	1164.4	NAVS	
"	0.1	19.7	F/A-18 E/F MATL CORR CHAR	
"	0.3	58.9	F/A-18 E/F MET MATLS TECH	
"	13.9	3368.3	UAV BQM-145 T/S	
"	0.0	495.4	P-3 SAR TEST AND OPERATION	
	0.4	63.6	ICNEWS	
	35.0	11074.4	UPDATE IV	
"	0.2	19.8	TEST PROC ASW SONAR SYSTEM	R
"	0.4	67.4	F/A-18 E/F HONEYCOMB ELIM	
"	0.8	148.6	E-2C MISSION COMPUTER STU	
"	0.6	99.0	SH-2G/SH-3H/SH-60 MISSION	R
"	16.0	15.8	SDIO/SBIR PHASE 1 PROJECT	

NAWCHQ Change
VBC 9/20/94
NAWC21D

AIR VEHICLES, FIXED, AVIONICS (CONT'D)

OTHER	1.4	222.0	MIMIC	
"	0.6	112.8	F/A-18 E/F ADH BOND TECH	
	3.0	522.2	INEWS SAAS ENGINEERING SU	
"	0.6	84.2	PDC BOARD FAB(EMSP FACIL)	
"	2.7	534.2	ASWOC FAST-TIME ANALYZER	
"	0.9	202.9	F/A-18 E/F LAND GEAR MATL	
"	0.8	137.8	BAM UPGRADE	
"	0.3	69.4	F/A-18 MIDS ANTENNA SYSTE	
"	0.7	181.0	F/A-18 E/F HYD SYS REDSGN	
"	17.8	3369.2	ADI AIRSHIP PROGRAM	
"	0.2	99.1	LITE	R
"	1.6	259.2	LASER RECV E-O SENSOR PRG	
"	0.2	21.8	TESTING BETA-BARIUM BARAT	
"	0.7	157.9	TACAMO SUPPORT	R
"	8.9	2649.6	P-3 SAR TEST AND EVAL	
	1.2	198.2	AIR ACOUSTIC CLASSIFICATION	
	1.2	247.8	NA-20 PROJ 111 SUPPORT	
"	2.2	320.4	AIR DEFENSE INITIATIVE	
"	19.8	3432.6	JTIDS SOFTWARE DEVELOPMEN	
"	0.2	14.6	EER(63013N) NELO FY92C-O	
"	2.4	399.0	INTEGRATED EW SYSTEM (INE	

NAWCHQ change
VBC 9/20/94
NAWC-21D

AIR VEHICLES, FIXED, AVIONICS (CONT'D)

OTHER	0.4	109.4	T/R MODULE MANTECH	R
	0.8	147.8	F/A-18 E/F ADV STRUCTURES	
"	0.5	90.8	F/A-18 E/F ACFT SEAL TECH	
"	0.4	87.3	F/A-18 E/F ACFT PERF SUPT	
"	0.4	59.5	E-2C MISSION COMPUTER UPG	R
"	5.4	1377.0	S-3 ENGINEERING SUPPORT	
"	1.3	286.9	F/A-18 E/F SYSTEMS ENG	
"	1.6	293.8	ADI-ASW SIGNAL PROCESSING	
"	0.4	111.4	F/A-18 E/F FLT CLEARANCE	
"	0.5	112.3	F/A-18 E/F STRUCTURE ANLY	
"	0.3	51.5	TAMPS JTIDS	R
"	0.4	39.6	PROJ RAD CIRRUS II	
"	0.6	174.1	MILSTAR	
"	1.2	260.8	F/A-18 E/F FLT CNTRL SYS	
"	0.8	138.0	NIGHT TARGETING	R
	1.1	244.8	F/A-18 E/F NT TECH SUPT	
"	0.1	14.3	RDTE UAV(MR)TECH ANALYSIS	
"	0.2	49.6	EA6B VHF-ILS	R

XHQ Change
VBC 9/20/94
NAWC-210

AIR VEHICLES, FIXED, AVIONICS (CONT'D)

OTHER	0.1	9.9	FY92 S/E SUPPRT VTOL	
	5.4	1129.6	TAMPS GPS	
"	0.2	34.4	PIONEER-PROD ENGR SUPPT	
"	8.0	2000.0	OPTICAL ASW-O	
"	1.4	284.4	SST	
"	1.2	454.5	AIRBORNE COMMAND POST	
"	0.4	49.6	SSST	
"	0.8	119.0	INEWS	
"	1.0	267.6	RADIANT CIRRUS III	
"	0.0	25.4	LIGHTENING TECH SUPP FOR	R
"	1.6	293.7	SURTASS SUPPORT MARITIME	R
"	51.2	9581.8	EER(63999N)PMA264 FY93	
"	0.2	39.6	RASSP PROPOSAL EVALUATION	
"	7.0	1674.4	EMSP	
"	0.1	14.9	WLY-1 TEST & EVALUATION	
	0.8	137.2	PROJECT TOSS	
"	7.0	1506.2	ARPA AIRSHIP PROGRAM	
"	5.4	1141.6	MAD BUOY	
"	0.1	23.1	PASSIVE EXT RANGE SONOBUO	

R

NAWCHQ Change
VBC 9/20/94
NAWC-21D

AIR VEHICLES, FIXED, STRUCTURES

Engineering Development	Name or Number	Work-years (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT ID	ADVANCED INTERDICTION WEAPON SYSTEM	5.2	2101.8	PROVIDE SYSTEM AND TECHNOLOGY ENGINEERING SUPPORT TO NAVAIR 5402H FOR THE JOINT STANDOFF WEAPON DURING THE DEMONSTRATION AND VALIDATION PHASE PROVIDING LEAD LAB SUPPORT IN THE AREAS OF STRUCTURES AND MATERIALS
ACAT ID	T-45 IMPROVEMENTS	3.9	571.8	PROVIDE SYSTEMS AND TECHNOLOGY SUPPORT TO NAVAIR-5114D. PROVIDE SYSTEMS AND TECHNOLOGY ENGINEERING SUPPORT FOR THE DEVELOPMENT OF THE NAVY'S JET FLIGHT T-45 TRAINING SYSTEM.

AIR VEHICLES, FIXED, STRUCTURES (CONT'D)

OTHER	4	0.4	71.8	MK48 VEHICLE AXLE FATIGUE
"		0.0	10.0	MULTICHIP MODULAR TECHNOL
		1.0	168.4	ASTOVL ADV DEV PROJ OFFIC
"		1.2	198.2	ADV VEHICLE/NAVY

R

NAWCHQ Change
VBC 9/20/94
NAWC-21D

AIR VEHICLES, ROTARY, AVIONICS

Engineering Development	Name or Number	Work-years (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT II	ALFS	3.8	741.4	ALFS IS REPLACEMENT FOR AN/AQS-13F. ALFS DEVELOPMENT IS BEING INTEGRATED ONTO THE H-60 TO MEET THREAT RQTS. LEAD TECHNICAL LAB FOR ALFS DEVELOPMENT TECHNICAL SUPPORT TO NAVAIR.

R

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEMS

Engineering Development	Name or Number	Work-years (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
III	1	56.6	27748.8	AIRCREW SYSTEMS DEVELOPMENT
IV	1	20.6	14589.8	MEDIUM ENERGY LASER EYE PROTECTION
OTHER	3	0.4	8.9	TESON/ARLM INTERFACES
"		0.0	43.6	UWARS TESTING
"		7.0	792.8	ADVANCED EYE PROTECTION C

R

Engineering Development	Name or Number	Work-years (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative

AIR VEHICLES, FIXED, PROPULSION

R

ACAT ID	F-18	41.6	7.6	ENGINEERING SUPPORT
OTHER	F-14	17.3	1.3	ELIMINATION HALON 1301 FR

NAWCHQ Change
VSC 9/20/94
NAWC-21D

AIR VEHICLES, ROTARY, PROPULSION

ACAT III/IV	3	14.5	1.4M	DIAGNOSTICS DEVELOPMENT, DRIVE SYSTEM SUPPORT, TRANSMISSION SUPPORT
TER	1	1.5	.12M	A/V DIAGNOSTICS
...AT IC	V-22	1.7	.15M	ENGINEERING SUPPORT FOR V-22, PROPULSION ENGINEERING DEVOPMENT PROGRAM
ACAT III/IV	10	4.8	.54M	CH-53, H60,E-2C,C-2, C-130,C-2,P-3,AH-1, SH-3,SH-2

C4I SYSTEMS, AIRBORNE C4I

ACAT 1C	E-6A	8	4.8M	Airborne/Strategic Communications (ASC)	R

WEAPONS, CRUISE MISSILE

AACAT III/IV	5	4.0	.58	ITALS, Targets, JUAV, CR/SRUAV, VTOL UAV, MRUAV

WEAPONS, GUIDED PROJECTILES

*

***No full-time personnel dedicated 100% to this CSF.**

C4I SYSTEMS, FIXED GROUND-BASED C4I

R

TIC	FLTSATCOM	0.1	11.5	PROVIDE SUPPORT FOR THE ACQUISITION AND TESTING OF COMMUNICATION EQUIPMENT.
ACAT II	NCCS X0709	1.5	346	DEVELOP, TEST, EVALUATE, & LIFE CYCLE SUPPORT FOR OSS/WWMCCS
ACAT III/IV	TSC/MOCC X0486	25	9590	DEVELOP, TEST, EVALUATE, LIFE CYCLE SUPPORT & ACQUISITION FOR MODULAR OPERATIONAL COMMAND CENTER
ACAT III/IV	TACTICAL COMBAT OPERATION	1.5	630	DEVELOP, TEST, & EVALUATE MARINE CORPS TACTICAL COMMAND SYSTEM

NAWCHD Change
VSC 9/20/94
NAWC-21D

R

OTHER	0.8	297.2	IBAHRS INERTIA REEL TEST
	0.8	99.0	ELIMINATION HALON 1301 FR
	0.0	56.0	AERPS
	0.8	297.2	LASER EYE PROTECTION
	0.8	135.8	ARMY AVIATORS ENSEMBLE
	0.0	98.4	USAF LIFE SUPPORT/HUMAN S
	0.2	39.6	ADVANCED DEVELOPMENT AIRC
	0.0	19.8	LIFE SUPT EQUIPMENT/2934
	0.0	297.2	BROAD BAND

3.3.1.3 **In-Service Engineering:** For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

NAVCHO Change
VBC 9/20/94
NAVC-21D

Common Support Functions	In Service Engineering Efforts	FY-93 Actual		Weapon Systems Supported
		Funds Received	Work Years	
Air Vehicles, Fixed, Avionics	A-6E NVIS LIGHTING	468.9	2.7	A-6
Air Vehicles, Fixed, Avionics	A-6E SWIP NVIS LIGHTING			A-6
Air Vehicles, Fixed, Avionics	A-6E ARMAMENT SYSTEM	10.0		A-6
Air Vehicles, Fixed, Avionics	A-6E MATERIALS	56.2	0.3	A-6
Air Vehicles, Fixed, Avionics	A-6E WING ANALYSIS	113.7	0.4	A-6
Air Vehicles, Fixed, Avionics	A-6E BLOCK II ILS	0.0		A-6
Air Vehicles, Fixed, Avionics	A-6E NVIS ILS	71.6	0.4	A-6
Air Vehicles, Fixed, Avionics	A-6E SWIP NVIS			A-6
Air Vehicles, Fixed, Avionics	A-6E NVIS SUPPORT EQUIP			A-6
Air Vehicles, Fixed, Avionics	A-6E E3 DESIGN AND INTEG	15.7	0.1	A-6
Air Vehicles, Fixed, Avionics	A-6E NVIS SUPT EQUIP	201.0	1.2	A-6
Air Vehicles, Fixed, Avionics	A-6E PROD MGNT	215.3	1.3	A-6
Air Vehicles, Fixed, Avionics	A-6E MOCKUP/NVIS INTEG	9.9		A-6
Air Vehicles, Fixed, Avionics	A-6E NVIS IMAGING SYSTEM			A-6
Air Vehicles, Fixed, Avionics	A-6E ILS SUPPORT	29.6	0.2	A-6
Air Vehicles, Fixed, Avionics	A-6E TACTICAL MANUAL	14.2	0.8	A-6
Air Vehicles, Fixed, Avionics	AQM-37C	215.1	1.4	AQM-37C
Air Vehicles, Fixed, Avionics	ASWOC FAST-TIME ANALYZER	633.3	3.4	ASW
Air Vehicles, Fixed, Avionics	MISSION TAPE RECORDER	52.6	0.4	AVIONICS
Air Vehicles, Fixed, Avionics	NASA TAPE DROP-OUT CIRCUI	503.4	1.4	AVIONICS
Air Vehicles, Fixed, Avionics	BQM-34S	107.2	0.5	BQM-34S
Air Vehicles, Fixed, Avionics	BQM-74C	591.4	3.3	BQM-74C
Air Vehicles, Fixed, Avionics	C-130	566.8	2.7	C-130
Air Vehicles, Fixed, Avionics	KC130 ENG NVIS SUPPORT	148.7	0.9	C-130
Air Vehicles, Fixed, Avionics	E-2C SYSTEM SUPPORT	258.2	2.3	E-2
Air Vehicles, Fixed, Avionics	E-6 SYST DEVEL (ILS)	998.9	3.4	E-6A
Air Vehicles, Fixed, Avionics	E-6 DEVEL SUPT (NTEST)	9.9	0.1	E-6A
Air Vehicles, Fixed, Avionics	E-6 SYSTEMS DEVELOPMENT	64.4	0.2	E-6A
Air Vehicles, Fixed, Avionics	EA6B FLIGHT CONTROL	385.7	1.7	EA-6
Air Vehicles, Fixed, Avionics	ANTENNA TUNING SUPPORT	7.9	0.1	EA-6B
Air Vehicles, Fixed, Avionics	GEN-X EXPEND DECOY PRODUC	1000.1	3.5	ECM GEN-X DECOY
Air Vehicles, Fixed, Avionics	EMI INST	155.9	0.7	EMI
Air Vehicles, Fixed, Avionics	F-14 NATOPS SUPPORT	26.5	0.2	F-14
Air Vehicles, Fixed, Avionics	F-14A/B UPGRADE PROGRAM	1946.7	6.6	F-14
Air Vehicles, Fixed, Avionics	F-14 ILS SUPPORT	193.7	0.5	F-14
Air Vehicles, Fixed, Avionics	F-14 HYDRAULIC	49.6	0.3	F-14
Air Vehicles, Fixed, Avionics	F-14 APG-71 SUPPORT	189.2	0.1	F-14
Air Vehicles, Fixed, Avionics	F-14 LFA SUPPORT	1155.8	2.7	F-14
Air Vehicles, Fixed, Avionics	F-14 NVIS SUPPORT	316.3	0.2	F-14
Air Vehicles, Fixed, Avionics	AIM-54C SUPPORT	99.0	0.6	F-14

Common Support Functions	In Service Engineering Efforts	FY-93 Actual		Weapon Systems Supported
		Funds Received	Work Years	
Air Vehicles, Fixed, Avionics	F-14 BEARING MATERIALS	154.7	0.9	F-14
Air Vehicles, Fixed, Avionics	F-14 MATERIAL APPLICATION	76.9	0.4	F-14
Air Vehicles, Fixed, Avionics	ILS F-14A/B UPGRADE	84.1	0.4	F-14
Air Vehicles, Fixed, Avionics	F-14 TACTICAL MANUAL	48.7	0.3	F-14
Air Vehicles, Fixed, Avionics	F-14 FATIGUE LIFE MONITOR	242.3	1.3	F-14
Air Vehicles, Fixed, Avionics	TRAINER SUPT & MODEL DEV	1261.8	3.5	F-14
Air Vehicles, Fixed, Avionics	MDPS IV&V	190.3	0.7	F-14/F-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D RUG	63.0	0.4	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D TECHNICAL SUPT	281.0	1.2	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D ECP-87S1 INTEG	84.6	0.4	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D MATLS COR/ANLY	43.0	0.3	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D SMS TECH SUPT	103.4	0.4	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D SUBSYS FLT ACT	10.0	0.1	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D ARFRM FAT LIFE	222.1	1.3	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D ECS	57.6	0.4	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D MISSION PLAN	138.2	0.7	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D RECCE CONV KIT	169.9	0.3	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D TACT MAN CHART	27.8	0.2	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 FMS SP-P-SBQ			F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D HYD SYS TECH	137.6	0.8	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D E3 WOG	5.3		F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D EXT FUEL TANK	14.8	0.1	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D MECH FUEL SYS	23.2	0.2	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D ECCM RADAR UPG	64.0	0.5	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 FMS SZ-P-SAI			F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D OBOGS	38.3	0.3	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 FMS KU-P-SAO	16.4	0.2	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D EW	240.9	1.1	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 FMS FI-P-SAA			F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D TRN REF NAVIG	26.4	0.6	F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 FMS AT-P-GPG			F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 FMS CN-P-GRF			F/A-18
Air Vehicles, Fixed, Avionics	F/A-18 C/D CRS	932.2	4.4	F/A-18
Air Vehicles, Fixed, Avionics	EF-18 A/C/FLEET MOD PROGR	26.4	0.2	F/A-18E/F
Air Vehicles, Fixed, Avionics	ASW CAMPAIGN MODELLING	99.1	0.6	FLEET SUPPORT
Air Vehicles, Fixed, Avionics	APN	777.9	1.8	GUILDER
Air Vehicles, Fixed, Avionics	OPN	3448.5	15.9	GUILDER
Air Vehicles, Fixed, Avionics	WPN	198.2	1.4	GUILDER
Air Vehicles, Fixed, Avionics	LSAR	19.8		LOGISTICS
Air Vehicles, Fixed, Avionics	CAIN II LOG SUPP	742.2	0.4	MULTI-PLATFORM

Common Support Functions	In Service Engineering Efforts	FY-93 Actual		Weapon Systems Supported
		Funds Received	Work Years	
Air Vehicles, Fixed, Avionics	NASEE (NAVAIR S/W ENGINEE	37.2	0.1	NASEE
Air Vehicles, Fixed, Avionics	NSTTS	540.0	2.9	NSTTS
Air Vehicles, Fixed, Avionics	BEARTRAP SH-60 DIG. MAG.			P3C
Air Vehicles, Fixed, Avionics	ROYAL NETHERLANDS NAVY	123.1	0.5	P3C
Air Vehicles, Fixed, Avionics	REPUBLIC OF KOREA NAVY	291.3	1.2	P3C
Air Vehicles, Fixed, Avionics	ROYAL NORWEGIAN AIR FORCE	137.7	0.4	P3C
Air Vehicles, Fixed, Avionics	JMSDF S/W SUPPORT	438.0	1.9	P3C
Air Vehicles, Fixed, Avionics	AN-ASQ 212 IV&V	1385.8	6.8	P3C
Air Vehicles, Fixed, Avionics	SPECIAL PROJECTS FLT SUPT	912.3	4.7	P3C
Air Vehicles, Fixed, Avionics	2ND P3I (COMMAND FUNC SEL	842.3	5.3	P3C
Air Vehicles, Fixed, Avionics	ROYAL AUSTRALIAN AF	222.0	0.6	P3C
Air Vehicles, Fixed, Avionics	BM/C3 HUMAN IN CONTROL	61.4	0.4	P3C
Air Vehicles, Fixed, Avionics	PAKISTAN NAVY (PN)	8.9		P3C
Air Vehicles, Fixed, Avionics	SONOBUOY SUPPORT	667.4	2.7	R&D
Air Vehicles, Fixed, Avionics	PRODUCTION SONOBUOY SUPPO	282.4	1.8	R&D
Air Vehicles, Fixed, Avionics	VLAD SONOBUOY	297.3	1.8	R&D
Air Vehicles, Fixed, Avionics	VLF-2 TEST	26.8	0.2	R&D
Air Vehicles, Fixed, Avionics	RNUS TEST PLANNING	77.2	0.4	RANGES
Air Vehicles, Fixed, Avionics	RQM-67A	74.1	0.4	RQM-67A
Air Vehicles, Fixed, Avionics	OPTICAL REMOTE FUNCTIONS	90.2	0.5	S-3
Air Vehicles, Fixed, Avionics	OPTICAL RFS ADM DEV FOR S	782.4	3.6	S-3B
Air Vehicles, Fixed, Avionics	IMAGE QUALITY PRINTERS	228.9	0.3	SE
Air Vehicles, Fixed, Avionics	HAND HELD CAMERA	926.3	1.3	SE
Air Vehicles, Fixed, Avionics	PALADIN/FARV CONTROL SYS.	12.9	0.1	SENSOR TEC
Air Vehicles, Fixed, Avionics	NIGHT VISION SUPT/ARMY	39.6	0.4	SENSOR TEC
Air Vehicles, Fixed, Avionics	HARPOON ENG TRNG AIDS	98.5	0.7	SIMUL+TRNG DEV
Air Vehicles, Fixed, Avionics	PART TASK TRAINER	557.6	3.7	SIMUL+TRNG DEV
Air Vehicles, Fixed, Avionics	SPAIN HARPOON TRNG AID	1.8		SIMUL+TRNG DEV
Air Vehicles, Fixed, Avionics	PORTUGAL HARPOON TRNG AID	20.3	0.1	SIMUL+TRNG DEV
Air Vehicles, Fixed, Avionics	KUWAIT HARPOON TRNG AID	36.4	0.3	SIMUL+TRNG DEV
Air Vehicles, Fixed, Avionics	PENGUIN SIMUL TRNG DEV			SIMUL+TRNG DEV
Air Vehicles, Fixed, Avionics	SOFTWARE SPT	17.5		SOFTWARE SPT
Air Vehicles, Fixed, Avionics	SWALAS OPN	40.7	0.3	SONOBUOY
Air Vehicles, Fixed, Avionics	ACAP R&D OPN VIA NAC	30.1		SONOBUOY
Air Vehicles, Fixed, Avionics	IP'S FOR ECP'S	76.5	0.4	SONOBUOY
Air Vehicles, Fixed, Avionics	EER(OPN)NELO FY92-93	1739.7	5.8	SONOBUOY
Air Vehicles, Fixed, Avionics	TA/AS USQ-104	809.7	4.4	TA/AS USQ-104
Air Vehicles, Fixed, Avionics	TACAMO SUPPORT E6A HPTSPR	3276.4	14.2	TACAMO
Air Vehicles, Fixed, Avionics	MILSTAR JTPO	3016.8	11.7	TACAMO
Air Vehicles, Fixed, Avionics	TACAMO SUPPORT(BLKUPILS)	56.6	14.4	TACAMO

Common Support Functions	In Service Engineering Efforts	FY-93 Actual		Weapon Systems Supported
		Funds Received	Work Years	
Air Vehicles, Fixed, Avionics	SWG TACTICAL IMAGING SYS	525.7	2.2	TACT COMM SYS
Air Vehicles, Fixed, Avionics	TACRECCE FACTS 3200	38.3	0.3	TACTICAL RECON
Air Vehicles, Fixed, Avionics	TACTS PINE	53.6	0.4	TACTS
Air Vehicles, Fixed, Avionics	TACTS THAILAND	142.2	0.7	TACTS
Air Vehicles, Fixed, Avionics	TACTS GDOP	26.0	0.1	TACTS
Air Vehicles, Fixed, Avionics	TACTS JACTS NAVY	56.7	0.4	TACTS
Air Vehicles, Fixed, Avionics	TACTS TAIWAN	82.3	0.4	TACTS
Air Vehicles, Fixed, Avionics	TACTS TRES G	97.5	0.4	TACTS
Air Vehicles, Fixed, Avionics	TAMPS IV&V	444.0		TAMPS
Air Vehicles, Fixed, Avionics	TARPS	662.4	3.2	TARPS
Air Vehicles, Fixed, Avionics	ILSP CMS	349.1	1.1	TARPS
Air Vehicles, Fixed, Avionics	COUNTER NARCOTIC (CNIP)	224.0	0.9	TARPS
Air Vehicles, Fixed, Avionics	ACOUSTIC GENERATOR SYSTEM	788.6		TRAINERS
Air Vehicles, Fixed, Avionics	UAV ADM-141 T/S	54.0	0.4	UAV
Air Vehicles, Fixed, Avionics	UAV ITALD T/S	25.2	0.1	UAV
Air Vehicles, Fixed, Avionics	VANDAL	59.9	0.4	VANDAL
Air Vehicles, Fixed, Flight Subsystems	MILITARY SPECIFICATIONS	157.7	1.1	A/C ELEC POWER
Air Vehicles, Fixed, Flight Subsystems	E-2C RUDDER SERVO ACTUATO	69.4	0.4	ACTUATOR UPDATE
Air Vehicles, Fixed, Flight Subsystems	TECH SUP A/C ARM SYS	17.8	0.1	ARMAMENT SYSTEM
Air Vehicles, Fixed, Flight Subsystems	HELICOPTOR ROTOR HEAD	170.6	0.6	BEARING PERFORM
Air Vehicles, Fixed, Flight Subsystems	AIRCRAFT ELECTRICAL	110.4	0.6	BOMB RACKS
Air Vehicles, Fixed, Flight Subsystems	CSF HORZ ACC TEST INERTIA	46.1		CSF HORIZ ACCEL
Air Vehicles, Fixed, Flight Subsystems	E-2C AIR CREW EMER EGRESS	95.1	0.6	E-2C A/C EMERGN
Air Vehicles, Fixed, Flight Subsystems	TORPEDO BAND ENVIRONMENT			ENVIRONMENTTEST
Air Vehicles, Fixed, Flight Subsystems	AERIAL REFUELING STORE (A	223.3	0.8	FUEL TANKS
Air Vehicles, Fixed, Flight Subsystems	G-FAMILIARIZATION FOR ANG	19.8		G-FAM FOR ANG
Air Vehicles, Fixed, Flight Subsystems	LASER GUIDED TRAINING	26.7	0.1	GBU-24/BLU109
Air Vehicles, Fixed, Flight Subsystems	HYDRAULIC OIL PURIFIERS	17.0	0.1	HYDRAULIC OIL
Air Vehicles, Fixed, Flight Subsystems	SUPT OF ALSS/45BL	1824.3	9.1	INSERVICE ENG
Air Vehicles, Fixed, Flight Subsystems	CHEM/BIO UPGRADE/43SY	606.5	0.5	INSERVICE ENG
Air Vehicles, Fixed, Flight Subsystems	OZONE DEPLETING SUBSTANCE	126.1	0.9	OZONE ELIMINATE
Air Vehicles, Fixed, Flight Subsystems	PRACTICE BOMBS			RADAR TRACKING

Air Vehicles. Fixed. Flight Subsystems	TACTICAL REMOTE SENSOR	213.1	1.3	TRSS ADSID V

Common Support Functions	In Service Engineering Efforts	FY-93 Actual		Weapon Systems Supported
		Funds Received	Work Years	
Air Vehicles. Fixed. Flight Subsystems	AERIAL REFUELING (ARS)	1122.2	5.3	WAR CONSUMABLES
Air Vehicles. Fixed. Flight Subsystems	WAR CONSUMABLES	356.4	2.0	WAR CONSUMABLES
Air Vehicles. Fixed.Structures	CORROSION SENSORS	4.0		CORROSION
Air Vehicles. Fixed.Structures	CRUISE MISSILES PROJECT	4.4		CRUISE MISSILES
Air Vehicles. Fixed.Structures	F-14 IRSTS CARRYING CASE	110.4	0.6	F-14 IRSTS
Air Vehicles. Fixed.Structures	FABRICATION SUPPORT	130.0	0.9	FABRICATION SUP
Air Vehicles. Fixed.Structures	GBU-24/BLU-109 STRU ENG	113.0	0.8	GBU-24/BLU-109
Air Vehicles. Fixed.Structures	INSENSITIVE MUNITIONS	59.5	0.4	INSENSITIVE MUN
Air Vehicles. Fixed.Structures	SAFE	2132.7	12.8	KUWAIT F/A-18
Air Vehicles. Fixed.Structures	NATOPS MANUALS	31.5	0.2	NATOPS MANUALS
Air Vehicles. Fixed.Structures	A/C CORROSION PREVENTION	5.6		P-3 AIRCRAFT
Air Vehicles. Fixed.Structures	PMB EFFECTS ON A/C	59.5	0.4	PLASTIC MEDIA
Air Vehicles. Fixed.Structures	ENGINEERING SUPPORT	727.0	6.6	PRODUCTION ENG
Air Vehicles. Fixed.Structures	T45TS PROGRAM SUPPORT	59.6	0.4	T45TS PROGRAM
Air Vehicles. Fixed.Structures	OSP FABRICATION SUPPORT	89.2	0.6	UK OSP PROCURE
Air Vehicles. Fixed.Structures	OFFBOARD COUNTERMEASURES	104.0	0.7	UNMANNED AIRVEH
Air Vehicles. Rotary. Avionics	AH-1W TECH MGMT SUP (FMS)	22.3	0.2	H-1
Air Vehicles. Rotary. Avionics	AH-1W SYS ENGRG SUP	350.3	3.5	H-1
Air Vehicles. Rotary. Avionics	AN/ARC-210 UHF/VHF ECCM	126.1	0.7	H-46
Air Vehicles. Rotary. Avionics	SH-60BOP S/W SUPT & ENHAN	1834.7	8.4	SH-60B
Air Vehicles. Rotary. Avionics	SH60F & DERIVATIVE HELOS	105.1	0.4	SH-60F
Air Vehicles. Rotary. Avionics	SH60F AND VARIANTS	998.3	4.5	SH-60F & DERIVA
Air Vehicles. Rotary. Avionics	UH-1N GFE SPARES			UH-1N
Air Vehicles. Rotary. Avionics	UH-1N GFE PH A&B NTIS	2383.9	10.6	UH-1N
Air Vehicles. Rotary. Avionics	UH-1N COEA	287.4	1.2	UH-1N
Air Vehicles. Rotary. Avionics	93 TEST BENCH PO	25.2	0.2	VH-3/60
Air Vehicles. Rotary. Avionics	93 AIRTASK (A5115J)	1122.5	5.3	VH-3/60
Air Vehicles. Rotary. Avionics	93 GFE (RF/SCUPROD/IRU)			VH-3/60
Air Vehicles. Rotary. Avionics	92 CDS/NIU/KY/FM PO	530.7	1.8	VH-3/60
Air Vehicles. Rotary. Avionics	92 V/FM PO	287.3	0.4	VH-3/60
Air Vehicles. Rotary. Avionics	VH-3A	10.5	0.5	VH-3A
Air Vehicles. Rotary Flight Subsystems	H-53 HELICOPTER PROGRAM	55.5	0.4	H-53

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Common Support Functions	In Service Engineering Efforts	FY-93 Actual		Weapon Systems Supported
		Funds Received	Work Years	
Air Vehicles, Rotary, Propulsion	Engineering Support for: CH-46,H-60,CH-53, & SH-2 HELO'S	.3	4.5	CH-46, H-60, CH-53E, SH-2
Weapons, Cruise Missile	Product Improvement, Configuration Mgmt, Fleet Support	1.95M	22.5	Cruise Missile, UAV, BQM-34, Harpoon; BQM-74, SLAM; ALCM, Tomahawk; ACM, Pioneer
Weapons, Guided Projectiles	Electromagnetic Environment Effects (E3), Systems Integration, Modeling and Simulation, Electronic Warfare	*	*	ACETEF
C4I Systems, C4I Airborne	Airborne/Strategic Communications (ASC)	4.8M	8	E6A
C4I Systems, Fixed Ground-Based C4I	JOINT SPECOPs	89.8	40	
C4I Systems, Fixed Ground-Based C4I	FACSFAC	6.8	42	AN/FYK-17/23
C4I Systems, Fixed Ground-Based C4I	MATCALs	1.1	15	AN/TPN-22

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***No full-time personnel dedicated 100% to Weapons, Guided Projectiles function.**

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3.3.2 Projected Funding

3.3.2.1 **Direct Funding:** For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

There is no MRTFB or BOS funding that supports the Research & Development.

CSF	FY94	FY95	FY96	FY97
Not Applicable				

3.3.2.2 **Other Obligation Authority:** For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Human Systems	**3609.8**	**8844.7**	**8921.3**	**9,904.4**
Advanced Materials	**1960.9**	**1411.4**	**1037.6**	**789.6**
Air Vehicles, Fixed, Avionics	**277,559.9**	**220.259.9**	**184,272.7**	**161,093.1**
Air Vehicles, Fixed Flight Subsystems	**180,737.6 (R)**	**149,592.1 (R)**	**140,235.7 (R)**	**136,461.6 (R)**
Air Vehicles, Fixed Structures	**26,702.9**	**23,826.9**	**22,032.7**	**28,070.2**
Air Vehicles, Rotary Avionics	**48,732.1**	**16315.8**	**11,539.5**	**8,078.9**
Air Vehicles, Rotary, Flight Subsystems	**54,100.0**	**66,099.0**	**0.0**	**0.0**
Air Vehicles, Rotary, Propulsion	**2,500.0**	**4,300.0**	**3,700.0**	**4,300.0**
Air Vehicles, Fixed, Propulsion	**16,000.0**	**16,800.0**	**17,000.0**	**17,600.0**
Weapons, Cruise Missile	**3,900.0**	**5,900.0**	**5,300.0**	**5,300.0**
Weapons, Guided Projectiles	*	*	*	*
C4I Systems, Airborne C4I	**8,700.0**	**5,000.0**	**5,000.0**	**5,000.0**
C4I, Systems, Fixed Ground-Based C4I	**141,435**	**122,746**	**113,359**	**104,051** R

***No full-time personnel dedicated 100% to Weapons, Guided Projectiles function.**

3.4 Facilities and Equipment

3.4.1 **Major Equipment and Facilities:** Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

The Naval Air Warfare Center Aircraft Division (NAWCAD) is a full spectrum acquisition management center for naval aircraft, unique within the DoD. NAWCAD has the capability to provide: research and development capabilities and facilities; ground and flight test and evaluation (T&E) capabilities and facilities; and logistic and maintenance management to support maritime aircraft, aircraft systems, propulsion, materials, and components.

NAWCAD Patuxent River's support role for Naval Aviation has expanded to include the capability located at Warminster, Trenton, and NAVAIR Headquarters and will provide Full Spectrum Engineering Development and Acquisition Support for the fleet. This technical support is essential to Fleet readiness and will be found only at Patuxent River.

The RDT&E conducted at the Complex is truly synergistic with R&D and T&E efforts complementing each other in the overall delivery of Naval Aviation Products. Sometimes the efforts are inseparable since the same personnel perform both the R&D and T&E task in the same facilities. More often, the R&D and T&E efforts complement each other in the development process through the develop, test and fix process that is repetitive. Since the facility capabilities are intertwined all the appropriate R&D and T&E facility capabilities are described in Appendix D.

Common Support Function	% CSF	Other Shared Functions	% Other	Major Facility or Equipment Description	Unique To			Replace-ment Cost ($K)
					DOD	Feder-al Gov't	U. S.	
Air Vehicles Fixed Avionics	100			Magnetic Media Laboratory			YES	3,800.0
Air Vehicles Fixed Avionics	85	Test & Evaluation Air Vehicle	15	VS Labs	YES			80,000.0
Air Vehicles Fixed Avionics	90	Test & Evaluation Air Vehicle	10	VP Facility - PHIC (Program Hardware Integration Center)	YES			125,000.0
Air Vehicles Fixed Avionics	80	Test & Evaluation Air Vehicle	20	VP Facility - SPF (Software Program Facility)	YES			10,000.0
Air Vehicles Fixed Avionics	100			Anechoic Chamber	YES			1,700.0
Air Vehicles Fixed Avionics	100			Anechoic Chamber			YES	4,700.0
Air Vehicles Fixed Avionics	90	Test & Evaluation Electronic Combat	10	Aircraft Test Tower	YES			1,500.0
Air Vehicles Fixed Avionics	90	Test & Evaluation Electronic Combat	10	Aircraft Test Tower				1,500.0
Air Vehicles Fixed Avionics	85	Test & Evaluation Electronic Combat	15	Antenna Test Tower				4,400.0
Air Vehicles Rotary, Avionics	85	Test & Evaluation Air Vehicle	15	Vertical Flight	YES			36,000.0
Air Vehicles Rotary, Avionics	100			VH Facility (HIS-2)			YES	5,500.0
Air Vehicles, Fixed Flight Subsystem	80	Test & Evaluation Air Vehicle	20	Ejection Tower			YES	5,800.0

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Air Vehicle, Fixed Flight Subsystem	80	Test & Evaluation Air Vehicle	20	Horizontal Accelerator				4,150.0
Air Vehicle, Fixed Flight Subsystem	85	Test & Evaluation Air Vehicle	15	Dynamic Flight Simulator			YES	50,000.0
N/A		No Details Available		Special Access Program Spaces				Unknown
Air Vehicle, Fixed Structure	80	Test & Evaluation Air Vehicle	20	Structural Test Facility	YES			5,000.0
Air Vehicle Fixed Flight Subsystem	95		5	Hydraulics Research Lab	YES			2,200.0
C4I Systems, Fixed Ground-Based C4I				B185	YES			6,000.0
				B 111A/P723 MILCON		YES		4,289.0
				B 2110, 2122,141,105	YES	YES		1,278.0
Air Vehicle, Fixed Structure	100			Code 60724 Machine Shop				856.0
Air Vehicle, Fixed Structure	100			Code 60725 Machine Shop				985.7
C4I Systems, Airborne C4I	70	Test & Evaluation Air Vehicle	30	Airborne Strategic Communication Eng & Test Fac (ASCET)			YES	3,000.0
Air Vehicles, Rotary, Avionics	20	Test & Evaluation Air Vehicle	80	Helicopter Mission Systems Supt Center (HMSSC)				11,000.0
Air Vehicles, Fixed, Avionics	30	Test & Evaluation Air Vehicle	70	Fixed Wing ASUW & ASW Lab				47,000.0
Air Vehicles, Fixed, Avionics	70	Test & Evaluation Air Vehicle	30	Project Beartrap				1,000.0
Air Vehicles, Rotary, Propulsion	5	Test & Evaluation Air Vehicle	80	Propulsion System Evaluation Facility	YES			50,800.0
Weapons, Cruise Missile	15							
Air Vehicles, Fixed, Avionics	10	Test & Evaluation Air Vehicle	90	Antenna Testing Laboratory Automated System (ATLAS)			YES	2,600.0

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Common Support Function	% CSF	Other Shared Functions	% Other	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
					DOD	Federal Gov't	U. S.	
Air Vehicles, Fixed, Avionics	45	Test & Evaluation Air Vehicle	55	Combat Identification System				6,000.0
Air Vehicles, Fixed, Avionics	30	Test & Evaluation Air Vehicle	70	Ground Range Antenna Test Facility (GRATF)				2,000.0
Air Vehicles, Fixed, Avionics	10	Test & Evaluation Air Vehicle	40	Acoustic Test Facility (ATF)			YES	2,635.0
Air Vehicles, Rotary, Avionics	10	Test & Evaluation Air Vehicle	40	Acoustic Test Facility (ATF)				
Air Vehicles, Fixed, Avionics	10	Test & Evaluation Air Vehicle	55	Communications Test and Evaluation Lab (COMTEL)				3,400.0
Air Vehicles, Rotary, Avionics	5	Test & Evaluation Air Vehicle	30	Communications Test and Evaluation Lab (COMTEL)				
Air Vehicles, Fixed, Flight Subsystems	5	Test & Evaluation Air Vehicle	45	Aircraft Electrical Evaluation Facility (AEEF)			YES	35,000.0
Air Vehicles Rotary, Flight Subsystems	5	Test & Evaluation Air Vehicle	45	Aircraft Electrical Evaluation Facility (AEEF)				
Air Vehicles, Fixed, Flight Subsystems	20	Test & Evaluation Air Vehicle	30	Aircrew Systems Test Facility	YES			10,700.0
Air Vehicles Rotary, Flight Subsystems	20	Test & Evaluation Air Vehicle	30	Aircrew Systems Test Facility				

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Common Support Function	% CSF	Other Shared Functions	% Other	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
					DOD	Federal Gov't	U. S.	
Air Vehicles, Fixed, Propulsion	5	Test & Evaluation Air Vehicle	45	Aircraft Support Systems Test Facility			YES	17,500.0
Air Vehicles, Fixed, Avionics	5	Test & Evaluation Air Vehicle	45	Aircraft Support Systems Test Facility				
Air Vehicles, Fixed, Avionics	8	Test & Evaluation Air Vehicle	41	Air Combat Environment Test and Evaluation Facility (ACETEF)			YES	276,065.0
Air Vehicles, Rotary Avionics	7	Test & Evaluaation Armament	8	Air Combat Environment Test and Evaluation Facility (ACETEF)				
Weapons, Guided Projectiles	8	Tst & Evaluation Electronic Combat		Air Combat Environment Test and Evaluation Facility (ACETEF)				
Air Vehicles, Fixed, Structure	5	Test and Evaluation Air Vehicle	95	Test & Evaluation Data Processing		YES		2,000.0

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NOTE: THE NAWCAD PATUXENT RIVER LABS WERE BUILT PRIMARILY FOR TEST AND EVALUATION FUNCTIONS. WHEN TIME WAS AVAILABLE, THESE LABS WERE USED FOR OTHER FUNTIONS TO MAXIMIZE THE USE. ON THAT BASIS, THE PERCENTAGES SHOWN ABOVE FOR THESE FUNCTIONS DO NOT REFLECT THE SPACE DIVISION WITHIN LABS BUT RATHER A MULTIPLEXING BY TIME.

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

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WEBSTER FIELD

Common Support Function	Facility or Equipment Description	Type of Space	Space Capacity (KSF)		
			Current	Used	Excess
C4I Systems, Fixed Ground-Based C4I	B111A/P723	Admin	8.9	8.9	0
	B2120/2122/141/105		21.2	21.1	0
C4I Systems, Fixed Ground-Based C4I	B111A/P723	Technical	15.9	15.9	0
	B2110/2122/141/105		24.8	24.8	0
C4I Systems, Fixed Ground-Based C4I	B111A/P723	Staging	4.9	4.9	0
Advanced Materials	None	None	None	None	None R
Air Vehicles, Fixed, Avionics	None	None	None	None	None R
Air Vehicles, Fixed Structures	None	None	None	None	None R
Air Vehicles, Rotary, Avionics	None	None	None	None	None R
Air Vehicles, Rotary, Flight Subsystems	None	None	None	None	None R
Human System	None	None	None	None	None R

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3.5.1 WARMINSTER

Common Support Function	Facility or Equipment Description	Type of Space	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicles Fixed Avionics	Magnetic Media Laboratory	Technical	2.8	2.8	0
Air Vehicles, Fixed Flight Subsystem	Horizontal Accelerator	Technical	5.3	5.3	0
Air Vehicles, Fixed Flight Subsystem	Dynamic Flight Simulator	Technical (w/remain at Warminster)	N/A	N/A	N/A
N/A	Special Access Program Spaces	Unknown	Unk	Unk	Unk
Air Vehicles, Fixed Structure	Structural Test Facility	Technical	15.3	15.3	0
Air Vehicles, Fixed Structure	CODE 60724 Machine Shop	Technical (Total for both Shops- 60724 & 60725)	11.9	11.9	0
Air Vehicles, Fixed Structure	Code 60725 Machine Shop	Technical		(included in above)	
Air Vehicles Fixed Avionics	VS Labs	Technical	6.7	6.7	0
Air Vehicles Fixed Avionics	VP Facility - PHIC (Program Hardware Integration Center)	Technical	7.1	7.1	0
Air Vehicles Fixed Avionics	VP Facility - SPF (Software Program Facility)	Technical	6.2	6.2	0
Air Vehicles Fixed Avionics	Anechoic Chamber	Technical	8.2	8.2	0
Air Vehicles Fixed Avionics	Anechoic Chamber	Technical	5.8	5.8	0
Air Vehicles Fixed Avionics	Aircraft Test Tower	Technical	1.3	1.3	0
Air Vehicles Fixed Avionics	Aircraft Test Tower	Technical	.2	.2	0
Air Vehicles Fixed Avionics	Antenna Test Tower	Technical	.2	.2	0
Air Vehicles Rotary, Avionics	Vertical Flight	Technical	5.5	5.5	0

Air Vehicles Rotary, Avionics	Vertical Flight	Technical	5.5	5.5	0
Air Vehicles Rotary, Avionics	VH Facility (HIS-2)	Technical	5.0	5.0	0
Air Vehicles, Fixed Flight Subsystem	Ejection Tower	Technical	1.3	1.3	0
Advanced Material	A Series of Small Unconnected Laboratorys	Technical	N/A	N/A	0

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NOTE: NAWCAD laboratories and technical facilities are slated to be installed in buildings being built under BRAC 91 MILCON. Spaces under construction are commensurate with functional and fleet requirements. Therefore, there is no excess in these facilities.

NAWCAD PATUXENT RIVER

Common Support Function	Facility or Equipment Description	Type of Space	Space Capacity (KSF)		
			Current	Used	Excess
C4I Systems, Airborne C4I	Airborne Strategic Communication Eng & Test Fac (ASCET)	Technical	6.3	6.3	0
Air Vehicles, Rotary, Avionics	Helicopter Mission Systems Supt Center (HMSSC)	Technical	7.8	7.8	0
Air Vehicles, Fixed, Avionics	Fixed Wing ASUW & ASW Lab	Technical	11.3	11.3	0
Air Vehicles, Fixed, Avionics	Project Beartrap	Technical	1.6	1.6	0
Air Vehicles, Rotary, Propulsion Weapons, Cruise Missile	Propulsion System Evaluation Facility	Technical	77.0	77.0	0
Air Vehicles, Fixed, Avionics	Antenna Testing Laboratory Automated System (ATLAS)	Technical	.6	.6	0
Air Vehicles, Fixed, Avionics	Combat Identification System	Technical	15.6	15.6	0
Air Vehicles, Fixed, Avionics	Ground Range Antenna Test Facility (GRATF)	Technical	.2	.2	0
Air Vehicles, Fixed, Avionics Air Vehicles, Rotary, Avionics	Acoustic Test Facility (ATF) Acoustic Test Facility (ATF)	Technical	2.3	2.3	0
Air Vehicles, Fixed, Avionics Air Vehicles, Rotary, Avionics	Communications Test and Evaluation Lab (COMTEL) Communications Test and Evaluation Lab (COMTEL)	Technical	1.5	1.5	0

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PATUXENT RIVER CONT'D R

Common Support Function	Facility or Equipment Description	Type of Space	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicles, Fixed, Flight Subsystems Air Vehicles, Rotary, Flight Subsystems	Aircraft Electrical Evaluation Facility (AEEF) Aircraft Electrical Evaluation Facility (AEEF)	Technical	38.3	38.3	0
Air Vehicles, Fixed, Flight Subsystems Air Vehicles Rotary, Flight Subsystems	Aircrew Systems Test Facility Aircrew Systems Test Facility		16.3	16.3	0
Air Vehicles, Fixed, Propulsion Air Vehicles, Fixed, Avionics	Aircraft Support Systems Test Facility Aircraft Support Systems Test Facility	Technical	17.3	17.3	0
Air Vehicles, Fixed, Avionics Air Vehicles, Rotary Avionics Weapons, Guided Projectiles	Air Combat Environment Test and Evaluation Facility (ACETEF) Air Combat Environment Test and Evaluation Facility (ACETEF) Air Combat Environment Test and Evaluation Facility (ACETEF)	Technical	97.4	97.4	0
Air Vehicles, Fixed, Structure	Test & Evaluation Data Processing	Technical	2.0	2.0	0

NOTE: THESE LABS WERE BUILT PRIMARILY FOR TEST AND EVALUATION FUNCTIONS. WHEN TIME WAS AVAILABLE, THESE LABS WERE USED FOR OTHER FUNTIONS TO MAXIMIZE THE USE. ON THAT BASIS, THE PERCENTAGES SHOWN IN TABLE 3.4.1 DO NOT REFLECT THE SPACE DIVISION WITHIN LABS BUT RATHER A MULTIPLEXING BY TIME.

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III).

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEM

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

ADVANCED MATERIALS

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

AIR VEHICLES, FIXED, AVIONICS

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

AIR VEHICLES, FIXED STRUCTURES

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

AIR VEHICLES, ROTARY, AVIONICS

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

HUMAN SYSTEM

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

AIR VEHICLES, FIXED, PROPULSION

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

AIR VEHICLES, ROTARY, PROPULSION

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

WEAPONS CRUISE MISSILE

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

WEAPONS GUIDED PROJECTILES

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

C4I SYSTEMS, AIRBORNE C4I

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

C4I SYSTEMS, FIXED GROUND-BASED C4I

R

When the NISE EAST Detachment at Webster Field moves (estimated to begin in FY97/FY98) to Charleston they will vacate approximately 122,713 SQFT. Of this vacated space, 24,269 SQFT is recommended to be demolished. Another 27,413 SQFT are located within existing facilities which may not be available for relocation or expansion. To renovate this existing space upon NISE EAST departure, it will cost approximately $2.3M. The remaining space which could be used for expansion is 46,762 SQFT within Building 185. Some renovations to this facility would be necessary and would cost approximately $701K.

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEM

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

ADVANCED MATERIALS

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

AIR VEHICLES, FIXED, AVIONICS

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

AIR VEHICLES, FIXED STRUCTURES

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

AIR VEHICLES, ROTARY, AVIONICS

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

HUMAN SYSTEM

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

AIR VEHICLES, FIXED, PROPULSION

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

AIR VEHICLES, ROTARY, PROPULSION

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

WEAPONS, CRUISE MISSILE

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

WEAPONS, GUIDED PROJECTILES

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

C4I SYSTEMS, AIRBORNE C4I

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

C4I SYSTEMS, FIXED GROUND-BASED C4I

R

Additional workyears can be absorbed after FY 97 when functions are relocated to Charleston. Currently there are about 950 civil servant, military, and contractors working in these facilities which will relocate to Charleston. As these personnel move, the vacated space will be available to absorb new or additional workyears.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alteration projects programmed in the FY95 PBS. (BRAC Criteria II)

N/A

AIR VEHICLES, FIXED, PROPULSION

337 acres

AIR VEHICLES, ROTARY, PROPULSION

337 acres

WEAPONS, CRUISE MISSILE

337 acres

WEAPONS, GUIDED PROJECTILES

337 acres

C4I SYSTEMS, AIRBORNE C4I

337 acres

C4I SYSTEMS, FIXED GROUND-BASED C4I

337 acres

R

NCHQ Change
VBC 9/20/94
NAWC-21D

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEM

337 acres

ADVANCED MATERIALS

337 acres

AIR VEHICLES, FIXED, AVIONICS

337 acres

AIR VEHICLES, FIXED STRUCTURES

337 acres

AIR VEHICLES, ROTARY, AVIONICS

337 acres

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

337 acres

HUMAN SYSTEM

337 acres

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g., KWH of electricity. (BRAC Criteria II)

AIR VEHICLES, FIXED, FLIGHT SUBSYSTEM

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

ADVANCED MATERIALS

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

AIR VEHICLES, FIXED, AVIONICS

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

AIR VEHICLES, FIXED STRUCTURES

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

AIR VEHICLES, ROTARY, AVIONICS

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

C4I SYSTEMS, FIXED GROUND-BASED C4I

R

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

NAWCHQ change
VBC 9/20/94
NAWC-21D

AIR VEHICLES, ROTARY, FLIGHT SUBSYSTEMS

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

HUMAN SYSTEM

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

AIR VEHICLES, FIXED, PROPULSION

R

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

AIR VEHICLES, ROTARY, PROPULSION

R

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

WEAPONS, CRUISE MISSILE

R

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

WEAPONS, GUIDED PROJECTILES

R

Current use of utilities is as follows:

Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

C4I SYSTEMS, AIRBORNE C4I

R

Current use of utilities is as follows:

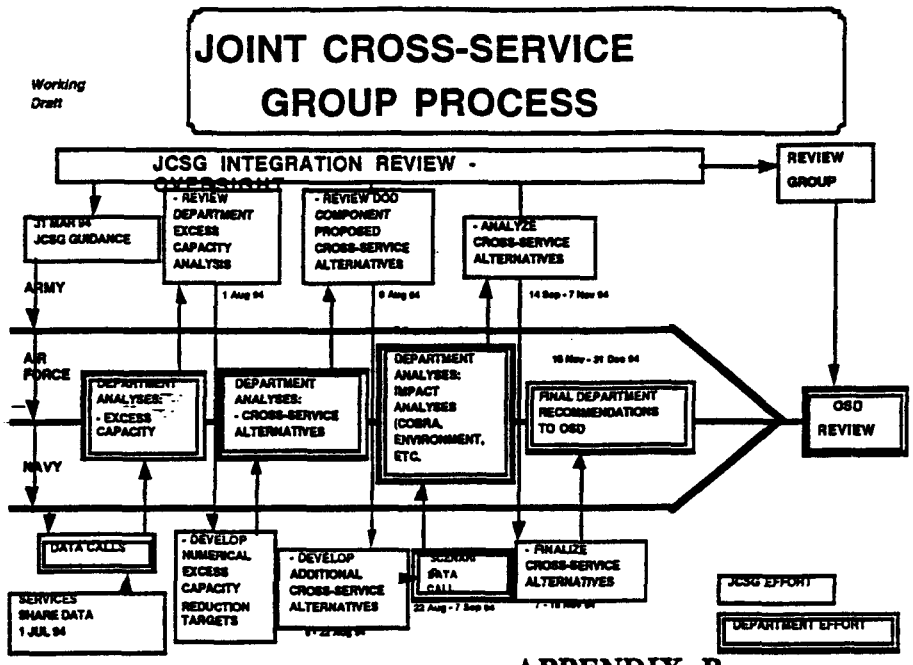
Electricity 19.26% used, total capacity = 5,201,250 KWH
Water 8.97% used, total capacity = 612,000 GPD
Sewer 48.96% used, total capacity = 60,000 GPD

NAWCHO Change
VBC 9/20/94
NAWC-21D

SECTION IV: APPENDICES

A. Macro Process/Schedule
B. List of Activities
C. Common Support Functions

APPENDIX A



APPENDIX B

LIST OF ACTIVITIES

AIR FORCE

1. Armstrong Lab, Brooks AFB
2. Armstrong Lab, Tyndall AFB
3. Armstrong Lab, Wright-Patterson AFB
4. Armstrong Lab, Williams AFB
5. Human Systems Center, Brooks AFB
6. Wright Lab, Wright-Patterson AFB
7. Wright Lab, Eglin AFB
8. Aeronautical Systems Center, Wright-Patterson AFB
9. Aeronautical Systems Center, Eglin AFB
10. Oklahoma City Air Logistics Center, Tinker AFB (In-service engineering)
11. Ogden Air Logistics Center, Hill AFB (In-service engineering)
12. San Antonio Air Logistics Center, Kelly AFB (In-service engineering)
13. Sacramento Air Logistics Center, McClellan AFB (In-service engineering)
14. Warner-Robins Air Logistics Center, Robins AFB (In-service engineering)
15. Phillips Lab, Kirtland AFB
16. Phillips Lab, Hanscom AFB
17. Phillips Lab, Edwards AFB
18. Space & Missile Center, Los Angeles AFB

19. Space & Missile Center, Norton AFB
20. Sacramento Air Logistics Center, Peterson AFB
21. Rome Lab, Griffiss AFB
22. Rome Lab, Hanscom AFB
23. Electronic Systems Center, Hanscom AFB
24. Sacramento Air Logistics Center, Peterson AFB (In-service engineering)

ARMY

1. Army Research Lab (ARL), Adelphi, MD
2. ARL, Aberdeen Proving Grounds (APG), MD
3. ARL, White Sands Missile Range, NM
4. ARL, NASA Langley, VA
5. ARL, NASA Lewis, OH
6. Natick Research, Development and Engineering Center, Natick, MA
7. Aviation Research, Development and Engineering Center, St Louis, MO
8. Aviation Troop Command, Aeroflight Dynamics Directorate, Moffitt Field, CA
9. Aviation Troop Command, Aviation Applied Technology Directorate, Fort Eustis, VA
10. Edgewood Research, Development and Engineering Center, Aberdeen Proving Ground, MD
11. Communications Electronics Command Research, Development and Engineering Center, Ft Mammoth, NJ
12. Communication Electronics Command Research, Development and Engineering Center - Night Vision EO Directorate, Ft Belvoir, VA
13. Missile Research, Development and Engineering Center, Redstone Arsenal, AL
14. Armaments Research, Development and Engineering Center, Picatinny Arsenal, NJ
15. Armaments Research, Development and Engineering Center, Benet Labs, Watervliet Arsenal, NY
16. Tank-Automotive Command Research, Development and Engineering Center, Warren, MI
17. USA Research Institute of Infectious Diseases, Ft Detrick, MD
18. Walter Reed Army Institute of Research, Washington D.C.
19. USA Institute of Surgical Research, Ft Sam Houston, TX
20. USA Aeromedical Research Lab, Ft Rucker, AL
21. Medical Research Institute of Chemical Defense Aberdeen Proving Grounds, MD
22. USA Research Institute of Environmental Medicine, Natick, MA
23. Construction Engineering Research Laboratory, Champaign, IL
24. Cold Regions Research and Engineering Lab, Hanover, NH
25. Topographic Engineering Center, Alexandria, VA
26. Waterways Experiment Station, Vicksburg, MS
27. USA Research Institute for Behavioral & Social Sciences, Alexandria, VA
28. Simulation, Training and Instrumentation Command (STRICOM), Orlando, FL

NAVY

1. Naval Air Warfare Center, Weapons Division, China Lake
2. Naval Air Warfare Center, Weapons Division, Point Mugu
3. Naval Air Warfare Center, Aircraft Division, Patuxent River
4. Naval Air Warfare Center, Aircraft Division, Indianapolis
5. Naval Air Warfare Center, Aircraft Division, Lakehurst

6. Naval Research Lab, Washington D.C.
7. Naval Research Lab Detachment, Bay St Louis
8. Naval Surface Warfare Center, Carderock Division, Bethesda
9. Naval Surface Warfare Center, Carderock Detachment, Annapolis
10. Naval Surface Warfare Center, Crane Division
11. Naval Surface Warfare Center, Crane Detachment, Louisville
12. Naval Surface Warfare Center, Dahlgren Division
13. Naval Surface Warfare Center, Dahlgren Detachment, Panama City
14. Naval Surface Warfare Center, Indian Head Division
15. Naval Surface Warfare Center, Port Hueneme Division
16. Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, San Diego
17. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering, West Coast Division, San Diego
18. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering Division, Charleston
19. Naval Aerospace Medical Research Center, Pensacola
20. Naval Biodynamics Lab, New Orleans
21. Naval Dental Research Lab, Great Lakes
22. Naval Health Research Center, San Diego
23. Naval Medical Research Institute, Bethesda
24. Naval Undersea Warfare Center, Keyport Division, WA
25. Naval Surface Warfare Center, Carderock, Philadelphia Detachment
26. Naval Undersea Warfare Center, Newport, RI
27. Naval Undersea Warfare Center (Newport), New London, CT
28. Naval Personnel Research and Development Center, San Diego, CA

DEPARTMENT OF DEFENSE

1. Armed Forces Radiobiology Research Institute (AFRRI), Bethesda, MD

APPENDIX C

COMMON SUPPORT FUNCTIONS (DEFINITIONS LISTED FOLLOWING PAGES)

Product Functions

1. Air Vehicles
   - Fixed
     - Structure
     - Propulsion
     - Avionics
     - Flight Subsystems
   - Rotary
     - Structure
     - Propulsion
     - Avionics
     - Flight Subsystems

2. Weapons
   - ICBMs/SLBMs
   - Conventional Missiles/Rockets
   - Cruise Missiles
   - Guided Projectiles
   - Bombs
   - Guns and Ammunition
   - Directed Energy
   - Chemical/Biological

3. Space Systems
   - Launch Vehicles
   - Satellites
   - Ground Control Systems

4. C4I Systems
   - Airborne C4I
   - Fixed Ground-Based C4I
   - Ground Mobile C4I

Pervasive Functions

1. Electronic Devices
2. Environmental Sciences
3. Infectious Diseases
4. Human Systems
5. Manpower and Personnel
6. Training Systems
7. Environmental Quality
8. Advanced Materials

DEFINITIONS

COMMON SUPPORT FUNCTIONS

Product Functions

1. Air Vehicles. Air vehicles are broken out into common support functions for fixed wing and rotary wing. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of air vehicles. Included are all air vehicles including their application as UAV's and targets.

- Structures. Includes but not limited to all air vehicles structure technology, engineering and production efforts. Include technology and engineering practices which advance structural design and analysis; advanced structural concepts and fabrication techniques; and structural integrity.

- Propulsion. Includes but not limited to all technology, engineering and production efforts associated with air vehicle propulsion such as turbine engine, rotorcraft power drive, and hypersonic propulsion components. Such components include compressors, inlets and nozzles, turbines, mechanical systems and control, gears, bearings, shafts, and clutches. In addition, include associated subsystems activities such as turborocket, turboramjet and rotorcraft transmissions; and supporting technical and engineering disciplines.

- Avionics. Includes but not limited to all technology, engineering and production efforts associated with the air platform's integrated avionics system. The avionics suite includes but is not limited to weapon delivery systems, electronic warfare, navigation, communications, radar, electro-optic sensors, signal/data processing and associated software system and support. Includes efforts associated with developing the integrated avionics system (i.e. optimizing functional partitioning, distribution and integration of avionics/related functions).

