DCN 1251

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**	

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GENERAL INFORMATION

Facility/Capability Title: **Ship Ground Station** 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:	**100%**						

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles: **60%**

Armament/Weapons:

EC:

Shipboard Systems: **40%**

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

TECHNICAL INFORMATION

Facility/Capability Title: **Ship Ground Station**

Facility Description; Including mission statement:

The SGS replicates the Combat Direction systems and USW/EW subsystems of DD-963 and FFG-7 Class ships in a land based test and evaluation facility. The SGS configuration allows scientifically controlled development testing of the integration and interoperability between ship and air mission elements of helicopters, fixed wing maritime, and Unmanned Air Vehicles (UAV's). SGS supports test and evaluation of the LAMPS MK III ship/air interface for DD-963, FFG-7, CG-47 and DDG-51 Class ships. Significant cost savings are realized by evaluating ship/air integration and interoperability issues without requiring support from costly and heavily committed surface assets. The integration of this facility with other NAWCAD assets, such as the Chesapeake Test Range, the Air Combat Environment Test and Evaluation Facility (ACETEF), and EW/Avionics Flight Test Facility leverages maximum utilization of these existing high cost assets. Colocation of the SGS and NAWCAD Maritime aircraft (both rotary and fixed wing) provides excellent access to all platforms required for ship/air integration test and evaluation. The SGS, being the only RDT&E facility of its kind in the Navy, provides a comprehensive payoff for the validation of force structure interoperability between air and ship elements and cost effectively enhances Fleet operational capabilities and training opportunities.

Interconnectivity/Multi-Use of T&E Facility:

The SGS is integrated with the Chesapeake Test Range for receipt of Time Space Position Information (TSPI) and for delivery of AN/SLQ-32 EW classification data. Additionally, SGS is integrated with ACETEF for anechoic chamber and electromagnetic compatibility tests to permit support of ship/air links while conducting tests in these facilities. SGS is linked to the AEGIS Combat System Center, Wallops Island VA to provide a multi ship LINK 11 capability and to provide the AEGIS USW Subset of the Command and Decision system with a telecommunications access to LAMPS MK III helicopter assets at NAWCAD Patuxent River, MD. The SGS can simultaneously conduct LAMPS MK-I, LAMPS MK-III, SH-60F Tactical Navigation, LINK 11, and non-LAMPS maritime missions.

Type of Test Supported:

Ship/Air integration and interoperability testing, airborne acoustic processing, shipboard acoustic processing, contact identification and localization tests, shipboard and airborne system and subsystem software, performance testing.

TECHNICAL INFORMATION

Facility/Capability Title: **Ship Ground Station**

Summary of Technical Capabilities:

Major facilities and equipment are: AN/UYA-4(V) Display Group, AN/UYK-7(V) Data Handling Group, AN/SRQ-4(V) Radio Terminal Set, AN/SQQ-28(V) Sonar Signal Processor Set, Naval Tactical Data System (NTDS) LINK 11, AN/SLQ-32 Electronic Surveillance Measures Set An/SQQ-89(V)T ON Board Trainer, Mini-Signals and Data Processing Unit. AN/SPA-50G NAVSEA TACNAV/Radar Terminal. Instrumentation capabilities include: NTDS Bus monitor, SGS Mission Data Extraction System, Chesapeake Test Range positioning data interface. Additionally, the SGS uses commercial off the shelf logic, and acoustic signal analysis equipment.

Keywords:

Light Airborne Multi-purpose System (LAMPS), Undersea Warfare (USW), Research Development and Test and Evaluation (RDT&E), antisubmarine, ship/air, interoperability, Combat Direction System (CDS), helicopter, AEGIS Combat Systems Center

ADDITIONAL INFORMATION

Facility/Capability Title: **Ship Ground Station**

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	5	4
Contractor	15	13	12	11	11	11	11
Total	19	17	16	15	15	16	15

Total Square Footage: **3704**

Test Area Square Footage: **1696**

Office Space Square Footage: **2008**

Tonnage of Equipment: **52**

Volume of Equipment: **7200 cu. ft.**

Annual Maintenance Cost: **$107K**

Estimated Moving Cost: **$2,542K**

CAPITAL EQUIPMENT INVESTMENT ($K)

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
I&M	25	25	25	25	25	25	25
Sponsor Funded	140	75	275	1,475	75	75	75
Total	165	100	300	1,500	100	100	100

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Ship Ground Station**

AGE: **13 Years** REPLACEMENT VALUE: **63.0M (Includes Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1991**

NATURE OF LAST UPGRADE: **Alpha upgrade to the AN/SLQ-32 Countermeasures Set and the AN/UYK-44 Based An/SQQ-28 Sonar Signals Processing Set**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Commercial Off the Shelf An/SQQ-28 Sonar Signals Processing Set**

TOTAL PROGRAMMED AMOUNT: **200K**
SUMMARY DESCRIPTION: **Creates an AN/SQQ-28 Sonar Signals Processing Set in an HP 9000 TAC-3 Computer. For integration with the DD-963 Combat Direction System.**

2. UPGRADE TITLE: **AN/SQQ-28(V)10 Sonar Signals Processing Set**

TOTAL PROGRAMMED AMOUNT: **1.4M**
SUMMARY DESCRIPTION: **Upgrade of the AN/SQQ-28(V)6 configuration to the V10 system. This system upgrades the signal processor, tape recorder, interfacing computer and tape loading device.**

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

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.

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HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Ship Ground Station**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	0	2800	5000	7200	7200	7200	7200	7200
(Mission Systems)	TEST HOURS	1	416	583	749	749	749	624	624
	MISSIONS								
EC	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
ARMAMENT/WEAPONS	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER T&E	DIRECT LABOR	0	4200	7500	10800	10800	10800	10800	10800
(Shipboard Mission Systems)	TEST HOURS	0	624	874	1123	1123	1123	936	936
	MISSIONS								
OTHER	DIRECT LABOR	4200	0	0	0	0	0	0	0
(System Development)	TEST HOURS	1560	0	0	0	0	0	0	0
	MISSIONS								

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

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Ship Ground Station**

ANNUAL HOURS OF DOWNTIME	1	**1640**
AVERAGE DOWNTIME PER DAY (LINE 1 + 365)	2	**4.49**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**19.5**

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
Ship/Air Missions Systems Integration	**4**	**7**	**28**	**1,014**
Shipboard Mission Systems T&E	**4**	**6**	**24**	ANNUAL UNCONSTRAINED CAPACITY
				9
"TYPICAL"	**2**	**5**		**370,111**
		TOTAL Σ	**52**	

GENERAL INFORMATION

Facility/Capability Title: **Aircraft Armament Systems Simulation Engineering Test Station (AASSETS)**

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:	**100%**						

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles: **100%**

Armament/Weapons:

EC:

Other:

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

GENERAL INFORMATION

Facility/Capability Title: **Electronic Warfare/Avionics Flight 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: **Measurement Facility**

	T&E	S&T	D&E	IE	T&D	OTHER	=100%
PERCENTAGE USE:	**80%**				**20%**		
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**60%**				**15%**		
Armament/Weapons:							
EC:	**20%**				**5%**		
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Electronic Warfare/Avionics Flight Test Facility**

Summary of Technical Capabilities:

Eight non coherent RCS measurement systems operating from 1 to 35 Ghz and one wideband coherent system operating over the 8 to 12 Ghz range. Precision Vitro RIR 778 precision tracking radars for TSPI, Telemetry station for precision target attitude information all integrated into a real-time engineering workstation.

Keywords:

Radar Cross Section (RCS), Jam to Signal Ration (J/S), Chaff, Radar Signature, Emitter Simulations and C^3 Simulation.

ADDITIONAL INFORMATION

Facility/Capability Title: **Electronic Warfare/Avionics Flight Test Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	12	12	12	12	12	12	12
Contractor	6	6	6	5	5	5	5
Total	18	18	18	17	17	17	17

Total Square Footage: **35,717**

Test Area Square Footage: **32,860** Office Space Square Footage: **2,857**

Tonnage of Equipment: **91** Volume of Equipment:

Annual Maintenance Cost: **$200K** Estimated Moving Cost: **$240K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
450	2,000	2,000	3,000	1,500	2,000	2,000

TECHNICAL INFORMATION

Facility/Capability Title: **Electronic Warfare/Avionics Flight Test Facility**

Facility Description; Including mission statement:

The Avionics Flight Test Facility provides a real-time test tool to evaluate aircraft avionics weapon systems. Aircraft avionics systems include: navigation, communication, Identification Friend or Foe (IFF), radar, Electronic Support Measurements (ESM), Electronic Counter Measures (ECM), and Electronic Counter Counter Measures (ECCM). The facility is primarily designed to provide multiple signal characteristic emissions through the utilization of programmable parameter synthesizing for Electronic Warfare (EW) testing. Emitter simulation capabilities include multiple continuous wave, pulse, and synthetic antenna scan patterns covering a frequency range of 7 to 35 Ghz. Measurements include warning receiver sensitivity and bearing accuracy and aircraft antenna patterns. The avionics workstation provides for integration of airborne avionics bus data received via real-time telemetry with the ground instrumentation data. The Chesapeake Test Range (CTR) Dynamic In-flight RCS facility performs high quality dynamic RCS measurements, Jam to signal ratio versus angle, chaff bloom rates, and chaff cloud characteristics. Both HH and VV polarization's are supported.

Interconnectivity/Multi-Use of T&E Facility:

The pulse-to-pulse data capture capability is unique at CTR and is essential in providing the Probability Distribution Function (PDF). All Radar Cross Section (RCS) Transmission equipment is shared with the EW test facility to support ESM and Radar Warning Receiver (RWR) testing. The RCS facility takes advantage of the controlled airspace, Time Space Position Information (TSPI), telemetry and control room facilities of the multi-role CTR. The emitter simulations capability can replicate 150 RF and 16 C^3 simulations. The engineering Flight Test System integrates and correlates avionics test data, TSPI, and emitter simulations in real-time, creating a "cause and effect" flight testing scenario.

Type of Test Supported:

This facility is primarily designed to obtain in-flight dynamic RCS data in support of air vehicle and EW system development, specification compliance, life cycle analysis and RCS data base entry. Additional avionics testing supporting navigation, communication, and IFF are also supported.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Electronic Warfare/Avionics Flight Test Facility**

AGE: **Multiple Buildings: 5-52 Years** REPLACEMENT VALUE: **$16.1M (Building Only)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **FY94**

NATURE OF LAST UPGRADE: **Upgrade Dynamic Radar Cross Section Capability, Upgrade C^3 Simulations, Upgrade Emitter Simulations**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Advanced Radar Cross Section (RCS) Measurements**

   TOTAL PROGRAMMED AMOUNT: **$8M**
   SUMMARY DESCRIPTION: **Coherent RCS measurements of aircraft doppler spectrum.**

2. UPGRADE TITLE: **Bi-Static RCS**

   TOTAL PROGRAMMED AMOUNT: **$2.5M**
   SUMMARY DESCRIPTION: **Bi-Static RCS measurements of aircraft while in flight.**

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Electronic Warfare/Avionics Flight Test Facility**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	7500	8745	10260	13500	14175	16080	16800	18870
	TEST HOURS	236	480	225	150	315	262	340	184
	MISSIONS								
EC	DIRECT LABOR	2500	2915	3420	4500	4725	5360	5600	6290
	TEST HOURS	79	160	75	50	105	88	114	61
	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: **Electronic Warfare/Avionics Flight Test Facility**

ANNUAL HOURS OF DOWNTIME	1	**182**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**.5**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.5**

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
Air Vehicles	**1**	**2**	**2**	**94**
EC	**1**	**2**	**2**	ANNUAL UNCONSTRAINED CAPACITY
				9
"TYPICAL"				**34,310**
		TOTAL Σ	**4**	

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Aircraft Armament Systems Simulation Engineering Test Station (AASSETS)**

ANNUAL HOURS OF DOWNTIME	1	**3000**
AVERAGE DOWNTIME PER DAY (LINE 1 + 365)	2	**8.2**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**15.7**

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
Elec. Compatibility	**2**	**2**	**4**	**125.6**
System Trouble-Shooting	**2**	**2**	**4**	ANNUAL UNCONSTRAINED CAPACITY 9
				45,844
"TYPICAL"				
		TOTAL Σ	**8**	

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Aircraft Armament Systems Simulation Engineering Test Station (AASSETS)**

		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								
	TEST HOURS								
	MISSIONS								

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

New facility, established in 1993. No historical workload.

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Aircraft Armament Systems Simulation Engineering Test Station (AASSETS)**

AGE: **50 Years** REPLACEMENT VALUE: **$1.414M (Building and Equipment)**
Equipment: 1 Year

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1994**

NATURE OF LAST UPGRADE: **Acquisition of mobile van and baseline F/A-18C/D software, computer peripherals, interface cables between aircraft 1553 and 1760 multiplex busses, and computer data acquisition software and hardware housed in a mobile test station unit.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **STORES MANAGEMENT SYSTEMS 3RD AND 4TH PLATFORM EXTENSION MOBILE LAB SYSTEM**

TOTAL PROGRAMMED AMOUNT: **$350K**
SUMMARY DESCRIPTION: **Software development to include smart aircraft ordnance systems in the F/A-18C/D; simulation/stimulation software for AV-8B, F-14D, and F/A-18E/F; and expand data acquisition libraries for the F/A-18C/D.**

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:
SUMMARY DESCRIPTION:

ADDITIONAL INFORMATION

Facility/Capability Title: **Aircraft Armament Systems Simulation Engineering Test Station (AASSETS)**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer		0	0	0	0	0	0
Enlisted		0	0	0	0	0	0
Civilian		1	1	1	1	2	2
Contractor		0	1	1	1	1	1
Total		1	2	2	2	3	3

Total Square Footage: **651**

Test Area Square Footage: **551** Office Space Square Footage: **100**

Tonnage of Equipment: **8** Volume of Equipment: **177 cu ft**

Annual Maintenance Cost: **$20K** Estimated Moving Cost: **$11K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	200	100	50	200		

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Armament Systems Simulation Engineering Test Station (AASSETS)**

Keywords:

Stores, Interface Cables, Break-Out Box

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Armament Systems Simulation Engineering Test Station (AASSETS)**

Facility Description; Including mission statement:

This laboratory is used to analyze the compatibility of the interface between aircraft and stores; identify the functional requirements of store/aircraft cables, break-out boxes, and interfaces cables; conduct pre-flight of weapon systems and post-flight trouble-shooting; and determine the operational description of store functional sequences allowing for proper release and control of all aircraft store combinations.

Interconnectivity/Multi-Use of T&E Facility:

This facility supports the store certification program. Depending on the program it links to the Air Combat Environment Test and Evaluation Facility (ACETEF) and Aircraft Stores Certification Test Facility and the Integrated Avionics Test Lab.

There is no other lab that tests and evaluates entire aircraft armament systems as a full-up system.

Type of Test Supported:

Aircraft/store electrical compatibility; armament system testing

Summary of Technical Capabilities:

This laboratory is used to analyze the compatibility of the interface between aircraft and stores; identify the functional requirements of store/aircraft cables, break-out boxes, and interfaces cables; conduct pre-flights of weapon systems evaluation and post-flight trouble-shooting; and determine the operational description of store functional sequences allowing for proper release and control of all aircraft store combinations.

2 computer workstations
Universal Time Counter
AC Power Supplies
DC Power Supplies
Oscilloscope
Multimeter
Generic Test Bench
Electrical Test Bench
Logic Analyzer
Strip Chart Recorder

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.

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								

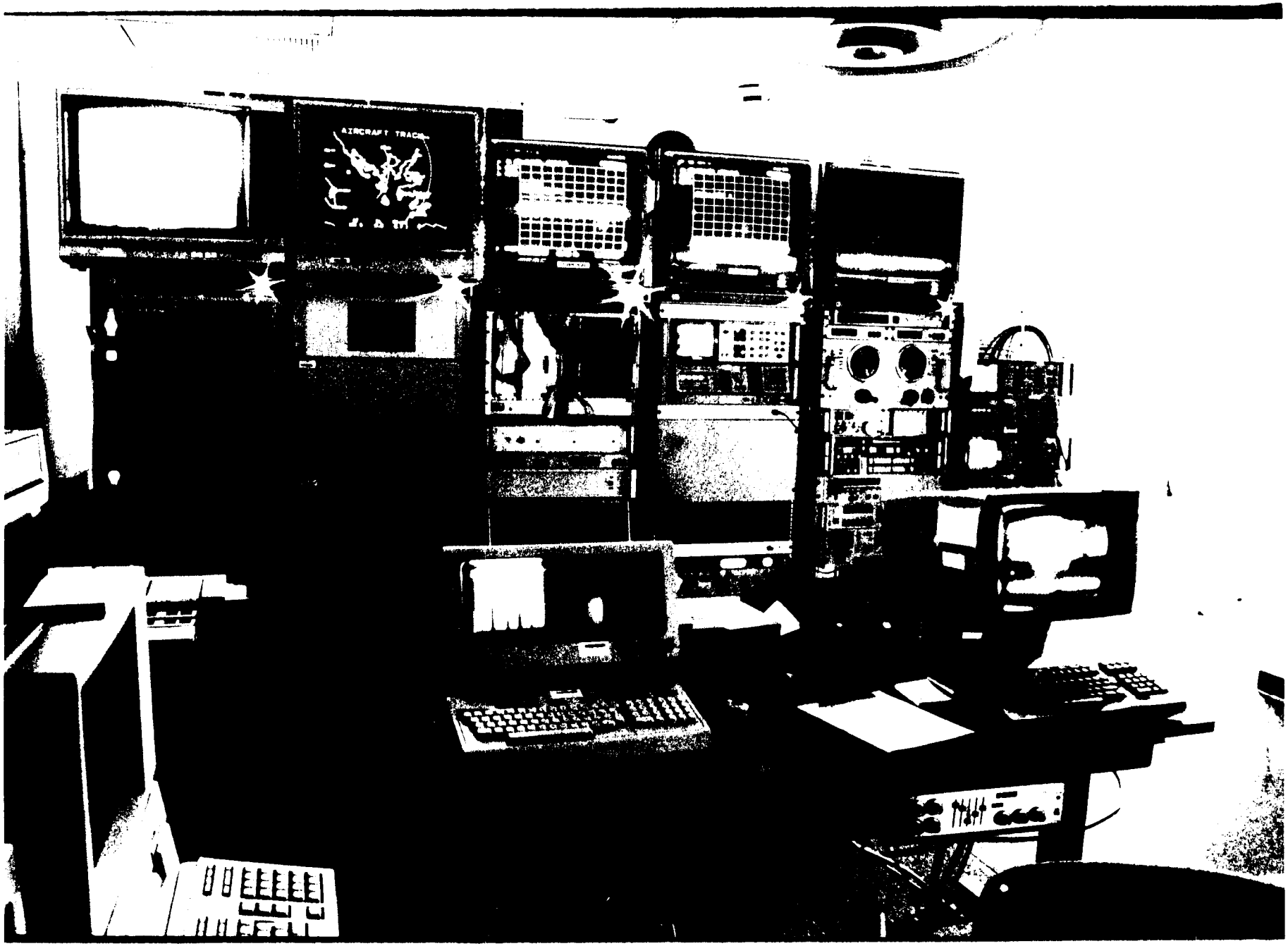
Note - **Includes civilian, military, and contractor direct labor hours.**

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**	


AIRCRAFT TRACK

GENERAL INFORMATION

Facility/Capability Title: **Aircraft Test And Evaluation Facility (ATEF)** 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:	**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: **Aircraft Test And Evaluation Facility (ATEF)**

Facility Description; Including mission statement:

ATEF provides the capability to ground test installed aircraft propulsion, mechanical, electrical, and pneumatic subsystems in a controlled environment during both static and engine operating conditions. The facility provides water intrusion, solar heating and wind evaluation capabilities in an acoustic structure which reduces the outside noise level to an 86 dba level during full power engine operations. Thrust measuring facilities are available for fixed wing aircraft. A mobile engine analyzer test van is available for remote site evaluations and weight and balance facilities are available for both fixed and rotary wing aircraft.

The ATEF operates on a 24 hour basis regardless of local noise restrictions or weather conditions, is located away from congested areas, and can be secured for classified programs.

Dynamic tests are supported which require engine operations include "trim runs", thrust, electrical, hydraulic, and fuel system checks, and general engine and systems performance tests. Aircraft can be subjected to solar radiation, or "heat soak", as well as wind and blowing rain at speeds up to 40 knots. Power includes 400 Hz and 60 Hz, 3 phase, 28 VDC, 200 amp with a minimum of 1200 amp service requirement. The building is equipped with a fuel oil separator and a fume ventilating system.

Interconnectivity/Multi-Use of T&E Facility:

The Aircraft Test and Evaluation Facility (ATEF) supports all NAWCAD directorates, and the Navy/Marines, Coast Guard, Army and Air Force departments, and Presidential helicopters. ATEF provides an optimal test space for wide range of static test operations including weight and balance, fuel calibrations, night vision, x-ray, welding, and many other test programs which require special support or a restricted operating environment.

Control of ambient lighting allows for ground assessments of night vision systems and cockpit lighting packages regardless of outside conditions.

Additionally, the ATEF weight and balance capability supports normal aircraft maintenance for all Patuxent River aircraft on an as available basis.

Normal maintenance ground turns of tactical and training jet aircraft are conducted at ATEF when available to minimize noise.

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Test And Evaluation Facility (ATEF)**

Type of Test Supported:

Installed aircraft propulsion system, and associated hydraulic, pneumatic, and electrical systems; exterior and interior lighting systems; night vision devices, ground support systems; and technology demonstrations. Near term plans include the incorporation of uninstalled engine testing.

Summary of Technical Capabilities:

ATEF provides the capability to ground test installed aircraft propulsion, mechanical, electrical, and pneumatic subsystems in a controlled environment, during static and engine operating conditions. The facility provides local water intrusion, solar heating, and wind evaluation capabilities.

INSTRUMENTATION ASSETS:
The ATEF instrumentation consists of an Integrated Telemetry Analysis System (ITAS) which is capable of monitoring 32 analog parameters and 1,0000 plus pulse code modulation (PCM) parameters. This data can be monitored and completely processed and presented to the test engineers or maintenance personnel via a strip chart, digital printout, tape, or disk on site. The ITAS is integrated with an engine test cell environment, trim, thrust measurement, and weight and balance measurement systems. ATEF can also telemeter data to Real-Time Processing System (RTPS), or transmit processed data via land line. A remote controlled video system monitors the test aircraft from the four corners of the test cell, and up the tail pipe. Safety features include a cell depression and augmentor tube temperature monitoring system, and a AFFF fire extinguisher system.

Keywords:

Installed Propulsion System, Hush House Facility, Engine/Airframe, Night Vision Devices, Lighting, Weight and Balance

ADDITIONAL INFORMATION

Facility/Capability Title: **Aircraft Test & Evaluation Facility (ATEF)**

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	2	2	2	2	2	2
Contractor	6	5	5	5	5	5	5
Total	7	7	7	7	7	7	7

Total Square Footage: **15,703**

Test Area Square Footage: **15,075** Office Space Square Footage: **628**

Tonnage of Equipment: **60** Volume of Equipment: **24K cu. ft..**

Annual Maintenance Cost: **$300K** Estimated Moving Cost: **$62.2K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	100	35				40

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Aircraft Test And Evaluation Facility (ATEF)**

AGE:

ATEF:	**14 Years**
Engine Monitoring Systems & Computer Lab:	**50 Years**
Engine Support Services:	**50 Years**

REPLACEMENT VALUE: **$11.8M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **May 1994**

NATURE OF LAST UPGRADE: **New camera and control system. New noise suppression tube temperature monitor system and computer. Both systems replaced. FM Data Handling Package and spectrum analyzer to extend ATEF instrumentation capability.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Storage Shed**

   TOTAL PROGRAMMED AMOUNT: **$35K**
   SUMMARY DESCRIPTION: **To protect auxilary equipment from the elements.**

2. UPGRADE TITLE: **EPAMS Recording**

   TOTAL PROGRAMMED AMOUNT: **$40K**
   SUMMARY DESCRIPTION: **To update data recording capability to meet data rates.**

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Aircraft Test And Evaluation Facility (ATEF)**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	**14440**	**14440**	**14440**	**14440**	**14440**	**12635**	**12635**	**12635**
	TEST HOURS	**1536**	**1968**	**2140**	**2240**	**2644**	**2772**	**1820**	**920**
	MISSIONS	**384**	**492**	**535**	**560**	**661**	**693**	**455**	**230**
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.

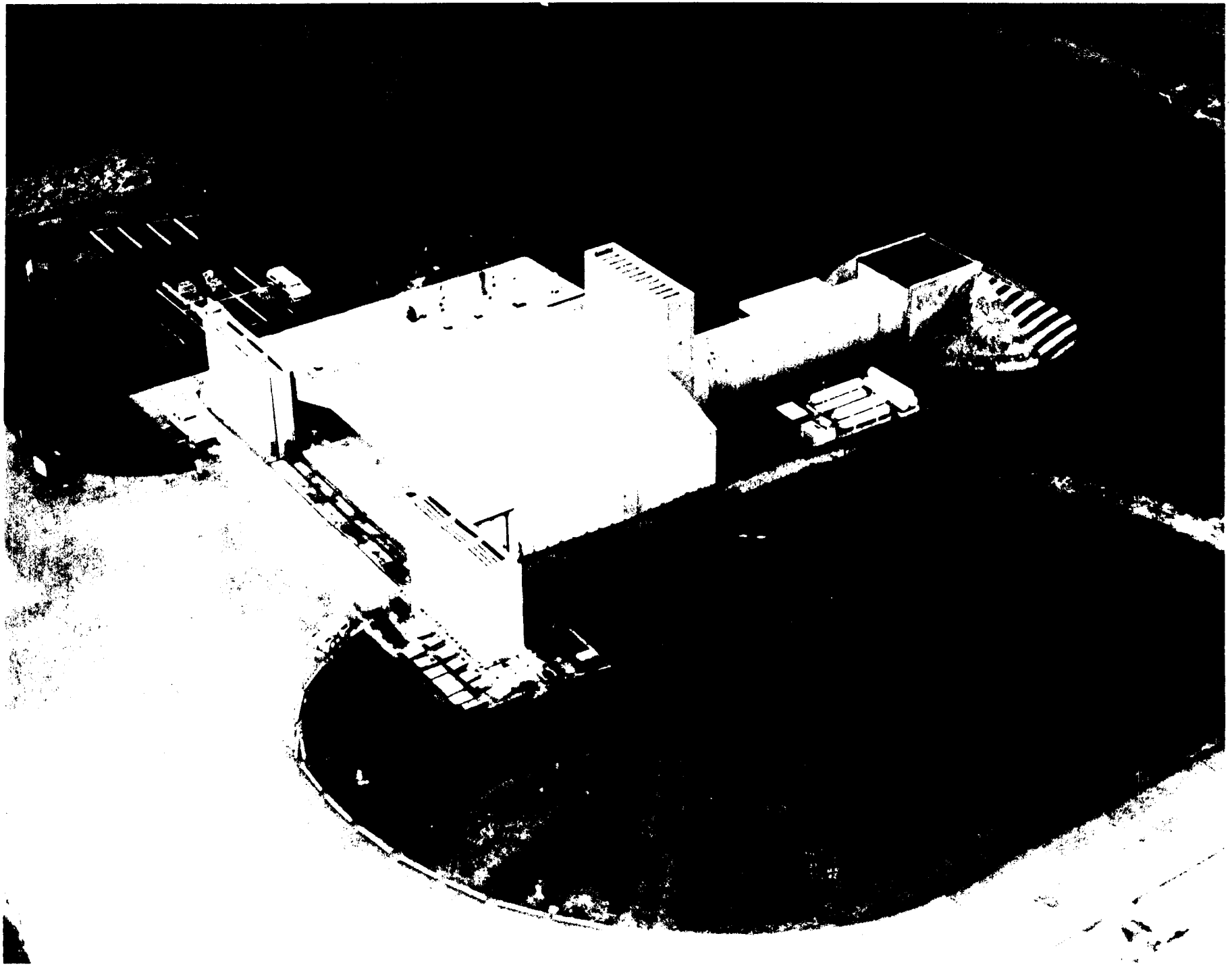
DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Aircraft Test And Evaluation Facility (ATEF)**

ANNUAL HOURS OF DOWNTIME	1	**47**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**.13**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.87**

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
				83.5
				ANNUAL UNCONSTRAINED CAPACITY 9
				30,477.5
"TYPICAL"	**1**	**3.5**	**3.5***	
		TOTAL Σ	**3.5**	

*** 7 different tests can be performed, but only 1 can be performed at one time in this facility. Therefore, an average typical test is used to determine unconstrained capacity.**



GENERAL INFORMATION

Facility/Capability Title: **Electro-Optical & Reconnaissance System 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: **Measurement Facility (MF)**

	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: **Electro-Optical & Reconnaissance System Test Facility**

Facility Description; Including mission statement:

MISSION: To provide testing expertise on aircraft EO/RECCE systems during all phases of aircraft weapon system test and evaluation.

DESCRIPTION: The EO/RECCE System Test facility extensively utilizes Open Air Ranges to support data collection of critical information regarding integrated system performance. This facility provides ground and airborne stimulus test capability to support sensor T&E for EO, Electronic Warfare (EW), night combat, and RECCE missions. The facility comprised of flight crew, engineers, and laboratory technicians provide the capabilities to support the development, integration, and T&E of electro-optic, infrared (IR), laser and RECCE systems as stand alone systems and as fully integrated aircraft systems. Test and evaluation is conducted using special optical test equipment, and unique laboratory and target assets. Laboratory and ground test assets are available which provide project/facility support for laser safety measurements and analysis, a test equipment development environment, and laboratory system measurement and evaluation capability. The majority of the ground tests are conducted in hangars or on the aircraft flight line. The majority of the EO/RECCE flight tests are conducted on either the Chesapeake Test Range, Patuxent River or at Webster Field located in nearby St. Inigoes, MD.

Interconnectivity/Multi-Use of T&E Facility:

Integration and interface with other unique NAWCAD PAX laboratories and the Chesapeake Test Range supports aircraft installed sensors and integrated aircraft weapon systems tests. The compilation of these unique laboratories, test equipment, optical targets and ranges provide a unique DOD test capability for integrated aircraft weapon systems, to support the Navy, other government agencies, private sector, and foreign governments. Interconnectivity is established through computer networks, microwave links, and by physical linkage through cables. The majority of the EO/RECCE equipment can be moved to link with other EW equipment, simulation or stimulation equipment, and aircraft or laboratory data buses as required.

TECHNICAL INFORMATION

Facility/Capability Title: **Electro-Optical & Reconnaissance System Test Facility**

Type of Test Supported:

The primary type of tests supported are EO/RECCE system performance and platform integration. Specifically, system performance includes: resolution, probability of detection, sensitivity, dynamic range, false alarm susceptibility, signal output, effectiveness, pointing accuracy, tracking capability, and system hand-off. Platform Integration includes: EO/EW/RECCE interface, field of regard and field of view measurements, and foresight. The types of systems evaluated include: Warning Receivers (IR, UV, laser), Laser Systems (Rangefinders, Target Designators, Spot Trackers, Radar, RECCE, Anti-collision systems, Altimeters, Velocimeters), Countermeasures (IR, EO, laser vulnerability) and RECCE Sensors (Cameras, FLIR, Down Looking IR (DLIR), IR Search and Track, Low Light Level TV, Direct View Optics, Line Scanners) and associated processors, detectors, optics, libraries, controls and displays.

Summary of Technical Capabilities:

The EO/RECCE laboratory provides an array of test equipment including radiometers, collimators, photometric devices, optical components, cameras, lenses, computers, tables and benches, lasers, stimulators and standard laboratory instrumentation. This equipment is used to conduct performance and platform integration tests. A 20 ft x 30 ft Electro-Optic Test Target (EOTT) consisting of rotatable, vertical three-sided panels provides active and passive bar array targets and the capability to acquire quantitative data on the dynamic performance of FLIR devices, televisions and laser sensor systems. The three sides of the panels may be selectively heated to provide precise differential temperatures. Photographic resolution targets utilizing four standard "A" type resolution targets symmetrically located at NISE East, St. Indigoes for testing RECCE systems are also available as are portable test targets for use in off site flight testing. Tests of laser warning devices are routinely supported by the Chesapeake Test Range using the Range Directorate LRY-1000 laser rangefinder/designator which provides very accurate Time, Space, Position Information (TSPI) data and an excellent means of testing an onboard laser warning system in an actual maritime environment. Flight test assets located at NISE East, St. Indigoes also provide a location to test onboard laser system performance during air to ground encounters, as well as host the above mentioned EOTT and resolution targets.

TECHNICAL INFORMATION

Facility/Capability Title: **Electro-Optical & Reconnaissance System Test Facility**

Keywords:

Electro-Optical(EO), Reconnaissance(RECCE), Cameras, Infrared(IR), Electronic Warfare(EW), Laser, Electro-Optical Test Target(EOTT), Warning Receivers, Countermeasures, Aircraft Installed

ADDITIONAL INFORMATION

Facility/Capability Title: **Electro-Optical & Reconnaissance System Test Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	1	0	0	0	0	0
Enlisted	0	0	0	0	0	0	0
Civilian	7	8	8	8	8	8	8
Contractor	2	1	1	1	1	1	1
Total	10	10	9	9	9	9	9

Total Square Footage: **19,646**

Test Area Square Footage: **18,785** Office Space Square Footage: **861**

Tonnage of Equipment: **4 Tons** Volume of Equipment: **960 ft**

Annual Maintenance Cost: **$50K** Estimated Moving Cost: **$180K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	1,900	1,423	157	385	285	275

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FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Electro-Optical & Reconnaissance System Test Facility**

AGE: **Building: 4 Years**
Equipment: 4 Years

REPLACEMENT VALUE: **$19M (Building & Equipment)** R

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1992**

NATURE OF LAST UPGRADE: **I&M Equipment Purchases- These equipments were procured to support all EO related projects. Special unique test capabilities were developed from the purchased items. General support equipment was required for optimizing productivity. Equipments included: Hydraulic Lift, Storage Bins, Laser Goggles, Optical Design Software, Monochometer/Spectrograph, Micropositioners, Motorized Translation Stages, Programmable Laser Pulse Generator, Laser Diodes, and Optical Components.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Electro-Optical & Reconnaissance System Laboratory Equipment**

TOTAL PROGRAMMED AMOUNT:

FY94	FY95	FY96	FY97	FY98	FY99
$1,300K	$1,423K	$157K	$385K	$285K	$275K

SUMMARY DESCRIPTION: **This laboratory equipment will provide the Navy/DoD with an increased capability to meet the challenge of developing and testing next generation EO/RECCE systems. The laboratory equipment will provide the required capability to execute dynamic, accurate and repeatable tests of EO/IR/laser and RECCE systems at the systems level (aircraft installed subsystem and component level.**

2. UPGRADE TITLE: **EO/RECCE Target Upgrades**

TOTAL PROGRAMMED AMOUNT: **FY94 - $611K**

SUMMARY DESCRIPTION: **An upgrade to the EO/RECCE target test capability is required due to current restrictions and limitations. The design of heater elements, evaluation system, control system, and data recording methods are required for EO and photo test targets. Plans for a mobile IR Signature Target System (MISTS) will consist of a trailer mounted target board with software controlled heater elements that permit an operator to create a desired thermal image.**

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FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Electro-Optical & Reconnaissance System Test Facility**

AGE: **Building: 30 Years** REPLACEMENT VALUE: **$19M (Building & Equipment)**
Equipment: 4 Years

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **1992**

NATURE OF LAST UPGRADE: **I&M Equipment Purchases- These equipments were procured to support all EO related projects. Special unique test capabilities were developed from the purchased items. General support equipment was required for optimizing productivity. Equipments included: Hydraulic Lift, Storage Bins, Laser Goggles, Optical Design Software, Monochometer/Spectrograph, Micropositioners, Motorized Translation Stages, Programmable Laser Pulse Generator, Laser Diodes, and Optical Components.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **Electro-Optical & Reconnaissance System Laboratory Equipment**

TOTAL PROGRAMMED AMOUNT:

FY94	FY95	FY96	FY97	FY98	FY99
$1,300K	$1,423K	$157K	$385K	$285K	$275K

SUMMARY DESCRIPTION: **This laboratory equipment will provide the Navy/DoD with an increased capability to meet the challenge of developing and testing next generation EO/RECCE systems. The laboratory equipment will provide the required capability to execute dynamic, accurate and repeatable tests of EO/IR/laser and RECCE systems at the systems level (aircraft installed subsystem and component level.**

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HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Electro-Optical & reconnaissance System Test Facility**

R

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	14,560	16,640	16,640	22,880	24,960	14,560	14,560	14,560
	TEST HOURS	1,800	1,800	2,160	1,680	2,400	1,920	1,920	1,920
	MISSIONS	15	15	18	14	20	16	16	16
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.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Electro-Optical & reconnaissance System Test Facility**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
EC	DIRECT LABOR	14,560	16,640	16,640	22,880	24,960	14,560	14,560	14,560
	TEST HOURS	1,800	1,800	2,160	1,680	2,400	1,920	1,920	1,920
	MISSIONS	15	15	18	14	20	16	16	16
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: **Electro-Optical & Reconnaissance System Test Facility**

ANNUAL HOURS OF DOWNTIME	1	**728**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**2**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**22**

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
Resolution	**3**	**6**	**18**	**5,280**
Laser/Missile Probability of Detection	**2**	**4**	**8**	ANNUAL UNCONSTRAINED CAPACITY
Sensitivity	**7**	**14**	**98**	
False Alarm	**7**	**14**	**98**	
FOV/FOR	**3**	**6**	**18**	9
"TYPICAL"	**5**	**10**		**1,927,200**
		TOTAL Σ	**240**	

ATARS

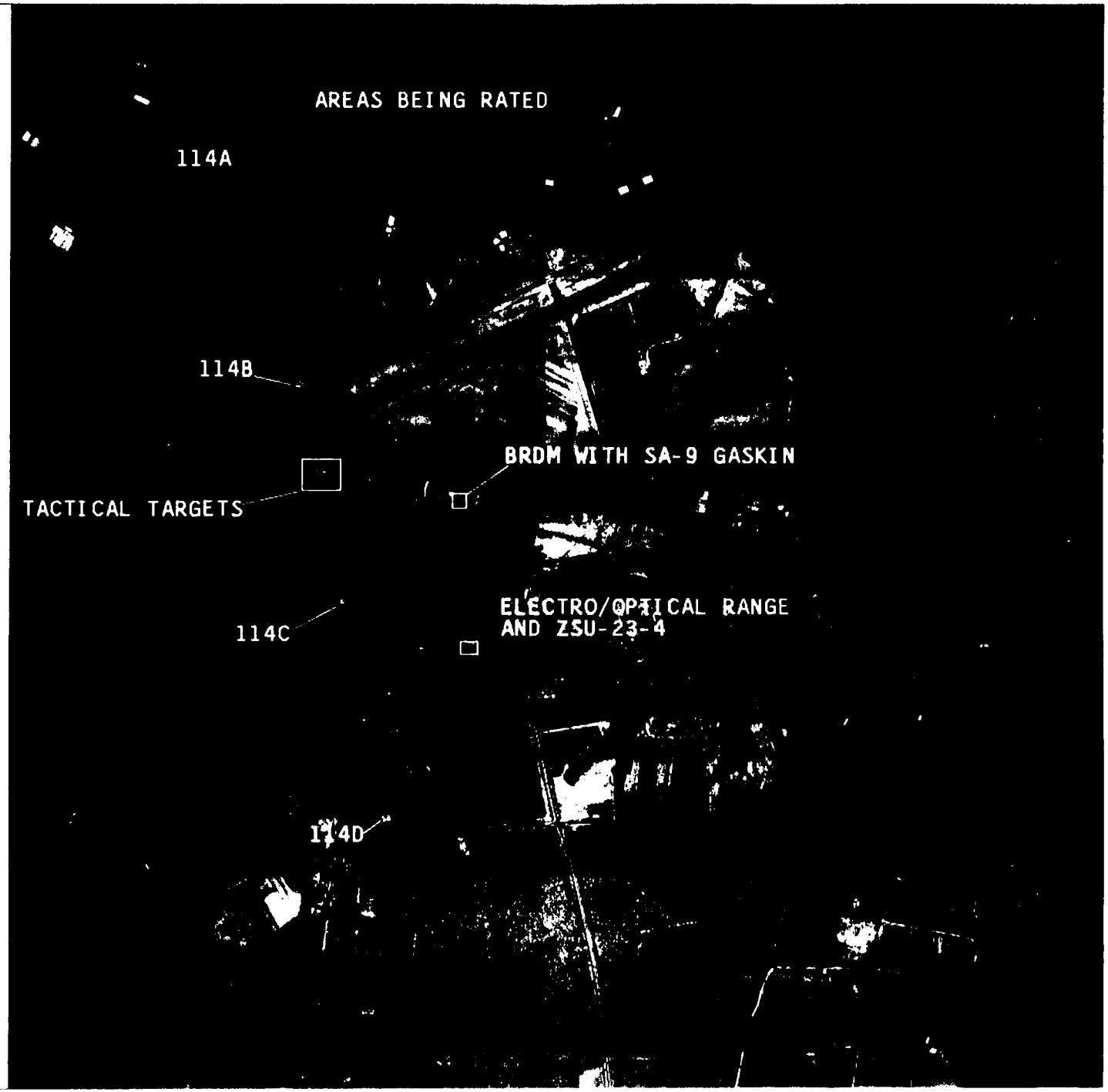
Test Display Station

Mission Data

Mission ---: T2
Date ------: 081 01
Time ------: 13:14:17
Sensor ----: M
FOV -------: 022
FODA/SODA -: 092
Latitude --: 038.09.022 N
Longitude -: 076.26.034 W
Heading ---: 256.0
Velocity --: 0476.1
Height ----: 24464
Roll ------: 000.5
Pitch -----: 001.4
Yaw -------: 000.2