- Flight Subsystems. Includes but not limited to all technology, engineering and production efforts for air vehicle support systems such as landing gear; crew enclosures; egress systems; mechanical equipment integrity; electrical component integrity; subsystem integration; and aircraft power, pressurization, and temperature control systems.

2. Weapons. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of ICBMs/SLBMs, conventional missiles and rockets, cruise missiles, guided projectiles, bombs, guns and ammunition, directed energy and chemical/biological munitions. Include with each weapon as appropriate, all related technology, engineering and production activities such as fusing/safe and arm, missile propulsion, warheads and explosives, and guidance and control.

3. **Space.** Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of launch vehicles, satellites and associated ground control systems (satellite control only; ground systems for telemetry of data included in C4I). Include under satellites, all technology, engineering and production activities associated with space communications and space-based surveillance (and associated sensors) and space-based C4I.

4. **C4I.** Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of airborne, fixed ground-based and mobile ground based C4I systems. Include all technology, engineering and production activities associated with communications networks, radios and links, distributed information systems, data fusion, decision aids, and associated computer architectures.

Pervasive Functions (6.1, 6.2, and 6.3)

1. **Electronic Devices.** Includes but not limited to all science and technology activities supporting development of semiconductor and superconductor materials for optoelectronic, acoustic and microwave devices. Include all associated electronic materials/device fabrication and processing.

2. **Environmental Sciences.** Includes but not limited to all science and technology activities to improve measurement, characterization and modeling of the earth atmosphere and space environment. Examples include global prediction systems, space effects, and celestial backgrounds/astronomical reference sources.

3. **Infectious Diseases.** Includes but not limited to all science and technology activities which preserve manpower and performance by the prevention and treatment of militarily important infectious diseases that occur naturally worldwide.

4. **Human Systems.** Includes but not limited to all science and technology activities to enable, protect, sustain and enhance human effectiveness in DOD operations. The focus of this pervasive, multi-disciplinary area is the human and therefore impacts all DOD systems and operations. This area includes: (1) human performance definition, assessment, and aiding; (2) physiologic bioeffects of toxic hazards, ionizing and non-ionizing radiation, biodynamic (bio-mechanical) stress, and extreme environments; (3) military operational medicine; and (4) generic, human-centered design standards/methodologies for crew station subsystems, information management and display, and life support.

5. **Manpower and Personnel.** Includes but not limited to all science and technology activities which support four broad areas: (1) selection and classification of DOD personnel (including pilots); (2) identification of operational tasks performed and requirements for skills, knowledge, and aptitudes; (3) matching the right people with the jobs they are best suited for according to the needs of DOD, (4) and developing techniques for measuring and enhancing the productivity of the operational force.

6. Training Systems. Includes but not limited to all science and technology which support training of personnel, including training strategies, devices and simulators, and computer aided intelligent tutoring systems.

7. Environmental Quality. Includes but not limited to all science and technology activities which support the development of technologies to reduce the environmental costs of DOD operations while ensuring mission accomplishment is not jeopardized by adverse environmental impacts. Specifically, this area encompasses technologies to: (1) identify and cleanup sites contaminated with hazardous materials as a result of DOD operations (cleanup); (2) ensure DOD compliance with current and anticipated local, national, and international environmental laws and treaties (compliance); (3) minimize DOD use of hazardous materials and reduce DOD hazardous waste generation (pollution prevention); and (4) provide for protection of natural resources under DOD stewardship (conservation).

8. Advanced Materials. Includes but not limited to all science and technology activities related to structural, high temperature, electromagnetic protection, electronic, magnetic, optical, and biomolecular materials. Note: excludes materials areas which were included in DDR&E decision of 18 Mar 94 related to the Army's Materials Research Facility at Aberdeen Proving Ground and the Navy's Materials Facility at Carderock.

PAX RIVER 1/63

BRAC 95 DATA CALL #12 UIC: 00421

APPENDIX D

"LAB" JOINT CROSS-SERVICE GROUP DATA CALL #12

NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
PATUXENT RIVER

This portion of Appendix D is the verbiage to supplement photos enclosed in the submission of 15 August. Verbiage was inadvertently left out.

WC

UIC: 121

GENERAL INFORMATION

Facility/Capability Title: **Magnetic Media Laboratory** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Other** UIC = **062269 INTO 00421**

T&E Test Facility Category: **Measurement Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:			60%	40%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles							
Armanent/Weapons							
EC							
Other			60%	40%			

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

Enclosure (4)

TECHNICAL INFORMATION

Facility/Capability Title: **Magnetic Media Laboratory**

Facility Description; Including mission statement:

The Magnetic Media Laboratory is an RDT&E facility dedicated to evaluating the electrical performance parameters, dimensional characteristrics and physical properties of instrumentation quality recording tape. The facility defines salient criteria for state-of-the-art media and determines the required values for proper system performance. The results of these studies are then incorporated into standards and specifications for government procurement of these media. The MML also monitors the quality of delivered products for compliance with these documents.

The Laboratory accomplishes its mission by utilizing approximately $2 million of in-house equipment to perform measurements on magnetic recording media. The tests which are performed evaluate the performance, magnetic and physical properties of these materials and determine the usefulness of these products for recording the required types of data. The test results lead to the development of federal and industry wide specifications and standards. The facility also has the ability to evaluate the compliance of mass produced tape products with these documents.

Interconnectivity/Multi-Use of T&E Facility:

Type of Test Supported:

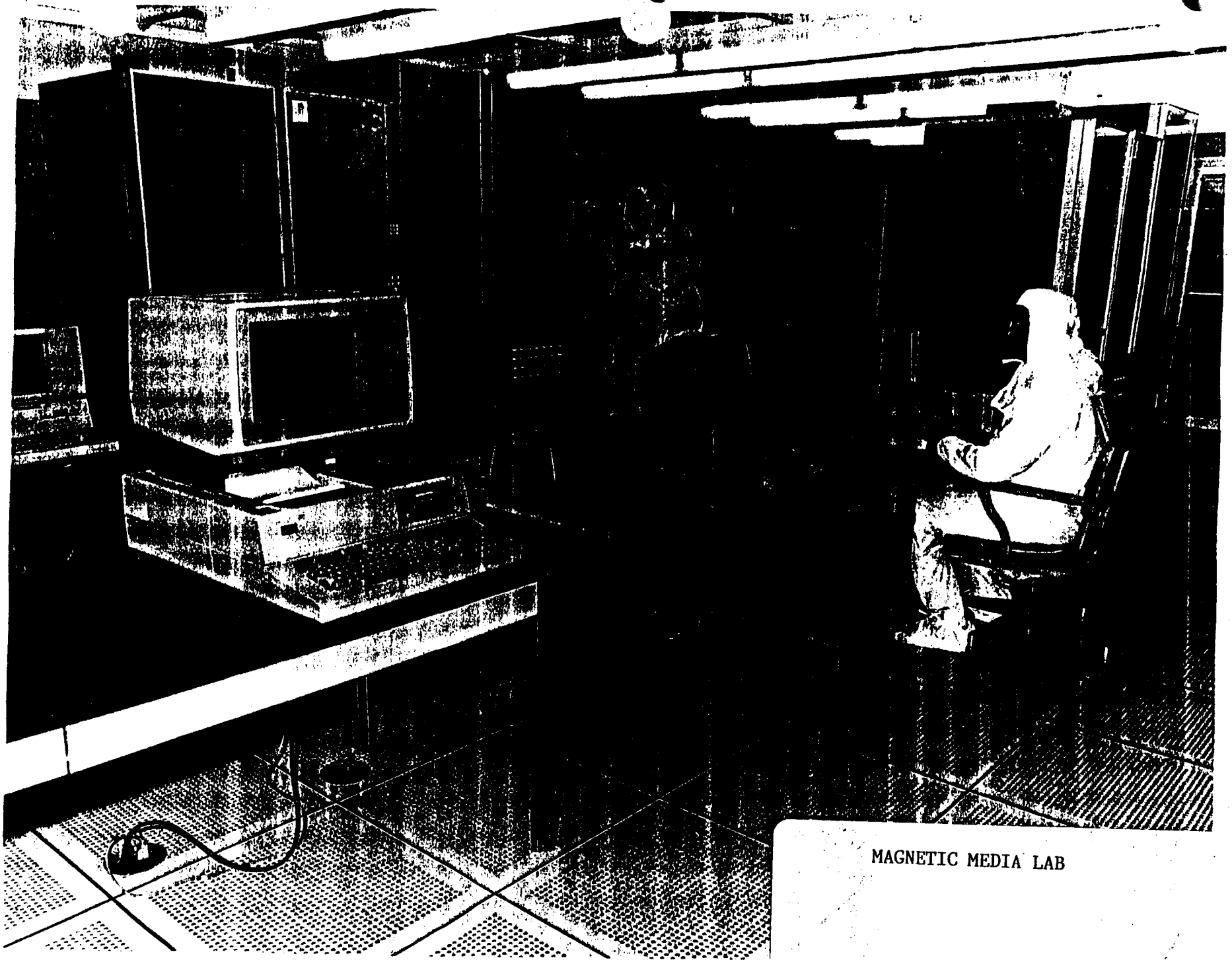
Parametric testing of new types of media and statistical behavior of production media.

Summary of Technical Capabilities:

The laboratory supports FED-SPEC-W-T-1553 for magnetic instrumentation tape and W-R-175 for intrumentation tape hubs and reels. The physical facility contains 2000 sq. ft. of class 100 cleanroom.

Keywords:

Magnetic Media, Cleanroom, Recording tape



MAGNETIC MEDIA LAB

UIC 00421

GENERAL INFORMATION

Facility/Capability Title: **Anechoic Chamber #2** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWC-AD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Electronic Combat** UIC = **62269 INTO 00421**

T&E Test Facility Category: **Installed Systems Test Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:		20%	60%	20%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles							
Armanent/Weapons							
EC		20%	60%	20%			
Other							

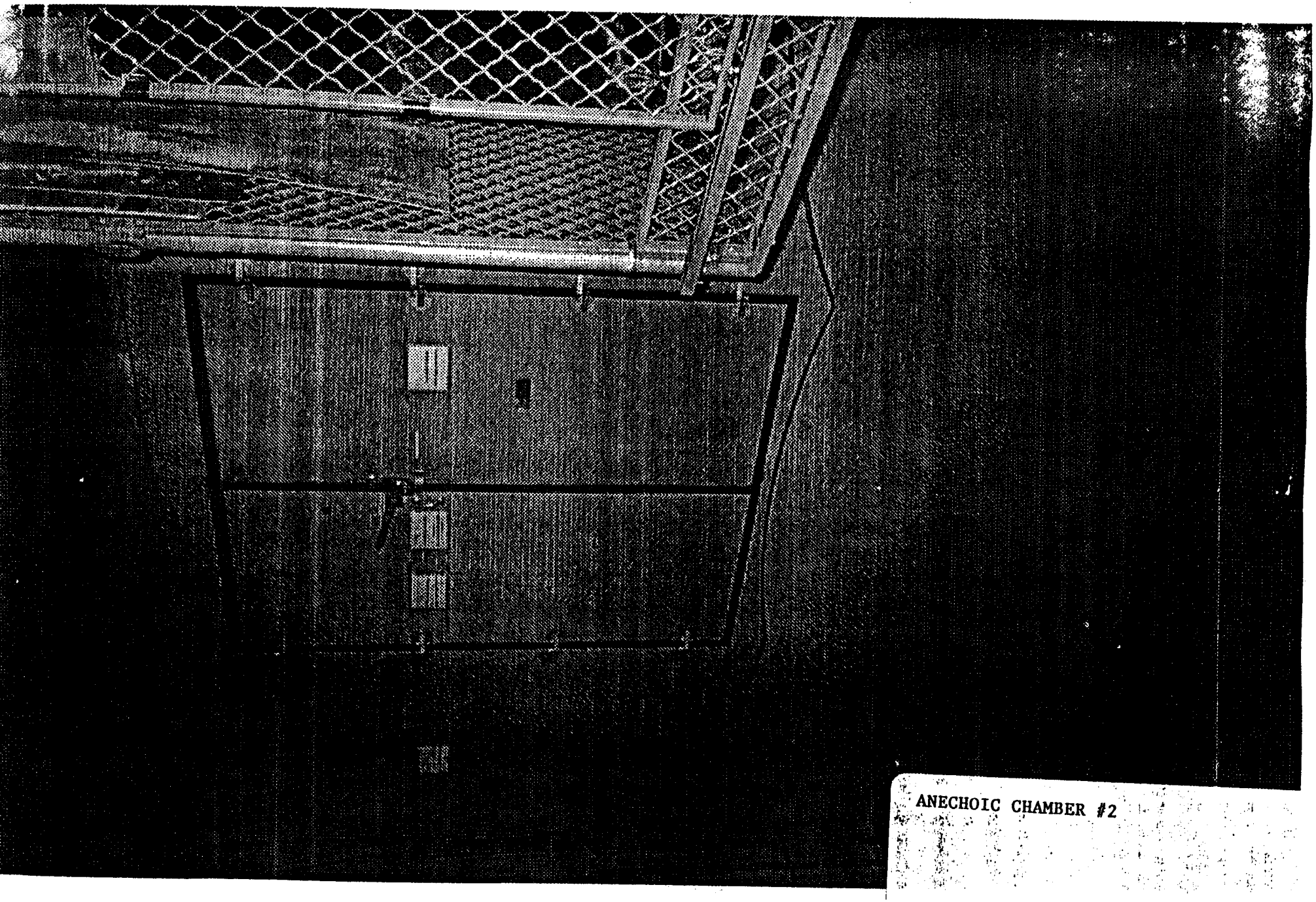
Total in Breakout Must Equal "Percentage Use" On First Line

UIP 00421

TECHNICAL INFORMATION

Facility/Capability Title: **Anechoic Chamber #2**

Facility Description; Including mission statement: **The 40' x 20' x 20' Anechoic Chamber, lined with special high grain, low sidelobe horn absorbers to optimize performance for radar cross section measurements, is utilized for the research and development of low observable technology to increase aircraft survivability. It is equipped with a Scientific-Atlanta Radar Cross Section Analyzer System to acquire, process and store data.**
Interconnectivity/Multi-Use of T&E Facility:
Type of Test Supported: **Radar Cross Section Measurements on a variety of materials.**
Summary of Technical Capabilities: **It is equipped with a Scientific-Atlanta Radar Cross Section Analyzer System to acquire, process and store data.**
Keywords: **Radar Cross Section, Low Observable Technology**



ANECHOIC CHAMBER #2

UIC 121

GENERAL INFORMATION

Facility/Capability Title: **Anechoic Chamber (Bldg 120)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Electronic Combat** UIC = **N62269 INTO 00421**

T&E Test Facility Category: **Installed Systems Test Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:		20%	40%	40%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles							
Armanent/Weapons							
EC		20%	40%	40%			
Other							

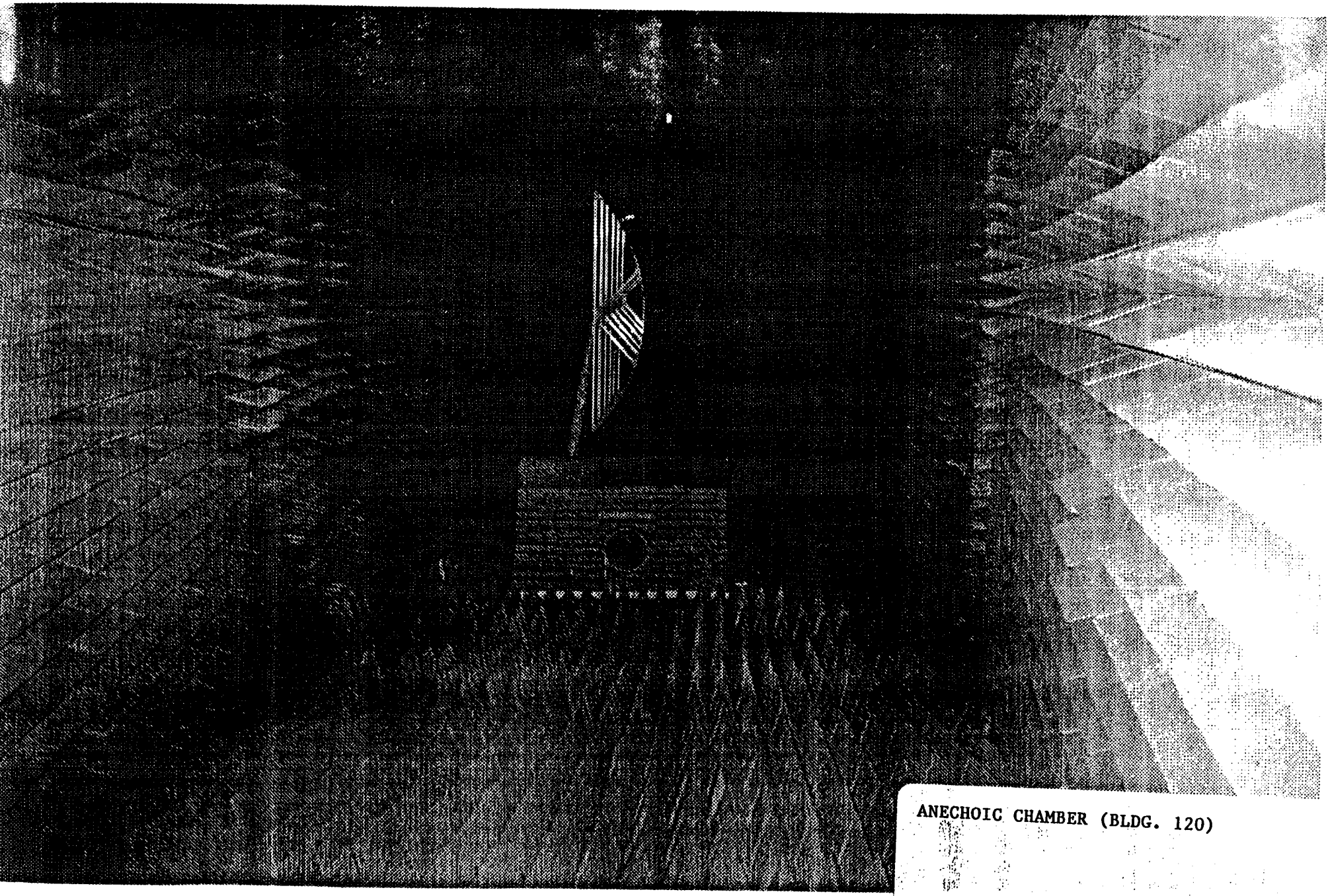
Total in Breakout Must Equal "Percentage Use" On First Line

UIC 00421

TECHNICAL INFORMATION

Facility/Capability Title: **Anechoic Chamber (Bldg 120)**

Facility Description; Including mission statement: **Building 120 is a 90' x 30' x 30' pyramidal chamber with 12' spherical quiet zone. The tapered design of this chamber creates an environment favorable for low frequency testing. The chamber is equipped to perform standard antenna measurements of partial full scale mock-ups and reduced scale model mock-ups. The chamber is utilized to measure and optimize installed antenna system performance.**
Interconnectivity/Mulit-Use of T&E Facility:
Type of Test Supported: **Low Frequency RF Antenna Testing**
Summary of Technical Capabilities: **The chamber is equipped with a two axis positioner with a model tower mounted on top to provide the capability for standard antenna measurements.**
Keywords: **Anechoic Chamber, Antenna Measurements**



ANECHOIC CHAMBER (BLDG. 120)

UIC 00421

GENERAL INFORMATION

Facility/Capability Title: **Anechoic Chamber (Bldg 144)**

Origin Date: **May 9, 1994**

Service: **N**

Organization/Activity: **NAWCAD**

Location: **WARMINSTER INFLUX**

T&E Functional Area: **Electronic Combat**

UIC = **N62269 INTO 00421**

T&E Test Facility Category: **Installed Systems Test Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:		20%	40%	40%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles							
Armanent/Weapons							
EC		20%	40%	40%			
Other							

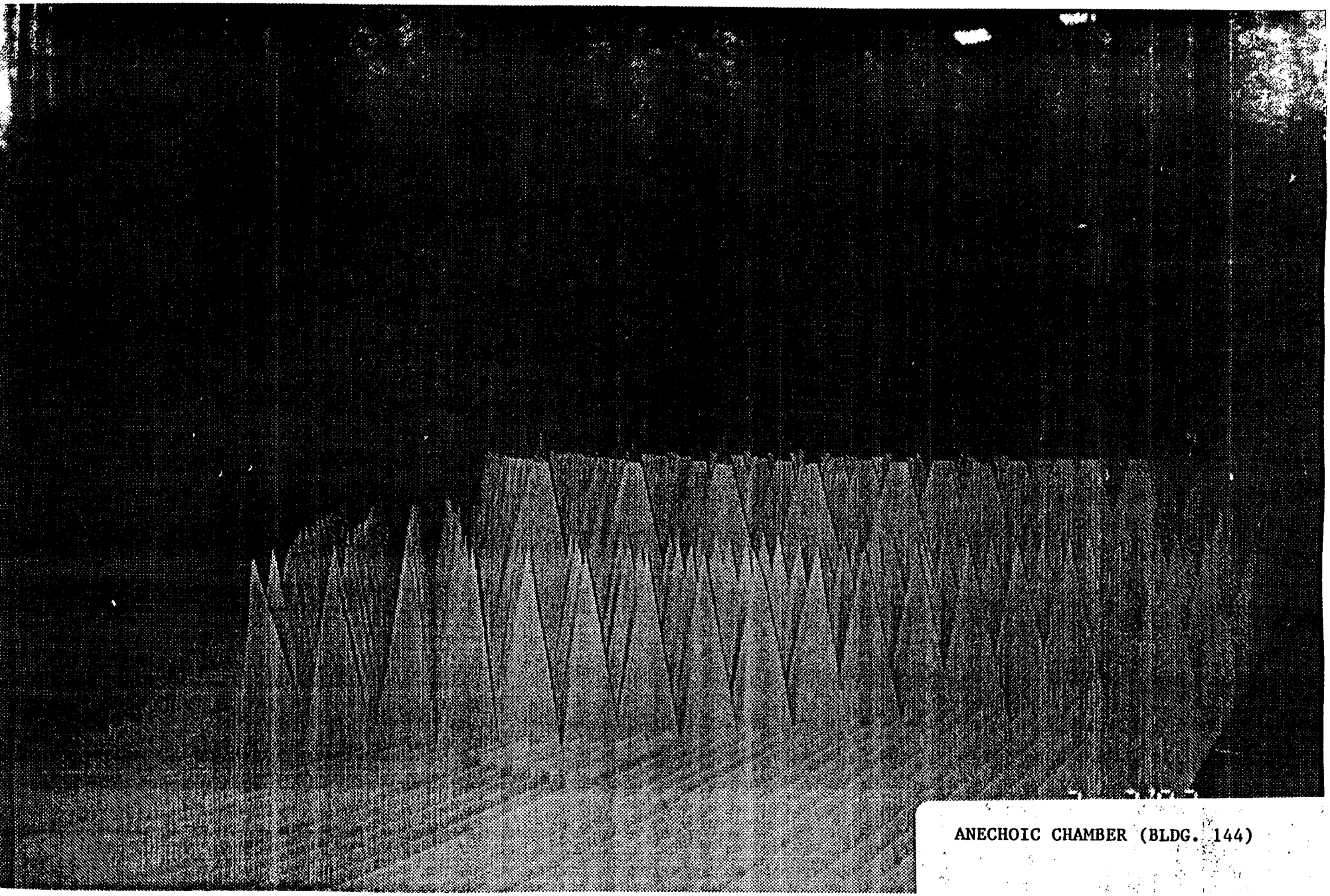
Total in Breakout Must Equal "Percentage Use" On First Line

U1 00121

TECHNICAL INFORMATION

Facility/Capability Title: **Anechoic Chamber (Bldg 144)**

Facility Description; Including mission statement: **Structure 144 is a 100' x 40' x 40' shielded anechoic chamber which is uniquely designed for multi-purpose operation. The design permits the acquisition of antenna pattern measurements and Radar Cross Section (RCS) measurements in frequency range from 100 MHz to 100 GHZ. measurements.**
Interconnectivity/Mulit-Use of T&E Facility:
Type of Test Supported: **Antenna Pattern Measurements and Radar Cross Section (RCS) Measurements in frequency range from 100 MHz to 100 GHZ.**
Summary of Technical Capabilities: **The chamber has a 12' cylindrical quiet zone and is fitted with a three axis positioner which is controlled by an Antenna/RCS measurement system. The positioner can be prepared to accommodate a model tower (SA58000B) for standard antenna measurements or a low profile pylon for RCS**
Keywords: **Radar Cross Section, Anechoic Chamber**



ANECHOIC CHAMBER (BLDG. 144)

UIC 00421

GENERAL INFORMATION

Facility/Capability Title: **Aircraft Test Tower (Bldg 367)** Origin Date: 05/11/94

Service: **N** Organization/Activity: **NAWCAD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Electronic Combat** UIC = **N62269 INTO 00421**

T&E Test Facility Category Open Air Range

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**10%**	**20%**	**40%**	**30%**			

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles				
Armanent/Weapons				
EC	**10%**	**20%**	**40%**	**30%**
Other				

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

UIP 00421

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Test Tower (Bldg 367)**

Facility Description; Including mission statement:

The Structure 367 Full Scale Aircraft Facility permits mounting aircraft either right side up or upside down, in an electromagnetic free space environment. The facility consists of an aircraft tower/control building that supports the aircraft 40 feet above ground on an azimuth over elevation positioner. A mobile RF source tower can be positioned and operated from any one of three locations 500', 833', or 1280' distant. In addition there is a mobile van, with power that allows signal generation at almost any azimuth, tower/control building that houses pedestal control equipment, RF receivers, computers, and equipment peculiar to the tests in progress - such as Direction Finding systems, adaptive nulling processors, radar warning receivers, etc.

Interconnectivity/Multi-Use of T&E Facility:N/A

Type of Test Supported:

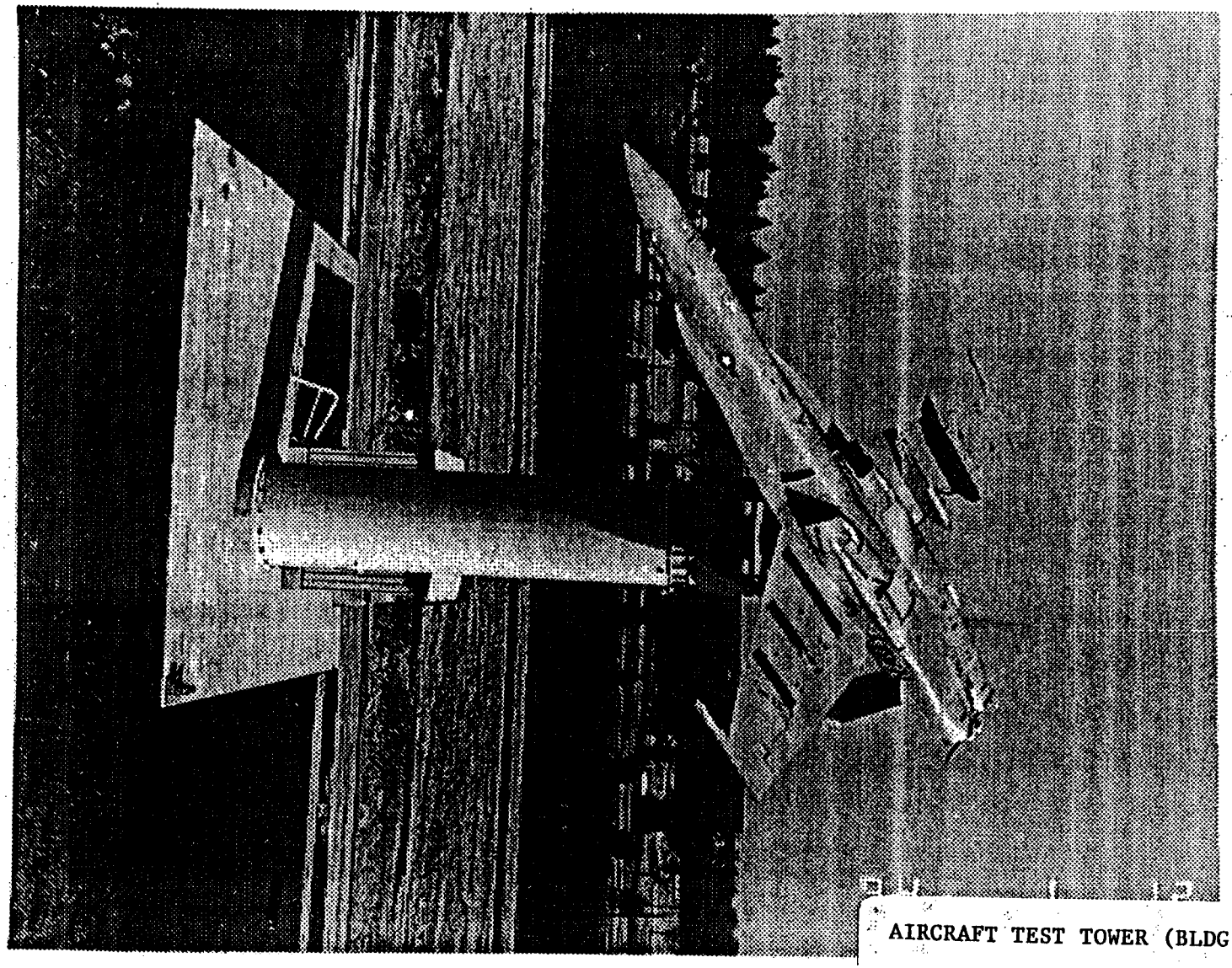
Measurement of the characteristics of Direction Finding systems, adaptive nulling arrays, radar warning receivers, etc.

Summary of Technical Capabilities:

There are currently three full scale aircraft that have been prepared (stripped of non-essential components/weight) for the range; the F/A-18, EA-6A, and A-7. The EA-6A can also be reconfigured as an EA-6B. In addition an F-14 awaits restoration. There are various stores available for each aircraft. Major programs supported in the last three years include ALR-67 (F-18), ALQ-99 (EA-6B), ALQ-149 (EA-6B), ALQ-126/165 (F-18), ALQ-162 (F-18 Plyon), WALLEYE (A-6E).

Keywords:

Electromagnetic Measurements, Electronic Warfare, Direction Finding, Radar Warning Receivers



AIRCRAFT TEST TOWER (BLDG. 367)

UIC 00421

GENERAL INFORMATION

Facility/Capability Title: **Aircraft Test Tower (Bldg 745)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Electronic Combat** UIC = **N62269 INTO 00421**

T&E Test Facility Category: **Open Air Range**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**10%**	**20%**	**30%**	**40%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles							
Armanent/Weapons							
EC	**10%**	**20%**	**30%**	**40%**			
Other							

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

UIC 00421

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Test Tower (Bldg 745)**

Facility Description; Including mission statement:

The Structure 745 Full Scale Aircraft Facility permits mounting aircraft either right side up or upside down, in an electromagnetic free space environment for the purpose of conducting electromagnetic measurements on electronic warfare and communications systems.

Interconnectivity/Mulit-Use of T&E Facility:

N/A

Type of Test Supported:

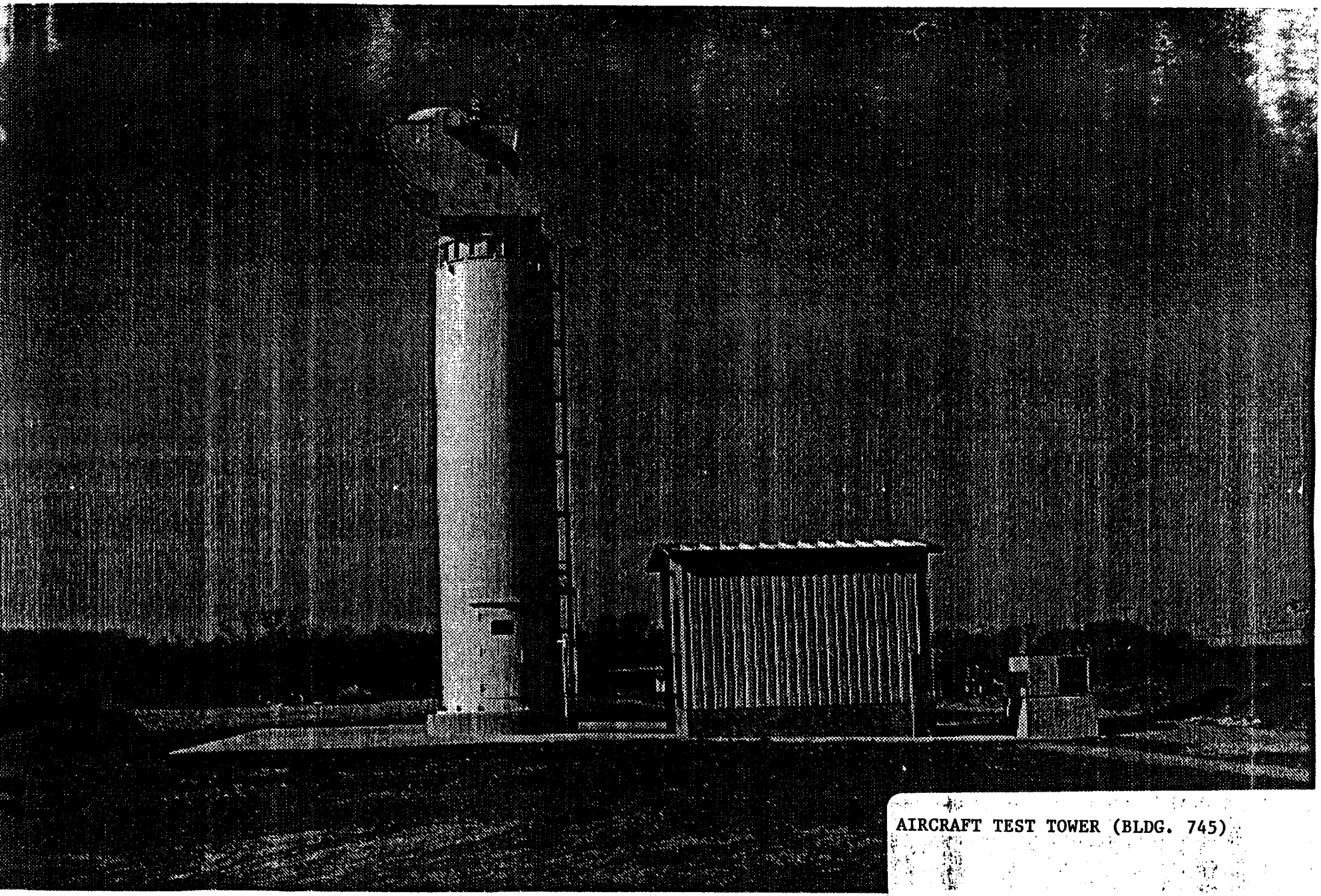
Measurements of the characteristics of electronic warfare and communications systems.

Summary of Technical Capabilities:

The facility consists of an aircraft tower that supports the aircraft 40 feet above ground on an azimuth over elevation over azimuth positioner and a small control building adjacent to the tower. A mobile RF source tower can be positioned and operated from any one of three locations 416', 875', or 1363' distant. In addition there is a mobile van, with power, that allows signal generation at almost any azimuth position relative to the aircraft and the other sources. The aircraft tower/control building houses pedestal control equipment, RF receivers, computers, and equipment peculiar to the tests in progress. Major programs supported in the last three years include data link antenna system for NAWC-AD-PAX (F018), ALQ-126/165 (F-18), L-Band Pod (F-18), TASD Plyon (F-18), WALLEYE (F-18), F-18 E/F, JTIDS, and FLEET SATCOM.

Keywords:

Electromagnetic Measurements, Electronic Warfare



AIRCRAFT TEST TOWER (BLDG. 745)

U1 00421

GENERAL INFORMATION

Facility/Capability Title: **Antenna Test Tower (Bldg 115)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWC-AD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Electronic Combat** UIC = **N62269 INTO 00421**

T&E Test Facility Category: **Open Air Range**

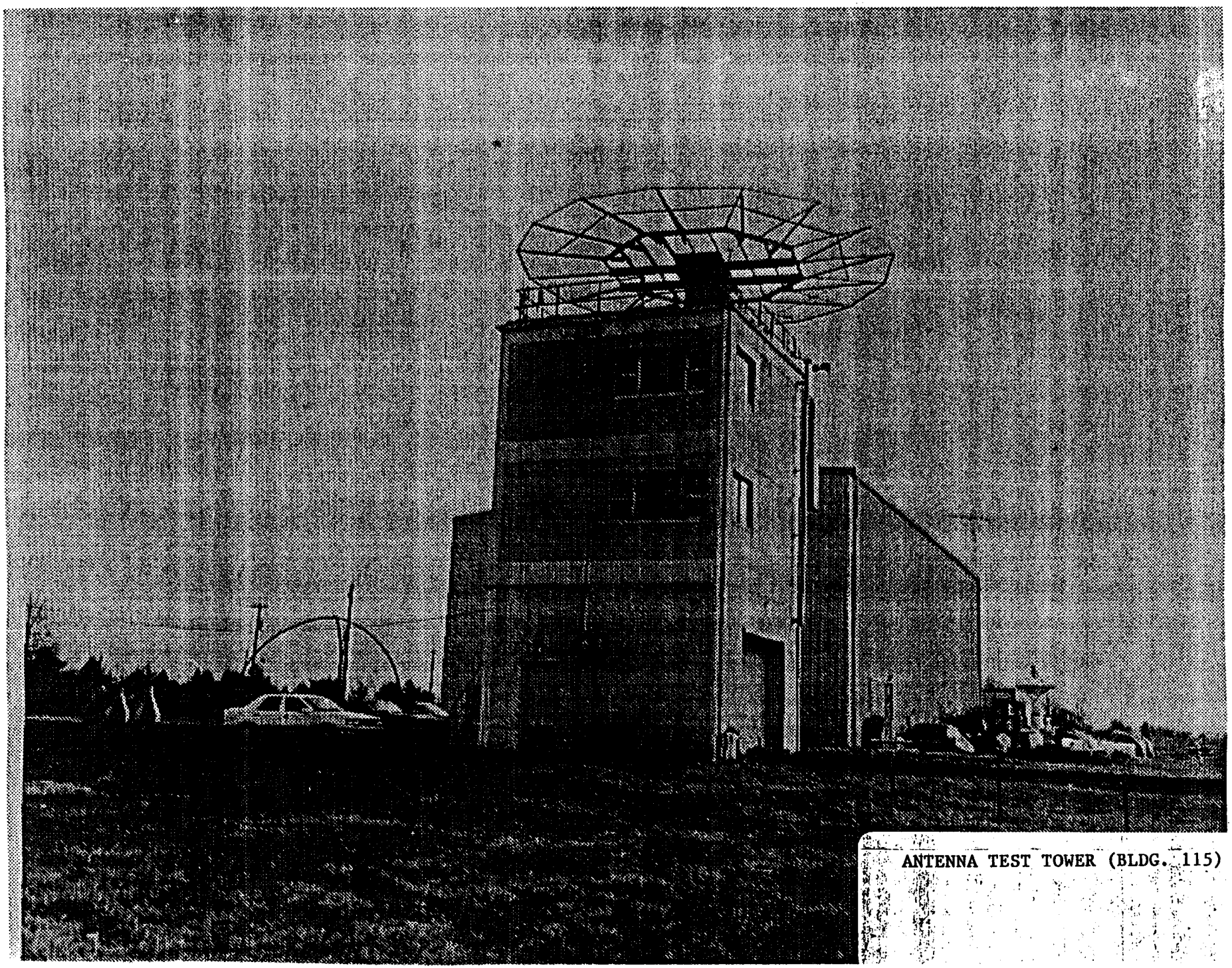
	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**15%**	**20%**	**35%**	**30%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles							
Armanent/Weapons							
EC	**15%**	**20%**	**35%**	**30%**			
Other							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Antenna Test Tower (Bldg 115)**

Facility Description; Including mission statement: **This is a standard configuration outdoor range that is multipurpose. Standard antenna measurements and rain erosion tests are conducted in thist facility.**
Interconnectivity/Multi-Use of T&E Facility: **N/A**
Type of Test Supported: **Antenna and Radome Tests**
Summary of Technical Capabilities: **The long range antenna test facility utilizes an azimuth over elevation pedestal (which can also hold a model tower) mounted on the rooftop. Control is from the third floor. The transmit site can be: a portable tower or a moveable tower placed on the transmit pads (500', 1000', 1500') described in PSC Report 9.5.25.**
Keywords: **Antenna Measurements, Rain Erosion Measurements**



ANTENNA TEST TOWER (BLDG. 115)

00431

GENERAL INFORMATION

Facility/Capability Title: **Vertical Flight**

Origin Date: **May 9, 1994**

Service: **N**

Organization/Activity: **NAWCAD**

Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles**

UIC = **62269 INTO 00421**

T&E Test Facility Category **Integration Lab**

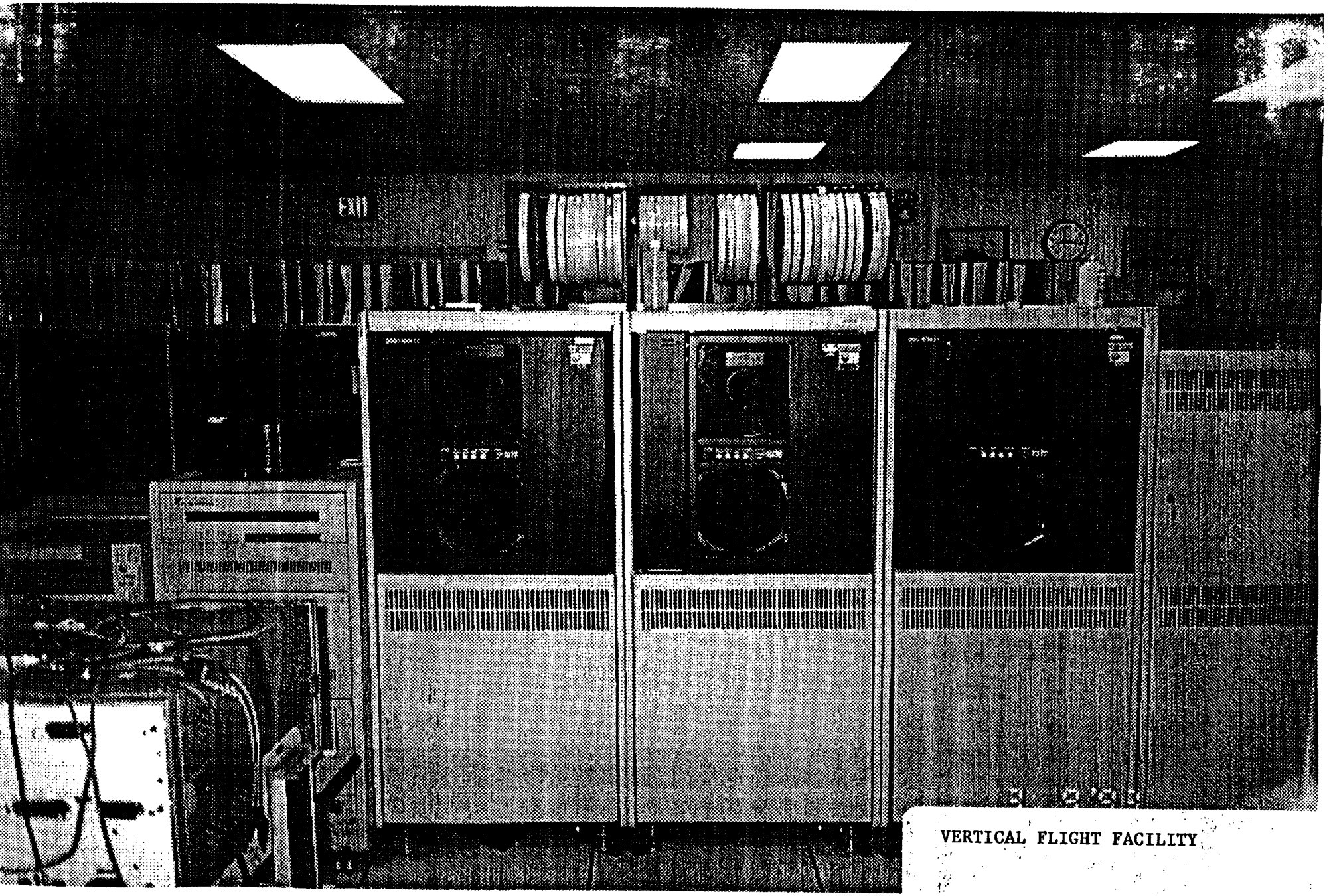
	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**15%**		**45%**	**40%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	**15%**		**45%**	**40%**			
Armanent/Weapons							
EC							
Other							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Vertical Flight**

Facility Description; Including mission statement: **The Vertical Flight Laboratory consists of five major facilities that currently support the development and integration of fleet avionics and software products for seven primary projects. Vertical Flight programs are sponsored by NAVAIR PMA-205, NAVAIR PMA (F) 225, NAVAIR PMA-299, NAVAIR AIR-546, and SPAWAR.**
Interconnectivity/Multi-Use of T&E Facility:
Type of Test Supported: **Hardware and Software Design, Development and Integration; Technology Demonstration; Systems Integration and Life Cycle Support**
Summary of Technical Capabilities: **These facilities provide a secure environment for processing SECRET material.**
Keywords: **Integration Laboratory, Systems Engineering, Software V&V**



VERTICAL FLIGHT FACILITY

e: 00421

GENERAL INFORMATION

Facility/Capability Title: **VH Facility (Executive Transport-2)**

Origin Date: **May 9, 1994**

Service: **N**

Organization/Activity: **NAWCAD**

Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles**

UIC = **62269 into 00421**

T&E Test Facility Category: **Integration Lab**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:			50%	50%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles			50%	50%			
Armanent/Weapons							
EC							
Other							

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

TECHNICAL INFORMATION

Facility/Capability Title: **VH Facility (Executive Transport-2)**

Facility Description; Including mission statement: **The VH Facility (HIS-2) verifies and validates VH avionics hardware and software. Tasks supported include avionics integration, software development, and operational simulation. The equipment includes instrument racks, workbenches, computers and peripherals, crew stations, power supplies, test racks, and a full-scale mock-up helicopter.**
Interconnectivity/Multi-Use of T&E Facility:
Type of Test Supported: **Hardware and Software Design, Development and Integration, Systems Integration**
Summary of Technical Capabilities: **The equipment includes instrument racks, workbenches, computers and peripherals, crew stations, power supplies, test racks, and a full-scale mock-up helicopter.**
Keywords: **Helicopters, Avionics, Software**

VH FACILITY (HIS-2)

UIC 00421

GENERAL INFORMATION

Facility/Capability Title: **Ejection Tower**

Origin Date: **May 9, 1994**

Service: **N**

Organization/Activity: **NAWCAD**

Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles**

UIC = **N62269 INTO 00421**

T&E Test Facility Category: **Hardware-In-The-Loop**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**20%**		**40%**	**40%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	**20%**		**40%**	**40%**			
Armanent/Weapons							
EC							
Other							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Ejection Tower**

Facility Description; Including mission statement: **The Ejection Tower produces dynamic ejection conditions which simulate the catapult phase of an ejection from an aircraft. The Ejection Tower has its upper end attached to the Vertical Drop Tower. The Vertical Drop Tower has been primarily used to test and evaluate crashworthy seating systems, restraints, energy absorbing devices and other equipment that may be exposed to a rapid deceleration environment.**
Interconnectivity/Multi-Use of T&E Facility:
Type of Test Supported: **Operability of Ejection Seats, Restraint Systems, Cockpit Clearance, Injury Potential, Crashworthy Seating Systems, Energy Absorbing Devices and other equipment exposed to rapid deceleration environment.**

Summary of Technical Capabilities:

The Tower is 150 feet high and inclined at an angle of 20 degrees from the vertical. It can provide ejection seat accelerations of up to 30 G's with onset rates of up to 500 G/sec with a payload of 600 pounds. The principle components of the facility are the catapult gun; rails; ejectable mass composed of the seat occupant, ejection seat, seat adapter, and cradle; and a "bogie" system and winch which is used to position the seat for cartridge loading and recovery of the test article after the test. Other ancillary equipment includes data recording instrumentation, photographic equipment, anthropomorphic manikins, accelerometers, pressure pickups, strobes and tools required for cartridge modification. Two high intensity, flicker-free portable lighting banks are also available for testing during overcast weather conditions. The Ejection Tower is used to test the operability of ejection seats, restraint systems, g-valve and wiring disconnects, cockpit clearance, or the injury potential of any man-mounted equipment that is worn during the ejection sequence.

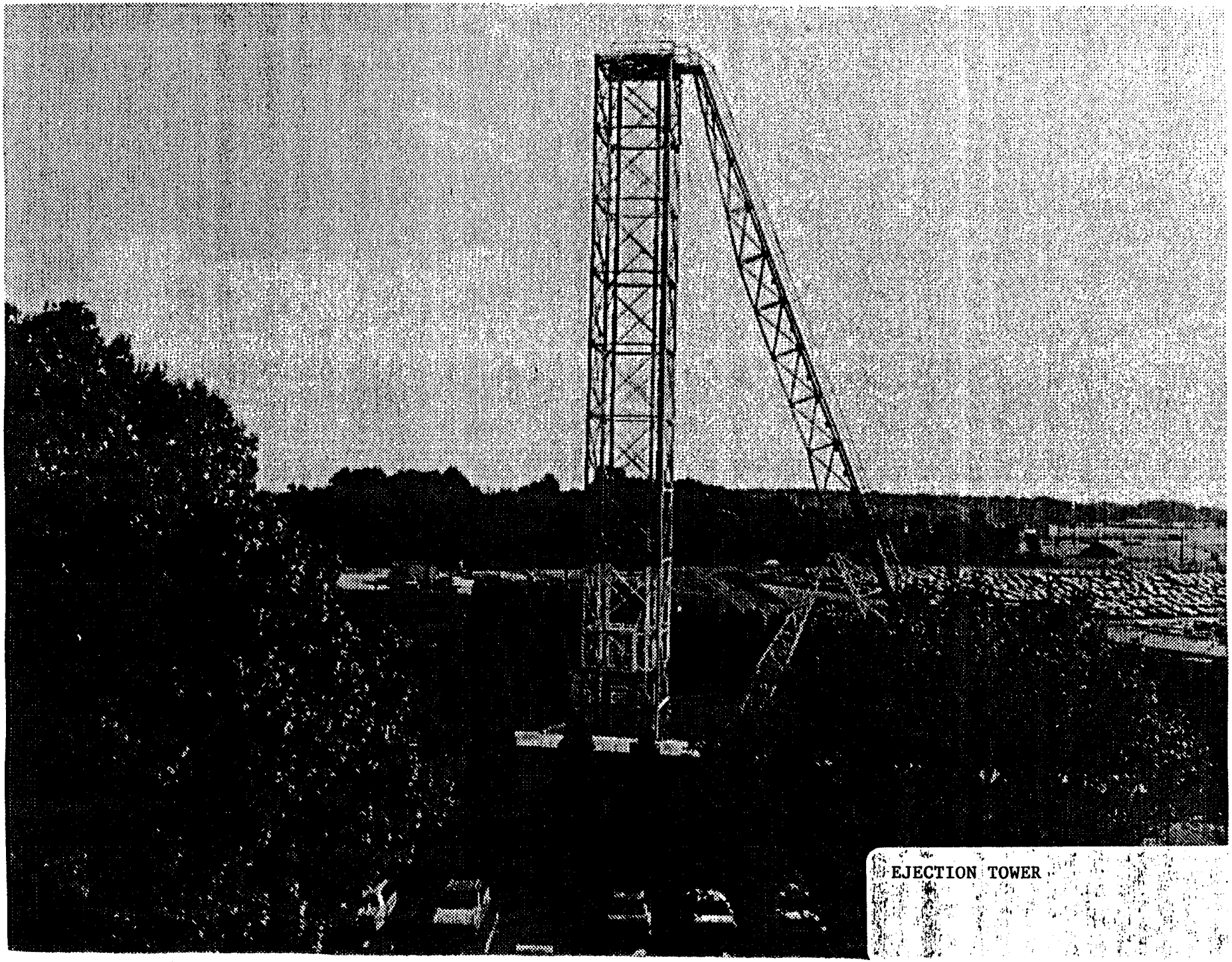
The Ejection Tower has its upper end attached to the Vertical Drop Tower. The Vertical Drop Tower is a free standing structure 150 feet high. A 10 x 10 ft. drop cart located within the framework is used for mounting the test specimen. This cart is raised to a predetermined height, released, and free falls onto an array of expandable metal bending arrestment straps where it is abruptly stopped. This facility can produce a variety of deceleration pulses depending on the drop height, weight of the loaded cart and configuration of the arrestment straps. A maximum free fall velocity of 85 fps can be obtained imposing deceleration levels from 2 to 100 G's on test objects weighing up to 800 lbs.

TECHNICAL INFORMATION

Facility/Capability Title: **Ejection Tower**

Keywords:

Ejection Seat Performance Measurements, G-Loads, Crashworthy Seating Systems



EJECTION TOWER

GENERAL INFORMATION

Facility/Capability Title: **Horizontal Accelerator** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles** UIC = **N62269 INTO 00421**

T&E Test Facility Category: **Hardware-In-The-Loop**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**20%**		**40%**	**40%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	**20%**		**40%**	**40%**			
Armanent/Weapons							
EC							
Other							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Horizontal Accelerator**

Facility Description; Including mission statement:

The Horizontal Accelerator is used for development, test and evaluation of Aircrew Lift Support Equipment, including crash resistant seats, ejection seats, clothing, helicopter seating, energy attenuation devices, restraints and other crashworthiness product lines.

Interconnectivity/Mulit-Use of T&E Facility:

N/A

Type of Test Supported:

The facility permits precise, repeatable testing of systems and components, under laboratory conditions.

Summary of Technical Capabilities:

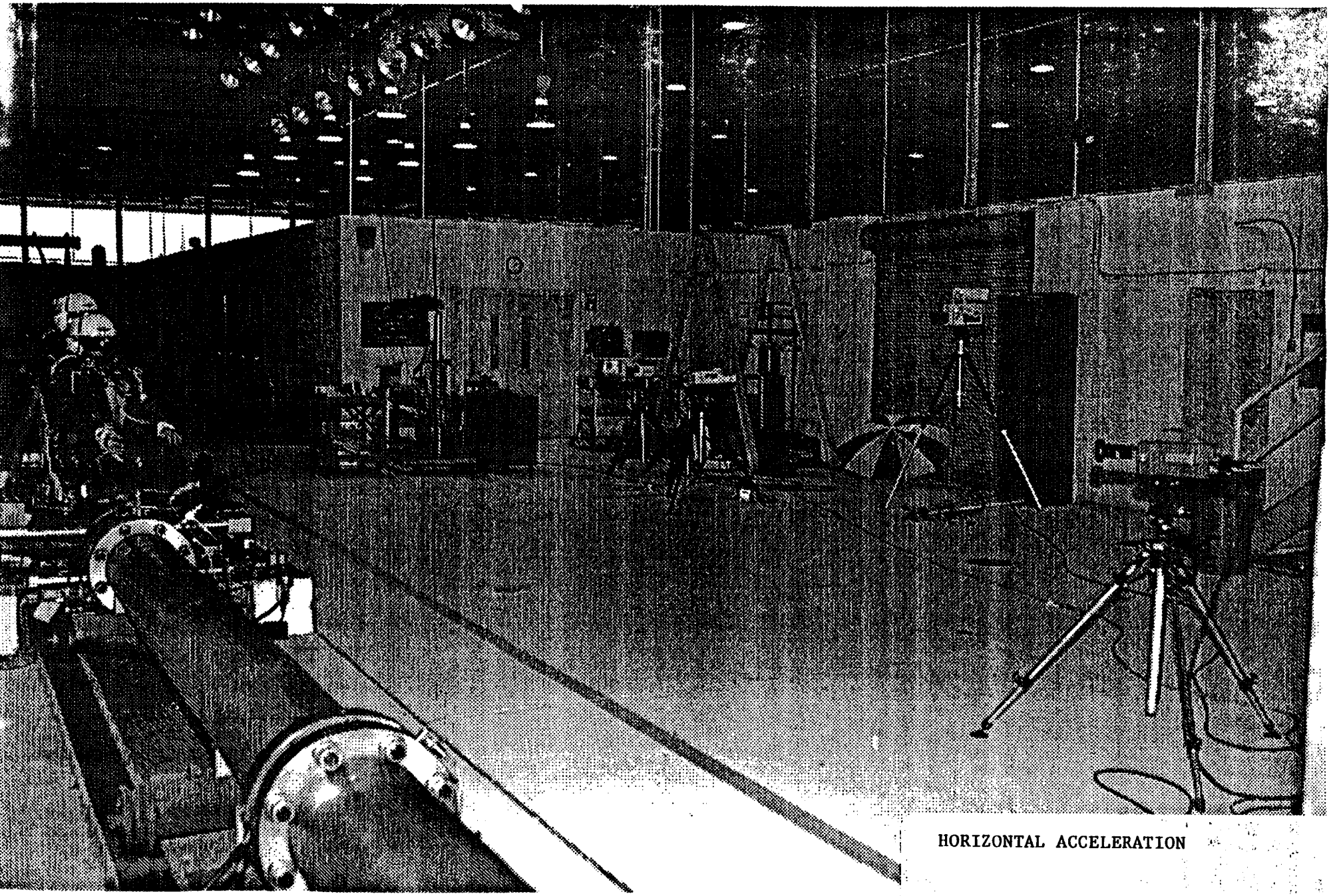
The facility produces acceleration profiles which duplicate the shock environment to which the crewman and his equipment are exposed. Its control system permits precise, repeatable testing of systems and components, under laboratory conditions. The accelerator produces essentially the same effect as a crash impact by simply reversing the orientation of the test article.
The Horizontal Accelerator Facility consists of a pneumatically driven/hydraulically-controlled crash simulator, a 100-foot rail system, a control center, photographic high-intensity lighting and a data acquisition system. The facility contains a mechanical preparation area, test fixture storage room, electronic preparation areas and control/data acquisition room.

Currently, it is being utilized on a number of crew systems programs and is a vital "tool" used in the development process. As required by military specifications, it is also used for the verification and validation of equipment performance as part of their qualification before fleet introduction. It is a versatile facility capable of producing accelerations which simulate those produced during a crash or abrupt acceleration. Because of its versatility it is being used by other DoD agencies, Dept. of Transportation and private industry.

00431

Keywords:

Aircrew Life Support Equipment, Aircraft Seats, Horizontal Accelerator



HORIZONTAL ACCELERATION

GENERAL INFORMATION

Facility/Capability Title: **Human Centrifuge/Dynamic Flight Simulator (DFS)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles** UIC = **N62269 INTO 00421**

T&E Test Facility Category **Measurement Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**15%**	**20%**	**20%**	**25%**	**20%**		
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	**15%**	**20%**	**20%**	**25%**	**20%**		
Armanent/Weapons							
EC							
Other							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Human Centrifuge/Dynamic Flight Simulator (DFS)**

Facility Description; Including mission statement:

The DFS consists of a full-scale aircraft cockpit with active instruments and controls which is mounted inside the centrifuge gondola along with a computer generated outside visual scene. The control system for the DFS incorporates a high fidelity 6 degree-of-freedom aircraft model which drives the cockpit instruments and displays as well as the centrifuge motion system. The DFS has been used successfully for manned testing of new crew equipment, advanced cockpit configurations, and to assess the performance of current and future high performance aircraft designs. The facility is a unique national asset which enables human performance testing in a realistic, high-G-flight environment, with the safety and repeatability of a ground-based laboratory.

Interconnectivity/Mulit-Use of T&E Facility:

DFS is supported by the Central Computer Facility at Warminster.

Type of Test Supported:

Manned testing of new crew equipment, advanced cockpit configurations, and assessment of the performance of current and future high performance aircraft designs.

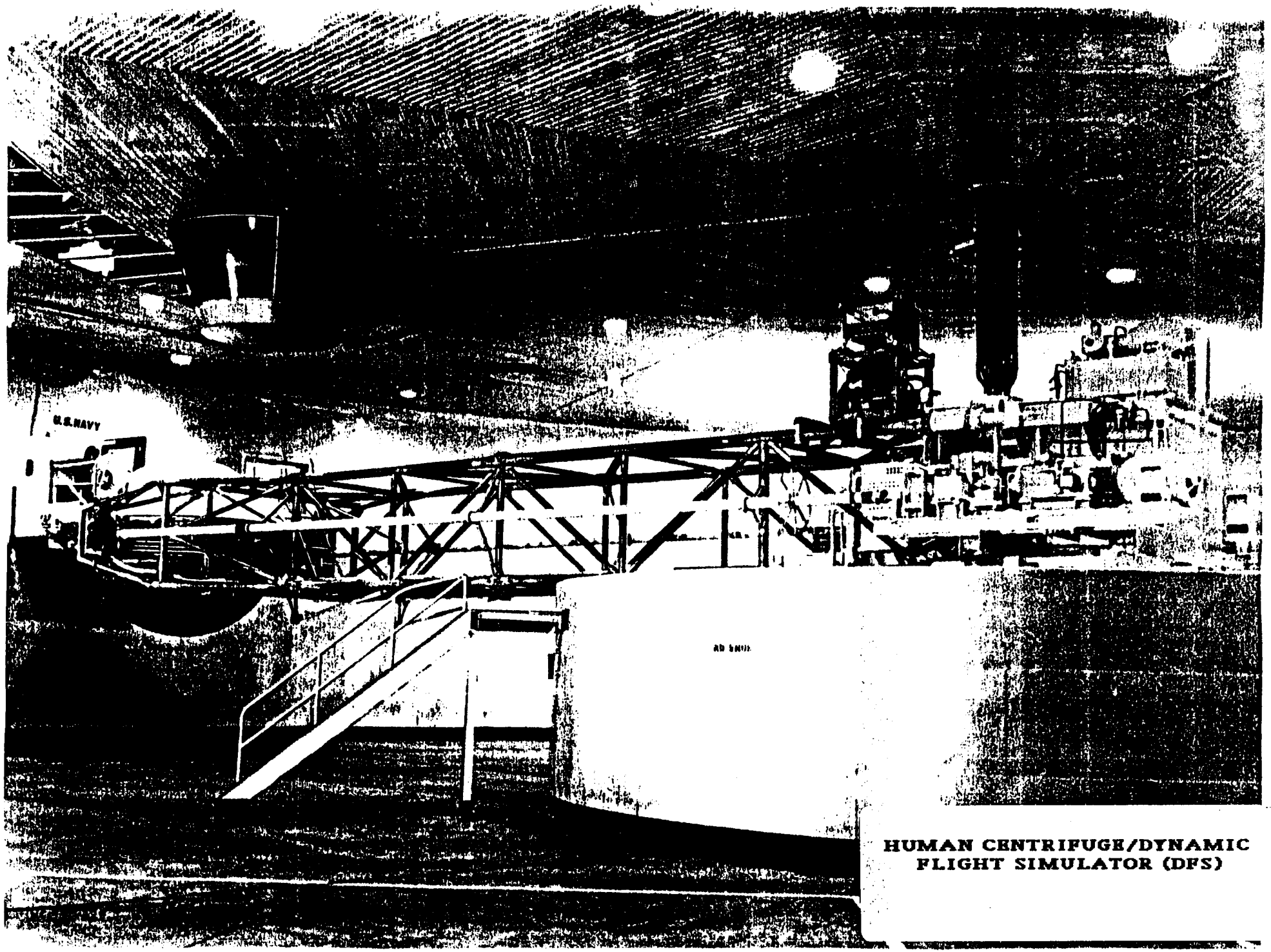
Summary of Technical Capabilities:

The Human Centrifuge located at the NAWCADWAR is the largest and most capable man-rated centrifuge in the world. It has a 50-foot arm, a 16,000 horsepower direct-drive motor, and is able to reach a maximum of 40 G's with a 1000 pound payload. Between 1.5 G and 15 G's, the centrifuge can produce an average g-onset rate of 10 G/second with an maximum instantaneous G-onset of 13 G/second. The crewstation for the centrifuge is enclosed in a 10-foot spherical gondola mounted in a high speed dual-gimbal system. The movable gimbal system enables multi-directional G forces (Gx, Gy, Gz) to be applied on the pilot/subject and is responsive enough to permit closed-loop pilot control. This feature has enabled the development of a unique real-time sustained-G flight simulation capability known as the Dynamic Flight Simulator (DFS).

C:00421

Keywords:

G-tolerance, Centrifuge, Dynamic Crew Station, Real-time sustained-G flight simulation.



HUMAN CENTRIFUGE/DYNAMIC FLIGHT SIMULATOR (DFS)

IC: 00421

GENERAL INFORMATION

Facility/Capability Title: **Special Access Program Spaces**

Origin Date: **May 9, 1994**

Service: **N**

Organization/Activity: **NAWCAD**

Location: **WARMINSTER INFLUX**

T&E Functional Area: **(No details available)**

UIC = **62269 INTO 00421**

T&E Test Facility Category: **N/A**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:							

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles

Armanent/Weapons

EC

Other

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

TECHNICAL INFORMATION

Facility/Capability Title: **Special Access Program Spaces**

Facility Description; Including mission statement: **Under the BRAC '91 realignment of NAWCAD Warminster with NAWCAD Patuxent River, 20,000 sq.ft. of Special Access Program Space is being constructed. These spaces, which are all on raised deck, are split between the South Technology Complex (15,500 sq. ft.) and the North Technology Complex (4,500 sq.ft.).**
Interconnectivity/Multi-Use of T&E Facility: **N/A**
Type of Test Supported: **N/A**
Summary of Technical Capabilities: **N/A**
Keywords: **N/A**

GENERAL INFORMATION

Facility/Capability Title: **Human Centrifuge/Dynamic Flight Simulator (DFS)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles** UIC = **N62269 INTO 00421**

T&E Test Facility Category **Measurement Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**15%**	**20%**	**20%**	**25%**	**20%**		
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	**15%**	**20%**	**20%**	**25%**	**20%**		
Armanent/Weapons							
EC							
Other							

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

GENERAL INFORMATION

Facility/Capability Title: **Structural Test Facility** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles** UIC = **N62269 INTO 00421**

T&E Test Facility Category: **Measurement Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**20%**		**30%**	**50%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	**20%**		**30%**	**50%**			
Armanent/Weapons							
EC							
Other							

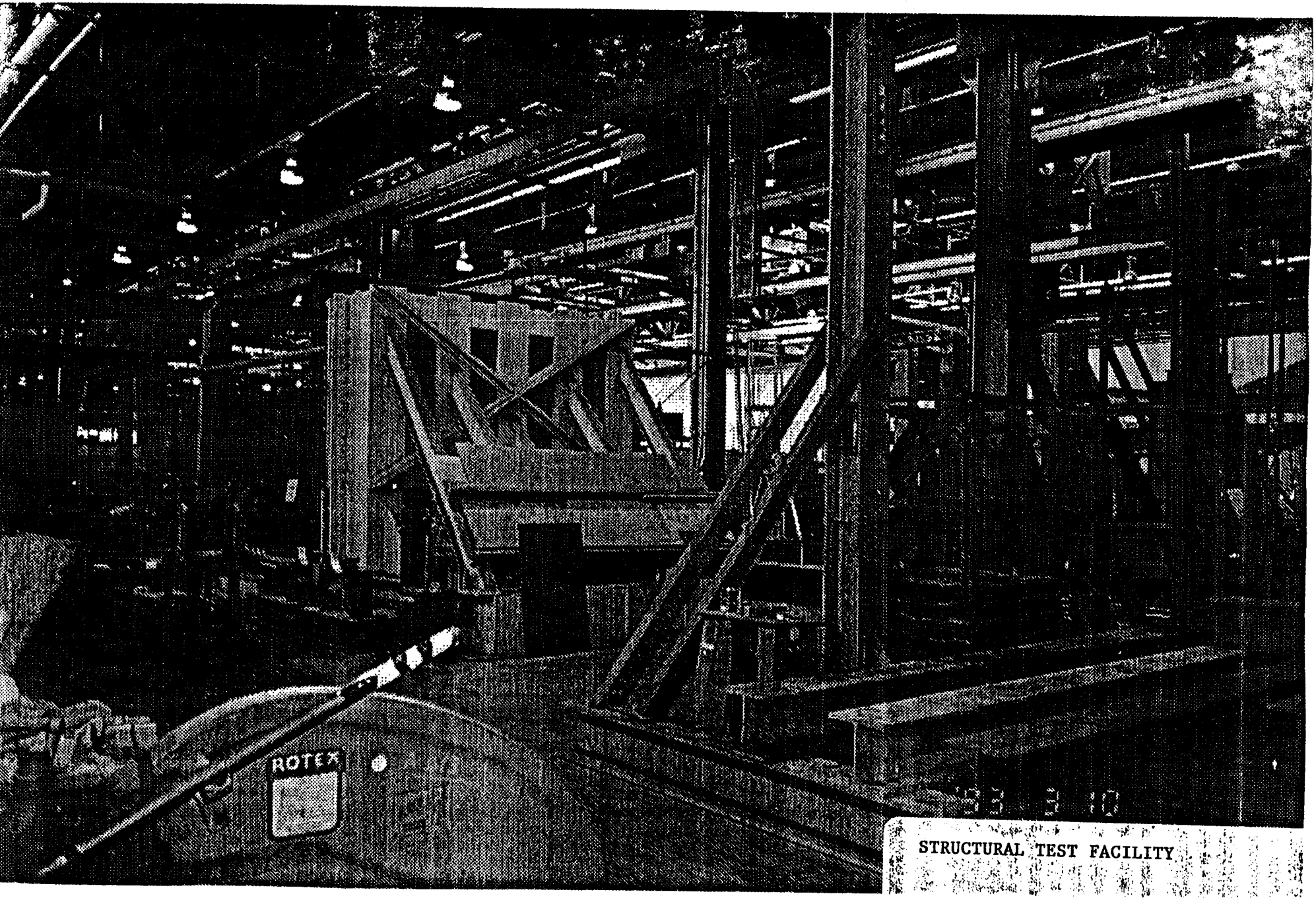
Total in Breakout Must Equal "Percentage Use" On First Line

:IC: 00121

TECHNICAL INFORMATION

Facility/Capability Title: **Structural Test Facility**

Facility Description; Including mission statement: **The Structural Test Facility performs structural tests, both static and fatigue, on aircraft structural specimens ranging in size and complexity from small coupons and structural elements through major subassemblies to full scale aircraft. Test loads are normally applied by electronically-programmed, servo-controlled, electro-hydraulic actuators that may be used singly or in several separately-programmed groups. The equipment to be moved includes four hydraulic pumps, three dust collectors, five drill presses, three hydraulic presses, seven power saws, two environmental chambers and miscellaneous other machine shop tools and supplies.**
Interconnectivity/Multi-Use of T&E Facility: **N/A**
Type of Test Supported: **Static and Fatigue Tests on Aircraft Structural Specimens**
Summary of Technical Capabilities: **Test loads are normally applied by electronically-programmed, servo-controlled, electro-hydraulic actuators that may be used singly or in several separately-programmed groups. The equipment includes four hydraulic pumps, three dust collectors, five drill presses, three hydraulic presses, seven power saws, two environmental chambers and miscellaneous other machine shop tools and supplies.**
Keywords: **Structural Testing**



STRUCTURAL TEST FACILITY

IC 00421

GENERAL INFORMATION

Facility/Capability Title: **Hydraulics Research Lab** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles** UIC = **N62269 INTO 00421**

T&E Test Facility Category: **Measurement Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	5%	30%	35%	30%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	5%	30%	35%	30%			
Armanent/Weapons							
EC							
Other							

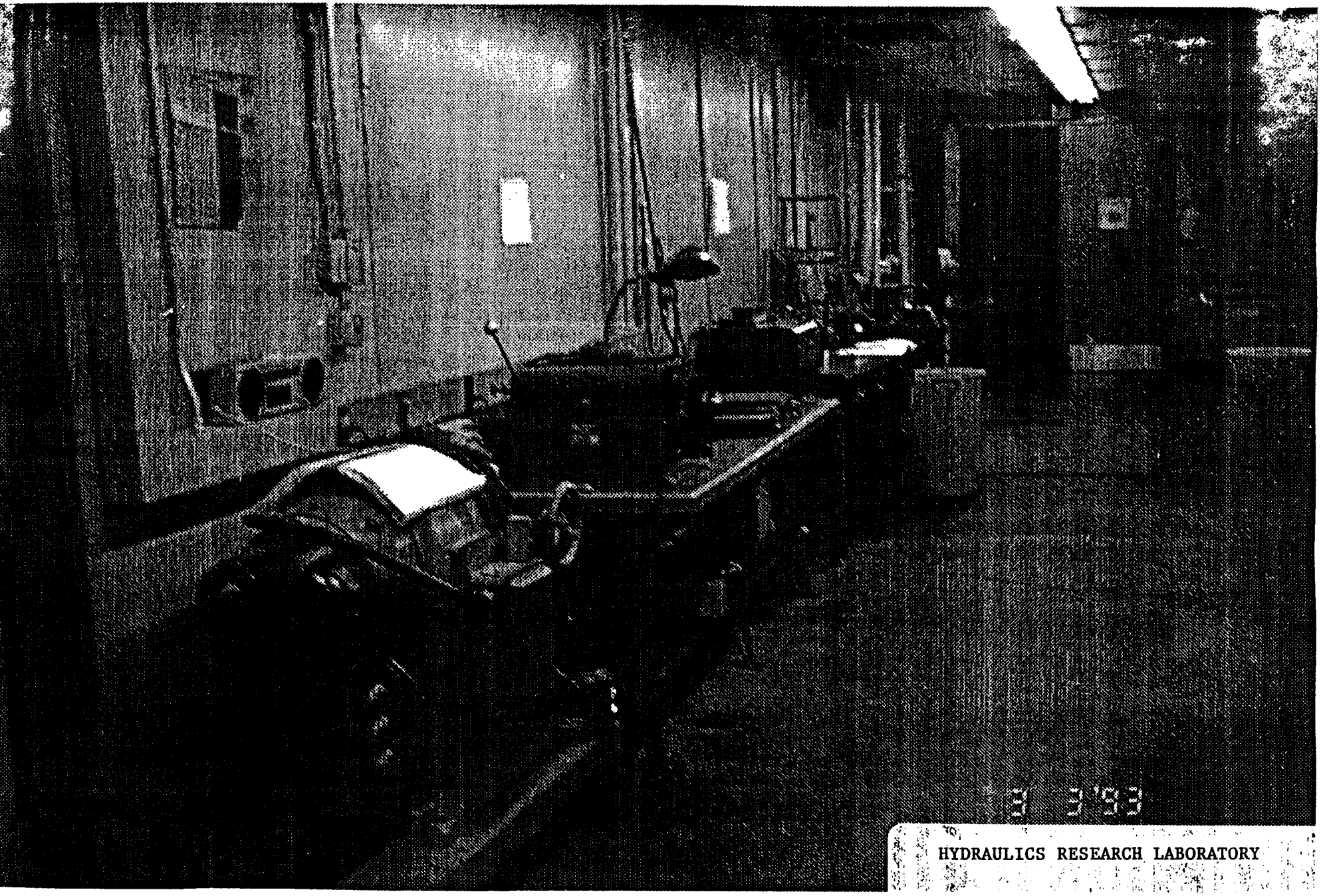
Total in Breakout Must Equal "Percentage Use" On First Line

'10: 00121

TECHNICAL INFORMATION

Facility/Capability Title: **Hydraulics Research Lab**

Facility Description; Including mission statement: **This laboratory provides developmental testing of Naval Aircraft hydraulic components including pumps, filters, fittings and hoses at pressures to 30,000 PSI and flow rates to 50 GPM. Environmental and functional tests are performed on aircraft hydraulic equipment including pressure surge, flexure fatigue, vibration and low and high temperature functioning.**
Interconnectivity/Multi-Use of T&E Facility:
Type of Test Supported: **Environmental and functional measurement and tests on aircraft hydraulic equipment (surge, fatigue, vibration, and temperature tests).**
Summary of Technical Capabilities: **The facility has capabilities at pressures up to 30,000 PSI and flow rates to 50 GPM.**
Keywords: **Hydraulic Measurements**



HYDRAULICS RESEARCH LABORATORY

.C · 00421

GENERAL INFORMATION

Facility/Capability Title: **Code 60724 Machine Shop**

Origin Date: **May 9, 1994**

Service: **N**

Organization/Activity: **NAWCAD**

Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles**

UIC = **N62269 INTO 00421**

T&E Test Facility Category: **N/S (Fabrication of Prototypes)**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:		40%	30%	30%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles		40%	30%	30%			
Armanent/Weapons							
EC							
Other							

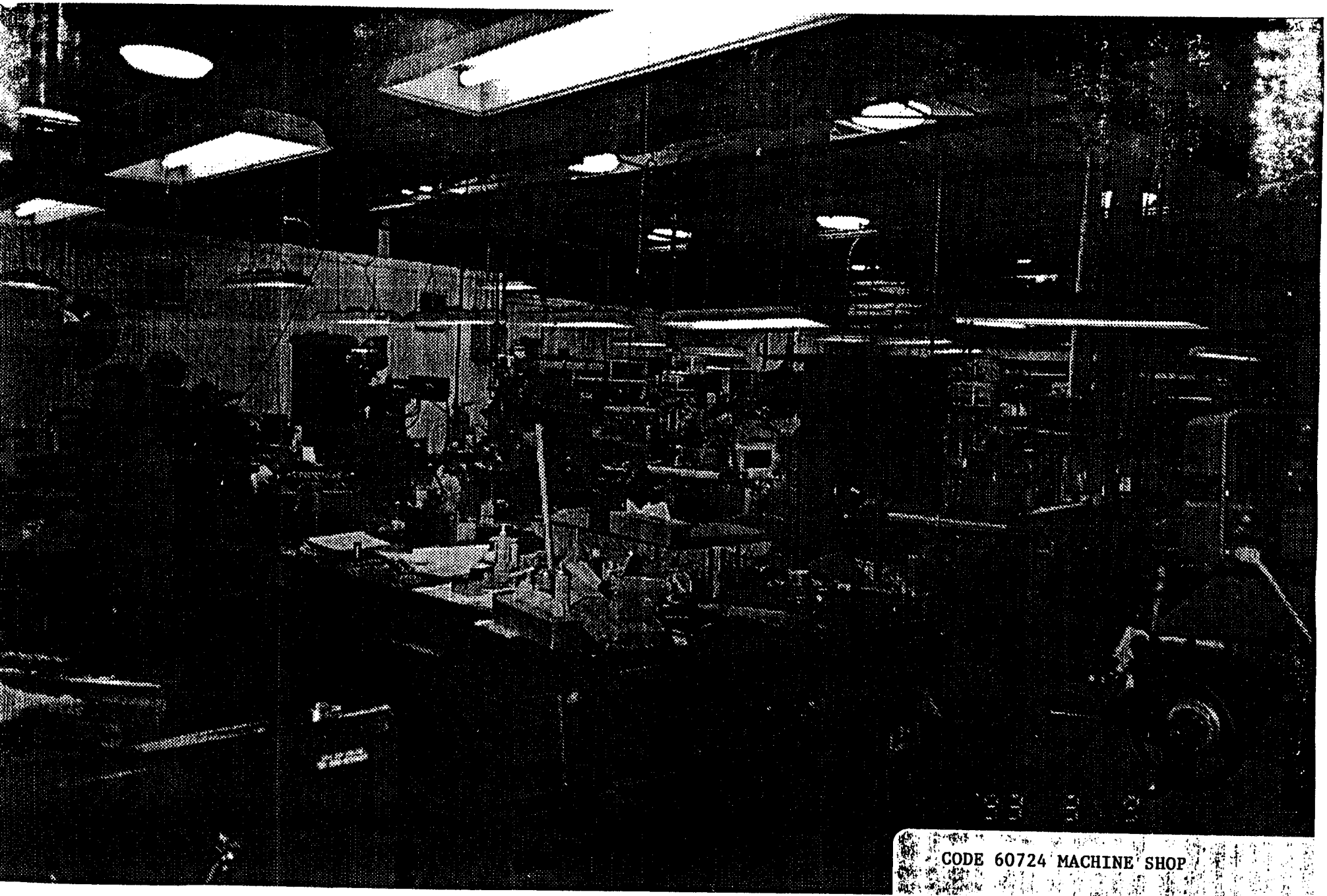
Total in Breakout Must Equal "Percentage Use" On First Line

C: 00471

TECHNICAL INFORMATION

Facility/Capability Title: **Code 60724 Machine Shop**

Facility Description; Including mission statement: **The Code 60724 Machine Shop provides a wide range of machinery and equipment capable of producing high quality, close tolerance parts required to support research and development activities at NAWCADWAR.**
Interconnectivity/Multi-Use of T&E Facility:
Type of Test Supported: **N/A**
Summary of Technical Capabilities: **The equipment includes 6 grinders, 12 lathes, an optical comparator, a metal disintegrator, 3 drill presses, 3 gear shapers, a honing machine, 2 band saws, a jig borer, 10 milling machines, a control projector, and miscellaneous smaller tools and material. This machine shop will be combined with the NAWCADWAR Code 60725 Machine Shop at Patuxent River. The equipment included in these two facilities will be installed in Building 104, rooms 16, 19, and 22 and Building 2186, room 112.**
Keywords: **Machine Shop, R&D Prototypes**



CODE 60724 MACHINE SHOP

ID: 00421

GENERAL INFORMATION

Facility/Capability Title: **Code 60725 Machine Shop**

Origin Date: **May 9, 1994**

Service: **N**

Organization/Activity: **NAWC-AD**

Location: **WARMINSTER INFLUX**

T&E Functional Area: **Air Vehicles**

UIC = **62269 INTO 00421**

T&E Test Facility Category: **N/A (Fabrication of Prototypes)**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:		40%	30%	30%			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles		40%	30%	30%			
Armanent/Weapons							
EC							
Other							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Code 60725 Machine Shop**

Facility Description; Including mission statement: **The Code 60725 Machine Shop provides a wide range of machinery and equipment capable of producing high quality, close tolerance parts required to support research and development activities at NAWCADWAR.**
Interconnectivity/Multi-Use of T&E Facility:
Type of Test Supported: **N/A**
Summary of Technical Capabilities: **The equipment includes 16 lathes, 9 grinders, 22 milling machines, 7 drill presses, 3 band saws, 3 vertical shapers, 2 EDM machines, a jig borer, a cutter, a sander, a power hack saw and miscellaneous smaller tools and materials. This machine shop will be combined with the NAWCADWAR Code 60724 Machine Shop at Patuxent River. The equipment included in these two facilities will be installed in Building 104, rooms 16, 19, and 22 and Building 2186, room 112.**
Keywords: **Machince Shop, R&D Prototyping**

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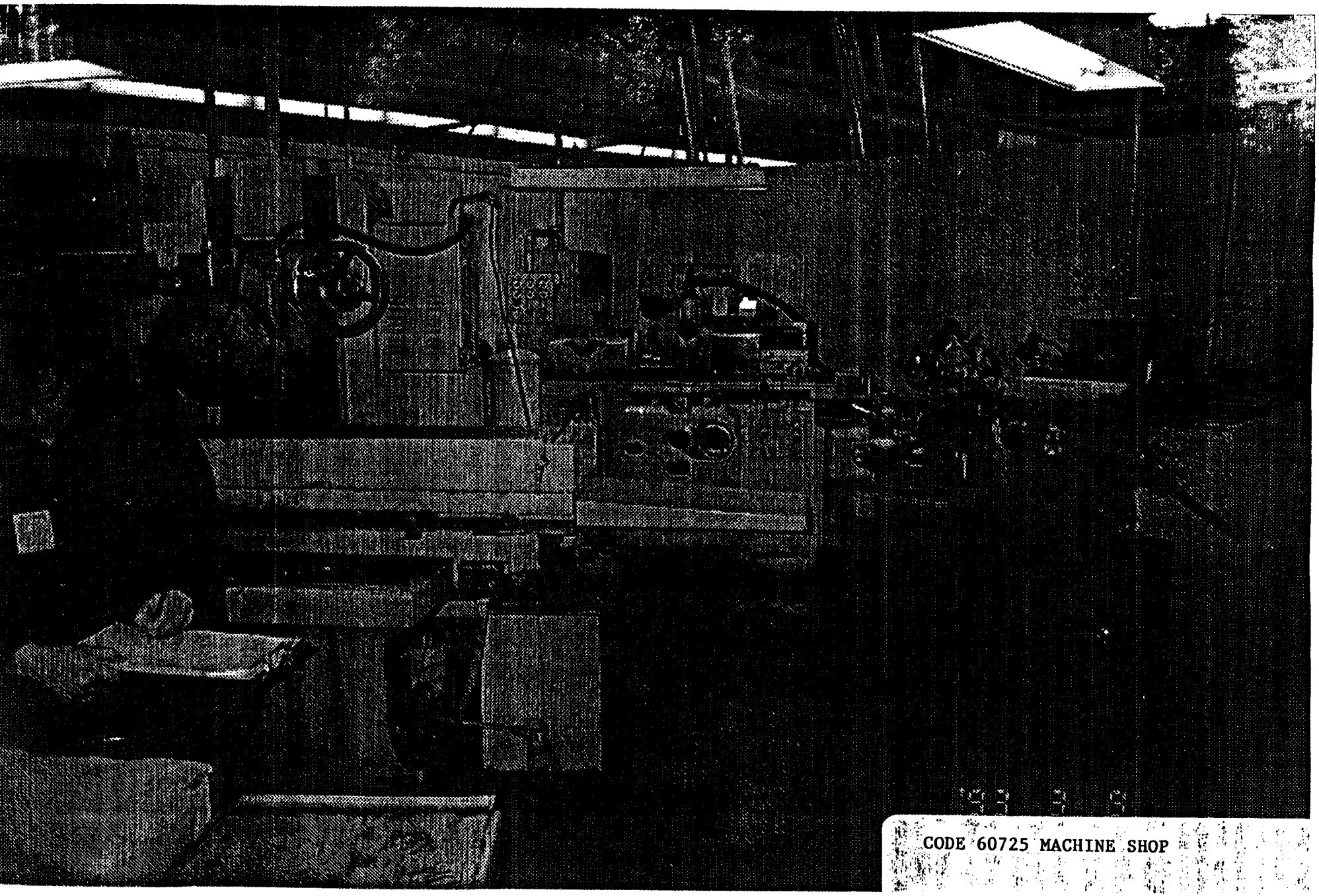


CODE 60725 MACHINE SHOP

?:00421

GENERAL INFORMATION

Facility/Capability Title: **Airborne Strategic Communication Engineering and Test Facility (ASCET)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle** UIC = **00421**

T&E Test Facility Category: **Integration Laboratory**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**30%**			**70%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**30%**			**70%**			
Armament/Weapons:							
EC:							
Other:							

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

00421

TECHNICAL INFORMATION

Facility/Capability Title: **Airborne Strategic Communication Engineering and Test Facility (ASCET)**

Facility Description; Including mission statement:

To provide test, evaluation and system engineering functions for Navy Airborne Strategic Communications (ASC) aircraft, avionics, and mission systems in support of the NAWCAD mission for RDT&E of aircraft systems during all phases of the ASC system life cycle process.

The ASCET Facility provides the capability to perform RDT&E and to support OT&E/FOT&E and product improvement efforts on E-6 airborne strategic and tactical communications systems. The ASCET Facility is configured with a Tactical Message Processing System (TMPS), Enhanced VERDIN receiver and transmitter terminals, TMPS message simulator and HF/UHF transceivers. The Ground based test site replicates the aircraft mission system thus allowing significant amounts of T&E on both hardware and software to be conducted without a dedicated aircraft asset.

Interconnectivity/Multi-Use of T&E Facility:

The ASCET Facility supports the E-6's Airborne Communication and avionic systems. It is primarily an Integration Laboratory Test Facility unique to the strategic communication mission. In addition to integration, this facility supports the Cognizant Field Activity (CFA) as a Participating Field Activity (PFA) responsible for any and all support for Engineering Investigations (EI), Engineering Change Proposals (ECP), Avionic Changes (AVC), and Airframe Changes (AFC) for the Airborne Strategic Communication System. Provides operational and technical expertise as needed for fleet subsystem fault isolation, mission training requirements, and special monitoring needs. The ASCET Facility communication system can also be utilized with other Joint Chiefs of Staff (JCS) World Wide Military Command and Control System communication sources using compatible down links.

Type of Test Supported:

Software
Mission Avionics Integration
Special Monitoring
In-service Engineering

TECHNICAL INFORMATION

Facility/Capability Title: **Airborne Strategic Communication Engineering and Test Facility (ASCET)**

Summary of Technical Capabilities:

The ASCET Facility provides the capability to perform RDT&E and to support OT&E/FOT&E and product improvement efforts on E-6 airborne strategic and tactical communication systems. This facility also supports the CFA as a Participating Field Activity (PFA) responsible for any and all support for Engineering Investigations (EI), Engineering Change Proposals (ECP), Avionic Changes (AVC), and Airframe Changes (AFC) for the Airborne Strategic Communication System.

Keywords:

TACAMO, Strategic, WWMCCS, E-6A, Command & Control.

UIC: 00471

ADDITIONAL INFORMATION

Facility/Capability Title: **Airborne Strategic Communication Engineering and Test Facility (ASCET)**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted	4	4	4	4	4	4	4
Civilian	4	4	4	6	6	6	5
Contractor	7	7	7	7	10	10	7
Total	15	15	15	17	20	20	16

Total Square Footage: **6,336**

Test Area Square Footage: **3,036**

Office Space Square Footage: **3,000**

Tonnage of Equipment: **210**

Volume of Equipment: **29,551 cu ft**

Annual Maintenance Cost: **$100K**

Estimated Moving Cost: **$245.5K**

CAPITAL EQUIPMENT INVESTMENT ($K)

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Sponsor Funded	720	1,400	1,000	1,000	500	385	215

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Airborne Strategic Communication Engineering and Test Facility (ASCET)**

AGE: **13 Years** REPLACEMENT VALUE: **$3.0M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **April 1994**

NATURE OF LAST UPGRADE: **E-6A Mission Avionics System installation and upgrade.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **High Power Transmit Set (HPTS) installation**

   TOTAL PROGRAMMED AMOUNT: **$4.5M**
   SUMMARY DESCRIPTION: **To install HPTS system into the ASCET Facility and procure ancillary equipment needed to effectively utilize system.**

2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Airborne Strategic Communication Engineering and Test Facility (ASCET)**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								**26,940**
	TEST HOURS								**6,240**
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Note - Includes civilian, military, and contractor direct labor hours.

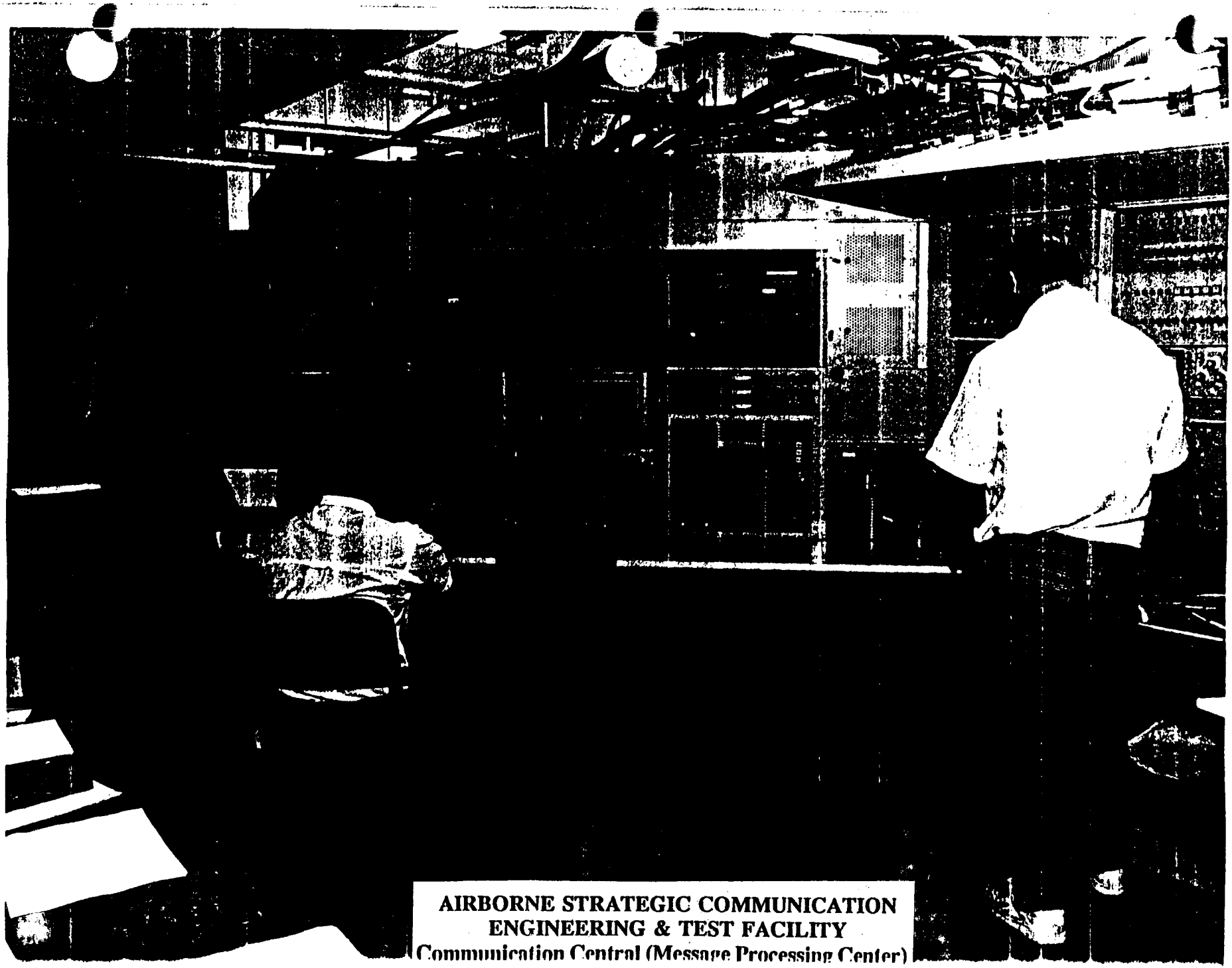
DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Airborne Strategic Communication Engineering and Test Facility (ASCET)**

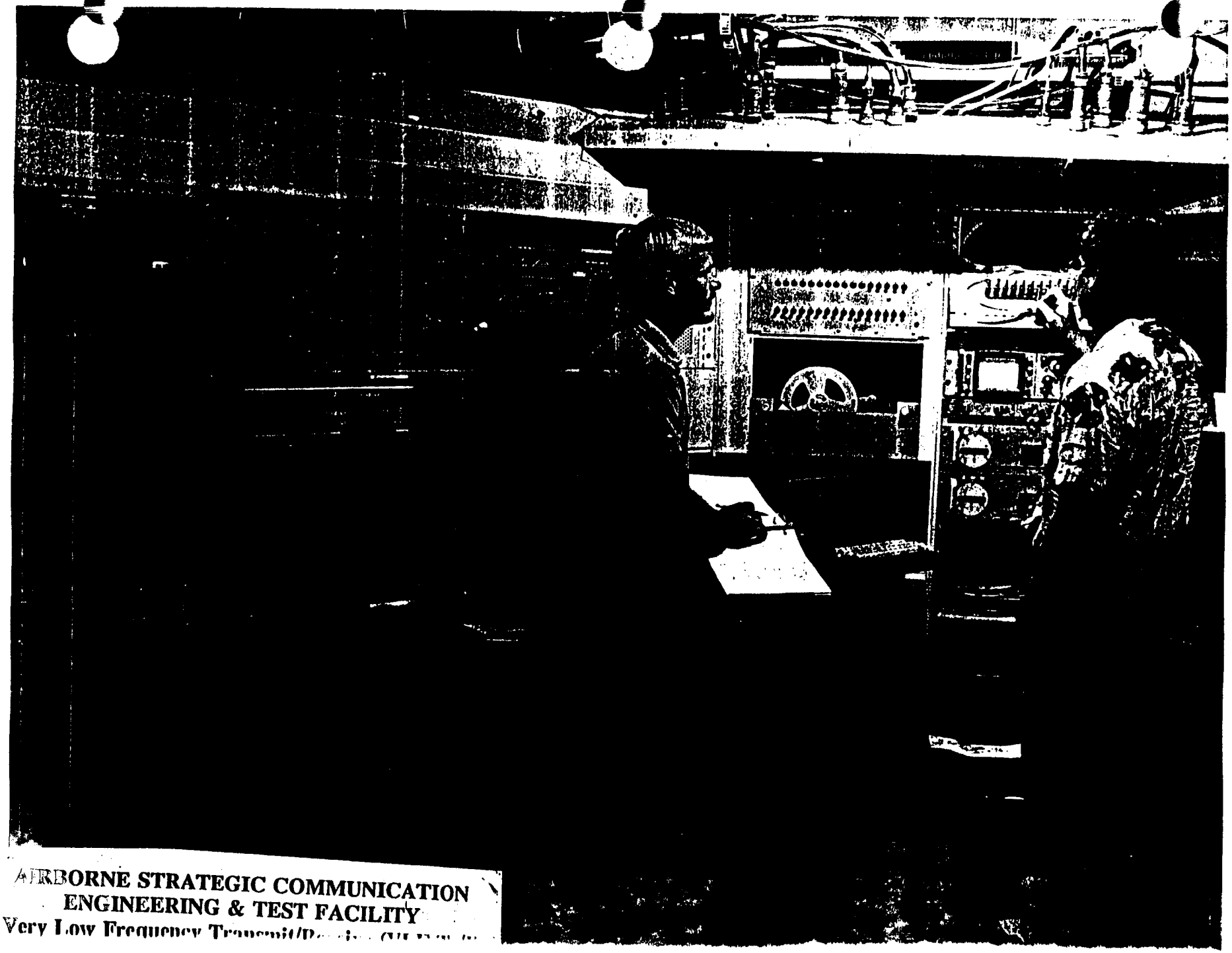
ANNUAL HOURS OF DOWNTIME	1	**576**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**1.6**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**22.4**

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 Σ) 8
Software	**2**	**3**	**6**	**604.8**
Mission Avionics Integration	**2**	**4**	**8**	ANNUAL UNCONSTRAINED CAPACITY
Special Monitoring	**1**	**4**	**4**	
In-Service Engineering	**3**	**3**	**9**	
				9
"TYPICAL"				**220,752**
		TOTAL Σ	**27**	

AIRBORNE STRATEGIC COMMUNICATION ENGINEERING & TEST FACILITY
Long Trailing Wire Antenna Console



AIRBORNE STRATEGIC COMMUNICATION ENGINEERING & TEST FACILITY
Communication Central (Message Processing Center)



AIRBORNE STRATEGIC COMMUNICATION
ENGINEERING & TEST FACILITY
Very Low Frequency Transmit/R[illegible]

GENERAL INFORMATION

Facility/Capability Title: **E-2C Systems Test and Evaluation Laboratory (ESTEL) Facility**

Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle** UIC = **00421**

T&E Test Facility Category: **Integration laboratory**

T&E	S&T	D&E	IE	T&D	OTHER	=100%

PERCENTAGE USE: **100%**

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles: **100%**

Armament/Weapons:

EC:

Other:

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

TECHNICAL INFORMATION

Facility/Capability Title: **E-2C Systems Test and Evaluation Laboratory (ESTEL) Facility**

Facility Description; Including mission statement:

ESTEL's major components are a mobile Joint Tactical Information Display System (JTIDS) data reformat and reduction facility, E-2C tactical computer group (L-304, I/O's, displays, etc), Link 11 (HF and UHF) system, Link-4A system, Link-11 analyzer, mission simulator, and multiple engineering work stations for data analysis. This facility is an essential and integral component in the continuing T&E of E-2C weapons systems upgrades and replacements. ESTEL provides the means to evaluate or assess collected sensor and communications data for an entire outer battle group scenario. ESTEL is government owned and designed to support airborne early warning T&E requirements.

Interconnectivity/Multi-Use of T&E Facility:

LINK II - UHF and HF receive and transmit; 2250 bits/second

LINK 4 - UHF receive and transmit; 5000 bits/second

ACETEF - STU Phone Link; 76,800 bits/second

ESTEL provides a backup capability to NRAD, San Diego's E-2C computer group stimulate by computer simulation for software life cycle support and Grumman's Facility for basic R&D.

Type of Test Supported:

Airborne early warning aircraft, radar, IFF, Passive Detection System, and tactical data link test and evaluation.

Summary of Technical Capabilities:

E-2C data reduction and analysis, Realtime Link 11 and 14, E-2C Mission Reconstruction.

Keywords:

E-2C, Airborne, Radar, Tracking, Surveillance

ADDITIONAL INFORMATION

Facility/Capability Title: **E-2C Systems Test and Evaluation Laboratory (ESTEL) Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian		3	3	3	5	5	6
Contractor		12	13	15	17	18	19
Total		15	16	18	22	23	25

Total Square Footage: **2,000**

Test Area Square Footage: **1,500**

Office Space Square Footage: **500**

Tonnage of Equipment: **31**

Volume of Equipment: **5,000 cu ft**

Annual Maintenance Cost: **$30K**

Estimated Moving Cost: **$670K**

CAPITAL EQUIPMENT INVESTMENT ($K)

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Sponsor Funded		$200	$250	$300	$400	$400	$300

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **E-2C Systems Test and Evaluation Laboratory (ESTEL) Facility**

AGE: **9 Years** REPLACEMENT VALUE: **$5.9M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **May 1992**

NATURE OF LAST UPGRADE: **Facility central processor system replacement.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **E-2C Group II**

   TOTAL PROGRAMMED AMOUNT: **$200K**
   SUMMARY DESCRIPTION: **Integrate E-2C Group II Indicator Group Hardware**

2. UPGRADE TITLE: **Link-16**

   TOTAL PROGRAMMED AMOUNT: **$150K**
   SUMMARY DESCRIPTION: **Provide live Link-16 capability.**

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **E-2C Systems Test and Evaluation Laboratory (ESTEL) Facility**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	14144	14144	17680	17680	17680	21216	21216	21216
	TEST HOURS	2120	2120	2120	2120	2120	2120	2120	2120
	MISSIONS	*	16	23	40	60	25	89	122
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

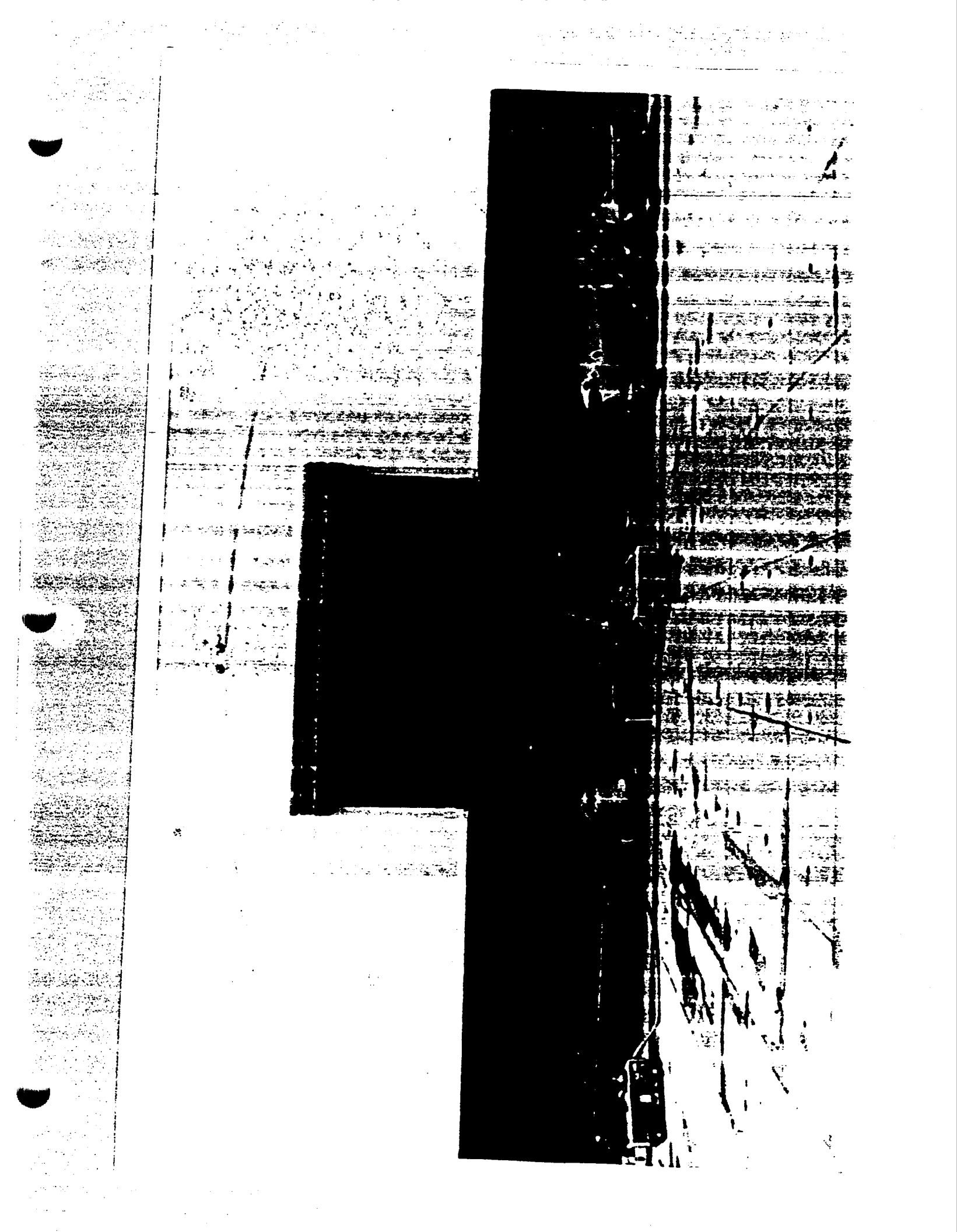
*** No records**
Mission - Number of flights supported does not include lab-tests.
Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **E-2C Systems Test and Evaluation Laboratory (ESTEL)**

ANNUAL HOURS OF DOWNTIME	1	**370**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**1**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23**

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 Σ) 8
Flight Test	**1**	**5**	**5**	**437**
Data Reduction/Analysis	**3**	**3**	**9**	ANNUAL UNCONSTRAINED CAPACITY
Mission Reconstruction	**1**	**5**	**5**	
				9
"TYPICAL"				**159,505**
		TOTAL Σ	**19**	



GENERAL INFORMATION

Facility/Capability Title: **Helicopter Mission Systems Support Center (HMSSC)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle** UIC = **00421**

T&E Test Facility Category: **Integration Laboratory**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**80%**		**10%**	**10%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**80%**		**10%**	**10%**			
Armament/Weapons:							
EC:							
Other:							

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

C:00421

TECHNICAL INFORMATION

Facility/Capability Title: **Helicopter Mission Systems Support Center (HMSSC)**

Facility Description; Including mission statement:

The Helicopter Mission Systems Support Center (HMSSC) provides hangar-based facilities for daily support of in-service and new acquisition maritime rotary wing and VTOL aircraft in the areas of mission systems integration, tactical data analysis and ground/fight testing of sensor performance. Special testing equipment and secure facilities provide program sponsors with early-on development and T&E phase engineering insight into integrated mission system problems, and allow engineering investigations to prototype potential fixes. Specific capabilities exist to evaluate magnetic anomaly detection (MAD) sensor systems, acoustic in-water sensors (including dipping sonar rearing and display/processing equipment), tactical digital encrypted data links, MIL-STD 1553A/B data bus performance, tactical data processors and mission tape recorder/playback systems. Dedicated, specialized test equipment including calibrated sonar transducer test tanks, avionics system test benches and data link analysis hardware are available. These facilities and equipment are used to support special unique helicopter test installations needed for participation in technology demonstration development projects and foreign weapons system evaluation programs. For in-service naval helicopters, proposed hardware and software updates are installed and tested on the ground including complete structural integrity certifications, electrical inspections and initial sensor performance. Follow-on inflight performance is evaluated using extensive data playback and analysis workstations. DT/OT aircrews receive operator training in the HMSSC prior to actual flights to review checklists and enhance flight test efficiency and safety. For the executive transport helicopters (VH-60N and VH-3D), an NVH-3A technology test bed helicopter operates in direct support to the HMSSC for avionics/software testing.

Interconnectivity/Multi-Use of T&E Facility:

Interconnectivity with Ship Ground Station, Navy and USCG maritime helicopters under test (ground and flight). Mission post-flight data analysis tools support flight tests. New aircraft tactical software can be data linked (T1 Modem) from the developer to the HMSSC for loading into the helicopters for ground/flight tests in support of software. Specific secure communications provisions and storage support all testing operations. Familiarization of OT and INSURV aircrew is conducted for support of combined test teams on new avionics/software.

TECHNICAL INFORMATION

Facility/Capability Title: **Helicopter Mission Systems Support Center (HMSSC)**

Type of Test Supported: **Laboratory, ground and flight tests of mission systems avionics in Navy, Marine, and Coast Guard helicopters.**
Summary of Technical Capabilities: **MIL-STD-1553A/B Data Bus processing and analysis; Automated LAMPS (SH-60R) Data Integrated Network (ALADIN) data analysis system; NVH-3A Testbed helicopter and Technical Support Facility (TSF); Helicopter Tactical Data Processor (ASN-123/150) System Test Benches; Acoustic Sensors (Sonar/Sonobuoy) integration performance analysis, Mission Tape Recorder/Playback System Post-flight analysis, Secure Test/Data Link/Conference/Fax Facilities.**
Keywords: **Naval, Maritime, Helicopter, Avionics, Integration, Installation, Secure Communications**

ADDITIONAL INFORMATION

Facility/Capability Title: **Helicopter Mission Systems Support Center (HMSSC)**

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	4	4	4	4	4	4	4
Contractor	2	2	2	2	2	2	2
Total	6	6	6	6	6	6	6

Total Square Footage: **7800**

Test Area Square Footage: **6500**

Office Space Square Footage: **1300**

Tonnage of Equipment: **20**

Volume of Equipment: **10,000 cu. ft.**

Annual Maintenance Cost: **$80K**

Estimated Moving Cost: **$273K**

CAPITAL EQUIPMENT INVESTMENT ($K)

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
I&M	25	25	25	25	25	25	25
Sponsor Funded	415	30	62	523	275	275	275
Total	440	55	87	548	300	300	300

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Helicopter Mission Systems Support Center (HMSSC)**

AGE: **49 Years (Building)**
Equipment: 1-17 Years

REPLACEMENT VALUE: **$11.1M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1991**

NATURE OF LAST UPGRADE: **Addition of engineering and technical support facilities for the Executive Transport Helicopter**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Communications system upgrade**

TOTAL PROGRAMMED AMOUNT: **$38K**
SUMMARY DESCRIPTION: **Acquisition and implementation of communications test equipment in support of ground and flight tests of helicopter integrated communications system. This upgrade is in direct support of and funding by the Executive Transport Helicopter (VH-60N and VH-3D) program manager, and is planned for completion during FY95.**

2. UPGRADE TITLE: **Computer support equipment upgrade**

TOTAL PROGRAMMED AMOUNT: **$54K**
SUMMARY DESCRIPTION: **Upgrade of existing computer resources to support ground, real-time, and post flight data reduction and analysis of helicopter test data. These updates are in direct support of and funded by the NAVAIRSYSCOM Program Managers for the SH-60R and the Executive Transport Helicopters (VH-60N and VH-3D). Completion FY95.**

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Helicopter Mission Systems Support Center (HMSSC)**

3. UPGRADE TITLE: **Executive Transport Helicopter (VH) Life Cycle Avionics/Software Testing Support**

TOTAL PROGRAMMED AMOUNT: **$808K**

SUMMARY DESCRIPTION: **Upgrades to the HMSSC and associated NVH-3A Testbed Helicopter will be necessary to meet CRLCMP and BRAC consolidation schedules, consisting of the installation and acquisition of specific updated aircraft avionics equipment (OSIP for AN/ARC-182 radios, etc), unique data security devices, and directly related special and general laboratory test and testing support equipment (special configured preflight planning and postflight reconstruction data analysis gear, etc) necessary to satisfy established Navy Life Cycle Support test requirements of the VH Program Office (PEO(A)/PMA-261). Funding for this upgrade is fully provided by the VH PMA.**

4. UPGRADE TITLE: **Navy Maritime Helicopters' Life Cycle Avionics/Software Testing Support**

TOTAL PROGRAMMED AMOUNT: **$504K**

SUMMARY DESCRIPTION: **Upgrades to the HMSSC will consist of the acquisition and integration of selected specific updated avionics systems, specialized test data security devices, and associated specialized laboratory/flight line test support assets required and planned for critical testing of the weaponized HH-60H, new SH-60R and other Navy helicopter major systems upgrade programs. Funding will be fully provided by the respective cognizant PEO(A)/PMA's.**

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Helicopter Mission Systems Support Center (HMSSC)**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	9700	9700	9100	9100	8600	8100	8300	7900
	TEST HOURS	5600	5600	5200	6100	5800	3600	3900	4000
	MISSIONS	500	500	450	450	400	350	400	350
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

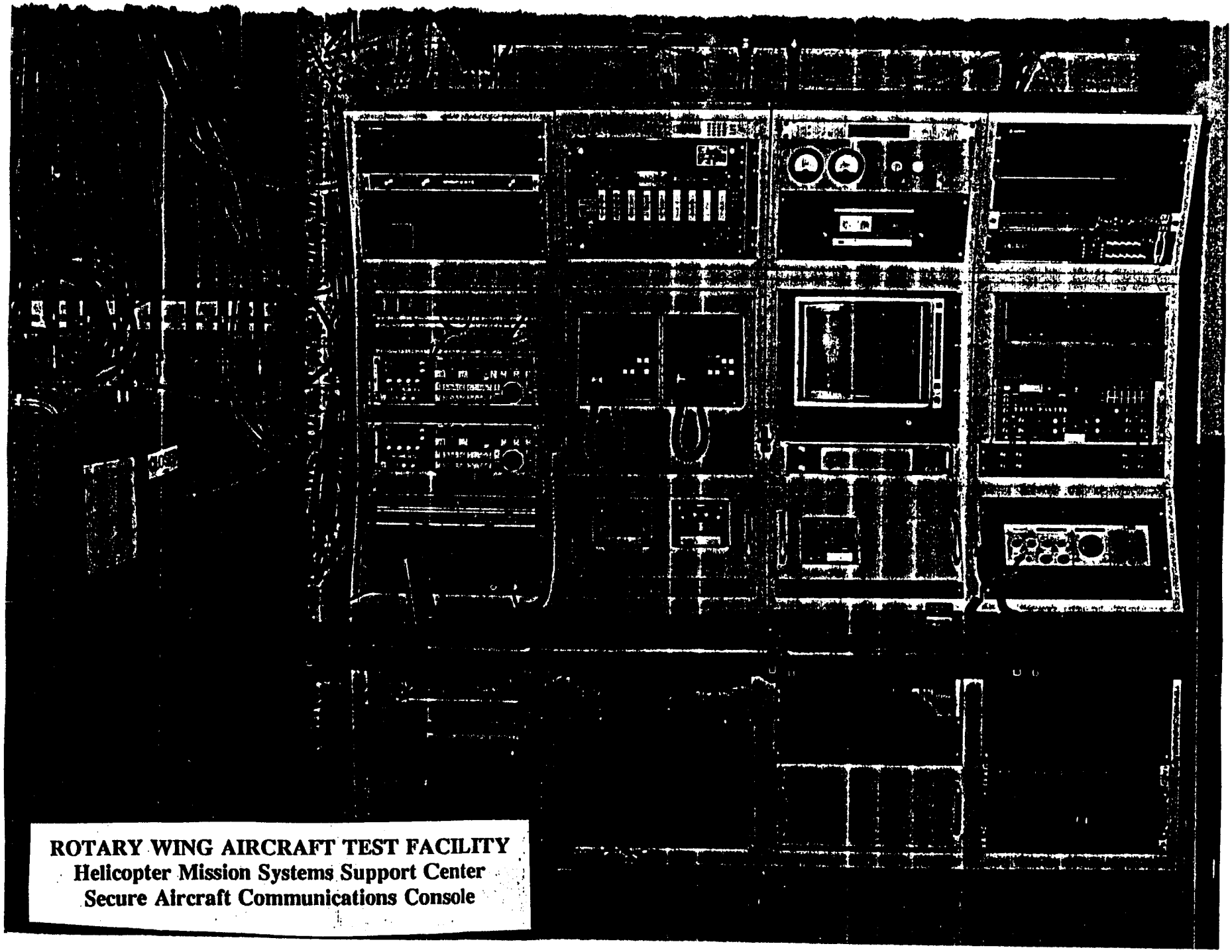
Helicopter avionics, installed systems, flight test support.
All types of tests.
Approximate number of avionics installations, checkouts, ground tests, test flights supported per year.
Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Helicopter Mission Systems Support Center (HMSSC)**

ANNUAL HOURS OF DOWNTIME	1	**73**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**.02**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.8**

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 Σ) 8
Individual Avionics units and software	**7**	**1.5**	**10.5**	**393**
Mission systems flight test support (total helicopter)	**3**	**2**	**6**	ANNUAL UNCONSTRAINED CAPACITY
				9
"TYPICAL"				**143,445**
		TOTAL Σ	**16.5**	



ROTARY WING AIRCRAFT TEST FACILITY
Helicopter Mission Systems Support Center
Secure Aircraft Communications Console

12 00421

GENERAL INFORMATION

Facility/Capability Title: **Fixed Wing ASUW & ASW Lab** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle** UIC = **00421**

T&E Test Facility Category: **Integration Laboratory**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**70%**		**30%**				

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles:	**70%**		**30%**				
Armament/Weapons:							
EC:							
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Fixed Wing ASUW & ASW Lab**

Facility Description; Including mission statement:

Facility engineering and aircraft assets provide development, test and evaluation capabilities for ASUW/ASW aircraft. The facility includes a generic simulation architecture which provides correlated environmental and platform sensors simulation/stimulation of ASUW/ASW aircraft. The generic architecture is flexible in order to incorporate other target platforms without major changes to software and hardware configurations. The facility provides simulation and simulations for the ASQ-212/SASP version of the P-3 airplane and the S-3A/B airplane.

The fixed wing ASUW & ASW Labs are comprised of the following components: P3/S3 Transitional Software Support Activity (SSA)/, B-MOD SSA, S-3 ATL, Patrol Avionics Test Laboratory/Acoustic Signal Generator (PATL/ASG) and the Navigation Lab.

Interconnectivity/Multi-Use of T&E Facility:

None

Type of Test Supported:

Anti-surface warfare and antisubmarine warfare aircraft and mission system testing.

Summary of Technical Capabilities:

Capabilities provide for development support of the P-3 TACNAVMOD airplane (ending FY94) and for simulation/stimulation test support for the P-3 and S-3 airplanes as well as navigation system RDT&E support for all Navy aircraft. Specific capabilities include full SSA functionality for the P-3 TACNAVMOD (ending FY94) and the P-3 and S-3 platforms (starting late FY95), software development support, data extract/reduction, and generic mission systems simulation capability.

Keywords:

Anti-submarine, ASW, Maritime, Ocean, P-3, S-3

ADDITIONAL INFORMATION

Facility/Capability Title: **Fixed Wing ASUW & ASW Labs Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	3	3	3	6	7	4	4
Contractor	5	5	5	11	10	5	5
Total	8	8	8	17	17	9	9

Total Square Footage: **11,330**

Test Area Square Footage: **6,685**

Tonnage of Equipment: **94**

Annual Maintenance Cost:

Office Space Square Footage: **4,645**

Volume of Equipment: **2,842 cu. ft.**

Estimated Moving Cost: **96K**

CAPITAL EQUIPMENT INVESTMENT ($K)

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Sponsor Funded	300	150	150	200	200	200	200

2. 00121

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Fixed Wing ASUW & ASW Labs**

AGE: **Multiple Buildings: 50 Years**
Equipment: 1-18 Years

REPLACEMENT VALUE: **$47M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **March 1994**

NATURE OF LAST UPGRADE: **Acoustic rack for sonobuoy simulation.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **None**

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

e. 00431

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Fixed Wing ASUW & ASW Labs**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								**26,940**
	TEST HOURS								**6,240**
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS	*	*	*	**139**	**325**	**958**	**627**	**953**
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

*** No utilization data was available for these years. Also, the data shown for FY89-93 is only for the S-3 ATL; no data was available for the other capabilities.**
Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Fixed Wing ASUW & ASW Lab**

ANNUAL HOURS OF DOWNTIME	1	**200**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**.54**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.46**

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 Σ) 8
S-3 ATL	**3**	*	*	*
Navigation	**1**			ANNUAL UNCONSTRAINED CAPACITY
P3/S3 TSSA	**2**			
BMOD SSA	**1**			
PATL/ASG	**1**			9
"TYPICAL"				*
		TOTAL Σ		

*** This page cannot be completed due to the lack of utilization data and direct labor hour data.**

10 00421

GENERAL INFORMATION

Facility/Capability Title: **Project Beartrap** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle** UIC = **00421**

T&E Test Facility Category: **Integration Laboratory**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**30%**		**50%**	**20%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**30%**		**50%**	**20%**			
Armament/Weapons:							
EC:							
Other:							

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

dic 00131

TECHNICAL INFORMATION

Facility/Capability Title: **Project Beartrap**

Facility Description; Including mission statement: **Provide developmental engineering support to NAVAIR in the areas of system engineering, design, development and integration/installation.**
Interconnectivity/Multi-Use of T&E Facility:
Type of Test Supported: **Intelligence data collection. Acoustic system development and evaluation.**
Summary of Technical Capabilities: **Two 28 track wide band tape recorders, acoustic system calibration equipment including buss control computer and software. Various test equipment to support unique aircraft acoustic system calibration.**
Keywords: **Acoustic, Calibration, Intelligence, P-3, ASW**

ADDITIONAL INFORMATION

Facility/Capability Title: **Project Beartrap Lab**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	2	2	2	2	2	2	2
Contractor	6	4	4	4	5	5	5
Total	8	6	6	6	7	7	7

Total Square Footage: **1600**

Test Area Square Footage: **780**

Office Space Square Footage: **820**

Tonnage of Equipment: **10**

Volume of Equipment: **6400 sq. ft.**

Annual Maintenance Cost: **$8K**

Estimated Moving Cost: **$750K**

CAPITAL EQUIPMENT INVESTMENT ($K)

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Sponsor Funded	237	46	25	26	30	60	45

UC:00421

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Project Beartrap Lab - Building 1711**

AGE: **Building: 10 Years**
Equipment: 6 Years

REPLACEMENT VALUE: **$1M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1988**

NATURE OF LAST UPGRADE: **Power Filter/conditioner, 400 Hz Power Converter, Ground Grid and Raised Floor**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **None**

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Project Beartrap Lab**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		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								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR			12376	12376	15912	17680	18564	18564
	TEST HOURS			2400	2400	2960	3080	3120	3120
	MISSIONS			0	0	0	0	0	0

Note - Includes civilian, military, and contractor direct labor hours.