Enhancement History

Sobel -----: 0
Histogram -: 0
Linear ----: 0
Rotate ----: 0
MagX ------: 100.0/ FFOV
File: T2
Target # --:
IIRS ------:
Interpreter: H. Wilson



ATARS

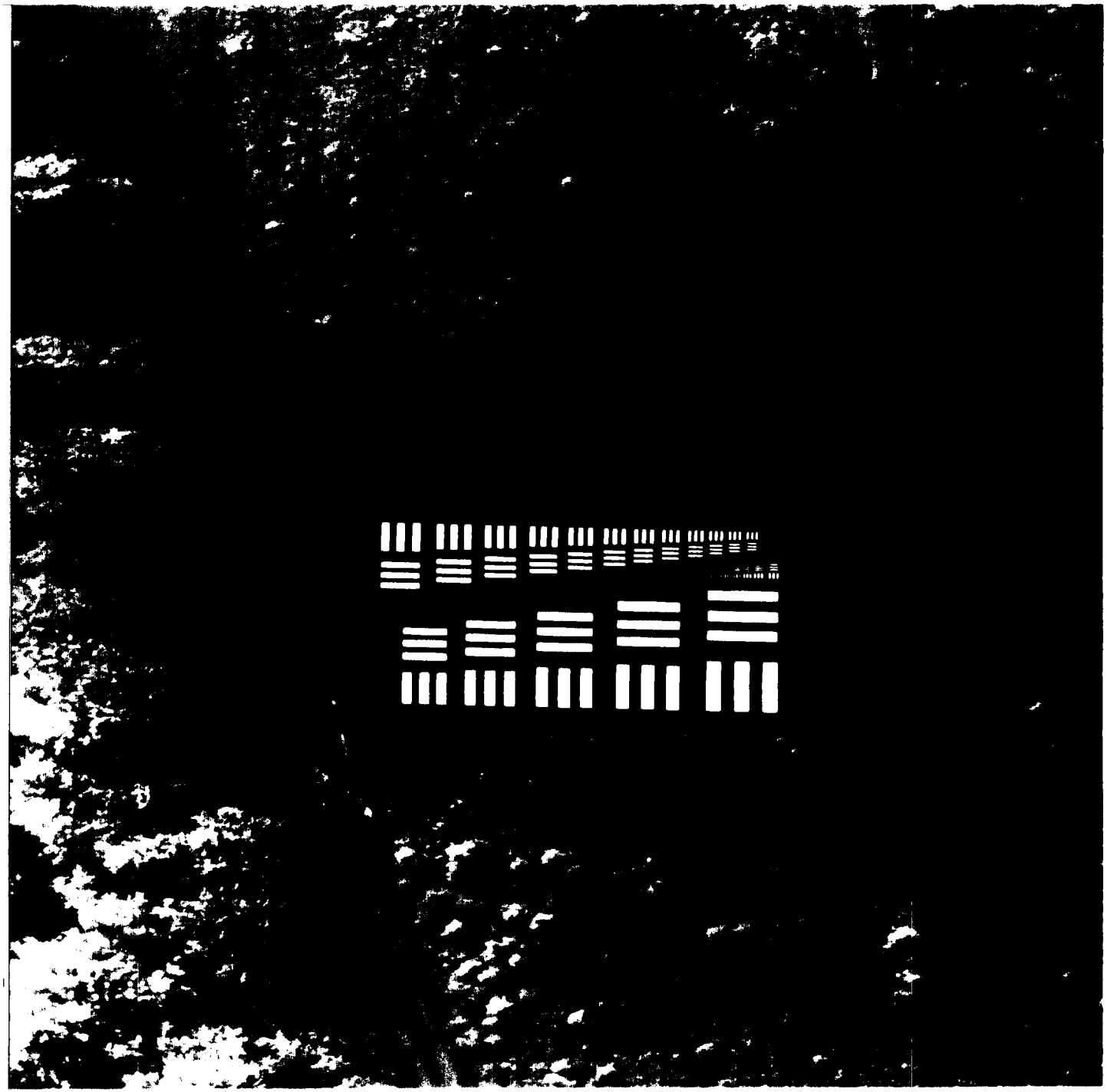
Test Display Station

Mission Data

Mission ---:
Date ------: 245 93
Time ------: 14:41:11
Sensor ----: L
FOV -------: 140
FODA/SODA -: 090
Latitude --: 038.08.085 N
Longitude -: 076.35.031 W
Heading ---: 244.2
Velocity --: 0367.1
Height ----: 00552
Roll ------: -00.4
Pitch -----: 00?.0
Yaw -------: 00?.0

Enhancement History

Sobel ---- : 0
Histogram - : 0
Linear ---- : 0
Rotate ---- : 0
Mag' ------: 0.5 FFOV
File: M4508536144111.R5C244
Target # --:
IIRS ------:
Interpreter: H. WILSON



ATARS

Test Display Station

Mission Data

Mission ---:
Date ------: 245 93
Time ------: 14:41:19
Sensor ----: I
FOV -------: 140
FODA/SODA -: 090
Latitude --: 038.07.045 N
Longitude -: 076.26.017 W
Heading ---: 244.1
Velocity --: 0369.5
Height ----: 00540
Roll ------: -03.7
Pitch -----: 003.8
Yaw -------: 000.9

Enhancement History

Sobel -----: 0
Histogram -: 0
Linear ----: 0
Rotate ----: 0
MagX ------: 10.5/ FFOV
File: M46005371441W10Xio4fl
Target # --:
IIRS ------:
Interpreter: NO ENTRY

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.**

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

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**	

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

Revised pg UIC N00421

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: **3.0** Volume of Equipment: **1000 cu ft** **R**

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

NAWCHQ Change
ams NAWC-21
9/19/94

TAB16
R(9-15-94)

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** REPLACEMENT VALUE: **$2.0M (Building and Equipment)**
Equipment: 1-12 Years

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:

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								

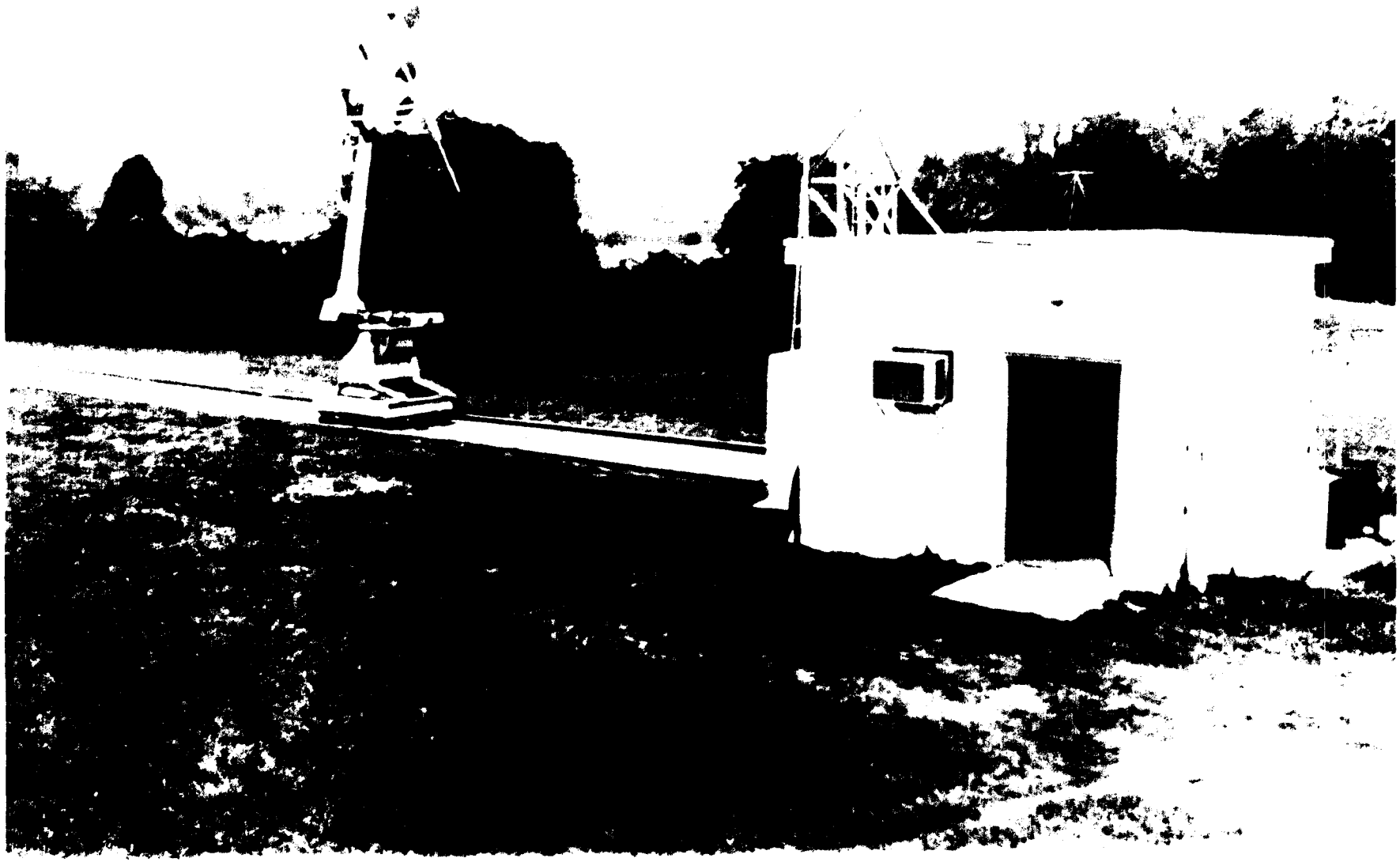
Note - Includes civilian, military, and contractor direct labor hours.

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**	



GENERAL INFORMATION

Facility/Capability Title: **(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**
Equipment: 1-18 Years

REPLACEMENT VALUE: **$2.635M (Building and Equipment)**

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:

Revised 15

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Acoustic Test Facility (ATF)**

R

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	**	**	4854	2766	2214	2217	3195	8649
	TEST HOURS	**	**	1,618	922	738	739	1,065	2,883
	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								

****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.**

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.**

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LV

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

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.

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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**	

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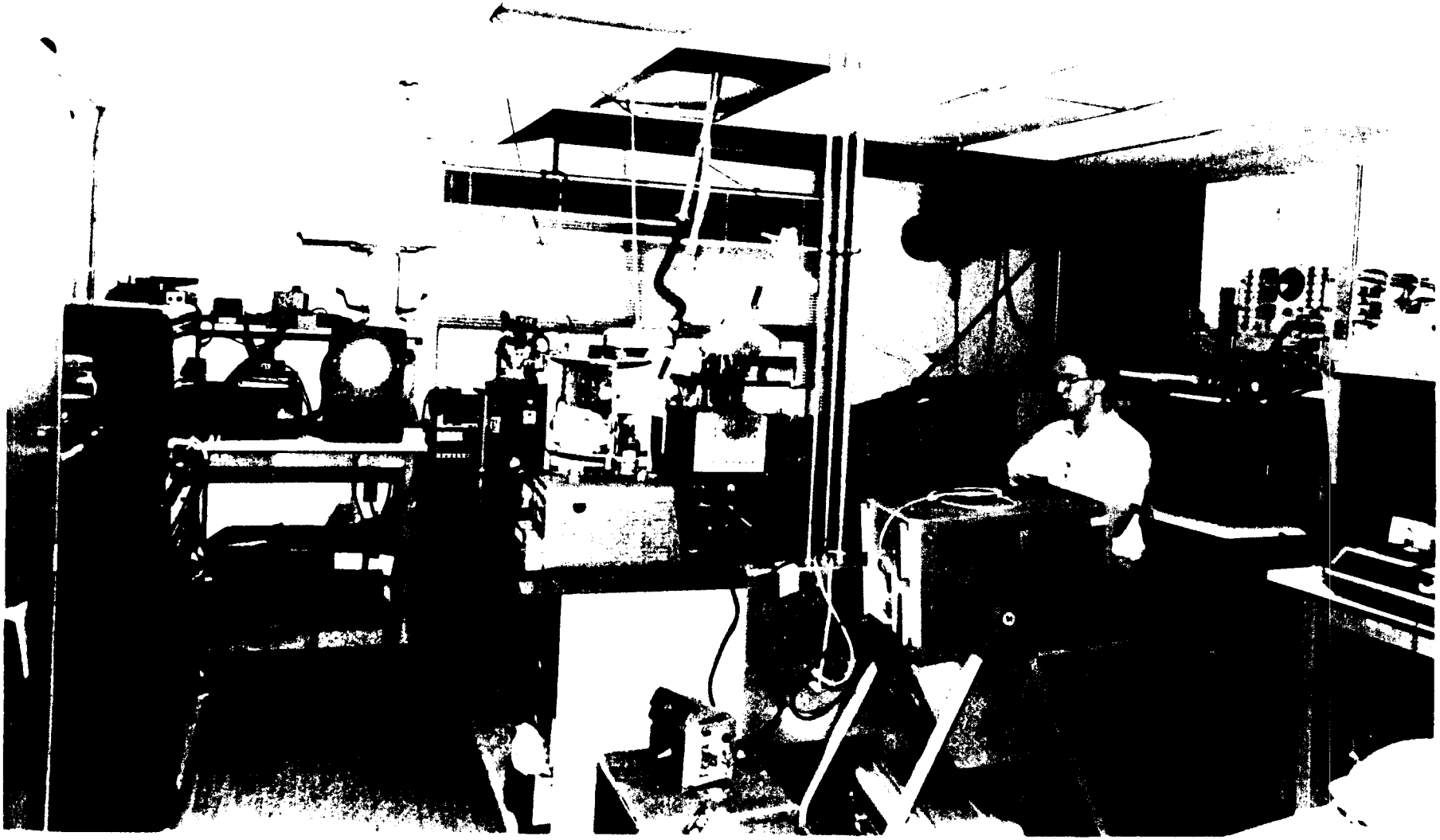


GENERAL INFORMATION

Facility/Capability Title: **Surveillance and Topographical Analysis Radar Systems Laboratory (STARS)**

Origin Date: **May 9, 1994**

R

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:	**80%**	**10%**	**5%**	**5%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**80%**	**5%**	**5%**	**5%**			
Armament/Weapons:							
EC:	**0%**	**5%**					
Other:							

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

GENERAL INFORMATION

Facility/Capability Title: **Surveillance and Topographical Analysis Rad Systems Laboratory (STARS)**

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:	**80%**	**10%**	**5%**	**5%**			
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles:	**75%**	**5%**	**5%**	**5%**			
Armament/Weapons:							
EC:	**5%**	**5%**					
Other:							

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

TECHNICAL INFORMATION

Facility/Capability Title: **Surveillance and Topographical Analysis Radar Systems Laboratory (STARS)**

Facility Description; Including mission statement: **The STARS Laboratory is a 400 square foot facility which provides the capability to conduct Test and Evaluation of airborne radar surveillance, weather detection, topographical analysis, and classified radar systems. A 360 degree unobstructed field of view limited only by line of sight propagation conditions allows surface and subsurface testing in a brown/blue water environment.**
Interconnectivity/Multi-Use of T&E Facility: **The STARS Laboratory is the only Navy test site with Tri-service capabilities for radar-mode IFF operations**
Type of Test Supported: **Test and Evaluation of airborne radar surveillance, weather detection, surface and subsurface target detection, parametric measurements, and radar-mode IFF flight testing.**
Summary of Technical Capabilities: **Technical capabilities include parametric measurements, transmission line (loss, waveguide integrity, exploitation, fleet support, ground station support for flight testing, assessment of weather detection capability, and Radar Cross Section (RCS) measurements. This facility provides a unique capability for testing x-band airborne radar systems over the frequency range of 8.0 to 12.0 GHz.**
Keywords: **Radar, Ocean Surveillance, Inverse Synthetic Aperture Radar, Weather Detection, IFF**

ADDITIONAL INFORMATION

Facility/Capability Title: **Surveillance and Topographical Analysis Radar Systems (STARS) Laboratory**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	3	3	3	3	3	3	3
Contractor					2	2	2
Total	3	3	3	3	5	5	5

Total Square Footage: **500**

Test Area Square Footage: **400**

Office Space Square Footage: **100**

Tonnage of Equipment: **5.0**

Volume of Equipment: **300 cubic feet**

Annual Maintenance Cost: **$50K**

Estimated Moving Cost: **$5,000K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
62	35	45	65	57	42	48

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Surveillance and Topographical Analysis Radar Systems (STARS) Laboratory**

AGE: **12 Years** REPLACEMENT VALUE: **$2.1M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **FY92**

NATURE OF LAST UPGRADE: **Test capability improvement**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **None**

TOTAL PROGRAMMED AMOUNT:
SUMMARY DESCRIPTION:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Surveillance and Topographical Analysis Radar Systems (STARS) Laboratory**

R

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	**1800**	**1800**	**2200**	**2200**	**2000**	**2200**	**2600**	**2400**
	TEST HOURS	**450**	**450**	**550**	**550**	**500**	**550**	**550**	**600**
	MISSIONS	**25**	**25**	**30**	**30**	**25**	**30**	**40**	**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.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Surveillance and Topographical Analysis Radar Systems (STARS) Laboratory**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	400	400	600	800	800	800	1000	1000
	TEST HOURS	100	100	150	200	200	200	250	250
	MISSIONS	5	5	5	10	10	10	15	15
EC	DIRECT LABOR	1200	1200	1400	1200	1000	1200	1400	1200
	TEST HOURS	300	300	350	300	250	300	250	300
	MISSIONS	20	20	25	20	15	20	25	20
ARMAMENT/WEAPONS	DIRECT LABOR	200	200	200	200	200	200	200	200
	TEST HOURS	50	50	50	50	50	50	50	50
	MISSIONS								
OTHER T&E	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								
OTHER	DIRECT LABOR								
	TEST HOURS								
	MISSIONS								

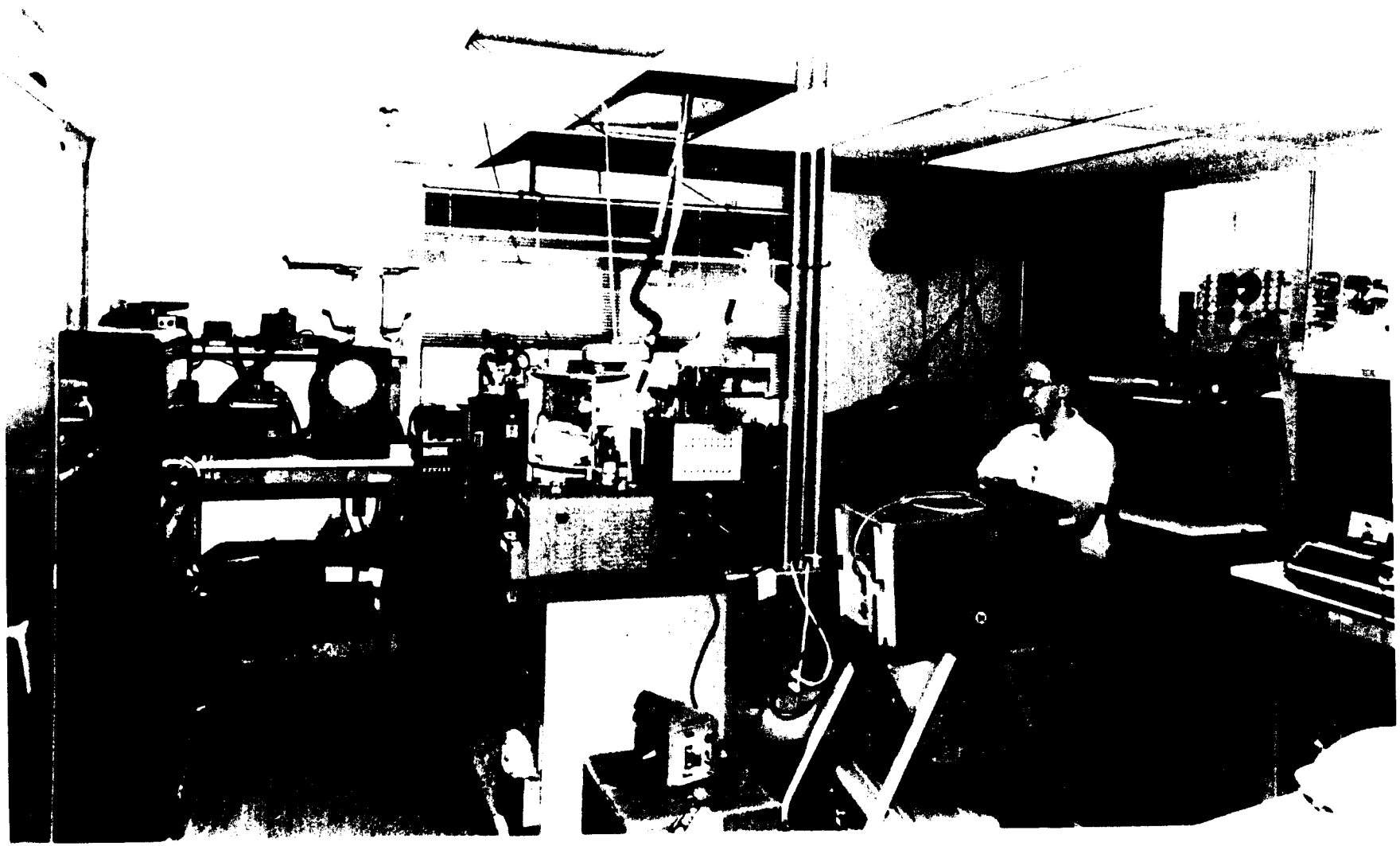
Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Surveillance and Topographical Analysis Radar Systems (STARS) Laboratory**

ANNUAL HOURS OF DOWNTIME	1	**80**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**.25**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.75**

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 **Lab Test**	**2.0**	**2.0**	**4.0**	**95.0**
				ANNUAL UNCONSTRAINED CAPACITY
				9
"TYPICAL"				**34,675**
		TOTAL Σ	**4.0**	



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.

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.**

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								

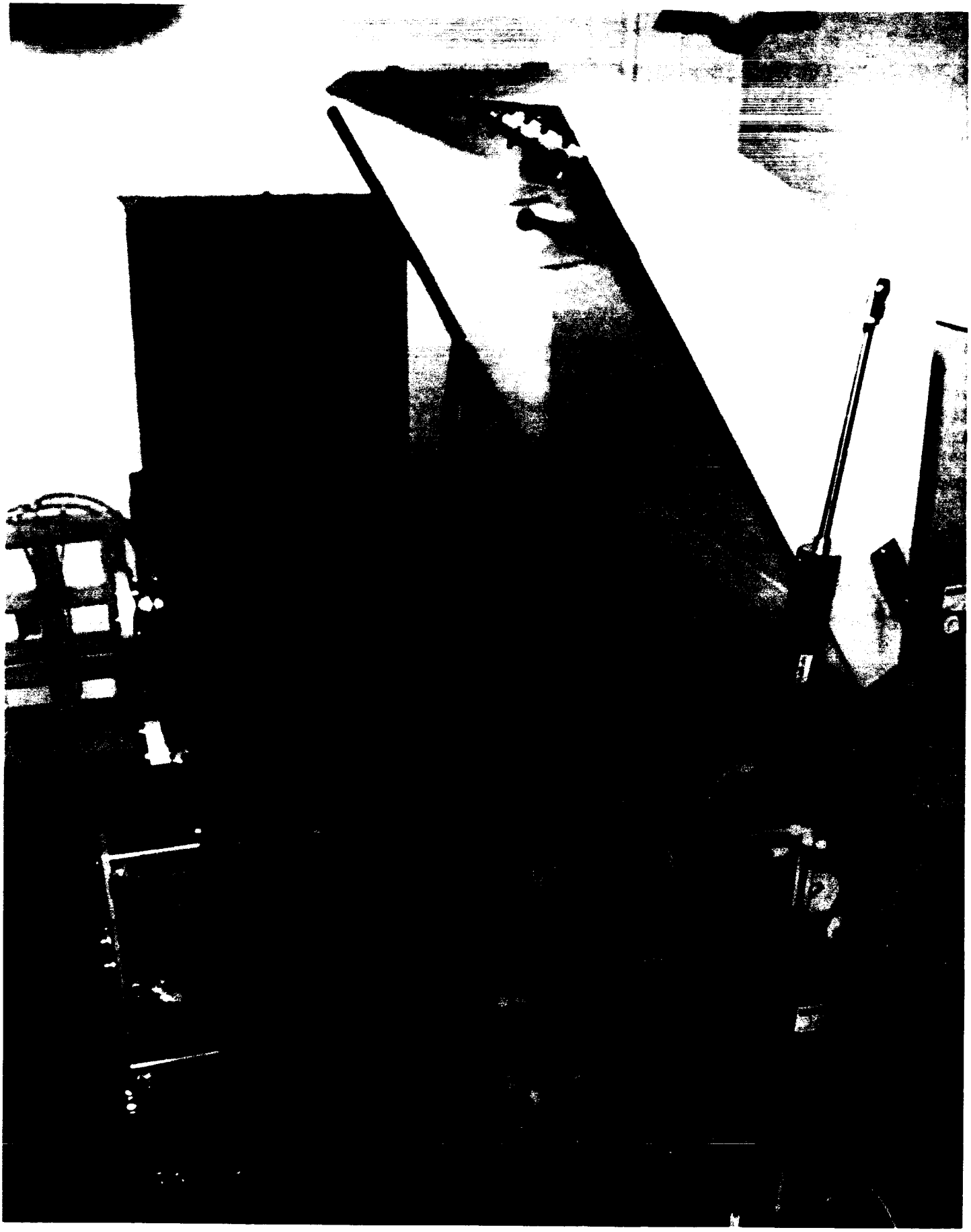
Note - Includes civilian, military, and contractor direct labor hours.

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**	



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.

Aircrew Escape and Survival Systems Laboratory

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.

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								

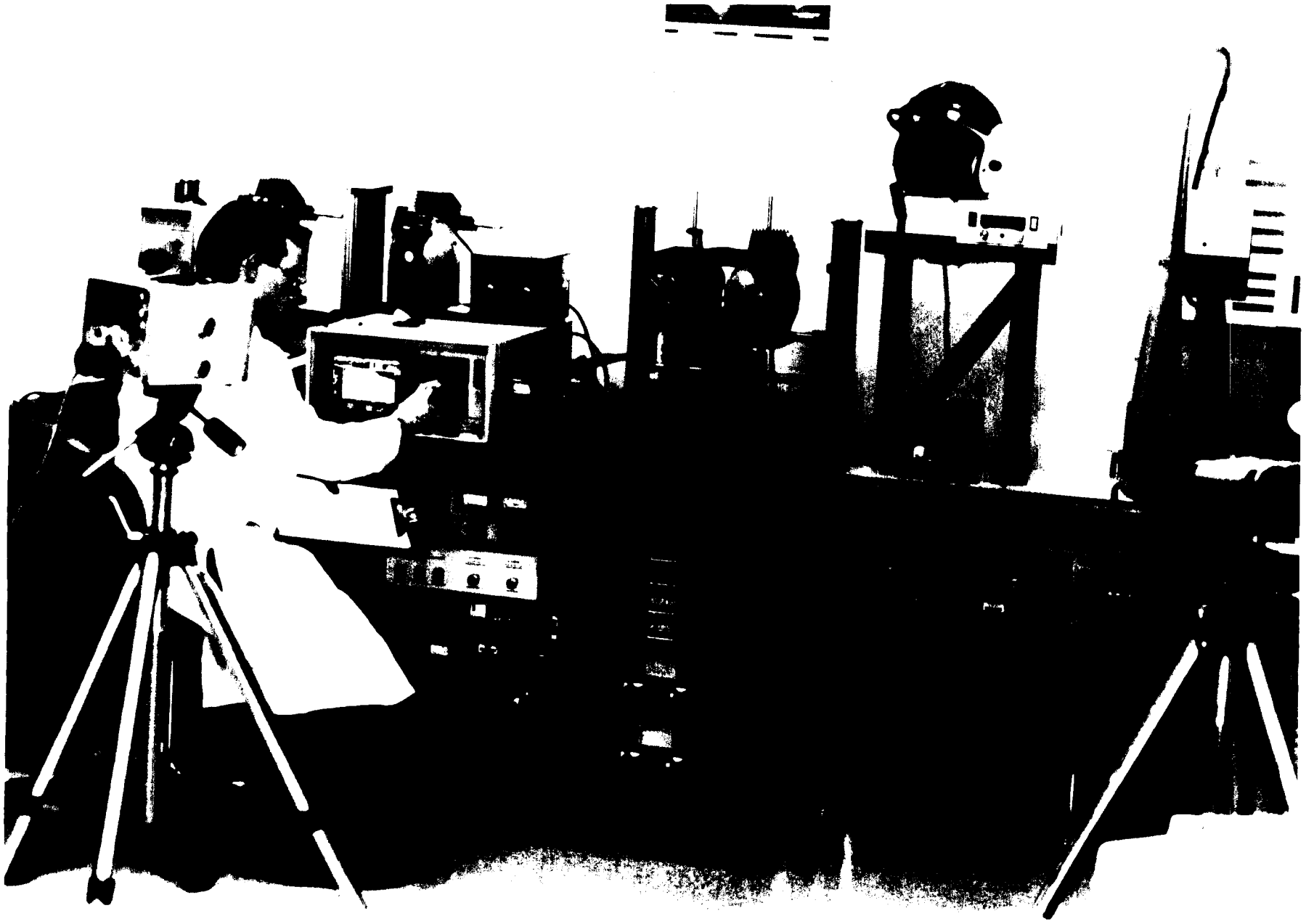
Note - Includes civilian, military, and contractor direct labor hours.

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**	



GENERAL INFORMATION

Facility/Capability Title: **Aircraft Stores Certification 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:	**100%**						

BREAKOUT BY T&E FUNCTIONAL AREA (%)

Air Vehicles: **100%**

Armament/Weapons:

EC:

Other:

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

FOR
PREDEC

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Stores Certification Test Facility**

Facility Description; Including mission statement:

The Aircraft stores certification test facility provides the capability to conduct test and evaluation of fixed and rotary wing aircraft/armament compatibility including armament/stores management systems; suspension and release equipment; physical fit; store captive carriage and separation test build up; interface with loading and ship installation equipment; internal gun installations and external gun pods; towed and powered targets; and verification of technical manuals and procedures for fleet use. Ballistic characteristics of rocket, gun and bomb ordnance are determined and weapon delivery, fuzing and safe escape data provided for fleet use in tactical manual format. Major facilities include:

Munition/Store Laboratories: These laboratories include 2 enclosed concrete structures (Firing Tunnels) 300 ft X 40 ft X 25 ft high which are used for internal and external gun firing tests. Measurements can be made of muzzle velocity, cyclic rate of gun fire, projectile dispersion, boresight retention, boresight adjustment procedures, gun gas concentration and gun gas temperatures. Evaluations of ammunition feed and spent case ejection systems are conducted.

Totally enclosed construction allows for live ground firing of all fixed aircraft guns as well as all crew served systems. Data can be collected via 96 real-time channels from a remote control room allowing instant review and correlation with closed circuit TV.

Mass Properties Laboratory: This facility is used to acquire accurate weight, center of gravity, and 3-axis moment of inertia measurements for air launched munitions armament equipment. It is new facility capable of fast turn around store measurements of missiles, bombs, pods, or any other external weapon/store unit. Data are recorded by a stand-alone suite of electronic recording equipment with rapid data retrieval and correlation capability.

Indoor Ground Ejection Facility: This facility is used to evaluate bomb racks to determine ejection velocities, store pitch rates, arming wire and device system function and reliability. Repeated store ejections may be conducted in a short time frame in order to evaluate store or rack characteristics.

Ordnance Electrical Systems Laboratory: This laboratory provides the capability to simulate input and output for all weapon release system components including multiple ejector racks, intervalometers, arming and fuzing functions and other factors essential to aircraft/armament compatibility tests.

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Stores Certification Test Facility**

Facility Description; Including mission statement: (continued)

The Rocket Test Stand allows direct observation of the test range and the capability to fire all rockets up to 5 inch diameter with inert or non-explosive warheads at safe angles into the test range area. It is linked to Chesapeake Test Range personnel and safety craft via radio to ensure safe operations. The facility provides for the recording of instrumentation output and interface with the real-time telemetry processing system.

Interconnectivity/Multi-Use of T&E Facility:

The Mass Properties Laboratory resource provides complete mass properties for 100% of the stores used by NAWCAD aircraft. Data are also provided for instrumentation packages, electronic equipment, and flight helmets, all of which serve the needs of engineers throughout NAWC and the tri-service.

Type of Test Supported:

Aircraft stores certification testing including guns, rockets, missiles, and droppable external stores. Additional tests include weapon systems electrical compatibility and mass property measurements.

Summary of Technical Capabilities:

Aircraft stores certification test facilities provide the capability to conduct test and evaluation of fixed and rotary wing aircraft/armament compatibility including armament/stores management systems; suspension and release equipment; physical fit; captive flight and separation characteristics; interface with loading and ship installation equipment; internal gun installations and external gun pods; towed and powered targets; and verification of technical manuals and procedures for fleet use.

INSTRUMENTATION ASSETS:

HP data recording system (96 channel). Continuous wave doppler radar ballistics system.

Two 300 ft firing tunnels.

KGR 3500 + KGR 350 mass properties instruments. Floor and crane scales. Center of gravity positioners. Related computers for data recording and record keeping.

TECHNICAL INFORMATION

Facility/Capability Title: **Aircraft Stores Certification Test Facility**

Summary of Technical Capabilities: (continued)

Protective blast walls and screens. Hardened control and observation room. Azimuth and elevation adjustable rocket firing stand.

Test stand with 4000 lb capacity, adjustable height from 4-14 ft. Full array of data recording and retrieval equipment.

Keywords:

Stores Certification, Weapon Separation, Firing Tunnel
Aircraft Interface, Electrical Compatibility, Stores, Guns, Rockets, Mass Properties

ADDITIONAL INFORMATION

Facility/Capability Title: **Aircraft Stores Certification Test Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0	0	0	0	0	0	0
Enlisted	0	0	0	0	0	0	0
Civilian	10	10	10	12	12	12	12
Contractor	4	5	5	3	3	3	3
Total	14	15	15	15	15	15	15

Total Square Footage: **34,397**

Test Area Square Footage: **33,577** Office Space Square Footage: **820**

Tonnage of Equipment: **1,073** Volume of Equipment: **23,960 cu ft**

Annual Maintenance Cost: **$250K** Estimated Moving Cost: **$1,080K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Aircraft Stores Certification Test Facility**

AGE: **Ordnance Stores: 26 Years**
Ordnance Electric Lab: 8 Years
Rocket Firing Test Stand: 23 Years
Test Firing Tunnel: 46 Years

REPLACEMENT VALUE: **$11.7M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **October 1992**

NATURE OF LAST UPGRADE: **Addition of Indoor Test Stand Facility and improved accessibility to part of Mass Properties Laboratory**

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 Stores Certification Test Facility**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	**26000**	**26000**	**26000**	**26000**	**26000**	**26000**	**28000**	**28000**
	TEST HOURS	**8600**	**8600**	**8600**	**8600**	**8600**	**8600**	**9300**	**9300**
	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								

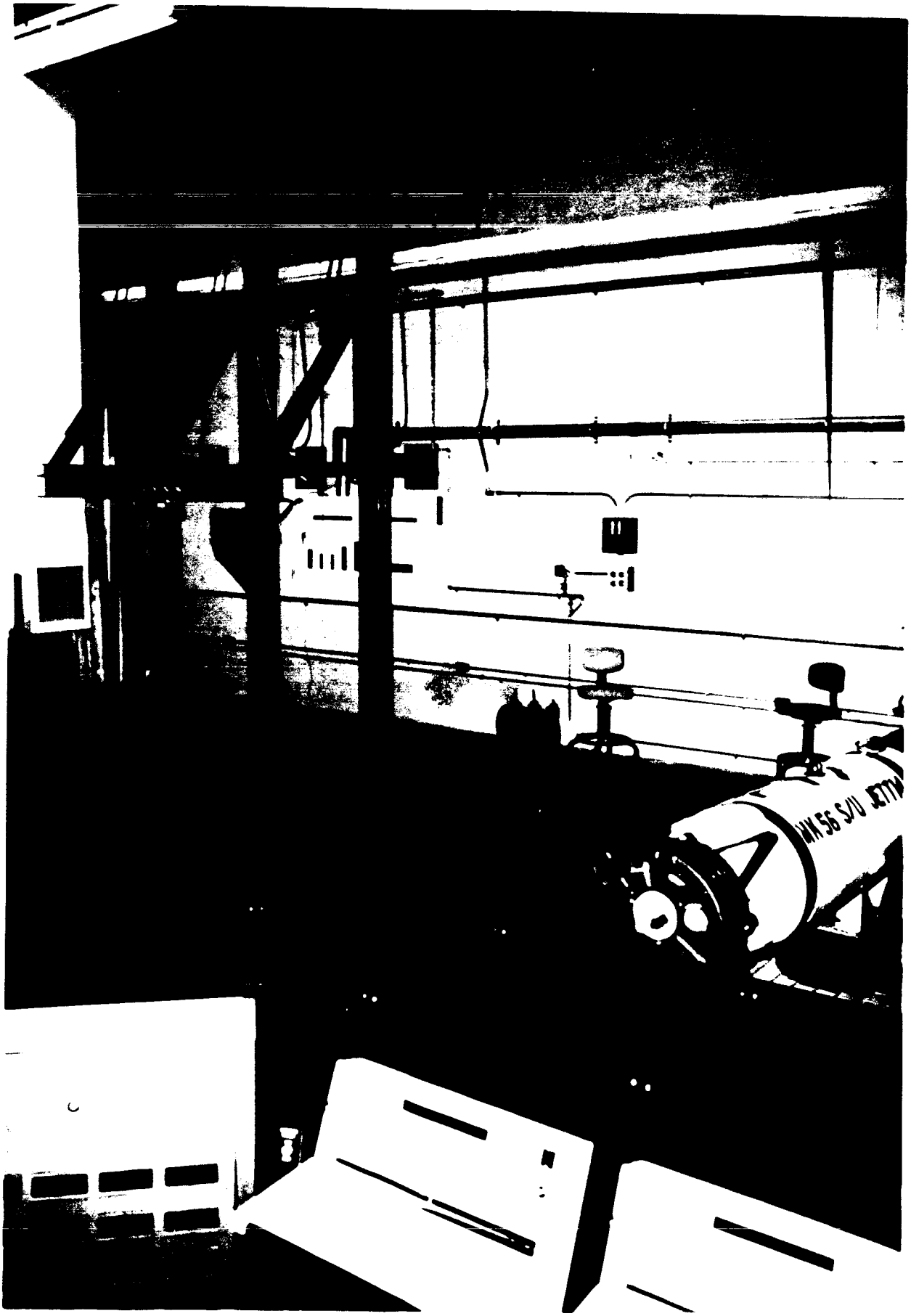
Note - Includes civilian, military, and contractor direct labor hours.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: **Aircraft Stores Certification Test Facility**

ANNUAL HOURS OF DOWNTIME	1	**78**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**0.21**
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
gun firing	**2**	**3**	**6**	**571**
rocket launch	**1**	**5**	**5**	ANNUAL UNCONSTRAINED CAPACITY 9
ground ejection	**1**	**5**	**5**	
mass prop	**2**	**2**	**4**	
functional	**2**	**2**	**4**	
"TYPICAL"				**208,400**
		TOTAL Σ	**24**	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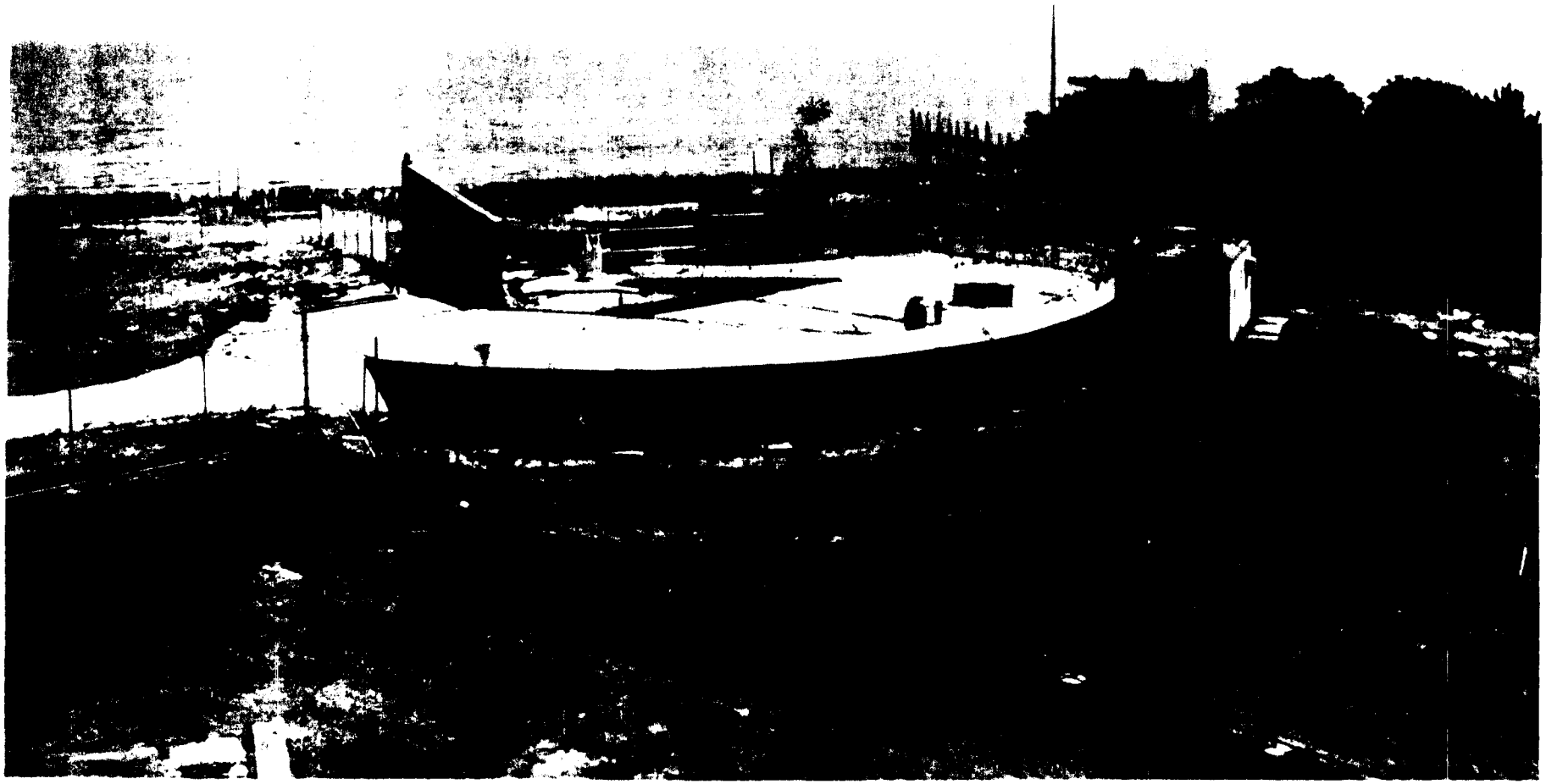

GENERAL INFORMATION

Facility/Capability Title: **Flight Control Computer Test Facility** Origin Date: **May 9, 1994**

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

T&E Functional Area: **Hardware-in-the-Loop** UIC = **00421**

T&E Test Facility Category: **Air Vehicle**

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: **Flight Control Computer Test Facility**

Facility Description; Including mission statement:

The Flight Control Test facility provides the capability to support the acquisition process for all modern digital flight control systems (DFCS). The test facility utilizes a generic architecture that can support any aircraft using a digital flight control system and shared resources among different projects to increase efficiency and cost effectiveness. The laboratory is interfaced with the Manned Flight Simulator (MFS) for high fidelity man-in-the-loop simulations and with the Air Combat and Environmental Test and Evaluation Facility (ACETEF) for full flight systems simulations.

The Manned Flight Simulator (MFS) is a full flight and avionics simulation facility used to support the acquisition process for all categories of Navy aircraft. The Simulation and Control Technology department maintains and operates high fidelity flight dynamics, flight control and avionics systems simulations for a wide spectrum of aircraft types at the MFS. The piloted simulation aspects are highlighted by four simulation stations: a 40 feet diameter dome, a six degree of freedom motion base and two fixed base lab stations. Facilities and most hardware are independent of aircraft type and are shared resources. Advanced flight control capability consists of state-of-the-art analysis and design computer programs and a F/A-18 flight control computer test station.

The test facility has four major components: Flight Control Computer Test Stations (FCCTS), computational resources, flight control computer interfaces and piloted simulation stations. Major equipment components include flight control computers, and mission computers as well as the simulation resources (cockpit, visual system, aerodynamic models, etc.).

Interconnectivity/Multi-Use of T&E Facility:

All piloted simulations make use of roll in/roll out cockpits and can be reconfigured for different aircraft types in minimal time.

Type of Test Supported:

Flight Control System Testing

TECHNICAL INFORMATION

Facility/Capability Title: **Flight Control Computer Test Facility**

Summary of Technical Capabilities:

Current capabilities include: one fully functional F-18 flight control computer test station and two test stations in development. The engineering analysis capabilities include flight control laws, redundancy management, flying qualities, evaluation of fleet incidents, flight test planning, flight test data analysis and parameter identification. Flight control computer (FCC) hardware and software development support include operational flight program analysis, IV&V, fleet incident evaluation, configuration control, tracking of FCC and fleet problems and flight test planning using personal computers for selected engineering analysis.

The Flight Controls test Facility provides the technical capabilities needed to test current and future advanced DFCS for programs such as F-18, V-22, F-14, EA-6B, A-6, AV-8B, E-2C, T-45, and H-60. The phases of the acquisition process which are supported are concept exploration, engineering manufacturing and development, production, fleet introduction and in-service use. These DFCS systems are increasing in complexity with an ever increasing amount of code to test making it difficult if not impossible to test all logic paths. Advanced DFCS include new concepts for integrated DFCS-avionic-sensor architecture's, thrust vectoring, canards, control surface allocation and integrated fire and flight control (IFFC) requiring an increased Navy capability to support development and provided IV&V. Since we cannot create in flight test the total environment needed to test the DFCS throughout its flight envelope, a simulation and stimulation capability are needed to create this environment in a laboratory setting. An increased technical capability is also needed to address significant flight test issues associated with testing these advanced control concepts.

INSTRUMENTATION ASSETS:

The assets of the Flight Controls Test Facility include the F/A-18 FCCTS, V-22 FCCTS, F-14 DFCS Engineering Tests Station (ETS) and the EA-6B Standard Automatic Flight Control System (SAFACS) Development Test Equipment (DTE). FCC assets for each platform include two F/A-18 FCCs, three V-22 FCCs, three F-14 DFCS computers, and one EA-6B SAFCS computer. Each test station shares generic lab equipment and instrumentation among the different platforms which include AD100, AD10, and Real-Time Station parallel processor computers. The stations utilize a set of strip chart recorders, multi-meter and oscilloscope electronics cart, IOCP input/output rack, two SUN SPARC Station, and two DEC VAX stations.

Keywords:

Simulation, Digital Flight Control Systems, Manned Flight Simulator, Flight Control Computer

ADDITIONAL INFORMATION

Facility/Capability Title: **Flight Control Computer Test Facility**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	65	76	65	55	54	31	28
Contractor	12	24	15	11	10	6	6
Total	77	100	80	66	64	37	34

Total Square Footage: **20,197**

Test Area Square Footage: **4,847**

Office Space Square Footage: **15,350**

Tonnage of Equipment: **5**

Volume of Equipment: **2000 cubic feet**

Annual Maintenance Cost: **$50K**

Estimated Moving Cost: **$40K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99
		220	220	435	70	

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Flight Control Computer Test Facility**

AGE: **9 Years (Building and Equipment)** REPLACEMENT VALUE: **$23.9M (Building and Equipment)**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **3/18/94**

NATURE OF LAST UPGRADE: **The F-14 Engineering Test Station (ETS) was installed to support the development, integration and test requirements of the new digital flight control systems (DFCS) for the F-14 aircraft. The F-14 ETS is capable of supporting an adaptive, real-time, man-in-the-loop, hardware and software simulation environment, and high fidelity aerodynamic propulsion and flight control simulations for the development of advanced flight control system design, integration, test and analysis methods, and digital flight control system software life cycle support methods. The F-14 ETS became available 3/18/94.**

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: **FCC Software Support Activity Facility Installation**

TOTAL PROGRAMMED AMOUNT: **$875K (over 3 years)**
SUMMARY DESCRIPTION: **This facility will provide full life-cycle support for the digital flight control computers for the V-22, F-18, and F-14 aircraft. The facility shall develop new test procedures to meet the requirements of integrated adaptive aircraft systems involving the inner-action of flight stability and control, flight and engine control systems, aircraft performance and propulsion systems. Development test and evaluation for new aircraft software and support for in-service digital flight control systems shall be performed as well as the verification and validation of contractor engineering changes to the digital flight control systems.**

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:
SUMMARY DESCRIPTION:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: **Flight Control Computer Test Facility**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR	**76066**	**99840**	**84448**	**111218**	**121243**	**117603**	**103771**	**160555**
	TEST HOURS	**0**	**0**	**1460**	**1460**	**1460**	**1460**	**1460**	**1460**
	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: **Flight Control Computer Test Facility**

ANNUAL HOURS OF DOWNTIME	1	**1040 hours**
AVERAGE DOWNTIME PER DAY (LINE 1 + 365)	2	**2.85**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**21.15**

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
FCS IV&V	**5**	**5**	**25**	**1,903.50**
FCS Control Lab	**5**	**2**	**10**	ANNUAL UNCONSTRAINED CAPACITY
FCS Software Analysis	**5**	**3**	**15**	
FCS Design	**5**	**2**	**10**	9
SIM DEV	**6**	**3**	**18**	
Realtime SIM	**4**	**3**	**12**	**694,777.50**
"TYPICAL"				
		TOTAL Σ	**90**	

GENERAL INFORMATION

Facility/Capability Title: **Integrated Aircraft Test Laboratory (IATL)** Origin Date: **May 9, 1994**

Service: **NAVY** 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:	**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: **Integrated Aircraft Test Laboratory (IATL)**

Facility Description; Including mission statement:

The IATL provides a facility for the development, test and evaluation of avionics systems during the integration process into tactical aircraft, and supports technology demonstrator aircraft. The laboratory provides the environment and assets to develop, test, and evaluate new or upgraded avionics systems during the integration process using common commercial instruments and automated test equipment by having their associated interfaces stimulated via either simulated or prerecorded inputs. Automated test equipment allows avionics subsystem integration performance assessment and trouble shooting of Weapon Replaceable Assemblies (WRA) interface problems. Individual WRA performance can also be determined and Shop Replaceable Assembly (SRA) failure analysis conducted, in addition to automated aircraft instrumentation and wiring checkout. The laboratory supports current and future F-14, F/A-18, A-6, AV-8 avionics integration projects in addition to the future aircraft avionics integration tasks.

One of the two IATL components is the Radar System Test and Evaluation Roof-Top Laboratory (RASTERL). RASTERL is a ground test facility designed to support both ground and flight testing of current and future radar systems, and to demonstrate advanced radar system technologies. The laboratory facility is used to support programs in all acquisition phases including engineering demonstration/validation of new radar systems and radar system technologies. One of the primary attributes of the laboratory is the ability to conduct actual RF transmission tests, which can be radiated into free space with or without a radome. The laboratory utilizes free space, open air test conditions for roof-top T&E of radar components, integrated radar system performance and is capable of supporting multiple programs simultaneously.

The second IATL component, the Avionics Systems Integration Laboratory (ASIL), like the RASTERL, is located in an aircraft hangar, which allows either to support direct stimulation of avionics systems either in the laboratory, in test aircraft via umbilical connection, or a through mix of both.

TECHNICAL INFORMATION

Facility/Capability Title: **Integrated Aircraft Test Laboratory (IATL)**

Interconnectivity/Multi-Use of T&E Facility:

An important laboratory characteristics is its flexibility to support multiple and various types of projects (radar and avionics) and project requirements. The facility includes generic capabilities which it adapts and utilizes to support each project, as required. These generic capabilities include: radomes/garage door windows for free space RF transmissions; power and cooling; test equipment for systems integration and testing; tools and soldering capabilities to support systems integration efforts; technicians and engineers; and accessibility to other on base resources.

The lab is linked with the Aircraft Armament Systems Simulation Engineering Test Station.

Near term plans include the incorporation of data/voice link to Chesapeake Test Range (CTR) to support cooperative testing. Long term plans include data links with the Air Combat Environment Test and Evaluation Facility (ACETEF).

Type of Test Supported:

Radar and Avionics System Testing:
- System Integration Testing
- System Performance Testing
- Hardware and Software Design, Development, Integration, and Test
- Life Cycle Support
- Fleet Training
- Software Verification and Validation (V&V)
- Technology Demonstration

TECHNICAL INFORMATION

Facility/Capability Title: **Integrated Aircraft Test Laboratory (IATL)**

Summary of Technical Capabilities:

The laboratory facility can radiate actual RF transmissions allowing full end-to-end radar system testing. The facility is approximately 33 ft above ground level situated looking out over the Chesapeake Bay, providing an excellent field-of-view including various types of air and surface targets of opportunity (military and commercial). The location also allows for cooperative testing with controlled surface and air targets.

This laboratory has direct access to aircraft so that test equipment and aircraft Weapon Replaceable Assemblies (WRA) can be easily moved to/from the laboratory and aircraft. The laboratory provides the environment and assets to develop, test, and evaluate avionics systems during the integration process using common commercial instruments and automated test equipment. New or upgraded avionics equipment being developed or evaluated in this laboratory have their associated interfaces stimulated via either simulated or prerecorded data. Automated test equipment provides the tools necessary for assessing avionics subsystem integration performance and trouble shooting WRA interface problems. This laboratory also provides the capability to determine individual WRA performance with Shop Replaceable Assembly (SRA) failure analysis, in addition to automating aircraft instrumentation and wiring checkout. Test equipment for this laboratory is generic, reconfigurable, and computer controlled. This lab supplements the capabilities of the current Air Combat Environment Test and Evaluation Facility (ACETEF).

Instrumentation Assets:
- Various test measurement equipment (up to 18 GHz)
- HP70000 multi-measurement system
- ALR computer with IEEE 488 and 1553 interface
- HP90000 computer system with VXI chasis
- Mainframe VXI chasis (HP E1401A)
- Signal generators (programmable)
- Analog and digital O-scopes
- Power meters
- Signal analyzer (HP35660A)
- Reflectometer (TK1502)
- Micropotomer system (EG&G Gamma Science DRZ)
- Range source (DBA System Inc 202A)
- Logic Analyzer (HP1651B)

Keywords:

Radar, Avionics, Roof-Top, Lab, RASTERL, ASIL, Open-Air, Integration

ADDITIONAL INFORMATION

Facility/Capability Title: **Integrated Aircraft Test Laboratory (IATL)**

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	5	4.0	3	3	3	3	3
Contractor	1	1.0	1	1	1	1	1
Total	6	5.0	4	4	4	4	4

Total Square Footage: **6,458**

Test Area Square Footage: **6,458**

Office Space Square Footage: **0**

Tonnage of Equipment: **12.95**

Volume of Equipment: **4,653 cu ft**

Annual Maintenance Cost: **$5K**

Estimated Moving Cost: **$13.2K**

CAPITAL EQUIPMENT INVESTMENT ($K)

FY93	FY94	FY95	FY96	FY97	FY98	FY99

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Integrated Aircraft Test Laboratory (IATL)**

AGE:

Avionics Systems Integration Lab	**50 Years**	REPLACEMENT VALUE: **5.1M (Building and Equipment)**
Radar Lab	**49 Years**	
Radar Systems T&E Roof Top Lab	**49 Years**	
Structures Lab:	**50 Years**	
Equipment	**1-4 Years**	

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE: **9/93 - 1/94**

NATURE OF LAST UPGRADE: **Facility rehab**

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: **Integrated Aircraft Test Laboratory (IATL)**

		FISCAL YEAR							
T&E FUNCTIONAL AREA		86	87	88	89	90	91	92	93
AIR VEHICLES	DIRECT LABOR					**7208**	**7208**	**8109**	**9749**
	TEST HOURS					**1802**	**1802**	**2703**	**4343**
	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: **Integrated Aircraft Test Laboratory (IATL)**

ANNUAL HOURS OF DOWNTIME	1	**182**
AVERAGE DOWNTIME PER DAY (LINE 1 ÷ 365)	2	**.5**
AVERAGE HOURS AVAILABLE PER DAY (24 - LINE 2)	3	**23.5**

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
				282
				ANNUAL UNCONSTRAINED CAPACITY 9
				102,930
"TYPICAL"	**3**	**4**	**12**	
		TOTAL Σ	**12**	

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).**

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

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**	

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.

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

Anechoic Chamber/Shielded Hangar
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

Revised pg UIC N00421

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: **299,902 cu ft R**

Annual Maintenance Cost: **$5,290K** Estimated Moving Cost: **$18,962.28K R**

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

NAWCHQ Changes
Conus NAWC-21
9/15/94

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

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FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Air Combat Environment Test & Evaluation Facility**

	Age:	Replacement Value: (Building & Equipment)
Simulation & Analysis Dept Operations & Control Center Aircrew Systems Evaluation Facility	3 Years	$11.8M
EC Stimulation Dept CNI Lab EW Integrated Systems Test Lab Offensive Sensors Lab	14 Years	$106.35M
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: Digital Radar Landmass Simulator Simulation Enhancements Instrumentation Upgrade	FY94

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

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	1.00	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

UIC N00421

Revised 1/3

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

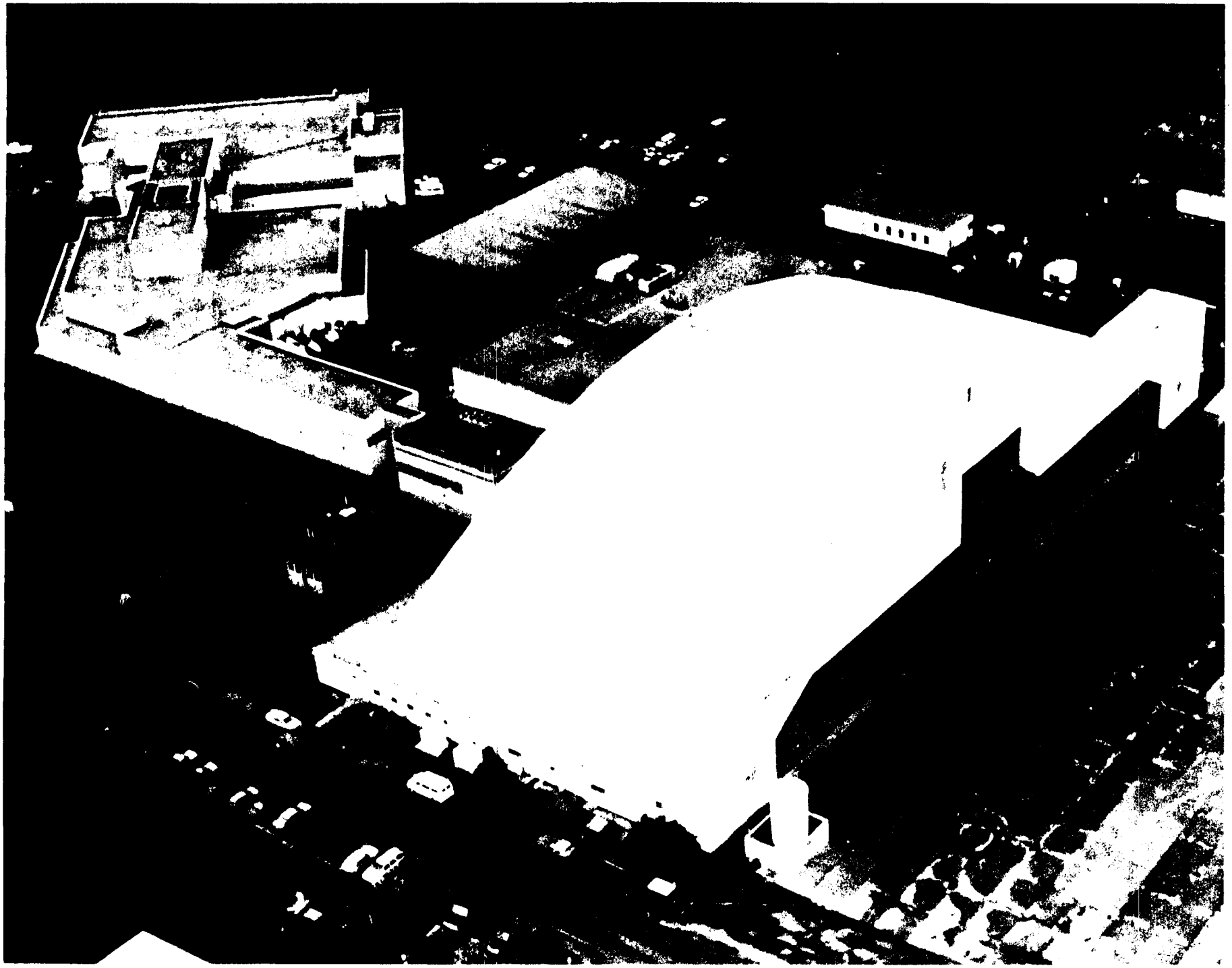
ACETEF can perform a maximum of 33 test simultaneously. (In response to EC-027 BSAT Request for Clarification dated 9 Sep 94.

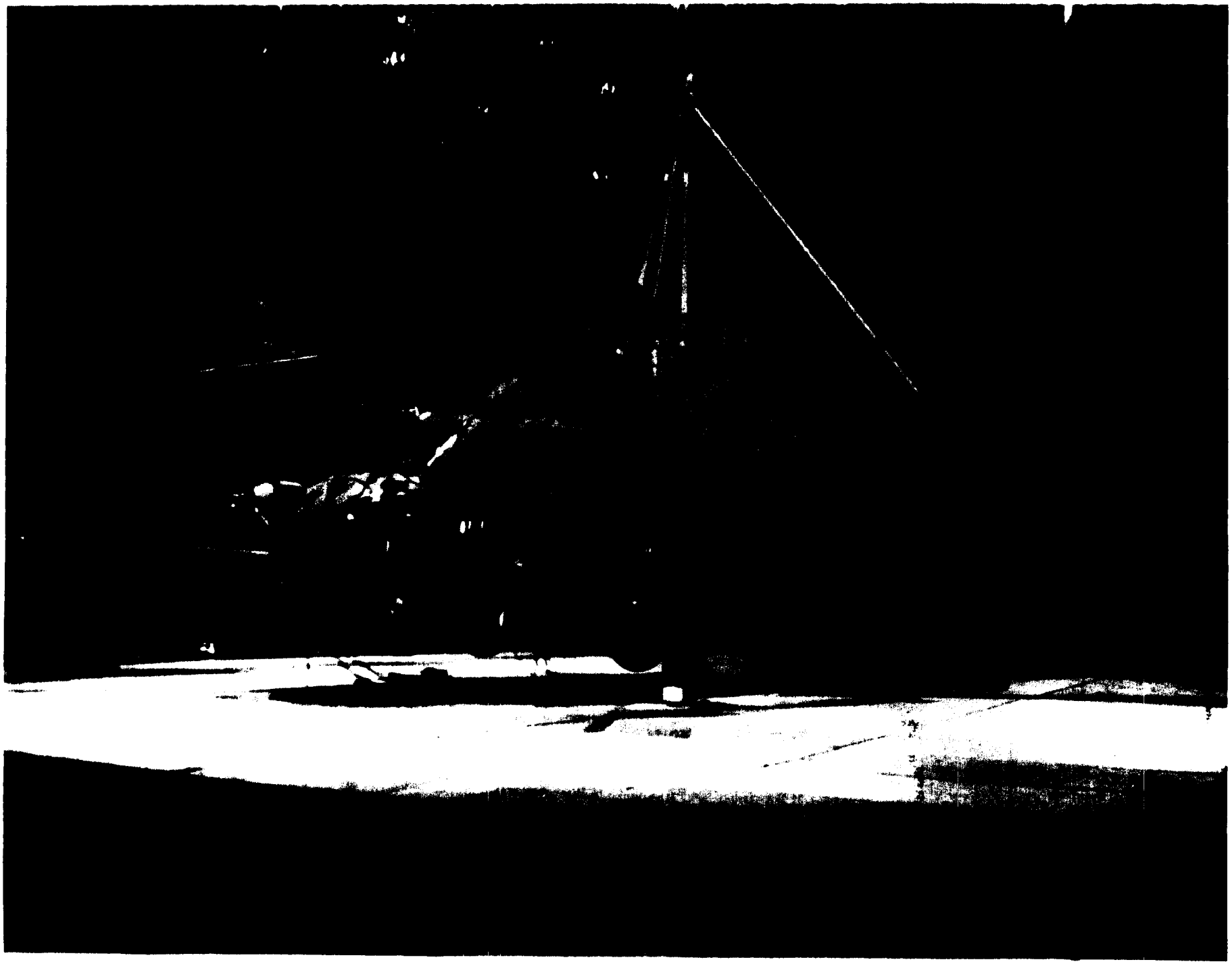
NAWCHQ Change
ames NAWC-21
9/19/94

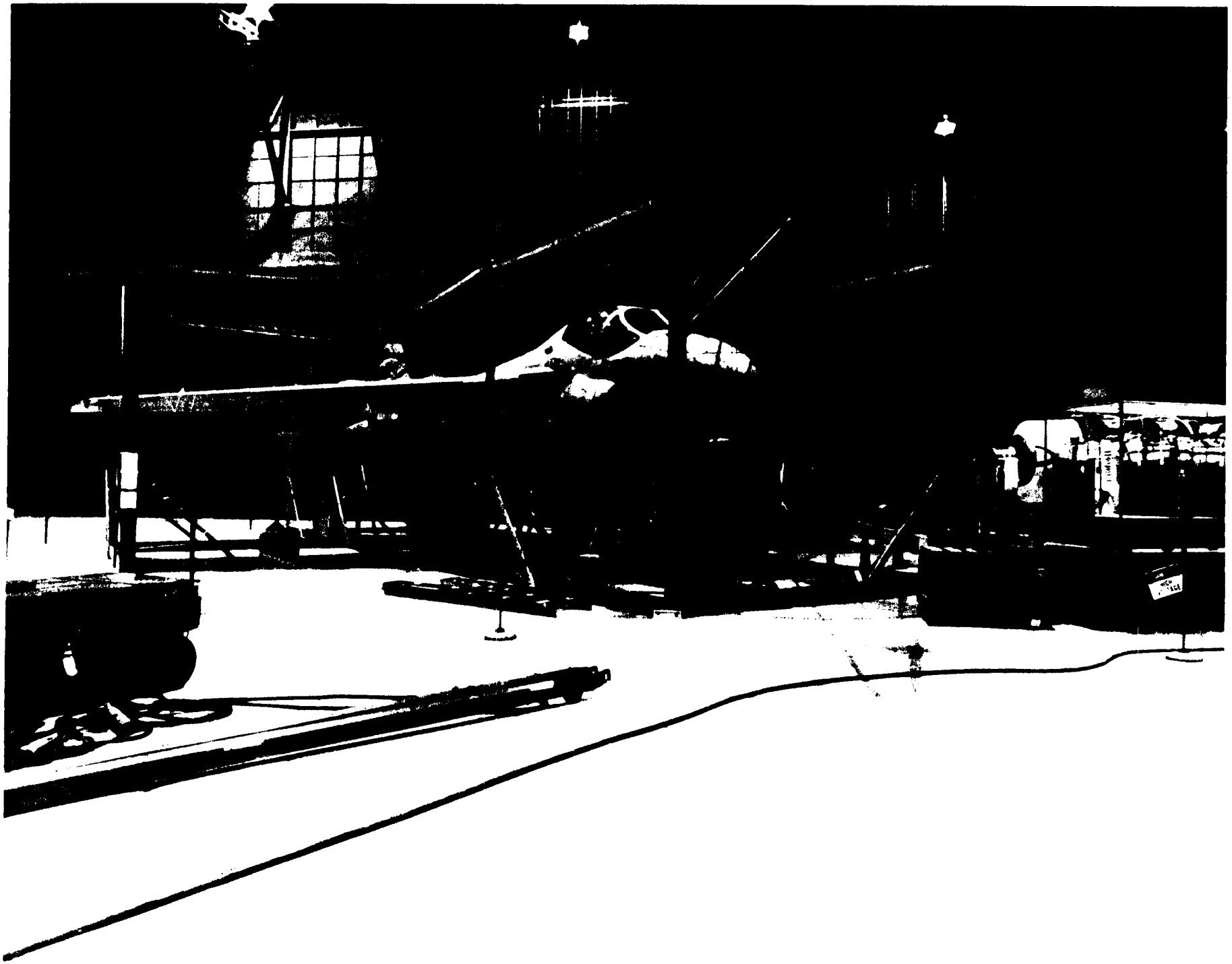
TAB 26 (page 2)
R (9-16-94)

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








407

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: **Test and Evaluation Hangar Space**

AGE: REPLACEMENT VALUE: $112,428,000 (total value of all hangars used to house aircraft) **R**

MAINTENANCE AND REPAIR BACKLOG:

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE:

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

   TOTAL PROGRAMMED AMOUNT:
   SUMMARY DESCRIPTION:

NAWCHQ Change
ams NAWC-21
9/19/94

TAB35
R(9-15-94)

Data Call #13
Audit Changes
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

DONALD V. BOECKER, RADM USN
~~XXXXXXXXXXXXXXXXXXXXXXXX~~
NAME (Please type or print)

Signature

COMMANDER (ACTING)
Title

21 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

7/29/94
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 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 #13 - AUDIT
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."

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

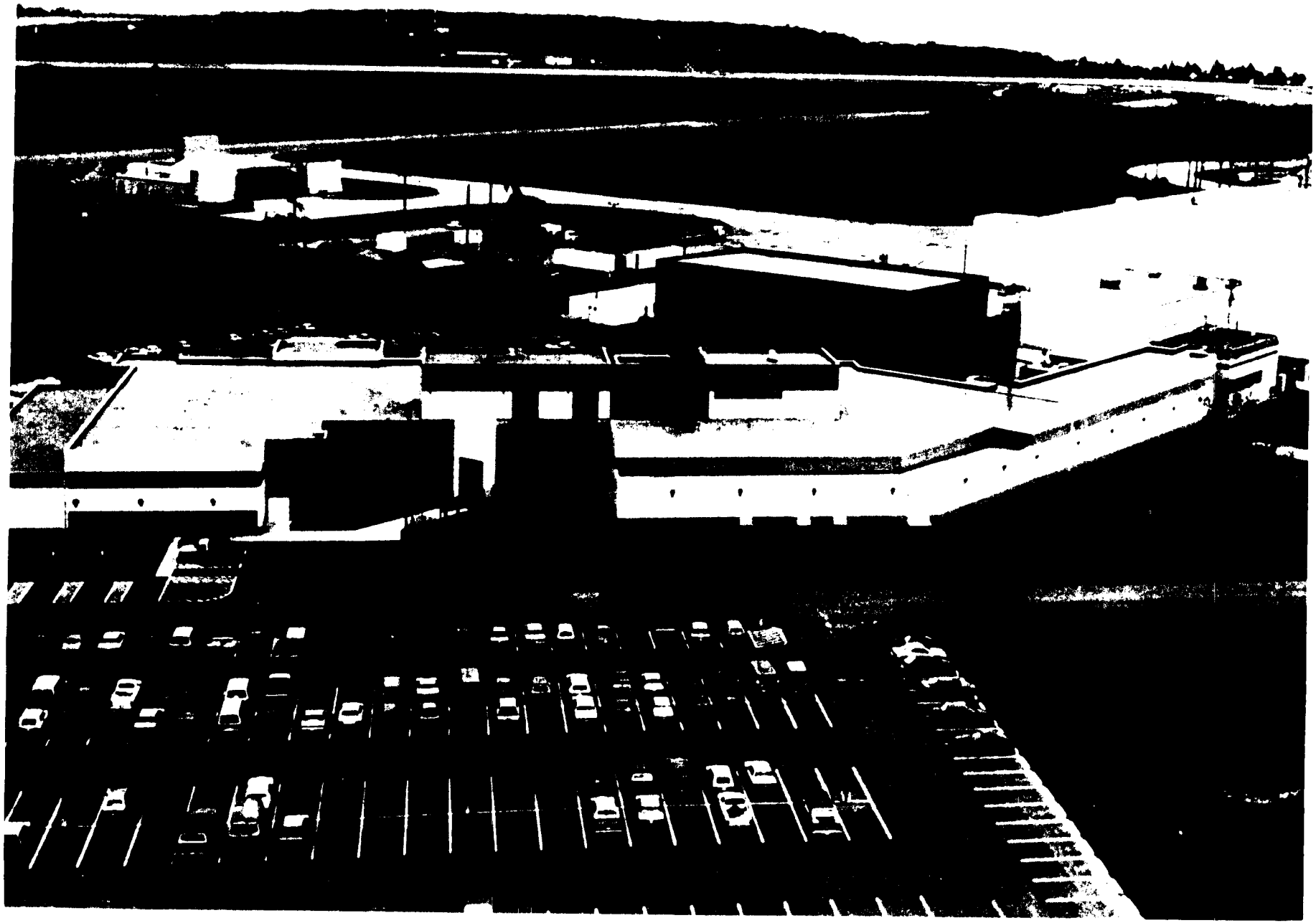
CAPTAIN JOHN B. PATTERSON
NAME (Please type or print)

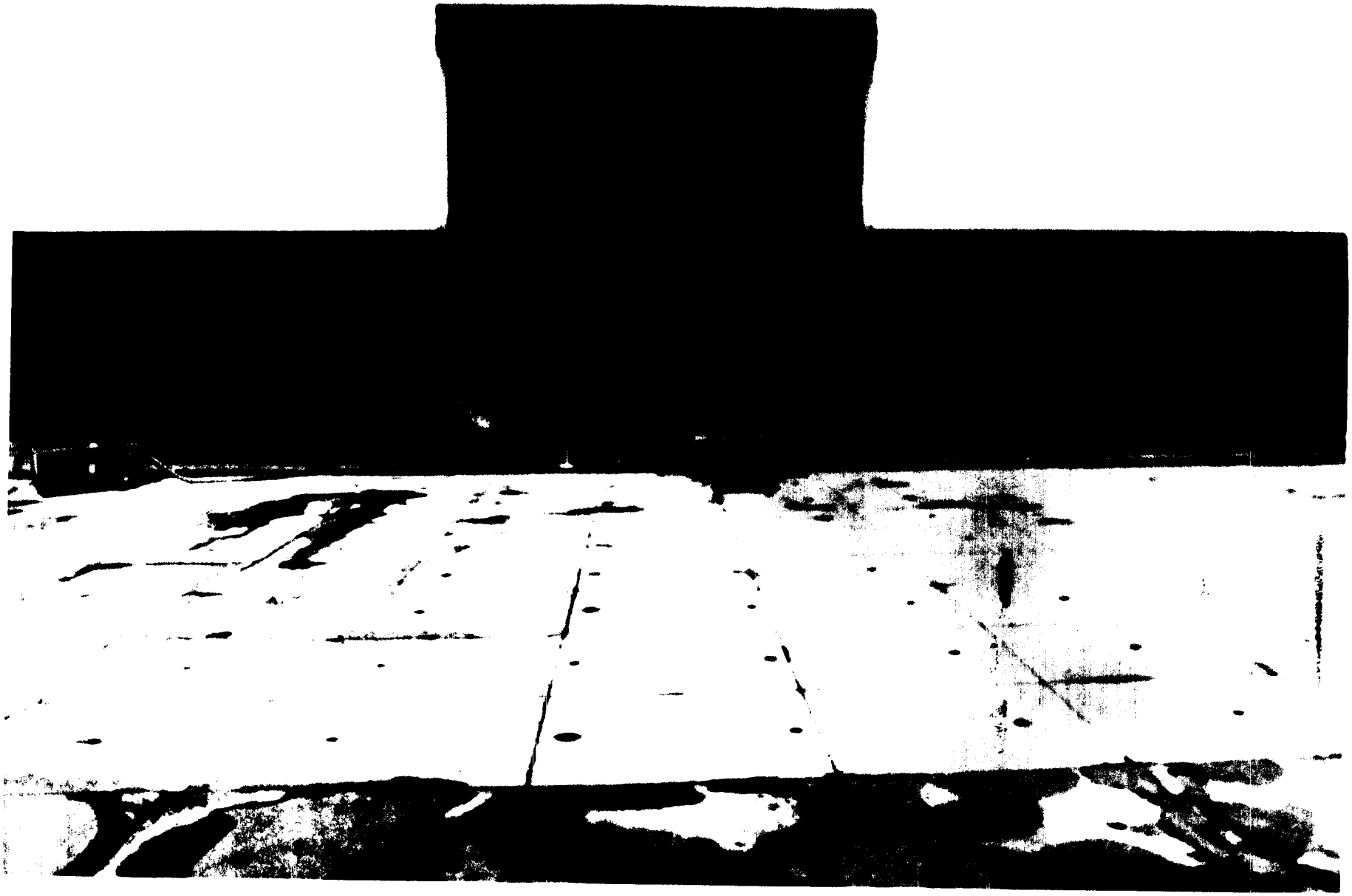
Signature

ACTING COMMANDER
Title

Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD





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.