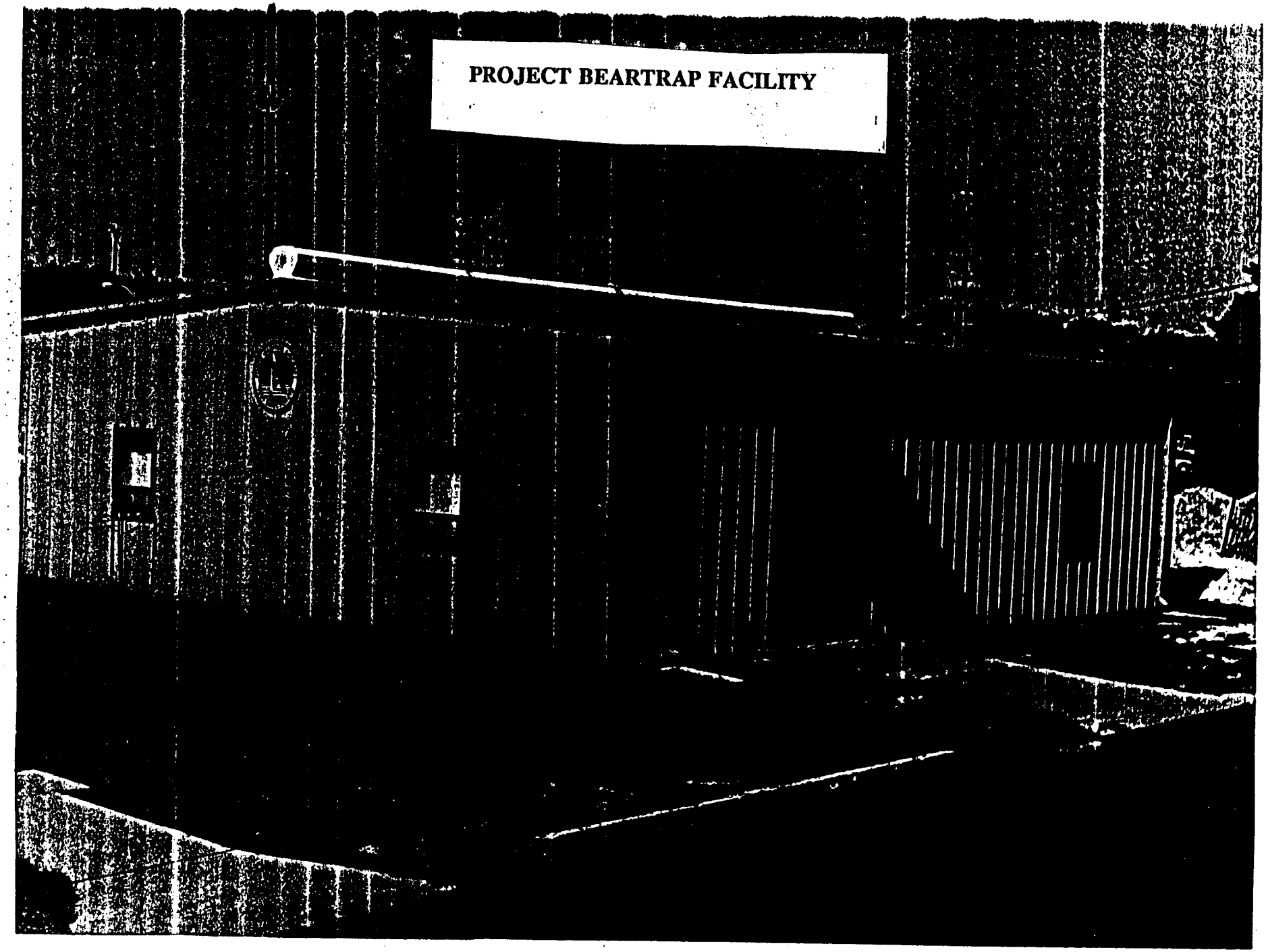
IC 00421

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Project Beartrap Lab**

ANNUAL HOURS OF DOWNTIME	1	**04370**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**1.9**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**22.1**

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 Σ) 8
A/C Calibration	**2**	**1**	**2**	**884**
Software	**1**	**4**	**4**	ANNUAL UNCONSTRAINED CAPACITY
Rx Sens	**1**	**2**	**2**	
Cal Reducation	**2**	**16**	**32**	
				9
"TYPICAL"				**322,660**
		TOTAL Σ	**40**	


PROJECT BEARTRAP FACILITY

:ie 00421

GENERAL INFORMATION

Facility/Capability Title: **Propulsion System Evaluation Facility** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicles** UIC = **00421**

T&E Test Facility Category: **Measurement Facilities (MF)**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**80%**	**20%**					

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles:	**80%**	**20%**
Armament/Weapons:		
EC:		
Other:		

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

110-00471

TECHNICAL INFORMATION

Facility/Capability Title: **Propulsion System Evaluation Facility**

Facility Description; Including mission statement:
This facility will provide for testing, development, reliability and fleet service engineering support for air vehicle engines, engine components, and accessories; to provide test and evaluation services, for small engine air-breathing propulsion systems, power drive systems, fuels and lubricants. The Propulsion System Evaluation Facility consists of the Helicopter Engine Test Facility, Altitude Chamber, Accessory Test Area, Fuel Components Facility, Chemistry Laboratory, Rotor Spin Facility, Fuels and Lubricants Area, High Volume Fuel Flow Facility, Infrared Laboratory, and Information Systems Computer Room.
Interconnectivity/Multi-Use of T&E Facility:
The Propulsion System Evaluation Facility suports the Naval Air Systems Command, the Naval Air Warfare Center Navy Program Executives Office, the Fleet, and other U.S. or international customers.
Type of Test Supported:
Helicopter engine and transmission gearbox test facility; small air-breathing engine altitude chamber; engine accessory test area; fuels and lubricants chemistry facility; rotor spin facility, fuels and lubricants area; infrared laboratory; ground firing and aerial refueling facility.

Summary of Technical Capabilities:

Helicopter Engine Test Facility: The test facility is capable of simulating and testing compete helicopter turbine engines and tail drive systems under simulated flight loads. A central control room controls the instrumentation, measuring, and recording devices. The 8,000 horsepower capability of the gear box enables the power systems of current helicopters to be tested over all power ranges. Component efficiencies, vibrations, and other transient data can be recorded. Evaluating the performance of such components as disconnect couplings, oil coolers, tail drive gear boxes and alternate fuels and lubricants, occurs at the same time the drive system is being tested.

Altitude Chamber: The 10x10x17 ft. pressure-sealed chamber is capable of testing small engines while simulating pressures from sea level (14.7 psia) to 19,000 feet (7.0 psia) with an air exhaust capability of 44 lb/sec (sea level) to 21 lb/sec (19,000 feet).

TECHNICAL INFORMATION

Facility/Capability Title: **Propulsion System Evaluation Facility**

Summary of Technical Capabilities: (continued)

ATA - Accessory Test Area: The accessory test area is comprised of seven test rooms and associated control room which allow complete testing of engine starting systems, auxiliary power units, ram air turbines, generators, pumps, and air-breathing engine components independent of the engine itself including lubricant qualification tests and high temperature cycling corrosion testing for evaluating gas turbine engine materials.

Fuel Components Facility: This facility is built around F404 engine gearbox mounted accessories testing and consists of an environmental chamber and air room to simulate compressor discharge pressures up to 500 psig for complete testing of fuel components fuel controllers and structural tests of aerial and ground refueling components. A central control room controls the instrumentation, recording, and measuring devices.

Chemistry Laboratory: The chemistry facility completely determines all physical and chemical specification properties for all Naval aviation fuels and lubricants. The chemistry lab is comprised of a chemical analysis area containing advanced instruments such as spectrometers, chromatographs and a scanning calorimeter, a property testing area containing instruments for conducting standardized fuel and lubricant testing to resolve Fleet problems, a balance area containing a wide variety of electronic balances and optical microscopes and a database and records room.

Rotor Spin Facility: The RSF is used to experimentally develop and evaluate the structural and material aspects of gas turbine engine rotor design. Simulated engine conditions are used to investigate rotor stress distribution, low cycle fatigue, crack growth, burst characterization and containment studies. The RSF can test small and large rotor disks and accessories at spin speed up to 150,000 RPM in three test chambers with special high speed camera systems providing detailed pictorial coverage of the tests. New exploratory and advanced development concepts are evaluated as well as demonstration of component life and engine overspeed capability.

Fuels and Lubricants Area: The test rooms are used to assess the deposition characteristics of gas turbine engine lubricants in the liquid and vapor phases as well as engine gearbox lubricant load carrying capacity and thermal stability. Fuel lubricity and systems icing inhibitor tests are conducted along with performance and qualification testing for Naval aviation fuel filtration equipment.

TECHNICAL INFORMATION

Facility/Capability Title: **Propulsion System Evaluation Facility**

Summary of Technical Capabilities: (continued)

High Volume Fuel Flow Facility: This facility is used to test ground fueling and aerial refueling components, such as nozzles, couplings, and valves. The HVFFF includes a 2,000 gallon fuel tank and two 100 horsepower engines each driving a 600 gallon per minute pump. The HVFFF includes all the controls and instruments that are required to direct, indicate, and record the activities in the test area.

Infrared Laboratory: The infrared lab encompasses a fully self-contained mobile instrumentation van and an associated calibration laboratory used to acquire infrared emission data on aircraft and gas turbine engines. Equipment includes spectral radiometers, a thermal imaging system, and a data acquisition system with a mini-computer, a tracking pedestal, video and audio equipment, and ranging and weather systems. The calibration lab contains equipment to support the calibration of the Infrared (IR) systems and other van systems.

Information Systems Computer Room: The central computer facility provides resources for acquiring, processing, analyzing, and storing all test data for the entire Propulsion System Evaluation Facility.

Keywords:

Accessory test area (ATA); Rotor Spin Facility (RSF), High Volume Fuel Flow Facility (HVFFF), Infrared (IR)

ADDITIONAL INFORMATION

Facility/Capability Title: **Propulsion System Evaluation Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	1	1	1	1	1	1
Enlisted							
Civilian	128	128	128	128	128	128	128
Contractor							
Total	129	129	129	129	129	129	129

Total Square Footage: **77,000**

Test Area Square Footage: **73,130** Office Space Square Footage: **3,870**

Tonnage of Equipment: **560** Volume of Equipment: **400,000 cu. ft.**

Annual Maintenance Cost: **$1,000K** Estimated Moving Cost: **$48,000K**

CAPITAL EQUIPMENT INVESTMENT

FY93	FY94	FY95	FY96	FY97	FY98	FY99

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Propulsion System Evaluation Facility**

AGE: **0 (New)** REPLACEMENT VALUE: **$50.8M (includes $25.0M in Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **No major upgrades**

NATURE OF LAST UPGRADE: *****

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **None**

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

*** Facility is being relocated from Trenton, NJ to Patuxent River, MD as a result of BRAC-93 under Milcon Project P-953T.**

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Propulsion System Evaluation Facility**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	**129500**	**129500**	**129500**	**129500**	**129500**	**129500**	**122500**	**117250**
	TEST HOURS	**40425**	**40425**	**40425**	**40425**	**40425**	**40425**	**40425**	**40425**
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Note - Includes civilian, military, and contractor direct labor hours.

KIC: 0042,

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Propulsion System Evaluation Facility**

ANNUAL HOURS OF DOWNTIME	1	**1032**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**2.8**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**21.2**

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 Σ) 8
6W/8W	**1**	**80.8**	**80.8**	**2,289.6**
Lubes/Chem Lens	**10**	**.1**	**1.1**	ANNUAL UNCONSTRAINED CAPACITY
ATA	**2**	**5.5**	**10.9**	
RSF	**1**	**4.7**	**4.7**	
IR	**1**	**10.5**	**10.5**	9
"TYPICAL"				**835.704**
		TOTAL Σ	**108.0**	

UIC 00421

GENERAL INFORMATION

Facility/Capability Title: **Antenna Testing Laboratory Automated System (ATLAS) in-flight antenna measurement capability** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicles** UIC = **00421**

T&E Test Facility Category: **Measurement Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**90%**		**5%**	**5%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**75%**		**3%**	**3%**			
Armament/Weapons:	**5%**						
EC:	**10%**		**2%**	**2%**			
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Antenna Testing Laboratory Automated System (ATLAS) in-flight antenna measurement capability**

Facility Description; Including mission statement:

The Antenna Testing Laboratory Automated System (ATLAS) test facility provides the unique capability to measure the in-flight antenna radiation patterns of airborne antennas with accuracy normally obtainable only under laboratory conditions for frequency ranges between 2 MHz and 18 GHz. This capability ensures reliable and functional antenna systems are sent to or installed in fleet aircraft with the ATLAS laboratory used as a specification range for aircraft antenna systems and for verification of data obtained at other DOD antenna ground ranges and/or contractor antenna test facilities.

The ATLAS facility's capability to measure free-space in-flight antenna patterns and reference them to an isotropic source is unique. The location of the ATLAS facility on the Chesapeake Bay provides its antennas with an unobstructed electromagnetic propagation path over a calm body of water which serves as a reflection surface for RF energy. The calmness of the Bay allows accurate characterization of reflecting electromagnetic energy which is used to determine antenna gains relative to isotropic radiators.

Interconnectivity/Multi-Use of T&E Facility:

The ATLAS facility is interfaced with the Chesapeake Test Range Facilities for radar tracking support during in-flight antenna radiation pattern testing. The interface uses a Synchronous Data Link Control (SDLC) protocol with a data rate of 50 Kbits. Space position data or other data can be exchanged in both directions between the two facilities. Reduced data can be exported in a variety of digital media (9 track & 8 mm tapes, floppy disks) and over the INTERNET system. Patterns measured at the SY100 antenna ground range can be put into ATLAS's graphical analysis tools for comparison to the in-flight patterns on the same antenna.

Type of Test Supported:

In-flight antenna patterns on airborne platforms is the primary measurement conducted with ATLAS. Ship board antenna patterns, Effective Isotropic Radiated Power (EIRP) and minimal detected signal measurements can also be measured. ATLAS also provides the antenna engineer with various analytical tools to supplement the antenna pattern data to fully evaluate the antenna performance. These tools include computer antenna modeling programs used to analytically predict characteristics of antennas mounted on complex structures.

C:00131

TECHNICAL INFORMATION

Facility/Capability Title: **Antenna Testing Laboratory Automated System (ATLAS) in-flight antenna measurement capability**

Summary of Technical Capabilities:

ATLAS consist of ground antennas capable of receiving test signals from 2 MHz to 18 GHz connected to a suite of programmable RF receivers. The receivers interface with an automatic calibration consisting of programmable signal generators that are connected to a set of programmable attenuators and a power meter controllerd by a mini-computer and multi-micro processor system. A suite of peripherals provide a range of data display options with a data reduction and analysis system consisting of UNIX based workstations with a variety of reduction and analysis programs.

Keywords:

In-flight antenna patterns, Effective Isotropic Radiated Power (EIRP), computer antenna predictions, received signal strength

ADDITIONAL INFORMATION

Facility/Capability Title: **Antenna Testing Laboratory Automated System (ATLAS) in-flight antenna measurement capability.**

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	0	2	2	2	2	2	2
Contractor	1	1	1	1	1	1	0
Total	1	3	3	3	3	3	2

Total Square Footage: **550**

Test Area Square Footage: **550**

Office Space Square Footage: **0**

Tonnage of Equipment: **12**

Volume of Equipment: **3000 cu. ft.**

Annual Maintenance Cost: **$85K**

Estimated Moving Cost: **$180K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$75	$40	$30	$30	$385	$42	$32

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Antenna Testing Laboratory Automated System (ATLAS) in-flight antenna measurement capability**

AGE: **11 Years**
Equipment: 1-12 Years

REPLACEMENT VALUE: **$2.6M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1978**

NATURE OF LAST UPGRADE: **This upgrade automated the in-flight antenna measurements system. Computer control of programmable receivers, signal generators, RF attenuators, and other RF equipment. New data reduction and analysis software was developed.**

MAJOR UPGRADES PROGRAMMED

1.UPGRADE TITLE: **Upgrade to aircraft tracking and antenna analysis system.**

TOTAL PROGRAMMED AMOUNT: **FY97 - $385K**

SUMMARY DESCRIPTION: **This upgrade will incorporate differential GPS tracking, eliminating RF radar tracking thus reducing test costs. Improvement to the antenna computer prediction capabilities will conducted. Completion of the graphical antenna database, which will be a repository for all airborne antenna data. This data includes antenna manufacturer data, aircraft data both measured and predicted. Efforts to make this a DOD tool is ongoing.**

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Antenna Testing Laboratory Automated System (ATLAS) in-flight antenna measurement capability**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	540	720	740	810	828	822	600	630
	TEST HOURS	270	360	370	405	414	411	300	315
	MISSIONS	48	71	68	62	65	45	30	32
EC	DIRECT LABOR	18	126	60	36	73	42	164	48
	TEST HOURS	9	63	30	18	36	21	84	24
	MISSIONS	1	7	3	2	4	2	8	2
ARMAMENT/WEAPONS	DIRECT LABOR			36	18				
	TEST HOURS			18	9				
	MISSIONS			2	1				
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

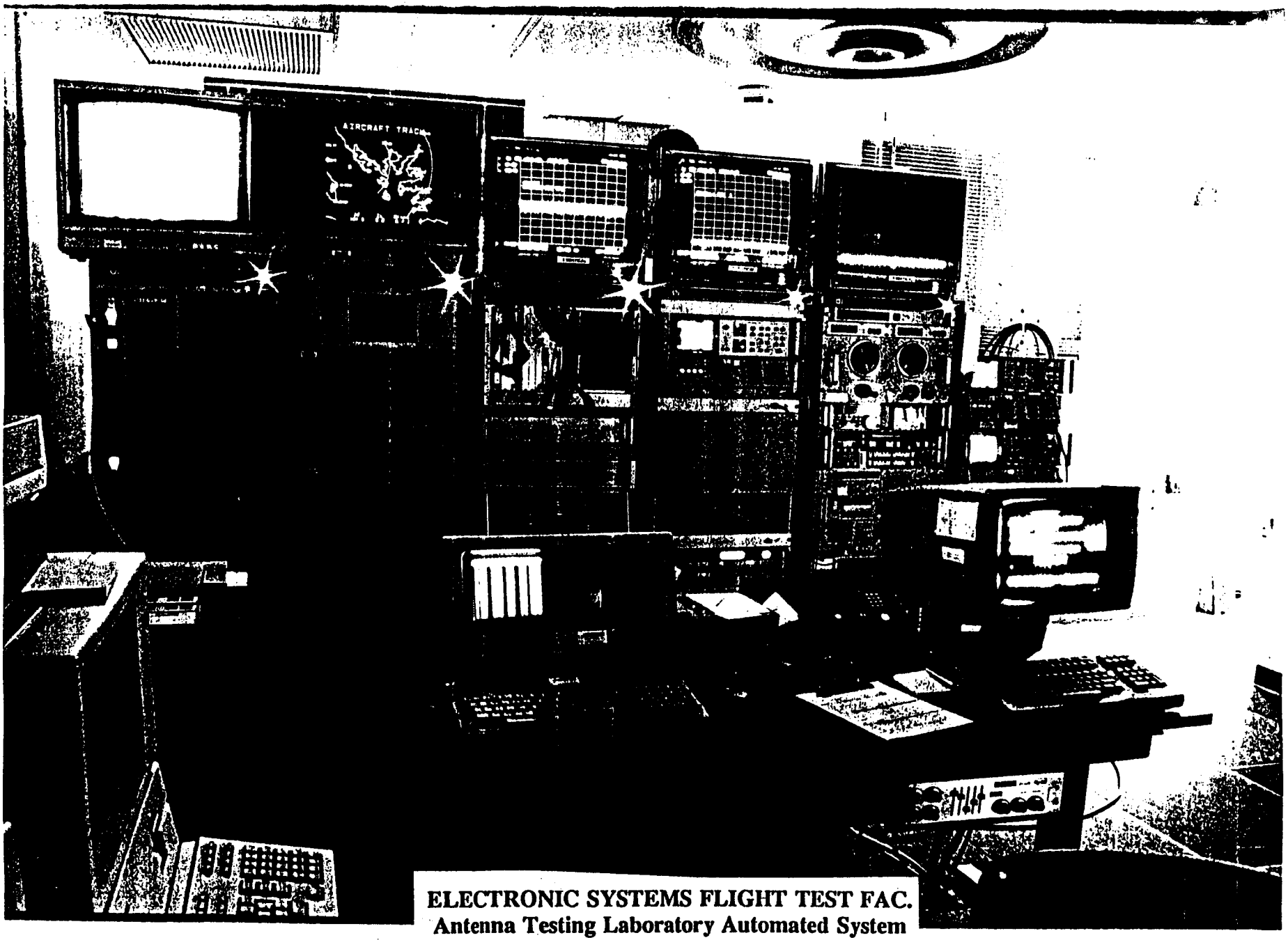
Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Antenna Testing Laboratory Automated System (ATLAS) in-flight antenna measurement capability**

ANNUAL HOURS OF DOWNTIME	1	**3160**
AVERAGE DOWNTIME PER DAY (LINE 1 + 365)	2	**8.67**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**15.34**

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 Σ) 8
In-flight patterns	**antenna 1 (platform 5 antennas)**	**5**	**5**	**230.1**
EIRP Unconstrained	**1**	**5**	**5**	ANNUAL UNCONSTRAINED CAPACITY
Minimum Signal Strength	**1**	**5**	**5**	
				9
"TYPICAL"	**1**	**2.5**		**83,986.5**
		TOTAL Σ	**15**	



ELECTRONIC SYSTEMS FLIGHT TEST FAC.
Antenna Testing Laboratory Automated System
(ATLAS)

GENERAL INFORMATION

Facility/Capability Title: **Combat Identification Systems** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle** UIC = **00421**

T&E Test Facility Category: **Measurement Facilities**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**55%**		**30%**	**10%**	**5%**		
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**50%**		**28%**	**10%**	**5%**		
Armament/Weapons:							
EC:	**5%**		**2%**				
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Combat Identification Systems**

Facility Description; Including mission statement:

Supports the engineering development and other technical life cycle support, including Test and Evaluation (T&E) and Systems Engineering (S&E), of airborne and ground direct and indirect Identification (ID) Systems from concept definition to full integration in battle force environment Developmental Tests. The facility supports development operational requirements and specifications, contractor selection, system integration, and provides DoD/NATO test capabilities for the conduct of Developmental Test and Evaluation (DT&E) and support of Operational Test and Evaluation (OT&E). The facility is also used to facilitate development of specialized identification systems test methodologies.

Interconnectivity/Multi-Use of T&E Facility:

A DoD/Allied Nations ID test and evaluation facility (NIFFTE) and data analysis facility (CISDAC) for joint and interoperable use. Supports other NAVAIRWARCENACDIV directorates, NAVAIRSYSCOM, SPAWARSYSCOM, Department of the Navy, Air Force, Army and Allied governments.

Type of Test Supported:

Identification Systems performance parameters such as ID range, Range Accuracy, Range Resolution Azimuth Accuracy, Azimuth Resolution, Probability of ID, System Integrity/Jamming, Exploitation, Spoofing, Multipath Effects, Capacity, Interrogation Volume, Mode Prioritization, and Diversity.

Summary of Technical Capabilities:

The NAWCAD Combat Identification Systems test facilities consists of the Navy IFF Test and Evaluation Laboratory (NIFFTE) and Combat Identification Systems Data Analysis Center (CISDAC). The test facilities evaluate air, surface, ground identification, and data link systems. The present NIFFTE lab provides automated, instrumented Interrogator and Transponder Systems. The lab is adaptable to incorporate various developmental Repeatability and Test Data Integrity for test systems. The CISDAC is a Multiple Source Data Fusion/Reduction system for Performance Prediction and Analysis. Also test facilities exist to support laboratory closed loop, parametric, anti-jam, vulnerability and interference testing.

2 00431

TECHNICAL INFORMATION

Facility/Capability Title: **Combat Identification Systems**

Keywords:

AI	Air Interrogator
AIMS	ATCRBS IFF Mark XII System
ATC	Air Traffic Control
ATCALS	Air Traffic Control and Landing Systems
ATCRBS	Air Traffic Control Radar Beacon System
AWACS	Airborne Warning and Control System
BVR	Beyond Visual Range
CAI	Cooperative Aircraft Identification
CI	Combat Identification
CI/CAI	Combat Identification/Cooperative Aircraft Identification
CISDAC	Combat Identification Systems Data Analysis Center
CIT	Combined Interrogator/Transponder
FRUIT	False Replies Unsynchronized in Time
ID	Identification
IFF	Identification Friend or Foe
PID	Probability of ID
XP	Transponder

ADDITIONAL INFORMATION

Facility/Capability Title: **Combat Identification Systems**

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	10	11	12	12	12	12
Contractor	20	30	25	30	35	35	35
Total	29	40	36	42	47	47	47

Total Square Footage: **15,624**

Test Area Square Footage: **8,333**

Office Space Square Footage: **7,291**

Tonnage of Equipment: **20 Tons**

Volume of Equipment: **2,550 cu. ft.**

Annual Maintenance Cost: **$150K**

Estimated Moving Cost: **$9,400K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
280	110	150	400	400	400	0

1/1C cont

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Combat Identification Systems**

AGE: **50 Years** REPLACEMENT VALUE: **$6M for equipment and software development and building**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1993**

NATURE OF LAST UPGRADE: **Capacity, Capability and User Interface**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Identification Friend or Foe Interrogator/Evaluator**

   TOTAL PROGRAMMED AMOUNT: **$400K**
   SUMMARY DESCRIPTION: **Provides an upgraded IFF and Mode IV Evaluator capability**

2. UPGRADE TITLE: **Lear IFF Emitter Test Tool**

   TOTAL PROGRAMMED AMOUNT: **FY97-$400K, FY98-$400K**
   SUMMARY DESCRIPTION: **Provides an Airborne IFF Interrogator/Transponder capability for new technology Identification Systems.**

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Combat Identification Systems**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	16,848	16,848	16,848	16,848	16,848	16,848	16,848	16,848
	TEST HOURS	360	90	180	270	180	90	270	180
	MISSIONS	90	22	45	67	45	22	67	45
EC	DIRECT LABOR	1872	1872	1872	1872	1872	1872	1872	1872
	TEST HOURS	40	10	20	30	20	10	30	20
	MISSIONS	10	3	5	8	5	3	8	5
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Note - Includes civilian, military, and contractor direct labor hours.

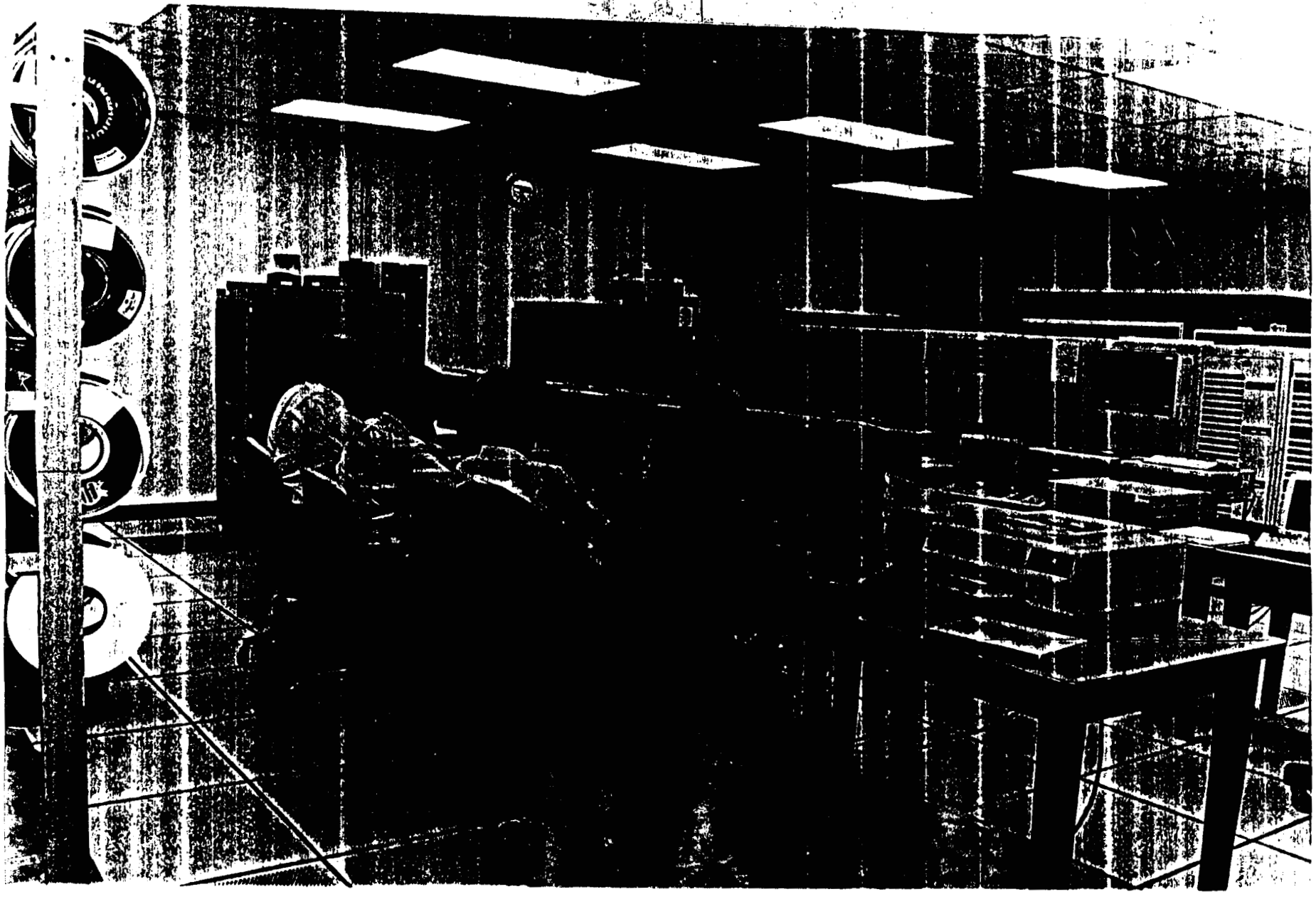
DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Combat Identification Systems**

ANNUAL HOURS OF DOWNTIME	1	**18**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**0.05**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.95**

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 Σ) 8
Flight T&E	**3**	**1**	**3**	**215.6**
Bench T&E	**3**	**1**	**3**	ANNUAL UNCONSTRAINED CAPACITY
Ground T&E	**3**	**1**	**3**	
				9
"TYPICAL"				**78,676**
		TOTAL Σ	**9**	-

ELECTRONIC SYSTEMS FLIGHT TEST FAC
Combat Identification Systems Data Analysis Center



GENERAL INFORMATION

Facility/Capability Title: **Ground Range Antenna Test Facility (GRATF)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle** UIC = **00421**

T&E Test Facility Category: **Measurement Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**70%**		**20%**	**10%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**50%**		**15%**	**5%**			
Armament/Weapons:							
EC:	**20%**		**5%**	**5%**			
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Ground Range Antenna Test Facility (GRATF)**

Facility Description; Including mission statement:

The GRATF utilizes an automated measurement system to perform antenna measurements in the 500 MHz to 18 GHz frequency range. The facility has a 22 ft fiberglass tower which can be slewed in azimuth and/or elevation and which can accommodate antennas and models weighing up to 400 lbs. The tower is movable and can traverse a 500 ft track to obtain far-field antenna radiation patterns on antennas of various physical and aperture sizes. The GRATF functions as a specification range for aircraft antennas and is used for verification of data obtained at other DOD antenna ground ranges and contractor antenna test facilities. The GRATF is also used to perform antenna performance tests prior to flight tests to ensure valid flight tests are performed.

Interconnectivity/Multi-Use of T&E Facility:

GRATF is linked to the Antenna Testing Laboratory Automated System (ATLAS). Data can be transferred from one facility to the other to enhance aircraft antenna system testing.

Type of Test Supported:

Antenna radiation patterns; Antenna gain; Antenna beamwidth/beam shape; Effective radiated power; Radome Transmissivity; Pointing Accuracy; Antenna isolation; Full-scale UAV antenna radiation patterns.

Summary of Technical Capabilities:

The GRATF utilizes a Scientific-Atlanta SA2012 positioner/controller and a Hewlett-Packard 8510B RF Network Analyzer. The positioner/controller and network analyzer are controlled by an HP9000 series computer to automate antenna radiation pattern measurements. In addition, the HP8510 can maintain phase lock from 45 MHz to 26.5 GHz which speeds up data acquisition significantly. The Scientific-Atlanta 5323-7-B-M azimuth-over-elevation positioner supports the SA5362A 22 ft fiberglass tower to support 3-dimensional measurements for antennas, radomes, UAV's and aircraft mock-ups weighing up to 400 lbs.

Keywords:

Antenna, Radome, Network Analyzer, Ground Range, Antenna Radiation Patterns, Transmissivity, Gain, Beamwidth

ADDITIONAL INFORMATION

Facility/Capability Title: **Ground Range Antenna Test Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0	0	0	0	0	0	0
Enlisted	0	0	0	0	0	0	0
Civilian	1	0	0	0	0	0	0
Contractor	1	2	2	2	2	2	2
Total	2	2	2	2	2	2	2

Total Square Footage: **200**

Test Area Square Footage: **200**

Office Space Square Footage: **0**

Tonnage of Equipment: **4.0**

Volume of Equipment: **1000 cu ft**

Annual Maintenance Cost: **$30K**

Estimated Moving Cost: **$40K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$30	$50	$35	$42	$25	$37	$37

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Ground Range Antenna Test Facility**

AGE: **11 Years**
Equipment: 1-12 Years

REPLACEMENT VALUE: **$2.0M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1988**

NATURE OF LAST UPGRADE: **Implementation of HP8510 Network Analyzer and a March Microwave Automated Measurement System**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **None**

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2: 00421

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Ground Range Antenna Test Facility**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	1500	1550	1480	1240	1040	1780	1460	1420
	TEST HOURS	750	725	740	620	520	890	730	710
	MISSIONS	17	18	15	20	23	25	15	17
EC	DIRECT LABOR	650	650	630	530	560	600	620	610
	TEST HOURS	325	325	315	265	280	300	310	305
	MISSIONS	7	4	3	5	5	10	5	4
ARMAMENT/WEAPONS	DIRECT LABOR	32			48		16		
	TEST HOURS	16			24		8		
	MISSIONS	1			1		1		
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Note - Includes civilian, military, and contractor direct labor hours.

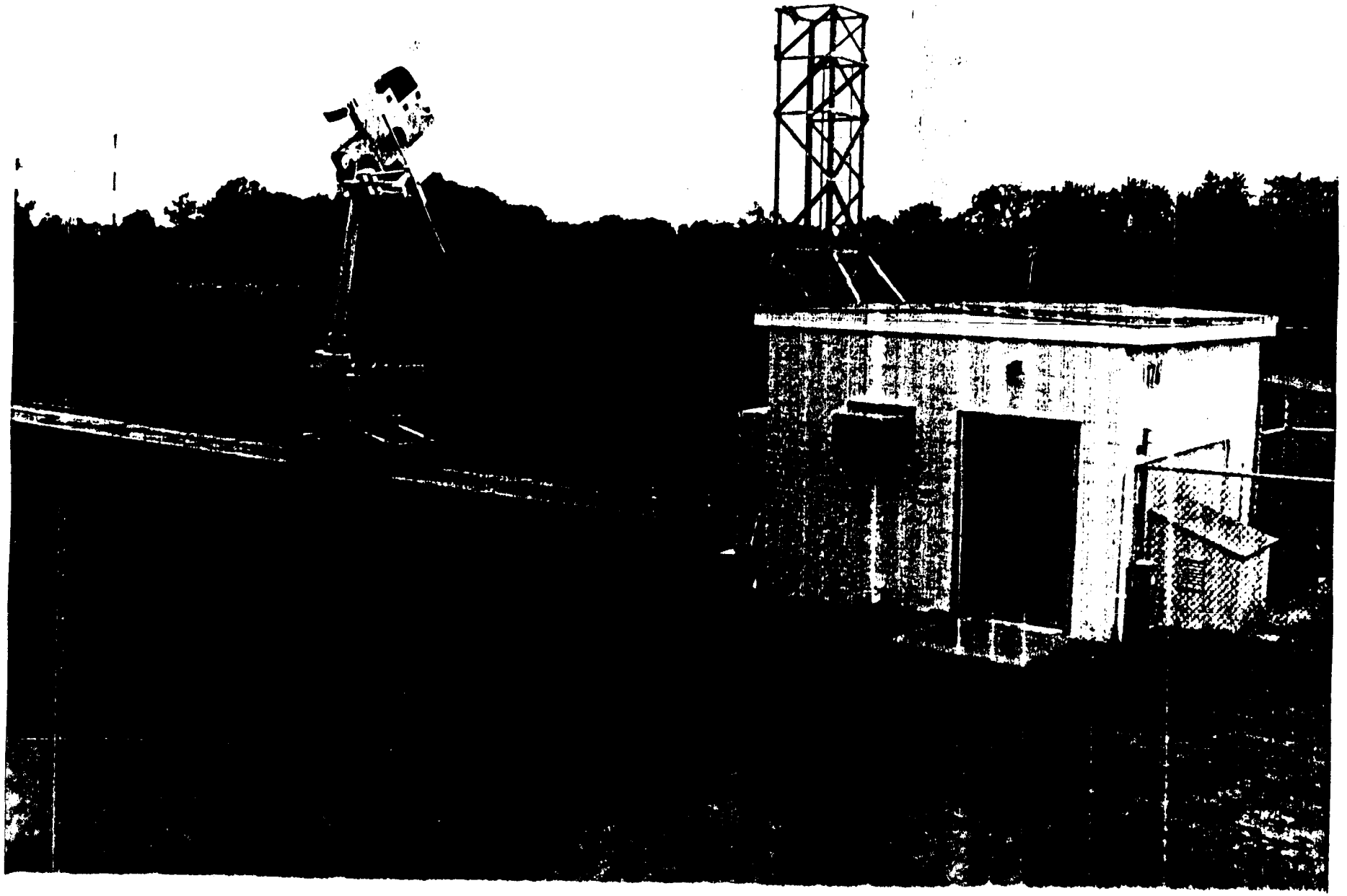
DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Ground Range Antenna Test Facility**

ANNUAL HOURS OF DOWNTIME	1	**2400 Hours**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**6.6 Hours**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**17.4 Hours**

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 Σ) 8
Antenna Testing	**1**	**1**	**1**	**34.8**
Radome Transmissivity Testing	**1**	**1**	**1**	ANNUAL UNCONSTRAINED CAPACITY
				9
"TYPICAL"	**1**	**1**		**12,702**
		TOTAL Σ	**2**	

ELECTRONIC SYSTEMS FLIGHT TES .C.
Ground Range Antenna Test Facility (GRATF)



IC 00421

GENERAL INFORMATION

Facility/Capability Title: **Acoustic Test Facility (ATF)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicles** UIC = **00421**

T&E Test Facility Category: **Measurement Facilities**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**80%**		**20%**				
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**80%**		**20%**				
Armanent/Weapons:							
EC:							
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Acoustic Test Facility (ATF)**

Facility Description; Including mission statement.

The Acoustic Test Facility (ATF) consists of three separate capabilities; laboratory and mobile Acoustic Test Facilities and the Automated Quick Look (AQL) Land Programmable Acoustic Processor Stimulator (PAPS). The ATF provides realistic and controllable simulation of sonobuoys, ocean acoustic conditions and submarine targets. The facility supports laboratory and flight test evaluations of ASW acoustic sensor processing equipment and computer software programs that are to be used in fixed wing and/or rotary wing aircraft mission systems.

Interconnectivity/Mulit-Use of T&E Facility:

The facility also provides training in ASW acoustic system operation and recognition of acoustic signals in varying ocean environments.

Type of Test Supported:

Applications include tests on acoustic systems, subsystems, and components to establish design specifications, determine performance in various simulated acoustic conditions using various ocean target models, verify and validate ASW acoustic system software acoustic data processor simulations for ASW system-aircraft platform integration, verify, and validate the acoustic signature library and auto detect software routines, evaluate aircrew performance and system human factor aspects.

Summary of Technical Capabilities:

The Acoustic Test Facility provides simulation and stimulation to support testing of all acoustic sensor processing equipment and computer software programs used in aircraft mission systems.

Keywords:

ASW, Acoustic Sensor, Sonobuoy

ADDITIONAL INFORMATION

Facility/Capability Title: **Acoustic Test Facility (ATF)**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	2	1	1	1	1	1	1
Contractor	1	1	1	1	1	1	1
Total	3	3	3	3	3	3	3

Total Square Footage: **2,295**

Test Area Square Footage: **1,947**

Office Space Square Footage: **168**

Tonnage of Equipment: **40**

Volume of Equipment: **12,627 cuft**

Annual Maintenance Cost: **$30K**

Estimated Moving Cost: **$92.5K**

CAPITAL EQUIPMENT INVESTMENT ($K)

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Sponsor Funded	95	0	0	0	0	0	0

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Acoustic Test Facility (ATF)**

AGE: **Building: 50 Years** REPLACEMENT VALUE: **$2.635M (Building and Equipment)**
Equipment: 1-18 Years

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **FY93**

NATURE OF LAST UPGRADE:

AQL relocated and reconfigured with different computer and disk array.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **None**

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Acoustic Test Facility (ATF)**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		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	**	**	4854	2766	2214	2217	3195	8649
	TEST HOURS	**	**	1,618	922	738	739	1,065	2,883
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

****No data could be found for test hours for fiscal years 86 - 87. However, the ATF has been consistantly utilized since its inception in 1975 - 1976 for a multitude of ASW projects.**

Note - Includes civilian, military, and contractor direct labor hours.

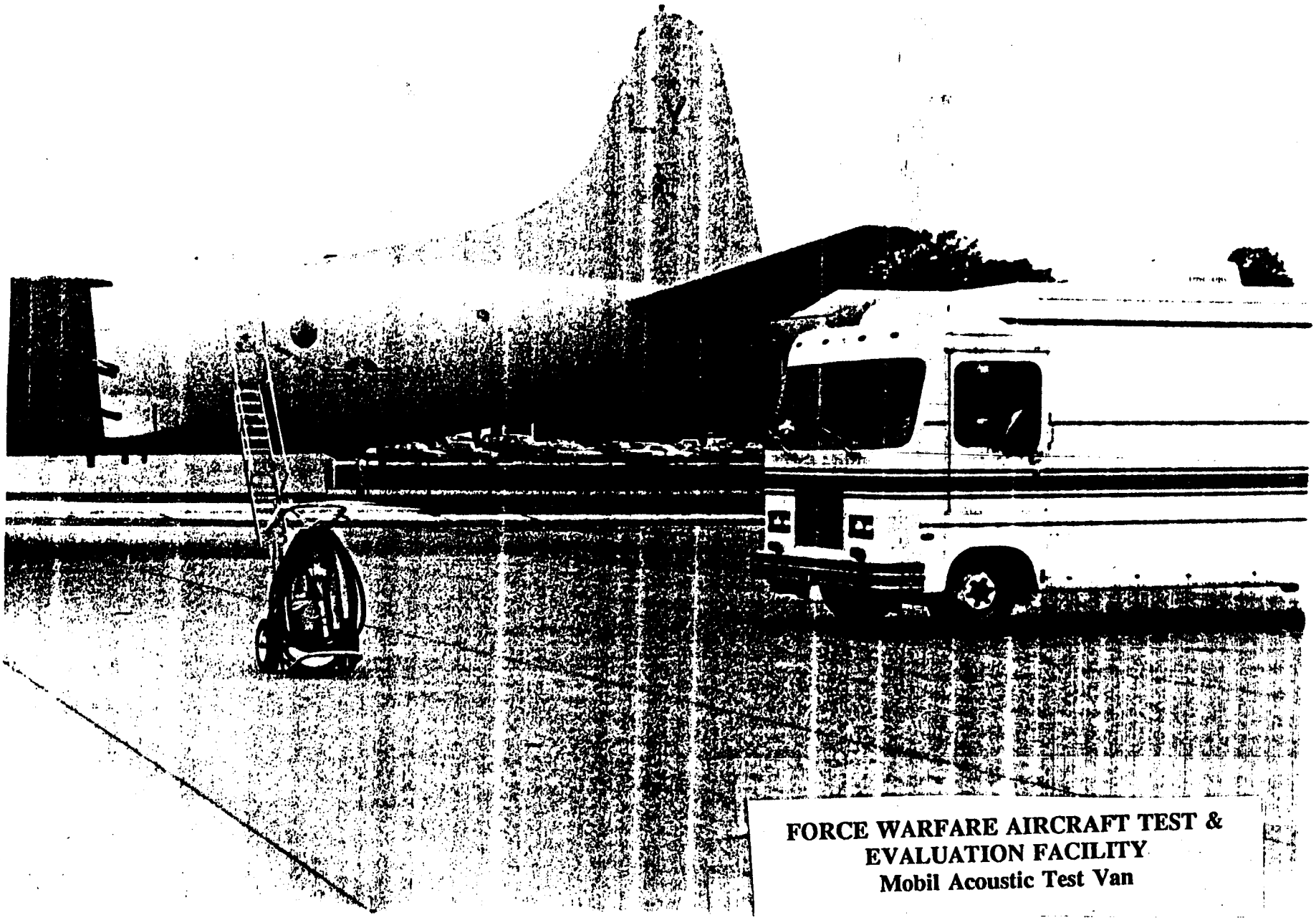
DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Acoustic Test Facility (ATF)**

ANNUAL HOURS OF DOWNTIME	1	**80**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**.21**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.79**

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 Σ) 8
Acoustic Processing	**3**	*	*	*
Mission Avionics Reconstruction	**1**			ANNUAL UNCONSTRAINED CAPACITY
				9
"TYPICAL"				*
		TOTAL Σ		

*** This could not be completed due to the lack of data for direct labor hours and test hours from preceding Historical Workload page.**



FORCE WARFARE AIRCRAFT TEST & EVALUATION FACILITY
Mobil Acoustic Test Van

GENERAL INFORMATION

Facility/Capability Title: **Communications Test and Evaluation Laboratory (COMTEL)**

Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicles** UIC = **00421**

T&E Test Facility Category: **Measurement Facilities**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**85%**	**5%**		**10%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**80%**	**3%**		**8%**			
Armament/Weapons:							
EC:	**5%**	**2%**		**2%**			
Other:							

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

U 30431

TECHNICAL INFORMATION

Facility Capability Title: **Communications Test and Evaluation Laboratory (COMTEL)**

Facility Description; Including mission statement:
The purpose of this facility is to provide assets for evaluation of High Frequency (HF), Very High Frequency (VHF), Ultra High Frequency (UHF), Electronic Counter-counter Measures (ECCM) communications, Satellite communications (SATCOM), Radio Frequency (RF) information data links and their antenna systems integrated in fixed and rotary wing aircraft. The facility provides the unique capability for testing airborne communications over the HF, VHF, and L frequency bands in an unobstructed over-the-water test environment limited only by line of sight propagation conditions. The facility has capabilities to conduct tests in secure (COMSEC), SATCOM and SATCOM DAMA nodes, and to test susceptibility of communication systems to Electronic Counter Measures (ECM) systems.
Interconnectivity/Multi-Use of T&E Facility:
The test facility can provide interconnectivity with other SATCOM T&E facilities such as Naval Underwater Warfare Center (NUWC), New Loudon, CT., Naval Command, Control and Ocean Surveillance Center In-service Engineering and RDT&E Division. The facility also can provide normal and ECCM communication signals to evaluate ECM and ESM systems as well as conduct joint interoperability tests with Air Force and Army ECCM communications systems such as SINOGARS, JTIDS, HAVE QUICK I and II.
Type of Test Supported:
Communications performance tests such as normal and COMSEC communication mode verification, ECCM communications interoperability verification, voice intelligibility, message throughout, message error rate, Bit Error rate, SATCOM carrier to noise (C/No) measurement, SATCOM Non-DAMA and DAMA interoperability verification, maximum communication ranges and coverage tests.

TECHNICAL INFORMATION

Facility/Capability Title: **Communications Test and Evaluation Laboratory (COMTEL)**

Summary of Technical Capabilities:

The facility provides capabilities and assets to evaluate HF, VHF, UHF, ESCM, SATCOM, RF information data lank communication systems and their antenna systems as integrated in fixed and rotary wing aircraft.

Instrumentation/Assets: Facility assets include transceiver test benches (Signal generators, audio analyzer, modulation analyzer, audio power meter, RF power meters), ARC-182/ARC-120 test bench, HF, VHF, and UHF Transceivers, HAVE QUICK radio sets (ARC-164, ARC-182 and ARC-210), SINOGARS radio sets (PRC-119 and ABC-2101, Non-DAMA UHF SATCOM ground station, and DAMA SATCOM (WSC-3/TD1271) ground station, audio recorder, BER analyzers, spectrum analyzers, ECM RF sources, REPEAT Data recorder, MIL-STD-1553 Mux Bus analyzer. COMSEC equipment, data link analysis system, HF, VHF, UHF, and SATCON antenna systems.

Keywords:

HF, VHF, UHF, SATCOM, ECCM, HAVE QUICK, SINOGARS, JTIDS, COMSEC, ARC-182/ARC-210, DAMA, aircraft communications, and flight test.

ADDITIONAL INFORMATION

Facility/Capability Title: **Communications Test and Evaluation Laboratory (COMTEL)**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1						
Enlisted	1						
Civilian	4	5	5	5	5	5	5
Contractor	3	2	2	3	3	3	3
Total	9	7	7	8	8	8	8

Total Square Footage: **1500**

Test Area Square Footage: **500**

Office Space Square Footage: **1000**

Tonnage of Equipment: **3.0**

Volume of Equipment: **1000 cu. ft.**

Annual Maintenance Cost: **$50K**

Estimated Moving Cost: **$3,500K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
250	80	150	135	80	110	95

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Communications Test and Evaluation Laboratory (COMTEL)**

AGE: **12 Years** REPLACEMENT VALUE: **3.4M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **September 93**

NATURE OF LAST UPGRADE: **Upgrade includes increased SATCOM DAMA test capabilities. Improvements included BER Analyzers, SATCOM antenna, OTCIXS I and II interfaces and REPEAT data recording capability. Upgrade was completed and operational on September 1993.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **None**

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Communications Test and Evaluation Laboratory (COMTEL)**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	2000	2200	2300	2700	6000	5000	4000	6000
	TEST HOURS	300	350	350	360	1000	1000	500	1000
	MISSIONS	5	5	5	6	8	8	7	8
EC	DIRECT LABOR	200	100	100	100	1000	1000	500	300
	TEST HOURS	20	20	30	30	200	200	100	50
	MISSIONS	1	1	1	1	2	3	2	1
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Communications Test and Evaluation Laboratory (COMTEL)**

ANNUAL HOURS OF DOWNTIME	1	**20**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**.05**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.85**

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 Σ) 8
Flight Ground	**1**	**4.0**	**4.0**	**95.4**
				ANNUAL UNCONSTRAINED CAPACITY
				9
"TYPICAL"				**34,821**
		TOTAL Σ	**4.0**	

C: 00121

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Electrical Evaluation Facility (AEEF)**

Summary of Technical Capabilities:

Shock Facilities - Half-sine or saw tooth shock pulses of 3 ms to 30 ms duration on test articles up to 350 lb.

Mechanical Interface Test Facilities - Capability to perform fatigue and wear testing of drive couplings up to 1.525 inch pitch diameter at torques to 500 lb ft, at misalignment to 0.5 degree and at 28,000 RPM.

Accessory Drive strands - 13 test stands, loads to 150 KVA, speed to 30,000 RPM, accelerations/decelerations to 1800 RPM/sec, power to 300 HP, oil or air cooling interface, programmable operations.

Electromagnetic Interference Facility - MIL-STD-461/462 narrowband and broadband emissions and susceptibility testing. Two shielded enclosures, one interfaced with a 200 HP drive, filtered power, load sources and CSS-750 computer controlled spectrum surveillance system to analyze and record data from 10 KHz to 18 GHz. RS03 to 200 V/meter.

Wind Tunnel - Open circuit subsonic wind tunnel with a 3 ft dia by 6 ft long cylindrical test section capable of testing various component equipment including emergency electrical/hydraulic power packages at speeds ranging from 12 to 230 KTS.

Jet Engine Simulator - Provides jet engine simulation of various engine drag torque vs speed profiles for testing electric starter and starter generators.

Combined Environment Testing (CET) Facility - Consists of two 64 cubic feet chambers capable of providing programmable temperature, humidity, cooling air and vibration conditions.

Keywords:
Electrical, Mechanical, Environmental, Temperature, Altitude, Electromagnetic Interference (EMI), Salt/Fog, Fungus

ADDITIONAL INFORMATION

Facility/Capability Title: **Aircraft Electrical Evaluation Facility (AEEF)**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	32	34	34	34	34	34	34
Contractor	13	13	13	13	13	13	13
Total	45	47	47	47	47	47	47

Total Square Footage: **38,329**

Test Area Square Footage: **27,214**

Office Space Square Footage: **11,115**

Tonnage of Equipment: **388**

Volume of Equipment: **24,000 ft^3**

Annual Maintenance Cost: **$785.6K**

Estimated Moving Cost: **$2,628.8K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
195	234	533	674	306	315	315

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Aircraft Electrical Evaluation FAcility (AEEF)**

AGE: **23 Years** REPLACEMENT VALUE: **$35M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE:

FY90 - Replaced furnance, FY91 - Replaced Air Conditioning System.

NATURE OF LAST UPGRADE:

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Electrical & Environmental Test Upgrade**

TOTAL PROGRAMMED AMOUNT: **$2,572K**

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
TEMP/ALT CHAMBER	$195K	$234K	$533K	$674K	$306K	$315K	$315K

SUMMARY DESCRIPTION: **Provides upgrades to temperature/altitude test capability of an aircraft generator on existing drivestands. Portable chamber will use existing drevestand facilities and significantly reduce test costs. Replaces outdated motor generators which supply high voltage DC for Drive Stand operation with solid state power supplies. This upgrade automates existing drivestands, replaces aging load banks and gearboxes, and adds a 500 horsepower drivestand and 270 VDC load bank to meet the need to T&E of larger capacity and high voltage DC aircraft electrical power systems.**

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HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Aircraft Electrical Evaluatin Facility (AEEF)**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	63,336	63,366	63,366	63,366	63,366	63,366	63,366	63,366
	TEST HOURS	70,080	70,080	70,080	70,080	70,080	70,080	70,080	70,080
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Aircraft Electrical Evaluation Facility (AEEF)**

ANNUAL HOURS OF DOWNTIME	1	**1050 hours**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**2.9**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**21.1**

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 Σ) 8
Electrical	**12**	**2.0**	**24**	**2005**
				ANNUAL UNCONSTRAINED CAPACITY
Environmental	**16**	**2.0**	**32**	
Electrical/ Mech	**12**	**2.5**	**30**	
EMI	**3**	3	**9**	9
"TYPICAL"	**6**	**4**		**731,825**
		TOTAL Σ	**95**	

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GENERAL INFORMATION

Facility/Capability Title: **Aircraft Electrical Evaluation Facility (AEEF)** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicles** UIC = **00421**

T&E Test Facility Category: **Hardware In the Loop**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**90%**		**5%**	**5%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**90%**		**5%**	**5%**			
Armanent/Weapons:							
EC:							
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Electrical Evaluation Facility (AEEF)**

Facility Description; Including mission statement:

To perform test and evaluation on aircraft electrical systems in support of the NAWCAD mission for RDT&E of aircraft systems.

Conducts T&E of aircraft electrical systems and components of primary, secondary and emergency power generation systems. Includes test facilities for power conversion equipments, emergency and auxiliary power units, constant speed drives or transmissions, engine starters, battery chargers, power distribution and control equipments, electrical wiring and wiring installations, drive shafts and couplings, hydraulic motor-generators, hydraulic pumps, avionic cooling and environmental phenomena.

Interconnectivity/Multi-Use of T&E Facility:

The AEEF's environmental chambers can and are used to conduct tests of non-electrical components on an as needed basis.

Type of Test Supported:

Aircraft electrical power generating system performance, MIL-STD-810 Environmental, MIL-STD-461 EMI, and aircraft electrical wiring testing, Salt/Fog, Fungus

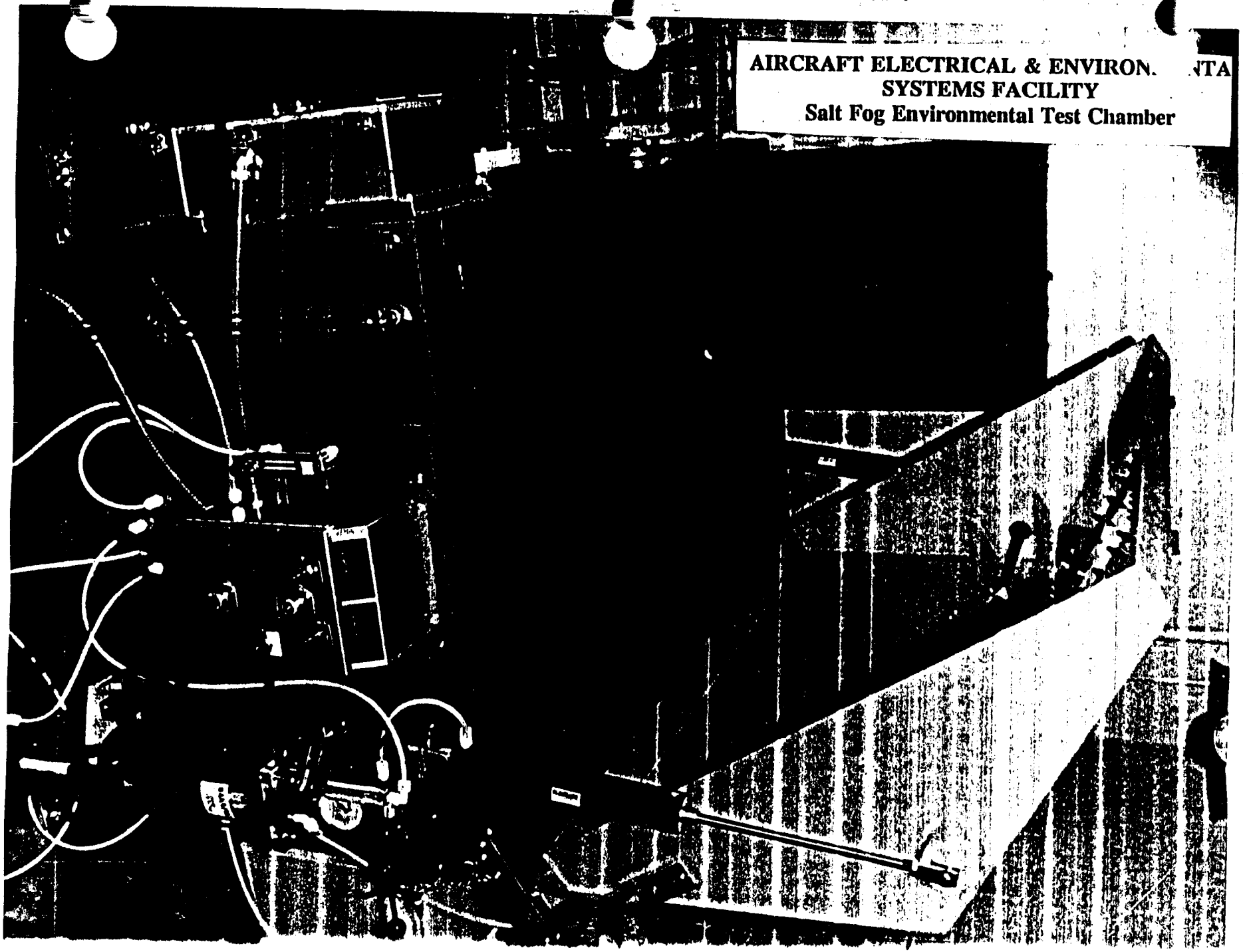
Summary of Technical Capabilities:

Temperature/Altitude Facilities - Ten chambers with work space from 1 cubic foot to 343 cubic feet, altitude capability from sea level to 150,000 ft, and temperature ranges from -73 deg to 177 deg C. Large walk in chamber (343 cubic feet) provisions for up to 40 lbs/min of conditioned equipment cooling air.

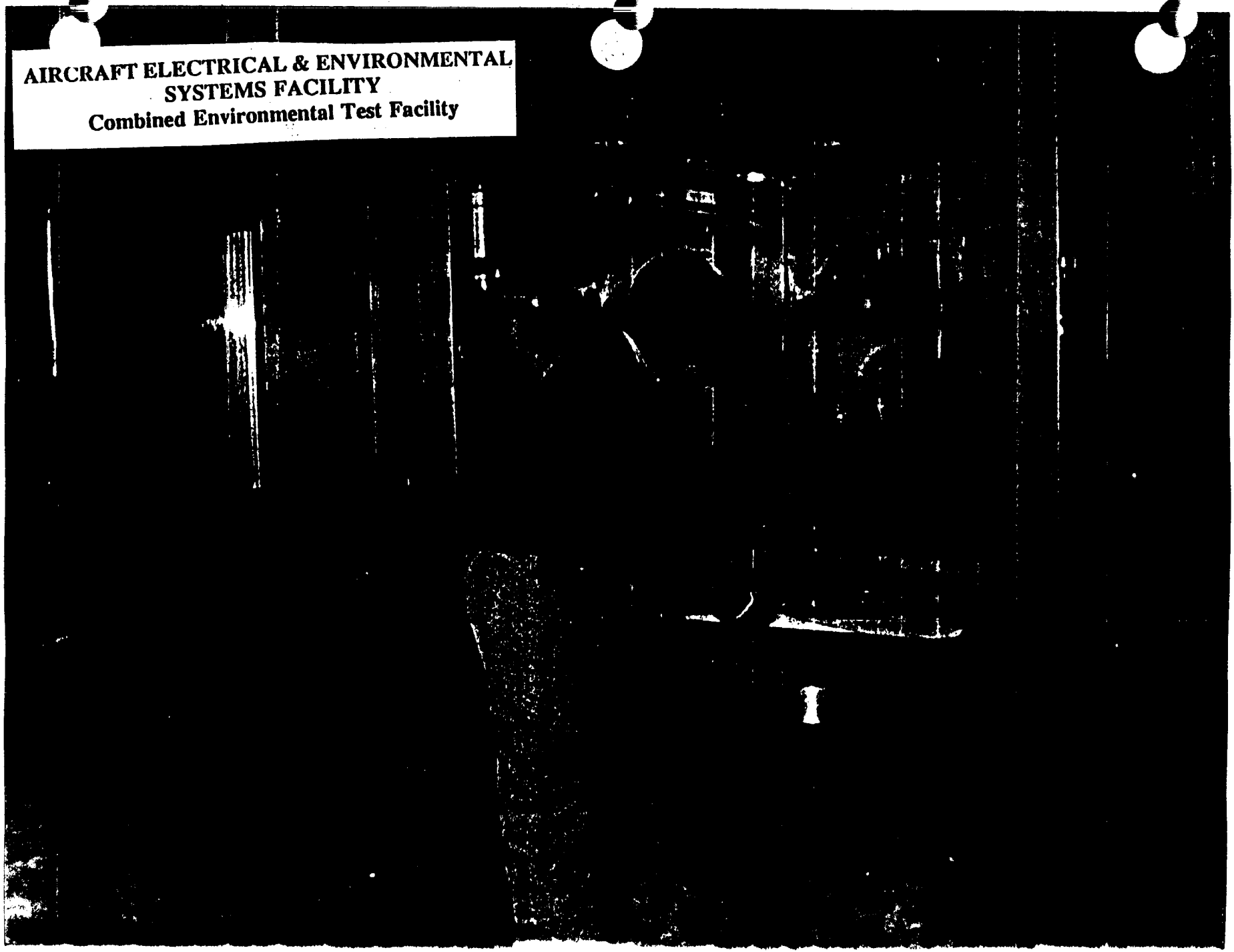
Environmental Facilities - Salt fog/all salinities and 80 cu. ft. sulfur dioxide, Sand, Dust, Fungus and relative humidity (20 to 100 percent) chamber.

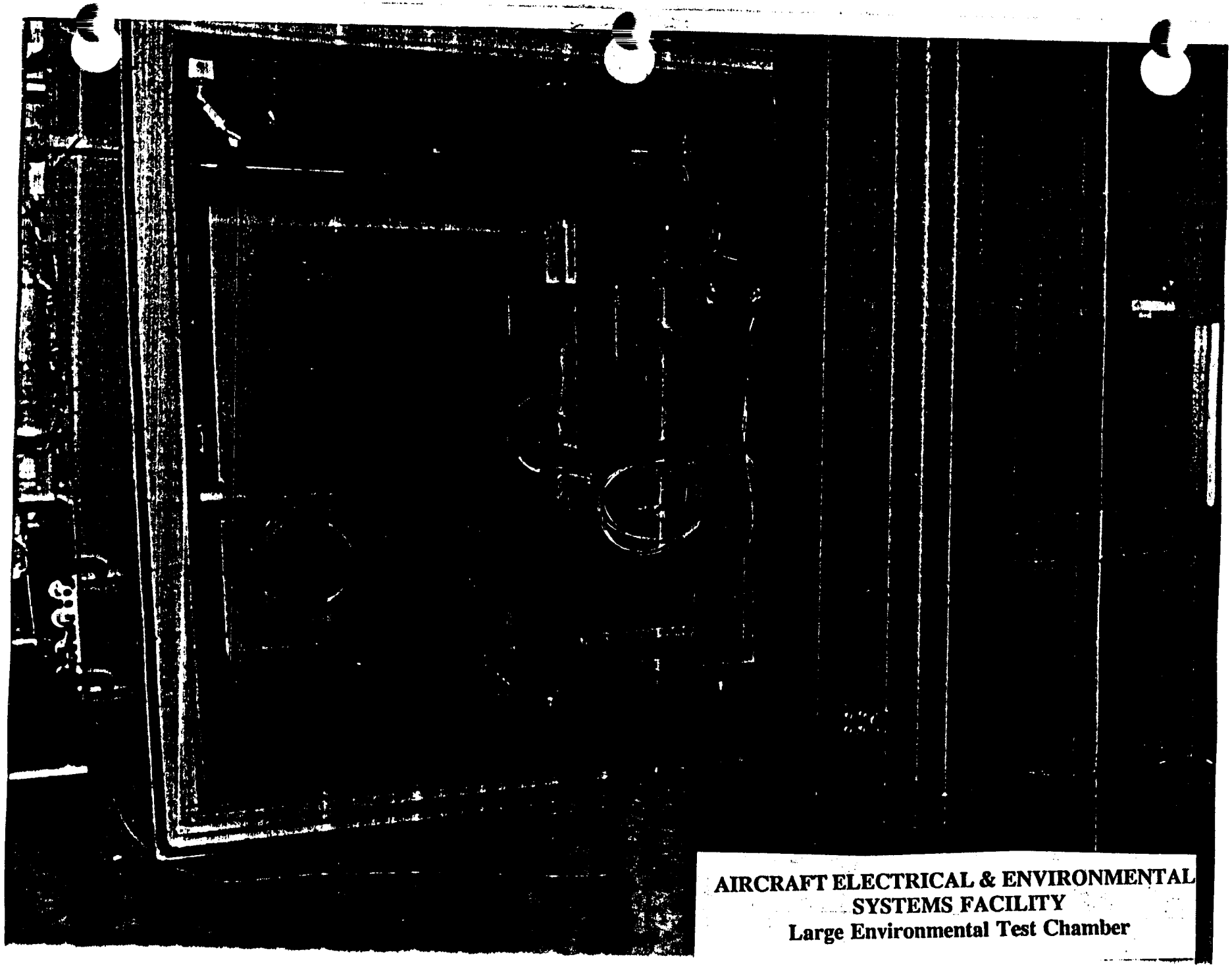
Dynamic Test Facilities - 4,500 to 24,000 lb force sine and random vibration from 10 to 2,000 Hz.

AIRCRAFT ELECTRICAL & ENVIRONMENTAL
SYSTEMS FACILITY
Wind Tunnel



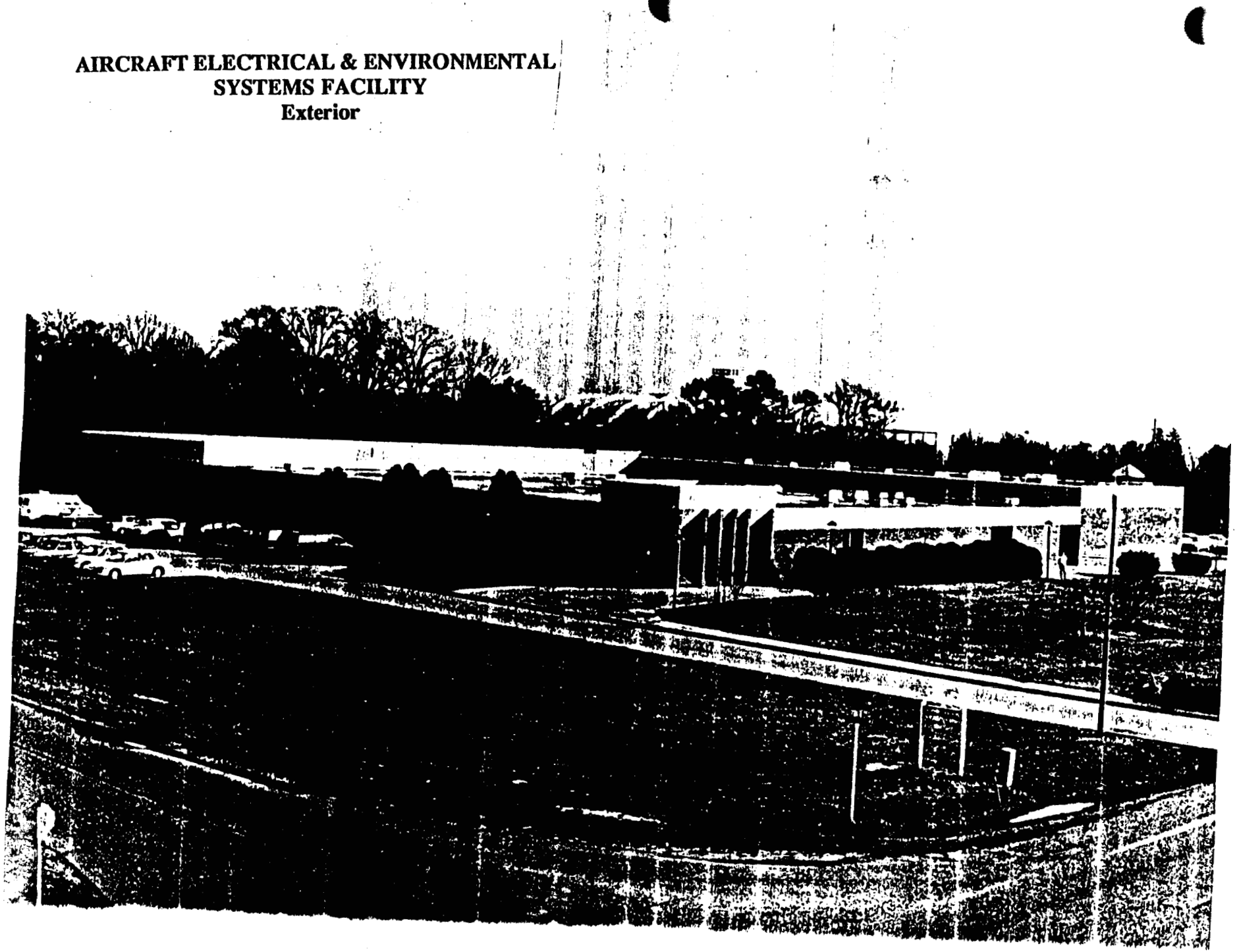
AIRCRAFT ELECTRICAL & ENVIRON. NTA
SYSTEMS FACILITY
Salt Fog Environmental Test Chamber


AIRCRAFT ELECTRICAL & ENVIRONMENTAL
SYSTEMS FACILITY
Combined Environmental Test Facility



AIRCRAFT ELECTRICAL & ENVIRONMENTAL SYSTEMS FACILITY
Large Environmental Test Chamber

AIRCRAFT ELECTRICAL & ENVIRONMENTAL SYSTEMS FACILITY
Exterior



GENERAL INFORMATION

Facility/Capability Title: **Aircrew Systems Test Facility**

Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD**

Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle**

UIC = **00421**

T&E Test Facility Category: **Hardware-in-the-Loop**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**60%**		**40%**				
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**60%**		**40%**				
Armament/Weapons:							
EC:							
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Aircrew Systems Test Facility**

Facility Description; Including mission statement:

Aircrew Systems Test Facility (8 labs) provide the capabilities required for test and evaluation of life Support Systems, Environmental Control Systems, Escape and Survival Systems, Internal and External Lighting, Night Vision Systems and Human Factors/Man-Machine Interface Factors resulting from the integration of all the mechanical, avionic, and environmental sub-systems of the total aircraft.

Interconnectivity/Multi-Use of T&E Facility:

Chemical intrusion testing with Dugway Army Proving Grounds. Mobile Vertical/Short Take Off and Landing (VSTOL) Downwash Lab supports all DOD branches, NASA, and FAA test requirements.

Type of Test Supported:

Aircraft Life Support Systems, Environmental Control System, Escape and Survival Systems, Internal and External Lighting, Night Vision, Human Factors Test and Evaluation, and aircraft Cockpit Crewstation Integration.

Summary of Technical Capabilities:

Eight different laboratories contain fixed lab test equipment as well as portable test fixtures to allow lab tests, aircraft ground tests and flight tests.

<u>Aircrew Escape and Survival Systems Laboratory</u>

This lab is used to test aircraft escape systems, survival equipment (helmets, protective clothing, etc.), helicopter emergency flotation systems, chemical defense ensembles, fixed/crashworthy seating systems, negative-g restraint systems and aircrew inflight physiological responses. The laboratory has specialized test fixtures, equipment, and instrumentation to perform the specialized tests. The lab also supports Navy aircraft chemical intrusion tests.

UIC. 5421

TECHNICAL INFORMATION

Facility/Capability Title: **Aircrew Systems Test Facility**

Summary of Technical Capabilities: (continued)

Environmental/Electronics Laboratory

The laboratory contains equipment to measure aircraft induced environmental effects on personnel such as radiation hazards; acoustical noise; VSTOL downwash flowfields; cockpit/cabin temperatures, pressure, toxic gas; physiological performance; and speech intelligibility. The facility also supports instrumentation build up, calibration of test equipment, and reduction of acoustic data.

Life Support/Fluid Flow and Gas Lab

This lab is used to test aircraft life support (oxygen) systems as well as their integration with other aircraft or personal systems. Complete aircraft oxygen systems are prototyped or mocked-up for testing system modifications or preliminary system design. Compressed air sources are available to simulate aircraft engine bleed air and two mechanical breathing machines simulate a wide range of aircrew breathing profiles. A microcomputer, with special analog I/O circuitry, provides data storage and analysis capability. The laboratory is also certified to perform trace contaminant analysis of aviator breathing oxygen and is used to calibrate all types of fluid flow equipment used in airborne flight testing.

Mobile VSTOL Downwash Laboratory

This is a portable facility/capability that provides test fixtures, a remote control survey vehicle, portable flight director station/measurement/data analysis capability to measure the wind characteristics and flowfield of vertical takeoff aircraft. This is the only such facility in the U.S. and performs work for DOD, FAA, and NASA. Equipment is also available to map engine exhaust plumes.

Crewstation Lighting and Night Vision Goggle Laboratory

This laboratory is used to test aircraft display lighting and night vision systems, aircraft transparencies, and aircraft exterior lighting. The lab contains a large variety of automatic and manual photometric equipment for use both in the lab and in the aircraft. The lab also contains specialized photometers for evaluating night lighting which effect night vision systems.

TECHNICAL INFORMATION

Facility/Capability Title: **Aircrew Systems Test Facility**

Summary of Technical Capabilities: (continued):

Aircrew Crew Systems Integration Laboratory (AIL)

AIL is a general man-machine integration laboratory providing Aircrew Systems project engineers with both engineering support and specialized test equipment for ground and inflight testing. This test equipment is used for Cockpit Field-of-View, Crew Accommodation, and control/display evaluations. This laboratory is currently being upgraded to include a test capability for Night Vision system performance characteristics.

Crewstation Technology Laboratory

This is a behavioral test development facility. Its functions are to refine, develop, and validate new methods and procedures to meet unique Navy T&E requirements for human factors. Crewstation control and display equipment tests are expanded to cover helmet mounted displays. Computational methods are developed for modeling crewmen and crewstation geometry, and for modeling man-machine interactions, both with visual depiction of results. Test-based verification of spatial models and of task analysis results emphasize video based techniques. Improvements in performance observation, scoring, data reduction and depiction are emphasized to match the tempo of ground, flight and simulation testing. Resources include mainframe and advanced graphics workstation computers, extensive unique software, behavioral test apparatus, custom video equipment, and a helmet mounted display test facility.

Keywords:

Aircrew, Escape, Aviation, Life Support, Lighting, Night Vision, Downwash, control/display

ADDITIONAL INFORMATION

Facility/Capability Title: **Aircrew Systems Test Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	3	4	4	4	4	4	4
Enlisted	4	5	4	4	4	4	4
Civilian	40	38	38	38	38	38	38
Contractor	5	10	5	5	4	4	3
Total	52	57	51	51	50	50	49

Total Square Footage: **16,348**

Test Area Square Footage: **11,241**

Office Space Square Footage: **5,107**

Tonnage of Equipment: **58**

Volume of Equipment: **24,657**

Annual Maintenance Cost: **$34K**

Estimated Moving Cost: **$989K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
895	338	422	380	385	400	425

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Aircrew Systems Test Facility**

AGE: **4 Years (Building and Equipment)** REPLACEMENT VALUE: **$10.7M (Building and Equipment)**
MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **None**

NATURE OF LAST UPGRADE: **N/A**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Night Attack Facility**

TOTAL PROGRAMMED AMOUNT: **FY94-$338K, FY95-$422K, FY96-$380K**
SUMMARY DESCRIPTION: **This laboratory capability is used to test night vision system (NVS) and aircraft NVS compatible cockpit upgrades. Facility was funded under MRTFB I&M and is in the final year of funding to completion. The laboratory is completed and only technical upgrades will be done. The upgraded equipment is housed in a light tight aircraft hanger facility.**

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:
SUMMARY DESCRIPTION:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Aircrew Systems Test Facility**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	**90205**	**90708**	**94752**	**101972**	**94128**	**92167**	**92320**	**91485**
	TEST HOURS	**12350**	**13850**	**16220**	**17850**	**17240**	**15480**	**16540**	**16848**
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

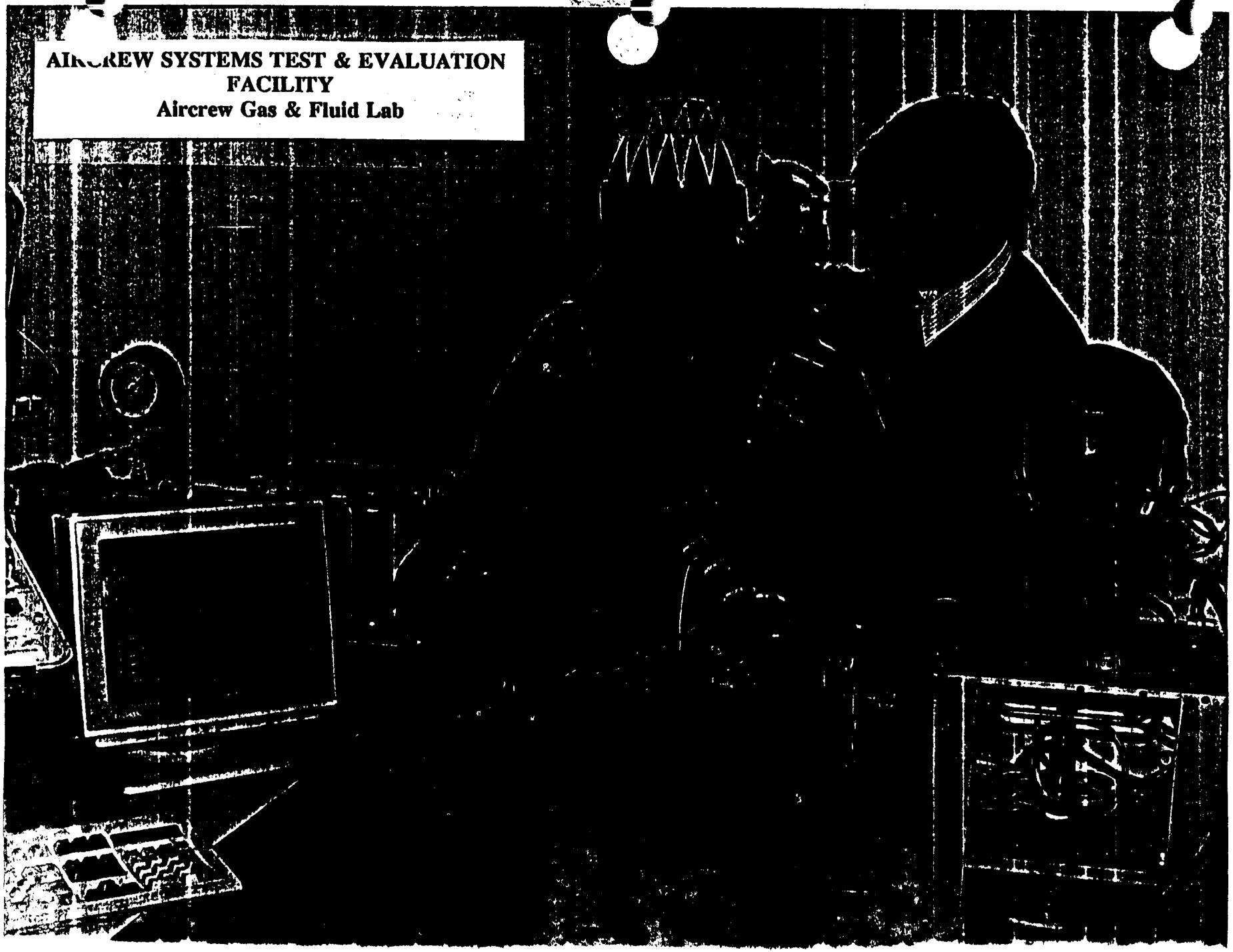
Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

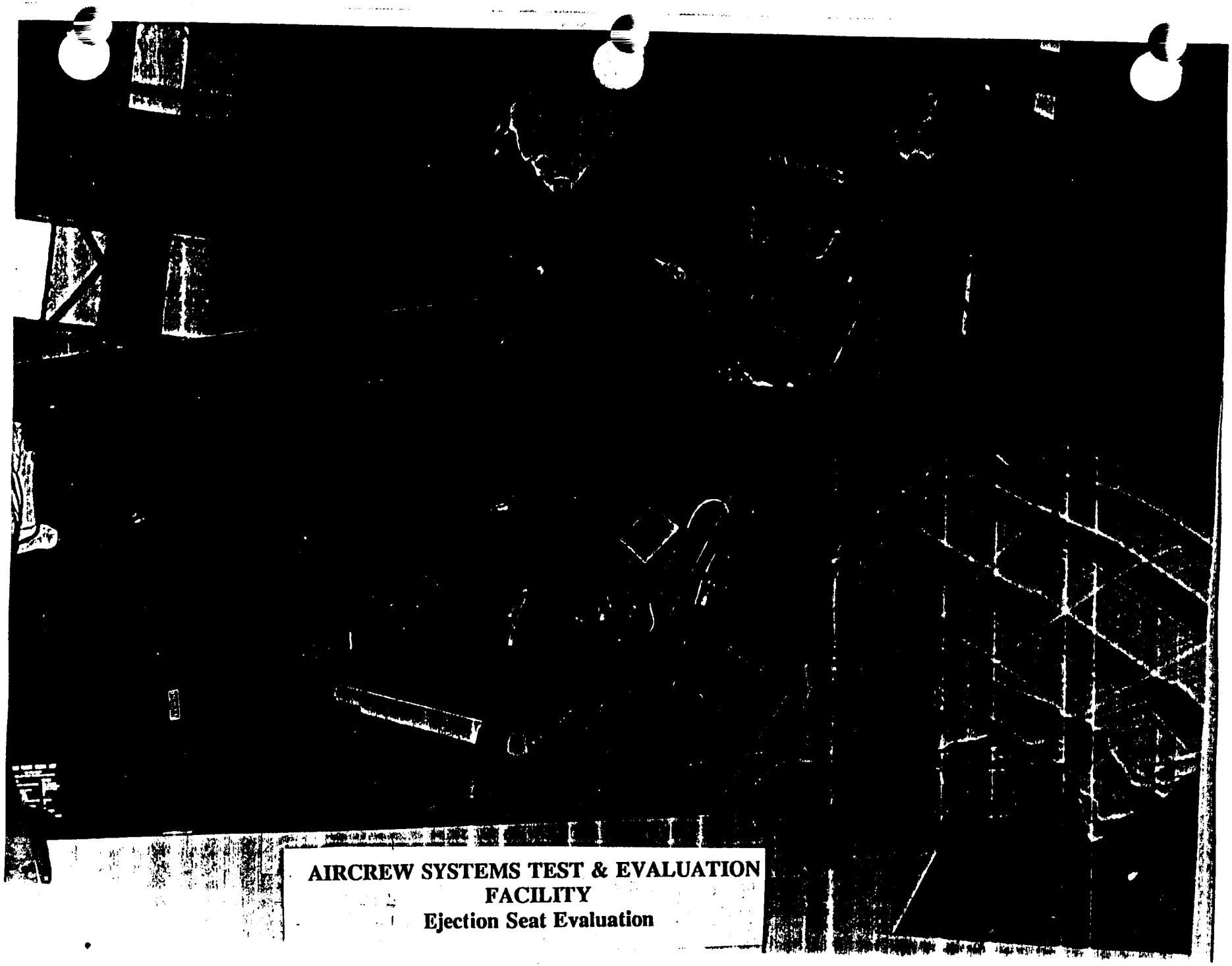
FACILITY/CAPABILITY TITLE: **Aircrew Systems Test Facility**

ANNUAL HOURS OF DOWNTIME	1	**340 Hrs Per Shift**
AVERAGE DOWNTIME PER DAY (LINE 1 + 365)	2	**.93**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**24 - 3 Shifts x .93 = 21.2**

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 Σ) 8
Night Systems	**1**	**6**	**6**	**890**
Life Support	**2**	**3**	**6**	ANNUAL UNCONSTRAINED CAPACITY
Escape Systems	**2**	**2**	**4**	
Chem/Bio	**1**	**2**	**2**	
Env Haz	**2**	**5**	**10**	
Lighting	**1**	**2**	**2**	
HMD	**2**	**2**	**4**	
Down Wash	**1**	**8**	**8**	9
"TYPICAL"				**324,850**
		TOTAL Σ	**42**	


AIRCREW SYSTEMS TEST & EVALUATION
FACILITY
Aircrew Gas & Fluid Lab

AIRCREW SYSTEMS TEST & EVALUATION FACILITY



AIRCREW SYSTEMS TEST & EVALUATION FACILITY
Ejection Seat Evaluation

GENERAL INFORMATION

Facility/Capability Title: **Aircraft Support Systems Test Facility** Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicles** UIC = **00421**

T&E Test Facility Category: **Hardware-in-the-Loop**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**90%**		**5%**	**5%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**90%**		**5%**	**5%**			
Armament/Weapons:							
EC:							
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Support Systems Test Facility**

Facility Description; Including mission statement: **This facility provides the necessary integrated test facilities to develop, test, and evaluate all aviation common and peculiar Support Equipment (SE) within its simulated or real operational environment.**
Interconnectivity/Multi-Use of T&E Facility: **Highly dependent on the use of Naval and Marine Corps aircraft and enlisted military personnel assigned to other units at Patuxent River. Utilize electromagnetic test and evaluation capabilities of the Systems Test Directorate at NAWCAD-Patuxent River and NAVSURFWPNSCEN, Dahlgren, VA.**
Type of Test Supported: **Operational Suitability and Supportability of SE.**
Summary of Technical Capabilities: **Consolidated Automated Support Systems (CASS) Laboratory containing five (5) CASS stations. Uninstalled Engine Test Facility containing two (2) test pads, holdback facilities, operation and instrumentation systems, wiring, and fuel capabilities.**
Keywords: **Support Equipment (SE), Supportability Evaluation (SUPEVAL), Consolidated Automated Support System (CASS), Peculiar SE (PSE), Common SE (CSE), Avionics SE (ASE), Automatic Test Equipment (ATE), Test Program Set (TPS), Propulsion SE, Aircraft Engine Test Systems (AETS), Armament and Weapons SE (AWSE).**

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ADDITIONAL INFORMATION

Facility/Capability Title: **Aircraft Support Systems Test Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	1	1	1	1	1	1
Enlisted	9	11	11	11	11	11	11
Civilian	56	49	49	49	49	49	49
Contractor	14	26	38	42	46	51	56
Total	80	87	99	103	107	112	117

Total Square Footage: **17,281**

Test Area Square Footage: **9,505**

Office Space Square Footage: **7,776**

Tonnage of Equipment: **210**

Volume of Equipment:

Annual Maintenance Cost:

Estimated Moving Cost: **$2,200K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
372	558	724	334	348	0	0

UIC:00421

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Aircraft Support Systems Test Facility**

AGE:

Bldg. 1405	**25 Years**
Bldg. 2705	**8 Years**
Bldg. 2093	**7 Years**
Bldg. 2117	**5 Years**
Bldg. 2121	**5 Years**
Bldg. 2131	**4 Years**
Equipment:	**1-31 Years**

REPLACEMENT VALUE: **$17.5M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1994**

NATURE OF LAST UPGRADE: **Major Roof Replacement/Repair on Building 1405, Major Electrical Update to Uninstalled Engine Test Facility, New Jet Engine Test Pad Installed at Uninstalled Engine Test Facility.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **None**

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Aircraft Support Systems Test Facility**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	119600	127900	154700	136300	137700	147300	165523	138927
	TEST HOURS	59800	63950	77350	68150	68580	73650	82762	69494
	MISSIONS	60	60	67	53	49	69	57	35
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Aircraft Support Systems Test Facility**

ANNUAL HOURS OF DOWNTIME	1	**288**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**0.789**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.21**

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 Σ) 8
Technical Evaluation	**34**	**2.0**	**68**	**1764**
Developmental Assist	**2**	**2.0**	**4**	ANNUAL UNCONSTRAINED CAPACITY
In-Service Evaluation	**2**	**2.0**	**4**	
				9
"TYPICAL"	**7**	**2.0**		**643,845**
		TOTAL Σ	**76**	

'10:00421

GENERAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle And Electronic Combat** UIC = **00421**

T&E Test Facility Category: **Installed System Test Facility**

	T&E	S&T	D&E	IE	T&D	OTHER =100%
PERCENTAGE USE:	77%	1%	15%	3%	3%	1%
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles:	41%	1%	14%	2%	3%	1%
Armament/Weapons:	8%					
EC:	26%		1%	1%		
Other:	2%					

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

TECHNICAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Facility Description; Including mission statement:

The Air Combat Environment Test & Evaluation Facility (ACETEF) is a fully integrated ground test facility that allows full spectrum test & evaluation of highly integrated aircraft and aircraft systems in a secure and controlled engineering environment. The facility uses state-of-the-art simulation and stimulation technologies to provide test scenarios that reproduce the conditions of actual combat. ACETEF facilities are divided into Simulation & Analysis, Electronic Combat Stimulation, Manned Flight Simulation, and Electromagnetic Environmental Effects departments which support "bench" tests of simulations & uninstalled systems as well as tests of fully installed systems in a shielded hangar, anechoic chamber and/or other local and remote sites. ACETEF is a one of a kind facility which provides an integration of wargaming, man-in-the-loop, hardware-in-the-loop, and electromagnetic environmental effects test capabilities.

Simulation & Analysis Department

Operations & Control Center (OCC)

The Operations & Control Center provides the cornerstone for total integrated multi-platform ground testing in the ACETEF. Threat generation is provided by the Simulated Warfare Environment Generator (SWEG). SWEG is the core of the OCC, generating the threat scenarios and maintaining control of red and blue players. Test execution, data distribution, and test instrumentation are also controlled by the OCC.

Aircrew Systems Evaluation Facility (ASEF)

The Aircrew Systems Evaluation Facility provides the tools necessary to evaluate the man-machine interface and crew workload during ACETEF testing. Controls, displays, and cockpit layouts are rapidly prototyped and evaluated early in the development process to reduce the cost of correcting design errors. In addition, ASEF provides a low fidelity man-in-the-loop capability through multiple desktop crewstations to support tests in other ACETEF labs.

EC Stimulation Department

The ACETEF Electronic Combat Stimulation Department consists of four separate functional laboratories. These labs can work independently or as integrated systems to provide an RF/EO signal rich environment to aircraft located in test areas at Patuxent River or off site.

Electronic Warfare Integrated Systems Test Laboratory (EWISTL)

The Electronic Warfare Integrated Systems Test Laboratory (EWISTL) provides multispectral open loop stimulation to aircraft EW systems. These systems consist of radar warning receivers, jamming systems, electronic support measures, laser warning, and passive missile approach warning. EWISTL provides this stimulation to bench and installed systems at RF through direct injection, close coupled hats, or free space radiation.

TECHNICAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Facility Description; Including mission statement: (continued)

The Threat Air Defense Laboratory (TADL)

The Threat Air Defense Laboratory (TADL) provides closed loop radar/missile stimulation to aircraft EW systems. TADL currently has one surface to air weapon system and one early warning/acquisition radar. Connecting TADL to aircraft jamming systems provides test engineers with jamming effectiveness data such as missile miss distance, tracking break lock errors, burn through, and sector coverage.

Communications, Navigation, Identification Laboratory (CNIL)

The Communications, Navigation, Identification Laboratory (CNIL) provides open and closed loop stimulation of DoD CNI systems and EW surveillance systems. CNIL has a GPS simulator, a multi-emitter open loop simulator, several closed loop radio systems, a PROFORMA simulator, a Link 16 simulator and other data link equipment.

Offensive Sensors Laboratory (OSL)

The Offensive Sensors Laboratory (OSL) provides RF target generation and IR scene generation to Navy aircraft offensive sensor systems. These include air to air radar, air to ground radar, forward looking infrared (FLIR), infrared search and track (IRST), and active missile approach warning systems. OSL currently has an air to air radar target simulator (RTS) that can generate sixteen simultaneous targets to an aircraft fire control radar.

Manned Flight Simulator

MFS is a full flight and avionics systems laboratory used to support the development and test of all categories of aircraft including support for vehicle management and mission managegment systems, mission critical computer resources, man-machine interface and performance, software development and test, and T&E methodology development. It features a six-degree-of-freedom motion base, a 40 foot diameter dome, and two medium fidelity lab station. Out the window visuals are provided by a Compuscene IVA and a Compuscen IV and a stand-alone Silicon Graphics System. Roll-in/roll-out cockpits permit rapid reconfiguration of all simulation stations. Cockpits presently in the MFS inventory include V-22, F/A-18A, F/A-18C/D/E/F, F-14D front seat, AH-1W procedures trainer, and Multiple Reconfigurable cockpits with touch sensitive front displays for rapid reconfiguration of cockpit instruments. MFS is used independently to support flying qualities and performance and high fidelity MMI evaluation tasks and integrated with other labs to provide a high fidelity man-in-the-loop capability.

Electromagnetic Environmental Effects Department

Navy Electromagnetic Pulse Test Facility:

This facility subjects Navy and other DoD aircraft and weapons to the High Altitude Electromagnetic Pulse Threat

TECHNICAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Facility Description; Including mission statement: (continued)

Navy Lightning & P-Static Test Facility

This facility subjects Navy and other DoD aircraft and weapons to Lightning and P-Static Threats.

TEMPEST/COMSEC (Communications Security) Test Facility

The TEMPEST/COMSEC Test Facility is used to support the Navy, Marine Corps and Coast Guard in the RDT&E and Fleet suport of Airborne classified information processing system. The facility supports three main functional areas: TEMPEST Test and Evaluation, the COMSEC cetification Program, and RDT&E and Fleet support of COMSEC systems.

Naval Electromagnetic Radiation Facility (NERF)

The NERF consists of a 1500 square foot lab building, vault, two ground planes (100' x 240' surface mounted steel deck and 200' x 400' imbedded grid under the hangar 144 apron) with all required electrical services and high powered transmitters required to generate simulated operational electromagnetic environment for purposes of conducting radiated susceptibility tests for the Navy, Army, Air Force, FAA, and commercial customers.

Anechoic Chamber/Shielded Hangar

Shielded Hangar

A 300' x 150' x 60' shielded hangar used for test and evaluation of aircraft electronic combat (mission) system and electromagnetic environmental effects.

Anechoic Chamber

A tactical aircraft sized anechoic chamber (100' x 60' x 35') designed to accomodate fixed and rotary wing aircraft. A 30 ton traveling hoist suspends the test article in a flight configuration. a 15' x 10' x 8' pit allows for special access to electronic test equipment. The chamber has 120dB of shielding from the outside environment, allowing tests to be conducted in a secure and uncontaminated RF environment. The chamber provides a near free-space environment over a very wide frequency range (10kHz - 40 GHz), providing for more efficient use of limited flight test time and resources.

TECHNICAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Interconnectivity/Multi-Use of T&E Facility:

Interconnectivity

ACETEF laboratories are able to operate both independently (to provide a stand alone test capability) and integrated with other local and remote facilities (to provide a more complex test capability). For multi-lab operations within ACETEF, the OCC provides scenario control & coordination to any combination of simulation labs & stimulation labs which may be supporting the test of systems on a bench within the lab or installed in an aircraft in the anechoic chamber or shielded hangar. Linking of ground based systems under test and airborne seaborne assets has been accomplished using both tactical data links and test support data links. The local architecture is centered around a fiber-optic network supporting shared memory within each lab. Labs were built adjacent to the anechoic chamber/shielded hangar to reduce signal latency/propagation loss problems.

The OCC is also ACETEF's portal for interconnectivity with external facilities, both local (NAWCAD Patuxent) and off site locations. This is done via the Defense Simulation Internet (DSI) and a series of dedicated point-to-point connections. To date, ACETEF has successfully connected externally to the REDCAP facility, various facilities participating in WARBREAKER exercises, the X-31 Rockwell simulator, and multiple Defense Interactive Simulation (DIS) projects Locally ACETEF is connected to all facilities via Patuxent River's fiber-optic local area network. Local facilities which have been integrated into various tests include the Chesapeake Test Range, E-2C Systems Test and Evaluation Facility, Ship Ground Station, and Fixed Wing ASUW and ASW Labs.

Multi-Use

The ACETEF concept provides for maximum flexibility in efficient use of test resources. Laboratories are capable of stand-alone and integrated testing in multiple combinations. By combining the various labs, ACETEF provides the ability to accomplish test tasks in all areas of air combat. ACETEF labs share tools & instrumentation, as well as test sites--the anechoic chamber and shielded hangar. The facility is capable of operating on a three shift basis in whichever labs are required to support a given test.

UIC 1421

TECHNICAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Type of Test Supported:

ACETEF's primary function is to support installed systems test. Secondary functions include support of modeling & simulation tests, hardware-in-the-loop tests, and measurement tests. Specific examples include:

Simulation & Analysis

Operations & Control Center

The Operations & Control Center supports testing which requires a high fidelity wargaming environment and those tests which require coordination of multiple labs. As a standalone facility, OCC supports various types of operational effectiveness analyses. In conjunction with other labs, OCC provides scenario generation and simulation, instrumentation, data analysis, laboratory integration, and integration with remote facilities.

Aircrew Systems Evaluation Facility (ASEF)

The Aircrew Systems Evaluation Facility provides display prototyping in support of human factors testing including Aircrew Systems Advisory Panels, Design Advisory Groups, Controls & Displays Working Groups, and training. In addition, ASEF provides a low fidelity man-in-the-loop capability in support of other labs test objectives.

EC Stimulation

Generally the EC Stimulation Department operates as an Installed System Test Facility (ISTF) for the test and evaluation of aircraft EC, Offensive sensors, and CNI systems. In this role, the facility supports both developmental installations and retrofit installations. This department can support EC system integration, E^3 evaluation, weapons integration, and safety of flight for advanced technology demonstrators, developmental test, and operational test. These tests can be supported in anechoic chambers, shielded hangers, aircraft hangers, flight lines, contractor facilities, off-site DoD facilities, and on operational platforms (land, air, and sea).

Manned Flight Simulator

MFS supports testing of vehicle management and mission managegment systems, mission critical computer resources, man-machine interface and performance, software developmenta and test, and T&E methodology development for existing and notional aircraft.

Electromagnetic Environmental Effects

Navy Electromagnetic Pulse Test Facility

The Navy Electromagnetic Pulse Test Facility supports horizontal and vertical electromagnetic pulse testing of aircraft and aircraft systems.

TECHNICAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Type of Test Supported: (continued)

Navy Lightning & P-Static Test Facility
The Navy Electromagnetic Pulse Test Facility supports lightning and P-static testing of aircraft and aircraft systems.

TEMPEST/COMSEC Test Facility
The TEMPEST/COMSEC Test Facility supports test and evaluation of TEMPEST/COMSEC systems. In addition, the facility supports COMSEC certifications, R&D of COMSEC systems, and fleet support.

Naval Electromagnetic Radiation Facility (NERF)
The Naval Electromagnetic Radiation Facility supports any form of radiated susceptibility test including Electromagnetic Vulnerability test, Intersystem Electromagnetic Compatibility test, Hazardous Electromagnetic Radiation to Ordnance, Hazardous Electromagnetic Radiation to Fuel, MIL-STD-461 RS03 tests, and High Intensity Radiated Fields tests for FAA certification of commercial aircraft.

Anechoic Chamber/Shielded Hangar

The anechoic chamber and shielded hangar support all aspects of ACETEF testing including: E3, EC system integration, antenna isolation, TEMPEST, and RF emission signature measurement.

Summary of Technical Capabilities:

Combat Environment Simulation Department
The Simulation & Analysis Dept provides the following capabilities:
Simulated Warfare Environment Generator
8 channel data bus instrumentation & data analysis
Interlaboratory and interfacility integration
8 Mini-crewstations
Cockpit prototyping system

TECHNICAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Summary of Technical Capabilities: (continued)

EC Stimulation Department

The EC Stimulation Dept. provides the following capabilities:
Dynamic multi-emitter open loop RF threat environment
Dynamic multi-emitter open loop CNI threat environment
Dynamic closed loop simulation of EW/ACQ and SAM threat systems
Dynamic closed loop simulation of Blue CNI systems (GPS, tactical data links, strategic data links)
Dynamic multi-target stimulation of Blue fire control radar(APG-71,APG-73)
Open loop EO stimulation (laser, missile plume, simple IR targets)
Open loop target simulation of anti radiation missiles (for aircraft avionics integration)

Manned Flight Simulator

MFS features a six-degree-of-freedom motion base, a 40 foot diameter dome, and two medium fidelity lab stations. Out-the-window visuals are provided by a Compuscene IVA, a Compuscene IV and a stand-alone Silicon Graphics System. Roll-in/roll-out cockpits permit rapid reconfiguration of all simulation stations. Cockpits presently in the MFS inventory include V-22, F/A-18A, F/A-18C, F/A-18F, F-14D pilot, AH-1W procedures trainer, and a Multiple Reconfigurable cockpit with touch sensitive front display for rapid reconfiguration of cockpit instruments. It provides hardware-in-the-loop testing capability of flight control computers and mission control computers.

Electromagnetic Environment Effects Department

Navy Electromagnetic Pulse (EMP) Test Facility:
The EMP Test Facility provides the following capabilities:
Full Threat Electromagnetic Pulse Simulation.
Vertical and Horizontal Polarization.
Thirty channels of high speed instrumentation.
Above threat direct injection capability.

Navy Lightning & P-Static Test Facility:
The Lightning & P-static Test Facility provides the following capabilities:
Full Threat Lightning Capability
Full Threat P-Static Capability

TECHNICAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Summary of Technical Capabilities: (con't)

TEMPEST/COMSEC Test Facility
The TEMPEST/COMSEC Test Facility provides the following capabilities:
Test equipment to support 3 simultaneous aircraft TEMPEST tests
Test equipment to support 4 simultaneous aircraft COMSEC certifications
Various test equipment, benches, racks, wiring harnesses and mobile test vehicles to support RDT&E and Fleet support of COMSEC systems.

Naval Electromagnetic Radiation Facility (NERF)
The NERF facility is capable of accommodating test articles from box size to Boeing 747 aircraft size and generating simulated operational electromagnetic fields as follows:
Discrete radars from 200Mhz through 35 GHz
0 - 120,000 mW/cm^2 Peak E-fields
Swept communication/EW signals from 10 KHz through 18 GHz
0 - 250 V/M CWE-fields

<u>Anechoic Chamber/Shielded Hangar</u>
The anechoic chamber and shielded hangar provide the following capabilities:
Isolation from the external environment
Aircraft testing in a shielded enclosure
Aircraft support services including electrical, hydraulic, and coolant at six spots in the hangar and one in the chamber

In addition, the anechoic chamber provides a near free space radiation capability.

TECHNICAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

Keywords:

Simulation, Instrumentation, Defense Simulation Internet (DSI), Distributed Interactive Simulation (DIS), Rapid Prototype, Simulated Warfare Environment Generator (SWEG), ACETEF, Modeling, Aircrew Systems Advisory Panel, Design Advisory Group, Controls & Displays, EC Stimulation, Electronic Combat (EC), Electronic Warfare (EW), RF Stimulation, IR Stimulation, Threat Air Defense Laboratory (TADL), Electronic Warfare Integrated Systems Test Laboratory (EWISTL), Communication, Navigation, Identification Laboratory (CNIL), Offensive Sensors Laboratory (OSL), Manned Flight Simulator, Six-degree-of-freedom, motion base, dome, hardware-in-the-loop, man-in-the-loop, integrated system test facility, aircraft simulation, aero modeling, avionics modeling, Electromagnetic Environmental Effects (E3), Navy Electromagnetic Pulse Test Facility, Electromagnetic Pulse (EMP), Vertically Polarized Dipole (VPD), Horizontally Polarized Dipole (HPD), Navy Lightning & P-Static Test Facility, Precipitation Static (P-Static), Lightning, Anechoic Chamber, Shielded Hangar, AATF, TEMPEST, EMC/EMI, Radiated Susceptibility, Electromagnetic Vulnerability, Intersystem Electromagnetic Compatibility, Hazardous Electromagnetic Radiation to Ordnance, Hazardous Electromagnetic Radiation to Fuel, MIL-STD-461 RS03, and High Intensity Radiated Fields

ADDITIONAL INFORMATION

Facility/Capability Title: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0	1	1	1	1	1	1
Enlisted	2	2	1	1	1	0	0
Civilian	133	135	144	145	146	116	79
Contractor	135	109	111	111	110	75	55
Total	270	247	257	258	258	192	135

Total Square Footage: **97,431**

Test Area Square Footage: **74,048**

Office Space Square Footage: **23,383**

Tonnage of Equipment: **926**

Volume of Equipment: **2,999,902 cu ft**

Annual Maintenance Cost: **$5,290K**

Estimated Moving Cost: **$17,084K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
$12,450	$14,690	$24,250	$20,150	$21,950	$21,760	4,960

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Air Combat Environment Test & Evaluation Facility**

(Building	Age:	Replacement Value: & Equipment)
Simulation & Analysis Dept	3 Years	$11.8M
Operations & Control Center		
Aircrew Systems Evaluation Facility		
EC Stimulation Dept	14 Years	$106.35M
CNI Lab		
EW Integrated Systems Test Lab		
Offensive Sensors Lab		
Manned Flight Simulator	8 Years	$52.3M
Electromagnetic Environmental Effects Dept		
Navy Electromagnetic Pulse Test Facility	11 Years	$30.0M
Navy Lightning & P-Static Test Facility	22 Years	$10.0M
TEMPEST/COMSEC Test Facility	25 Years	$5.0M
Naval Electromagnetic Radiation Facility	31 Years	$1.2M
Anechoic Chamber/Shielded Hangar		
Anechoic Chamber	11 Years	$15.0M
Shielded Hangar	46 Years	$45.0M

MAINTENANCE AND REPAIR BACKLOG: (See Attachment 1 for Facility Maintenance and Repair and Facility Upgrades)

DATE/NATURE OF LAST UPGRADE:

Combat Environment Simulation Dept:	FY94
Digital Radar Landmass Simulator	
Simulation Enhancements	
Instrumentation Upgrade	

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Air Combat Environment Test & Evaluation Facility**

EC Stimulation Dept	FY94
Advanced Tactical EW Environment Simulator (ATEWES) Frequency Extension (Millimeter/Low Band)	
Communication Environment Simulator (CES)	
IR Stimulator	
Anti-Radiation Missile Stimulator	
Manned Flight Simulator	FY94
Processor Upgrade	
Electromagnetic Environmental Effects Dept	
Navy Electromagnetic Pulse Test Facility	FY88
Instrumentation Upgrade	
Navy Lightning & P-Static Test Facility	FY93
Power upgrade	
TEMPEST/COMSEC Test Facility	FY86
Space renovation	
Naval Electromagnetic Radiation Facility	FY94
Addition of 200' x 400' Ground Plane	
Anechoic Chamber/Shielded Hangar	
Anechoic Chamber	FY94
Replacement of Anechoic Floor	
Shielded Hangar	FY94
Painted floor	

MAJOR UPGRADES PROGRAMMED:

Combat Environment Simulation Dept

Upgrade Title: Simulation Software Upgrade
Total Programmed Amount: $5.0M
Description: Upgrade simulation software to ADA, obtain full documentation, ensure compliance with all current standards

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Air Combat Environment Test & Evaluation Facility**

EC Stimulation Dept:
Upgrade Title: Air To Ground Radar Target Generator
Total Programmed Amount: $15M
Description: RF Stimulator To Provide Ground Mapping Input To Airborne Radar System.

Upgrade Title: Infrared Scene Generator
Total Programmed Amount: $15M
Description: Processor And Projection System To Provide Dynamic Infrared Scene Capability To Infrared Search And Track (Irst), Forward Looking Infrared (Flir), and Passive Missile Approach Warning Systems. 1994 Completion Of Los Alamos Study For System Specification

Manned Flight Simulator
Upgrade Title: Helmet Mounted Display System
Total Programmed Amount: $0.8M
Description: Add ability to integrate helmet mounted display viauals

Upgrade Title: Independent Lab Stations
Total Programmed Amount: $2.5M
Description: Develop self contained simulation stations

Electromagnetic Environmental Effects Dept
Navy Electromagnetic Pulse Test Facility
Upgrade Title: Horizontally Polarized Dipole Pulsar Upgrade
Total Programmed Amount: $0.26M
Description: Increases simulator rise time, and bandwidth.

Upgrade Title: Direct Injection Simulation Upgrade
Total Programmed Amount: $0.14M
Description: Increases direct injection amplitude and bandwidth.

Navy Lightning & P-Static Test Facility
Upgrade Title: Crow Bar Switch
Total Programmed Amount: $0.25M
Description: Add capability to generate unipolar waveform.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Air Combat Environment Test & Evaluation Facility**

Upgrade Title: Long Arc Generator
Total Programmed Amount: $0.10M
Summary Description: Improve radome testing capability.

TEMPEST/COMSEC Test Facility
None

Naval Electromagnetic Radiation Facility
None

Anechoic Chamber/Shielded Hangar
Anechoic Chamber
Upgrade Title: Anechoic Material Replacement
Total Programmed Amount: $0.34M
Description: Replace anechoic material as part of scheduled maintenance (effort is funded thru cost distribution vice institutional, funds)

Shielded Hangar
None

UIC: 00421

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Air Combat Environment Test and Evaluation Facility (ACETEF)**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	53826	63642	73050	102866	134898	164329	152730	143150
	TEST HOURS	16135	20274	21068	18942	19675	18434	18815	21393
	MISSIONS						30	125	87
EC	DIRECT LABOR					26291	35579	27317	24342
	TEST HOURS	3047	3720	3669	3079	4169	4893	4293	4198
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR					2629	3558	2732	2034
	TEST HOURS	528	457	573	543	764	767	803	931
	MISSIONS								
OTHER T&E	DIRECT LABOR	2314	3738	4450	5874	8503	9432	9496	8798
	TEST HOURS	324	560	600	592	511	561	625	527
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

Note - Includes civilian, military, and contractor direct labor hours.

Determination of Unconstrained Capacity

Facility/ Capability Title:	Naval Electromagnetic Radiation Facility	Navy Electromagnetic Pulse Test Facility	Navy Lightning & P-Static Test Facility	TEMPEST/ COMSEC Test Facility	Anechoic Chamber	Shielded Hangar	EW Integrated Systems Test Lab	Offensive Sensors Lab	CNI Lab	Manned Flight Simulator	Operations & Control Center	Aircrew Systems Evaluation Facility
Annual Hours of Downtime:	2920.00	2880.00	500.00	100.00	720.00	720.00	325.00	320.00	145.00	712.00	410.00	352.20
Average Downtime per Day:	8.00	7.89	1.37	0.27	1.97	1.97	0.89	0.88	0.40	1.95	1.12	0.96
Average Hours Available Per Day:	16.00	16.11	22.63	23.73	22.03	22.03	23.11	23.12	23.60	22.05	22.88	23.04

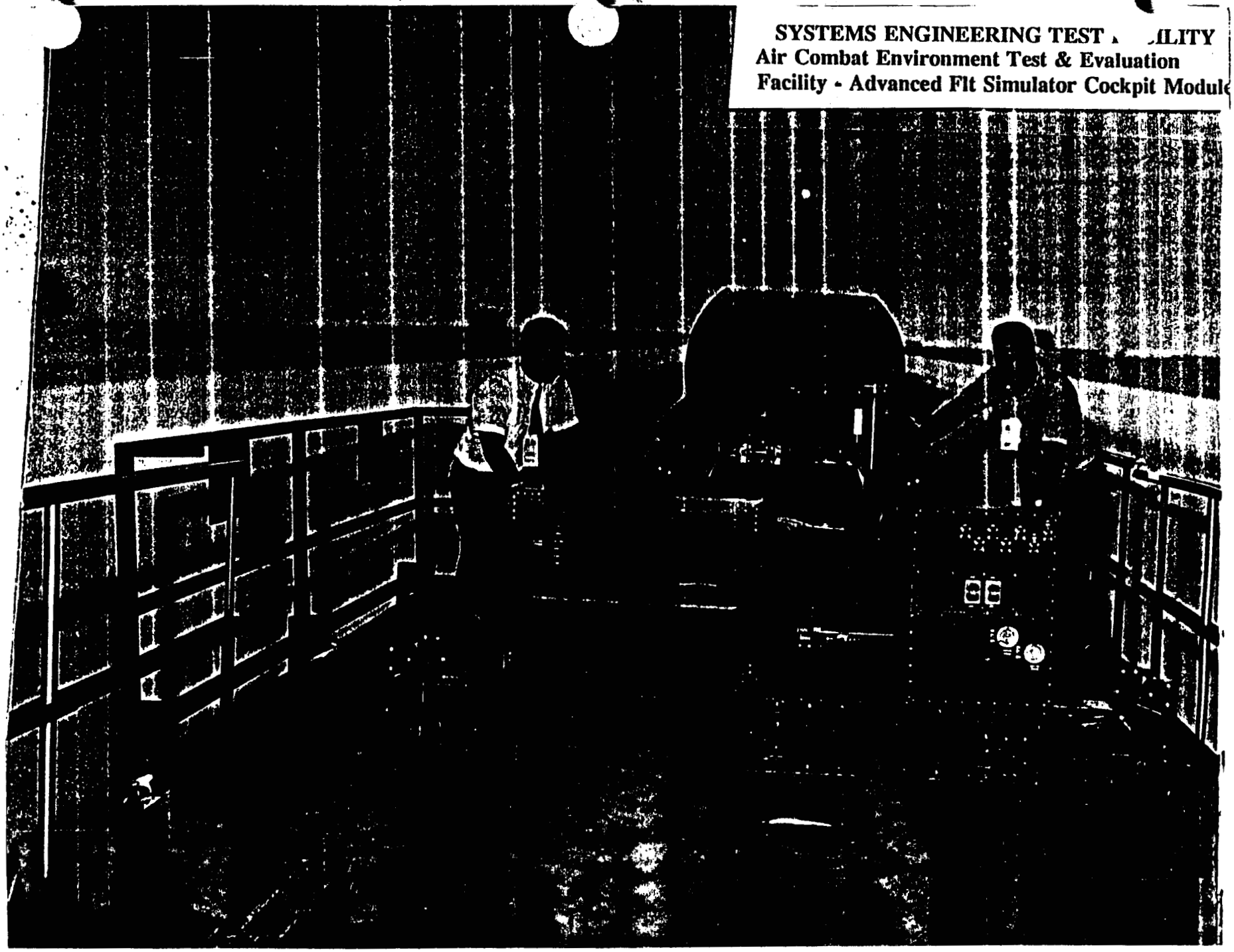
Determination of Unconstrained Capacity

Test Type	Facility	Tests at one time	Workload per test per facility hour	Workload per facility hour	Unconstrained per day	Annual unconstrained capacity
Any form of radiated susceptibility	Naval Electromagnetic Radiation Facility	2.00	7.00	14.00	224.00	81760.00
Horizontal EMP	Navy Electromagnetic Pulse Test Facility	1.00	15.00	15.00	241.64	88200.00
Vertcal EMP	Navy Electromagnetic Pulse Test Facility	1.00	8.00	8.00	128.88	47040.00
Direct Injection	Navy Electromagnetic Pulse Test Facility	1.00	5.00	5.00	80.55	29400.00
Lightning	Navy Lightning & P-Static Test Facility	1.00	7.00	7.00	158.41	57820.00
P-Static	Navy Lightning & P-Static Test Facility	1.00	3.00	3.00	67.89	24780.00
TEMPEST	TEMPEST/ COMSEC Test Facility	5.00	2.00	10.00	237.26	86600.00
COMSEC	TEMPEST/ COMSEC Test Facility	5.00	2.00	10.00	237.26	86600.00
EW	EW Integrated Systems Test Lab	10.00	3.00	30.00	693.29	253050.00
Offensive Sensors	Offensive Sensors Lab	2.00	3.00	6.00	138.74	50640.00
CNI	CNI Lab	5.00	3.00	15.00	354.04	129225.00
High fidelity Man-in-the-Loop	Manned Flight Simulator	3.00	3.00	9.00	198.44	72432.00

Environment generation	Operations & Control Center	2.00	4.00	8.00	183.01	66800.00

Determination of Unconstrained Capacity

Rapid prototyping	Aircrew Systems Evaluation Facility	1.00	3.00	3.00	69.11	25223.40
Low fidelity Man-in-the-Loop	Aircrew Systems Evaluation Facility	8.00	3.00	24.00	552.84	201787.20
Installed System Test	Shielded Hangar	6.00	7.00	42.00	925.15	337680.00
Installed System Test (Anechoic)	Anechoic Chamber	1.00	7.00	7.00	154.19	56280.00



SYSTEMS ENGINEERING TEST A ILITY
Air Combat Environment Test & Evaluation Facility - Advanced Flt Simulator Cockpit Module

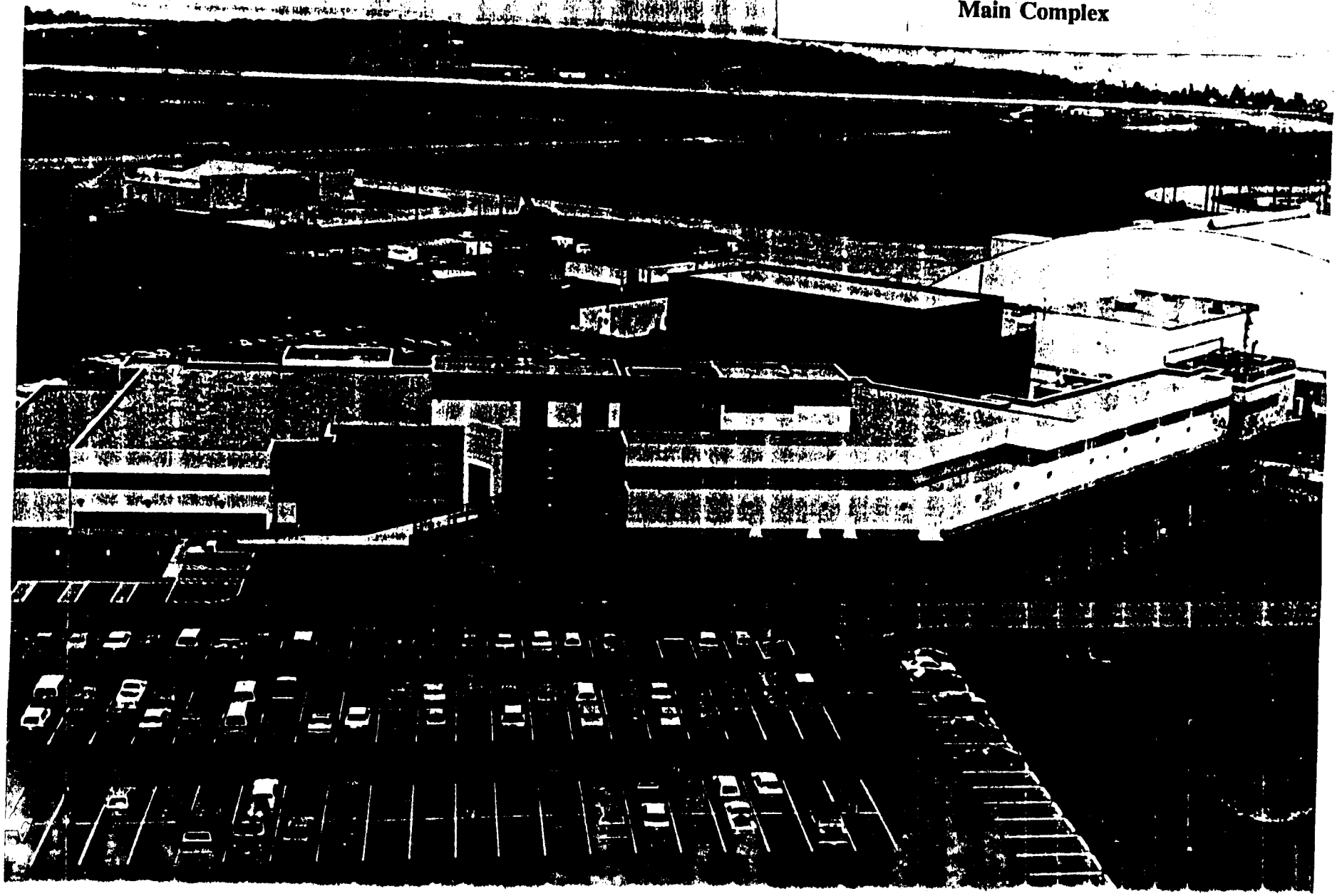
SYSTEMS ENGINEERING TEST FACILITY
Air Combat Environment Test & Evaluation Facility - Advanced Flt Simulator Control Console

SYSTEMS ENGINEERING TEST FACILITY
Air Combat Environment Test & Evaluation Fac.
Aircrew Systems Evaluation - PREDATOR II

SYSTEMS ENGINEERING TEST FACILITY
Air Combat Environment Test & Evaluation
Facility - Entire Complex

SYSTEMS ENGINEERING TEST FACILITY

Main Complex



GENERAL INFORMATION

Facility/Capability Title: **Test & Evaluation Data Processing (Software & Applications)**

Origin Date: **May 9, 1994**

Service: **N** Organization/Activity: **NAWCAD** Location: **Patuxent River, MD**

T&E Functional Area: **Air Vehicle** UIC = **00421**

T&E Test Facility Category: **Open Air Range**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**95%**		**5%**				

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles:	**85%**	**5%**
Armament/Weapons:	**5%**	
EC:	**5%**	
Other:		

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

TECHNICAL INFORMATION

Facility/Capability Title: **Test & Evaluation Data Processing (Software & Applications)**

Facility Description; Including mission statement:

The T&E Data Processing (Software & Engineering Applications Department) Facility consists of workstations, film readers, and video data extraction equipment. The facility provides data analysis for real-time and post-event processing, performance of requirements analysis with computer aided tools, modeling for structural analysis, and project management support. Flight test and modeling data are analyzed and/or made available to project personnel to support the T&E of aircraft weapon systems. The facility provides photogrammetric analysis of data retrieved from recordings of carrier suitability tests as well as weapon separation testing. The facility provides independent verification and validation, configuration management, and quality assurance functions integrated with the data analysis.