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.

BRAC Data Call Thirteen

Table of Contents

- o Aircraft Armament Systems Simulation Engineering Test Station (AASSETS) [Appendix A, Tab 10]
- o Electronic Warfare/Avionics Flight Test Facility [Appendix A, Tab 11]
- o Antenna Testing Laboratory Automated System (ATLAS) in-flight antenna measurement capability [Appendix A, Tab 12]
- o Aircraft Test and Evaluation Facility (ATEF) [Appendix A, Tab 13]
- o Electro-Optical & Reconnaissance System Test Facility [Appendix A, Tab 14]
- o Combat Identification Systems [Appendix A, Tab 15]
- o Ground Range Antenna Test Facility (GRAFT) [Appendix A, Tab 16]
- o Acoustic Test Facility (ATF) [Appendix A, Tab 17]
- o Communications Test and Evaluation Laboratory (COMTEL) [Appendix A, Tab 18]
- o Surveillance and Topographical Analysis Radar Systems Laboratory (STARS) [Appendix A, Tab 19]

VI. Hardware-in-the-Loop Facilities

- o Aircraft Electrical Evaluation Facility (AEEF) [Appendix A, Tab 20]
- o Aircrew Systems Test Facility [Appendix A, Tab 21]
- o Aircraft Stores Certification Test Facility [Appendix A, Tab 22]
- o Flight Control Computer Test Facility [Appendix A, Tab 23]
- o Integrated Aircraft Test Laboratory (IATL) [Appendix A, Tab 24]
- o Aircraft Support Systems Test Facility [Appendix A, Tab 25]

VII. Installed Systems Test Facilities

- o Air Combat Environment Test and Evaluation Facility (ACETEF) [Appendix A, Tab 26]

VIII. Open Air Range Facilities

- **o Chesapeake Test Range (CTR) [Appendix A, Tab 27]**
- **o Telemetry Data System Facility [Appendix A, Tab 28]**
- **o Airborne Instrumentation Support Facility [Appendix A, Tab 29]**
- **o Target Support Facility [Appendix A, Tab 30]**
- **o Test and Evaluation Data Processing (Software & Applications) [Appendix A, Tab 31]**

Books Two and Three:

I. Appendix A, Book 1 of 2 Tabs 1-26
Appendix A, Book 2 of 2 Tabs 27-36

NAWCAD Patuxent River T&E Facility Forms:

General Information
Technical Information
Additional Information
Facility Condition
Historical Workload
Determination of Unconstrained Capacity

II. Appendix A Annex (Book 2 of 2)

NAWCAD Research and Development Facilities, Warminster Site:

General Information
Technical Information

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 its unique missions and operations aboard ship, Navy aircraft and their associated systems must be developed and tested in the sea-level maritime environment.

NAWCAD Patuxent River has the singular combination of required ground and flight test facilities for conducting full RDT&E of maritime aircraft and their associated systems. **Patuxent River possesses 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, and Hazard of Electromagnetic Radiation to Ordnance (HERO) facility; 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 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.**

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The information contained in this data call focuses on the T&E capabilities and facilities at Patuxent River. However, 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 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 if the activities were to remain separated. **This data call focuses only on the T&E capability of the various activities wherein another data call focuses on the science and technology laboratories. Assessment of capabilities in these focused areas can lead to sub optimal recommendations and decisions.** Therefore, information is also included as an annex to appendix A on the Naval Air Warfare Center Aircraft Division science and technology and research and development laboratories at Warminster that perform a T&E function to provide a better picture of the complete spectrum of capability.

Department of Defense

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

March 31, 1994

T&E JOINT CROSS-SERVICE GROUP DATA GUIDANCE

SECTION 1: GUIDANCE, STANDARDS, AND ASSUMPTIONS
1.1 GUIDANCE
1.1.A Guidance for Identification of Test and Evaluation (T&E) Facilities/Capabilities
1.1.B Guidance for Military Department Data Collection
1.1.C Guidance for Military Department Data Analysis
1.2 ASSUMPTIONS
1.3 FUNCTIONAL AREAS
1.3.A Air Vehicles
1.3.B Electronic Combat (EC) Systems
1.3.C Armaments/Weapons

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

SECTION 3: MEASURES OF MERIT

3.1 OVER-ARCHING MEASURES OF MERIT

3.1.A Interconnectivity

3.1.B Facility Condition

3.1.C Environmental and Encroachment Carrying Capacity

3.1.D Specialized Test Support Facilities and Targets

3.1.E Expandability

3.1.F Uniqueness

3.1.G Available Air, Land, and Sea Space

3.1.H Geographic/Climatological Features

3.2 AIR VEHICLES

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3.2.B Airfield and Facility Characteristics

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3.3 ELECTRONIC COMBAT

3.3.A Threat Environment

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3.4 ARMAMENTS/WEAPONS

3.4.A Directed Energy

3.4.B Rocket/Missile/Bomb Systems

T&E JOINT CROSS-SERVICE GROUP

SECTION 1: GUIDANCE, STANDARDS, AND ASSUMPTIONS

The Military Departments will use the following information for data collection on each facility that has performed T&E and is still capable of performing T&E within the three functional areas of air vehicles, electronic combat, and armaments/weapons for any component (hardware or software), subsystem, system, or platform. Guidance is provided on conducting a cross-service analysis.

1.1 GUIDANCE

1.1.A Guidance for Identification of Test and Evaluation (T&E) Facilities / Capabilities

1.1.A.1 Scope

All DoD installations will be examined to identify facilities that have and are still capable of performing T&E within the three functional areas of air vehicles, electronic combat, and armaments/weapons.

All facilities (tenant and host on the installation) owned by DoD are within scope of this examination.

The Military Departments and Defense Agencies are responsible for submitting the data.

The scope of this examination will include T&E facilities that are funded from any funding source and appropriation (RDT&E, procurement, O&M, training, etc.).

1.1.A.2 T&E Facilities / Capabilities

The definition of a T&E facility/capability to be used for purposes of data collection will be a set of DoD-owned or controlled property (air/land/sea space) or any collection of equipment, platforms, ADPE or instrumentation that can conduct a T&E operation and provide a deliverable T&E product.

The T&E facility can support T&E of components through systems platforms or missions in the following functional areas: air, land, sea, space, C4I, armaments/weapons, electronic combat, nuclear effects, chem/bio, propulsion, environmental effects, guidance, and materials.

The T&E facilities will be grouped under one of the following test facility categories: modeling and simulation, measurement, integration laboratory, hardware-in-the-loop, installed systems, or open air (See Appendix A for definitions). It will typically consist of all of the following components:
data collection sensors and instrumentation, data reception and storage, data processing, and data display and reporting.

The scope will include T&E operations from all funding sources (RDT&E, procurement, O&M, training, etc.).

The Naval Air Warfare Center Aircraft Division Patuxent River, Maryland mission is to: Provide and operate the Navy's principal test, evaluation, engineering, and fleet support activity for Navy aircraft (fixed and rotary wing/manned and unmanned); propulsion, avionics, and aircraft support systems; ship/shore/air operation, and aircraft electronic warfare throughout the life cycle to ensure successful operational performance. Maintain and operate test and evaluation facilities/capabilities and perform in-service engineering for aircraft systems. This includes providing a principal site for aircraft Development

Test and Evaluation (DT&E) and providing, as directed, range, technical, engineering and/or base support for DoD users and other Government agencies.

NAWCAD Patuxent River supports and utilizes the DoD's most extensive array of military aircraft infrastructure (airfield services, airspace, and aircraft support). Its range capability provides a full array of tracking and control with aerial, seaborne, and land targets that support the bulk of the Navy fixed wing aircraft and rotary wing test and evaluation test sorties. NAWCAD Patuxent River has the Navy's most extensive flight instrumentation capability/operation including prototype manufacturing and design capability. NAWCAD Patuxent River has extensive capability for data collection, processing and analysis in terms of real-time and post flight support for all disciplines required to support fixed wing, as well as rotary wing, aircraft test and evaluation.

NAWCAD Patuxent River supports all of the functional areas required for test and evaluation of maritime aircraft systems. The strength of this facility is not focused in specialized areas but is distributed across the broad spectrum of the air vehicle and mission technology arenas. The test and evaluation facilities that support the engineering development task for Navy Air Combat were recognized in the 1991 Fixed-Wing Aircraft Test and Evaluation Reliance study as superior.

The NAWCAD Patuxent River test and evaluation facilities provided in Table 1 are grouped under one of the test facility categories (Digital Modeling and Simulation (DMS), Integration Laboratories (IL), Measurement Facilities (MF), Hardware-in-the-Loop (HITL), Installed System Test Facilities (ISTF) or Open Air Ranges (OAR)). Facilities are categorized based on their primary orientation and function. The following needs to be understood: DMS capability is utilized to support virtually all other capability categories, therefore; facilities shown in other categories in general, and specifically HITLs and ISTFs, have secondary and tertiary DMS capabilities. ILs have the capability to perform some HITL capabilities for their platform specific subsystems. Some military forces support

OAR functions and may provide some limited OAR capabilities. ISTFs have secondary and tertiary capabilities to provide some HITL, IL and DMS functions. OAR provide some measurement functions.

NAWCAD Patuxent River has an extensive Digital Modeling and Simulation capability; an appropriate number of Integration Laboratories (based on the Navy approach of utilizing total platform integration laboratories at developing contractor or software support activities and not duplicating total platform IL at the test site); the most extensive and efficient complement of required on-site measurement facilities of any aircraft test and evaluation site; the most extensive and efficient complement of required on-site Hardware-in-the-Loop capabilities of any aircraft test and evaluation site; the most capable existing aircraft system Installed System Test Facility; and the most extensive maritime environment open air range capability.

By combining its complement of full spectrum ground test facilities with state-of-the-art flight test support facilities, NAWCAD Patuxent River is the only DoD activity capable of conducting fully integrated testing of Naval aircraft systems. The philosophy of principal siting of major aircraft test programs at Patuxent River has resulted in significant benefits towards reducing the schedule and cost of Naval Aircraft System development. The co-location of contractor personnel with Navy maintenance and logistics support optimizes limited resources with a single parts and support pipeline. The ability to provide total availability of high valued test assets with involvement by an integrated Navy/Contractor team results in an increased productivity during the schedule-critical phases of Engineering and Manufacturing Development (E&MD). The contractor utilizes existing government state-of-the-art testing facilities while the Program Manager is able to eliminate redundant testing via government involvement and participation. Data are shared and one set of facts is produced for all parties involved. The principal site concept at Patuxent River has resulted in high utilization of state-of-the-art test facilities, excellent customer insight into contractor E&MD Programs, and improved products to the Fleet.

Test Facility Category	NAWCAD Patuxent River Facility Name	APPENDIX A Tab Numbers
Digital Models and Computer Simulation (DMS)	Imbedded in all test facility categories.	N/A
Integration Laboratories	Airborne Strategic Communication Engineering and Test Facility	1
	E-2C Systems Test and Evaluation Laboratory	2
	Helicopter Mission Systems Support Center	3
	Fixed Wing ASUW and ASW Labs	4
	Project BEARTRAP	5
Measurement Facilities	Catapult and Arresting Gear	6
	Landing Systems Test Facility	7
	Propulsion System Evaluation Facility	8
	Ship Ground Station	9
	Aircraft Armament Systems Simulation Engineering Test Station	10
	Electronic Warfare/Avionics Flight Test Facility	11
	Antenna Testing Laboratory Automated System (ATLAS)	12
	Aircraft Test and Evaluation Facility (ATEF)	13
	Electro-Optical Reconnaissance System Test Facility	14
	Combat Identification Systems (CID)	15
	Ground Range Antenna Test Facility (GRATF)	16
	Acoustic Test Facility (ATF)	17
	Communications Test and Evaluation Laboratory (COMTEL)	18
	Surveillance and Topographical Radar Systems (STARS) Laboratory	19

TABLE 1

Test Facility Category	NAWCAD Patuxent River	APPENDIX A Tab Numbers
Hardware-in-the-Loop (HITL)	Aircraft Electrical Evaluation Facility	20
	Aircrew Systems Test Facility	21
	Aircraft Stores Certification Test Facility	22
	Flight Control Computer Test Facility	23
	Integrated Aircraft Test Laboratory	24
	Aircraft Support Systems Test Facility	25
Installed Systems Test Facilities (ISTF)	Air Combat Environment Test and Evaluation Facility (ACETEF)	26
Open Air Ranges (OAR)	Chesapeake Test Range	27
	Telemetry Data System Facility	28
	Airborne Instrumentation Support Facility	29
	Target Support Facility	30
	Test and Evaluation Data Processing	31
Mission Support	Test Pilot School	32
	Air Operations	33
	Aircraft Intermediate Maintenance Department	34
	Test and Evaluation Hangars	35
	Mission Support (Offices/Shops)	36

TABLE 1 (cont'd)

1.1.B Guidance for Military Department Data Collection

The Military Departments will use the T&E facility/capability definitions included within this data call package. In your descriptions of facility technical capabilities include programmed investments/upgrades in Military Department or Defense Agency 1995 Future Years Defense Plan (FY95 FYDP) in support of the President's Budget (PB95). When calculating capacity data, use the guidelines/definitions included in this package.

Data will be collected on all facilities/capabilities that are within the scope defined in section 1.1.A. Data will be collected using Appendix A, Data Forms and Instructions

1.1.C Guidance for Military Department Data Analysis

The Military Departments will use the 95 FYDP as the baseline to calculate costs and savings. Address closure/realignment opportunities at the functional T&E and facility levels. Retain essential technical capabilities for core competencies and technologies. Consider consolidation of subfunctions such as centralized maintenance of common platforms, instrumentation, data processing. Consider retention of difficult-to-replace essential geographic assets (e.g. airspace, ground/terrain, climates, seaports) without regard to "ownership". Recognize adaptability to future technologies. Do not consider environmental cleanup costs/difficulties for closure or downsizing a facility/capability.

1.2 ASSUMPTIONS

Cross-service analyses will use the following assumptions:

1.2.A T&E workload is not a direct function of force structure, but is related to the RDT&E budget and acquisition funding.

1.2.B The FYDP is considered certified data. Information from non-DoD activities will not be used as a basis for analyses.

1.2.C At least one test facility/capability will be required to address any technology in use or nearing maturation. Geographic assets (airspace, ground space, sea space, terrain, climate, physical security) must be adequate. Closure or realignments of laboratories, maintenance depots, and training activities could necessitate consolidation with T&E facilities/capabilities.

1.2.D Evaluation of developing technologies and systems will follow a process that involves a progression of test facilities/capabilities ranging from modeling and simulation, measurements, through hardware-in-the-loop, system integration laboratories, installed-systems, to open air/range testing.

1.2.E Potential for internetting facilities/capabilities can be considered in workload projections if investments to provide internetting capability are programmed.

1.2.F With regard to outsourcing, it will be assumed that work currently performed in-house will remain in-house and that work currently outsourced will remain outsourced.

1.2.G With regard to foreign military sales (FMS), it will be assumed that the FMS workload will continue at FY93 levels into the future (straight-lined).

1.3 FUNCTIONAL AREAS

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

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

1.3.A Air Vehicles

This functional area includes facilities involved in the testing of all air vehicles/subsystems/components whether fixed wing or rotary wing and test of major sub-systems (e.g., avionics, engines, and sensors). This includes flight testing and the testing involving pre- and post-flight preparation and processing of the air vehicle. Unmanned air vehicles and cruise missiles are included.

NAWCAD Patuxent River's primary focus is in the Air Vehicle area.

NAWCAD Patuxent River provides a full spectrum aircraft test and evaluation capability for Navy manned and unmanned fixed and rotary wing aircraft and all related

mission and support systems. It has demonstrated capability and experience in providing the full spectrum of test function disciplines shown in Table 1.3.A including experienced personnel, test resources, test infrastructure support and test facilities required to support programs ranging from individual test and evaluation projects through major Engineering and Manufacturing Development (E&MD) principal site efforts. It supports the full array of Navy aircraft test and evaluation required to support all Navy/Marine mission/warfare areas (antisubmarine, anti surface, strike, surveillance and reconnaissance, command and control, electronic warfare, close air support, trainer, etc.). It supports test and evaluation of components through systems platforms and their interoperability. It provides support throughout the acquisition phase from Concept Exploration, Demonstration and Validation, E&MD, Production and Deployment, Operation and Support , and minor/major fixes/enhancement and Pre-Planned Product Improvements. NAWCAD Patuxent River currently conducts the bulk of the Navy aircraft test and evaluation flight testing. It has the capability to conduct or support a range of DT&E and OT&E tests utilizing its resources.

Table 1.3.A:

TEST FUNCTION DISCIPLINES
Airworthiness
Flutter Testing
Engine Performance Testing
Stability and Control Testing
High Alpha Testing
Flying Qualities Performance and Evaluation
Aerial Refueling Testing
Structural Loads Testing
Structural Dynamics Evaluation
Landing Gear Brake Performance Testing
Automatic Flight Controls Testing
Engine Out and Air Start Testing
UAV Launch and Recovery System Testing
Installed Thrust Measurement (Tactical Aircraft, UAVs)

TEST FUNCTION DISCIPLINES CONT'D
Mass Property Measurement
(Heavy Aircraft, Tactical Aircraft, UAVs)
Flight Trainers/Simulator Evaluation
Air Data Calibration Testing
Ground Vibration Testing
Ship Suitability Testing
Automatic Carrier Landing Systems
Catapult
Arrested Landing
Helicopter Dynamic Interface
Ski Jump
Tethered Hover Testing
Aircraft Auxiliary Systems Testing
(Hydraulic, Electrical, Mechanical)
Environmental Control Systems Testing
In-Ground Effect Testing (various altitude)
Landing Systems Testing
Avionics Systems Integration
Systems Integration Testing
Aircraft to Environment
Aircraft to Low Observable
Sensor to Aircraft
Sensor to Core Avionics
Core Avionics to Controls and Displays
Software-Hardware
Armament
Antenna Pattern Measurement
(Ground/In-Flight)
Sensor Imaging/Resolution Testing
(Radar/EO/IR/Photo)
Anti-Submarine Warfare Testing
(Acoustics, Magnetics, Data Links)
Night Vision Testing
Avionics Testing
Interfaces
Computer Resources (Hardware/Software)
Simulation
Helicopter Mission Systems

TEST FUNCTION DISCIPLINES CONT'D
EW Testing
Comm/Navigation Interface
Offensive/Defensive Sensors
Aircrew Systems Evaluation
Electro Optical
Stores Management
Aircraft Sensor Integration
Mission Planning System
Command and Control Systems Testing
Supportability
Deployment Tactics Developmental Testing
Electromagnetic Environmental Effects Testing
(ECM, EMI, EMP, TEMPEST, EMV, HERO, Lightning)
Reliability and Maintainability Testing
Integrated Logistics Support Testing
Helicopter Rotor Downwash Testing
Interoperability Testing
Inter-Service
Intra-Service
Inter-Subsystem
Ground Support Systems Testing
Documentation Validation
Environmental
Adverse Weather Testing
Signature Measurement (Acoustic/RCS/IR)
Ground
In-Flight
Environmental Testing
Airborne Icing Testing
Stores Integration
Stores Integration Testing
Stores Compatibility Testing
Bombing Accuracy Testing
Air-To-Ground Gunnery Testing
UAV Payload Testing
Aerial Load Delivery Testing
Air Transportability Testing

TEST FUNCTION DISCIPLINES CONT'D
External Cargo/Hoist Testing
Rotary Wing Air-to-Air Weapons Testing
Other
Human Factors Testing
Aircrew and Aircraft Interfaces
Survivability/Vulnerability Testing
Air Transportability Testing
Escape Systems Testing
Terrain Following Testing
Nap of Earth (NOE) Flight Testing

Table 1.3.A

1.3.B Electronic Combat (EC) Systems

This functional area includes facilities involved in the testing of stand-alone electronic combat systems and electronic combat subsystems that are normally integrated into other weapon systems. It includes the testing of systems or subsystems that have as their primary mission threat warning, testing of systems that provide countermeasures in the RF (radio frequency) spectrum against radars and other RF sensors, systems that provide countermeasures that are used against sensors in the electro-optical or infrared spectrum as well as testing of electronic and C3 countermeasures.

In addition to Air Vehicle testing, NAWCAD Patuxent River T&E efforts are associated with the electronic combat functional area as defined above. Classifying specific work efforts exclusively as Air Vehicle or Electronic Combat is difficult since both these areas involve avionics, sensor countermeasures, and other related areas. Electronic combat (EC) capabilities are employed to perform a broad range of air platform related RDT&E activities to support the development, integration, developmental test and, in some cases, operational test and evaluation of electronic combat systems. This capability includes: threat warning and exploitation systems, IFF (present and future), anti-jam

capabilities of data links (JTIDS), UAV links, E-2C (radar), C^3 systems), TEMPEST, electronic counter counter-measures and intelligence support. Patuxent River has the capability to perform the testing necessary to develop and integrate hardware and software (single platform/multi-platform), conduct human factors evaluations, and flight test (less jammer effectiveness measurements) EC systems in all aircraft. Ground test facilities include the Air Combat Environment Test and Evaluation Facility (ACETEF) which consists of several highly integrated laboratories for Simulation & Analysis, Electronic Combat Stimulation, Manned Flight Simulation, and Electromagnetic Environmental Effects. ACETEF is a one of a kind facility which provides the unique ability to simultaneously subject an aircraft and its installed systems and weapons to a multi-spectral combat environment. Flight test capabilities include the EW/Avionics Flight Test Facility which provides a real time test tool to evaluate aircraft and their EC systems. It provides multiple signal emissions from communications bands through the millimeter wave band and a capability to measure high quality dynamic radar cross section, jam to signal ratio, chaff bloom rate and chaff cloud measurements. Frequency coverage ranges from 1 to 15 Ghz and 35 Ghz and coherent wideband measurements from 8 to 12 Ghz with High Range resolution/imaging signatures. Both the ACETEF and the EW/Avionics Flight Test Facility are internetted together and with other test facilities. Examples include the ACETEF/E-2C System Test Facility link to support aircraft interoperability with AEW aircraft; the ACETEF/Ship Ground Station (SGS)/Chesapeake Test Range (CTR) link to support the integration testing of the SH-60B LAMPS EW and ASW integration with the AEGIS, FFG and DD class ships; the ACETEF/CTR link to provide pre-flight training for RCS flight testing; and the SGS/Wallops link to support multi-ship LAMPS testing. Other efforts include participation in ACETEF/REDCAP integration, WARBREAKER, Synthetic Theater of War - Europe, and the Multi-service Distributed Testbed exercises.

1.3.C Armaments / Weapons

This functional area includes facilities involved in the testing of the weapons portion of a weapon system. In those cases where the weapon system is composed almost exclusively of the weapon, it may include system-level and platform integration testing. In other cases, it addresses just the weapon subsystem (e.g., guidance and control, propulsion, warheads, and airframe), while the testing of the weapon system's vehicle is in another functional area.

In addition to Air Vehicle and Electronic Combat, NAWCAD Patuxent River's T&E effort also supports the Armaments/Weapons functional area. None of the facilities involved in the testing of this area are facilities or capabilities dedicated to weapons support. The weapons support efforts are provided by leveraging some of the facilities and capabilities developed and utilized in support of the air vehicle efforts.

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INSTALLATION

SECTION 2: CAPACITY & TECHNICAL RESOURCES

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

2.1 WORKLOAD

Annual workload will be reported in units as follows: for open air ranges involving flight testing, report test hours and missions. For all other T&E facilities direct labor hours and test hours must be reported; if available, missions must be reported. If an estimation of test hours based on direct labor hours is necessary, refer to the instructions for Determination of Unconstrained Capacity on page 28.

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

The NAWCAD Patuxent River has experienced a 36% increase in funding received from 1988 to present. That dramatic increase in workload, in a time of declining Defense budgets, is testament to the value of the products and services provided. Furthermore, during that time, flight test hours have remained essentially constant which reflects both greatly improved efficiency in its flight test capability and its increased emphasis on ground testing through the use of simulation facilities.

	FY87	FY88	FY89	FY90	FY91	FY92	FY93
DIRECT	250,695	284,383	292,813	328,613	356,536	376,685	473,284
MRTFB/BOS	94,805	94,617	99,187	107,787	103,864	108,280	114,516

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INSTALLATION

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

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	FY87	FY88	FY89	FY90	FY91	FY92	FY93
DIRECT	250,695	284,383	292,813	328,613	356,536	363,420	473,284
MRTFB/BOS	94,805	94,617	99,187	107,787	103,864	108,280	114,516

2.1.B Forecasted Workload

-2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP. The Military Departments will provide total funding amounts appropriated for all PEs identified in each functional area shown above.

NAWCAD Patuxent River has evolved into a unique national asset essential to the effective application of naval air and sea power. Our hallmark has been the test and evaluation of developmental and production aircraft weapon systems, subsystems, and components. Our workload policy and guidance achieve a balance in the full spectrum of technical activity from advanced development to fleet support: RDT&E 39%, acquisition support 39%, in service support 15%, training/operational support 7%. With the realignment of NAWCAD Warminster and the engineering staff of NAWCAD Trenton to NAWCAD Patuxent River, this site will become an unparalleled national site capable of the full spectrum of research, development, and test and evaluation for aircraft weapons systems, propulsion systems and sensor systems.

The following table reflects the forecasted workload for testing at NAWCAD Patuxent River:

		$K							
FUNC	P.E.	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
AREA	APPROP	TOTAL $	TOTAL $	TOTAL $	TOTAL $	TOTAL $	TOTAL $	TOTAL $	TOTAL $
AIR VEHICLE									
	11402N	$1,876	$1,404	$2,346	$1,103	$1,205	$1,129	$1,129	$1,129
	21487N	$8	$0	$0	$0	$0	$0	$0	$0
	24134N	$553	$1,477	$1,291	$503	$258	$245	$245	$245
	24136N	$4,652	$9,051	$21,103	$20,776	$24,597	$15,917	$8,441	$6,671
	24152N	$950	$366	$1,020	$1,087	$735	$356	$134	$0
	24163N	$130	$134	$258	$59	$61	$0	$0	$0
	25604N	$7,146	$4,675	$772	$380	$400	$420	$420	$420
	25633N	$1,502	$2,315	$5,545	$2,134	$1,884	$1,892	$1,973	$2,065
	25667N	$2,133	$5,728	$1,776	$554	$82	$0	$0	$0
	33109N	$158	$410	$45	$0	$0	$0	$0	$0
	35141D	$754	$1,865	$661	$212	$65	$68	$68	$68
	60000N	$0	$0	$209	$484	$88	$0	$0	$0
	62122N	$422	$674	$546	$348	$270	$107	$107	$107
	62233N	$0	$143	$0	$0	$0	$0	$0	$0
	63013N	$1,525	$1,764	$693	$1,240	$490	$411	$411	$411
	63208N	$5,264	$5,140	$2,858	$2,982	$2,722	$2,665	$2,345	$621
	63216N	$89	$111	$361	$0	$0	$0	$0	$0
	63231N	$84	$0	$0	$0	$0	$0	$0	$0
	63254N	$813	$346	$392	$570	$470	$429	$415	$421
	63261N	$584	$667	$656	$322	$0	$0	$0	$0
	63321N	$6	$0	$0	$0	$0	$0	$0	$0
	63512N	$691	$1,168	$1,186	$1,449	$1,128	$304	$192	$327
	63562N	$0	$301	$2,735	$0	$0	$0	$0	$0
	63654N	$11	$0	$0	$0	$0	$0	$0	$0
	63706N	$0	$111	$0	$0	$0	$0	$0	$0
	63708N	$3,443	$2,268	$1,079	$1,333	$1,381	$970	$970	$970
	63741D	$273	$46	$0	$0	$0	$0	$0	$0
	63747N	$0	$150	$360	$293	$256	$298	$300	$304
	63999N	$0	$761	$1,127	$0	$0	$0	$0	$0
	64203N	$1,431	$104	$143	$55	$0	$0	$0	$0
	64211N	$102	$530	$2,608	$3,607	$5,227	$10,200	$10,200	$10,200
	64212N	$244	$482	$673	$1,036	$686	$601	$410	$356
	64213N	$670	$1,038	$599	$812	$0	$0	$0	$0
	64214N	$790	$1,276	$1,897	$1,069	$740	$657	$211	$157
	64215N	$2,088	$2,257	$1,845	$2,192	$1,894	$2,276	$2,429	$2,936
	64217N	$0	$62	$0	$0	$0	$0	$0	$0
	64219N	$574	$654	$1,380	$2,257	$1,534	$1,027	$1,027	$1,027

		$K							
FUNC	P.E.	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
AREA	APPROP	TOT$	TOT$	TOT$	TOT$	TOT$	TOT$	TOT$	TOT$
AIR VEHICLE									
	64221N	$12,105	$7,148	$3,089	$3,455	$3,332	$7,306	$2,075	$2,147
	64231N	$0	$24	$53	$55	$57	$59	$59	$59
	64233N	$1,732	$1,762	$3,454	$4,127	$4,762	$5,770	$5,770	$5,770
	64260N	$308	$88	$0	$0	$0	$0	$0	$0
	64261N	$1,815	$1,004	$715	$1,038	$600	$365	$313	$281
	64262N	$14,639	$18,076	$18,229	$15,784	$16,686	$38,600	$24,653	$4,233
	64264N	$66	$25	$34	$60	$55	$114	$116	$117
	64265N	$94	$835	$48	$39	$35	$30	$30	$30
	64268N	$1,522	$2,218	$1,851	$1,273	$1,085	$1,171	$1,171	$1,171
	64270N	$3,097	$1,863	$4,324	$1,223	$577	$882	$592	$524
	64314N	$116	$7	$0	$0	$0	$0	$0	$0
	64373N	$351	$424	$0	$0	$0	$0	$0	$0
	64504N	$577	$642	$619	$573	$211	$164	$160	$63
	64567N	$15	$14	$103	$24	$24	$24	$24	$24
	64574N	$100	$100	$0	$0	$0	$0	$0	$0
	64603N	$49	$57	$0	$0	$0	$0	$0	$0
	64618N	$0	$0	$1,308	$11	$0	$0	$0	$0
	64727N	$246	$643	$2,090	$349	$0	$0	$0	$0
	64777N	$7,052	$6,937	$4,325	$4,072	$4,114	$4,151	$4,313	$4,271
	65152N	$332	$0	$0	$0	$0	$0	$0	$0
	65803N	$70	$70	$62	$110	$112	$121	$121	$121
	65864N	$13,818	$14,394	$14,969	$15,568	$16,191	$16,839	$17,512	$18,213
	90000N	$624	$1,972	$32	$34	$35	$37	$37	$37
	AFR	$2,282	$1,662	$328	$295	$1	$1	$1	$1
	APN	$89,144	$95,796	$70,427	$72,969	$65,209	$55,301	$54,532	$60,653
	ARM	$241	$350	$268	$72	$2	$2	$2	$2
	CGD	$508	$1,342	$623	$355	$356	$348	$348	$348
	CNO	$88	$0	$0	$0	$0	$0	$0	$0
	DBF	$6,326	$11,140	$7,381	$5,805	$6,796	$5,116	$5,116	$5,116
	FMA	$0	$9	$0	$0	$0	$0	$0	$0
	FMC	$4,516	$4,145	$3,571	$3,500	$3,500	$3,500	$3,500	$3,500
	MAR	$496	$146	$5	$6	$6	$6	$6	$6
	MIS	$1,175	$1,367	$1,498	$554	$560	$585	$585	$585
	NGR	$2,107	$3,527	$3,648	$1,562	$596	$188	$188	$188
	NIF	$1,880	$185	$929	$1,443	$1,403	$789	$789	$789
	NSF	$62	$22	$0	$0	$0	$0	$0	$0
	OMN	$21,603	$22,723	$25,052	$18,161	$34,310	$34,445	$34,445	$34,445
	OMR	$38	$0	$0	$0	$0	$0	$0	$0
	OPN	$1,172	$1,402	$332	$387	$390	$420	$370	$370
	OSD	$1,943	$2,140	$2,997	$568	$31	$32	$82	$82
	PPP	$574	$535	$130	$29	$15	$16	$16	$16

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		$K								
FUNC AREA	P.E. APPROP	FY92 TOT$	FY93 TOT$	FY94 TOT$	FY95 TOT$	FY96 TOT$	FY97 TOT$	FY98 TOT$	FY99 TOT$	
AIR VEHICLE										
	SCN	$984	$1,051	$1,358	$835	$791	$690	$690	$690	
	SEA	$2,699	$2,757	$1,185	$265	$301	$287	$287	$287	R
	SPA	$173	$212	$311	$256	$257	$138	$138	$138	
	VAR	$6,454	$4,882	$898	$1,102	$999	$1,031	$1,031	$1,031	
ELECTRONIC COMBAT										
	33109N	$0	$2	$186	$0	$0	$0	$0	$0	
	63109N	$1,649	$1,323	$0	$0	$0	$0	$0	$0	
	63270N	$1,731	$4,743	$1,222	$0	$0	$0	$0	$0	
	64255N	$225	$1,287	$722	$743	$1,080	$445	$445	$445	
	64270N	$1,524	$782	$1,449	$348	$153	$157	$106	$94	
	63013N	$0	$0	$236	$0	$0	$0	$0	$0	
	AFR	$214	$205	$85	$76	$79	$103	$103	$103	
	APN	$6,187	$6,358	$4,741	$3,537	$3,826	$2,211	$2,180	$2,425	
	ARM	$44	$242	$89	$0	$0	$0	$0	$0	
	DBF	$384	$723	$242	$138	$94	$66	$66	$66	
	NIF	$102	$0	$0	$0	$0	$0	$0	$0	
	OMN	$14,968	$18,961	$9,483	$23,649	$25,680	$12,882	$12,882	$12,882	
	OPN	$114	$116	$84	$0	$0	$0	$0	$0	R
	OSD	$380	$312	$1,936	$372	$400	$430	$430	$430	
	SEA	$0	$280	$11	$11	$0	$0	$0	$0	
	SPA	$3	$49	$53	$0	$0	$0	$0	$0	
	MIS	$0	$0	$30	$29	$34	$40	$40	$40	
ARMAMENT/ WEAPONS										
	VAR	$0	$0	$1,771	$330	$364	$387	$387	$387	
	WPN	$1,608	$3,041	$671	$396	$132	$0	$0	$0	
	DBF	$15	$0	$263	$0	$0	$0	$0	$0	
	MIS	$10	$0	$0	$0	$0	$0	$0	$0	
	WPN	$0	$0	$42	$28	$30	$31	$31	$31	
OTHER										
	21487N	$310	$0	$0	$0	$0	$0	$0	$0	
	24571N	$2,034	$2,811	$2,353	$3,337	$3,605	$3,606	$3,684	$3,733	
	25658N	$68	$0	$0	$0	$0	$0	$0	$0	
	35141D	$0	$529	$210	$113	$118	$123	$123	$123	
	60009N	$230	$437	$374	$359	$313	$309	$309	$309	
	63216N	$0	$10	$0	$0	$0	$0	$0	$0	
	63217N	$34	$0	$0	$0	$0	$0	$0	$0	
	63261N	$10	$108	$57	$0	$0	$0	$0	$0	

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9/19/94

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		$K							
FUNC AREA	R.E. APPROP	FY92 TOT$	FY93 TOT$	FY94 TOT$	FY95 TOT$	FY96 TOT$	FY97 TOT$	FY98 TOT$	FY99 TOT$
AIR VEHICLE									
	SCN	$984	$1,051	$1,358	$835	$791	$690	$690	$690
	SEA	$2,699	$2,757	$1,185	$265	$350	$287	$287	$287
	SPA	$173	$212	$311	$256	$257	$138	$138	$138
	VAR	$6,454	$4,882	$898	$1,102	$999	$1,031	$1,031	$1,031
ELECTRONIC COMBAT									
	33109N	$0	$2	$186	$0	$0	$0	$0	$0
	63109N	$1,649	$1,323	$0	$0	$0	$0	$0	$0
	63270N	$1,731	$4,743	$1,222	$0	$0	$0	$0	$0
	64255N	$225	$1,287	$722	$743	$1,080	$445	$445	$445
	64270N	$1,524	$782	$1,449	$348	$153	$157	$106	$94
	63013N	$0	$0	$236	$0	$0	$0	$0	$0
	AFR	$214	$205	$85	$76	$79	$103	$103	$103
	APN	$6,187	$6,358	$4,741	$3,537	$3,826	$2,211	$2,180	$2,425
	ARM	$44	$242	$89	$0	$0	$0	$0	$0
	DBF	$384	$723	$242	$138	$94	$66	$66	$66
	NIF	$102	$0	$0	$0	$0	$0	$0	$0
	OMN	$14,968	$18,961	$9,483	$23,649	$25,680	$12,882	$12,882	$12,882
	OPN	$114	$130	$84	$0	$0	$0	$0	$0
	OSD	$380	$312	$1,936	$372	$400	$430	$430	$430
	SEA	$0	$280	$11	$11	$0	$0	$0	$0
	SPA	$3	$49	$53	$0	$0	$0	$0	$0
	MIS	$0	$0	$30	$29	$34	$40	$40	$40
ARMAMENT/ WEAPONS									
	VAR	$0	$0	$1,771	$330	$364	$387	$387	$387
	WPN	$1,608	$3,041	$671	$396	$132	$0	$0	$0
	DBF	$15	$0	$263	$0	$0	$0	$0	$0
OTHER									
	MIS	$10	$0	$0	$0	$0	$0	$0	$0
	WPN	$0	$0	$42	$28	$30	$31	$31	$31
	21487N	$310	$0	$0	$0	$0	$0	$0	$0
	24571N	$2,034	$2,811	$2,353	$3,337	$3,605	$3,606	$3,684	$3,733
	25658N	$68	$0	$0	$0	$0	$0	$0	$0
	35141D	$0	$529	$210	$113	$118	$123	$123	$123
	60009N	$230	$437	$374	$359	$313	$309	$309	$309
	63216N	$0	$10	$0	$0	$0	$0	$0	$0
	63217N	$34	$0	$0	$0	$0	$0	$0	$0
	63261N	$10	$108	$57	$0	$0	$0	$0	$0

		$K							
FUNC	P.E.	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
AREA	APPROP	TOT$	TOT$	TOT$	TOT$	TOT$	TOT$	TOT$	TOT$
OTHER									
	63262N	$2,029	$2,087	$964	$1,081	$1,208	$1,353	$1,353	$1,353
	63514N	$20	$0	$0	$0	$0	$0	$0	$0
	63634N	$0	$29	$0	$0	$0	$0	$0	$0
	63712N	$4	$326	$0	$0	$0	$0	$0	$0
	64208N	$620	$419	$0	$0	$0	$0	$0	$0
	64215N	$561	$795	$531	$345	$288	$40	$43	$52
	64270N	$232	$285	$0	$0	$0	$0	$0	$0
	64314N	$0	$92	$0	$0	$0	$0	$0	$0
	64504N	$128	$0	$0	$0	$0	$0	$0	$0
	64574N	$1,067	$1,231	$1,299	$1,775	$2,291	$1,438	$1,463	$1,492
	64610N	$180	$0	$0	$0	$0	$0	$0	$0
	64777N	$1,144	$1,509	$1,698	$207	$215	$224	$233	$230
	65155N	$0	$113	$26	$0	$0	$0	$0	$0
	65502N	$92	$72	$0	$0	$0	$0	$0	$0
	65804N	$0	$3	$0	$0	$0	$0	$0	$0
	65804N	$46	$34	$0	$0	$0	$0	$0	$0
	65861N	$76	$41	$0	$0	$0	$0	$0	$0
	65862N	$597	$0	$0	$0	$0	$0	$0	$0
	65863N	$2,606	$2,828	$1,911	$2,028	$1,819	$508	$516	$526
	65865N	$7	$0	$0	$0	$0	$0	$0	$0
	AFR	$1,494	$993	$936	$892	$987	$1,049	$1,049	$1,049
	APN	$2,160	$3,173	$2,724	$2,415	$2,259	$2,252	$2,220	$2,470
	ARM	$945	$1,055	$787	$179	$230	$223	$223	$223
	CGD	$5,043	$12,283	$9,338	$10,270	$0	$0	$0	$0
	CNO	$185	$160	$76	$76	$81	$0	$0	$0
	DBF	$3,469	$10,082	$12,615	$12,754	$13,096	$12,978	$12,978	$12,978
	FMA	$662	$386	$0	$0	$0	$0	$0	$0
	FMC	$2,578	$3,188	$2,307	$0	$0	$0	$0	$0
	MCN	$23	$0	$0	$0	$0	$0	$0	$0
	MIS	$2,302	$1,415	$675	$645	$683	$690	$690	$690
	NIF	$318	$59	$28	$23	$0	$0	$0	$0
	OMN	$30,375	$32,206	$23,222	$21,886	$22,374	$21,944	$21,944	$21,944
	OPN	$4,363	$5,477	$11,346	$7,094	$3,219	$3,303	$3,303	$3,303
	OSD	$650	$16,567	$571	$86	$6	$6	$6	$6
	PPP	$11	$10	$0	$0	$0	$0	$0	$0
	SEA	$1,689	$1,528	$793	$1,477	$1,096	$1,079	$1,079	$1,079

		$K							
FUNC	P.E.	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
AREA	APPROP	TOT$	TOT$	TOT$	TOT$	TOT$	TOT$	TOT$	TOT$
OTHER									
	SPA	**$1,446**	**$1,595**	**$101**	**$100**	**$96**	**$67**	**$67**	**$67**
	SUP	**$3**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
	WPN	**$0**	**$0**	**$231**	**$642**	**$63**	**$68**	**$68**	**$68**

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

70% of our workload dollars are in support of Air Vehicle testing 6% for Electronic Combat, 1% Armament and 23% other testing.