Interconnectivity/Multi-Use of T&E Facility:

The facility supports classified and non-classified data processing with results presented in various formats and media including magnetic, optical, or electronic trans-mission over networks. The facility is interconnected with other workstation servers both locally and remotely. The facility can and has provided reconstruction of aircraft mishaps based on analog, digital, or photogrammetric information recovered from crash sites.

Type of Test Supported:

The facility provides support of Flying Qualities and Performance, Flutter and Vibration Analysis, Carrier Suitability, Avionics Analysis, Weapon Separation, Weapons Delivery Accuracy, and Structural Analysis tests. The facility provides results during real-time, post-event, and near-real-time (quick-look) phases. The systems-under-test include the air vehicles within the Fleet, such as F-14, F/A-18, AV-8, CH-53, AH-1, P-3, E-2, and V-22; the avionics systems, such as mission computers, data buses, and cockpit configurations; as well as, ground support systems, including the Automated Carrier Landing System.

'12:00421

TECHNICAL INFORMATION

Facility/Capability Title: **Test & Evaluation Data Processing (Software & Applications)**

Summary of Technical Capabilities:

At least 10 workstations (plus several multi-processor servers) with strategically located storage at several local sites comprising more than 35 gigabytes for storing both raw and calculated results. Each of these processors is capable of at least 25 million instructions per second.

The four film readers are Telereadex compliant with one upgraded to assist pointing up of data from degraded quality film. The Semi-Automatic Film/Video Reader can digitize information for playback in both VHS and 3/4 inch formatted tape.

Various and sundry desktop processors provide software (both commercial-off-the-shelf and in-house) technical analysis, consultation, and reduction of test data for the local, joint-service, and commercial customer-base.

Keywords:

Datareduction, Telemetry, Real-time, Post-flight, Photographic, Structure

ADDITIONAL INFORMATION

Facility/Capability Title: **Test & Evaluation Data Processing (Software & Applications)**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	62	60	58	61	61	61	61
Contractor	27	30	41	37	36	35	37
Total	89	90	99	98	97	96	98

Total Square Footage: **2,000**

Test Area Square Footage: **750**

Office Space Square Footage: **1,250**

Tonnage of Equipment: **2.5**

Volume of Equipment:

Annual Maintenance Cost: **$193K**

Estimated Moving Cost: **$75K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	500	500	800	400	500	700

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Test & Evaluation Data Processing (Software & Applications)**

AGE: **Bldg. 2118** **5 Years**
Bldg. 1403 **25 Years**
Bldg. 1406 **25 Years**
Equipment **1-11 Years**

REPLACEMENT VALUE: **$2M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **FY94 (Additional 25MIPS Machine Plus 15GB Store)**

NATURE OF LAST UPGRADE: **Computational Upgrade**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Test & Evaluation Processing II**

TOTAL PROGRAMMED AMOUNT: **$3.4M**
SUMMARY DESCRIPTION: **Improve desktop data anlaysis through increased storage; software development improvement, enhancements and upgrades; and purchase of high density mass storage devices and additional engineering/user workstations.**

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:
SUMMARY DESCRIPTION:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Test & Evaluation Data Processing (Software & Applications)**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	53550	61895	80550	107324	101924	101924	123975	137250
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR	2975	3437	4475	5968	5663	5663	6887	7625
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR	2975	3437	4475	5968	5663	5663	6887	7625
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

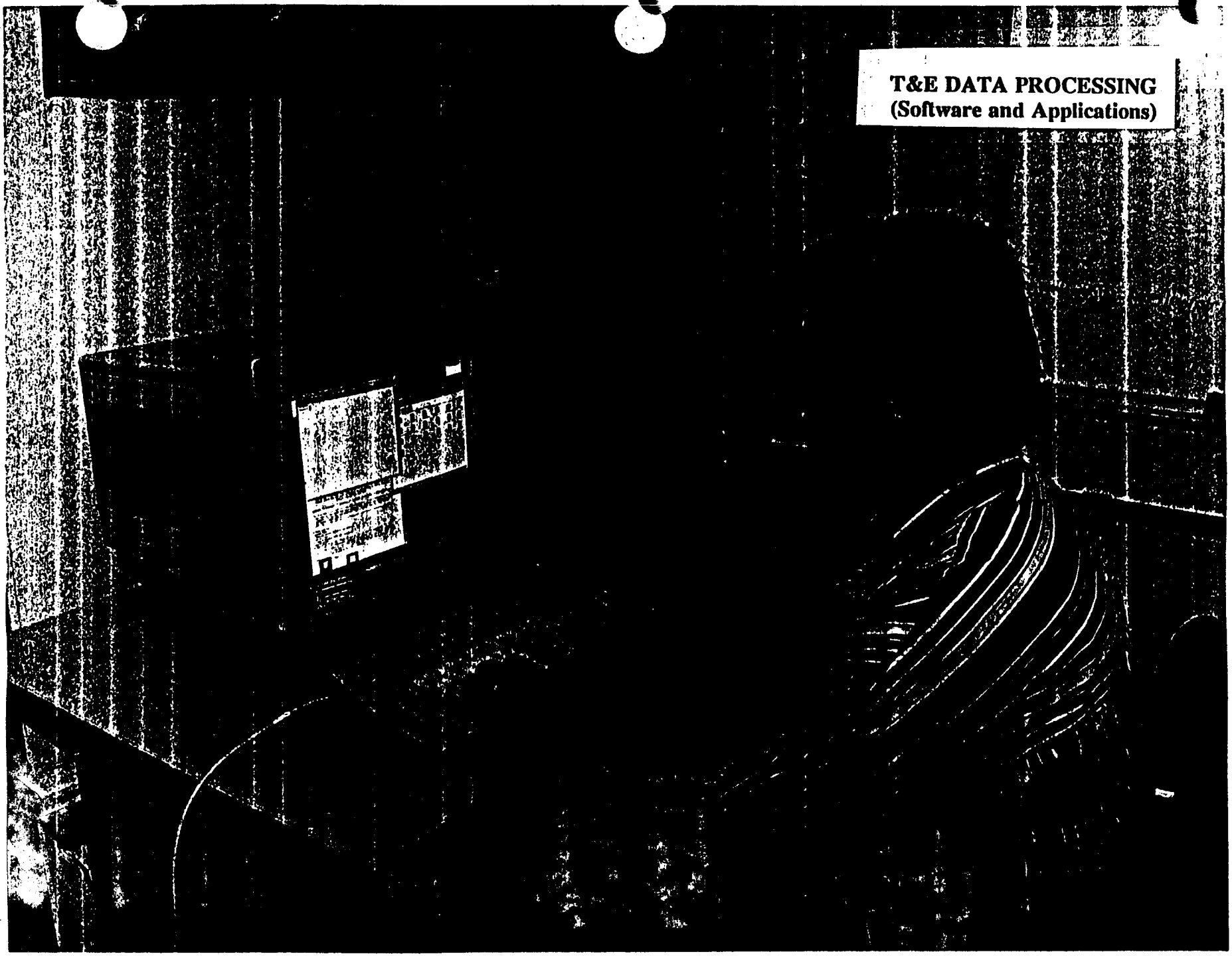
Note - Includes civilian, military, and contractor direct labor hours.

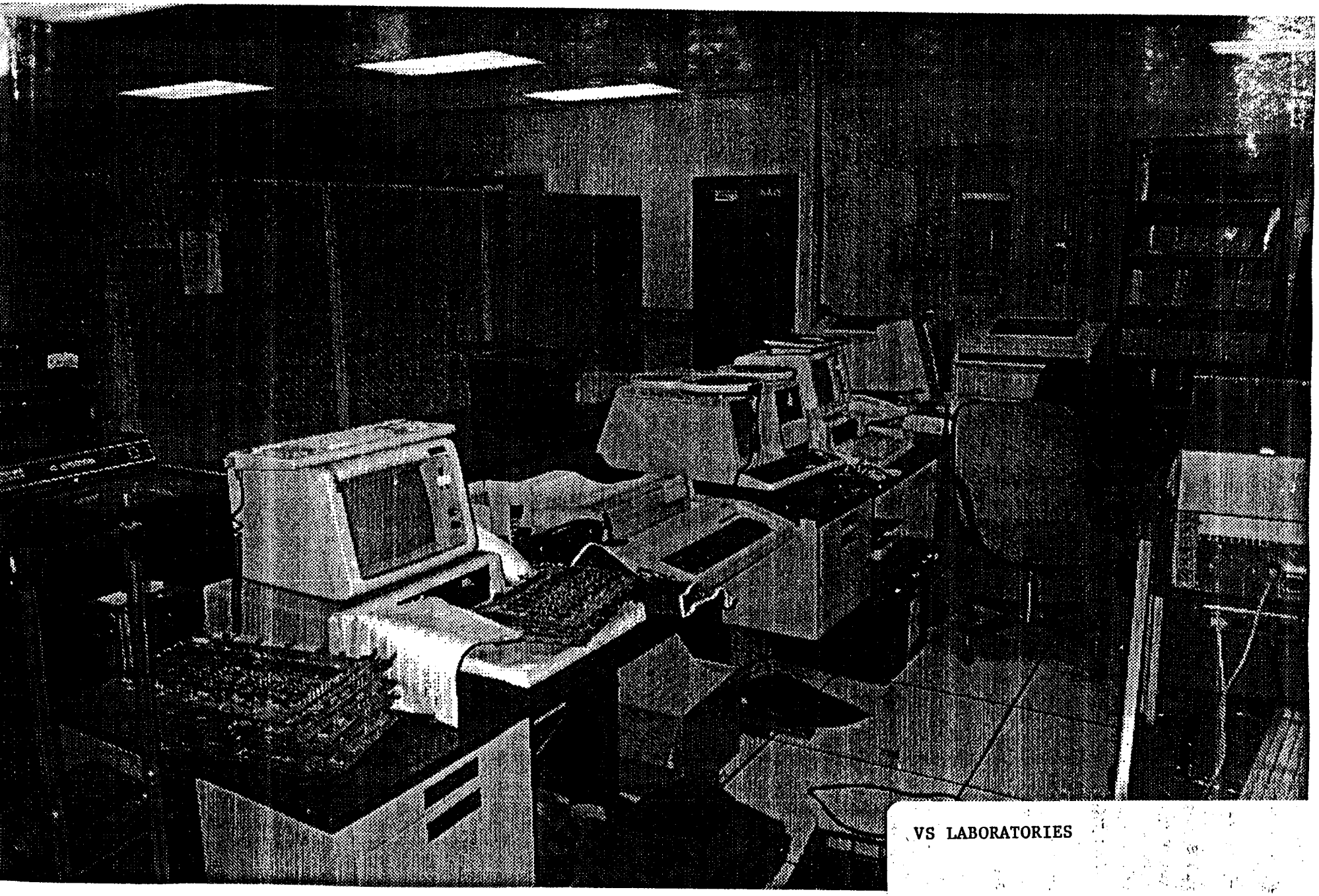
DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Test & Evaluation Data Processing (Software & Applications)**

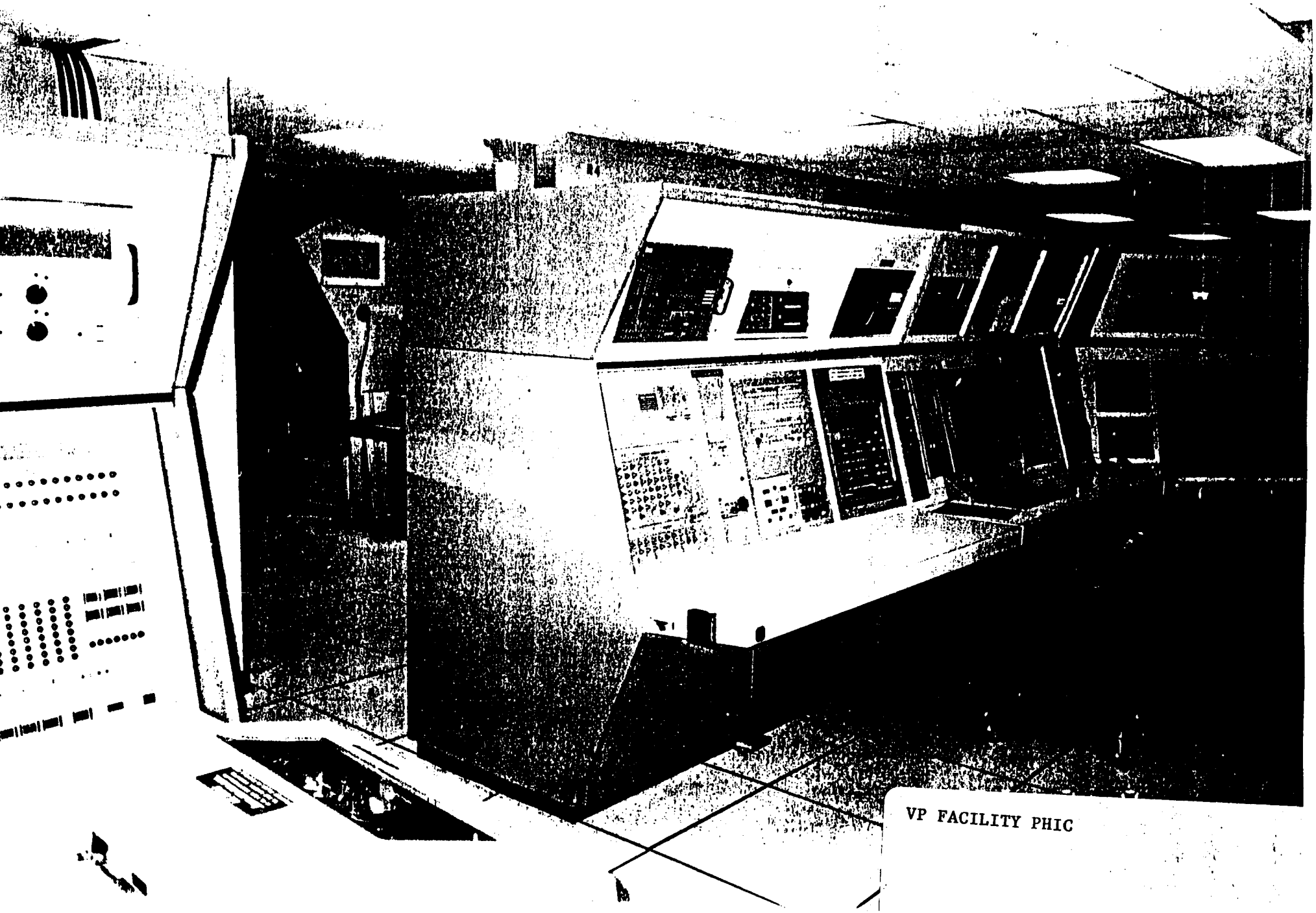
ANNUAL HOURS OF DOWNTIME	1	**55**
AVERAGE DOWNTIME PER DAY (LINE 1 + 365)	2	**.15**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.85**

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 Σ) 8
Flying Quality and Performance (FQ&P) Test Support	**1**	**2**	**4**	**226.58**
Carrier Suitability (CVS) Test Support	**2**	**.5**	**1**	ANNUAL UNCONSTRAINED CAPACITY
Avionics Test Support	**1**	**2**	**2**	
Structural Analysis Test Support	**1**	**2**	**2**	
Weapon Separation Test Support	**1**	**.5**	**.5**	9
"TYPICAL"				**82,702**
		TOTAL Σ	**9.5**	

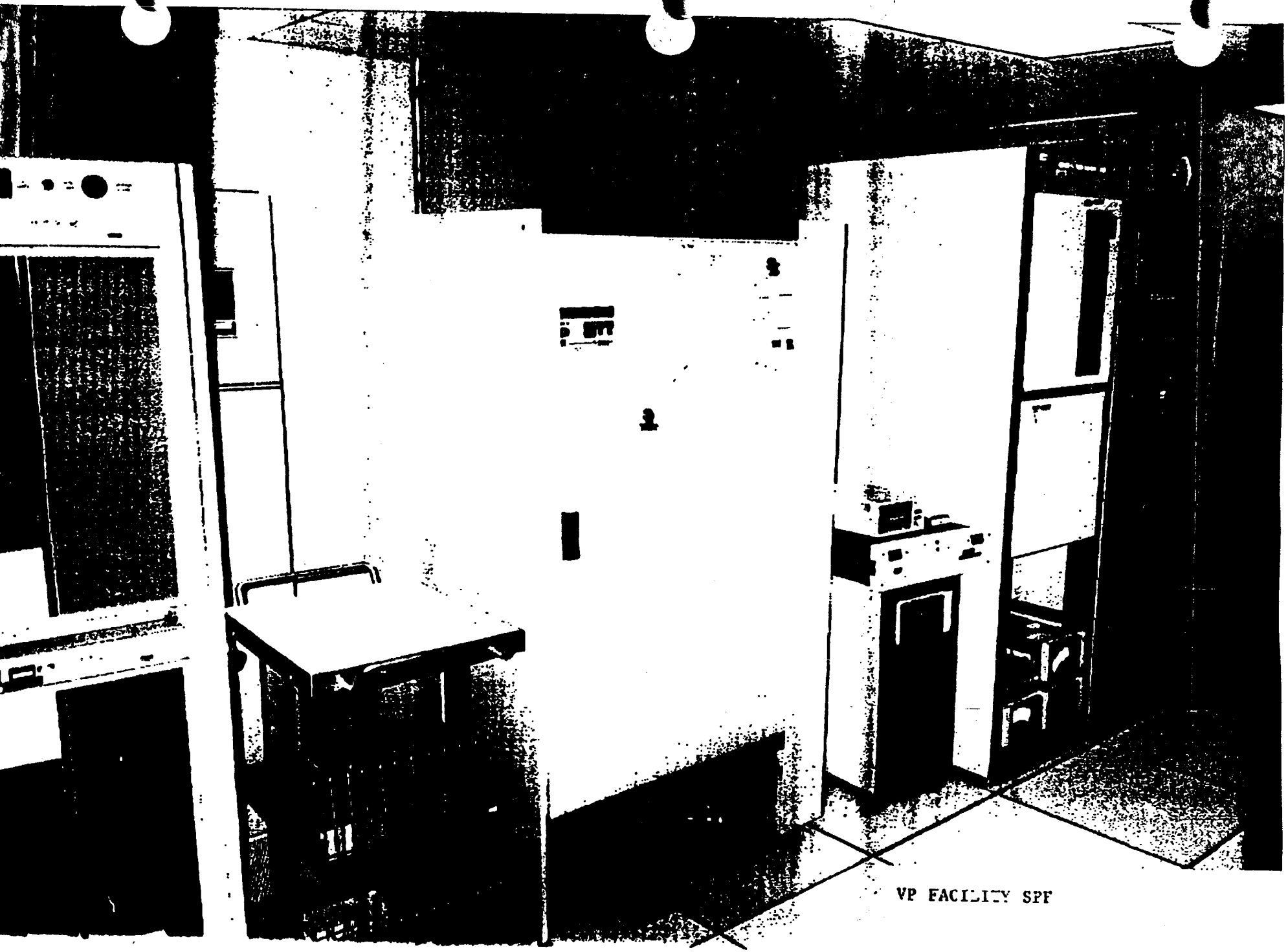

T&E DATA PROCESSING
(Software and Applications)



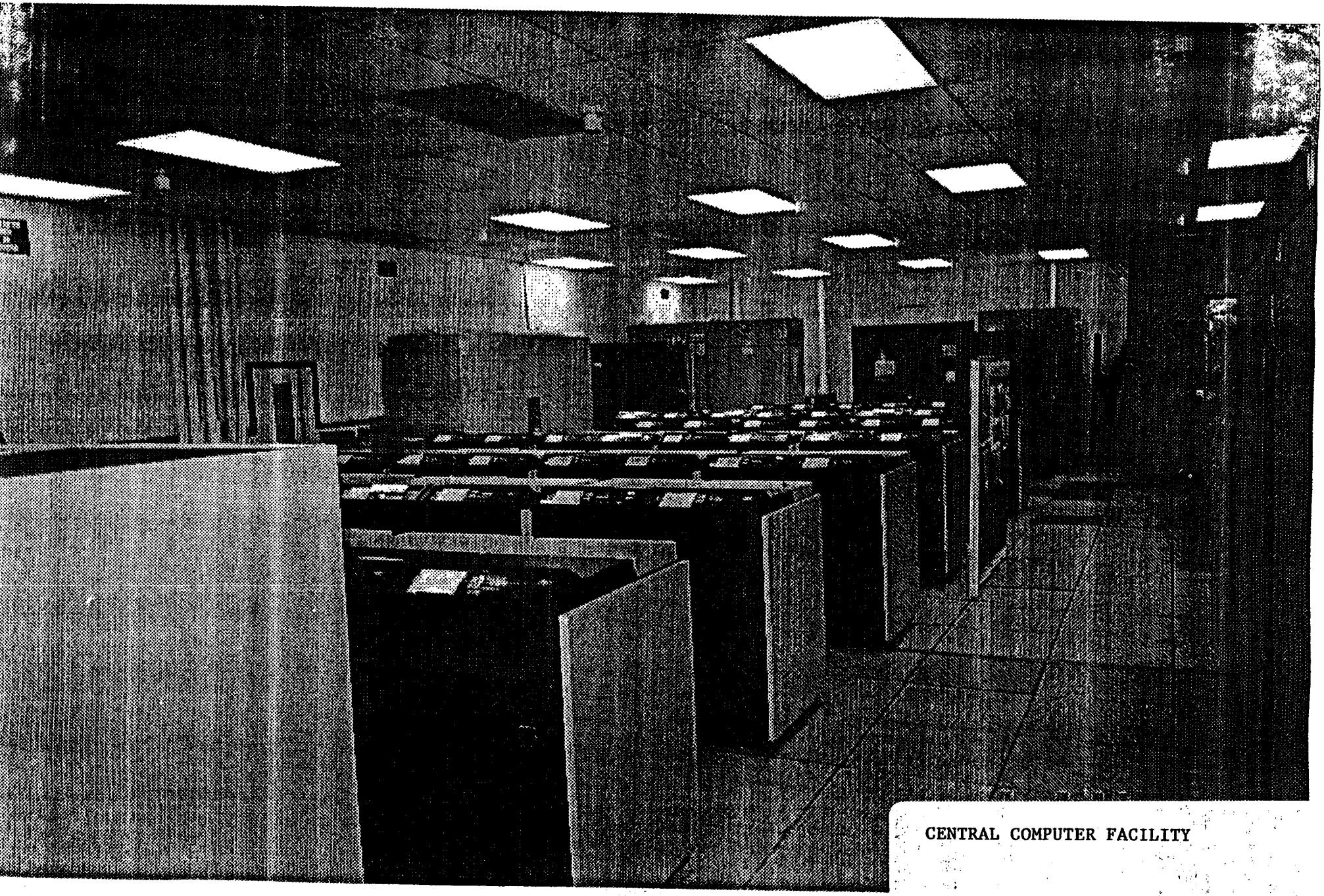
VS LABORATORIES



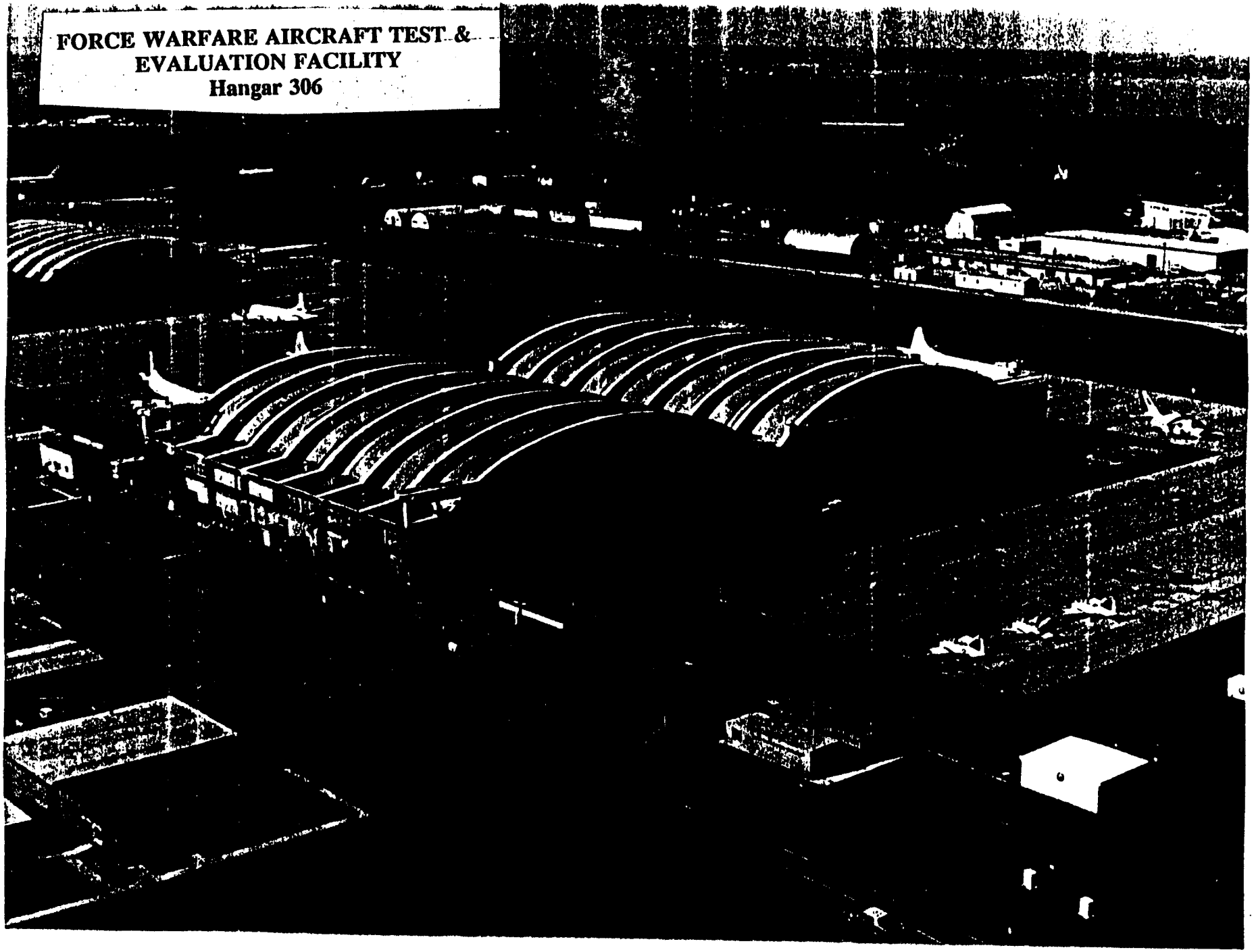
VP FACILITY PHIC

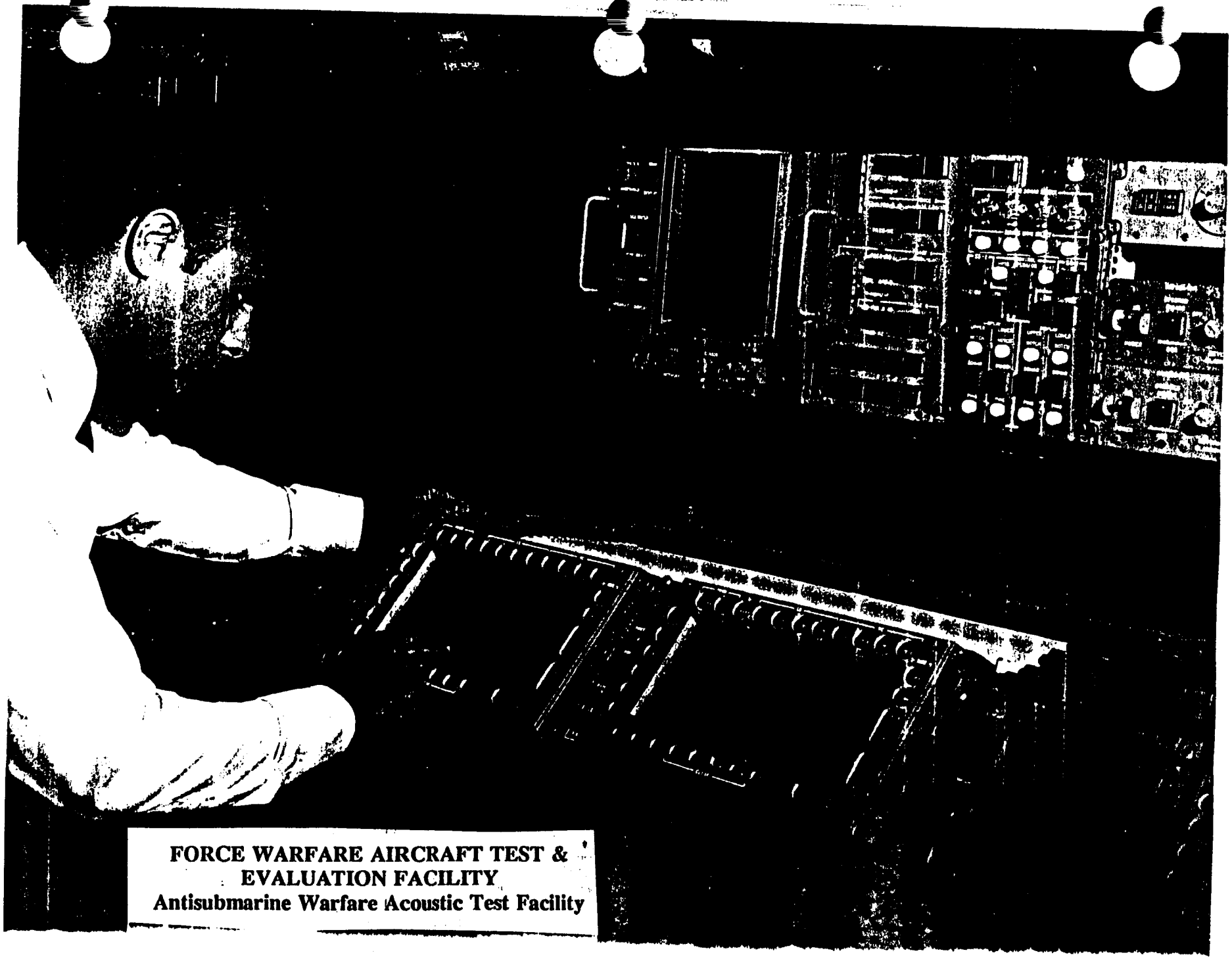


VP FACILITY SPF

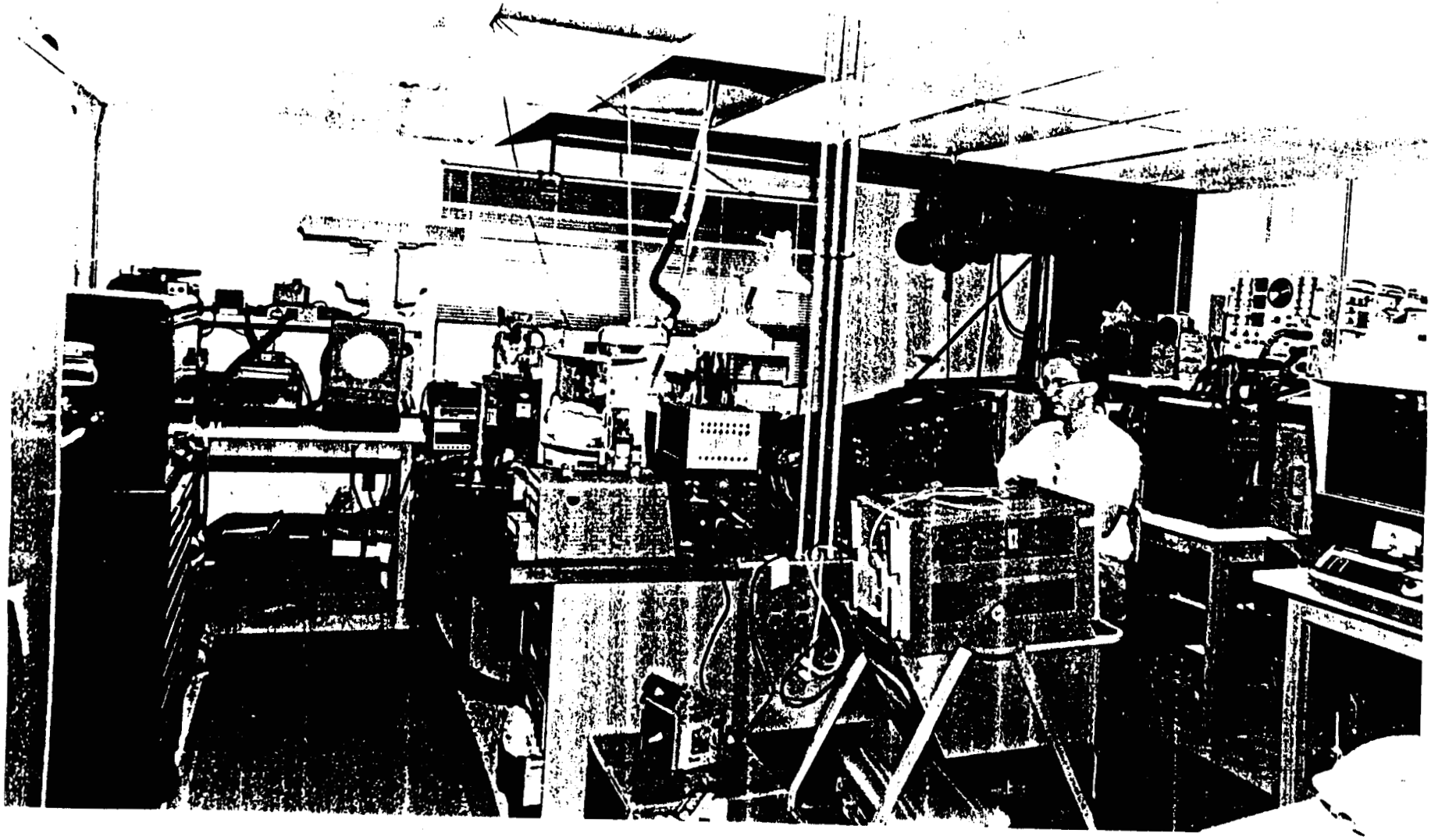


CENTRAL COMPUTER FACILITY

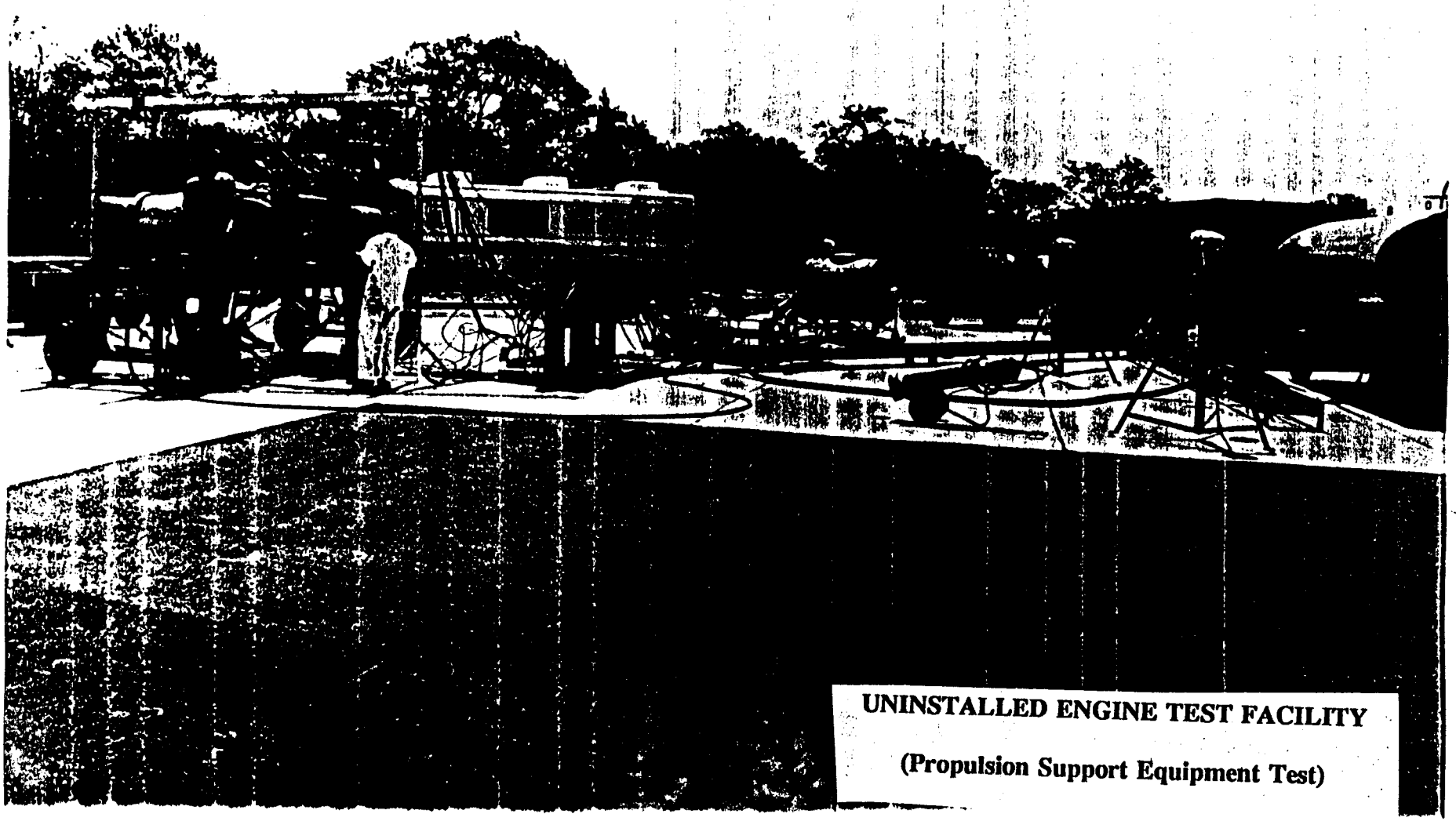

FORCE WARFARE AIRCRAFT TEST &
EVALUATION FACILITY
Hangar 306



FORCE WARFARE AIRCRAFT TEST & EVALUATION FACILITY
Antisubmarine Warfare Acoustic Test Facility

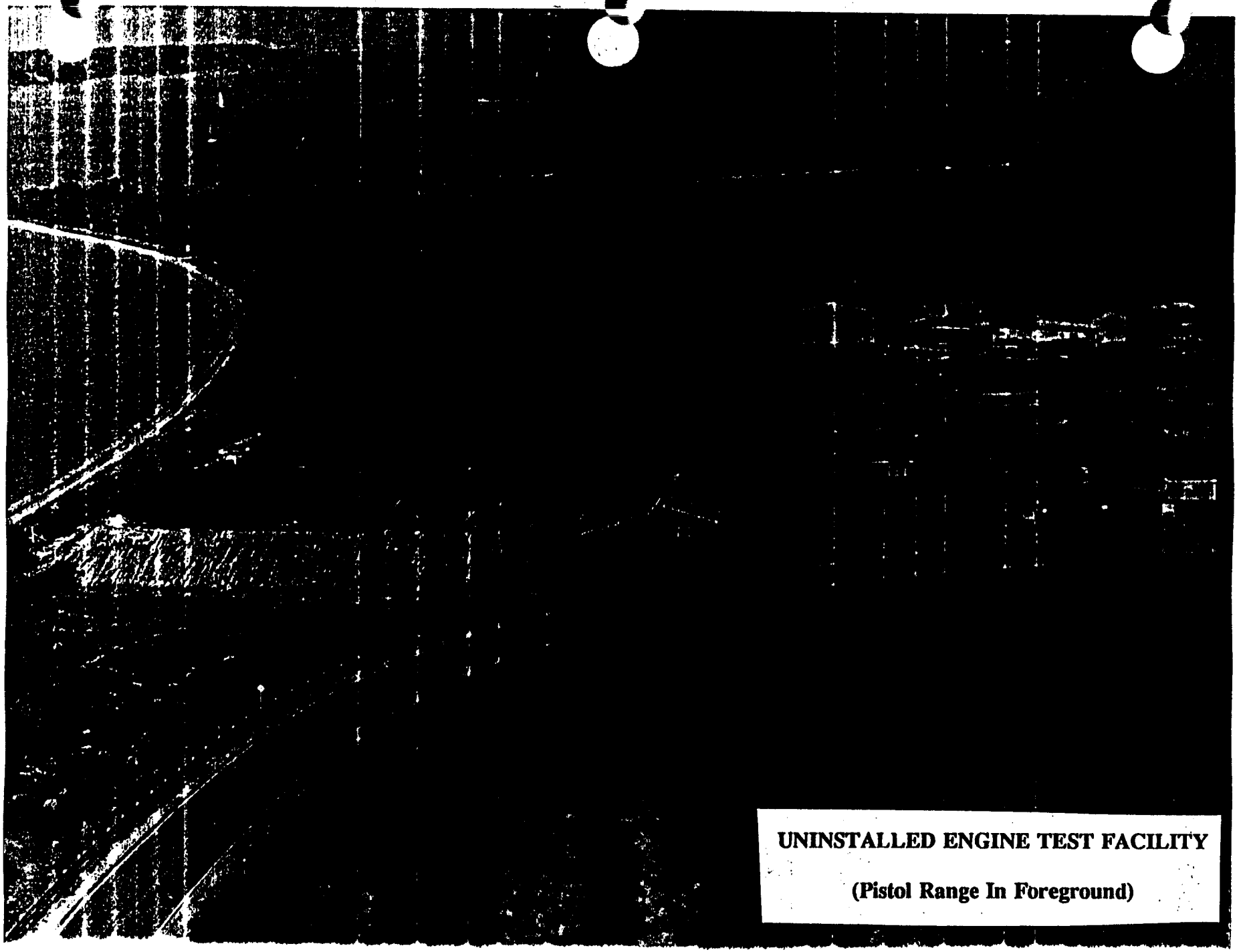


ELECTRONIC SYSTEMS FLIGHT TEST FAC.
Surveillance & Topographical Analysis of Radar
[illegible] (STARS) [illegible]



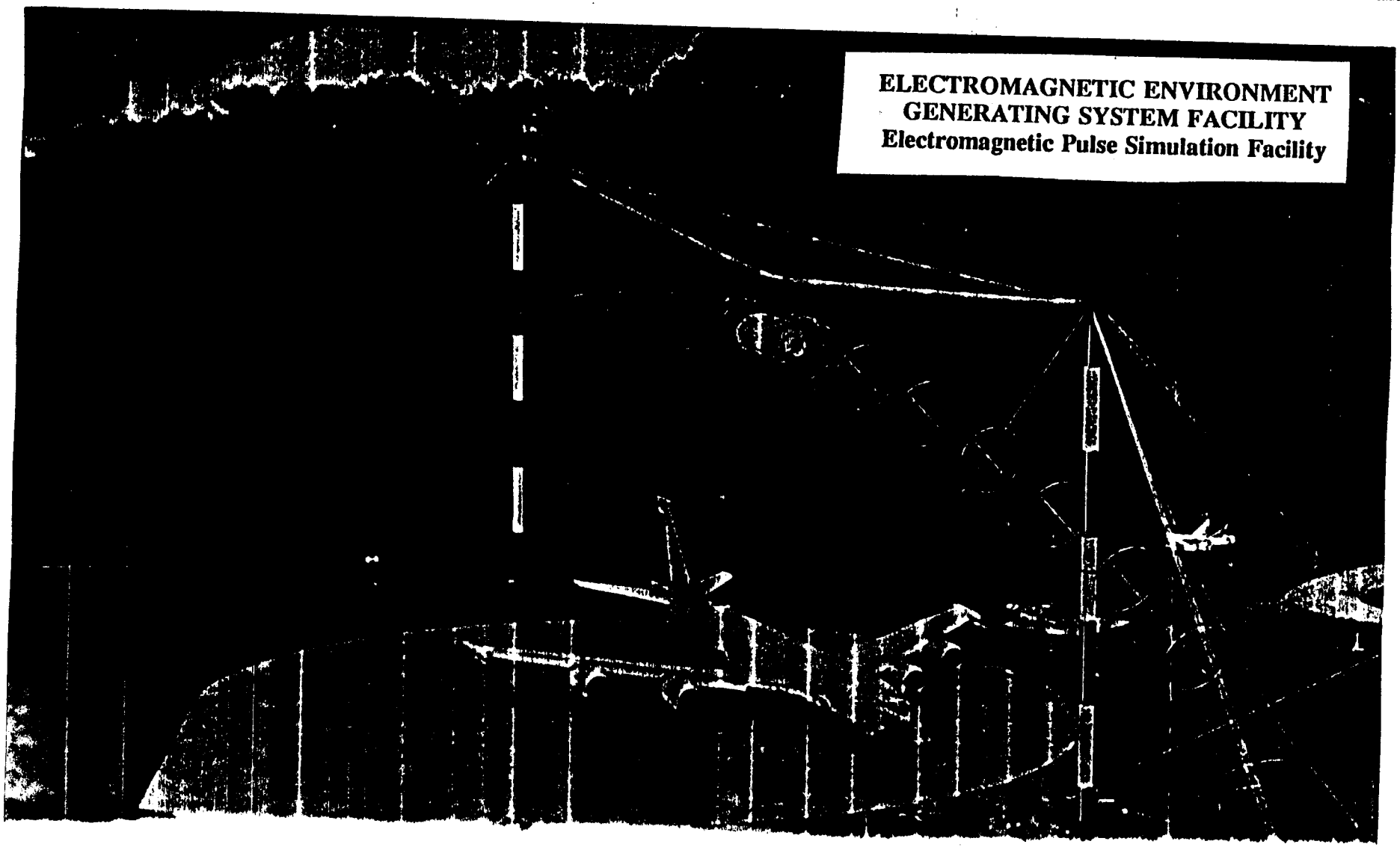
UNINSTALLED ENGINE TEST FACILITY

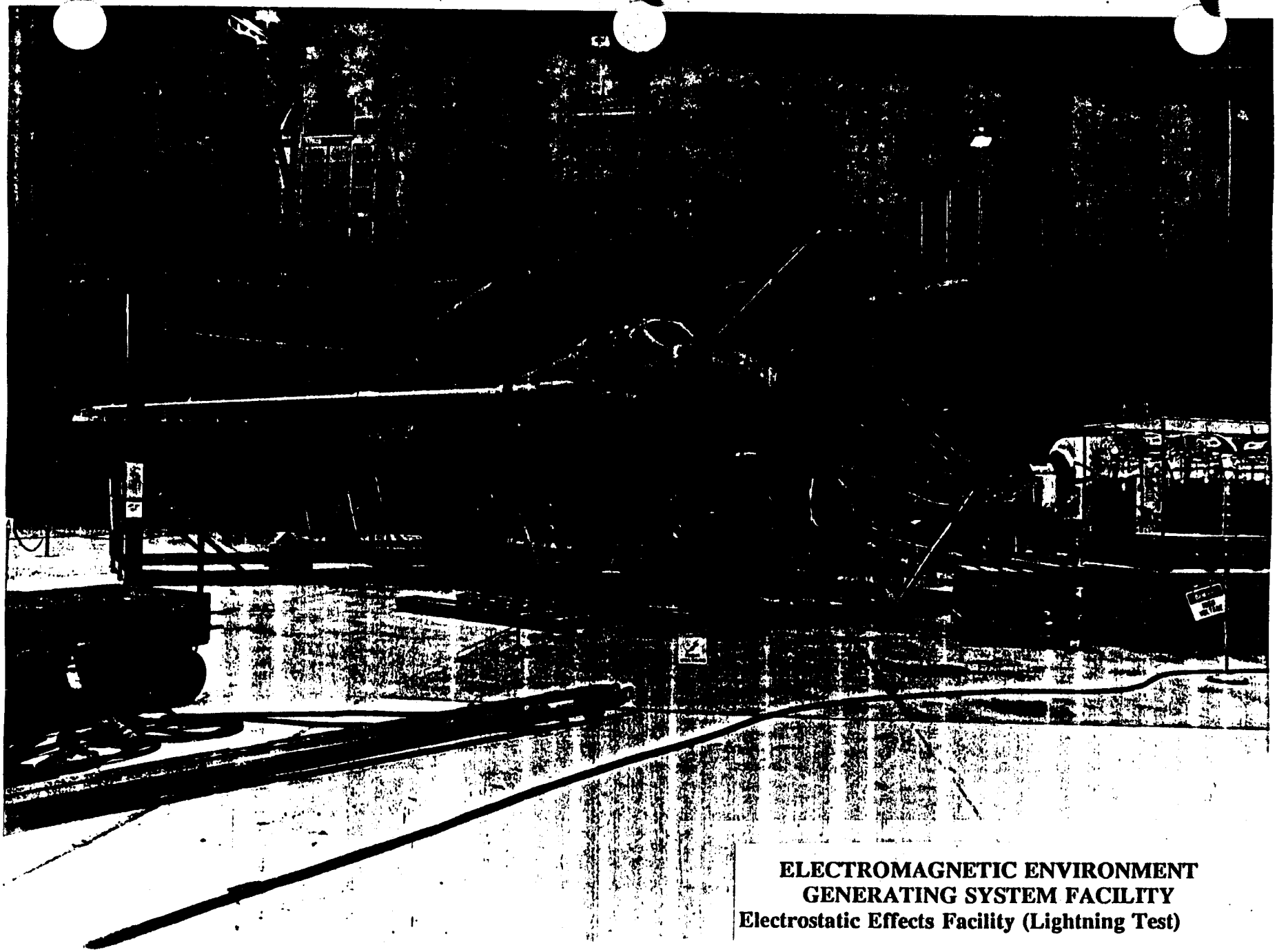
(Propulsion Support Equipment Test)



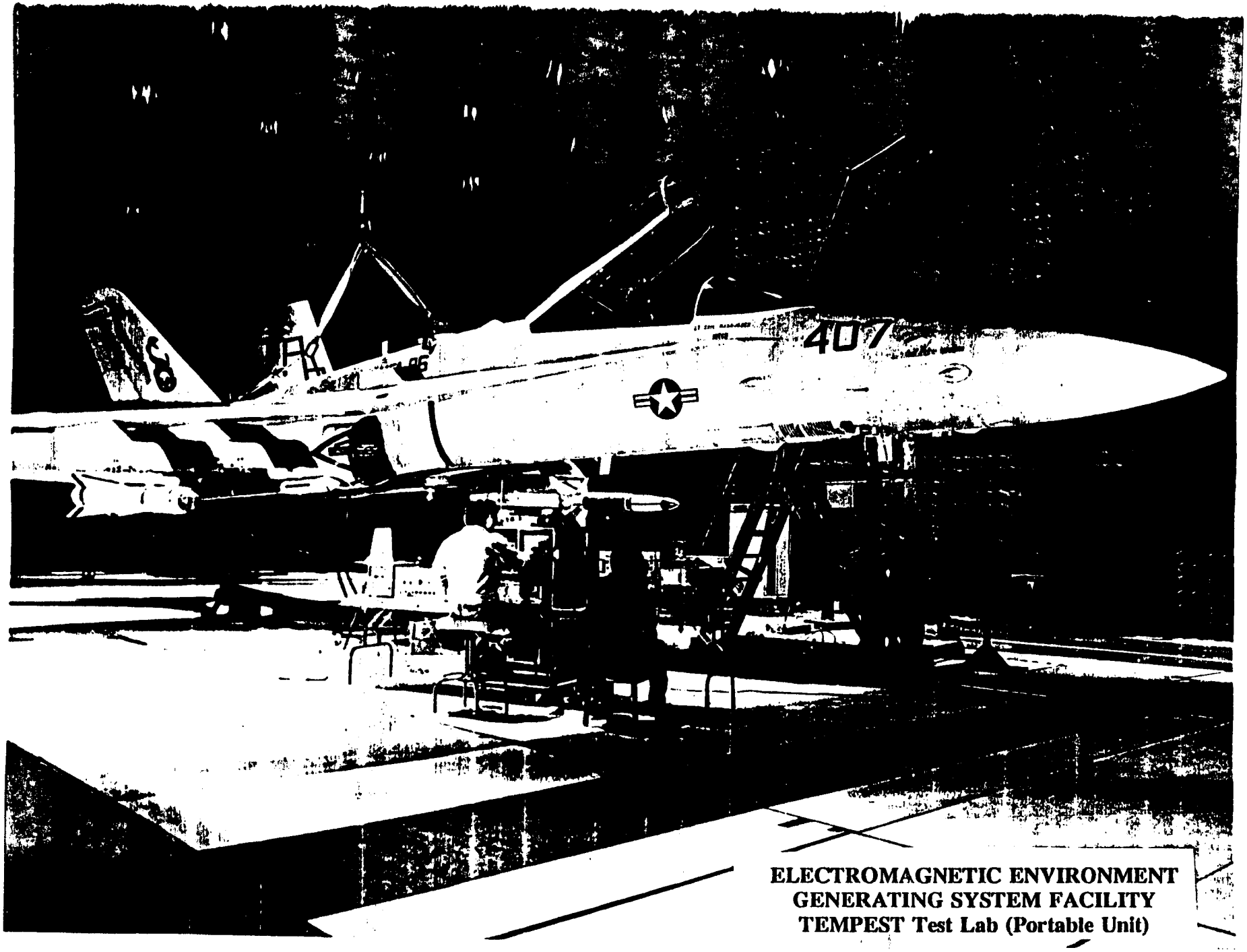
UNINSTALLED ENGINE TEST FACILITY

(Pistol Range In Foreground)

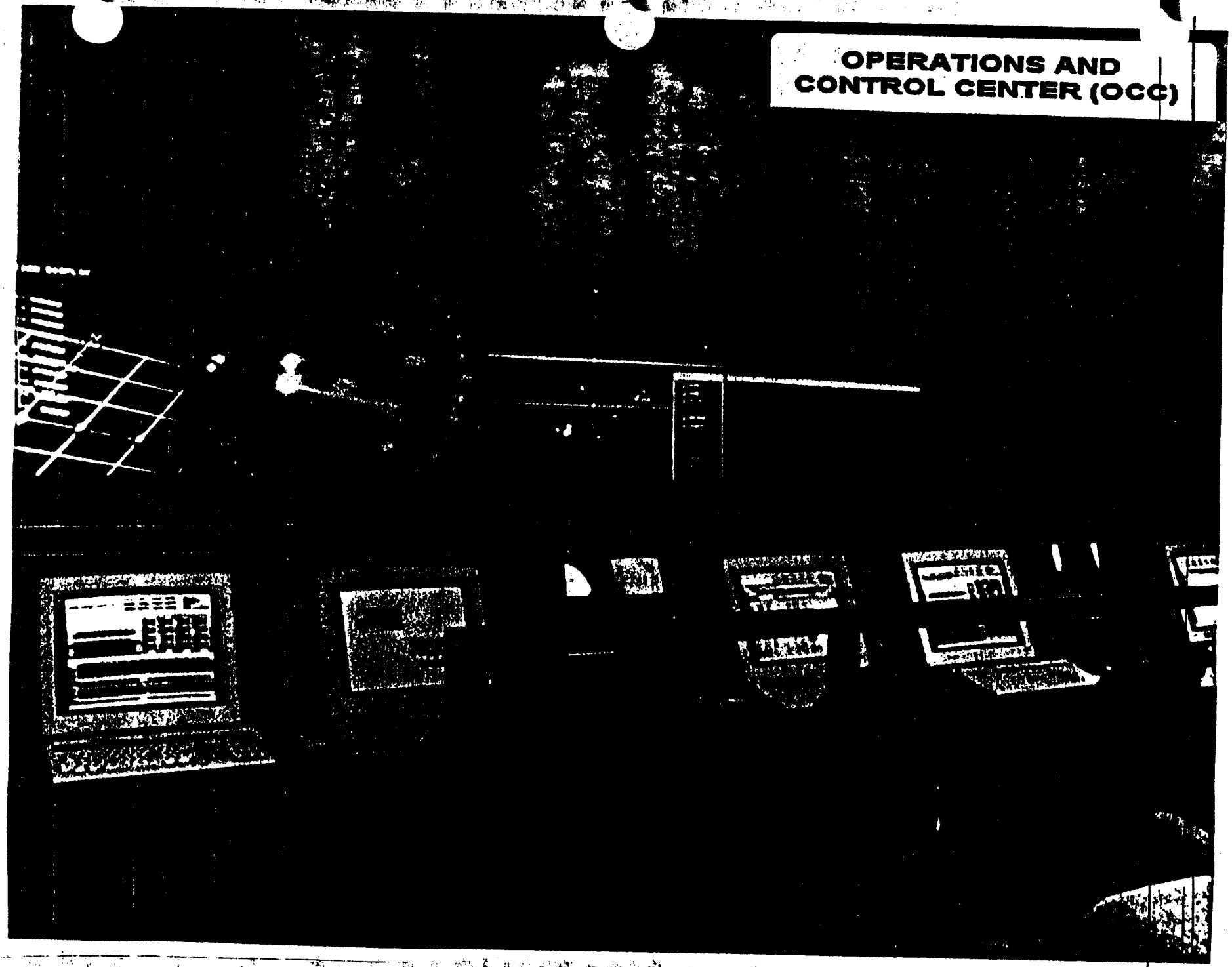

ELECTROMAGNETIC ENVIRONMENT
GENERATING SYSTEM FACILITY
Electromagnetic Pulse Simulation Facility

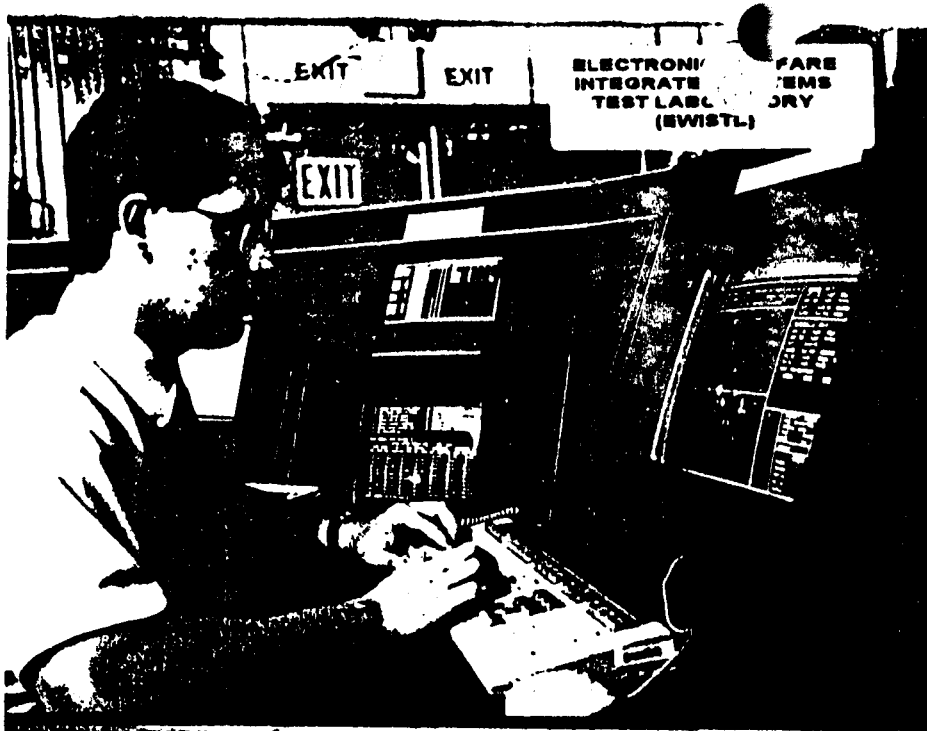


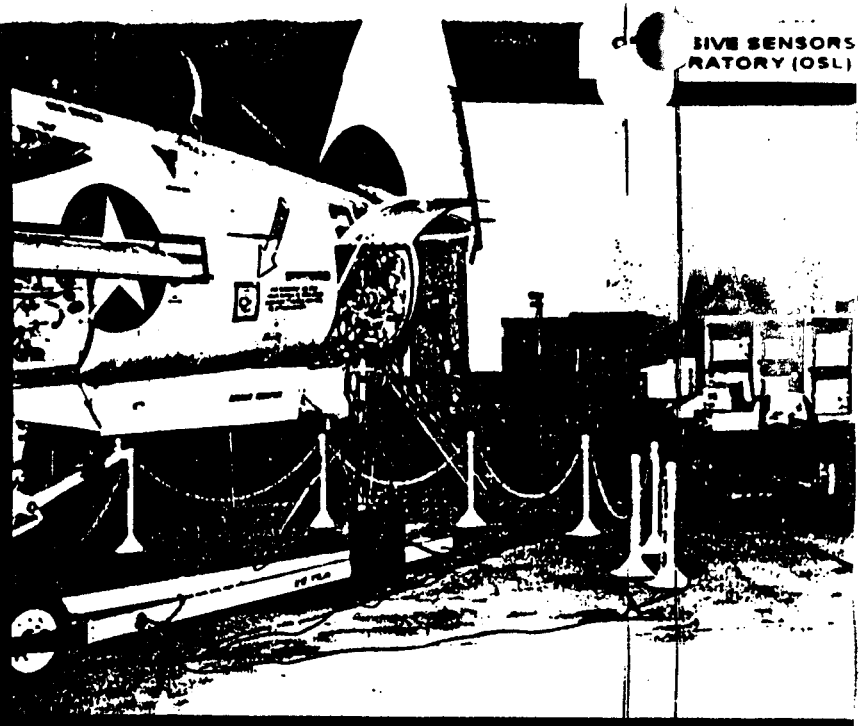
ELECTROMAGNETIC ENVIRONMENT GENERATING SYSTEM FACILITY
Electrostatic Effects Facility (Lightning Test)

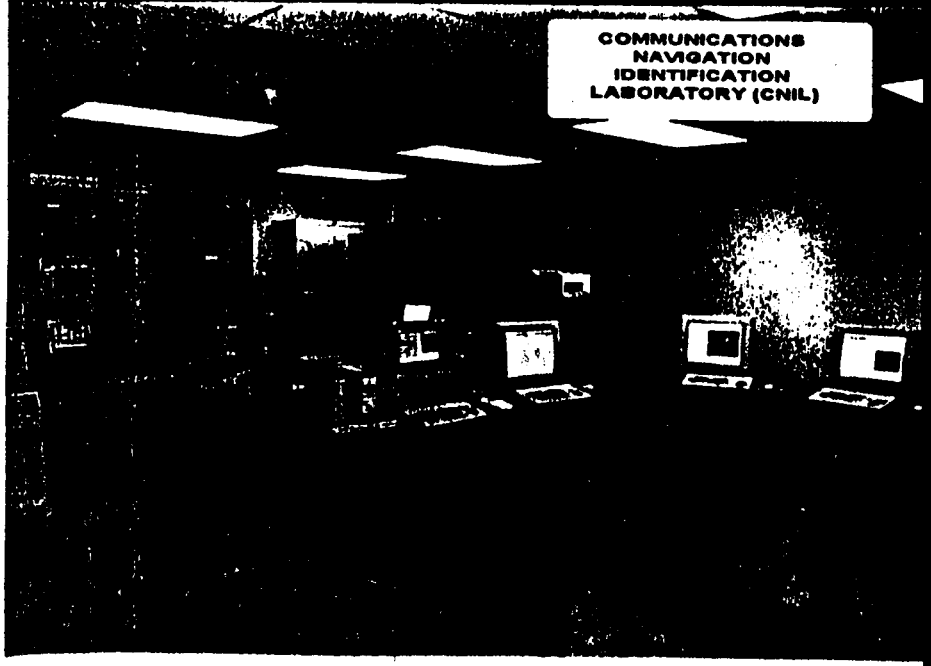


ELECTROMAGNETIC ENVIRONMENT GENERATING SYSTEM FACILITY
TEMPEST Test Lab (Portable Unit)


OPERATIONS AND
CONTROL CENTER (OCC)

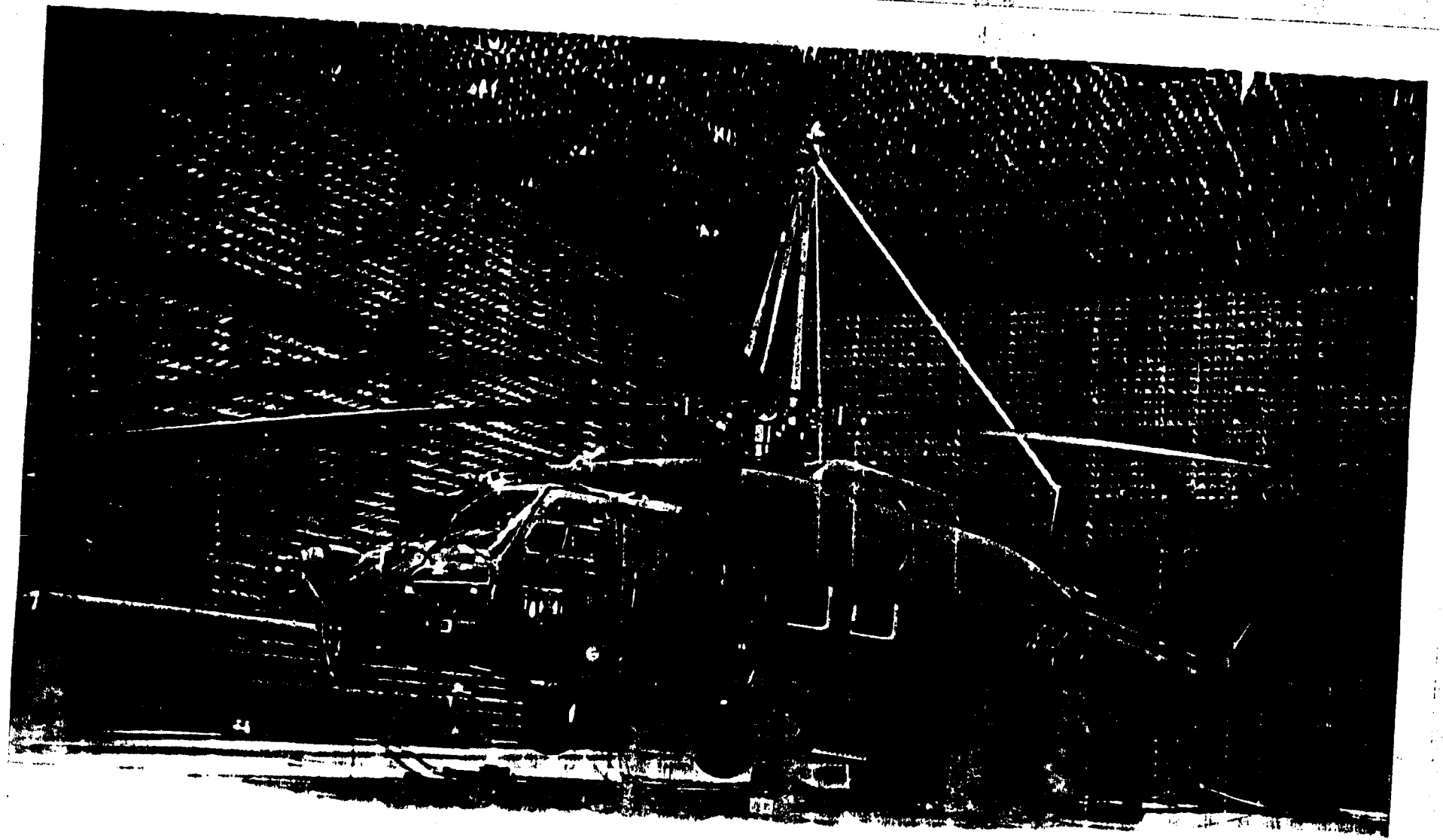

EXIT
EXIT
EXIT
ELECTRONI FARE
INTEGRATE EMS
TEST LAB ORY
(EWISTL)


SIVE SENSORS
RATORY (OSL)


COMMUNICATIONS
NAVIGATION
IDENTIFICATION
LABORATORY (CNIL)

THREAT AIR DEFENSE
LABORATORY (TADL)

ACETEF: NAVAL ELECTROMAGNETIC RADIATION FACILITY (NERF)



Revision 163

94-09-12 12:18 RCVD

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

Change I Data Call # Twelve/NAWCAD Patuxent River/22 Aug 94

ACTIVITY COMMANDER

BARTON D. STRONG
NAME (Please type or print)

Barton D. Strong
Signature

Commander
Title

22 August 1994
Date

Naval Air Warfare Center Aircraft Division, Patuxent River, MD
Activity

WC

Enclosure (2)

DATA CALL 12 CHANGE I
BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.
NEXT ECHELON LEVEL (if applicable)

WILLIAM E. NEWMAN
NAME (Please type or print)

Signature

COMMANDER
Title

8/24/94
Date

NAVAL AIR WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.
NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.
MAJOR CLAIMANT LEVEL

WILLIAM C. BOWES
NAME (Please type or print)

Signature

COMMANDER
Title

24 AUG 94
Date

NAVAL AIR SYSTEMS COMMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.
DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

Title

8/30/94
Date

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type of print

Signature

Title

Date

Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

W.C. BOWES, VADM USN

NAME (Please type or print

Signature

COMMANDER

Title

19 Sep 94

Date

NAVAL AIR SYSTEMS COMMAND

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER

NAME (Please type of print

Signature

Title

9/21/94

Date

Appendix D
Patuxent River UIC: 00421

BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

KARRIE CIAVATTONE
NAME (Please type or print)

Karrie Ciavattone
Signature

BRAC 95 COORDINATOR
Title

19 September 1994
Date

AIR-09B
Division

Base Realignment & Closure Program Office
Department

Naval Air Systems Command
Activity

ALL PEN & INK CHANGES FOR APPENDIX D, THIS SUBMISSION.

Enclosure (1)

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

W. E. NEWMAN, RADM, USN	W E Newman
NAME (Please type or print)	Signature
COMMANDER	9/16/94
Title	Date
NAVAL AIR WARFARE CENTER	
Activity	

Pax River

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

L. L. LUNDBERG
NAME (Please type or print)

Signature

ACTING COMMANDER
Title

9/20/94
Date

NAVAL AIR WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

W. C. BOWES, VADM, USN
NAME (Please type or print)

Signature

COMMANDER
Title

20 Sep 94
Date

NAVAL AIR SYSTEMS COMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

Title

9/21/94
Date

DATA CALL 12 REVISION 2
BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.
NEXT ECHELON LEVEL (if applicable)

WILLIAM E. NEWMAN
NAME (Please type or print)

W E Newman
Signature

COMMANDER
Title

8/18/94
Date

NAVAL AIR WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.
NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.
MAJOR CLAIMANT LEVEL

WILLIAM C. BOWES
NAME (Please type or print)

Signature

COMMANDER
Title

19 AUG 94
Date

NAVAL AIR SYSTEMS COMMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.
DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

Title

8/26/94
Date

DATA CALL 12 REVISION 2
BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 8 December 1993

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

RAYMOND A. DUDDERAR
NAME (Please type or print)

RADudderar
Signature

ACTING COMMANDER
Title

8/15/94
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
Activity

Enclosure (1)

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
PATUXENT RIVER, MARYLAND 20670-5304

5400
Ser AD07/1066
AUG 15 1994

From: Commander, Naval Air Warfare Center Aircraft Division, Patuxent River, MD 20670-5304
To: Commander, Naval Air Warfare Center, 1421 Jefferson Davis Highway, Arlington, VA 22243-6000

Subj: RELEASE OF BASE REALIGNMENT AND CLOSURE DATA CALL IN THE ABSENCE OF THE COMMANDER

1. During the period from 0900, 15 August 1994 until 1800, 17 August 1994, I will be on temporary additional duty.

2. Captain Raymond A. Dudderar, USN, will be Acting Commander. In my absence, he is authorized to release the completed Base Realignment and Closure Data Call, and provide the certification for the data call.

3. My point of contact at Division Headquarters is Mr. Stuart B. Simon, Code AD07. He can be reached at commercial (301) 826-1122 or DSN 326-1122.

Barton D. Strong
BARTON D. STRONG

Distribution:
CONAWCAD Indianapolis
CONAVAIRENGSTA Lakehurst
CONAWCAD Warminster
CONAWCAD Trenton
CONAWCTSD Orlando
COMNAWCAD Patuxent River
NAWCAD Patuxent River (CT00)
NAWCAD Indianapolis (Code 01)
NAVAIRENGSTA Lakehurst (Code 71)
NAWCAD Warminster (Code 01A1)
NAWCAD Trenton (Code 07B)
NAWCTSD Orlando (Code 503)
CONAS, Patuxent River

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER
NAVAL AIR WARFARE CENTER HEADQUARTERS
1421 JEFFERSON DAVIS HWY
ARLINGTON VA 22243

IN REPLY REFER TO
1000
Ser NAWC-21C/

SEP 16 1994

From: Commander, Naval Air Warfare Center
To: Distribution

Subj: RELEASE OF BASE REALIGNMENT AND CLOSURE DATA CALL IN THE ABSENCE OF THE COMMANDER

1. During the period 19-21 September I will be on travel.

2. Mr. Lewis L. Lundberg, Technical Director, Naval Air Warfare Center, is designated as acting as Acting Commander during this period. As such, he is authorized to release completed Base Realignment and Closure Data Calls and to provide certification for the data calls.

W. E. Newman

W. E. NEWMAN

Distribution:
COMNAVAIRWARCENWPNDIV
COMNAVAIRWARCENACDIV
NAVAIRWARTRASYSDIV

DATA CALL 12 CHANGE II
BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 8 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

BARTON D. STRONG
NAME (Please type or print)

Barton D. Strong
Signature

COMMANDER
Title

8 Sept 1994
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
Activity

Data Call #12
Audit Changes
Patuxent River

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

L. L. LUNDBERG
NAME (Please type or print)

Signature

ACTING COMMANDER
Title

9/20/94
Date

NAVAL AIR WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

W. C. BOWES, VADM, USN
NAME (Please type or print)

Signature

COMMANDER
Title

20 Sep 94
Date

NAVAL AIR SYSTEMS COMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

Title

9/21/94
Date

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER
NAVAL AIR WARFARE CENTER HEADQUARTERS
1421 JEFFERSON DAVIS HWY
ARLINGTON VA 22243

IN REPLY REFER TO
1000
Ser NAWC-21C/

SEP 16 1991

From: Commander, Naval Air Warfare Center
To: Distribution

Subj: RELEASE OF BASE REALIGNMENT AND CLOSURE DATA CALL IN THE ABSENCE OF THE COMMANDER

1. During the period 19-21 September I will be on travel.

2. Mr. Lewis L. Lundberg, Technical Director, Naval Air Warfare Center, is designated as acting as Acting Commander during this period. As such, he is authorized to release completed Base Realignment and Closure Data Calls and to provide certification for the data calls.

W. E. Newman
W. E. NEWMAN

Distribution:
COMNAVAIRWARCENWPNDIV
COMNAVAIRWARCENACDIV
NAVAIRWARTRASYSDIV

DATA CALL #12 - AUDIT
BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 8 December 1993

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

CAPTAIN JOHN B. PATTERSON
NAME (Please type or print)

John B Patterson
Signature

SEP 16 1994
Date

ACTING COMMANDER
Title

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD

195

"LAB" JOINT CROSS-SERVICE GROUP GUIDANCE PACKAGE

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
LOUISVILLE, KENTUCKY SITE

Section I: Taskings
1.1 Guidelines
1.2 Standards
1.3 Assumptions
1.4 Measures of Merit
1.5 Activities
1.6 Common Support Functions

Section II: Capacity of DOD Components
2.1 Workload
2.2 Excess Capacity

Section III: Capability of Activities to Perform Common Support Functions
3.0 Mission
3.1 Location
3.2 Personnel
3.3 Workload
3.4 Facilities & Equipment
3.5 Expansion Potential

Section IV: Appendices
A. Macro Process/Schedule
B. List of Activities
C. Common Support Functions

WC

SECTION I: TASKING

In accordance with the Deputy Secretary of Defense memorandum dated 7 Jan 94, the Laboratory Joint Cross-Service Group (LJCSG) with DOD components should, where operationally and cost effective, strive to: retain in only one Service militarily unique capabilities used by two or more Services; consolidate workload across the Service to reduce capacity; and assign operational units from more than one Service to a single base. Specifically, the purpose of the LJCSG is:

- Determine common support functions and bases to be addressed by LJCSG
- Establish guidelines, standards, assumptions, measures of merit, data elements and milestone schedules for DOD Component conduct of cross-service analysis of common support functions
- Review excess capacity analysis
- Develop closure or realignment alternatives
- Analyze cross-service trade-offs

The following information identifies to the Services common support functions and data element requirements necessary to support the cross-service analysis of these common support functions.

1.1 Guidelines

Because the DOD components are organized differently, "Lab" activities are considered to be those involved in the following life cycle efforts: Science and technology, and/or engineering development, and/or in-service engineering.

Service missions and force structure will be as stipulated in the FY1995-2000 Defense Planning Guidance and Interim Force Structure Plan.

The Military Departments will use the projected funding in the FY95 President's Budget Submission (Future Years Defense Plan -- FYDP) and an estimate of funds that will be received from outside the military department for execution.

If "lab" excess capacity exists, the Military Departments will start to reduce it where operationally and cost effective through a combination of downsizing in place within the departments, internal service consolidation, and cross service alternatives.

The Military Departments will gather, exchange, and analyze data collected per this guidance call for Common Support Functions (Appendix C) at "lab" activities (Appendix B) in accordance with the milestones and schedule dates identified in Appendix A.

Cross-service alternatives will result in an aggregate reduction in the overall "lab" infrastructure across the Military Departments -- personnel/funding/facilities and equipment.

Common cross-service Measures of Merit will be consistently applied for all cross-service alternatives.

Integration of weapon systems/components into operational forces will remain with the individual Military Departments responsible for those forces.

1.2 Standards

Evaluation of cross-service alternatives will be consistent with PL 101-510 (as amended) and the eight BRAC criteria. Only certified data will be used.

The COBRA cost model will be used to calculate estimated costs, estimated savings, and Return on Investment (ROI) of alternatives leading to proposed closures and realignments. Common inputs will be used for Military COBRA runs incorporating cross-service alternatives.

Military value analysis will be conducted by the Military Departments IAW Title 10, USC responsibilities.

1.3 Assumptions

"Lab" Common Support Functions and activities identified herein represent the major opportunities for developing cross-service alternatives. The Military Departments are not precluded from proposing other cross-service alternatives to reduce excess capacity as they assess the full complement of "lab" functions.

Previous BRAC decisions will be factored into cross-service alternatives.

"Lab" capacity will be based on budgeted workyears. A workyear is considered to be 2080 hours adjusted for time not on the job (e.g. sick leave, annual leave, etc.)

1.4 Measures of Merit

The following Measures of Merit represent the outcome from the DOD component final realignment and closure recommendations that are supported by the capabilities data which will be gathered by activity and common support function in Section III of this guidance.

- Reduction of "lab" infrastructure
- Return on investment (COBRA)
- Military value (BRAC criteria 1-4) -- the composite assessment of the quality of the remaining "lab" infrastructure

1.5 Activities

The Military Departments will collect capacity data for each "lab" activity identified in Appendix B. The "lab" activities were selected by considering all individual aggregates of personnel and facilities located at one base, under the same commander, performing predominantly science and technology (S&T), engineering development, and/or in-service engineering work. Small subelements of these "lab" activities were included with the activity. Larger subelements were broken out and defined as separate activities. The list of activities was then narrowed down to the list in Appendix B based on a joint Military Department assessment of common support functions with cross-service potential.

1.6 Common Support Functions

The common support functions (CSFs) were selected as shown in Appendix C based on a joint Military Department assessment of commonalty and cross-servicing potential. Common support functions which were already consolidated and being cross serviced were not included.

Common Support Functions are divided into two categories: product and pervasive. Product functions include all S&T, engineering development, and in-service engineering efforts associated with a product from all funding sources. Pervasive functions <u>only include</u> those efforts that are S&T funded, i.e. Technology Base (6.1)/Exploratory Development (6.2)/Advanced Development (6.3).

SECTION II: CAPACITY OF DOD COMPONENTS

2.1 Workload. Use the following table to describe historic and projected workload at ach activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Projected funding will be derived from FY95 President's Budget Submission (Then year dollars). Past fiscal year data shall begin with FY86 or at the inception of the activity as it existed on 1 Oct 93. (BRAC Criteria I & IV)

Information Required	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Programmed ($M)	139	165	134	145	152	163	192	199	207	187	195	188
Total Actual Funds ($M)	128	140	126	162	192	196	190	217				
Programmed Workyears	2493	2527	2532	2472	2251	2264	2705	2561	2229	2120	1857	1746
Actual Workyears	2559	2413	2386	2472	2589	2666	2663	2462				

• Budgeted workyears are the selected indicator of the "lab" infrastructure's capacity at an aggregate level for each Military Department. They include both workyears funded directly by the Military Department and the workyears funded from organizations outside the Military Dept.
Workyears = government personnel and on-site FFRDCs and SETAs

Note: Table 2.1 above represents all workload (including depot). For FY94 - FY97 the Louisville site budget is 37% of the Crane Division's joint budget submittal.

Table 2.1.1

Information Required	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Programmed ($M)	0	0.3	4.2	1.5	1.3	1.3	2.1	6.6	9.4	12.2	11.8	11.8
Total Actual Funds ($M)	0	0.3	4.2	1.5	1.3	2.2	1.5	5.1				
Programmed Workyears	0	3	10	10	17	22.8	19.9	45.7	43.4	38.6	35.1	35.7
Actual Workyears	0	4	7	10	14.5	14.6	14.7	38.8				

Table 2.1.1 represents that portion of Table 2.1 Workload that supports the Common Support Functions (Product/Pervasive). No Pervasive Functions are supported and the only Product Function supported is for Weapons (Gun & Ammunition). These workload figures are for the S&T, Engineering Development and In-Service Engineering efforts associated with 6.1 thru 6.6 type funding.

2.2 Excess "Lab" Capacity -- Measured at the DOD Component Level

- **Excess "Lab" Capacity = Sum of the Peak Workyears - Sum of the Projected Workyears**

-- Peak at each activity = Highest value between FY86 (or since inception of organization) and FY93
-- Projected at each activity = Estimated at FY97

38.8 (FY93) - 35.7 (FY97) = 3.1

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

- NAVSEA Program Manager for Shipboard Physical Security Programs
- Technical Direction
- Acquisition Engineering
- In-Service Engineering
- Non-Developmental Item (NDI) Test and Evaluation
- Design Engineering
- Logistics Support
- Maintenance Support
- Fleet Installation
- Depot Support

This capability is the knowledge and skills of highly specialized professional engineering and technical personnel integrated into a **"state of the art"** engineering/industrial facility. The specialized knowledge and skills needed to perform this capability **can only be acquired through years of hands-on experience**, formal education, and specialized training. The facility supporting this capability is **"unique" because it is the only remaining facility within DoD** having both the capability and capacity to provide **full-spectrum life cycle support** for highly complex Naval Gun Weapons Systems. This capability, which satisfies DON's Imperative to maintain readiness, **could only be replicated at great expense or not at all.** This capability supports DON's Acquisition/Contracting Imperative to retain the ability to function as a **"smart buyer"** of NGWS/ equipments. This capability ensures that suppliers perform to contract requirements, systems meet operational requirements, contract and financial management expertise are retained to perform inherent governmental functions within the life cycle support process. This capability satisfies DON's Depot/Industrial/Maintenance/ Engineering Imperative by providing an **organic depot capability which can meet surge and mobilization requirements**; selectively fabricate, modify or repair weapon systems as a means to **control costs and mitigate risks** of supplier failure (Last Source of Repair, LSOR); and control access and disassembly to assess in-service industrial conditions of weapon systems. Our **rapid response ability** in crisis situations was demonstrated during Operation Desert Storm. This capability would be **required for reconstitution** because it is the only remaining facility having the capability to perform this role for NGWS/

equipments. This capability **supports Level III**, Naval Gun Weapon Systems, which support a broad range of tactical missions as well as the interface requirements of Level II, Combat Weapon Systems.

NGWS are **mission critical elements of current as well as future Littoral Warfare strategies as described in "...From the Sea"**. Their importance is in the **Joint Mission Area (JMA) role** to provide Naval Gun Fire Support (NGFS) to forces ashore (e.g. Marines, Army) and Theater Air Defense (TAD) missions ensures that NSWC, Louisville will be an **enduring capability** which provides direct benefits to Fleet readiness.

The primary missions of this capability are to **provide core leadership** in the acquisition, maintenance, and operational support of in-service and emerging NGWS/equipments; **maintain the Navy's corporate memory (technical knowledge repository)** of sufficient breadth, depth, and continuity to be able to perform as a smart buyer; maintain rapid response capability for reconstitution of our Naval forces if mobilization is needed; **ensure that current and future fleet operational readiness requirements are achieved and maintained**; and through defense conversion and technological transfer initiatives, strengthen the private sector's technology base for mission critical elements of NGWS/equipments.

This capability **supports more than one product area element (PAE) by supporting both Engagement Systems (guns) and Theater Air Defense Systems.** Future operational requirements for these PAEs have been significantly influenced by the Littoral Warfare Strategies described in "...From the Sea". Due to the "operating forward" requirements of Littoral Warfare, surface combatants must operate near shore to provide NGFS in support joint operations with Marine and/or Army ground forces. Because Littoral warfare places our ships at a greater risk from multiple land, air and sea based threats, Theater Air Defense Systems will be critical to ship survivability. **NSWC, Louisville supports other product areas** due to the Littoral Warfare missions utilizing NGWS/equipments which further illustrates JMA responsibilities.

This capability performs engineering, maintenance and program management support roles for technically sophisticated NGWS/equipments. These support roles are an **inherently governmental** function from the perspective that **both sponsorship and appraisal roles are performed during the acquisition, production and operational (in-service) phases of life cycle support**. In a sponsorship role, delegated from higher authority (i.e. NAVSEA / PEOs), execution of program support during the acquisition phase involves the direction, **establishment of objectives**, initiation, approval, allocation and resource definition of assigned programs while performing the primary functions of exploration, assessment, development and evaluation. In the appraisal role, execution of program support for this capability requires the **setting of program priorities**, comparing program results and

program objectives, making decisions regarding program changes, making commitments to continue or terminate assigned program tasks while performing the primary functions of production, operation and maintenance.

An unprecedented synergy exists at NSWC/CD for acquisition, in-service and maintenance engineering capabilities necessary for life cycle support of NGWS/equipments. This is the **"only" remaining facility** that has the capability to provide full spectrum engineering, logistics, maintenance, program management and full service industrial support.

Acquisition Phase: This capability performs various engineering and management functions delegated by higher authority (i.e. NAVSEA/PEOs). In performing these various functions during the acquisition phase this capability satisfies the inherently governmental roles to sponsor and appraise NGWS/equipment support efforts. Following are listed the primary functions performed with program specific examples:

Exploration Function: The Advanced Gun Weapon System Technology and Naval Surface Fire Support Programs illustrate efforts which establish technical requirements and operational objectives, assignment, direction and oversight of both public and private efforts in the concepts definition, alternatives exploration and risk management. Further illustration in support of this function, is **support to Project Reliance** through membership on the Conventional Guns sub-panel of the Joint Directors of Laboratories. Conventional Air Surface Weaponry Panel, under the leadership of the Research Armament Development and Engineering Center at the Piccatinney Arsenal. In support of this **Tri-Service effort** we participate as members on this sub-panel as **recognized experts of conventional guns** while looking at the cooperative research efforts of conventional guns. Concurrently with this effort, this capability **contributes to the establishment of Navy policy** for conventional guns including the **establishment of Navy safety standards** for NGWS/equipments.

Assessment Function: The EX46 Optical Sight and MK 160 Gun Computer System acquisition programs illustrate support during the source selection process by participation in the **establishment, certification, validation, evaluation and definition of technical requirements** and critical design characteristics. Another example of assessment function performance is this capability's support as a member of the Technical Advisory Board to the Mason Research Institute (MRI) for the evaluation of Joint Electric Ammunitions Health and Safety issues. This is a cooperative program of MRI which utilizes the research capabilities of the Universities of Louisville, North Carolina State and Marshall. This effort contributes to the establishment of Navy safety standards.

Development Function: This capability **supports the joint Army/Navy developmental**

efforts for liquid propellant testing and guided munitions. NSWC/Louisville provides engineering and contract management for the development and production of a 155mm liquid propellant gun system. This effort requires Louisville to provide gun system specifications to the activities developing guided munitions in order to ensure compatability when they are integrated. Our support is further illustrated through the review for technical adequacy during the development of the EX46 Optical Sight. To ensure systems/equipments operational suitability, technical support is provided during Ships' Operational Testing, Builder's Trials, Post Shake-down Availability and for initial Combat Systems Ship Qualification Trials (CCSQTs). **While Navy Training Facilities are being established, NSWC, Louisville provides: initial interim training of Naval Forces** (i.e. the EX46 OS phased training developed and performed for the DDG-51, AEGIS Class Destroyers crews) and supports Chief of Naval Technical Training (CNTECHTRA) Naval Training Curriculum Development requirements with the **on-site Naval PHALANX Training Unit (NPTU)**. R

Evaluation Function: Currently, this capability supports the evaluation function by directing and monitoring the production contracting efforts for programs (i.e. MK 45 product improvements by FMC/ASD, Phalanx MK15 CIWS by Hughes (HMSC) and the EX46 Optical Sight by Kollmorgen).

Readiness Phase: This capability performs various engineering agent and management functions delegated by higher authority (i.e. NAVSEA/PEOs). While performing these various functions during the readiness phase this capability satisfies the inherently governmental roles to sponsor and appraise NGWS/equipments support efforts. Following are listed the primary functions performed with program specific examples:

Production Function: Production support is currently provided by NSWC, Louisville to Hughes for CIWS, to UNISYS for the MK160 GCS, to Kollmorgen for the EX46 OS and to FMC for the MK 45 Gun. Support for these efforts involves an **appraisal role in the acceptance and approval of production changes, modifications, acceptance testing, waivers, deviations, producibility reviews, etc.**.

Operation Function: In performance of its in-service engineering functions, NSWC, Louisville provides logistics, configuration control and spares support to SPCC from early design phase through fleet introduction and operational use. This capability's lead in the Reliability Based Sparing initiative on the DDG-51 AEGIS Class Destroyer is an example of **advanced logistics planning** and program support. Whenever ships are reactivated, retired or decommissioned such as with the Battleships, this capability directs and establishes the process for these efforts. Engineering fleet support is provided when Direct Fleet Support activities request assistance to **solve technical problems which impact fleet readiness**. This capability also **provides industrial training** of field service, intermediate level maintenance and fleet support personnel utilizing the PHALANX Performance Engineering Training

Training Facilities. These training facilities also support our **FMS customers** and provide an alternative training resource for **non-DoD customers** (i.e. Dept. of Trans, U.S. Coast Guard).

Maintenance Function: Three levels of maintenance support (depot, intermediate and organizational) are provided by this capability to **ensure operational readiness during the entire life cycle** of Naval Gun Weapons Systems. This capability is also responsible for the establishment and certification of depot and intermediate level maintenance capabilities and in providing and maintaining an industrial and engineering technology base. Other maintenance initiatives of this capability involve **technology transfer** efforts to the Department of Transportation (i.e. U.S. Coast Guard) and Foreign Military Sales (FMS) customers. Examples of this is our assisting the United Kingdom in the development of their own organic depot maintenance capability and a joint venture with Germany to develop selected Rolling Airframe Missile Guided Missile Launching System (RAM GMLS) depot maintenance capabilities. A related initiative in the area of **foreign weapons evaluation** is the 5"/54 Modular Gun System Foreign Comparative Test Program, under the sponsorship of NAVSEA 05R3. This program, developed by Blohm & Voss of Hamburg, Germany, has been implemented on the MEKO Class 200T Frigate.

Ultimately, our customers are the men and women serving their country aboard the Navy's Surface fleet who operate and maintain NGWS/equipments. Equally important customers are the **multiple sponsors (i.e. PMs, PEOs)** to whom we're directly accountable and who fund these programs which require this technical capability. The requirements for this capability **will continue to endure** as the Navy's mission transitions to that of Littoral Warfare. The currently **stable workload** has the potential to increase as new ships and weapons systems are introduced to the Fleet (i.e. introduction of the DDG-51 Class Destroyers and the RAM Weapon Systems).

The technically sophisticated NGWS/equipments require a professional and technical personnel staff with a broad mix of skills and knowledge in the fields of science, engineering, logistics, ordnance technicians and industrial specialists. NSWC, Louisville is considered by most to be the Navy's leading full spectrum life cycle engineering and systems maintenance support facility for technically sophisticated NGWS/equipments. With an experienced engineering and technical support staff which includes **recognized experts**, NSWC, Louisville is **recognized as the Navy's "expert" for this capability by both the public and private sectors**. Although much of the skill mix has been achieved through formal education or apprenticeships and masters programs, the application of these skills in a **hands-on environment** over the period of operation of the NSWC/CD facilities (50 years) represents a significant corporate memory which is the **repository of technical knowledge** for NGWS/equipments gained through experience throughout the entire life cycle process.

The significant characteristic of this capability's work force is in the integration of its knowledge/skills in a close working relationship provided throughout the life cycle. This provides the continuity inherently required in the support process of technically sophisticated NGWS/equipments.

This capability has a uniquely integrated, **fully operational, "state of the art"**, engineering and industrial facility (Louisville Site) which **provides the Navy, as well as other DoD, non-DoD and FMS customers**, with the only qualified and certified depot facility for Naval Gun Weapons Systems (**due to previous consolidations, closures and downsizing initiatives, NO OTHER SIMILAR FACILITY EXISTS**). This facility is a collocation of engineering and depot maintenance facilities which provides the Navy a unique full spectrum life cycle support **capability to respond to reconstitution, surge/mobilization and rapid response requirements** for Naval Gun Weapons Systems. This capability is a **national asset** recognized for its expertise as a leader both in and outside DoD. The Specialized Mechanical Devices, capability which is designated by the DoD Joint Logistics Center as one of the two original Flexible Computer Integrated Manufacturing (and Repair) (FCIM) Process Validation Enterprises for mechanical parts provides significant and unique support to this capability. The major elements of these facilities represent those assets which are permanent structures having unique functions in support of this capability and are **economically impractical to relocate**.

There is also a large compliment of special equipments and computers available to support this capability. The PHALANX CIWS depot alone, has fifty-three (significant/high value) system, subsystem and component test/special equipments. **This facility is considered to be fully capable of meeting any future projected surge or mobilization needs**.

The inherently governmental function (smart-buyer) performed by this capability represents the Navy's corporate memory for NGWS/equipments and is **impractical for the private sector to assume**. This capability has been acquired over most of the fifty years that the NSWC/CD facilities have been a provider of goods (military) and services (engineering). The customer base of this capability includes other branches of DoD, non-DoD, and FMS customers. For example, the FMS customer base for the PHALANX CIWS security assistance program currently supports Australia, Canada, Greece, Israel, Japan, Portugal, Saudi Arabia, Taiwan, Turkey and the United Kingdom with Brazil, Egypt, New Zealand, Spain, Thailand and Venezuela in the process of obtaining systems.

The full spectrum hands-on experience in both a sponsorship role and appraisal role in support of acquisition and readiness in the functional areas of exploration, assessment, development, evaluation, production, operation and maintenance provides a unique synergy for NGWS/equipments support.

Undoubtedly, this capability's most important resource is its people which cumulatively represents thousands of man-years of experience. The stability of it's work force provides the continuity necessary to perform the inherently governmental roles of sponsorship and appraisal required for life cycle support of NGWS/equipments. Whether developing, modernizing, upgrading, maintaining or producing major system prototypes or reactivating "Old Warriors" (Battleships) this capability has been able to maintain a core technological base to respond to any operational fleet requirement. **Operational readiness would be impacted if this capability were not maintained organically.**

This unique integration of engineering/industrial capability provides a full spectrum manufacturing, repair and systems overhaul capability for which no other source exists, for products where no interest exists in the private sector and for rapid response situations to fleet safety requirements.

Loss of this capability would result in an irreversible loss of the Navy's corporate memory (a DON imperative to maintain a repository of technical knowledge for critical mission essential Weapons Systems/equipments supported by this capability) and the loss of an inherently governmental role, that of being a smart buyer. Additionally, the Navy's ability to reconstitute resources to address future threats would be severely limited.

Development and fielding of Naval Gun Weapons Systems and COMNAVSEASYSCOM Program Management of Physical Security Equipment and Systems for protection of Nuclear Weapons and other "High Value" assets in support of the Weapons (Guns and Ammunition) Common Support Function.

The Advanced Gun Weapon System Technology and Naval Surface Fire Support Programs illustrates efforts which support: requirements definition and the establishment of operational objectives; the assignment, direction and oversight of both public and private efforts in the concepts definition, alternatives exploration and; risk management. Further illustration in support of this function, is the support of Project Reliance through membership on the Conventional Guns sub-panel of the Joint Directors of Laboratories (JDL), Conventional Air Surface Weaponry Panel, under the leadership of the Army's Research Armament Development and Engineering Center at the Picatinny Arsenal. In support of this Tri-Service effort we participate as members on this sub-panel as recognized experts of conventional guns while looking at the cooperative research efforts of conventional guns.

An interface exists with Defense Nuclear Agency (DNA) and Applied Research Laboratory (ARL), University of Texas, in that they typically conduct the basic research for Shipboard Physical Security System equipments and then transition final design, test, production and fielding of systems to NSWC, Louisville.

The relationship with other functions at NSWC, Louisville is very important. The experience in engineering products for shipboard weapons systems such as: Design practices, Logistics, Configuration Management, and Installation Practices have been directly incorporated into development of Security Hardware for Shipboard use.

The availability of facilities (machine shop, fabrication, plating shop, drafting, etc) in place to support NSWC, Louisville weapons systems overhaul efforts, also allows for rapid prototyping of new system's designs.

3.1 Location

3.1.1 Geographic/Climatological Features: Describe any geographic/climatological features in and around your activity that are relevant to each CSF. Indicate and justify those that are required versus those that just serve to enhance accomplishing the mission of the activity. For example, clear air at high altitude that increases quality of atmospheric, ground-based laser experiments in support of the weapons CSF. (BRAC Criteria I)

There are no special Geographic/Climatological features. Attributes of the location of this capability are an **affordable labor market** (prevailing labor rates lower than national average); **synergistic full spectrum** engineering and industrial facility; close proximity to major air, rail, river and interstate transportation routes; and readily available labor source from nearby colleges and universities (e.g. University of Louisville). The affordability attribute and location in a low cost of living area within a major metropolitan area, provides an environment necessary to sustain the **stability for maintaining a "smart buyer" capability** over the life cycle of a weapon system. Furthermore, this environment attracts and retains a highly technical, quality and stable workforce.

Due to previous consolidation efforts, NSWC, Louisville is the only remaining comprehensive depot/engineering facility with the capability to support the DoD Commodity Group of Sea Systems Subgroup Weapons Systems (Surface). In preservation of DON readiness, NSWC, Louisville maintains required critical and unique capabilities found nowhere else in the DoD and could only be replicated at a great cost.

One of the greatest benefits to NSWC, Louisville's location in the central midwest is that it provides a consolidated "full spectrum" engineering and industrial activity that **is capable of supporting the Atlantic, Pacific and Gulf Coast Activities**. This eliminates the need to replicate the Naval Gun Weapons Systems capability (i.e. an affordable one stop shop for our customers).

3.1.2 Licenses & permits: Describe and list the licenses or permits (e.g., environmental, safety, etc.) that your activity currently holds and justify why they are required to allow tests, experiments, or other special capabilities at your location for each CSF. For example, permit to store and use high explosives. (BRAC Criteria I)

There are no licenses or permits required. The Shipboard Physical Security offices are located in a required, secure "exclusion area". The facility is TEMPEST certified which allows classified information to be processed.

3.1.3 Environmental constraints: Describe and list the environmental or land use constraints present at your activity which limit or restrict your current scope for each CSF, i.e., would not allow increased "volume" or "spectrum" for the CSF. Example -- Volume: frequency of a type of experiment. Example -- Spectrum: Current permit to detonate high explosives will not allow detonation or storage of increased quantity of explosives without legal waiver (state law) or relocation of surrounding (non-govt) buildings. (BRAC Criteria II)

The Shipboard Physical Security Program has conducted a wide variety of tests over the past several years. There have been no environmental constraints on the tests and none are anticipated.

The Naval Gun Weapons Systems have no environmental constraints. Land use constraints exist which excludes live firing for large caliber guns. Outdoor radiation emissions requires coordination with local FAA authorities.

3.1.4 Special Support Infrastructure: List and describe the importance of any mission related special support infrastructure (e.g. utilities) present at your location for your activity. (BRAC Criteria I)

The major asset to the Shipboard Physical Security Program, is the availability at NSWC, Louisville of a full size replica of the interior of simulated shipboard spaces. The replica is complete with steel bulkheads, shipboard hatches and scuttles, magazine bulkhead lagging, lighting, shipboard type electrical power, and production or prototype versions of the physical security equipment being developed for shipboard use. This mockup allows new equipment to be thoroughly tested under realistic destructive threat scenarios to insure it will function as desired when actually placed aboard ship.

The Gun Systems Engineering/Testing and Advanced Training Facility provides capability to test prototypes and manufacture Engineering Development Models (EDMs). The capability to emulate/simulate shipboard conditions, resolve safety issues and correct design deficiencies is integral to the Naval Gun Weapons Systems full spectrum support facility.

3.1.5. Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

The availability of facilities (fabrication, machine shop, plating shop, drafting, etc.) in place to support NSWC, Louisville Weapons Systems overhaul efforts, also allows for rapid prototyping of new security system designs. The Manufacturing Technology Transfer Center at NSWC, Louisville, supports the DoD initiative to enhance technological teaming between public and private sectors.

There is a strategic benefit to being centrally located between the Pacific and Atlantic fleets. Atlantic, Pacific and Gulf coasts are easily accessible. **This eliminates the need to replicate support services.**

COMMON SUPPORT FUNCTIONS	NAME	TYPE OF ORGANIZATION	DISTANCE	WORKYEARS PERFORMED BY YOUR ACTIVITY	WORK-YEARS FUNDED BY YOUR ACTIVITY
WEAPONS (GUN AND AMMO)	NSWC, CRANE	DON	90 MILES	0	.2
	NAWC, INDIANAPOLIS	DON	110 MILES	0	0
	FORT KNOX	U.S. ARMY	40 MILES	0	0
	UNIVERSITIES	VARIOUS	5 MILES	0	0

As an integral part of the NSWC, Crane Division, the Crane site provides the capability for EMI, Environmental testing of equipment and components. NAWC, Indianapolis provides the capability for environmental testing and prototype manufacturing. Fort Knox provides nearby capability for live firing of large caliber guns. There are advantages to NSWC, Louisville's location in a metropolitan area where a broad variety of commercial, transportation, recreational, and educational services are readily available. Local Universities/Colleges provide an excellent source of technical personnel.

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	27	0	0	0
Management (Supv)	3	0	0	0
Other	9	0	0	0

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	2	0	8
Associates	3	0	0
Bachelor	17	3	0
Masters	6	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	5	11	7	3	2
Management (Supv)	0	0	0	1	2
Total	5	11	7	4	4

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
	0	0	
	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

SEE PAGE 20A

CSF	Number Published	Paper Titles (List)
Weapons (Guns and Ammunition)	3	Virtual Prototyping Using Knowledge-Based Modeling & Simulation Techniques Range Extension Near Term * Advanced Gun Weapons Systems Technology Program Overview *
TOTAL	3	

* ADPA Guns and Ammo Technical Conference Minutes

uisclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
	0	0	
	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

R

CSF	Number Published	Paper Titles (List)
Weapons (Guns and Ammunition)	1	"Virtual Prototyping Using Knowledge-Based Modeling & Simulation Techniques." American Society of Naval Engineers (ASNE). May 1993.
TOTAL	1	

WC

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	11.1	0	0	0
Engineering Development	25.9	0	0	0
In-Service Engineering	1.8	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- **For each ACAT IC, ID, and II program (as defined in DODI 5000.2):**
- **The name of the program**
- **A brief program description**
- **For each ACAT III and IV programs:**
- **The number of such programs**
- **A list of program names**
- **For each program not an ACAT I, II, III, IV:**
- **The number of such programs**
- **A list of program names**
- **For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).**

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	(Name)			(Description)
ACAT ID	(Name)			(Description)
ACAT II	(Name)			(Description)
ACAT III/IV	063228D/S1769	13.8	$1,541K	Shipboard Physical Security
	063228D/S0812-SL	1.0	$80K	Shipboard Nuclear Weapons Security
	0603795/S2093	11.1	$1,849K	Naval Surface Fire Support (NSFS)
	0603795/S2156	5.9	$759K	Naval Surface Fire Support (NSFS)
	0603795/S1684	5.2	$750K	Stable Weapon Systems Platform
Other	(Number)			(List)

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Weapons (Guns and Ammunition)	System Engineering	0.13	1.8	PHALANX MK 15 Close-In Weapon System

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
	0	0	0	0

Transm. Hal

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Weapons (Guns and Ammunition)	$9.4M	$12.2M	$11.8M	$11.8M

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Weapons (Guns and Ammunition)	Shipboard Physical Security Mockups *			X	1,018
	Gun Systems Engineering/ Testing and Advanced Training Facility *			X	9,649

* See Attachments A. and B. for explanation of facilities/equipment

The facilities shown above support RDT&E functions and there is no interconnectivity between the Weapons (Guns and Ammunition) CSF and other CSFs. R

The two facilities listed above have no interconnectivity. However, these facilities are interconnected with other facilities at NSWC, Louisville for the workload identified in Table 2.1 and are required to support our Mission as stated in paragraph 3.0 above. R

These facilities are used to support RDT&E efforts as well as other life cycle functions for the Major Equipment listed. There is no RDT&E unique Space Capacity within these facilities. All space is shared with other life cycle support functions: R

- Total workyears performed in these facilities : 140.6
- Percentage of time facilities used to support RDT&E efforts : 12.4%
- Percentage of time facilities used to support other life cycle functions : 87.6%

The balance of 21.3 RDT&E workyears are performed within other facilities at NSWC, Louisville.

WC

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Weapons (Guns and Ammunition)	Shipboard Physical Security Mockups	Technical Administrative	2,412 5,568	2,412 5,568	0 0
	Gun Systems Engineering/ Testing and Advanced Training Facility	Technical	7,330	7,330	0

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Existing facilities are sufficient to support FY97 projected workload and additional workload.

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Twenty additional workyears could be supported by current operations and existing facilities.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alteration projects programmed in the FY95 PBS. (BRAC Criteria II)

There are no MILCON projects programmed.

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

A total of 63.615 buildable acres is available for expansion at NSWC, Louisville. The site is compact (i.e. 142.44 total acres) with existing multi-feeds of each utility and minimal distance from any undeveloped site to roads, utilities, etc. These existing infrastructure components will significantly lower the cost for site development, thus lowering the overall cost for any new construction.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

UTILITY/ UNITS PROVIDER	NORMAL STEADY STATE	PEAK LOAD	EXISTING CAPACITY FROM DEMAND	AVAILABLE CAPACITY FROM PROVIDER
ELECTRIC: (KWH)	7,200	9,246.6	22,500	100,000
NATURAL GAS: (CFH)	58.622	151,200	543,560	1,000,000
WATER (GPD)	486,000	972,000	2,160,000	2,160,000

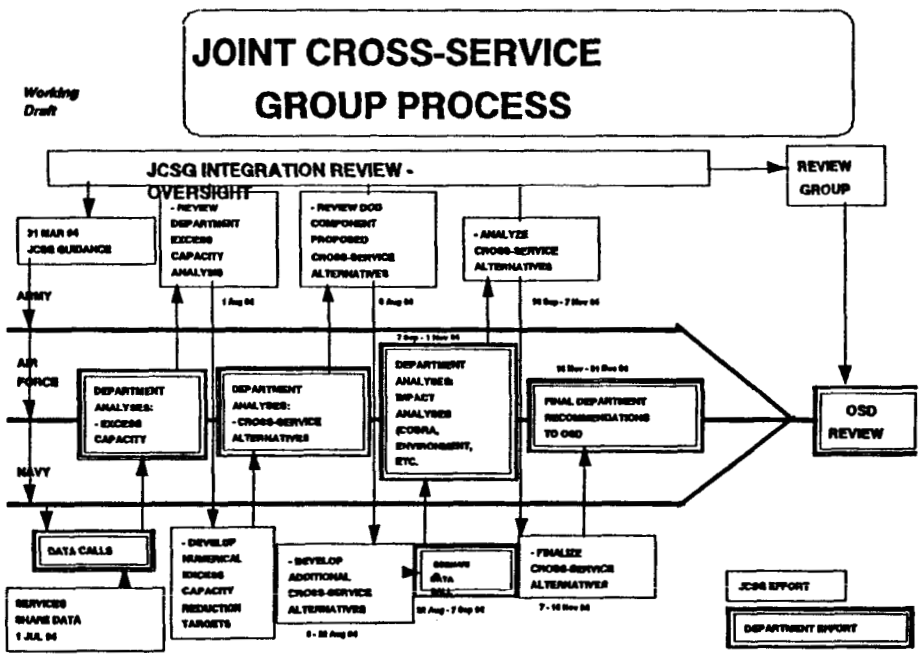
PROVIDER
ELECTRIC - LOUISVILLE GAS AND ELECTRIC
NATURAL GAS - LOUISVILLE GAS AND ELECTRIC
WATER - LOUISVILLE WATER COMPANY

UNITS:
KWH - kilowatts per hour (Continuous Demand)
CFH - cubic feet per hour (Gas assay - 1025 BTU per cubic foot)
GPD - gallons per day (@ 80 psig)

SECTION IV: APPENDICES

A. Macro Process/Schedule
B. List of Activities
C. Common Support Functions

APPENDIX A


JOINT CROSS-SERVICE
GROUP PROCESS
Working Draft
JCSG INTEGRATION REVIEW - OVERSIGHT
REVIEW GROUP
31 MAR 94 JCSG GUIDANCE
- REVIEW DEPARTMENT EXCESS CAPACITY ANALYSIS
- REVIEW DOD COMPONENT PROPOSED CROSS-SERVICE ALTERNATIVES
- ANALYZE CROSS-SERVICE ALTERNATIVES
ARMY
AIR FORCE
NAVY
DEPARTMENT ANALYSES: - EXCESS CAPACITY
DEPARTMENT ANALYSES: - CROSS-SERVICE ALTERNATIVES
DEPARTMENT ANALYSES: IMPACT ANALYSES (COBRA, ENVIRONMENT, ETC.
FINAL DEPARTMENT RECOMMENDATIONS TO OSD
OSD REVIEW
DATA CALLS
SERVICES SHARE DATA 1 JUL 94
- DEVELOP NUMERICAL EXCESS CAPACITY REDUCTION TARGETS
- DEVELOP ADDITIONAL CROSS-SERVICE ALTERNATIVES
- FINALIZE CROSS-SERVICE ALTERNATIVES
JCSG EFFORT
DEPARTMENT EFFORT

APPENDIX B

LIST OF ACTIVITIES

AIR FORCE

1. Armstrong Lab, Brooks AFB
2. Armstrong Lab, Tyndall AFB
3. Armstrong Lab, Wright-Patterson AFB
4. Armstrong Lab, Williams AFB
5. Human Systems Center, Brooks AFB
6. Wright Lab, Wright-Patterson AFB
7. Wright Lab, Eglin AFB
8. Aeronautical Systems Center, Wright-Patterson AFB
9. Aeronautical Systems Center, Eglin AFB
10. Oklahoma City Air Logistics Center, Tinker AFB (In-service engineering)
11. Ogden Air Logistics Center, Hill AFB (In-service engineering)
12. San Antonio Air Logistics Center, Kelly AFB (In-service engineering)
13. Sacramento Air Logistics Center, McClellan AFB (In-service engineering)
14. Warner-Robins Air Logistics Center, Robins AFB (In-service engineering)
15. Phillips Lab, Kirtland AFB
16. Phillips Lab, Hanscom AFB
17. Phillips Lab, Edwards AFB
18. Space & Missile Center, Los Angeles AFB
19. Space & Missile Center, Norton AFB
20. Sacramento Air Logistics Center, Peterson AFB
21. Rome Lab, Griffiss AFB
22. Rome Lab, Hanscom AFB
23. Electronic Systems Center, Hanscom AFB
24. Sacramento Air Logistics Center, Peterson AFB (In-service engineering)

ARMY

1. Army Research Lab (ARL), Adelphi, MD
2. ARL, Aberdeen Proving Grounds (APG), MD
3. ARL, White Sands Missile Range, NM
4. ARL, NASA Langley, VA
5. ARL, NASA Lewis, OH
6. Natick Research, Development and Engineering Center, Natick, MA
7. Aviation Research, Development and Engineering Center, St Louis, MO
8. Aviation Troop Command, Aeroflight Dynamics Directorate, Moffitt Field, CA

9. Aviation Troop Command, Aviation Applied Technology Directorate, Fort Eustis, VA
10. Edgewood Research, Development and Engineering Center, Aberdeen Proving Ground, MD
11. Communications Electronics Command Research, Development and Engineering Center, Ft Mammoth, NJ
12. Communication Electronics Command Research, Development and Engineering Center - Night Vision EO Directorate, Ft Belvoir, VA
13. Missile Research, Development and Engineering Center, Redstone Arsenal, AL
14. Armaments Research, Development and Engineering Center, Picatinny Arsenal, NJ
15. Armaments Research, Development and Engineering Center, Benet Labs, Watervliet Arsenal, NY
16. Tank-Automotive Command Research, Development and Engineering Center, Warren, MI
17. USA Research Institute of Infectious Diseases, Ft Detrick, MD
18. Walter Reed Army Institute of Research, Washington D.C.
19. USA Institute of Surgical Research, Ft Sam Houston, TX
20. USA Aeromedical Research Lab, Ft Rucker, AL
21. Medical Research Institute of Chemical Defense Aberdeen Proving Grounds, MD
22. USA Research Institute of Environmental Medicine, Natick, MA
23. Construction Engineering Research Laboratory, Champaign, IL
24. Cold Regions Research and Engineering Lab, Hanover, NH
25. Topographic Engineering Center, Alexandria, VA
26. Waterways Experiment Station, Vicksburg, MS
27. USA Research Institute for Behavioral & Social Sciences, Alexandria, VA
28. Simulation, Training and Instrumentation Command (STRICOM), Orlando, FL

NAVY

1. Naval Air Warfare Center, Weapons Division, China Lake
2. Naval Air Warfare Center, Weapons Division, Point Mugu
3. Naval Air Warfare Center, Aircraft Division, Patuxent River
4. Naval Air Warfare Center, Aircraft Division, Indianapolis
5. Naval Air Warfare Center, Aircraft Division, Lakehurst
6. Naval Research Lab, Washington D.C.
7. Naval Research Lab Detachment, Bay St Louis
8. Naval Surface Warfare Center, Carderock Division, Bethesda
9. Naval Surface Warfare Center, Carderock Detachment, Annapolis
10. Naval Surface Warfare Center, Crane Division
11. Naval Surface Warfare Center, Crane Detachment, Louisville
12. Naval Surface Warfare Center, Dahlgren Division
13. Naval Surface Warfare Center, Dahlgren Detachment, Panama City

14. Naval Surface Warfare Center, Indian Head Division
15. Naval Surface Warfare Center, Port Hueneme Division
16. Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, San Diego
17. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering, West Coast Division, San Diego
18. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering Division, Charleston
19. Naval Aerospace Medical Research Center, Pensacola
20. Naval Biodynamics Lab, New Orleans
21. Naval Dental Research Lab, Great Lakes
22. Naval Health Research Center, San Diego
23. Naval Medical Research Institute, Bethesda
24. Naval Undersea Warfare Center, Keyport Division, WA
25. Naval Surface Warfare Center, Carderock, Philadelphia Detachment
26. Naval Undersea Warfare Center, Newport, RI
27. Naval Undersea Warfare Center (Newport), New London, CT
28. Naval Personnel Research and Development Center, San Diego, CA

DEPARTMENT OF DEFENSE

1. Armed Forces Radiobiology Research Institute (AFRRI), Bethesda, MD

APPENDIX C

COMMON SUPPORT FUNCTIONS (DEFINITIONS LISTED FOLLOWING PAGES)

Product Functions

1. Air Vehicles
   - Fixed
     - -- Structure
     - -- Propulsion
     - -- Avionics
     - -- Flight Subsystems
   - Rotary
     - -- Structure
     - -- Propulsion
     - -- Avionics
     - -- Flight Subsystems

2. Weapons
   - ICBMs/SLBMs
   - Conventional Missiles/Rockets
   - Cruise Missiles
   - Guided Projectiles
   - Bombs
   - Guns and Ammunition
   - Directed Energy
   - Chemical/Biological

3. Space Systems
   - Launch Vehicles
   - Satellites
   - Ground Control Systems

4. C4I Systems
   - Airborne C4I
   - Fixed Ground-Based C4I
   - Ground Mobile C4I

Pervasive Functions

1. Electronic Devices
2. Environmental Sciences
3. Infectious Diseases
4. Human Systems
5. Manpower and Personnel
6. Training Systems
7. Environmental Quality
8. Advanced Materials

DEFINITIONS

COMMON SUPPORT FUNCTIONS

Product Functions

1. Air Vehicles. Air vehicles are broken out into common support functions for fixed wing and rotary wing. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of air vehicles. Included are all air vehicles including their application as UAV's and targets.

• Structures. Includes but not limited to all air vehicles structure technology, engineering and production efforts. Include technology and engineering practices which advance structural design and analysis; advanced structural concepts and fabrication techniques; and structural integrity.

• Propulsion. Includes but not limited to all technology, engineering and production efforts associated with air vehicle propulsion such as turbine engine, rotorcraft power drive, and hypersonic propulsion components. Such components include compressors, inlets and nozzles, turbines, mechanical systems and control, gears, bearings, shafts, and clutches. In addition, include associated subsystems activities such as turborocket, turboramjet and rotorcraft transmissions; and supporting technical and engineering disciplines.