The following table reflects FY92 and FY93 civilian, military and contractor workyears at NAWCAD Patuxent River which are directly related to testing. This does not include Air Operations and the Aircraft Intermediate Maintenance Departments which support the test operations, but do not generate a testing requirement.

FUNCTIONAL AREA	P.E.	FY92 WORKYEARS	FY93 WORKYEARS
AIR VEHICLE			
	00000N	0.6	2.3
	11224N	0.0	0.8
	11402N	28.7	17.2
	21487N	0.2	0.0
	24134N	10.0	13.6
	24136N	43.1	65.9
	24152N	7.5	5.4
	24163N	1.9	1.6
	25604N	35.0	33.5
	25633N	17.3	22.4
	25667N	27.4	60.6
	33109N	1.6	5.4
	35141D	9.4	20.1
	60000N	4.3	0.7
	62122N	6.5	9.6
	63013N	13.6	13.6
	63208N	47.8	35.0
	63216N	1.1	1.3
	63231N	0.1	0.0
	63254N	6.5	6.6
	63261N	5.0	5.8
	63321N	0.1	0.0
	63512N	7.5	9.8
	63562N	0.0	0.8
	63654N	0.2	0.0
	63706N	0.0	0.0
	63708N	16.4	28.4
	63741D	1.4	0.0
	63747N	0.0	3.2
	63790D	0.0	0.0
	63792N	0.0	0.0
	63800N	0.0	0.0
	63999N	0.0	9.6
	64203N	12.7	1.6
	64211N	12.5	5.0
	64212N	2.0	2.6
	64213N	7.4	5.2
	64214N	13.8	11.5
	64215N	26.5	25.2
	64217N	0.0	0.5
	64219N	4.0	6.0
	64221N	101.4	54.2

FUNCTIONAL AREA	P.E.	FY92 WORKYEARS	FY93 WORKYEARS
AIR VEHICLE			
	64231N	0.0	1.3
	64233N	22.2	20.4
	64260N	1.6	1.2
	64261N	8.5	8.8
	64262N	220.2	150.0
	64264N	1.9	1.7
	64265N	2.7	3.1
	64268N	13.1	16.5
	64270N	32.9	19.7
	64314N	2.0	0.1
	64373N	5.5	3.1
	64504N	6.9	5.5
	64567N	0.2	0.2
	64603N	0.8	0.7
	64727N	3.6	4.4
	64777N	48.4	46.7
	65152N	3.2	0.0
	65803N	1.3	0.7
	65864N	462.0	445.0
	90000N	4.5	11.1
	AFR	23.9	15.5
	APN	979.9	1258.8
	ARM	1.6	3.1
	CGD	8.5	30.0
	CNO	2.6	0.0
	DBF	97.4	118.7
	FMA	0.0	0.2
	FMC	64.9	56.0
	MAR	3.1	1.8
	MIS	18.1	5.9
	NEW	2.9	2.5
	NGR	23.4	20.5
	NIF	22.9	8.9
	NSF	1.0	0.1
	OMN	145.8	154.2
	OMR	0.7	0.0
	OPN	18.0	14.7
	OSD	17.3	9.0
	PPP	4.5	5.0
	SCN	2.8	3.7
	SEA	18.2	15.1

FUNCTIONAL AREA	P.E.	FY92 WORKYEARS	FY93 WORKYEARS
AIRVEHICLE			
	SPA	4.4	5.7
	VAR	268.3	156.6
ARMAMENT/WEAPONS			
	WPN	16.7	22.1
ELECTRONIC COMBAT			
	33109N	0.0	0.6
	63109N	18.7	1.9
	63270N	2.0	19.6
	64255N	3.1	6.0
	64270N	11.3	5.2
	AFR	2.2	2.3
	APN	76.8	84.3
	ARM	0.6	1.4
	DBF	4.7	4.0
	MIS	0.2	0.3
	NIF	0.1	0.2
	OMN	52.7	51.7
	OPN	0.8	1.1
	OSD	5.5	6.7
	SEA	0.0	6.7
	SPA	0.3	3.9
OTHER			
	00000N	0.1	0.0
	21487N	1.0	0.0
	24311N	0.0	0.0
	24571N	25.7	37.9
	25658N	0.7	0.0
	31309N	0.0	0.0
	35141D	0.0	3.3
	60000N	4.5	7.5
	60009N	0.0	0.1
	60009N	2.0	0.0
	63217N	0.2	0.0
	63261N	0.2	1.4
	63262N	28.1	12.8
	63712N	2.1	51.6
	64208N	14.6	5.9
	64215N	16.4	14.7
	64270N	3.7	2.6
	64314N	0.0	1.2

FUNCTIONAL AREA	P.E.	FY92 WORKYEARS	FY93 WORKYEARS
OTHER			
	64504N	0.4	0.0
	64574N	13.2	9.0
	64610N	3.8	0.0
	64777N	13.6	16.0
	65155N	0.0	0.4
	65502N	0.6	0.1
	65804N	0.3	0.1
	65861N	0.0	0.2
	65863N	9.8	43.5
	AFR	22.8	11.4
	APN	32.7	27.0
	ARM	19.7	12.6
	OGD	4.0	25.3
	ONO	2.0	0.6
	DBF	39.7	60.0
	FAC	0.6	0.0
	FMA	4.3	2.2
	FMC	0.0	0.7
	MIS	19.8	14.5
	NIF	2.2	0.5
	OMN	402.0	440.3
	OPN	30.4	42.1
	OSD	11.2	28.1
	SEA	14.9	14.8
	SPA	38.0	27.5
	WPN	0.0	0.8

2.2 UNCONSTRAINED CAPACITY

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

The NAWCAD Patuxent River complex has a significant unconstrained capacity (per the assumptions and criteria given) as shown by the completed "Determination of Unconstrained Capacity" forms contained in Appendix A. This information reflects the fact that our facilities are robust and that our primary limitations are a function of manpower constraints. In addition to the available capacity of existing facilities, there are 2,054 acres of developable land which will accommodate additional expansion.

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

As detailed in Appendix A, NAWCAD Patuxent River has significant capacity for expansion. Nearly all capabilities are limited by the need for additional facility space for personnel and equipment.

2.3 TECHNICAL RESOURCES

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

Yes. The NAWCAD Patuxent River is designated in classified DoD mobilization plans to support operational forces during times of national contingencies and operational exercises as outlined by Commandant Naval District Washington, DC, Continuity of Operations Plan 1-73 and the Joint Resources Assessment Database Report (JADREP). The airfield, with three runways, is capable of handling any size aircraft and provides a quick reaction capability. As a result of tenant operational squadrons including one strategic squadron, systems supporting operational forces such as Uniform Automation Data Processing System, Naval Air Logistics Command Monitoring Information system, Aircraft Intermediate Maintenance Department, Marine Security Force, and Fleet Communications already exist. The site is capable of supporting in excess of 300 aircraft. In addition the capability to modify man-rated aircraft and to prototype exists. The organic engineering talent rounds out this capability with the expertise to technically support most aviation technical issues worldwide. With the addition of the NAWCAD Warminster complement, the fleet will have almost instant access to the most extensive aircraft scientific and engineering capabilities available in the world today. The NAWCAD Patuxent River Hospital staff has, as a mobilization role, the staffing of the U.S. Hospital Ship Comfort during contingencies as was done during Desert Storm.

Webster Field Annex is included in the mobilization plans for approximately 30 programs at various sites (ship/shore). This activity is directly involved in all phases of communication support and has the ability to assemble all types of systems for all classes of ships and shore facilities. We have operational ASCOMM capabilities and in an emergency could provide full communications capability at the CINC level at this time (this capability will be transferred to Charleston). We have sufficient space in existing facilities to do emergency development of most types of electronic systems in the command, control, and communication arena. We also have open space for location of

temporary facilities to undertake short notice programs of practically any kind, small manufacturing capabilities, and in excess of 2,054 acres of land that could be developed with new facilities.

What unique features of this Center would be of value in case of a future contingency requiring the rebuilding of U.S. Naval forces?

The T&E capability at Patuxent River has long provided the Navy with a principal site for the development testing of new and major modifications to aircraft. The collocation of the development contractor and Navy test efforts at Patuxent River has provided significant efficiencies in the development and testing of Naval aircraft. The collocation at Patuxent River of the core aircraft acquisition, research and development, with the T&E function will further increase efficiency and ability to rapidly respond to fleet requirements. That ability, coupled with the unique capabilities required for maritime aviation RDT&E make Patuxent River an essential player in a future contingency requiring rebuilding of Naval forces.

NAWCAD Patuxent River consists of 7,123 acres, including 6,513,288 square feet of facilities. Of the total acreage 2,054 is undeveloped and available for expansion with minimal impacts on the current mission.

The natural geography, layout, and security aspects of the base provide for a secure environment for all aspects of RDT&E along with support of operational units.

The physical security aspects of the base include perimeter fencing, land, air and sea perimeter patrols, island security enclaves, and protected facilities and bunkers. The security response force consists of a DoD police force, an auxiliary security force, and a combat-ready Marine Security Force. This force is augmented, when needed, by contractor security forces and local civilian law enforcement personnel.

NAWCAD Patuxent River, using the above-mentioned security forces and measures, is capable of responding to threat types 1-6 as defined in OPNAVINST 5530.14B, and meets or exceeds all physical security program requirements as defined in the above instruction. The hostile attack threat to the base has been rated as minimal by the Naval Criminal Investigative Service.

NAWCAD Patuxent River has a very low exposure to or occurrence of natural disasters (e.g., earthquakes, floods, forest

fires, tornadoes, and hurricanes).

NAWCAD Patuxent River operates a complete Aircraft Intermediate Maintenance Department and supports fleet and RDT&E organizational-level maintenance activities in 18 hangar bays. Our AIMD is the Navy's most diverse level-2 aircraft maintenance activity supporting 130 aircraft representing 40 different types/models/series consisting of 728 different avionics and mechanical systems. It is also a first degree repair site for six different type engines representing 16 different models/series. The Supply Department is configured to meet the unusual and varied demands of over 50 tenants and NAWCAD Patuxent River.

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

The Naval Aviation acquisition community is streamlining its acquisition processes by (1) collocating its acquisition personnel at its primary test and evaluation facility at Patuxent River, MD. at Patuxent River, MD (2) implementing a competency aligned organization and (3) employing the concept of integrated program teams led by program managers with cradle to grave responsibilities for designated weapon systems. The Navy is collocating program management, research and development, test and evaluation, logistics, contracting, industrial processes, corporate operations, and shore station management competencies at Patuxent River, Maryland to reduce costs and improve the overall efficiency and effectiveness of aircraft weapons system procurement. The benefits of such a consolidation are expected to range from better utilization of dwindling work force to the improvement of test and evaluation thrusts such as technology demonstrations and proof-of-concept testing. Acquisition cost and schedule will be reduced due to enhanced communications between R&D and T&E personnel, joint access to developmental aircraft and elimination of inefficiencies associated with personnel located at different sites. Suboptimization, such as removing the Navy's Air Vehicle T&E function from Patuxent River will destroy this synergism and, according to several studies conducted to date, would increase overall costs. All of the inefficiencies, costs and program delays associated with a geographically dispersed work force would be realized. The Navy's approach of collocating its acquisition work force at its primary test and evaluation site is consistent with industry and holds the promise of significantly reduced product development time.

NAWCAD Patuxent River has highly capable integrated laboratories and facilities which subject current technology to real and simulated operating conditions. The Patuxent River complex has a full spectrum of aircraft, test facilities, and capabilities which have established it as the principal site for naval aircraft during the Engineering and Manufacturing Development (E&MD) phase. Furthermore these capabilities

provide full life cycle support from concept inception through fleet operations, such as high intensity conflicts. Capabilities that would be lost include:

- **inability to develop hard data (facts) on emerging systems**
- **absence of early-on continuing insight by government personnel**
- **loss of technical research and testing expertise during fleet introduction, life cycle support, and upgrades**
- **deterioration of organic Navy capability for the rapid prototyping, fabrication, installation certification, and rapid delivery of urgently needed components/systems and aircraft modifications during wartime crisis situations (e.g. Desert Storm).**
- **DoD's most advanced and comprehensive aircraft Installed Systems Test Facility and only site capable of supporting major maritime aircraft development and upgrades.**
- **Ideal maritime environment: Support Atlantic Fleet operations and training, and testing requirements for maritime aircraft.**

The inability to provide any of our assigned test and evaluation products or services would eliminate our capability to perform our test mission, ensuring a negative impact to the operational capabilities of our forces.

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

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

The fact that NAWCAD Patuxent River provides the full test and evaluation spectrum of engineering development and acquisition support for Naval Aviation has resulted in the collocation of numerous sophisticated technical facilities which support both ground and flight testing. NAWCAD Patuxent River is critical to the Naval Air Systems Command for the successful acquisition and introduction of new naval aircraft and modifications/ upgrades to existing aircraft. The expertise and facilities are not available from any other source. While vital to the host test mission, these facilities also provide support to many other test activities including DoD, other federal agencies, private industry and other countries. Navy facilities provide the only existing capability for specialized aircraft test and evaluation functions including but not limited to: DoD's most advanced and comprehensive aircraft Installed Systems Test Facility; Electromagnetic Environmental Effects Test Facility; Electromagnetic Pulse Facility; Ship Ground Station; Airborne Strategic Communication Engineering and Test Facility; E-2C System Test and Evaluation Laboratory; Aircraft Electrical Evaluation Facility; Aircraft Support Systems Test Facility; Flight Control Computer Test Facility; Airborne Surface Warfare and Anti-Submarine Warfare Laboratories. Some examples of activities which would be harmed are:

Air Test and Evaluation Squadron ONE (VX-1)
U.S. Air Force
U.S. Army
U.S. Coast Guard
Special Operating Forces
NCCOSC In-Service Engineering-East Detachment
National Aeronautical and Space Administration
Federal Aviation Administration
Naval Research Laboratory
David Taylor Research Center

As the only range on the east coast supporting aircraft and tactical missile testing, NAWCAD Patuxent River provides the most cost effective facility for military and other federal agencies and private industry located in this geographic area. Loss of NAWCAD Patuxent River facilities will disrupt support

provided for east coast fleet operational test launches of Tomahawk, HARM, and HARPOON weapons.

The operational test function of VX-1 is greatly enhanced by its collocation with NAWCAD Patuxent River test directorates. NAWCAD Patuxent River is the primary test activity for the Executive Transport helicopter fleet based at Quantico, VA.

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

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

Yes. Unique aircraft testing capabilities including installed systems testing in ACETEF, rotary wing shipboard suitability testing, and electromagnetic environmental effects that are extensively used by the Air Force and Army would impact their ability to field effective aircraft weapon systems.

The NAWCAD Patuxent River complex is the DoN's site for the acquisition, development, systems engineering, test and evaluation and life cycle support of the fleet tactical training range systems (e.g., Tactical Aircrew Combat Training System, Large Area Tracking Area, and the Joint Tactical Combat Training System). Without the NAWCAD Patuxent River complex, the fleet's ability to train on their tactical training ranges would be seriously degraded. Additional operational training areas harmed include fleet exercises as the NAWCAD Patuxent River complex is the sole provider of target hulks on the east coast.

Delivery of weapons - The NAWCAD Patuxent River complex provides to operational forces flight clearance release data, ballistics tactical manual data for new weapons or release conditions which for example required an extensive effort here during Desert Storm.

Carrier operations - The NAWCAD Patuxent River complex is the only installation capable of certifying and providing in-service support of automatic carrier landing systems for all aircraft carriers.

Airborne ASW operations - The NAWCAD Patuxent River complex is the only installation with the requisite expertise to support Airborne ASW system from research through life cycle support.

Crisis operations - The NAWCAD Patuxent River complex with its full spectrum aviation assets including rapid prototyping and installation capability has supported the fleet through quick reaction modifications to aircraft before and/or during every contingency operations which has occurred in recent memory.

Strategic communications - The NAWCAD Patuxent River complex is the alert site for east coast TACAMO deployments.

Special Warfare Operations - The NAWCAD Patuxent River complex is intimately involved in providing and supporting a wide variety of special warfare systems and vehicles.

Commander-in-Chief communications and transportation - The NAWCAD Patuxent River complex provides communications systems and vehicles for the Commander-in-Chief. The NAWCAD Patuxent River complex is transitioning into the VH Program Integrated Logistics Support (ILS) site for avionics.

Foreign Systems Intelligence - The NAWCAD Patuxent River complex has the technical resource facilities, and people, to efficiently support exploitation of foreign assets such as the TARANTUL class ships, aircraft, and subsystems.

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

SECTION 3: MEASURES OF MERIT

This section relates the measures of merit and the required data to the four criteria that have been established for Military Value. The four military value (MV) criteria are:

CRITERION 1: The current and future mission requirements and the impact on operational readiness of the Department of Defense's total force.

CRITERION 2: The availability and condition of land, facilities and associated airspace at both the existing and potential receiving locations.

CRITERION 3: The ability to accommodate contingency, mobilization, and future total force requirements at both the existing and potential receiving locations.

CRITERION 4: The cost and manpower implications.

3.1 OVER-ARCHING MEASURES OF MERIT

The over-arching measures of merit are listed with accompanying questions (or data requirements) intended to elicit standard information upon which the cross-service analyses can be based, and on which the Joint Cross-Service Groups can base their reviews of the Military Department analyses. Additional specific measures of merit are shown under individual functional areas. The numbers in parentheses () before each measure of merit indicate the BRAC selection criteria for military value.

3.1.A. Interconnectivity (MV I) - Measure of Merit: *Extent of linkage of this facility with other facilities and assessment of single-node failure potential.*

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

Approximately 20% of the FY93 test workload involved the real-time or near real-time exchange of data between facilities. 56% of these exchanges occurred between facilities internal to the site, 44% of these real-time or near real-time exchanges occurred with external sites. 64% of the facilities that utilize real-time/near real-time are capable of simultaneous activities. The interconnects are obtained through a combination of networks, satellite links, etc., and provide access to data and information including through Defense Simulation Internet and the Defense Research and Engineering Network. This does not include significant computer terminal to computer terminal exchange of data/information between onsite facilities.

The real-time exchange of data between facilities when added to the even more extensive real-time data collection, processing and analysis between test aircraft and open air ranges and

facilities make the bulk of the workload real-time associated.

The capabilities and facilities of the NAWCAD are highly integrated and linked in order to provide an efficient and effective Navy maritime full spectrum aircraft system test and evaluation capability. The full spectrum of ground test facilities are linked with the flight test support facilities to provide the only DoD activity capable of conducting fully integrated testing of naval aircraft systems. The NAWCAD Patuxent River also maintains external links to other test activities, other ranges, other warfare centers, fleet activities, and aircraft development contractors.

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

TEST FACILITIES REAL-TIME WORKLOAD N00421

Facility	Real-Time/ Near Real-Time % Test Workload	Facility Interconnect to for T&E	# of Simultaneous Activities	Site Internal or External
Airborne Strategic Communication Engineering and Test Facility	2	JGS National Command Authority Comm. Exercises	1	External
E-2C Systems Test and Evaluation Laboratory	15	ACETEF	1	Internal
Helicopter Mission Systems Support Center	10	Chesapeake Test Range Ship Ground Station	2	Internal
Fixed Wing ASUW and ASW Labs	5	ACETEF Helicopter Mission System Ship Ground Station	3	Internal
Project BEARTRAP	-	-	-	Internal
Catapult and Arresting Gear	80	Telemetry Data System	1	Internal
Landing Systems Test Facility	85	Chesapeake Test Range Telemetry Data System	2	Internal
Propulsion System Evaluation Facility	-	-	-	Internal
Ship Ground Station	10	Chesapeake Test Range ACETEF	2	Internal
Aircraft Armament Systems Simulation Engineering Test Station	-	-	-	Internal
Electronic Warfare/Avionics Flight Test Facility	80	Chesapeake Test Range Telemetry Data System Ship Ground Station ACETEF	4	Internal
Antenna Testing Laboratory Automated System (ATLAS)	100	Chesapeake Test Range	1	Internal
Aircraft Test and Evaluation Facility (ATEF)	25	Telemetry Data System	1	Internal

TEST FACILITIES REAL-TIME WORKLOAD N00421

Facility	Real-Time/ Near Real-Time % Test Workload	Facility Interconnect to for T&E	# of Simultaneous Activities	Site Internal or External
Electro-Optical Reconnaissance System Test Facility	10	Chesapeake Test Range Telemetry Data System	2	Internal
Combat Identification Systems (CID)	25	Chesapeake Test Range	1	Internal
Ground Range Antenna Test Facility (GRATF)	-	-	-	Internal
Acoustic Test Facility (ATF)	35	ACETEF Helicopter Mission Systems Test Facility Ship Ground Station	3	Internal
Communications Test and Evaluation Laboratory (COMTEL)	30	Naval Undersea Warfare Center NISE-Charleston, NC NAWC Weapon Division	3	External
Surveillance and Topographical Radar Systems (STARS) Laboratory	40	Chesapeake Test Range Combat Identification Systems COMTEL	3	Internal
Aircraft Electrical Evaluation Facility	20	Naval Air System Command NADEPS NAWCAD Indianapolis	3	External
Aircrew Systems Test Facility	-	-	-	
Aircraft Stores Certification Test Facility	-	-	-	
Flight Control Computer Test Facility	1	Rockwell International	1	External
Integrated Aircraft Test Laboratory	-	-	-	-
Aircraft Support Systems Test Facility	-	-	-	-

TEST FACILITIES REAL-TIME WORKLOAD N00421

Facility	Real-Time/ Near Real-Time % Test Workload	Facility Interconnect to for T&E	# of Simultaneous Activities	Site Internal or External
Air Combat Environment Test and Evaluation Facility (ACETEF)	5	Warbreaker Facility	1	External
		Rockwell International	1	External
		Defense Simulation Internet	Multiple	External
		Chesapeake Test Range	1	Internal
		E-2C System Test Evaluation	1	Internal
Chesapeake Test Range	40	Wallop Links	5	External
		Fleet Area Control & Surveillance Facility	1	External
		Naval Warfare Assessment Division	1	External
		Acoustical Underwater T&E Complex	1	External
		Naval In-Service Engineering East	2	Internal
		Antenna Testing Laboratory Automated System	1	Internal
		Telemetry Data System	Multiple	Internal
		Landing System Test and Facility	1	Internal
		Ships Ground Station	2	Internal
		Coast Guard Vessel Traffic Control System	1	Internal
		ACETEF	2	Internal
		Broadband Communication Link	Multiple	Internal
Telemetry Data System Facility	10	Electronic Warfare/Avionics Flight Test Facility	1	Internal
		Chesapeake Test Range	Multiple	Internal
		Landing System Test Facility	1	Internal
		Grumman Aerospace	1	External
		Bell Helicopter (Ft Worth)	1	External
		Satellite Terminal	1	External

TEST FACILITIES REAL-TIME WORKLOAD N00421

Facility	Real-Time/ Near Real-Time % Test Workload	Facility Interconnect to for T&E	# of Simultaneous Activities	Site Internal or External
Airborne Instrumentation Support Facility	5	Aircraft-Telemetry Data System Facility Links	6	Internal
		F/A-18 E/F Management Link	1	External
		Modem Link	1	External
Target Support Facility	40	Chesapeake Test Facility	1	Internal
		Wallop Flight Facility	1	External
Test and Evaluation Data Processing	45	Internet	Multiple	External
		V-22 Dallas and Wilmington	1	External
		Local Area Network	Multiple	Internal

Note: This table does not include NAWCAD Patuxent River Computer Sciences Directorate (CSD) data processing and interconnect that are utilized by many other activities, including the other four NAWCAD sites at Warminster, Trenton, Lakehurst, and Indianapolis, and the NAVAIRSYSCOM. They are also utilized by NAWCAD Patuxent River tenant activities. CSD is the wide area network communications hub for the Naval Aviation Wide Area Network (NAVWAN), providing high-speed communications links (T-1 and 56KB) to the NAVAIRSYSCOM, the NAWC Headquarters, the five NAWCAD sites, and the Naval Aviation Depots (NADEPs) across the country. CSD is also the home of the Test and Evaluation Community Network (TECNET), a 3,200-user unclassified information system that is critical to the test and evaluation community throughout the world. The TECNET system provides electronic mail, bulletin board and Internet access to its users, thus providing a link between industry, academia and the DoD.

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

Yes. There would be a major impact on both the external facilities to which NAWCAD Patuxent River facilities are connected and the site internal facilities which are interconnected if NAWCAD Patuxent River were to close. NAWCAD Patuxent River is critical to the Naval Air Systems Command for the successful acquisition and introduction of new naval aircraft and modifications/upgrades to existing aircraft. The expertise and many of the facilities are not available from any other source. These facilities also provide support to many other test activities including DoD, other federal agencies, private industry and other countries.

As shown in the 3.1.A.1 table, 44% of the NAWCAD Patuxent River facilities connections are to facilities external to NAWCAD. The external facilities to which NAWCAD facilities are connected usually provide real-time data exchange used in testing military systems. These include connections to other Navy sites plus other DoD ranges and test facilities. These facilities typically rely on the NAWCAD facilities for information or the performance of some function critical to their mission. The loss of the function provided by NAWCAD facilities would require the connected facility to replicate the capability of the NAWCAD facility or find the capability at some other RDT&E site. Since many of the NAWCAD facilities are unique, their loss would require replication elsewhere.

The loss of the extensive NAWCAD Patuxent River site internal facility interconnections (56% of the connections) would destroy the highly integrated capabilities of NAWCAD Patuxent River which are displayed in table 3.1.A.1. This composite facility capability was judged superior to any other activity in the DoD Fixed Wing Reliance study. Loss of the entire capability would catastrophically impact Naval aviation since several of the facilities are uniquely required for maritime aircraft T&E. Of critical importance would be the loss of the only site capable of totally supporting T&E for major maritime aircraft development and upgrades; key ground test facilities including ACETEF; the

catapult and arrestment facility; and loss of an ideal maritime environment that not only provides full spectrum naval aircraft test and evaluation but also supports Atlantic fleet operations and training.

Most of the facilities at Patuxent River are mutually dependent on other facilities for critical information or the performance of critical functions. Closure of any part of the NAWCAD facilities would have to account for the sub optimization created and the efforts that the remaining facilities would have to undertake to fill the void.

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

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

The overall material condition of the NAWCAD Patuxent River facilities is adequate. Infrastructure investments in the last 10 years exceed $478.4M which includes on-going construction for the re-location of NAWCAD Warminster and NAWCAD Trenton. Included in this figure is approximately $8M for rehabilitation of 25 existing structures. An additional $95.6M is programmed for relocating NAVAIR Headquarters and the remainder of Trenton.

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

3.1.C Environmental and Encroachment Carrying Capacity (MV II) - Measure of Merit: *Extent of current and future potential environmental and encroachment impacts on air, land, and sea space for testing.*

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

No. Due to our rural geographic location on a peninsula, encroachment from community growth is not an issue. We have also purchased restrictive easements where necessary, and the St. Mary's County land use plan and zoning ordinance recognizes the importance of the naval establishment. The county manages one of the strictest and most supportive Air Installation Compatible Use Zone (AICUZ) provisions ever enacted. The AICUZ provision has provided and will continue to provide the buffer against encroachment.

Future environmental impacts on air, land, and sea space for testing are not envisioned. Land use and wildlife refuge/wilderness area overflights are the biggest issues affecting air use and will affect all defense aviation activities. We are currently in compliance with all known environmental requirements and do not anticipate any unmanageable impacts due to emerging regulations.

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

Primary limitations on workload growth are not related to environmental or encroachment considerations. The limiting factor on our ability to increase flight testing workload is the Chesapeake Test Range and its associated airspace. As discussed later in section 3.1.E.2., this range/airspace combination can support a flight hour workload that exceeds 40,000 hours per year based on a seven day work week. Based on the current Patuxent River flight hour loading of 18,000 hours per year, this

represents 222% of current workload. The existing ground test infrastructure at Patuxent River could support the flying workload increase simply by adding shifts. Sufficient buildable land exists (2,054 acres) to permit construction of any additional hangars and office spaces that might be attendant to this workload increase.

The availability of over 2,000 acres of buildable land and the synergy of the existing and planned RDT&E laboratory infrastructure now being constructed as a result of BRAC-91 decisions also makes the site ideal for other functions not directly involving flight testing. The workload increase that can be accommodated is significantly higher than that related to flying.

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

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 the 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 United States Fish and Wildlife Service.

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

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

Heating Plant Operation
Open Air Burning
Construction of new boilers
Air Stripper for oil/water separators
National Pollution Discharge Elimination System (NPDES) for stormwater discharge
Landfill operation
Groundwater appropriation

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

The Patuxent River complex exists in a rural area which has a low population density. The total population in Southern Maryland, which includes the counties of St. Mary's, Charles, and Calvert, has grown by only 61,000 people between the years 1980 and 1990. The 1990 census shows a total population in these three counties of only 228,500. This growth during the 1980's was concentrated in regions 45 miles to the north and west of Patuxent River. In addition, the Maryland Eastern Shore area is experiencing the lowest growth rate of any area on the East Coast.

The St. Mary's County land use plan and zoning ordinance recognizes the importance of the naval establishment. The county manages one of the strictest and most supportive Air

Installation Compatible Use Zone provisions ever enacted. The Air Installation Compatible Use Zone provision has provided and will continue to provide the buffer against encroachment.

The vast majority of flying at Patuxent River occurs over water. Most work involving Range tracking facilities utilizes the R-4002 and R-4005 airspace sectors. Except for takeoffs and landings, only the southern tip of St. Mary's County is overflown. Flight testing at the Patuxent River complex simply does not use airspace over congested population areas. Almost all areas of flight over land involve population densities below 50 people per square mile.

The total population within various radii are:

50 mile radius - 1,132,793 persons

100 mile radius - 9,048,269 persons

150 mile radius - 17,660,919 persons

200 mile radius - 24,209,467 persons

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

Aircraft operations are essentially unconstrained and have access to the Chesapeake Bay and the East Coast open ocean test ranges (NAWCAD Patuxent River Departure and Arrival Control has been delegated by the FAA to control 28 airfields in a 4,600 square-mile Mid-Atlantic region). The rural peninsula location of Patuxent River naturally restricts ground vehicle commercial routes from bisecting the base. The commercial shipping lane transiting the Chesapeake Bay is well clear of target areas, and has no impact on operations. Seasonal public use recreational boating traffic is cleared through range control clearance boats prior to any hazardous mission profile being flown.

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

None.

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

None.

3.1.D Specialized Test Support Facilities and Targets (MV I) - Measure of Merit: *Extent to which specialized test support facilities and targets are available.*

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

Yes. An extensive array of specialized facilities exist at NAWCAD Patuxent River which provide comprehensive support for test operations including those required to properly certify aircraft and systems operating in the demanding Maritime environment. In addition to the test and evaluation facilities described in Appendix A Tabs 1 through 31, other specialized facilities of significant importance are described in Appendix A, TAB 32 through 36 and include:

<u>TEST PILOT SCHOOL</u>

The U.S. Naval Test Pilot School (USNTPS) is internationally recognized and is the only one (of the three in existence) which offers a totally integrated fixed, rotary wing and systems engineering curriculum. USNTPS provides instruction to experienced pilots, flight officers, and engineers in the specialties and techniques of aircraft and systems test and

evaluation. The school provides a unique educational program with considerable engineering depth and project variety. USNTPS is the only source of helicopter test pilots in the U.S. Government and industry. USNTPS educates and trains personnel from all U.S. military services, other U.S. Government agencies, and foreign nations. The school investigates and develops new flight test techniques, publishes manuals for use by the aviation test community in standardization of flight test techniques and project reporting, and conducts special projects. The school has a 42,000 square foot academic center, hangar space and maintenance office/shops to support 42 aircraft.

TEST AND EVALUATION HANGARS

NAWCAD Patuxent River maintains and operates approximately 130 project test aircraft including 42 aircraft assigned to the U.S. Naval Test Pilot School. The present aircraft inventory is comprised of 40 types (Fighter, Attack, Electronic Warfare, ASW, Trainer, Strategic Communications, etc.). The type of aircraft are both fixed and rotary wing and cover 30 models and 37 series of those models. The inventory covers almost all aircraft in operational USN and USMC Air Wings. Most aircraft are instrumented for air vehicle and/or mission systems evaluation. Specially configured aircraft are obtained from fleet units on a temporary basis for specific test requirements. Eleven large hangars provide over 1.2 million square feet of hangar space and associated shop areas for maintenance and instrumentation activities. The hangars provide required environmental protection and conditions for all aircraft and subsystem work.

ENGINEERING OFFICES/SHOPS

The NAWCAD Patuxent River engineering office and shop support facilities (401,989 square feet) provide general purpose spaces for engineering, technical documentation, data processing, equipment maintenance and operations, and miscellaneous technical support.

These office/shops are linked internally and externally via local area networks, high-speed broadband coax, fiber optics, T1 and 56KB data links, NAVNET links, Defense Research and Engineering Network, Defense Simulation Internet and others. Video teleconferencing facilities, fiber optic links, microwave links, high-speed data transfer and network interconnectivity

provide maximum capability and flexibility for technical personnel to process data and to communicate all forms of information to internal and external customers.

AIRCRAFT INTERMEDIATE MAINTENANCE DEPARTMENT

NAWCAD Patuxent River operates a complete Aircraft Intermediate Maintenance Department (AIMD) and supports fleet and Research, Development, Test and Evaluation (RDT&E) organizational-level maintenance activities in 19 hangar bays. Performs first, second or third degree repair on selected gas turbine engines per NAVAIRNOTE 4700 and applicable weapon system planning documents. Performs check, test, and repair functions or removed airframes, electronics, electrical systems and hydraulic systems components. Assures intermediate level maintenance on aviation life support systems. Maintains, inspects and repairs Support Equipment (SE) and controls sub-custody of SE to directorates and tenant activities.

AIR OPERATIONS

The NAWCAD Patuxent River Air Operations Facility is responsible for airfield and seadrome operations and air traffic control in assigned control areas. Air Operations provides Search and Rescue (SAR) helicopters for Air-Sea rescue.

COMPUTER SCIENCES DIRECTORATE

The Computer Sciences Directorate (CSD) maintains and operates modern, high-speed symmetric multi-processor computer systems which support both the business and RDT&E engineering computing requirements and network services aspects of the Naval Aviation System Team and External Customers. In addition to serving as a local area network communications hub, as a corporate business and aviation support applications facility, and as a scientific (classified and unclassified) data processing installation for all of the NAWCAD Patuxent River test and evaluation facilities; CSD supports and maintains corporate business and aviation support applications which are utilized by the other four NAWCAD Division sites at Warminster, Trenton, Lakehurst and Indianapolis, and the NAVAIRSYSCOM. They are also utilized by NAWCAD Patuxent River tenant activities, the U. S. Naval Academy, and Navy District Washington. CSD is the wide area network communications hub for the Naval Aviation Wide Area Network (NAVWAN) providing high-speed

communications links (T-1 & 56KB) to the NAVAIRSYSCOM, the NAWC Headquarters, the five NAWCAD sites, and the Naval Aviation Depots (NADEPs) across the county. CSD supports and maintains the network communications infrastructure of the NAWCAD Patuxent River test and evaluation facilities. The NAWCAD Patuxent River complex is serviced by a copper based Broadband mid-split CATV metropolitan communications network for distribution of video and data to over 75 local area networks across the base. CSD has a distributed base of high-speed mainframe and high-end computer systems supporting corporate business applications such as planning, financial, training, and property which are critical to the success of test and evaluation projects and their personnel. The CSD computers also support aviation support applications such as reliability and maintainability (R&M) databases, a flight scheduling and tracking system, and an aircraft resources management system. The CSD provides classified and unclassified scientific and engineering computer systems for the processing of test and evaluation post-flight and ground test data. The facility also has a dedicated limited-access classified data processing room that can handle data up to and including the SECRET level.

The CSD data processing facility provides important network communications links and interfaces to the Fleet Air Reconnaissance Squadron FOUR (VQ-4) Alert Facility, the Air Test and Evaluation Squadron ONE (VX-1), and the Fleet Composite Squadron SIX Detachment (VC-6) located at NAWCAD Patuxent River. CSD is responsible for providing network links and electronic mail capabilities to these missions which are deemed critical to the operational effectiveness of the United States.

The CSD maintains and supports the Test and Evaluation Community Network (TECNET), a 3,200-user unclassified information system that is critical to the test and evaluation community throughout the world. The TECNET system provides electronic mail, bulletin board and Internet access to its users, thus providing a link between industry, academia and the DoD. The TECNET system, available 24 hours a day, 7 days a week, is critical to the test and evaluation employees of the U. S. Navy, Marine Corps, U. S. Army and U. S. Air Force. By military department, the Air Force use accounted for 34% in FY93, the

Army accounted for 19% in FY93, and the Office of the Secretary of Defense accounted for 45% in FY93. A second TECNET system, operating at the SECRET level, provides classified access to critical databases and information for program managers, executed and test engineers.

METROLOGY DETACHMENT

The Metrology Naval Atlantic Meteorology and Oceanography Detachment (NAVLANTMETOCDET) is supported by the Commander, Naval Meteorology and Oceanography Command (COMNAVMETOCCOM)/with oceanographic prediction support.

NAVLANTMETOCDET has unique capabilities including TESS 3.0 (Tactical Environmental Support System) for analysis and prediction of Meteorology and Oceanography effects on Aviation sensors; AN/SMQ-11A(V) Meteorological Satellite Receiver System (Multiple Satellite access capability) for analysis, prediction and forecasting METOC effects on Aviation vehicles and ADP programs for providing Electro-Optic Tactical Decision Aides (Mark III EOTDA) and Dispersion Models, Radiological Fallout (RADFO) for METOC effects from weapon systems.

MISSION PLANNING

The Tactical Aircraft Mission Planning System (TAMPS) supports the work of tactical military planners and testers for a wide variety of aircraft types, weapons, and missions. It speeds the process of planning missions for testing, training and combat sorties. It also provides comprehensive analysis of penetration probabilities in complex defensive network, which can significantly reduce strike sorties simulation attrition. The system software can be adapted to a variety of computer hardware, providing flexibility in meeting unique operational requirements. The facilities support all required hardware and software to validate and utilize embedded information for test and evaluation operations.