• Avionics. Includes but not limited to all technology, engineering and production efforts associated with the air platform's integrated avionics system. The avionics suite includes but is not limited to weapon delivery systems, electronic warfare, navigation, communications, radar, electro-optic sensors, signal/data processing and associated software system and support. Includes efforts associated with developing the integrated avionics system (i.e. optimizing functional partitioning, distribution and integration of avionics/related functions).

• Flight Subsystems. Includes but not limited to all technology, engineering and production efforts for air vehicle support systems such as landing gear; transparent crew enclosures; egress systems; mechanical equipment integrity; electrical component integrity; subsystem integration; and aircraft power, pressurization, and temperature control systems.

2. Weapons. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of ICBMs/SLBMs, conventional missiles and rockets, cruise missiles, guided projectiles, bombs, guns and ammunition, directed energy and

chemical/biological munitions. Include with each weapon as appropriate, all related technology, engineering and production activities such as fusing/safe and arm, missile propulsion, warheads and explosives, and guidance and control.

3. **Space**. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of launch vehicles, satellites and associated ground control systems (satellite control only; ground systems for telemetry of data included in C4I). Include under satellites, all technology, engineering and production activities associated with space communications and space-based surveillance (and associated sensors) and space-based C4I.

4. **C4I**. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of airborne, fixed ground-based and mobile ground based C4I systems. Include all technology, engineering and production activities associated with communications networks, radios and links, distributed information systems, data fusion, decision aids, and associated computer architectures.

<u>Pervasive Functions (6.1, 6.2, and 6.3)</u>

1. **Electronic Devices.** Includes but not limited to all science and technology activities supporting development of semiconductor and superconductor materials for optoelectronic, acoustic and microwave devices. Include all associated electronic materials/device fabrication and processing.

2. **Environmental Sciences.** Includes but not limited to all science and technology activities to improve measurement, characterization and modeling of the earth atmosphere and space environment. Examples include global prediction systems, space effects, and celestial backgrounds/astronomical reference sources.

3. **Infectious Diseases.** Includes but not limited to all science and technology activities which preserve manpower and performance by the prevention and treatment of militarily important infectious diseases that occur naturally worldwide.

4. **Human Systems.** Includes but not limited to all science and technology activities to enable, protect, sustain and enhance human effectiveness in DOD operations. The focus of this pervasive, multi-disciplinary area is the human and therefore impacts all DOD systems and operations. This area includes: (1) human performance definition, assessment, and aiding; (2) physiologic bioeffects of toxic hazards, ionizing and non-ionizing radiation, biodynamic (bio-mechanical) stress, and extreme environments; (3) military operational

medicine; and (4) generic, human-centered design standards/methodologies for crew station subsystems, information management and display, and life support.

5. Manpower and Personnel. Includes but not limited to all science and technology activities which support four broad areas: (1) selection and classification of DOD personnel (including pilots); (2) identification of operational tasks performed and requirements for skills, knowledge, and aptitudes; (3) matching the right people with the jobs they are best suited for according to the needs of DOD, (4) and developing techniques for measuring and enhancing the productivity of the operational force.

6. Training Systems. Includes but not limited to all science and technology which support training of personnel, including training strategies, devices and simulators, and computer aided intelligent tutoring systems.

7. Environmental Quality. Includes but not limited to all science and technology activities which support the development of technologies to reduce the environmental costs of DOD operations while ensuring mission accomplishment is not jeopardized by adverse environmental impacts. Specifically, this area encompasses technologies to: (1) identify and cleanup sites contaminated with hazardous materials as a result of DOD operations (cleanup); (2) ensure DOD compliance with current and anticipated local, national, and international environmental laws and treaties (compliance); (3) minimize DOD use of hazardous materials and reduce DOD hazardous waste generation (pollution prevention); and (4) provide for protection of natural resources under DOD stewardship (conservation).

8. Advanced Materials. Includes but not limited to all science and technology activities related to structural, high temperature, electromagnetic protection, electronic, magnetic, optical, and biomolecular materials. Note: excludes materials areas which were included in DDR&E decision of 18 Mar 94 related to the Army's Materials Research Facility at Aberdeen Proving Ground and the Navy's Materials Facility at Carderock.

ATTACHMENT A. TO DATA CALL 12, QUESTION 3.4.1

Technical Center Site	NSWC, CRANE DIV. LOUISVILLE SITE
Facility/Equipment Nomenclature or Title	Shipboard Physical Security Mock-ups

1. State the primary purpose(s) of the facility/equipment:

U.S. Navy ships and ashore sites are vulnerable to attack by militant groups, terrorists, criminals, criminal dissidents, and others. Threats are continuous in nature and affect U.S. Navy ships while dockside, at anchorage, in both foreign and domestic ports and; ashore sites in CONUS and outside CONUS. The threat is validated by the System Threat Analysis Report (STAR 02-88). The shortcomings of current systems, and approaches to resolving these shortcomings, are described in documents such as the Shipboard Physical Security Operational Requirements Document (ORD 329-09N/B-93). The value of a full spectrum support program to prevent shipboard losses, and compromise of weapons, resulted in the designation of Naval Ordnance Station Louisville as a Center Of Excellance (COE) for Shipboard Physical Security in 1987. At that time the Station's formal Mission Statement was also changed in the NAVSEASYSCOM Instruction to include this role.

The Shipboard Physical Security Program Management and Execution Capability is unique because it is the only site in DON where unique shipboard facilities, technical expertise, program management capabilities, physical security knowledge and shipboard test and evaluation experience come together in a single location. As the recognized expert for shipboard physical security research and development, acquisition and life cycle support, NSWC, Louisville has developed an organic support capability as well as a "smart buyer" capability in evaluating private industry products and other Service's security products. As the DON's lead activity for Shipboard Physical Security, as designated by CNO, N09N1, this Technical Capability assists CNO in establishment of Navy policy for physical security and validates technical requirements through the CNO (N86, N87, and N88) platform sponsors. An example is the Operational Requirements Document approved in March, 1993, which was prepared by NSWC, Louisville, and staffed through the CNO sponsors.

The current and future missions of this Technical Capability are to execute the COMNAVSEASYSCOM Program Management functions for the Shipboard Nuclear Weapons Security (SNWS) Program and the Shipboard Physical Security (SPS) Program. Both programs are designated Priority 02 (FAD II, Designator A) and program priorities are established through the Program Manager at NSWC, Louisville.

The SNWS program is in the Production/Deployment phase and includes the acquisition and installation of the MK 4 Protected Voice Portable Communications System (PVPCS), the MK 6 Shipboard Internal Locking System Module (SMILS) and the MK 1 Magazine Security System (MSS). These equipments are procured through the NSWC, Louisville Contracting Office and installed by NSWC, Louisville Alteration Installation Teams (AIT). This TC also includes Integrated Logistics Support Management and Life Cycle Management. NSWC, Louisville coordinates with the CNO, N09N1, resource sponsor for the acquisition of equipments and with the CNO Platform Sponsors (N865, N866, N87 and N88) for Fleet Modernization

Program (FMP) funds and life cycle support funds.

The SPS program is in the RDT&E phase and work is performed directly for CNO, N09N1, to develop, acquire and adapt physical security equipments for shipboard use. As Technical Direction Agent (TDA), NSWC, Louisville directs the efforts of two other participating field Activities (NISE EAST, St. Inigoes, Md. and NSWC Dahlgren/CSS Panama City, FL.) in the acquisition, test, evaluation and fleet introduction of various shipboard physical security equipments. The program includes on-board sensors such as Security Television System (STS), Shipboard Access Control System (SACS), Infrared Motion Detectors (IMD), Balanced Magnetic Switches (BMS), Security Force Equipment (SFE) and a Central Alarm Station (CAS) with interfaces to other existing security equipments. Off-board sensors consist of Radars, Swimmer Detection Sonar (SDS) and Hull Lighting improvements.

NSWC, Louisville performs the role of COMNAVSEASYSCOM Program Manager for the SNWS and SPS equipments. The recognized expertise of personnel performing the Technical Direction Agent (TDA) and Acquisition Engineering Agent (AEA) roles provide a "smart buyer" capability for shipboard and ashore equipments and a developmental, test and evaluation capability for all shipboard physical security equipments including Technical Evaluation (TECHEVAL) and support to Operational Evaluations (OPEVALs). The roles of Design Agent (DA), In-Service Engineering Agent (ISEA) and Integrated Logistics Support Manager (ILSM) provide the capabilities for Transition to Production, Fleet support and Life Cycle support for systems/equipments in the SNWS, SPS and ashore physical security programs.

The MK 4 PVPCS and MK 1 MSS are designated as "K" ALT Ship Alterations. NSWC, Louisville is assigned the responsibility of Alteration Installation Team leader for these equipments, attends fleet scheduling conferences and provides input to schedule availability with the appropriate Type Commander and executes the installation by providing on-site support. Follow-on fleet support is provided by the same Engineering Technicians. Ordnance Alterations (ORDALTS) and Machinery Alterations (MACHALTS) are also developed by the same engineering and technical personnel and are "proofed" in the Fleet by the engineers and field service engineering technicians. This provides a synergism unattainable without a full spectrum support activity. A unique shipboard mock-up is located at NSWC, Crane, Louisville site, where all equipments/systems are installed, maintained, evaluated and tested prior to shipboard installation. Fleet training is also provided on the equipments prior to TECHEVAL/OPEVAL.

These functions provide a system level capability for shipboard physical security equipments/systems and provides the DON with a single location for resolution of fleet technical requirements and a reliable, responsive, enduring capability for fleet support.

The essential skills, knowledges and technical expertise required to accomplish all tasks within this Technical Capability are available at NSWC, Louisville, and include: an established core of engineers (electronic, mechanical, naval architect) to perform design tasks, research, development, test, evaluation and software development; technical specialists (logistics management specialists, equipment specialists, physical security specialists, program analysts, computer specialists and engineering technicians) to support a "smart buyer" capability, conduct test and evaluation, perform fleet and ashore installations and provide equipment/system life cycle support and; administrative personnel. This team includes a core of 64 engineering and technical support personnel and relies on other NSWC, Louisville specialized personnel for the remaining direct work-years. The average experience for technical personnel supporting this Technical Capability is 12 years.

ATTACHMENT B. TO DATA CALL 12, QUESTION 3.4.1

Technical Center Site	NSWC/Louisville
Facility/Equipment Nomenclature or Title	Naval Gun Weapons Systems Facility

1. **State the primary purpose(s) of the facility/equipment.**

The Naval Gun Weapons Systems Facility is a **uniquely integrated, fully operational, "state of the art"**, engineering and industrial facility (Louisville Site) which provides the Navy, as well as other DoD, non-DoD and FMS customers, with the **only qualified and certified depot** facility for Naval Gun Weapons Systems (due to previous consolidations, closures and downsizing initiatives, there is **no other similar facility that exists).**

The primary missions of this facility are to provide **core leadership** in the acquisition, maintenance, and operational support of in-service and emerging NGWS/equipments; maintain the Navy's corporate memory **(technical knowledge repository)** of sufficient breadth, depth, and continuity to be able to perform as a smart buyer; maintain rapid response capability for reconstitution of our Naval forces if mobilization is needed to ensure that current and future fleet operational **readiness** requirements are achieved and maintained; through defense conversion and technological transfer initiatives, and strengthen the private sector's technology base for mission critical elements of NGWS/equipments. Future operational requirements, influenced by the Littoral Warfare Strategies described in "*...From the Sea*" insures that the requirement for this facility will be an enduring capability to provide Fleet readiness support. This facility is considered to be **fully capable of meeting any future projected needs.**

This facility is a collocation of engineering and depot maintenance facilities which provides the Navy a **unique full spectrum life cycle support capability to respond to reconstitution, surge/mobilization and rapid response requirements for Naval Gun Weapons Systems. This facility is a national asset recognized for its expertise as a leader both in and outside DoD.** The collocated Specialized Mechanical Devices Facility which was designated by the DoD Joint Logistics Center as one of the two original Flexible Computer Integrated Manufacturing (and Repair) (FCIM) Process Validation Enterprises for mechanical parts provides **significant and unique** support to this facility. The major assets (both personnel and equipment) supporting this facility represent **a unique capability which is economically impractical to replicate or relocate.** The following describes these assets:

- Highly Skilled Experienced Technical Personnel
- Gun Weapon Systems Maintenance & Overhaul Support Facility
- Gun Weapon Systems Engineering/Test & Advanced Training Facility
- Gun Weapon Systems Engineering Lab & Test Tower Facility
- Software Development/Test & Maintenance Facility
- Engineering & Production Documentation Support Facility
- Close-In Defense Modernization/Upgrade/Overhaul Facility
- Performance Engineering and Training Systems (PETS) Facility
- TE8000 Weapon System Test Range
- TE125 Indoor Antenna Analyzer/Compact Range
- Calibration Laboratory Facility
- Soldering & Wiring Technology Facility

1. (Con't)

Following are descriptions of the primary purposes of the major assets of this facility:

• Highly Skilled Experienced Technical Personnel - The technically sophisticated NGWS/equipments require a professional and technical personnel staff with a broad mix of skills and knowledge in the fields of science, engineering, logistics, ordnance technicians and industrial specialists. NSWC, Louisville's experienced engineering and technical support staff **are recognized by both the public and private sectors as the Navy's leading experts for Naval Gun Weapons Systems.** Although much of the skill mix has been achieved through formal education or apprenticeships and masters programs, the application of these skills in a hands-on environment over the period of operation of the NSWC, Louisville facilities (50 years) represents a significant corporate memory which is the **repository of technical knowledge** for NGWS/equipments gained through experience throughout the entire life cycle process. Their purpose is to **provide the continuity** inherently required in the support process of technically sophisticated NGWS/equipments.

• Gun Weapon Systems Maintenance & Overhaul Support Facility - The purpose of this asset is the integration and testing of complex gun systems ranging in size from 20 mm to 8 inches together with associated ammunition handling systems. This includes the capability to perform complete disassembly of major and minor caliber gun mounts, remanufacturing of the individual components and the subsequent buildup of the components including the alignment and interfacing of each component into a functions operating gun mount. This asset also possesses all the required capabilities to perform all required functional tests of the gun mounts to assure proper and functional operation of all the components installed during re-assembly of the mount. This is inclusive of providing components for all these systems for the Supply Parts Control Center (SPCC) Navy and the 2J Cog component support.

• Gun Weapon Systems Engineering/Test & Advanced Training Facility - The purpose of this asset is to provide engineering prototype development, integration testing, documentation verification, training, simulation of duplicate fleet conditions and fleet support. This asset provides intermediate level training for U.S. Fleet, civilian and foreign military training requirements. This asset consists of the 5"/54 caliber MK 45 and MK 42 Gun areas, the 76mm MK 75 Gun area, the 3"/50 MK 33, the MK 30 Gun areas, a minor caliber indoor firing range, and associated classrooms.

This asset has a unique projectile return chute system that allows rounds to be pushed out the end of the gun barrel and returned two deck levels down to the loader drums for recycling. This asset is capable of cycling dummy ammunition through the entire loading sequence as well as operating in automatic, step load, and simulate mode (i.e. MK 45 and MK 42).

This asset has an on-site indoor live fire testing associated with the 3"/50 area behind bullet proof glass and fixed permanent mounting for a variety of weapons. Next to the bullet proof glass is a small staging area with work benches and testing equipment. Outside the building is the projectile collector which consists of a bullet trap, a 500 gallon tank filled with 50 percent water and 50 percent antifreeze, and a pump. The pump cycles the water mixture in the trap to decelerate the projectile. This asset also provides live fire proofing for the MK 19 Mod 3 40mm Grenade Machine Gun, it's barrels and prototype weapon designs and concepts. The proofing of the MK 19 Mod 3 and barrels are crucial for inspection and prompt turn around on overhaul.

1. (Con't)

• Gun Weapon Systems Engineering Lab & Test Tower Facility - The purpose of this asset is to provide In-Service and Product engineering functional area support for related test, development, specialized repair, maintenance management, and improvements to Gun Weapon Systems and Equipments. This includes Digital Gun Computing/Data Processing Systems, software/firmware certification and equipment support to Gun Weapon Systems Integration Testing prior to shipboard/fleet installation and utilization.

• Software Development/Test & Maintenance Facility - The purpose of this asset is the development and maintenance of tactical and operational software unique to Naval Gun Weapons Systems (i.e. MK 34 Gun Weapon System and MK 68 Gun Fire Control System), and the development of Test Program Sets (TPSs) in support of testing (i.e. depot, intermediate and operational level maintenance) and documentation for various systems including AN/SPS-49 Radar, MK 15 PHALANX, MK 57 NATO Seasparrow Surface Missile System, MK 86 Gun Fire Control System, MK 23 Target Acquisition System, MK 42 Gun Mount, MK 45 Gun Mount, MK 68 Gun Fire Control System, and the MK 13 Missile Launcher. These TPSs are for either the AN/USM-465 Portable Service Processor or the AN/TSM-192 Transportable Analog Tester. Software Development Branch personnel are also beginning development of TPSs for the Consolidated Automated Support System (CASS).

• Engineering & Production Documentation Support Facility - The purpose of this asset is to provide a Central Computer Aided Design and Drafting (CAD) area. This asset contains six CAD and CAD related systems that are used to develop three-dimensional engineering models for mechanical and electrical product design and to produce electronic printed wiring board Phototool Masters for electronic circuit card manufacture. This asset has been given authority by NAVSEA to control the creation and modification of all final official Navy full disclosure drawings. High quality master engineering drawings are produced for microfilm distribution to Navy and Contractor facilities involved in refurbishment, procurement and manufacture of ordnance parts. This asset has been involved in the implementation of a CALS compliant CAD and Image Systems Support Center. This asset is capable of receiving digital data from Contractor and other Navy CAD systems on magnetic tape, floppy disks and over an Ethernet network connection. This asset is also capable of analyzing, editing and converting the digital data using CALS data transfer standards and methods.

In addition, this asset includes a Technical Reference Center which serves as the Central Reference, Research and Distribution Center for Technical Material that contains technical books, journals, reports, manufacturing data, magazines and an audio and video tape library on all the latest in ordnance equipment. An extensive documentation service on CD-ROM is also available including Military Specifications, Industry Standards, Naval and DoD instructions, World Wide Industry Standards and Vendor Information.

• Close-In Defense Modernization/Upgrade/Overhaul Facility - The primary purpose of this asset is to provide the **only** Department of Defense asset certified/validated to perform modernization/upgrade/overhaul of Close-In Defense Systems. Close-In Defense Systems includes the PHALANX Close-In Weapon System (CIWS) and the Rolling Airframe Missile (RAM) Guided Missile Launching System (GMLS). This asset includes the Production Engineering and Repair area, the Phalanx Engineering Maintenance area, an Automated Storage and Retrieval System (ASRS), an Environmental Test area and a Pneumatic Test area. The following paragraphs describe the assets:

-This asset is used for modernization/upgrade/overhaul of PHALANX CIWS and RAM GMLS Weapon systems including system, subsystem and component testing and evaluation. This asset supports

1. (Con't)

the U.S. Navy Fleet and directed Foreign Military Sales (FMS) workload.

-The Production Engineering and Repair area performs modernization, upgrade, repair and acceptance testing of digital, analog, hybrid, electromechanical/inertial, RF and microwave modules and assemblies. This asset is also used to design and develop TPSs for fault isolation and acceptance testing. In addition, this asset includes a Complex Information Network System used for supporting reliability and maintainability analysis performed by the In-Service Engineering Agents (ISEA).

-The Phalanx Engineering Maintenance area provides operational and maintenance support of the Naval Sea Systems Command Engineering test and evaluation systems. These systems include both Engineering Development Model (EDM) and Production Suitability Model (PSM) systems which are utilized in such tasks as advanced engineering development, software validations, production procedures and proofing support, test analyze and fix functions, and qualification and acceptance testing.

-The ASRS automatically stores and retrieves purchased material used in support of the PHALANX and RAM programs.

-The Environmental Test area provides qualification testing and screening of weapon system subassemblies and components in three environmental areas: Mechanical Shock and Vibration, Humidity and Thermal Cycling and Salt Fog Exposure. This area is used to support Environmental Stress Screening (ESS) during the manufacturing process and provide qualification testing.

-The Pneumatic Test area provides the capability necessary to perform acceptance testing of Pneumatic Gun Drive Subsystem (PGDS) components and subassemblies using high pressure and/or high flow pneumatic test media. This capability includes providing required test stimuli, monitoring equipment, and interface connections.

• Performance Engineering and Training Systems (PETS) Facility - This asset provides PHALANX CIWS operation and maintenance training, fleet and production technical assistance and engineering verification, validation and analysis of PHALANX CIWS; faults, upgrades, software, ORDALTs, ECPs, new vendors and publications.

• TE8000 Weapon System Test Range - This asset provides Subsystem integration and final system acceptance testing of the PHALANX Close-In Weapon System.

• TE125 Indoor Antenna Analyzer/Compact Range - This asset provide certification and acceptance testing of antenna assemblies in the Modernization/Upgrade/Overhaul of MK 15 PHALANX CIWS and MK 92 Fire Control System.

• Calibration Laboratory Facility - This asset provides physical, mechanical, electrical, electronic, dimensional and optical calibration services and support of the Modernization/Upgrade/Overhaul of Naval Gun Weapon Systems.

• Soldering & Wiring Technology Facility - The primary purpose of this asset is to administrate the training and certification of personnel assigned electronic soldering duties related to the Modernization/Overhaul/Upgrade of Naval Gun Weapon Systems.

1. (Con't)

In summary, this facility has the knowledge and skills of highly specialized professional engineering and technical personnel integrated into a **"state of the art"** engineering/industrial capability. The specialized knowledge and skills needed to perform this capability can **only have been acquired through years of hands-on experience**, formal education, and specialized training. The facility supporting this capability is **unique because it is the only remaining facility within DoD** having both the capability and capacity to provide full-spectrum life cycle support for highly complex Naval Gun Weapons Systems. **This unique facility which could only be replicated at great expense or not at all satisfies DON's Imperative to maintain critical and unique facilities in support of Fleet readiness.** This facility also supports **DON's Acquisition/Contracting Imperative** to retain the ability to function as a **"smart buyer"**. In addition, this facility ensures that suppliers perform to contract requirements, systems meet operational requirements, contract and financial management expertise are retained to perform inherent governmental functions within the life cycle support process. This facility satisfies **DON's Depot/Industrial/Maintenance/Engineering Imperative** by providing an **organic depot** capability which can meet **surge** and **mobilization** requirements; selectively fabricate, modify or repair weapon systems as a means to control costs and **mitigate risks** of supplier failure (Last Source of Repair, **LSOR**); and control access and disassembly to **assess** in-service industrial conditions of weapon systems. Our **rapid response** ability in crisis situations was demonstrated during *Operation Desert Storm*. This facility would be **required for reconstitution** because it is the **only remaining** facility having the capability to perform this role for NGWS/ equipments. This capability supports **Level III**, Naval Gun Weapon Systems, which support a broad range of tactical missions as well as the interface requirements of Level II, Combat Weapon Systems.

2. Indicate whether the facility/equipment is portable, moveable or fixed as defined by paragraph 6, page 12 of this data call.

• Gun Weapon Systems Maintenance & Overhaul Support Facility	Fixed
• Gun Weapon Systems Engineering/Test & Advanced Training Facility	Fixed
• Gun Weapon Systems Engineering Lab & Test Tower Facility	Fixed
• Software Development/Test & Maintenance Facility	Moveable
• Engineering & Production Documentation Support Facility	Moveable
• Close-In Defense Modernization/Upgrade/Overhaul Facility	Fixed
• Performance Engineering and Training Systems (PETS) Facility	Movable
• TE8000 Weapon System Test Range	Fixed
• TE125 Indoor Antenna Analyzer/Compact Range	Fixed
• Calibration Laboratory Facility	Fixed
• Soldering & Wiring Technology Facility	Movable

3. Provide the replacement value of the facility/equipment. Report the facility/equipment cost separate from any building and utilities that may be integral to the facility/equipment.

• Gun Weapon Systems Maintenance & Overhaul Support Facility	$ 56,165,000.
• Gun Weapon Systems Engineering/Test & Advanced Training Facility	$ 9,649,000.
• Gun Weapon Systems Engineering Lab & Test Tower Facility	$ 5,512,000.
• Software Development/Test & Maintenance Facility	$ 1,300,000.
• Engineering & Production Documentation Support Facility	$ 1,596,000.
• Close-In Defense Modernization/Upgrade/Overhaul Facility	$ 126,339,500.
• Performance Engineering and Training Systems (PETS) Facility	$ 10,436,000.
• TE8000 Weapon System Test Range	$ 7,033,000.
• TE125 Indoor Antenna Analyzer/Compact Range	$ 2,150,000.
• Calibration Laboratory Facility	$ 3,145,323.
• Soldering & Wiring Technology Facility	$ 162,500.
TOTAL	**$ 223,488,323.**

4. Provide the gross weight and cube of the facility/equipment.

	Weight(lb)	Cube(ft)
• Gun Weapon Systems Maintenance & Overhaul Support Facility		6,147,959
• Gun Weapon Systems Engineering/Test & Advanced Training Facility	265,700	84,398
• Gun Weapon Systems Engineering Lab & Test Tower Facility		103,184
• Software Development/Test & Maintenance Facility	4,660	312
• Engineering & Production Documentation Support Facility	11,314	22,840
• Close-In Defense Modernization/Upgrade/Overhaul Facility		3,295,250
• Performance Engineering and Training Systems (PETS) Facility	43,785	4,263
• TE8000 Weapon System Test Range	16,000	4,900
• TE125 Indoor Antenna Analyzer/Compact Range	41,000	
• Calibration Laboratory Facility	55,000	51,600
• Soldering & Wiring Technology Facility		6,400

5. Indicate any "special" utility support required by this facility/equipment other than normal electrical power.

- Gun Weapon Systems Maintenance & Overhaul Support Facility
  440 volt AC, 3-phase
  5000 psi air supply
  8000 psi hydraulic pumps

- Gun Weapon Systems Engineering/Test & Advanced Training Facility
  440 volt AC, 3-phase, 60 Hz, Type Delta, 164 Kw peak
  175 psi air at 48.7 cfm
  115 volt AC, 3-phase, 400 Hz, Type Delta

5. (Con't)

- Gun Weapon Systems Engineering Lab & Test Tower Facility
  115 volt AC, 3-phase, 400 Hz, Type Delta
  440 volt AC, 3-phase, 60 Hz, Type Delta

- Software Development/Test & Maintenance Facility
  None

- Engineering & Production Documentation Support Facility
  None

- Close-In Defense Modernization/Upgrade/Overhaul Facility
  90 psi air supply
  Dried and filtered air and nitrogen sources
  Water source (30 GPM at 10 PSID minimum/150 PSID maximum)

- Performance Engineering and Training Systems (PETS) Facility
  Water source (30 GPM at 10 PSID minimum/150 PSID maximum)

- TE8000 Weapon System Test Range
  440 volt AC, 3-phase, 60 Hz, 700 amps for seven test bays

- TE125 Indoor Antenna Analyzer/Compact Range
  480 volt AC, 3-phase, 60 Hz, 120 amp

- Calibration Laboratory Facility
  90 psi air supply

- Soldering & Wiring Technology Facility
  None

6. Indicate any special budget requirements for the facility/equipment (i.e., special foundations, non-ferrous materials, shielding, hardening, etc.).

- Gun Weapon Systems Maintenance & Overhaul Support Facility
  Reinforced foundation for disassembly, assembly and testing pits
  Special foundation to support transportation of heavy equipment and systems
  Rail Service
  20 and 75 ton overhead crane service
  20,000 psi climate control chamber
  20 foot by 18 foot overhead door service
  Environmental compliant painting chamber

6. (Con't)

- Gun Weapon Systems Engineering/Test & Advanced Training Facility
  Reinforced building structures and foundations
  Bullet proof walls and ceilings in live fire area

- Gun Weapon Systems Engineering Lab & Test Tower Facility
  None

- Software Development/Test & Maintenance Facility
  None

- Engineering & Production Documentation Support Facility
  None

- Close-In Defense Modernization/Upgrade/Overhaul Facility
  An adequately smooth floor for air bearing system transportation
  Air handling vent systems required for paint booth and degreaser area
  ESD compliant grounding RF shielded enclosure for making FM noise measurements
  Foundation with concrete support piers for the ASRS Two concrete rebar footers for TE215 measuring 4' x 8' x 18' deep for the Environmental Test area Building 2 of the Pneumatic Test area must be capable of supporting the gross equipment weight in addition to two tanks weighing approximately 7,000 pounds each when empty A raised computer floor for cabling and for use as an air conditioning plenum within the Production Engineering and Repair area.

- Performance Engineering and Training Systems (PETS) Facility
  None

- TE8000 Weapon System Test Range
  Ground rods for the antenna towers, test bays, and equipment

- TE125 Indoor Antenna Analyzer/Compact Range
  Level foundation for range reflector and antenna positioner
  RF shielding for console room and anechoic chamber

- Calibration Laboratory Facility
  Vibration and magnetic isolation

- Soldering & Wiring Technology Facility
  None

7. State any environmental control requirements (i.e., temperature, humidity, air scrubbing).

- Gun Weapon Systems Maintenance & Overhaul Support Facility
  Environmental compliant painting chamber
  Climate controlled chamber
  Ventilation system for freon degreasing operation
  Environment containment for rexroth hydraulic pump area

- Gun Weapon Systems Engineering/Test & Advanced Training Facility
  Relative humidity of 50% +/- 10% and temperature controlled between 66 degrees and 78 degrees Fahrenheit must be maintained in the test system area.
  Ventilation of combustion gases in live fire area

- Gun Weapon Systems Engineering Lab & Test Tower Facility
  Relative humidity of 50% +/- 10% and temperature controlled between 66 degrees and 78 degrees Fahrenheit must be maintained in the test system area.

- Software Development/Test & Maintenance Facility
  Relative humidity of 50% +/- 10% and temperature controlled between 66 degrees and 78 degrees Fahrenheit must be maintained in the test system area.

- Engineering & Production Documentation Support Facility
  Relative humidity of 50% +/- 10% and temperature controlled between 66 degrees and 78 degrees Fahrenheit must be maintained in the test system area.
  Air filtration system for CAD system

- Close-In Defense Modernization/Upgrade/Overhaul Facility
  Relative humidity of 50% +/- 10% and temperature controlled between 66 degrees and 78 degrees Fahrenheit must be maintained in the test system area.

- Performance Engineering and Training Systems (PETS) Facility
  None

- TE8000 Weapon System Test Range
  Relative humidity of 50% +/- 10% and temperature controlled between 66 degrees and 78 degrees Fahrenheit must be maintained in the test system area.

- TE125 Indoor Antenna Analyzer/Compact Range
  Relative humidity of 50% +/- 10% and temperature controlled between 66 degrees and 78 degrees Fahrenheit must be maintained.

- Calibration Laboratory Facility
  Relative humidity of 40% +/- 20% and temperature control is dependent on the type of calibration performed.
  Dust - 700 micron per cubic foot maximum

- Soldering & Wiring Technology Facility
  Venting and external vacuum system.

8. Indicate if this facility/equipment would be extremely difficult or impossible to replicate or relocate at another site and the impact to the Department of the Navy if this facility/equipment was lost. Consider existing Government-wide and commercial capabilities as the replication and impact statements are formulated.

Due to previous consolidation efforts, the Gun Weapons Systems Facility at NSWC, Louisville is the only remaining comprehensive depot/engineering facility with the capability to support the DoD Commodity Group of Sea Systems Subgroup Weapons Systems (Surface). In preservation of DON readiness, NSWC, Louisville maintains required critical and unique capabilities found nowhere else in the DoD and **could only be replicated at a great cost.**

The inherently governmental function (smart-buyer) performed by this facility represents the Navy's corporate memory for NGWS/equipments and is **impractical for the private sector to assume.** This facility has been established over most of the fifty years that the facility has been a provider of goods (military) and services (engineering). The customer base of this facility includes other branches of DoD, non-DoD, and FMS customers. For example, the FMS customer base for the PHALANX CIWS security assistance program currently supports Australia, Canada, Greece, Israel, Japan, Portugal, Saudi Arabia, Taiwan, Turkey and the United Kingdom with Brazil, Egypt, New Zealand, Spain, Thailand and Venezuela in the process of obtaining systems.

The full spectrum hands-on experience in both a sponsorship role and appraisal role in support of acquisition and readiness in the functional areas of exploration, assessment, development, evaluation, production, operation and maintenance provides a unique synergy for NGWS/equipments support.

Undoubtedly, this facility's most important resource is its people which cumulatively represents thousands of man-years of experience. **The stability of it's work force provides the continuity necessary to perform the inherently governmental roles of sponsorship and appraisal required for life cycle support of NGWS/equipments.** Whether developing, modernizing, upgrading, maintaining or producing major system prototypes or reactivating "Old Warriors" (Battleships) this facility has been able to maintain a core technological base to respond to any operational fleet requirement. **Operational readiness would be impacted if this facility was not maintained organically.**

This unique integration of engineering/industrial capability **provides a full spectrum manufacturing, repair and systems overhaul capability for which no other source exists, for products where no interest exists in the private sector and for rapid response situations to fleet safety requirements.**

Loss of this facility would result in an irreversible loss of the Navy's corporate memory (a DON imperative to maintain a repository of technical knowledge for critical mission essential Weapons Systems/equipments supported by this facility) and the loss of an inherently governmental role, that of being a smart buyer. Additionally, the Navy's ability to reconstitute resources to address future threats would be severely limited.

8. (Con't)

Attributes of the location of this facility is an **affordable** labor market (prevailing labor rates lower than national average); **synergistic full spectrum** engineering and industrial facility; close proximity to major air, rail, river and interstate transportation routes; and readily available labor source from nearby colleges and universities (e.g. University of Louisville). The affordability attribute and location in a low cost of living area within a major metropolitan area, provides an environment necessary to sustain the stability for maintaining a "smart buyer" capability over the life cycle of a weapon system. Furthermore, this environment attracts and retains a highly technical, quality and stable workforce.

One of the greatest benefits to this facility's location in the central midwest is that it provides a consolidated "full spectrum" engineering and industrial activity that is capable of supporting the Atlantic, Pacific and Gulf Coast Activities. **This eliminates the need to replicate the Naval Gun Weapons Systems capability (i.e. an affordable one stop shop for our customers).**

9. Indicate how and when the facility/equipment was transported and or constructed at the site.

The Gun Weapons Systems Facility began construction in 1941. Original machinery was transported from the old Gun Factory in Washington, D. C. Construction continued through the 1940's and 1950's. In 1985 this facility was expanded through the purchase of adjacent properties to support the addition of the PHALANX CIWS depot capability. Specific dates for the constructed/purchased and last upgrade of the major assets of this facility are as follows:

	Constructed/ Purchased	Last Upgrade
• Gun Weapon Systems Maintenance & Overhaul Support Facility	1967	1993
• Gun Weapon Systems Engineering/Test & Advanced Training Facility	1960	1993
• Gun Weapon Systems Engineering Lab & Test Tower Facility	1971	1990
• Software Development/Test & Maintenance Facility	1991	1993
• Engineering & Production Documentation Support Facility	1962	1992
• Close-In Defense Modernization/Upgrade/Overhaul Facility	1985	1994
• Performance Engineering and Training Systems (PETS) Facility	1981	1993
• TE8000 Weapon System Test Range	1986	1989
• TE125 Indoor Antenna Analyzer/Compact Range	1986	1992
• Calibration Laboratory Facility	?	1993
• Soldering & Wiring Technology Facility	?	1993

10. List the functional support areas that this facility/equipment support.

- Gun Weapon Systems Maintenance & Overhaul Support Facility
  2.1 Gun Systems

- Gun Weapon Systems Engineering/Test & Advanced Training Facility
  2.1 Gun Systems

- Gun Weapon Systems Engineering Lab & Test Tower Facility
  2.1 Gun Systems

10. (Con't)

- Software Development/Test & Maintenance Facility
  2.1 Gun Systems

- Engineering & Production Documentation Support Facility
  2.1 Gun Systems
  2.8 Launchers

- Close-In Defense Modernization/Upgrade/Overhaul Facility
  2.1 Gun Systems
  2.8 Launchers

- Performance Engineering and Training Systems (PETS) Facility
  2.1 Gun Systems

- TE8000 Weapon System Test Range
  2.1 Gun Systems

- TE125 Indoor Antenna Analyzer/Compact Range
  2.1 Gun Systems
  2.8 Launchers

- Calibration Laboratory Facility
  2.1 Gun Systems
  2.8 Launchers

- Soldering & Wiring Technology Facility
  2.1 Gun Systems
  2.8 Launchers

11. Provide the historical utilization average for the past five fiscal years (1989-1993). Define the unit of measure used.

The average utilization is based on direct workload controlled by the Gun Weapon Systems Facility minus that direct workload performed within other NSWC, Louisville facilities. **Average equals 769 workyears.**

12. Provide the projected utilization data out to FY 1997.

Projected utilization (direct workload controlled by the Gun Weapon Systems Facility) should remained stabled through FY97 based on current readiness requirements. **Utilization projection is 769 workyears.**

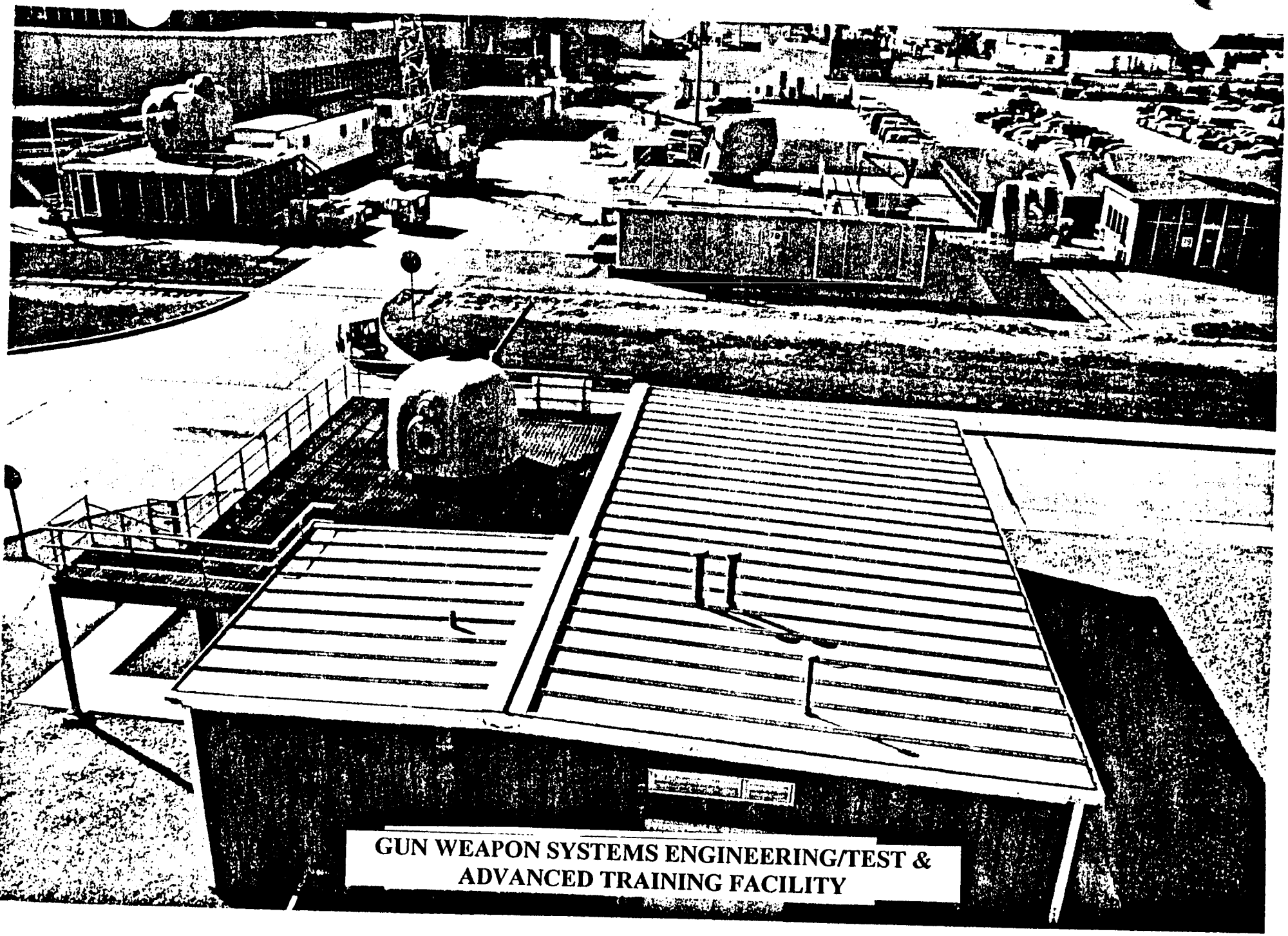
13. What is the approximate number of personnel used to operate the facility/equipment?

• Gun Weapon Systems Maintenance & Overhaul Support Facility	157
• Gun Weapon Systems Engineering/Test & Advanced Training Facility	29
• Gun Weapon Systems Engineering Lab & Test Tower Facility	8
• Software Development/Test & Maintenance Facility	16
• Engineering & Production Documentation Support Facility	8
• Close-In Defense Modernization/Upgrade/Overhaul Facility	225
• Performance Engineering and Training Systems (PETS) Facility	4
• TE8000 Weapon System Test Range	26
• TE125 Indoor Antenna Analyzer/Compact Range	3
• Calibration Laboratory Facility	19
• Soldering & Wiring Technology Facility	1

* Note - These figures do not include the following type of personal: clerical, administrative, engineering, etc.

14. What is the approximate number of personnel needed to maintain the equipment?

• Gun Weapon Systems Maintenance & Overhaul Support Facility	13
• Gun Weapon Systems Engineering/Test & Advanced Training Facility	5
• Gun Weapon Systems Engineering Lab & Test Tower Facility	2
• Software Development/Test & Maintenance Facility	3
• Engineering & Production Documentation Support Facility	2
• Close-In Defense Modernization/Upgrade/Overhaul Facility	3
• Performance Engineering and Training Systems (PETS) Facility	3
• TE8000 Weapon System Test Range	2
• TE125 Indoor Antenna Analyzer/Compact Range	1
• Calibration Laboratory Facility	1
• Soldering & Wiring Technology Facility	0


GUN WEAPON SYSTEMS ENGINEERING/TEST &
ADVANCED TRAINING FACILITY

12 Aug 94 Transmittal

LOUISVILLE SITE

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

S. HOWARD
NAME (Please type or print)

Signature

COMMANDER
Title

7/22/94
Date

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type or print)

Signature

Commander
Title

7/28/94
Date

Naval Surface Warfare Center
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STERNER
NAME (Please type or print)

Signature

Title
Commander
Naval Sea Systems Command

8/5/94
Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

Title

8/8/94
Date

12 Aug 94 Transmittal

UNIT CALL #1C
LOUISVILLE SITE

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

R.W. GILBERT	
NAME (Please type or print)	Signature
COMMANDING OFFICER	22 JULY, 1994
Title	Date
CRANE DIVISION NSWC, LOUISVILLE	
Activity	

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

R.W. GILBERT
NAME (Please type of print)

Signature

COMMANDING OFFICER
Title

6 MAY, 1994
Date

CRANE DIVISION
NSWC, LOUISVILLE
Activity

NSWC CRANE DIV, LOUISVILLE
DATA CALL # 12

JL
SEA09H
5/12/94

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

S. HOWARD
NAME (Please type or print

Signature

COMMANDER
Title

6 MAY, 1994
Date

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (SEL) D.P. SARGENT, JR.
NAME (Please type of print

Signature

COMMANDER
Title

5/11/94
Date

NAVAL SURFACE WARFARE CENTER
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STERNER
NAME (Please type or print

Signature

Title

5-13-94
Date

Commander
Naval Sea Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

J.B. Greene, Jr.
NAME (Please type of print

Signature

Acting
Title

27 May 1994
Date

FURTHER EXPLANATION FOR CHANGES MADE TO DATA CALL #12
REVISION (8/19/94)

Pages 9 and 10 of Data Call #12 do state that "This capability supports the joint Army/Navy developmental efforts for liquid propellant testing and guided munitions." The operative word is "supports". This TC is not responsible for development of guided munitions so the Weapons-Guided Projectiles, Common Support Function was not used. Since the Guns that launch guided projectiles are under this TC, technical support is provided by core personnel within the Weapons-Guns and Ammunition, Common Support Function. Loss of this TC capability would have a negative impact on the munitions developer since Gun expertise would not be available.

WC

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION, LOUISVILLE SITE
DATA CALL #12

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

J. M. CARNEY
NAME (Please type or print

Signature

COMMANDER
Title

8/21/94
Date

CRANE DIVISION, NSWC
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type of print

Signature

Commander
Title

8/23/94
Date

Naval Surface Warfare Center
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print

Signature

G. R. STERNER
Title

8/27/94
Date

Commander
Naval Sea Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type of print

Signature

Title

9/1/94
Date

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

R.W. GILBERT
NAME (Please type or print)

Signature

COMMANDING OFFICER
Title

19 AUGUST, 1994
Date

CRANE DIVISION
NSWC, LOUISVILLE
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

J. M. CARNEY
NAME (Please type or print)

Signature

Commander
Title

9/14/94
Date

Crane Division, NSWC
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. SARGENT, JR.
NAME (Please type or print)

Signature

COMMANDER
Title

9/15/94
Date

NAVAL SURFACE WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print)

Signature

G. R. STERNER
Commander
~~Naval Sea Systems Command~~
Title

9/19/94
Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

Title

9/19/94
Date

DATA CALL #12
LOUISVILLE SITE

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

JON R. CUMMINGS	Jon R Cummings
NAME (Please type or print)	Signature
COMMANDING OFFICER	9/14/94
Title	Date
NAVSURFWARCEN ORDSTA	
Activity	

1. In regards to the BSAT request for clarification dated 12 September 1994, the response to question #3.2.4.2 of Data Call #12 is provided.

Extensive use is made of the College co-operative internship program to acquire new engineers and training is provided through various sources to provide them with the necessary skills and knowledges in shipboard equipment/systems and physical security requirements. Electronics engineers specializing in Radio Frequency (RF) technology are one example of the skill mix required for this Technical Capability. Inherently Governmental roles include research, development and test of "off-the-shelf"/NDI hardware and development of unique items, transition-to-production, classified software development, fleet introduction and life cycle logistics support. The RDT&E effort requires NSWC, Louisville to provide the technical direction and funds allocation to other participating field Activities. Funds are provided directly to the other Activities, via the NAVSEASYSCOM, based on annual Business Plans provided by the NSWC, Louisville Program Manager. Core personnel allocate these resources based on overall program priorities.

2. Indicate whether the facility/equipment is portable, moveable or fixed as defined by paragraph 6, page 12 of this data call:

The above mentioned assets would be considered moveable, as defined by paragraph 6, page 12.

3. Provide the replacement value of the facility/equipment. Report the facility/equipment cost separate from any building and utilities that may be integral to the facility/equipment:

The core personnel and unique assets supporting this Technical Capability reside at NSWC Crane Div., Louisville site. A 7,980 sq. ft. building was constructed in two phases, in 1986 and 1990, using program funds. The building is a "secure area", TEMPEST certified for processing classified data, and utilizes 5,568 sq. ft. for offices for 45 personnel. The building contains an internal, secure, Local Area Network (LAN) and an independent interface to the NSWC, Crane Div. LAN.

Unique assets include a 1,572 sq. ft. mock-up of functional shipboard equipments. The mock-up is constructed of steel, with shipboard doors, hatches, scuttles, J-doors, lagging, lighting and ship's power to simulate a ship's magazine and surrounding spaces. A production version of the MK 4 PVPCS, MK 6 SMILS and MK 1 MSS are installed in and around the mock-up for developmental testing, evaluation and fleet training. These equipments are also used by the engineers and technicians to simulate and evaluate fleet problems, develop ORDALTS, SHIPALTS, MACHALTS, and evaluate interfaces to new sensors. Comprehensive vulnerability scenario testing is conducted and surreptitious penetration analysis is performed to evaluate equipment effectiveness for a wide range of threats. This mock-up was also used for fleet training prior to introduction of these equipments into the fleet.

An additional 840 sq. ft. mock-up was constructed for the RDT&E program, in 1992, which utilizes steel bulkheads, doors and hatches to simulate a ship's quarterdeck and Damage Control Central (DCC) spaces for the installation, test and evaluation of prototype equipment. A functional IC/SFZ switchboard, and components, are installed in this mock-up to test security equipment interfaces. A Security Television System, Shipboard Access Control System, Radar and other security devices are installed and tested in this mock-up.

Prototype manufacturing capabilities include a soldering station, an ESD station and Printed Wiring Assembly (PWA) workstations to accommodate circuit board design and simulation for development of shipboard physical security equipments.

Classified software development stations are installed in the mock-up to facilitate internal software programming. The building is TEMPEST certified for development of SECRET software and SECRET storage facilities are available for hardware and software. Software support capabilities include extensive off-the-shelf software analysis, evaluation of software distribution techniques and realtime in-circuit analysis of operational software.

Mock-up #1 equipment:

Original construction (material)	$35,000.00
Original construction (labor)	$57,600.00
Mk 1 MSS	$200,000.00
Mk 4 PVPCS	$90,000.00
SMILS & Misc. test equipment	$40,000.00
TOTAL (Mock-up #1)	$422,600.00

Mock-up #2 equipment:

Original construction (material)	$8000.00
Original construction (labor)	$19,200.00
SPS Equipment	$66,050.00
Test Equipment	$43,618.00
proto-type equipment	$28,483.00
proto-type software	$25,799.00
TOTAL (Mock-up #2)	$191,150.00

Facilities:

Building 83 Facility	$347,849.00
Furnishings	$16,000.00
Mezzanine	$18,000.00
SPS Library	$7,200.00
Railcar (storage)	$15,000.00
TOTAL	$404,049.00

Combined total(facilities/equipment) $1,017,799.00

4. Provide the gross weight and cube of the facility/equipment:

Mock-up #1:	20,500 lbs.,	12,576 cubic feet
Mock-up #2:	7,000 lbs.,	6,720 cubic feet

Office Space 5568 square feet

5. Indicate any "special" utility support required by this facility/equipment other than normal electrical power:

Incoming AC power is processed through internal independent power transformers to provide isolation with external power system equipment, and phase input power to simulate shipboard distribution systems.

6. Indicate any special budget requirements for the facility/equipment (i.e., special foundations, non-ferrous materials, shielding, hardening, etc.):

This facility is an approved exclusion area comprised of perimeter security fencing, electronic and mechanical access control devices. This facility is also TEMPEST compliant since processing classified information is a program requirement.

7. State any environmental control requirements for the facility/equipment (i.e., temperature, humidity, air scrubbing):

None.

8. Indicate if this facility/equipment would be extremely difficult or impossible to replicate or relocate at another site and the impact to the Department of the Navy if this facility/equipment were lost. Consider existing Government-wide and commercial capabilities as the replication and impact statements are formulated:

The location of this Technical Capability at NSWC, Louisville provides the personnel, unique facilities and support personnel to accomplish the mission. The close proximity of major universities and colleges is a resource for cooperative education students (engineers in training) and a source for new engineers and technicians. The location is also convenient to customers on each Coast and the Wash, D.C. area for coordination with program sponsors.

The personnel and assets supporting this Technical Capability provide support and services unduplicated within any of the Warfare Centers. The diversity of skills, trades and facilities utilized in the development, acquisition, test, evaluation, installation and life cycle support of shipboard physical security equipments/systems provides the synergism to maintain a "smart buyer" capability and enhance the level of physical security for fleet units to meet the Navy's changing role. The shipboard mock-ups provide a highly unique asset to test and evaluate equipment, provide fleet training and evaluate/resolve fleet problems.

The interfunctional relationship between the core group of engineers, technicians and logistics management personnel is essential for optimal acquisition, supply support and continued improvements for shipboard physical security. The roles assigned to this Technical Capability are inherently Governmental and are essential for long-term core logistics support to the fleet.

The loss, or transfer, of this function would seriously limit the ability of the Navy to provide economical, technically capable, programmatic, engineering and logistics support expertise to the fleet. Transfer of this Technical Capability would result in the loss of many experienced physical security personnel who would choose not to relocate. If funds are not available to relocate the mock-ups, a serious impact would result from the inability to conduct in-house testing of off-the-shelf devices and internal developments. Deletion of this Technical Capability function would eliminate all "coordinated" progress toward enhanced physical

security for fleet units and the requirements for commonality, logistics supportability and configuration management of equipments/systems for fleet units would not be met.

9. Indicate how and when the facility/equipment was transported and or constructed at the site:

Both mock-up facilities were constructed on site by NAVSURFWARCEN ORDSTA Louisville personnel, (riggers, welders, electricians, etc.). The magazine mock-up was constructed in 1986. The quarterdeck mock-up was constructed in 1992.

10. List the functional support areas (previously provided in Tab A) that this facility/equipment support. Refer to Appendix A for the list of functional support areas:

1.3 Surface Ship

11. Provide the historical utilization average for the past five fiscal years (1989-1993). Define the unit of measure used:

Over the past five years, the magazine mock-up has been used on the average of approximately 40 hours per week. There have been occasions when equipment was left to operate continuously (24 hrs/day) for testing purposes.

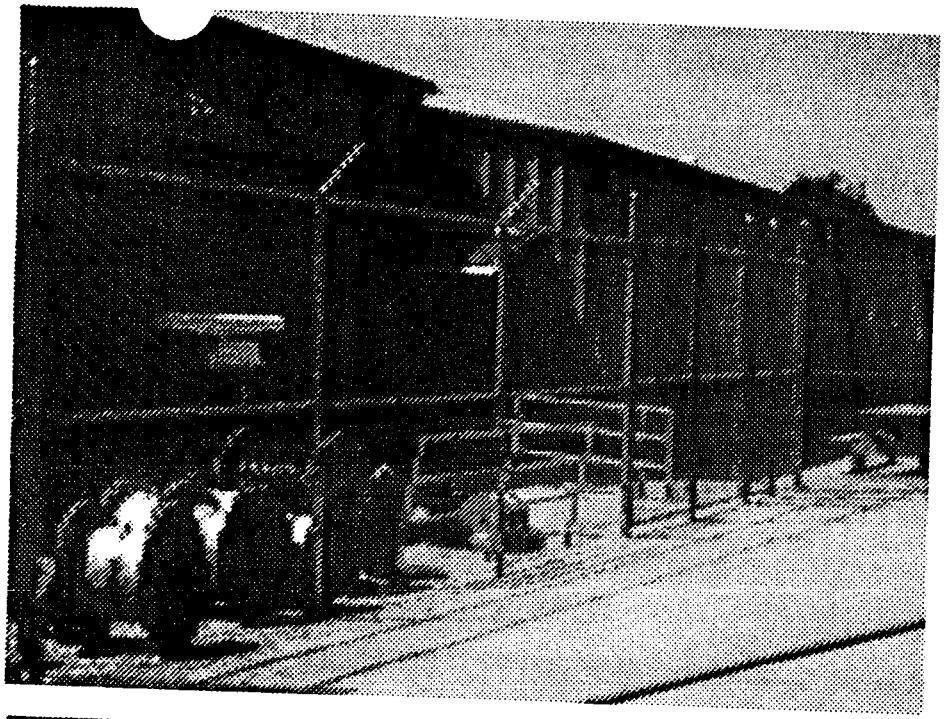
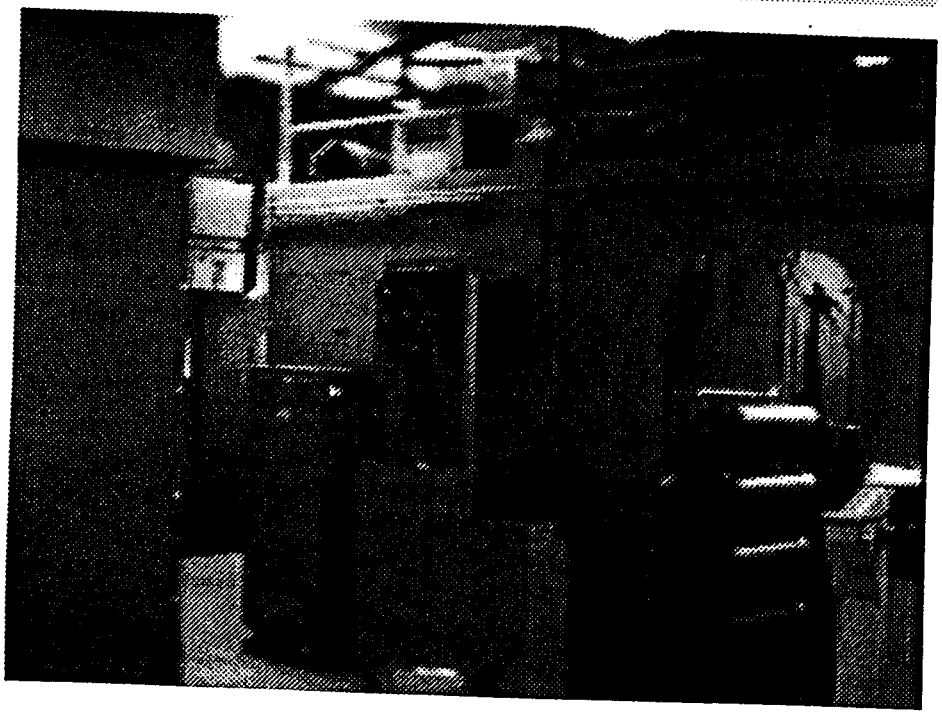
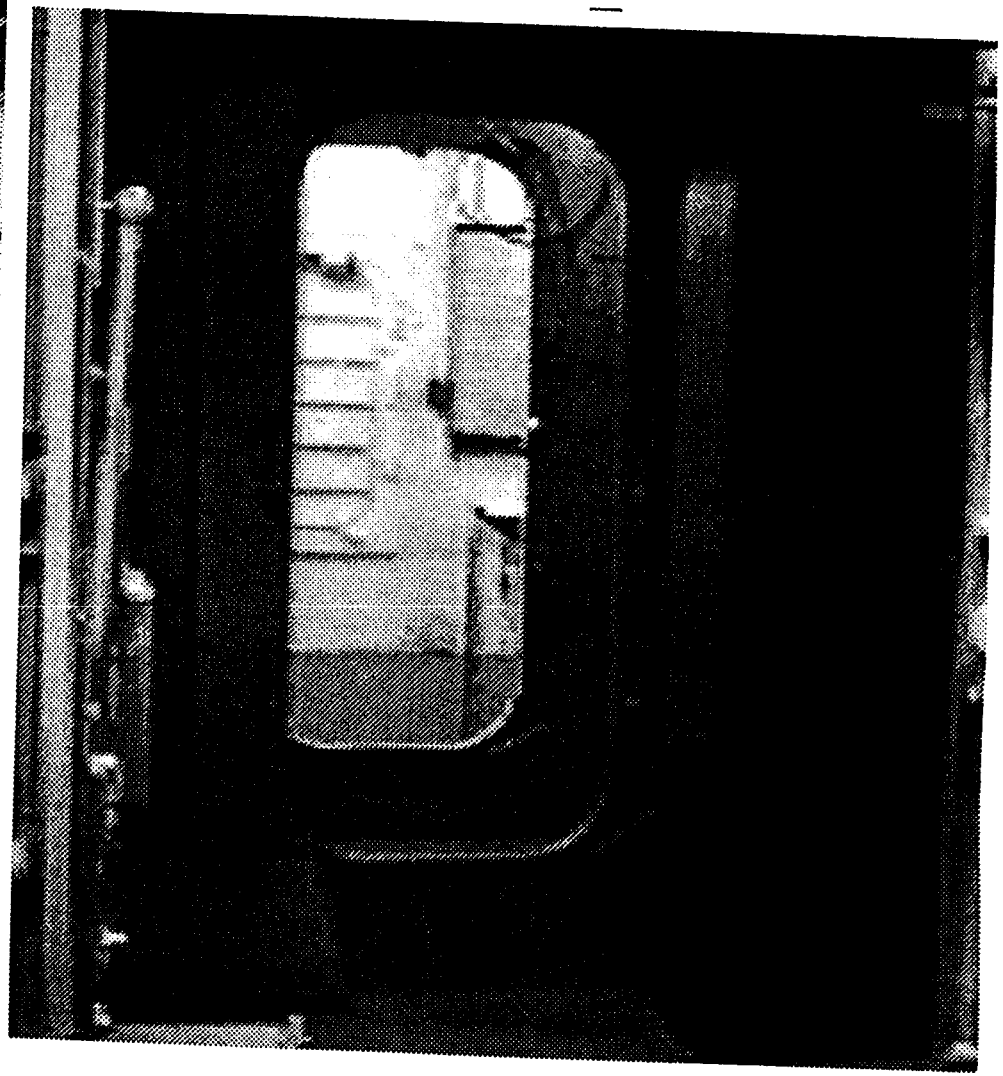
12. Provide the projected utilization data out to FY1997:

Projected use of both mock-ups is expected to be in excess of 40 hours per week up through FY1997.

13. What is the approximate number of personnel used to operate the facility/equipment:

Approximately 25

14. What is the approximate number of personnel needed to maintain the equipment:

Approximately 3

Shipboard Physical Security Programs Mock-up Area