FUELS DIVISION

The fuel farm is integral to accomplishing the RDT&E mission of NAWCAD Patuxent River. Its fuel laboratory performs 100% verification of all incoming fuel deliveries to ensure the integrity of fuels utilized in the RDT&E process. These products include JP-4 (soon to be replaced with JP-8), JP-5, AVGAS, DL2

low sulfur diesel fuel, 100 low lead MOGAS, liquid oxygen/nitrogen, and #2 fuel oil for heating.

In order to ensure minimal impact of operations on the environment, the Fuels Division has already initiated actions to replace existing underground JP-5 metal pipelines with fiberglass units with a leak detection system (estimated completion FY98). The three underground JP-5 storage tanks will also be replaced with above ground units by that same timeframe. Similarly, existing below ground #2 fuel oil storage tanks will be removed by August 94 when an above ground pipeline from the fuel pier to a newly renovated 1.5 million gallon storage tank will come into operation to accept more economical barge deliveries.

Fuel farm personnel are recognized by NAVAIRSYSCOM, NAVFACENGCOM, and other DoD and commercial activities as technically qualified fuel personnel to designing, integrate, install, test, and maintain new and promising fuel hardware items for incorporation into Navy/DoD design and specification criteria both afloat and ashore. Items such as the pantograph, emergency breakaway coupling, Helicopter In Flight Refueler rig, high level refueler shut off and tank level monitoring systems are but a few of the items which are now standard requirements for all the Navy and had their beginning at the NAWCAD Patuxent River fuel farm. More recently, the HK-14 Refueling Chart was developed to meet high priority Fleet Operation Plans requirements for advanced base aircraft refueling such as Desert Storm. The cart, which is completely self contained and air transportable, also has an application in supplementing Air Station fixed fueling facilities. NAWCAD Patuxent River Fuel Farm is currently performing acceptance testing of a modified HK-14 cart to support the Air Force's procurement of 30 carts. Finally, Fuel Farm and VQ-4 personnel created a TACAMO Alert site capable of dual aircraft refueling on a 24-hour-a-day basis.

The Fuel Farm's "hot pit" for refueling fighter aircraft has reduced turn-around-time from about 2 hours down to 15 minutes. Similarly, initiatives to mechanically interface Defense Fuel Supply Center processing systems with on station logistics and financial management software systems have resulted in significant manhour savings, with associated software design

now being requested by other Naval Commands.

SUPPLY DEPARTMENT

Supply Patuxent River has upgraded automated materials handling equipment to more efficiently utilize vertical storage capabilities while minimizing man-hour expenditures. The initiative allowed for ready storage of fast moving aircraft parts. Associated requisition wait times dropped from an average of 1.6 hours to .4 hours, thereby effecting a corresponding increase in repair productivity rates and follow-on asset availability postures.

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

Yes. Numerous specialized targets are employed which support this installation's mission. These include various size land and water craft, many remotely controlled, which accurately model the performance and identification characteristics of actual threats. The water craft available include a foreign military Tarantul-class missile patrol boat and large hulk air-surface missile targets. Other targets support aerial gunnery, underwater countermeasures, electro-optics, Infrared targeting and surface-air missile launches. Specific targets are described in more detail in individual facility descriptions contained in this document (Appendix A).

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

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

Yes. Specialized targets have been validated by the appropriate cognizant authority. Specific specialized targets are described in detail in the responses contained in the applicable facility categories.

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

3.1.E Expandability (MV III) - Measure of Merit: *Extent to which an installation/facility is able to expand to accommodate additional workload or new missions.*

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

Yes. Nearly all of NAWCAD Patuxent River specialized facilities could expand to the EC and Armament functional areas. The skills and technologies associated with current facilities and capabilities in the three test and evaluation areas provide an inherent capability to further expand. Specific limitations where expansion would not appear cost effective are in open air electronic warfare threat replicas and aircraft size climatic hangars.

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

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

Yes. The NAWCAD can accept additional workload different from that which we are currently performing. With our technical facilities and test and evaluation expertise, NAWCAD is capable of performing aircraft and aircraft weapon system test and evaluation on all commercial, other DoD, other government (FAA, Coast Guard) and Foreign Military sales aircraft. To accomplish this, NAWCAD Patuxent River would utilize its integrated test facilities and open air ranges to support air vehicle, electronic combat and ordnance testing (including missile shots). In addition, testing can be expanded to include high speed water vehicles such Landing Craft Air Cushion (LCAC) and Surface Effect Ships (SES), battle tanks, satellites, and other non-aviation hardware.

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THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

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

NAWCAD PATUXENT RIVER MAIN SITE ACREAGE 6,379

Developed Acreage - There are approximately 6,379 acres of Class 1 assets at the Main Complex. This includes approximately 1,791 acres of Runways, Taxiways, Aircraft Parking Aprons and Clear Zones. The other 2,324 acres are occupied by buildings, structures, utilities, and improved grounds such as landscaped areas.

Available for Development - There are approximately 2,054 Restricted acres of undeveloped land at the Main Complex. This undeveloped land area is the total of the Maintenance, Operational, R&D, Supply & Storage, Administration, Housing, Recreational, and Navy Agricultural Outlease Program. The totals above exclude the 135 Acres used for development as a result of the BRAC 91 and BRAC 93 decisions.

Constraint Information

824 Acres are encumbered by Explosive Safe Quantity Distances (ESQD). Some of the undeveloped areas are located at the Main Magazine Complex and the two Arming/Dearming Pads along with 11 other areas that have various small distances next to ready service magazines.

27 Acres are encumbered by Hazards of Electromagnetic Radiation to Fuel (HERF). There are approximately 15 sites located throughout the Main Complex with the largest being 3 acres.

371 Acres are encumbered by Hazards of Electromagnetic Radiation to Personnel (HERP). There are approximately 12 sites located throughout the complex with the largest being at the Chesapeake Test Range Area which covers approximately 311 Acres and the remaining 11 sites located throughout the base both on developed areas and areas available for development.

Hazards Electromagnetic Radiation Ordnance (HERO)

HERO Arcs and Constraints are defined to provide guidance for Ordnance circulation routes, defining safe handling areas, and for site locations of Ordnance Storage Facilities.

603 Acres of Patuxent River are identified as HERO Susceptible. There are 9 different transmitter sites that transmit at High Frequencies that are above the maximum safe level for HERO unsafe ordnance. There are current safety procedures in place which silence the particular transmitters during movements of ordnance.

4,912 Acres of the Main Site complex are considered potentially hazardous to HERO unsafe ordnance.

Unsafe Ordnance is defined as unsafe when its internal wiring is exposed or an additional electrical connection to the ordnance will be made or when the item is being assembled or disassembled.

Air Installation Compatible Use Zones (AICUZ)

196 Acres of Taxiway and Aircraft Parking Apron lateral clearance zones areas exist and these areas require management based on the mission being supported but aren't excluded from development.

Accident Potential Zones exist due to the Flying Mission and the number of aircraft operations being performed. These zones are used to ensure that minimal risk are accepted during the siting of new mission supported facilities or operations.

The total volume of managed (R-areas) and shared (W-areas) airspace for Patuxent River is approximately 411,000 mi^3. A measure of the utility of the Patuxent River airspace is the level of activity that can be accommodated. The highest airspace utilization levels occurred in the late 70's and early 80's and exceeded 28,000 flight hours per year. The acknowledged limitation then was telemetry stream availability and the work-week was basically five days with several major FSED Programs

(F-18A, AV-8B, and SH-60B) spilling over into Saturday. Since that time several significant changes have occurred: a Memorandum of Agreement with FACSFAC VACAPES has enhanced our access to W-386 and W-108, two RIR-778 instrumentation radars have been installed at Webster Field to support helicopter work, and the Telemetry Data Center has doubled its capacity. Currently, as a result of these improvements, a workload of 35,000 flight hours/year is easily achievable in the existing airspace and this could be extended to over 40,000 flight hours/year by a full six or seven day/week schedule of operations.

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

Yes. The installation has numerous facilities which are appropriately equipped to support secure operations at all three classification levels including Special Access Required requirements, secure communications and encrypted telemetry capabilities. The natural geography, layout, and security aspects of the base provide for a secure environment for all aspects of RDT&E along with support of operational units including a strategic communications squadron.

The physical security aspects of the base include perimeter fencing, land, air and sea perimeter patrols, island security enclaves, and protected facilities and bunkers. The security response force consists of a DoD police force, an auxiliary security force, and a combat-ready Marine security force. This force is augmented, when needed, by contractor security forces and local civilian law enforcement personnel. NAWCAD Patuxent River, using the above-mentioned security forces and measures, is capable of responding to threat types 1-6 as defined in OPNAVINST 5530.14B, and meets or exceeds all physical security program requirements as defined in the above instruction. The hostile attack threat to the base has been rated as minimal by the Naval Criminal Investigative Service.

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

a. Yes. The following MILCON projects are currently programmed to be completed by the end of FY95 and beyond:

Aircraft Technologies Laboratory P-920-S

Description: Provides an integrated laboratory (57,000 square feet) to study aircraft materials and structures in a naval operating environment. Meets current EPA and OSHA requirements.
Construction in Progress: Yes.
Estimated Completion: 21 December 1994

Frank Knox School Improvements For HRO P-930-1-S

Description: Provides a centralized base training facility to handle expanding training requirements. Renovates a Navy owned, former elementary school for training and meeting space.
Construction in Progress: Yes.
Estimated Completion: 1 November 1994

Aircraft MODS Shop P-930-3-S

Description: Provides an aircraft modifications shop building to support a R&D function being relocated. Shop performs prototype modifications to aircraft to prove concept validity. Meets current EPA and OSHA standards for this type of work.
Construction in Progress: No, but will be awarded 1 June 1994.
Estimated Completion: 1 June 1995

Ejection Tower (Support Structure) P-930-3A-S

Descriptions: Project will provide utilities and support building for the relocation of the only man-rated ejection tower in the DoD inventory. Supports crew survivability R&D.
Construction in Progress: No.
Estimated Completion: 1 February 1995

Addition to Building 1490 P-930-4B-S

Description: Provides additional space and interior alterations to support expanded R&D Mainframe computer processing requirements at the computer center.
Construction in Progress: No.
Estimated Completion: 31 August 1995

Building 1406 Addition P-930-4-S

Description: Provides additional space to move non-computer center personnel from computer center to allow for additional R&D mainframe computer processing at the computer center.
Construction in Progress: No.
Estimated Completion: 1 September 1995

Addition/Renovation to Building 1652 P-930-4A-S

Description: Provides additional space and interior alterations to support consolidated RDT&E for the TACAMO Strategic Communications Program. No.
Estimated Completion: 31 August 1995

ACLS Integration Test Facility. P-712

Description: 7,200 SF, building will include integration lab, test lab, staging and test area, repair and instrumentation area, parts storage, fire protection system, security alarms, handicapped access, parking and utilities.
Construction in Progress: No, but advertised.
Estimated Completion: September 1994

FACSFAC Electronic System Integration Facility P-723

Description: 27,000 SF provides space for all hardware and software functions, logistics support, and administrative personnel.
Construction in Progress: No, but advertised.
Estimated Completion: October 1994

AN/SPN-46(V) Life Cycle Support Facility P-720

Description: 27,900 SF, single story, pile supported concrete foundation, steel framed masonry walls with computer room, bench labs, offices, storage, controlled access and parking areas. Will provide software and hardware maintenance, repair, configuration management, problem analysis, and logistics support for AN/SPN-46 ACLS installations.
Construction in Progress: No, but advertised.
Estimated Completion: April 1995

North and South Centers P-930-S

Description: Provides two integrated engineering R&D laboratory centers (totaling 721,000 square feet) to support BRAC 91 decisions to consolidate Naval Aviation RDT&E. Laboratories support crew systems, air vehicle research, embedded computer systems and airborne anti-submarine warfare.
Construction in Progress: Yes.
Estimated Completion: 30 March 1996

Jet Engine Test Cell Facility P-383

Description: This project will construct a T-10 jet engine test cell relocated from Subic Bay. Neither of the two existing cells can be adapted to provide the capability to perform post maintenance engine runup of the engines in our existing inventory or those programmed to be here by FY96.
Construction in Progress: No.
Estimated Completion: 21 November 1995

Hazardous/Flammable Material Store House P-426

Description: This project will construct a building to meet safety requirements for the storage of hazardous materials. Currently hazardous materials are stored in an environmentally unsuitable structure that is in violation of the Navy Occupational Safety and Health and Environmental Standards.
Construction in Progress: No.
Estimated Completion: 30 June 1996

Library Renovations **P-930-1A-S**

Description: Provides interior alterations to support scientific, technical and classified libraries in support of the BRAC 91 decision to consolidate Naval Aviation RDT&E. Existing library is too small to handle combined functions.
Construction in Progress: No.
Estimated Completion: 1 January 1996

Recreation Cottages (Solomons) **P-497**

Description: This project will construct five duplex cabins for ten recreational lodging units for military personnel. Some of the Naval Recreational Center's lodging units have been condensed due to facility age.
Construction in Progress: No.
Estimated Completion: 31 January 1996

Sewage Flow Equalization Basin **P-505**

Description: This MILCON will pay the one time cost of the Navy's share of a county planned upgrade to the treatment plant. This MILCON solves a waste water quantity sewage problem.
Construction in Progress: Yes.
Estimated Completion: Dollars programmed in 1995

Administration Facilities (NAVAIR) **P-951-T**

Description: (Integrated Project Team Building) Provides space for integrated project teams (IPT) that support aircraft acquisition and need to be collocated with RDT&E. The IPT's will move from Arlington, VA, (Crystal City) resulting from BRAC 93 decision to move Headquarters out of the National Capital Region.
Construction in Progress: No.
Estimated Completion: 20 June 1997

Propulsion System Evaluation Facility P-953-T

Description: Provides a facility to support the BRAC 93 decision to consolidate small engine RDT&E. Building houses test chambers, component test rigs and supporting laboratories.
Construction in Progress: No.
Estimated Completion: Dollars programmed in 1996

Waste Water Treatment Plant P-516

Description: This MILCON will pay a one time cost to the Navy for a planned county upgrade to the sewage treatment plant. This MILCON will bring the facility into compliance with the latest water quality standards imposed by the Maryland Department of the Environment.
Construction in Progress: No.
Estimated Completion: 26 August 1996

Airframe Systems Integration Lab P-493

Description: This project will construct a two story integrated laboratory to test and evaluate, in a night combat environment, integrated weapons systems being developed. Facility will also be used for foreign weapon technology and international cooperative programs.
Construction in Progress: No.
Estimated Completion: 10 January 2000

P-721: AEGIS Electronic Equipment Staging Facility

Description: A permanent one story masonry building having a pile supported concrete foundation and floor, steel framed clear span staging and storage area, fire alarm system, security fence, environmental controls, access road, parking and utilities. Will provide logistics support and staging facilities for electronic and communication systems and equipment undergoing integration, test and evaluation in support of the AEGIS CG-47 and DDG-51 radio communication system integration and the related in-service engineering program.

b. The following improvement and modernization projects are currently programmed:

- Range Electronic Warfare: Develops and integrates the range instrumentation required to measure and quantify the in-flight performance of modern and future aircraft electronic warfare (EW) avionics weapon system.

- Electromagnetic Environmental Effects (E^3): Provides a system of signal sources, power amplifiers, transmitters and signal monitoring equipment, augmented by computer control to generate and simulate the electromagnetic environment seen by aircraft.

- Maritime Multi-Mission Interoperability Center (MMIC): An initiative to improve the process of testing complex maritime weapon systems and platforms in an interoperable environment. Extensive use of existing NAWCAD Patuxent River test facility resources is being made to complement the MMIC test capabilities.

- Range Operations Systems: This program will modernize NAWCAD's test range voice computation, control, display, safety, range voice communications and video systems to enable support of future airborne weapon system testing.

- Chesapeake Atlantic Tracking System (CATS): Improves the supportability, reliability, and maintainability of existing range instrumentation tracking and control systems at NAWCAD Patuxent River.

- Electromagnetic Transient Test and Evaluation Facility (EMTTEF): Includes the development of advanced threat-level simulation facilities and associated automated facilities and associated automated data acquisition/collection/analysis systems for design certification, specification compliance and production acceptance testing. The EMTTEF will provide all three services and the Defense Nuclear Agency with consolidated electromagnetic transient test capability not present anywhere else in DoD.

- Range Support Aircraft Instrumentation (RSAI): Will provide equipment to facilitate extended area coverage in open ocean Atlantic areas, remote operating sites and other established test areas.

c. The following projects are currently programmed in the Central Test and Evaluation Investment Program (CTEIP):

- Air Combat Environment Test and Evaluation Facility (ACETEF): This is a fully integrated ground test facility which will allow full spectral test and 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 techniques to provide test scenarios which will reproduce the conditions of actual combat.

- Common Airborne Instrumentation Systems (CAIS): The development and procurement of an adaptive and reprogrammable airborne flight test instrumentation system is required to meet DT&E and OT&E requirements for current and planned Full Scale Development (FSD) programs. The systems will feature a distributed architecture consisting of central airborne system controller, remote analog/digital units, data bus interfaces, cockpit displays and engineering unit processors. Laboratory and flight line support equipment used to configure and maintain the systems during flight test are also to be included in the core development.

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3.1.F Uniqueness (MV I) - Measure of Merit: *Extent to which the facility is one-of-a kind.*

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

Yes. NAWCAD Patuxent River is a unique facility due to its vast array of specialized test facilities and equipment, well educated technical workforce, and geographical location.

The unique combination of over water approaches to NAS Patuxent River's runways along with the shoreline location of several facilities provide the required maritime test environment for carrier suitability, rotary wing, ASW systems testing, transmission multi-path, antenna ground plane, and salt water exposure testing. Additionally, NAS Patuxent River's airfield can support operations of all current military and civil aircraft, allowing aircraft to transit to NAWCAD Patuxent River for site unique testing such as lightning, electro-static discharge, electromagnetic compatibility, HERO, electro-magnetic pulse, or carrier suitability.

No other facility has the mix of resident personnel and facilities for test and evaluation of ASW and ASUW aircraft and aircraft systems. Specific capabilities include rapid and readily available access to open ocean test areas as well as inshore areas provided by the Chesapeake Test Range, on-site software support activities (in place or moving here as a BRAC 91 decision) for P-3 and S-3 ASW/ASUW aircraft, and acoustic sensor development and evaluation laboratories. Aircraft modification shops support rapid turn around of developmental installations of new and improved ASW/ASUW packages in test aircraft on site. The collocation of the test aircraft, test engineers, support laboratories, and data reduction facilities in the same hangars allows for seamless and efficient testing that would not be possible in a more dispersed setting.

NAWCAD Patuxent River is a one-of-a-kind facility in its ability to support integrated rotary wing mission systems and air vehicle efforts at a single site. Facilities such as the Ship Ground Station and Helicopter Mission Systems Support Center

directly tie airborn test assets to ground based systems for assessment of data links, full exercise of missions systems, and real time monitoring of responses. NAS Patuxent River's sea level location and proximity to Chesapeake Bay and Atlantic Ocean ranges support operationally realistic test scenarios for maritime rotary wing aircraft and associated systems. Flight operations are fully compatible with fixed wing air traffic. The unique combination of flight test data acquisition, instrumentation facilities, talented technical staff, and a sea level environment have led to NAWCAD Patuxent River being selected as the single site for V-22 Osprey development as well as the test site for all U. S. Coast Guard and many U. S. Army, Air Force, and Foreign rotary wing test programs. The collocated U. S. Naval Test Pilot School offers the only rotary wing test pilot curriculum in the United States and has developed many of the test techniques and methods employed in evaluating these air vehicles.

NAWCAD Patuxent River incorporates an inground catapult and arresting gear embedded in the approach end of runway 32 to take advantage of prevailing wind conditions. Over water approaches and a sea level altitude provide ideal conditions for shipboard testing build up and structural assessments of carrier capable maritime aircraft as well as full exercise of Automated Carrier Landing Systems (ACLS) in a real multi-path environment. The mix of airfield runways allow for catapult and arresting gear work to take place in an undisturbed manner while normal airfield operations are conducted on other runways providing a unique and efficient arrangement.

NAWCAD Patuxent River also hosts the Air Combat Environment Test and Evaluation facility (ACETEF) which is the world's only operational Category I Installed Systems Test Facility. This facility is composed of multiple laboratories, all interlinked, which support full spectrum aircraft system stimulation and simulation assessments in a secure, controlled environment. Specific testing accomplished includes all aspects of electro-magnetic compatibility, susceptibility, and interference testing, electronic warfare testing, man in the loop interface testing, and aircraft system susceptibility to combat environment effects tests in a tactical sized anechoic chamber.

The Manned Flight Simulator (MFS) portion of the ACETEF provides a unique, self-developed capability to host multiple air vehicle simulations and rapidly transition from one simulation to another different type through the use of roll in/roll out cockpits in the facility's six degree of freedom motion based flight simulator, its domed flight simulator, or any of several fixed base, lower fidelity simulations. The MFS is interconnected with the Flight Control Computer Test Facility for air vehicle control law development and evaluation.

Unique facilities and capabilities (International (Int), United States (US), Dept of Defense (DoD), Dept of Navy (DoN), Naval Air Warfare Center (NAWC)) located at NAWCAD Patuxent River are summarized in the following Table:

Test Facility Category	NAWCAD Patuxent River	Uniqueness
Digital Models and Computer Simulation (DMS)	Imbedded in all test facility categories.	
Integration Laboratories	Airborne Strategic Communication Engineering and Test Facility	US
	E-2C Systems Test and Evaluation Laboratory	US
	Helicopter Mission Systems Support Center	Int
	Fixed Wing ASUW and ASW Labs	NAWC
	Project BEARTRAP	NAWC
Measurement Facilities	Catapult and Arresting Gear	US
	Landing Systems Test Facility	US
	Propulsion System Evaluation Facility	DoN
	Ship Ground Station	Int
	Aircraft Armament Systems Simulation Engineering Test Station	NAWC
	Antenna Testing Laboratory Automated System (ATLAS)	Int
	Aircraft Test and Evaluation Facility (ATEF)	NAWC
	Electro-Optical Reconnaissance System Test Facility	US
	Electronic Warfare/Avionics Flight Test Facility	US

Test Facility Category	NAWCAD Patuxent River Facility Name	Uniqueness
	Combat Identification Systems (CID)	NAWC
	Ground Range Antenna Test Facility (GRATF)	NAWC
	Acoustic Test Facility (ATF)	US
	Communications Test and Evaluation Laboratory (COMTEL)	NAWC
	Surveillance and Topographical Radar Systems (STARS)	DoD
Hardware-in-the-Loop (HITL)	Aircraft Electrical Evaluation Facility	US
	Aircrew Systems Test Facility	DoD
	Aircraft Stores Certification Test Facility	US
	Flight Control Computer Test Facility	NAWC
	Integrated Aircraft Test Laboratory	NAWC
	Aircraft Support Systems Test Facility	US
Installed Systems Test Facilities (ISTF)	Air Combat Environment Test and Evaluation Facility (ACETEF)	Int
Open Air Ranges (OAR)	Chesapeake Test Range	US
	Telemetry Data System Facility	DoN
	Airborne Instrumentation Support Facility	NAWC
	Target Support Facility	NAWC
	Test and Evaluation Data Processing	DoN

As a result of BRAC-91 and BRAC-93 realignment decisions, the NAWCAD Patuxent River complex is being significantly expanded to include numerous other functional areas of the Naval Aviation Acquisition community including NAWCAD Warminster, NAWCAD Trenton, and large portions of the Naval Air Systems Command which will enhance the efficiency of Naval Aviation System Acquisition Process through collocation of key personnel and,R&D, and T&E. Additionally, the proximity of NAWCAD Patuxent River to Washington DC and the large Naval operational communities in the Norfolk Virginia area provides a real advantage for timely communication and integration opportunities as well as access to fleet maintenance support/warehouse capabilities which greatly enhance aircraft operating capability.

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

See listing provided in 3.1.F.1.

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

See listing provided in 3.1.F.1.

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

Yes.

Department	FY92 %	FY93 %
Air Force	1.0	.9
Army	.9	.6
Coast Guard	1.9	2.9
Other DoD	.1	.2
Joint	7.0	9.0

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3.1.G Available Air, Land, and Sea Space (MV II) - Measure of Merit: *Extent to which controlled test ranges satisfy weapon system test requirements.*

The Patuxent River ranges and adjacent areas are capable of satisfying nearly all NAWCAD non-shipboard flight test requirements. Off site testing has been limited to events requiring special atmospheric conditions (e.g., icing) or certain live armament testing where weapon parameters drove the use of a large land range (e.g., instrumented Hellfire). The combination of Patuxent River range space and its collocated instrumentation and telemetry capability has permitted single site developmental flight testing of the F-18, AV-8B, SH-60B (LAMPS MK III) and (currently) the V-22 aircraft. In all of these examples, as well as the upcoming F-18E/F E&MD effort, Patuxent River offered a unique opportunity to improve efficiency during their development period through collocated assets and consolidated support. The capability to perform flight testing in areas that are available from sea level to high altitude provides a mission essential replication of Navy/ Marine Corps fixed and rotary wing flight environments.

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Revised pg

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

The Patuxent River ranges and adjacent areas are comprised of three types of special use airspace: Restricted areas (R), Warning areas (W), and Air Traffic Control Assigned Airspace (ATCAA). Combined inland and offshore operating areas available to support NAWCAD Patuxent River operations is approximately 74,000 square miles. Of that total airspace, approximately 50,000 square miles are instrumented with time, space and position coverage and telemetry (with relay) coverage. The Restricted Area immediately adjacent to the NAWCAD Patuxent River airfield permits continuous flight from sea level to 85,000 ft.

AREA	SQUARE MILES	
R-4005N	113	
R-4005S	110	
R-6609	120	
R-4006	1,473.8	
R-4007	162.5	
R-4008	1,336.4	
R-4002	39.6	
W-108A/B/C	2,972.5	
W-386A/B/C/D/E	6,612.1	
W-387A/B	2,254	
W-72A/B	16,276.65	
W-110	2,170	
W-122A/B/C/D/E/F/G/H/I/J	19,699.1	
W-107A/B/C/D/E	6,318.48	
W-106A/B	1,558.62	
W-105A/B/C/D/E/F	8,686.1	R
CHESSIE ATCAA	1,045	
TOTAL SQUARE MILES	70,834.85	R

NOTE: Approximately 90% of the above listed area is overwater (Chesapeake Bay or Atlantic Ocean)

Revised pg

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

The Patuxent River ranges and adjacent areas are comprised of three types of special use airspace: Restricted areas (R), Warning areas (W), and Air Traffic Control Assigned Airspace (ATCAA). Combined inland and offshore operating areas available to support NAWCAD Patuxent River operations is approximately 74,000 square miles. Of that total airspace, approximately 50,000 square miles are instrumented with time, space and position coverage and telemetry (with relay) coverage. The Restricted Area immediately adjacent to the NAWCAD Patuxent River airfield permits continuous flight from sea level to 85,000 ft.

AREA	SQUARE MILES
R-4005N	113
R-4005S	110
R-6609	120
R-4006	1,473.8
R-4007	162.5
R-4008	1,336.4
R-4002	39.6
W-108A/B/C	2,972.5
W-386A/B/C/D/E	6,612.1
W-387A/B	2,254
W-72A/B	16,276.65
W-110	2,170
W-122A/B/C/D/E/F/G/H/I/J	19,699.1
W-107A/B/C/D/E	6,318.48
W-106A/B	1,558.62
W-105A/B/C/D/E/F	11,852.04
CHESSIE ATCAA	1,045
TOTAL SQUARE MILES	74,000.79

R

NOTE: Approximately 96% of the above listed area is overwater (Chesapeake Bay or Atlantic Ocean)

N00421

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

The Patuxent River ranges and adjacent areas are comprised of three types of special use airspace: Restricted areas (R), Warning areas (W), and Air Traffic Control Assigned Airspace (ATCAA). Combined inland and offshore operating areas available to support NAWCAD Patuxent River operations is approximately 74,000 square miles. Of that total airspace, approximately 50,000 square miles are instrumented with time, space and position coverage and telemetry (with relay) coverage. The Restricted Area immediately adjacent to the NAWCAD Patuxent River airfield permits continuous flight from sea level to 85,000 ft.

AREA	SQUARE MILES
R-4005N	113
R-4005S	110
R-6609	120
R-4006	1,473.8
R-4007	162.5
R-4008	1,336.4
R-4002	39.6
W-108A/B/C	2,972.5
W-386A/B/C/D/E	6,612.1
W-387A/B	2,254
W-72A/B	16,276.65
W-110	2,170
W-122A/B/C/D/E/F/G/H/I/J	19,699.1
W-107A/B/C/D/E	6,318.48
W-106A/B	1,558.62
W-105A/B/C/D/E/F	11,852.04
CHESSIE ATCAA	1,045
TOTAL SQUARE MILES	74,008.79

NOTE: Approximately 90% of the above listed area is overwater (Chesapeake Bay or Atlantic Ocean)

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

The principal restricted areas utilized by NAWCAD Patuxent River (R-4005, R-4006, R-4007A, R-4008, R-6609, and R-4002) are primarily over the waters of the Chesapeake Bay which is an inland waterway owned by the Federal Government. Some portions of the restricted areas extend over tidal wetlands and farmland which is very sparsely populated. These areas are owned by the State Government of Maryland and/or private citizens and are principally used to support the local seafood, farming, and poultry industries. All primary population centers (Washington, Baltimore, Richmond) are at least sixty miles beyond the confines of the restricted area boundaries and present absolutely no impediment to testing. By agreement with the FAA, all restricted areas are controlled by NAWCAD Patuxent River. FACSFAC (Fleet Air Control and Surveillance Facility) VACAPES controls shared airspace in the Virginia area. Other shared airspace is controlled by their representative agencies.

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

R-4006 3,500 to, but not including FL250
R-4008 FL250 to FL850
R-4005 surface to, but not including FL250
(R-4008 in conjunction with subset R-4005 provides continuous coverage from the surface to FL850)
R-4002 and R6609 surface to FL200
R-4007/A surface to, but not including 5000'
Chessie ATCAA (areas A/B) FL270-410

NAWCAD Patuxent River also has available 233.7 acres of water area in the Chesapeake Bay as a water target aerial firing range for non-explosive weapons. The area is referred to as the Hooper Target (surrounded by a 1,000 yard radius surface prohibited area) and is under a permanent license granted by the State of Maryland in 1949. The Hannibal ship target is also located close by in the Chesapeake Bay. In addition, Bloodsworth Island (12 mi) and Dare County (155 mi) ranges provide land targets.

Aircraft operations are essentially unconstrained and have access to the Chesapeake Bay and the East Coast Open Ocean Test Ranges. Transit to and from offshore operating areas is available via low-altitude IFR or VFR routing. The NASA Wallops airfield has been configured as primary divert and support facility for offshore operations. NAWCAD Patuxent River has leveraged, through incurring only labor costs, the $400M plus investment of NASA Wallops range assets into daily support of the NAWCAD Patuxent River mission.

NAWCAD Patuxent River has the diversity and size of air and water operating areas to perform projects in all assigned mission areas. The geography and dispersion of facilities permit the safe and environmentally sound storage of fuel, ordnance, and hazardous materials. Close proximity of Atlantic Ocean operating areas provides nearly unlimited maneuvering space with deployable instrumentation systems and range safety.

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

Yes. The NAWCAD Patuxent River complex has access to special use airspace which contains supersonic areas capable of supporting simultaneous users. These include R-4002, R-4005, R-4006, R-4007, R-4008, and R-6609 restricted areas specifically controlled by Patuxent River and other nearby restricted areas R-4001A and B (Aberdeen, MD), R-5301 and R-5302 (Albemarle Sound, NC), R-5314 (Dare County, NC), R-6601 (A.P. Hill, VA), R-6611, R-6612, R-6613 (Dahlgren, VA), and R-6604 (Chincoteague, VA). The W-108 warning area is the primary offshore range used by Patuxent River aircraft with W-107, W-106, and W-105 available available to the North and W-110 and W-386 to the South. These areas are of complex polygonal shapes and are not characterized by numerical dimensions.

In addition to Special Use restricted and warning area airspace, established IFR Military Flight Routes (IRs) are used for conduct of low altitude, high speed cruise missile test flights, many involving terrain following modes of operation. Southern Tomahawk Test Vehicle (TTV) routes (IR-015, IR-030 IR-031, IR-032, and IR-033) and Northern routes (IR-850, IR-851, and IR-852) are all utilized for cruise missile testing supported out of Patuxent River. Simultaneous TTV users cannot be supported on these routes.

As shown in figure 1, numerous VFR (Visual Flight Route) and IR (Instrument Route) military flight routes are located in the NAWCAD Patuxent River area (e.g., VR-1751, VR-1752, VR-1754, VR-1756, VR-1757, VR-1758, IR-714, IR-760, IR-761, IR-762, etc.). Ample size routes are available, e.g., VR-1752 provides a 220 nautical mile (nm) long by 6 nm wide route, VR-1754 provides a 340 nm long by 6 nm wide route. This provides the opportunity to assess low altitude or terrain following capabilities over land/water interface, wooded terrain, and mountainous terrain (Blue Ridge Mountains). The simultaneous use of these routes is governed by the rules promulgated in the

DOD General Planning AP/1A and AP/1B Special Use Handbooks.

All of these routes offer a variety of test environments (overwater, wooded, mountainous) and atmospheric conditions (temperature, humidity, variable weather) covering a wide range of predicted operational situations likely to be encountered. The work areas are listed in paragraph 3.1.G.1. The following pages are graphic presentations of special use airspace adjacent to NAWCAD Patuxent River, missile test routes and an overview of regional Atlantic coast warning areas.

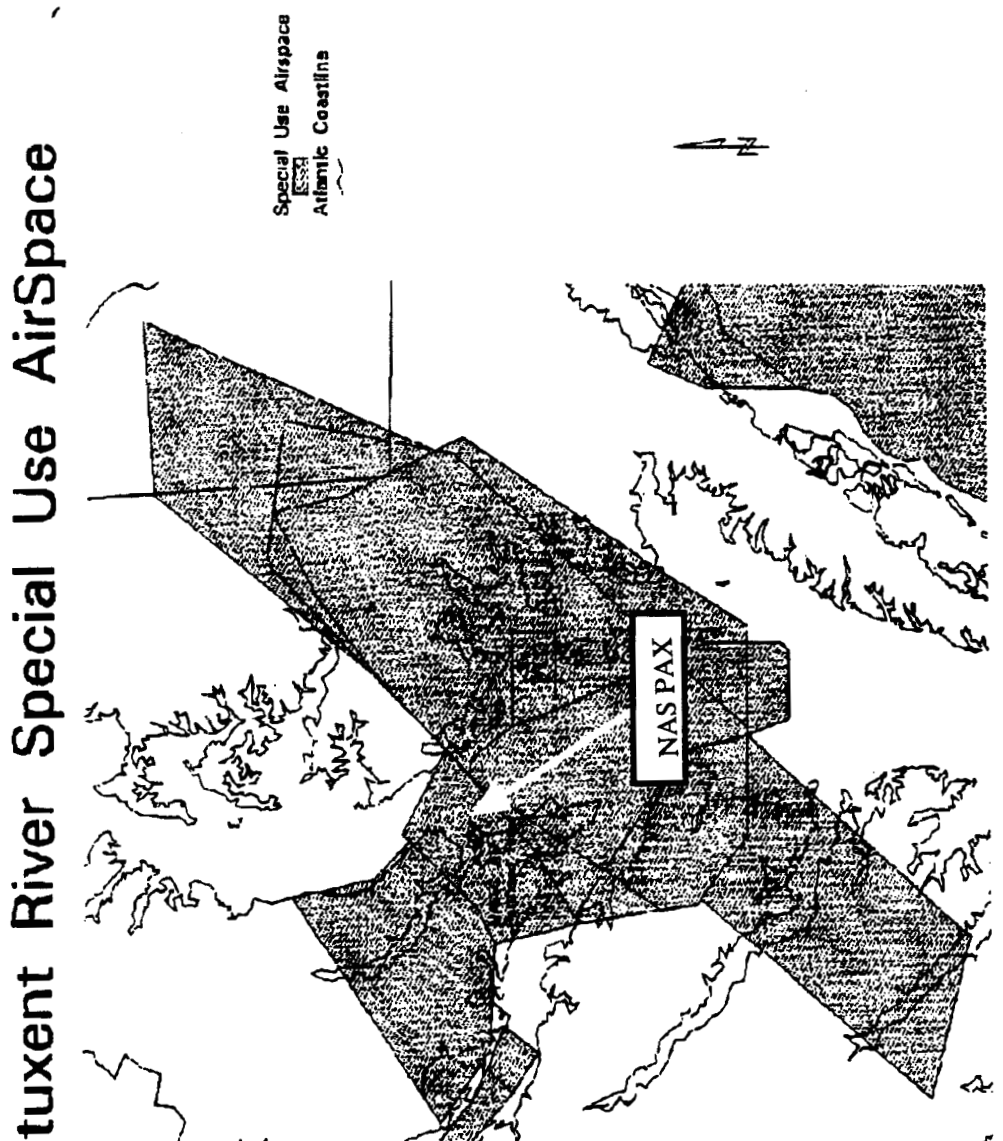

FIGURE 3.1.G.4
PATUXENT RIVER SPECIAL USE AIRSPACE

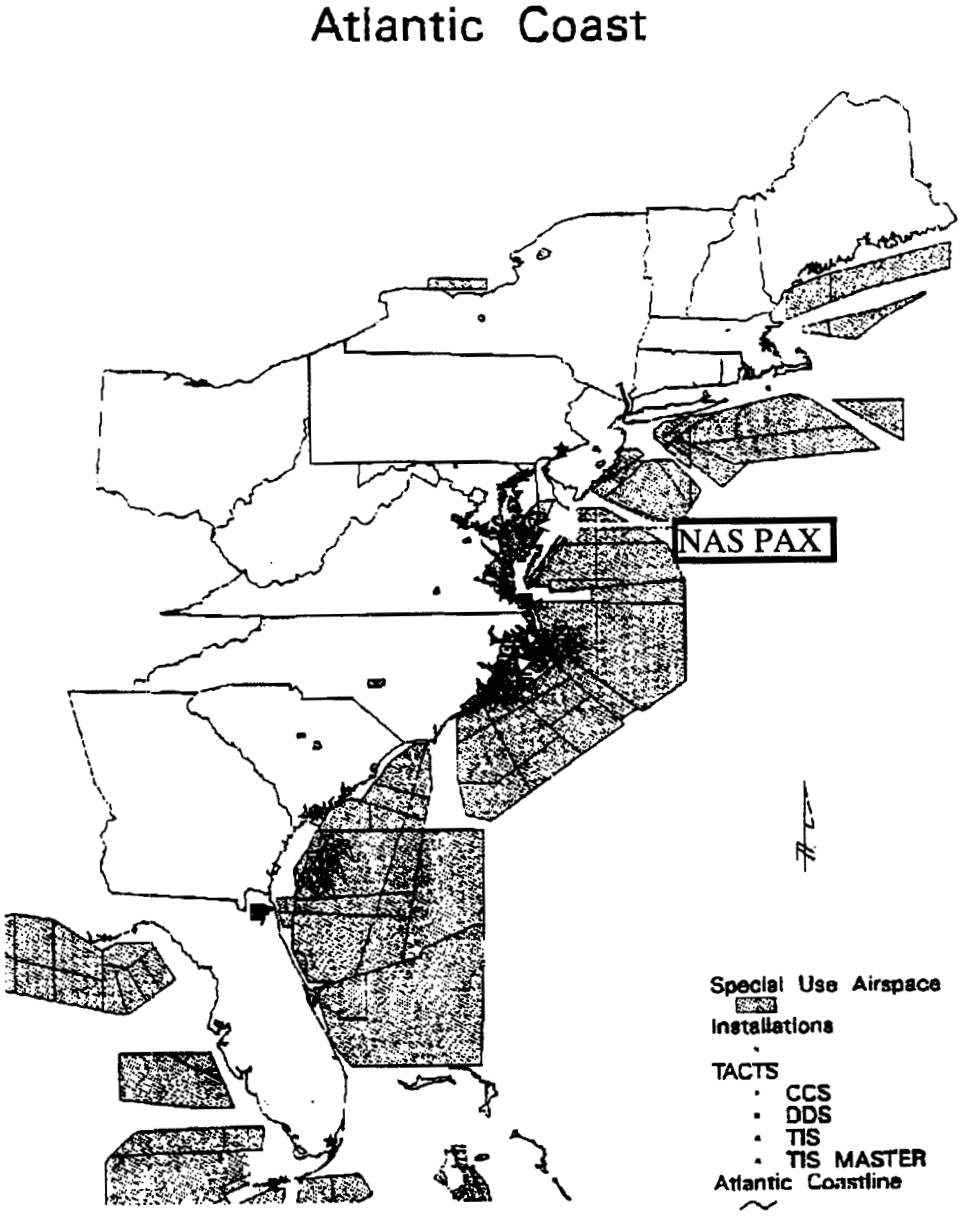

FIGURE 3.1.G.4
COASTAL WARNING AREAS

DOD

AREA PLANNING AP/1B CHART

MILITARY TRAINING ROUTES - EASTERN US

EFFECTIVE 0901Z 16 SEP 1993

TO 0901Z 11 NOV 1993

SCALE: 1" = 30 NM

Published by
DEFENSE MAPPING AGENCY AEROSPACE CENTER
3200 SOUTH SECOND STREET
ST. LOUIS, MISSOURI 63118-3399

Consult NOTAMS and UCN for latest information

3259 PLAN AP1BCHTS

NAWCAD Patuxent River

FOR OFFICIAL USE ONLY
PREDECISIONAL INFORMATION

Figure 1

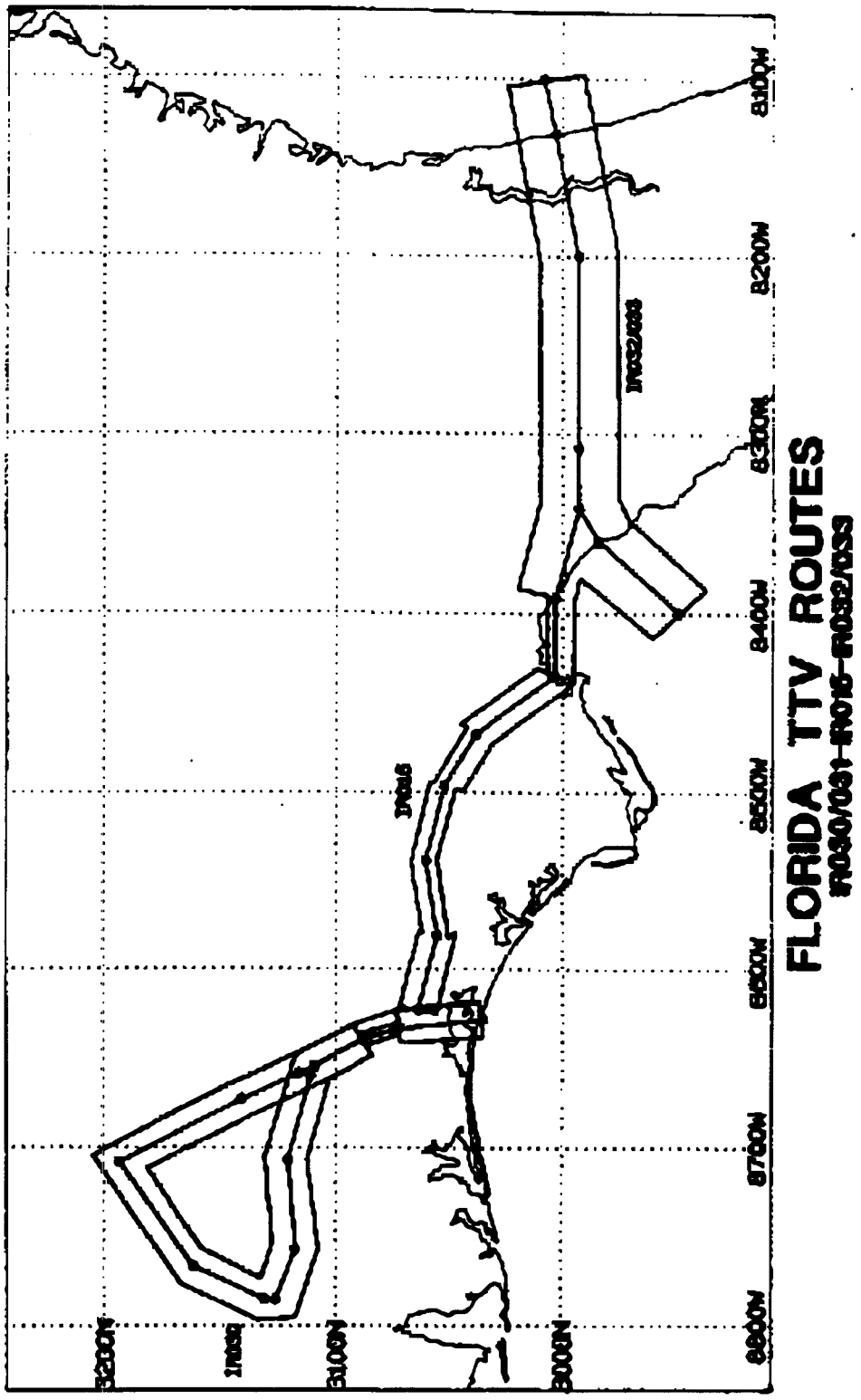

FIGURE 3.1.G.4
FLORIDA TTV CRUISE MISSILE ROUTES

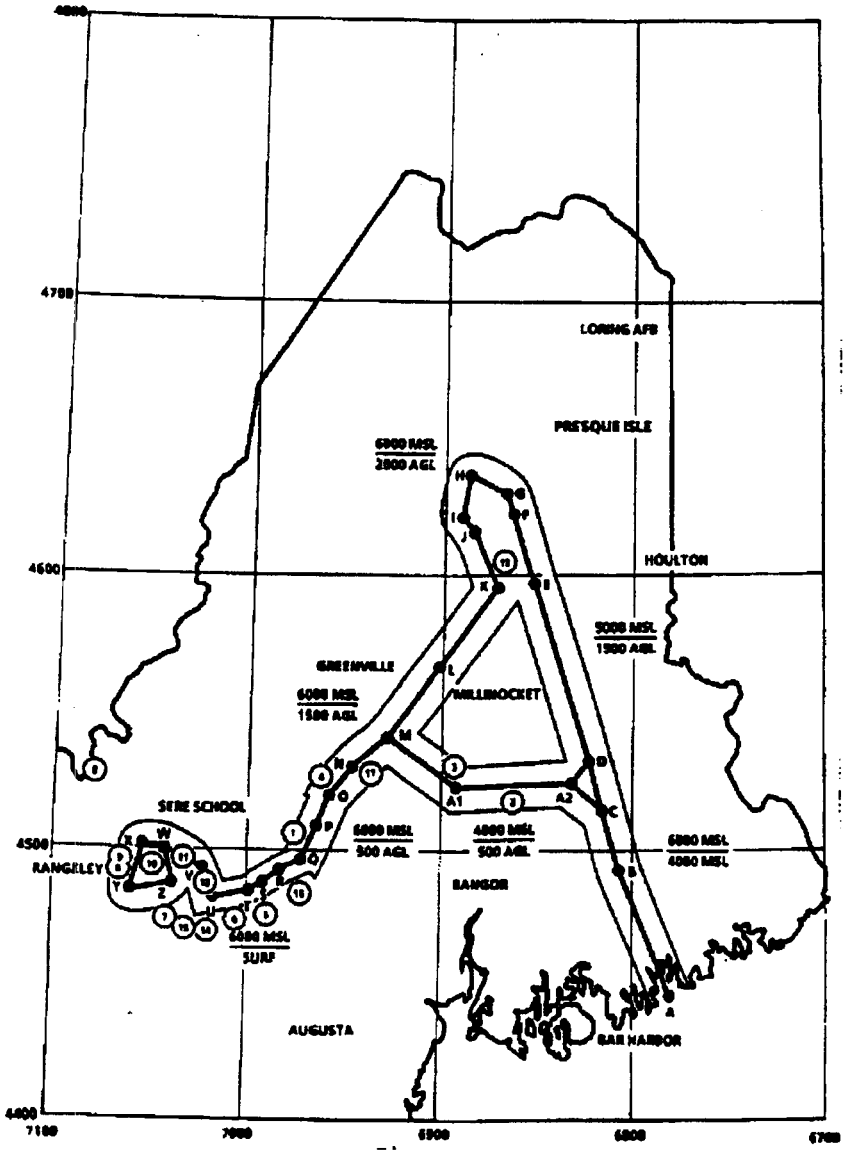

FIGURE 3.1.G.4
MAINE TTV CRUISE MISSILE ROUTES

FOR OFFICIAL USE ONLY - BRAC '95 WORKING PAPERS

REQUEST FOR CLARIFICATION
FROM THE BASE STRUCTURE ANALYSIS TEAM (BSAT)
NAWCAD PATUXENT RIVER

Control #: EC-035 Date sent: 19 September 1994

To: CAPT Doug Cook

Fax: (703) 604-1859

Activity: Navy
Site: NAWC Pax River
Facility/Capability: Overarching
Page: AI76

CLARIFICATION/CORRECTION REQUESTED for Data Call #13: Your responses to RFC# EC-026 confirmed that 2,460 square miles of your airspace is overland. How much of the land underneath this 2,460 square miles of airspace is DOD owned?

AI 76 Clarification

CDR Mark B. Samuels, CEC, USN
(703) 681-0481, or (703)578-5750

NOTE: This information is needed urgently. Request you respond with clarification comments (below) or corrected page(s) by 23 September 1994. FAX a preliminary response directly to the T&E Joint Cross-Service Working Group at (703)578-6592. Then , send your official response, properly certified, through your chain of command for certification and further forwarding to the BSAT.

Reply: **Of the 2,460 square miles of Patuxent River controlled overland airspace, approximately 20 square miles are DOD owned land with the remaining land area privately or state owned except for the Wallops Island Area which is controlled by NASA.**

Rusty Lowry	SA02A	(301) 826-4181	9/22/94
Name	Code	Commercial Phone #	Date

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

The restricted area complex and working areas above and adjacent to Patuxent River comprise approximately 70,000 suare miles of which 2,460 square mile are over land. The IRs in Florida are mostly overland and comprise approximately 6,600 square miles of airspace. The IRs in Maine are also overland and comprise approximately 2,460 square miles of airspace.

N00421

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

None.

N00421

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

Two hundred fifty (250) nm. located 60 miles east of NAS Patuxent River in the offshore warning areas. Directly overhead NAS Patuxent, a 120 nm straight line segment is also available. Longer straight line segments, if required, are available through coordination with the FAA.

N00421

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

Over and above the specific Warning areas, IR routes, and VR routes available to Patuxent River, open ocean airspace has been utilized for antisubmarine equipment evaluations as well as extended range weapon (HARM, Maverick, Sidewinder, Sparrow, Penguin, Harpoon, Tomahawk) firings. Navigation and communications testing can and has been conducted throughout the public airspace in CONUS as well as at the FAA test center in Atlantic City, NJ.

Also, we have used open-ocean airspace to conduct Joint Tactical Information Data System (JTIDS), Tomahawk, Harpoon, and Harm flights. These flights were conducted for weapon system integration, evaluation and Fleet training. This airspace will continue to be used in the future for similar test flights.

3.1.H Geographic/Climatological Features (MV II) - Measure of Merit: *Extent to which types of climatic/geographic conditions represent world-wide operational conditions.*

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

NAWCAD Patuxent River has excellent topography because of the complex littoral land/water transitions within the Chesapeake Bay and tributaries plus adjacent Atlantic Ocean.

The sea and ground clutter (i.e., geographic terrain features) available around Patuxent River are very important and necessary for the total Test and Evaluation of radar systems in a mission relatable environment. Since most airborne radar systems are required to be "all weather" performance capable, it is important to evaluate using the combination of various sea and ground clutter in concert with various volumetric clutter (i.e., rain). Geographic terrain is a very influential variable on clutter reflectivity (i.e., land radar cross section) and it's impact on radar system performance can be significant.

Radar Imaging - the Patuxent River location is ideal for evaluation of Navy aircraft radar imaging modes (i.e., ground mapping) because it provides the best available variety of terrain features consistent with Littoral mission scenarios. The wide variety of terrain features provides a broad range of reflectivity (i.e., spectral backscatter response) test scenarios for evaluating radar imagery. The levels of terrain can be categorized by varying complexities as follows: relatively flat land, deserts, rural rolling countryside, farmland, forests, heavy woods, jungle, mountainous regions, and urban areas (high density of man-made structures). The Patuxent River location can provide test environments for all the above, with the exception of desert and jungle. It should be noted that the relatively flat marshy land (i.e., New Jersey marshland) provides a very similar radar reflectivity response as that of the desert

and, to some extent, Maryland and Virginia heavy woods provide similar radar reflectivity as that of a jungle. Patuxent River's location provides easy access to a number of varied clutter response scenarios. The combination thereof, can be made to represent mission representative test scenarios. It is important to evaluate radar imagery (i.e., ground mapping) in the most diverse geographic test area as possible. When evaluating radar imagery the tester must develop Littoral scenarios where contrasting reflectivity is desired in the image data collected during any one routine flight event.

Terrain Clearance/Avoidance/Following - the capability to detect terrain features (i.e., hills and mountains) and obstacles ahead of the aircraft for either awareness of high ground/obstacles for avoidance or to allow the aircraft to follow the contour of the land is vital to aircraft terrain clearance/avoidance/following. Patuxent River has many available low level approved routes for terrain clearance/avoidance and Terrain Following testing. These routes provide rolling hills, forests, and mountainous features for evaluating such items as radar shadow effects, tower detection, flight path angle over a peak, peak clearance plane, peak over-shoot, and the qualitative ease of performing the soft or hard ride.

Sea Clutter - Patuxent River provides both an Ocean and Bay test environment. The sea states are different for each and are necessary test environments to evaluate mission relatable scenarios. Radar systems contain dedicated sea modes (i.e., Sea Surface Surveillance, Ship Target Track, Inverse Synthetic Aperture Radar). These modes require a wide variety of non-cooperative and cooperative targets for testing in a bay, river, and open ocean scenario. As is the importance of the coastal interface on radar imagery, it is also an important feature used to evaluate clutter rejection and false alarms in a Sea Surface Search mode.

Air to Air - the various clutter backgrounds available from the Patuxent River area provide a broad test environment to test the ability of a radar to detect, acquire, and track airborne targets. Clutter rejection is very important in air-to-air modes. The variety of clutter at Patuxent River is very representative of many mission scenarios (excluding desert) where it is important

to test the radar systems ability to detect slow moving aircraft from even the smallest amount of clutter.

Targeting - is also a very important aspect of any mission. A variety of clutter is necessary to evaluate the capability of a radar system to differentiate the target from the clutter background. As discussed, Patuxent River provides access to a wide variety of clutter backgrounds as well as easy access to short and long range targets in a variety of clutter backgrounds.

Electro-Optical sensor performance characteristics are significantly influenced by topography and ground cover/vegetation as well as climatic conditions. The affects of various terrain backgrounds on the performance characteristics of airborne Electro-Optical sensors must be considered and investigated during system technical evaluations. The thermal characteristics presented to the sensor system can vary greatly depending on type of terrain the sensor is flown over. The test program must include a wide variety of terrain and vegetation during flight test evaluations. It is imperative that testing include mission representative environments. The Patuxent River location provides a wide gamut and mixture of terrains and vegetation for Electro-Optical sensor evaluations. Readily available terrains include: urban/rural; mountains (low level, nap-of-the-earth, various vegetation, snow, etc.); forests; beachfront; ocean/waterfront; lowlands and swamps/riverines, and farmland/cultivated fields. In addition, various weather conditions are readily available (thunderstorms, haze, high heat plus humidity, ice and snow) at Patuxent River. The combinations of topography and ground cover/vegetation and climatic conditions available from Patuxent River represent the bulk of world wide operational conditions that Navy airborne Electro-Optical sensors will encounter.

36% Estuary/Bay/Sea = 1,365 square miles

64% Land = 2,460 square miles

EASTERN SHORE LANDS (General) (1,040 square miles)

Very Flat.
40% Cultivated Lowlands

40% Swamp/Marsh
20% Forest

WESTERN SHORE LANDS (Based on St. Mary's County Soil Survey) (1,420 square miles)

Elevation range from 0 to 170 feet.

40% Wooden/Forest
40% Cultivated Lowlands
20% Wetland/Marsh, Eroded, or Steep

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

The land/water interface of the Chesapeake Bay provides the single most important geologic enhancing characteristic to support the wide variety of tests required to evaluate DoD aircraft in a Maritime environment.

The Chesapeake Bay enhances inflight testing of aircraft antenna patterns by providing a very predictable reflection plane allowing compensation for the effects of RF multipath during free space measurements below 1 GHz.

The littoral environment of the Mid-Atlantic is very conducive to enhanced airborne magnetic sensor system performance measurements. Test aircraft departing Patuxent River are immediately overwater upon liftoff minimizing transit time to test locations. A dedicated in-water ship target hulk is available nearby for sensor test overflights. Additionally, several established areas for precise magnetic sensor testing have been charted by the Defense Mapping Agency which provide a diverse variety of geologic noise levels from quiet to very noisy in close proximity to NAWCAD Patuxent River.

The NAS Patuxent River local environment (MARITIME OPERATION ZONE) is bounded on the North by the Patuxent River and on the east by the Chesapeake Bay. The Potomac River is located approximately 10 miles southwest and the Atlantic Ocean is 60 miles east. West northwest lies a roughly triangular peninsula, the only uninterrupted land expanse. Another peninsula, an average 5 miles wide, extends north-northwest and forms the north shore of Patuxent River. The Eastern Shore of Maryland, about 10 miles east, is a broad low peninsula separating the Chesapeake Bay and the Atlantic Ocean.

NAS Patuxent River also offers the close proximity to Operational environments from extreme COLD (Brunswick, ME and North) to TROPICAL (Florida to Bermuda).

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

Yes. The diverse requirements of development and E&MD programs typically require that selected tests be conducted which would most appropriately be performed at other locations. Examples include: deep water ASW/ASUW tests at the Atlantic Undersea Test and Evaluation Center (AUTEC), environmental tests in the McKinley Climatic Laboratory, land range tests for weapons at NAWCWD and Yuma Proving Grounds, and icing tests at Duluth, Minnesota. These off-site detachments would typically encompass approximately 2% of the overall workload per year. Trips to some geographic locations will always be required such as Flight Trainer facilities, the Mediterranean littoral environment, etc..

This workload estimate does not include trips for shipboard test evaluations.

It is estimated that this fraction of workload (2%) would be similar during the past 8 years.

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

Data only available in percentage form based on Cumulative Percentage Frequency of Occurrence of Daily Mean Temperature. Derived from daily observations for a period of record from 1945-1990.

< 32F	**6.5%**
32 -95F	**93.4%**
> 95F	**<.05%**

Data from International Station Meteorological Climatic Summary (ISMCS), a joint USN/NOAA/USAF climatic information database.

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

Data only available in percentage form based on Cumulative Percentage Frequency of Occurrence of Relative Humidity. Derived from hourly observations from 1949-1990.

< 30%	**1.4%**
30 -80%	**67.8%**
> 80%	**30.8%**

Data from International Station Meteorological Climatic Summary (ISMCS), a joint USN/NOAA/USAF climatic information database.

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

There are no data available that can accurately describe the number of test missions per year canceled due to weather. Our best estimate from available information is that 5-8% of scheduled missions are cancelled and rescheduled for a later day due to weather. The weather in the past has characteristically supported flight loadings of 28,000 flight hours per year in the Patuxent River airspace based on a nominal 5 day work week. The responses to questions 3.1.H.7 and 3.1.H.9 provide further amplification.

During the past 15 years, three major Engineering and Manufacturing Development (E&MD) aircraft programs, the F/A-18 A/B Hornet, SH-60 LAMPS, and the AV-8B Harrier, were successfully prosecuted at NAWCAD Patuxent River. Specifically, flight rates were achieved in all programs which successfully met all required objectives. As an example, the F/A-18 A/B E&MD program achieved flight rates of 17.5 hours/aircraft/month for all test aircraft during the period of peak flight loadings. This far exceeds any other DoD tactical aircraft development program flight rate (e.g., F-15 at Edwards AFB achieved 12 hours/aircraft/month. Although the diverse weather conditions do result in some test mission cancellations throughout the year, innumerable test programs have achieved highly successful flight rates throughout the long history of NAWCAD Patuxent River.

The weather diversity available at NAWCAD Patuxent River supports testing throughout the breadth of weather conditions required to effectively predict key system perfomance in all operating environments.

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

Historical data on the number of flying days per year available for flight test do not exist; however a reasonably precise estimate can be developed. Forty-five year statistical averages for ceiling and visibility contained in the International Station Meteorological Climatic Summary from the Federal Climate Complex Asheville show the Patuxent River airfield to be below TACAN minimums (500 ft ceiling and 3/4 mile visibility) 3.9% of the time. This is the equivalent of 14 days per year. Test missions are flown above, below or in this weather. On average, two days/year are lost for snow/ice removal.

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

Data only available in percentage form based on Percentage Frequency of Occurrence of Visibility. Derived from hourly observations from 1945-1990.

< 1MI	**2.0%**
1 - 3MI	**4.6%**
> 3MI	**93.4%**

Data from International Station Meteorological Climatic Summary (ISMCS), a joint USN/NOAA/USAF climatic information database.

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

Historical data on the number of flying days per year available for flight test do not exist; however a reasonably precise estimate can be developed. Forty-five year statistical averages for ceiling and visibility contained in the International Station Meteorological Climatic Summary from the Federal Climate Complex Asheville show the Patuxent River airfield to be below TACAN minimums (500 ft ceiling and 3/4 mile visibility) 3.9% of the time. An additional two days are lost, on average for snow/ice removal. The average number of flying days per year for flight test is 349.

The Patuxent River airfield is below Instrument Flight Rates (IFR) minimums (1,000 ft ceiling and 3 mile visibility) 10% of the time or 36 days per year. In the range of meteorological condition between IFR minimums and TACAN minimums, mission flights do occur routinely. These limitations affect project flights originating out of Naval Air Station Patuxent River. Under such weather constraints however, significant portions of the operating area (which includes offshore warning areas) are often available where weather conditions in the area of the intended test operations (i.e., Vandal launch at Wallops, aircraft work in W-108, etc.) are appropriate.

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

The flight test mission at Patuxent River is critically dependent on the diverse weather conditions available at this site. The largest part (80%) of the test activity at Patuxent River involves mission systems. The complete testing of these mission systems typically involves a range of atmospheric conditions that includes weather commonly described as "adverse" in terms of aviation. It is possible for a test flight to be delayed at Patuxent River because of the lack of adverse weather as well as because of the presence of adverse weather. Examples of typical adverse weather mission systems tests and attendant weather requirements follow:

- All-Weather Automatic Carrier Landing Systems flight tests must include rainfall rates up to 25mm/hour and in both snowfall and lightning conditions.

- ASW sonobuoy tests must include both rain and snow at the water surface.

- Radar systems T&E requires diverse weather conditions:

- **o Fighter/attack radars, which incorporate methods to defeat the "curtain effect" of rain, must be evaluated. Test specifications span the range of rainfall rates from drizzle (.25mm/hr) to cloudburst (100 mm/hr).**
- **o Search radars (E-2C, B-Band) are influenced by both humidity and thermal inversions.**
- **o Radar systems are currently evaluating the best ways to differentiate between rain and chaff.**
- **o Terrain following modes require performance testing in rain (up to 10 mm/hour) and snow conditions.**
- **o Airborne radar detection ranges must be evaluated against Nimbo Stratus and Cumulo Nimbus systems as well as against fully developed weather fronts.**

- o Ocean Surveillance probability of detection must be evaluated in variable weather/sea state conditions.

- VLF and LF systems require tests in proximity to thunderstorms.

- EO sensors must be evaluated over a broad range of atmospheric humidity, with the most rigorous conditions being 100% relative humidity.

- GPS based systems must be tested over a broad range of humidity conditions, including high humidity.

- ES-3/E-2/P-3 Storm Warning Systems must be tested in proximity to lightning.

- Precipitation Static Tests require high humidity, clouds, rain, and icing conditions.

Historically, the weather conditions at Patuxent River can accommodate tests such as those listed above. Although deployments in search of adverse weather do occur, they are rare. There is no data available that can conclusively describe the amount of cancellations due to weather conditions. In some cases, as previously described, a poor weather condition might not be "bad enough".

3.2 AIR VEHICLES

This functional area includes facilities involved in the testing of all air vehicles/subsystems/components whether fixed wing or rotary wing and test of major subsystems (e.g., avionics, engines, and sensors). This includes flight testing and the testing involving pre- and post-flight preparation and processing of the air vehicle. Unmanned air vehicles and cruise missiles are included.

3.2.A Supersonic Airspace (MV II) - Measure of Merit: *Extent of range size to support weapon system requirements.*

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

Yes. Supersonic corridors exist in the Patuxent River Restricted areas R-4005 and R-4006. Precision Chesapeake Test Range tracking instrumentation and telemetry systems provide full coverage in these areas. Supersonic flight is also permitted anywhere within the confines of Atlantic Warning Area W-108. Radar, cooperative tracking system, and telemetry coverage is available in this area.

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

Immediately adjacent to the airfield in restricted airspace, and 60 nm to the east in warning areas.

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

5000' to FL850 in restricted airspace adjacent to the airfield. The warning areas are available surface to unlimited.

REQUESTS FOR CLARIFICATION
FROM THE BASE STRUCTURE ANALYSIS TEAM (BSAT)

Control #: **AW-096** Date sent: 26 September 1994

To: CAPT Doug Cook
Fax: (703) 604-1859
Voice: (703) 604-1857

Service: Navy
Site: **NAWC Patuxent River**
Facility/Capability: **3.2.A.4**
Page: **AI97**

CLARIFICATION/CORRECTION REQUESTED for Data Call #13, Question Number: 3.2.A.4
Please clarify - what is your largest supersonic area expressed in length x width in nautical miles?

CDR Mark B. Samuels, CEC, USN
(703)681-0481, or (703)578-5750

AT 97 Clarification

NOTE: This information is needed urgently. Request you respond with clarification comments (below) or corrected page(s) by 28 September 1994. FAX a preliminary response directly to the T&E Joint Cross-Service Working Group @ (703) 578-6592. Then , send your official response, properly certified, through your chain of command for certification and further forwarding to the BSAT.

Reply: **THE LARGEST SUPERSONIC AREA LOCATED ADJACENT TO PATUXENT RIVER AND CONTAINED WITHIN WARNING AREAS IS 250 NM LONG WITH A MAXIMUM WIDTH OF 150 NM WITH BOUNDARIES DEFINED BY THE W-108, W-386, W-387, AND W-72 WARNING AREAS (FIGURE 3.1.G.4). IF REQUIRED, DUE TO THE PROXIMITY TO THE ATLANTIC OCEAN, UNCONSTRAINED SUPERSONIC FLIGHTS CAN BE CONDUCTED OVER OPEN OCEAN AREAS BEYOND THE WARNING AREAS' BOUNDARIES.**

F. Carl Raley	SA02	(301) 826-4221	9/28/94
Name	Code	Commercial Phone #	Date

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

Supersonic areas are located over water. The longest available leg is 250 nautical miles and is located 60nm to the east in the Warning area. A 120 nm area is available immediately adjacent to NAWCAD Patuxent River in its restricted areas. Width is bound by restricted area or warning area boundaries.

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

(Chesapeake Bay areas) - Yes. Sound focusing analysis is conducted prior to flight to optimize flight path requirements and atmospheric conditions. As such, the supersonic areas are flexible and change from day to day.

(Atlantic offshore areas) - No.

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

In-so-far-as DoD test and evaluation requirements for supersonic test flight is concerned, no significant limits on simultaneous supersonic test flights exist. The restricted (R) areas above NAWCAD Patuxent can handle two such events simultaneously and the off-shore warning areas provide virtually unlimited capability.

-3.2.B Airfield and Facility Characteristics (MV II) - Measure of Merit: *Extent of air vehicle infrastructure to support T&E operations.*

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

NAWCAD Patuxent River real property consists of 7,123 acres, including 6,513,288 square feet of facilities, of which 2,054 undeveloped acres are available for expansion with minimal constraints that would have any impact on the current mission.

RUNWAYS, TAXIWAYS, RAMPS/PARKING

Number, size, weight capacity

The Patuxent River airfield, with three runways, is capable of handling any size aircraft and provides a quick reaction capability. The site is capable of supporting in excess of 300 aircraft with approximately 1,791 acres of runways, taxiways, aircraft parking aprons and clear zones. The airport landing area consists of two primary runways and one utility runway numbered to the nearest ten degrees of magnetic direction with dimensions as follows:

Runway	Magnetic Heading	Threshold Elevation	Length/Width
2/20	018° 198°	38'/20'	5000'/150'
6/24	059° 239°	38'/20'	11800'/200'
14/32	136° 316°	27'/16'	9728'/200'

All taxiways are 100' wide except ALPHA, east of runway 6/24 which is 150' wide.

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The runway and taxiway pavement weight limitations listed below may be exceeded by 50% on an infrequent basis without seriously damaging the pavement. C-5A/B aircraft have twin delta landing gear (28 wheels) and can be allowed to taxi on the field wherever a dual tandem aircraft at maximum weight can taxi (subject to wing span limitations).

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Area	Single Wheel Gear		Dual Gear	Dual Tandem
	(150 PSI)	(400 PSI)		
6/24	126,000	105,000	188,000	340,000
14/32	147,000	121,000	222,000	398,000
2/20	102,000	84,000	159,000	316,000
Taxiway A West of Runway 6	147,000	113,000	226,000	339,000
East of Runway 6	105,000	82,000	198,000	332,000
Taxiway B	100,000	78,000	170,000	351,000
Taxiway C	104,000	88,000	170,000	351,000
Taxiway D	143,000	119,000	210,000	370,000
Taxiway E	78,000	65,000	122,000	255,000
H110 and 111 Apron	70,000	55,000	120,000	271,000
H101 and 109 Apron	68,000	52,000	110,000	267,000
H305 and 306 Apron	74,000	60,000	126,000	287,000
H144 Apron & Taxiway	147,000	147,000	225,000	445,000
H115 Apron	90,000	76,000	140,000	286,000
H201 Apron	105,000	80,000	160,000	309,000

The Patuxent River complex also possesses four primary helicopter landing areas.

In addition, Webster Field is an Outlying Landing Field (OLF) of Naval Air Station Patuxent River. Operation of the airspace at Webster Field is the responsibility of the Commanding Officer, Naval Air Station Patuxent River, and is exercised through the

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Total ramp area available for parking aircraft (in sq. ft.) at Patuxent River is: 4,646,802 sf.

Total hangar space available (in sq. ft.), excluding shop, maintenance, and instrumentation is: 745,968 sf.

Total apron space available for parking aircraft (in sq. ft.) at Patuxent River is: 4,646,802 sf.

The runway and taxiway pavement weight limitations listed below may be exceeded by 50% on an infrequent basis without seriously damaging the pavement. C-5A/B aircraft have twin delta landing gear (28 wheels) and can be allowed to taxi on the field wherever a dual tandem aircraft at maximum weight can taxi (subject to wing span limitations).

Area	Single Wheel Gear		Dual Gear	Dual Tandem
	(150 PSI)	(400 PSI)		
6/24	126,000	105,000	188,000	340,000
14/32	147,000	121,000	222,000	398,000
2/20	102,000	84,000	159,000	316,000
Taxiway A West of Runway 6	147,000	113,000	226,000	339,000
East of Runway 6	105,000	82,000	198,000	332,000
Taxiway B	100,000	78,000	170,000	351,000
Taxiway C	104,000	88,000	170,000	351,000
Taxiway D	143,000	119,000	210,000	370,000
Taxiway E	78,000	65,000	122,000	255,000
H110 and 111 Apron	70,000	55,000	120,000	271,000
H101 and 109 Apron	68,000	52,000	110,000	267,000
H305 and 306 Apron	74,000	60,000	126,000	287,000
H301 Apron	84,000	65,000	138,000	290,000
H144 Apron & Taxiway	147,000	147,000	225,000	445,000
H115 Apron	90,000	76,000	140,000	286,000
Aero Club Apron	60,000	47,000	96,000	251,000
H201 Apron	105,000	80,000	160,000	309,000

The Patuxent River complex also possesses four primary helicopter landing areas.

In addition, Webster Field is an Outlying Landing Field (OLF) of Naval Air Station Patuxent River. Operation of the airspace at Webster Field is the responsibility of the Commanding Officer, Naval Air Station Patuxent River, and is exercised through the

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TOTAL OF ALL APRON 4,723,555 SF

SEE BELOW FOR A BREAK DOWN OF APRON TOTALS

946,870	SF	HANGAR 110/111 APRON
1,218,420	SF	HANGAR 101/109/AOPS APRON
794,350	SF	HANGAR 305/306 APRON
N/A	SF	HANGAR 301
306,075	SF	HANGAR 144 APRON & TAXIWAY
645,450	SF	HANGAR 115 APRON
163,200	SF	VQ-4 APRON (2199)
260,625	SF	HANGAR 2133 APRON
388,565	SF	HANGAR 210 APRON
4,723,555	SF	TOTAL

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SUMMARY OF ALL HANGARS:

154,806	SF	ADMINISTRATIVE SPACE
174,585	SF	LAB SPACES
145,756	SF	SHOP SPACES
745,968	SF	HANGAR DECK SPACES
1,221,115	SF	TOTAL

SEE BELOW FOR A BREAK DOWN OF HANGAR TOTALS

HANGAR 101

1,366	SF	ADMINISTRATIVE SPACE
39,456	SF	LAB SPACES
597	SF	SHOP SPACES
65,520	SF	HANGAR DECK SPACES
106,939	SF	TOTAL

HANGAR 109

31,187	SF	ADMINISTRATIVE SPACE
0	SF	LAB SPACES
15,593	SF	SHOP SPACES
80,480	SF	HANGAR DECK SPACES
127,260	SF	TOTAL

HANGAR 110

16,737	SF	ADMINISTRATIVE SPACE
1,456	SF	LAB SPACES
27,696	SF	SHOP SPACES
81,600	SF	HANGAR DECK SPACES
127,489	SF	TOTAL

HANGAR 111

7,800	SF	ADMINISTRATIVE SPACE
38,112	SF	LAB SPACES
0	SF	SHOP SPACES
81,600	SF	HANGAR DECK SPACES
127,512	SF	TOTAL

HANGAR 115

22,401	SF	ADMINISTRATIVE SPACE
17,499	SF	LAB SPACES
13,946	SF	SHOP SPACES
80,480	SF	HANGAR DECK SPACES
134,326	SF	TOTAL

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HANGAR 144

0	SF	ADMINISTRATIVE SPACE
24,621	SF	LAB SPACES
0	SF	SHOP SPACES
45,000	SF	HANGAR DECK SPACES
69,621	SF	TOTAL

HANGAR 201

26,937	SF	ADMINISTRATIVE SPACE
5,737	SF	LAB SPACES
20,985	SF	SHOP SPACES
91,532	SF	HANGAR DECK SPACES
145,191	SF	TOTAL

HANGAR 305

19,185	SF	ADMINISTRATIVE SPACE
0	SF	LAB SPACES
26,475	SF	SHOP SPACES
81,600	SF	HANGAR DECK SPACES
127,260	SF	TOTAL

HANGAR 306

0	SF	ADMINISTRATIVE SPACE
9,390	SF	LAB SPACES
36,270	SF	SHOP SPACES
81,600	SF	HANGAR DECK SPACES
127,260	SF	TOTAL

HANGAR 2133

29,193	SF	ADMINISTRATIVE SPACE
38,314	SF	LAB SPACES
4,194	SF	SHOP SPACES
56,553	SF	HANGAR DECK SPACES
128,254	SF	TOTAL

Naval Air Station Air Operations Officer. Due to Crash, Fire, Rescue (CFR) services availability, operations at OLF Webster are normally limited to Category I aircraft (maximum gross weight under 10,000 lbs.). For operation of Category II aircraft (maximum gross weight 10,000 - 50,000 lbs.), 24 hours advance notice to the Air Operations Duty Office is required to coordinate additional CFR services. Specifics on the Webster Field runways is as follows:

Runway	Magnetic Heading	Threshold Elevation	Length/Width
7/25	066° 246°	12'/21'	5000'/150'
14/32	141° 321°	13'/19'	5000'/150'

All taxiways are asphalt and are 75' wide. All taxiways northeast of runway 14/32 are closed.

The weight limitations for the Webster Field area is as follows:

Area	Single Wheel Gear		Dual Gear	Dual Tandem
	(150 psi)	(400 psi)		
R 14/32	16,800	8,400	21,840	32,760
R 7/25	18,900	9,450	24,750	36,855
T 14/32	15,700	7,850	20,410	30,615
T 7/25	10,500	5,250	13,650	20,475
T 18/36	30,500	15,250	39,650	59,475

R = Runway
T = Taxiway

The Helo Pad at Webster Field is located on the northeast corner of the ramp in front of the Tower and is stressed to 50,000 pounds.

2. Specialties? (barriers, cables, etc.)

Emergency arresting/abort gear is installed on runways 6/24 and 14/32. Duty runway arresting

gear is rigged at all times unless NOTAMED otherwise. Optical Landing Systems (OLS) are also installed on runways 6/24 and 14/32. OLS glide slopes are set at 3.25 degrees on all runways. The intensity of the source and datum lights may be varied at the installations. Due to different touchdown points and glide slope settings, the Precision Approach Radar and the OLS glide slopes do not coincide.

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

Numerous divert airfields are located within the Naval Air Station Patuxent River flying area. The fields and relative bearing/distances are listed below:

FIELD	MAGNETIC BEARING/DIST FROM PATUXENT RIVER
Andrews	333/37
Langley AFB	185/72
Naval Air Station Norfolk	182/81
Naval Air Station Oceana	175/90
Webster OLF	180/10
Salisbury	093/43
Wallops Island	122/47
Dover AFB	049/68
MCAF Quantico	295/44

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

Naval Air Station Patuxent River is itself contained within R4007. The majority of Restricted Airspace/Working Areas are immediately adjacent to Naval Air Station Patuxent River. W108, W386 are located 60 miles to the east with easy hi/lo VFR/IFR ingress/egress.

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

The NAS Patuxent River airfield is located on a 7,123 acre peninsula between the Patuxent River and Chesapeake Bay. The airfield's three major runways, 02/20, 06/24, and 14/32, offer overwater approaches which not only present the mandatory sea level maritime environment but significantly enhance the safety of flight operations by virtually eliminating the need for overflights of populated areas. This unique airfield arrangement provides multiple hung ordnance approaches to several runways thus accommodating a wider variety of wind and weather conditions than is possible at other facilities. Because of this, NAS Patuxent River supports outside users such as the Maryland and DC National Guard A-10 and F-16 aircraft for hung ordnance landings.

The close proximity of the airfield to special use airspace allows immediate transition from the airfield pattern into the air vehicle and ordnance test areas with minimal transit time. The proximity to test airspace/target areas not only increases the productive time of each mission but enhances mission safety by providing readily available and straightforward emergency approaches back to the field.

The collocation of the runways, taxiways, and hangars on the airfield with the Chesapeake Test Range (CTR) and Telemetry Data System (TDS) allows seamless data capture and analysis for an entire aircraft test mission from start up to shut down. Highly accurate Time, Space, Position Information (TSPI) is provided by fixed site and mobile laser and video trackers for aircraft airfield performance and carrier suitability evaluations in parallel with telemetered data to provide efficient and accurate tests. Similarly, the collocation of the aircraft facilities and the engineering work stations at CTR and TDS permit the test engineers to rapidly transition from hands on hardware work to real time telemetry monitoring of flight operations thus increasing efficiency and reducing the manning requirements for flight test projects.

The NAS Patuxent River airfield incorporates an inground

catapult and arresting gear embedded in the approach end of runway 32 to take advantage of prevailing wind conditions. This location allows for realistic over water approaches at sea level conditions for shipboard testing build up and structural assessments as well as a valuable safety margin for catapult and arrested landing testing provided by the 10,000 foot runway. Additionally, the mix of runways available at the airfield allow for catapult and arresting gear work to take place in an undisturbed manner while simultaneous airfield operations are conducted on other runways.

The layout of the airfield's runways allow for aircraft testing under a wide variety of wind conditions and permits concurrent low speed and/or hover work with helicopters, VSTOL (AV-8B) and other rotary wing or special use aircraft along with tactical jet and maritime patrol/support fixed wing aircraft. Approximately 150 aircraft of 40 (fighter, attack electronic warfare, ASW, trainer, strategic communication, etc.) types are currently assigned to NAS Patuxent River including the V-22 Osprey tilt rotor aircraft. This unique ability to support such a wide mix of concurrent aircraft operations drove the selection of NAWCAD Patuxent River for the single site development of several aircraft programs including F-18, AV-8B, and V-22 as well as one of a kind test efforts involving lighter than air vehicles (blimps), gliders, and other unusual aircraft.

Unmanned Air Vehicles (UAV) operations are also supported as required at both NAS Patuxent River and at OLF Webster located 10 miles South. Safety/risk assessments have been performed for various UAV types for operations in the Webster Field operating area to enable tailoring of flight profiles to minimize collateral risk. Helicopter operations are supported at OLF Webster as well as night targeting and night lighting/night vision device assessments for both fixed wing and rotary wing aircraft. This night mission work takes advantage of reduced ambient lighting sources in the vicinity of OLF Webster and the specialized targets maintained there.

NAWCAD Patuxent River maintains eleven large hangars for aircraft maintenance, instrumentation installations, and specialized test activities. Additionally, an Aircraft Intermediate Maintenance Department (AIMD) is resident on site

to provide rapid turn around of Intermediate level maintenance items and aid in minimizing aircraft down time thus providing increased efficiency of operations and reduced costs. Other specialized support in place at NAS Patuxent River include a quality controlled fuel farm (100% verification of all incoming fuel deliveries) for storage of multiple types of fuels as required for the diverse testing activities at NAWCAD Patuxent River, a full service Naval Atlantic Meteorology and Oceanography Detachment with unique capabilities including a meteorological Satellite Receiver System and a Tactical Environment Support System, and numerous facilities equipped to handle and process classified programs up to those requiring special access. This last factor was a key to selection of NAWCAD Patuxent River for the single site development of the A-12 aircraft.

The airfield has recently undergone a major security upgrade (MILCON P-420) to incorporate modern electronic surveillance and access control equipment. These advances in island security combined with pre-existing perimeter fencing, roving patrols, the relatively isolated location of the airfield, and the NAS security response force combine to meet or exceed all physical security program requirements defined in OPNAVINST 5530.14B and are fully capably of responding to threat types 1-6. Analysis of the hostile attack threat to NAS Patuxent River has been rated as minimal by the Naval Criminal Investigative Service.

NAWCAD Patuxent River has 2,054 acres of undeveloped land still available for development without an adverse impact upon the facility's current mission. Excellent cooperation has been maintained with the local government which has resulted in one of the strictest and most supportive Air Installation Compatible Use Zones (AICUZ) ever enacted. The St. Mary's County Land Use Plan and zoning ordinances reflect the county's recognition of the importance of the facility to the surrounding community. No encroachment problems are envisioned due to the unique peninsula location, over water flight test activities, supportive county government, and sparsely populated rural surroundings which has encouraged transfer of other Naval Aviation Activities to NAS Patuxent River (NAWCAD Warminster, NAWCAD Trenton, and the Naval Air Systems Command). The high degree of efficiency currently supported by NAWCAD Patuxent River will

only be enhanced by consolidation of these activities into a single site.

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

No. There are no limitations that would affect test operations at NAWCAD Patuxent River for Department of the Navy aircraft. All known DoD aircraft could be accommodated at NAWCAD Patuxent River with the single exception of the B-52 due to its footprint loading.

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

Using the current base loading of various aircraft located at NAWCAD Patuxent River as defined in paragraph 3.2.C.8, the following additional aircraft can be supported. The numbers of aircraft address only hangar and ramp capacity with regard to aircraft parking and location.

AIRCRAFT SIZE	ADDITIONAL AIRCRAFT SUPPORTABLE
Fighter	144
Multi-Engine	62
Rotary Wing	250

R
R
R

Note: Each size aircraft total assumes no increase in other size aircraft. The number of additional aircraft supported is based on "surge capacity" (meaning aircraft will be parked utilizing every possible space with their wings swept back). Only one of the three aircraft listed under aircraft size can be accommodated at the same time with existing aircraft. R

Development, evaluation, and training are currently conducted at NAWCAD Patuxent River and OLF Webster Field for a large variety of UAVs. Additional UAVs and cruise missiles could easily be integrated into the complex without a definable limitation on their numbers.

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

Using the current base loading of various aircraft located at NAWCAD Patuxent River as defined in paragraph 3.2.C.8, the following additional aircraft can be supported. The numbers of aircraft address only hangar and ramp capacity with regard to aircraft parking and location.

AIRCRAFT SIZE	ADDITIONAL AIRCRAFT SUPPORTABLE
Fighter	152
Multi-Engine	58
Rotary Wing	166

Note: Each size aircraft total assumes no increase in other size aircraft.

Development, evaluation, and training are currently conducted at NAWCAD Patuxent River and OLF Webster Field for a large variety of UAVs. Additional UAVs and cruise missiles could easily be integrated into the complex without a definable limitation on their numbers.

-3.2.C Test Operations (MV II) - Measure of Merit: *Extent of T&E operations that the airspace can accommodate.*

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

NAWCAD Patuxent River has conducted operations in the full range of test and evaluation functional areas including air vehicles, electronic combat and armament/weapons. This has included the full spectrum aircraft test and evaluation capability for manned and unmanned fixed and rotary wing aircraft and all related mission and support systems. Tests performed in NAWCAD airspace have included the broadest scope of total air vehicle testing such as the F/A-18 Hornet, AV-8B Harrier, SH-60 LAMPS Mark III Helicopter Engineering and Manufacturing Development programs covering avionics, aerodynamic and missile separation test.

The breadth of air vehicle testing which has been supported at NAWCAD Patuxent River is all encompassing. The integration of contractor development efforts with government test requirements has demonstrated the capability to support a myriad of test types including the following examples:

TEST FUNCTION DISCIPLINES
Airworthiness
Flutter Testing
Engine Performance Testing
Stability and Control Testing
High Alpha Testing
Flying Qualities Performance and Evaluation
Aerial Refueling Testing
Structural Loads Testing
Structural Dynamics Evaluation
Landing Gear Brake Performance Testing
Automatic Flight Controls Testing
Engine Out and Air Start Testing

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
Threat signals are represented which match, equal or exceed any current open air range capability and/or any operational threat area. Maximum radar signal density is 6 million pulses per second; up to 250 communication/data link signals simultaneously plus 13 electro-optical type signals, all signals are taped and verified by NSA.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Up to 112 radar and/or communication threat signals are represented simultaneously with every parameter except effective radiated power accurately generated at radio frequency. Signal density is limited only by duty cycle of the transmitters. This system capability exceeded all DT&E requirements for the EA-6B ADVCAP and EP-3E programs.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
Yes. Land and sea threats can be simulated. Combined land/sea threats can be simulated. Accurate platform/emitter laydowns of all current DoD open air ranges have been completed and are used regularly.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Land, Sea and Air threat signatures (allowed by OPNAVINST 3430.21A) can be generated. Parameters are extracted from the emitter library.

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

[Air Combat Environment Test and Evaluation Facility (ACETEF)] Due to the extensive computer simulation capability residing in the ACETEF complex, any required geographic dispersion can be constructed in a controlled, simulated environment which is fully representative of actual land, sea, or combined land/sea threat signals.

[Electronic Warfare/Avionics Flight Test Facility (EW/AFTF)] Complete hardware emitter generation stations are located at two locations along the western shore of the Chesapeake Bay, one at Cedar Point and the other at Point Lookout, which provide a baseline geometry to radiate to the test aircraft flying in 2,400 square miles of controlled airspace over the radiating sites. This actual baseline is typically supplemented in three dimensions by inclusion of emitters installed on target vessels operating under positive range control procedures in the Chesapeake Bay. The geography of the Chesapeake Bay tidal area and Atlantic Ocean coastal environment, within the NAWCAD Patuxent River operating area, enhances the geometry of a land, sea or combined land/sea threat signal dispersion scenario.

-3.3.A.7.A Threat lay down?

[Air Combat Environment Test and Evaluation Facility (ACETEF)] The ACETEF computer simulation capability is robust enough to provide precise threat lay down scenarios for any required threat representation. They are representative of real layouts with realistic distances and altitudes.

[Electronic Warfare/Avionics Flight Test Facility (EW/AFTF)] The EW/AFTF provided a test and evaluation threat lay down scenario which meets all requirements to verify emitter/jammer performance from a technical perspective.

-3.3.A.7.B Representative distance?

[Air Combat Environment Test and Evaluation Facility (ACETEF)] Baseline representative distances for any required threat lay down can be precisely simulated by the ACETEF computer

systems.

[Electronic Warfare/Avionics Flight Test Facility (EW/AFTF)] The actual geographic separation of the two fixed-site hardware emitter generation stations at Cedar Point and Point Lookout is 16 nmi. The addition of supplemental moving target emitters located on target vessels operating within the NAWCAD Patuxent River controlled test range operating areas provides land, sea, and combined land/sea threat test scenarios that meet all test requirements to verify emitter/jammer performance from a technical perspective.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
The threats are moveable (dynamic). Since all threat emitter parameters are resident in libraries, they are easily relocatable to new scenarios. Dynamic movement of threats can be simulated to the system under test in both phase and amplitude.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Yes. The emitter generators are located at two fixed locations and on multiple target vessels operating within the NAWCAD Patuxent River controlled test range operating areas. The moving (dynamic) emitters provide the flexibility to construct representative test scenarios which will satisfy all test requirements for verification of aircraft emitter/jammer technical performance.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
Yes. ACETEF laboratories are able to operate both independently to provide a stand alone test capability and integrated in with other local and remote facilities to provide a more complex test capability when required. 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 and seaborne assets has been accomplished using both tactical data links and test support data links.

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 local area communication 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 P-3 Avionics Test Laboratory. Examples include the ACETEF/ESTEL link to support aircraft interoperability with AEW aircraft; the ACETEF/Ships Ground Station/CTR to support the integration testing of the SH-60B LAMPS EW and ASW integration with the FFG and DD class ships; and the ACETEF/CTR to provide pre-flight training for RCS flight testing; SGS/Wallops to support multi-ship LAMPS testing. Other efforts have include participation in ACETEF/REDCAP integrations, WARBREAKER, Synthetic theater of War - Europe, MDT-2 exercises. Threat capabilities at these sites are reflected into the ACETEF environment.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
No.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
Yes. Limitations include one aircraft in anechoic chamber, seven aircraft in the shielded hangar and four aircraft on the ramp.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Yes. Airspace restrictions and the number of TSPI radars available limit the number of simultaneous users. The actual number depends on the assets required by each user.

3.3.B Test Article Support (MV II) - Measure of Merit: *Extent to which test support satisfies weapon system test requirements.*

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
The anechoic chamber is 100X60X40 and is capable of supporting tactical sized aircraft. The shielded hangar is 150X300X70 and is capable of handling all but C-5/C-17 sized aircraft.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
No. All aircraft are supported in-flight and controlled within 2400 sq miles of restricted airspace ranging from the surface to 80,000 feet.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
There is no limit to the number of countermeasures that can be evaluated. Refer to 3.3.A.10.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
There is no limit to the number or kinds of countermeasures that can be evaluated. Any number and combination of jammers, chaff, decoys, flares can be deployed.

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

ACETEF and the EW/AFTF combine to form complementary capabilities. While both share many RF signal generation capabilities, the EW/AFTF does not go beyond the millimeter wave frequency band. IR through UV signals that exist in free space exists because they are generated by aircraft and other natural/man-made sources. Therefore with target aircraft, FLIRS/IRST, EO sensors can and are evaluated in-flight at the EW/AFTF. Where ACETEF provides unique capabilities is in the area of missile warning sensors which may require a live missile to be launched towards the system under test. Here the combination of the ACETEF and the EW/AFTF provide for a near complete system test.

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
The range of spectra that can be tested and evaluated is from sonic to ultraviolet (10^0Hz to 10^{16}Hz).

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
The test spectra ranges from HF to millimeter wave (2 MHz to 35 GHz).

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]

The range of available spectra is from sonic to ultraviolet (10^0 Hz to 10^{16}Hz).

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]

All radiation is free space and must be controlled and coordinated through the Mid Atlantic Frequency Coordination office. Through close coordination with this office, frequency restrictions are minimized.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
ACETEF provides visible scene generation, multiple articulated black body sources for IRST/FLIR/MWS test requirements, and digital IR scene injection.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
No. Scene generation capability is not required nor applicable.

3.4 ARMAMENTS / WEAPONS

This functional area includes facilities involved in the testing of the weapons portion of a weapon system. In those cases where the weapon system is composed almost exclusively of the weapon, it may include system-level and platform integration testing. In other cases, it addresses just the weapon subsystem (e.g., guidance and control, propulsion, warheads, and airframe), while the testing of the weapon system's vehicle is in another functional area.

3.4.A Directed Energy (MV II) - Measure of Merit: *Extent to which the facility satisfies directed energy weapon system test requirements.*

This includes testing of all types of directed energy weapons.

TEST FUNCTION DISCIPLINES CONT'D
UAV Launch and Recovery System Testing
Installed Thrust Measurement
(Tactical Aircraft, UAVs)
Mass Property Measurement
(Heavy Aircraft, Tactical Aircraft, UAVs)
Flight Trainers/Simulator Evaluation
Air Data Calibration Testing
Ground Vibration Testing
Ship Suitability Testing
Automatic Carrier Landing Systems
Catapult
Arrested Landing
Helicopter Dynamic Interface
Ski Jump
Tethered Hover Testing
Aircraft Auxiliary Systems Testing
(Hydraulic, Electrical, Mechanical)
Environmental Control Systems Testing
In-Ground Effect Testing (various altitude)
Landing Systems Testing
Avionics Systems Integration
Systems Integration Testing
Aircraft to Environment
Aircraft to Low Observable
Sensor to Aircraft
Sensor to Core Avionics
Core Avionics to Controls and Displays
Software-Hardware
Armament
Antenna Pattern Measurement
(Ground/In-Flight)
Sensor Imaging/Resolution Testing
(Radar/EO/IR/Photo)
Anti-Submarine Warfare Testing
(Acoustics, Magnetics, Data Links)
Night Vision Testing
Avionics Testing

TEST FUNCTION DISCIPLINES CONT'D
Interfaces
Computer Resources (Hardware/Software)
Simulation
Helicopter Mission Systems
EW Testing
Comm/Navigation Interface
Offensive/Defensive Sensors
Aircrew Systems Evaluation
Electro Optical
Stores Management
Aircraft Sensor Integration
Mission Planning System
Command and Control Systems Testing
Supportability
Deployment Tactics Developmental Testing
Electromagnetic Environmental Effects Testing
(ECM, EMI, EMP, TEMPEST, EMV, HERO, Lightning)
Reliability and Maintainability Testing
Integrated Logistics Support Testing
Helicopter Rotor Downwash Testing
Interoperability Testing
Inter-Service
Intra-Service
Inter-Subsystem
Ground Support Systems Testing
Documentation Validation
Environmental
Adverse Weather Testing
Signature Measurement (Acoustic/RCS/IR)
Ground
In-Flight
Subsystem Testing
Airborne Icing Testing
Stores Integration
Stores Integration Testing
Stores Compatibility Testing

TEST FUNCTION DISCIPLINES CONT'D
Bombing Accuracy Testing
Air-To-Ground Gunnery Testing
UAV Payload Testing
Aerial Load Delivery Testing
Air Transportability Testing
External Cargo/Hoist Testing
Rotary Wing Air-to-Air Weapons Testing
Other
Human Factors Testing
Aircrew and Aircraft Interfaces
Survivability/Vulnerability Testing
Air Transportability Testing
Escape Systems Testing
Terrain Following Testing
Nap of Earth (NOE) Flight Testing

The overland airspace we use in Maine and Florida can support Tomahawk cruise missile testing. A typical test will include objectives covering every aspect of the missile system from operator human factors, fire control system, software and hardware, to the missile itself. The Maine instrument route was established to provide a cold weather testing environment.

The overwater airspace is used to test the anti-ship cruise missiles, Tomahawk and Harpoon. These, as described before, are located in the VACAPES area and at the Atlantic Fleet Weapons Training Facility. Again, these tests are end-to-end full systems tests.

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

Yes. Aircrew flying cockpit simulators in ACETEF's Manned Flight Simulator can prefly test points for the Patuxent River area, NAWS China Lake area, and the Nellis Air Force Base area. In addition, a real-time link exists between the Chesapeake Test Range Operations Center and ACETEF facilities to provide mission rehearsal for the extended test team including air space controllers and test coordinators when appropriate.

ACETEF's Manned Flight Simulator has four high fidelity simulation stations--a 6 DOF motion base, 40 ft visual dome, and 2 65 degree by 180 degree visual stations. Current high fidelity cockpits exist for the F/A-18A, V-22, F-14, and AH-1W and can be used in any station. In addition, a medium fidelity Multi-Reconfigurable Cockpit (MRC) is available for those projects which do not need a high fidelity cockpit. For projects where lower fidelity crew stations and visuals are needed, eight workstation-based mini-crewstations are available to support projects. All cockpits and crewstations can be interfaced with remote locations and ACETEF's combat environment.

The Rotary Wing Ship Ground Station (SGS) maintains an extensive network of data link antennas located at key test sites around the NAWCAD Patuxent River complex including the primary helicopter maintenance/test hangar, the ACETEF, and operational Air Test and Evaluation Squadron ONE (VX-1). LAMPS MK III ASW helicopters can connect to these antennas and link reliably to the SGS simulation/combat direction system equipment to conduct specialized ground checkouts of the entire ship/air weapons system. Using the versatile AN/SQQ-89 on-board acoustic trainer system, the SGS can feed extremely realistic flight simulations to the helicopter aircrews sitting in the aircraft (on the ground or in the air) to rehearse test scenarios or pre-flight the aircraft sensor equipment.

-3.2.C.3 What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

Fixed wing, rotary wing, and UAV platforms (manned and unmanned) can be supported at NAWCAD Patuxent River. Listed below are the current aircraft that are located at NAWCAD .

T&E AIRCAFT	
F/A-18A	6
F/A-18B	4
F/A-18C	4
F/A-18D	4
F-14A	3
F-14B	1
F-14D	2
T/AV-8	4
EA-6B	4
E-6A	1
A/NA-6E	4
E-2C	3
S-3A/B	4
P-3B/C	6
UP-3A	3
T/NT-34	2
C-28A	2
UC-12	1
C-2A	1
TH-57C	2
AH-1W/J/N	5
SH-60B/F	6
SH-3D/H	5
SH-2F/G	2
M/CH-53	3
CH-46E	2
T-2C	2
F/A-18C (Kuwait)	1
T-45 (McAir)	2
V-22 (Bell-Boeing)	2
Total	92

USN TPS AIRCRAFT	
TA-4J	4
FA-18B	4
OH-58A	4
OH-6B	6
SH-60B	1
UH-60A	3
T-2C	6
T-38A	4
T-38B	2
NU-1B	1
U-6A	2
U-21A	3
X-26A	2
Total	42

TENANT ACTIVITY AIRCRAFT	
VX-1:	
P-3C	3
SH-60B/F	5
E/S-3A/B	3
Total	11

Flight operations that combine RDT&E, OT, and Test Pilot School activity average over 100 flights daily. Simultaneous airspace use of any mix of the above listed vehicles takes place at NAWCAD on a daily basis.

***Additionally, there are 16 exdrone-variant unmanned aerial vehicles used for development/test and evaluation.**

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

No. NAWCAD Patuxent River has demonstrated the capability to perform integrated flight operations involving fixed wing, rotary wing, and unmanned aerial vehicles (manned and unmanned).

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

-ASW/ASUW
-RECCE (Reconnaissance)
-Air-to-Air
-Air-to-Ground
-Refueling
-SAR (Search and Rescue)
-Insertion/Extraction
-Command, Control and Communications
-Logistics Support
-Special Warfare
-Systems Interoperability
-Mobile In-Shore Undersea Warfare
-Electronic Warfare

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

Twelve simultaneous test missions that require telemetry can be supported.

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

An average flying day at NAWCAD has approximately 130 flight events scheduled. A typical flight schedule would include twenty-five sorties dedicated to tactical high performance and fifteen maritime aircraft test flights utilizing the inner range adjacent to NAS Patuxent and the outer range, W108/386 etc. A portion of the twenty-five high performance sorties would be dedicated to our unique carrier suitability testing using the catapult, arrested landing facility, and ACLS facility located on the airfield. Approximately forty rotary wing sorties occur concurrently in the Northwest Operating area and Webster OLF. The remaining sorties represent Test Pilot School and operational tenant commands. Usage of the airspace by agencies not located at NAS Patuxent River contribute events above and beyond the previously mentioned 130. There are no statistics available that accurately account for "outside user activity". These 130 events represent a mixture of all types of aircraft discussed in paragraphs 3.2.C.8. It is not uncommon to have twenty-five NAWCAD aircraft airborne simultaneously. The present level of effort is driven by project dollar availability, not airspace and facility availability.

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

NAWCAD PATUXENT RIVER

AIRCRAFT

F/A-18A	6	
F/A-18B	4	
F/A-18C	4	
F/A-18D	4	
F-14A	3	
F-14B	1	
F-14D	2	
T/AV-8	4	
EA-6B	4	
E-6A	1	
A/NA-6E	4	
E-2C	3	
S-3A/B	4	
P-3B/C	6	
UP-3A	3	
T/NT-34	2	
C-28A	2	
UC-12	1	
C-2A	1	
TH-57C	2	
AH-1W/J/N	5	
SH-60B/F	6	
SH-3D/H	5	
SH-2F/G	2	
M/CH-53	3	
CH-46E	2	
T-2C	2	
F/A-18C	1	(Kuwait)
T-45A	2	(McAir)
V-22	2	(Bell-Boeing)
Total	91	

USN TPS

AIRCRAFT

TA-4J	4
FA-18B	4
OH-58A	4
OH-6B	6
SH-60B	1
UH-60A	3
T-2C	6
T-38A	4
T-38B	2
NU-1B	1
U-6A	2
U-21A	3
X-26A	2
Total	42

TENANT ACTIVITY

AIRCRAFT

VX-1:	
P-3C	3
SH-60B/F	5
E/S-3A/B	3
VQ-4:	
E-6A	2
NRL:	
E/RP-3A/B	6
VC6:	
Pioneer UAV	10
Total	29

Currently there is a total of 162 aircraft at this installation Additionally, there are 16 exdrone-variant unmanned aerial vehicles used for development/test and evaluation.

3.3 ELECTRONIC COMBAT

This functional area includes facilities involved in the testing of stand-alone electronic combat systems and electronic combat subsystems that are normally integrated into other weapon systems. It includes the testing of systems or subsystems that have as their primary mission threat warning, testing of systems that provide countermeasures in the RF (radio frequency) spectrum against radars and other RF sensors, systems that provide countermeasures that are used against sensors in the electro-optical or infrared spectrum as well as testing of electronic and C3 countermeasures.

3.3.A Threat Environment (MV I) - Measure of Merit: *Extent to which the capability satisfies weapon system requirements.*

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

Any known threat emitter signature can be simulated since the emitter simulators are completely programmable.

The ACETEF and Electronic Warfare/Avionics Flight Test Facility share common radio frequency emitter signature data bases that can be used to program the emitter signature generators at each facility. This ensures commonality between ground test data and flight test data. The data base consisting of approximately 8,000 radio frequency emitter signatures that are resident in emitter simulators are completely programmable allowing generation of any of these library emitters or any generic parameters. Additionally, the ACETEF contains a complete laboratory version of the I-15 simulator.

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

The ACETEF and Electronic Warfare/Avionics Flight Test Facility have different capabilities in this area basically due to their different physical implementations. The capabilities are listed as follows:

SIMULTANEOUS THREATS

OPEN LOOP
[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
Simultaneous open loop radio frequency (RF) Threats:

1024>Enhanced Tactical EW Environment Simulator (ETEWES)
1024>Advanced Tactical EW Environment Simulator (ATEWES)
32>Micro Tactical EW Environment Simulator (UTEWES)
1>Frequency Agile Signal Simulator (FASS)
4>Multiple EW Emitter Simulator (MEWES)
32>Communications Environment Simulator (CES)
4>Threat Data Link Simulator
1>ECM Technique Generator

2122 Total

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Simultaneous open loop RF signatures:

40 radar signatures from Cedar Point
64 radar signatures from Pt Lookout
20 communications signatures from Cedar Point
16 communications signatures from Pt Lookout

140 Total

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
Simultaneous open loop EO Threats:

8>Laser
4>UV
1>IR

13 Total

CLOSED LOOP
[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
Simultaneous closed loop RF Threats:

1>Surface to Air Weapon system (I15)
1>Early Warning/Acquisition system (EW/ACQ)
1>Identify Friend or Foe (IFF) system
4>HF/VHF/UHF tactical radio sets

7 Total

TYPE THREATS

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
Air to Air, Anti-Aircraft Artillery, Surface to Air Missile, Airborne Intercept, Surface to Surface Missile, Air To Surface Missile, Early Warning, Height Finder, Airborne Search and Bombing, Altimeter, Airborne Reconnaissance, Air Traffic, Beacon, Transponder, Battlefield Surveillance, Controlled Approach, Ground To Ship, Controlled Intercept (Air, Ground, and Ship), Coastal Surveillance, Decoy/Mimic, Data Transmission, Earth Surveillance, Fire Control, Gun Laying Beacon, Ground Mapping, Harbor Surveillance, Identification Friend or Foe, Instrument Landing System, Jamming (Noise, Pulsed, Spot), Missile Acquisition, Missile Down link, Meteorological, Multi-Function, Missile Homing, Missile Guidance, Missile Tracking, Navigation, Instrumentation, Range Only, Radiosonde, Sonobouy, Space, Surface Search, Shell Tracking, Target Acquisition, Target Illumination, Target Tracking.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Early Warning, Acquisition, Fire Control, Guidance, Navigation, IFF, Target Tracking and Target Illumination.

MAXIMUM SIGNAL DENSITY
[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
6 million RF pulses per second.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Signal density is limited only by the duty cycle of the transmitters as follows:
15 Traveling Wave Tube Amplifier's (TWTA) at 6% Duty Cycle
11 TWTA's operating CW
6 Magnetrons at .032% Duty Cycle

MAXIMUM POWER LEVEL
[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
+25 dBm.

Most simulators have standard output of +25 dBm, however all systems can be amplified.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Magnetrons - 128 dBm Effective Radiated Power (ERP)
Pulse TWTA's - 105 dBm ERP
CW TWTA's - 98 dBm ERP

BANDS
[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
HF, VHF, A, B, C, D, E, F, G, H, I, J, K, L
0.5 - 10.6 microns laser

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
HF, VHF, UHF, D, E, F, G, H, I, J, K

RADIATED OR INJECTED

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]

Threats may be radiated or injected.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]

All Radiation is Free Space.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
The Surface to Air Weapon System (I15), Communications Environment Simulator (CES), and EW/ACQ have been validated through the Crossbow Simval Office. The ATEWES, ETEWES, and UTEWES validations are being studied by CROSSBOW. Specific emitters from all RF simulators have been validated by NSA. UV signatures are based upon live fire missile plume data which have not been specifically validated by an external agent.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Signals generated by the ACETEF and the EW/Avionics Flight Test Facility are generally common where allowed by OPNAVINST 3430.21A. The emitter library was built and is maintained through various intelligence data bases including Kilting, EWIR, EPL, etc. Additionally, a sampling of the emitter signatures held in the library have been validated by NSA.

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

The open and closed loop testing in the ACETEF and the open loop signal radiation and measurement capabilities at the EW/AFTF allows for the majority of required EW integration testing (less final phase, free-space jammer effectiveness testing) in an environment where fixes can be implemented in a cost effective manner before final phases of DT and OT. This Closed Loop and Open Loop testing approaches coupled with the existing Electromagnetic Environmental Effects, Carrier Suitability, In-flight Measurement (direction of arrival, radar cross section, jam to signal ratio, chaff), Human Factors evaluation, and other avionics test capabilities combine to represent a full spectrum T&E capability of integration EW systems into aircraft.

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)]
Yes. Open loop testing is conducted, both scripted and reactive.
Yes. Closed loop testing is also conducted.

[ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY (EW/AFTF)]
Yes. Open loop testing is conducted. No reactive or closed loop testing is performed.

3.4.B Rocket / Missile / Bomb Systems (MV II) - Measure of Merit: *Extent capability satisfies weapon system test requirements.*

This includes the testing of all types of rocket, missile, and bomb systems at the system/subsystem/component level, both stand alone and integrated into the launch platform. This includes testing of air-to-air, air-to-surface, and surface-to-air missiles.

NAWCAD Patuxent River conducts aircraft integration of rockets missiles and bomb systems testing as part of its air vehicle test and evaluation including air-to-air and air-to-surface missiles.

-3.4.B.1 Ground Space

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

AREA	NUMBER OF SQUARE MILES
R-4005N	113
R-4005S	110
R-6609	120
R-4002	39.6
W-108A/B/C	2972.5
W-386A/B/C/D/E	6612.1
W-387A/B	2254
W-72A/B	16276.65
W-110	2170
W-122A/B/C/D/E/F/G/H/I/J	19699.1
W-107A/B/C/D/E	6318.48
W-106A/B	1558.62
W-105A/B/C/D/E/F	11852.04
TOTAL SQUARE MILES	70337.09

Note: Approximately 90% of the above listed area is over water (Chesapeake Bay or Atlantic Ocean).

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

Revised pg

N00421

-3.4.B.1 Ground Space

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

AREA	NUMBER OF SQUARE MILES	
R-4005N	113	
R-4005S	110	
R-6609	120	
R-4002	39.6	
W-108A/B/C	2972.5	
W-386A/B/C/D/E	6612.1	
W-387A/B	2254	
W-72A/B	16276.65	
W-110	2170	
W-122A/B/C/D/E/F/G/H/I/J	19699.1	
W-107A/B/C/D/E	6318.48	
W-106A/B	1558.62	
W-105A/B/C/D/E/F	8686.1	R
TOTAL SQUARE MILES	67171.15	R

Note: Approximately 90% of the above listed area is over water (Chesapeake Bay or Atlantic Ocean).

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

Revised pg

N00421

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

AREA	ACRES
R-4002	25344
W-108A	784179.2
W-108B	1118208
W-386A	1418784
W-386B	2376960
W-386C/D	436000
W-386E	154240
W-387A/B	1442560
W-72A	3491840
W-72B	6925216
W-110	1388800
W-122A	917440
W-122B	1268800
W-122C	1952000
W-122D/E	446080
W-122F	1626880
W-122G	1309440
W-122H	842240
W-122I	2230016
W-122J	1951168
W-106A	311430.4
W-106B	217753.6
W-107A	2575360
W-107B	389888
W-107C	403200
W-107D	544819.2
W-107E	130560
W-105A	4073116
W-105B	779760
W-105C/D	611200
W-105E/F	95040
TOTAL ACRES FOR ALL AREAS	42238322

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THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

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

AREA	ACRES
R-4002	25344
W-108A	784179.2
W-108B	1118208
W-386A	1418784
W-386B	2376960
W-386C/D	436000
W-386E	154240
W-387A/B	1442560
W-72A	3491840
W-72B	6925216
W-110	1388800
W-122A	917440
W-122B	1268800
W-122C	1952000
W-122D/E	446080
W-122F	1626880
W-122G	1309440
W-122H	842240
W-122I	2230016
W-122J	1951168
W-106A	311430.4
W-106B	217753.6
W-107A	2575360
W-107B	389888
W-107C	403200
W-107D	544819.2
W-107E	130560
W-105A	59860224
W-105B	779760
W-105C/D	611200
W-105E/F	95040
TOTAL ACRES FOR ALL AREAS	98025430.4

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

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

Weapons ranges up to 500 nautical miles can be tested using the available test facilities and associated tracking capabilities of the Chesapeake Test Range. This allows testing of the following classes of weapons, including missiles, rockets, or guided bomb systems: unguided 2,000 pound-class ballistic weapons guided weapons, standoff weapons, short range missiles, and long range missiles.

Furthermore, if required existing extended tracking systems, such as MATS using relays and GPS, can increase this effective weapons testing range beyond 500 nautical miles (i.e., up to 900 nautical miles).

The following are the maximum required test ranges associated with the five categories of weapons shown in paragraph 3.4.B.2.A. All of the listed maximum ranges were derived from NAWCAD Patuxent River historical data of weapons systems tests conducted on both the inner and offshore range areas.

- **Unguided 2000 pound-class ballistic weapons (Mk-80 series weapons) 10 nm**
- **Guided weapons (GBU series weapons) 20 nm**
- **Standoff weapons (AGM-65, Penguin) 35 nm**
- **Short range missile (AIM-9) 30 nm**
- **Long range missile (SM-2 series weapons, AIM-54) 150 nm**

Tests involving the release or firing of unguided weapons with associated hazard patterns less than 10 nm can be accommodated in our inner Chesapeake Range operating area. Tests requiring larger hazard patterns for guided weapons can

be accommodated in our offshore Atlantic test range area.

THE COMPLETE RESPONSE TO THIS QUESTION FOR ALL OF THE INDIVIDUAL NAWCAD PATUXENT RIVER FACILITIES IS CONTAINED IN THE SUBSEQUENT SECTIONS FOR INTEGRATION LABORATORIES, MEASUREMENT FACILITIES, HARDWARE-IN-THE-LOOP FACILITIES, INSTALLED SYSTEM TEST FACILITIES, OPEN AIR RANGE AND MISSION SUPPORT FACILITIES.

3.4.B.2 Test Operations

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

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

FY92. 166 flights were completed for inert unguided 2000 pound-class ballistic weapons.

FY93. 182 flights were completed for inert unguided 2000 pound-class ballistic weapons.

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FY93. 44 flights were completed for inert GBU-24 class.

No AGM-130 class flights were scheduled for FY92 or FY93.

Outer Range:
FY92. 4 AIM-9 flights were completed at 10,000 - 15,000 ft

FY93. 3 AGM-62 flights were completed at 5,000 ft. R
3 ITALD flights were completed at 20,000 ft.

FY92. 6 SM-2 launches were fired against a VANDAL target successfully below 5,000 ft.

FY93. 6 SM-2 launches were fired against a VANDAL target successfully below 5,000 ft.

Also, during FY92 and FY93, 12 Tomahawk Cruise Missile Operational Test Launch missions were conducted on the East Coast. Missions were launched open ocean in the North Puerto Rico Opareas, the Gulf of Mexico, in the VACAPES Warning Areas (W-72), and the Atlantic Ocean east of Cape Cod, MA. All Tomahawk test missiles contain a special instrumentation section (Recovery Exercise Module - REM) which provides real-time missile health and guidance telemetry data, a recovery parachute, and flight termination capability. The flight termination, Range Safety Command (RSC), system also provides the capability to manually override the missile guidance set and fly the missile like a drone. The RSC system, initiated by chase aircraft crew flying formation with the missile, provides a much reduced hazard pattern compared to a non-RSC equipped missile. For Tomahawk Land Attack Missiles (TLAM) and Tomahawk Anti-Ship Missiles (TASM) equipped with an RSC system, the hazard pattern during flight is a 1nm radius semicircle, oriented down-range (in the direction of flight) centered on the nose of the missile and is dynamic, i.e. moves down-range with missile flight. Additionally, TASMs have a 25nm radius circle hazard pattern centered on the target.

During FY92 and FY93, NAWCAD Patuxent River supported planning and conduct for 6 HARM (AGM-88) and 11 Harpoon (AGM/RGM/UGM-84) missile Fleet Open Ocean Mobile Sea Range

FY93. 44 flights were completed for inert GBU-24 class.

No AGM-130 class flights were scheduled for FY92 or FY93.

Outer Range:
FY92. 4 AIM-9 flights were completed at 10,000 - 15,000 ft

FY93. 3 AIM-9 flights were completed at 5,000 ft.
3 ITALD flights were completed at 20,000 ft.

FY92. 6 SM-2 launches were fired against a VANDAL target successfully below 5,000 ft.

FY93. 6 SM-2 launches were fired against a VANDAL target successfully below 5,000 ft.

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During FY92 and FY93, NAWCAD Patuxent River supported planning and conduct for 6 HARM (AGM-88) and 11 Harpoon (AGM/RGM/UGM-84) missile Fleet Open Ocean Mobile Sea Range

exercise launches. Prior to the actual live fire, personnel monitor the surveillance and clearance of the exercise area. Hazard pattern for HARM live fire is a 60nm radius circle centered on the target, which must be clear of all surface contacts. Harpoon missiles launched during live fire are configured with flight termination capability, giving them a much reduced hazard pattern compared to a tactical round. The NAWCAD Navy Test Conductor operates the Harpoon flight termination system and relies on real-time missile health and guidance telemetry data as well as chase aircraft crew comments. The Harpoon reduced hazard pattern with flight termination capability is roughly approximated by an isosceles triangle with the apex centered on the launch platform, expanding in the direction toward the target, and extends 15nm beyond the target.

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

Yes. Flight termination systems were required on the Vandal, Harpoon and cruise missile exercises.

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

No support was required in the standoff weapons category.

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

No. During FY92 one scheduled Vandal mission in the offshore warning area was postponed due to temporary encroachment into the large safety footprint. This mission was successfully completed the next day.

TEST AND EVALUATION TEST FACILITY CATEGORY

Digital Modeling and Simulation (DMS)

The use of DMS has grown exponentially at Patuxent River since the late 1970's and forms one cornerstone of our T&E triad of simulation/stimulation, test analyze and fix efforts and flight test. DMS driven ground and flight testing now accounts for over 60% of our T&E efforts. DMS is used extensively in all our hardware in the loop/integration laboratories, in our Air Combat Test and Evaluation Facility (ACETEF) installed systems test facility as well as our Chesapeake Test Range (CTR), especially in the Electronic Combat portion. Other facilities at Patuxent River that provide extensive DMS capabilities include the Ships Ground Station (SGS), the Acoustic Test Facility, various avionics labs, and the E-2C Simulation Test and Evaluation Lab (ESTEL). ACETEF is the recognized world leader in DMS for aircraft installed systems integration and test. Patuxent River has modified the Tactical Air Command (TAC) Suppressor wargaming simulation to run in real-time in ACETEF called the Simulated Warfare Environment Generator (SWEG). It also incorporates the Enhanced Surface to Air Missile Simulations (E-SAMS) and TAC-BRAWLER (air to air combat) simulations for enhanced T&E and to support advanced concept studies and analyses, and Cost and Operational Effectiveness Analyses (COEA). DMS utilized at Patuxent River includes aircraft models, systems models, threat models, electronic combat models, aircraft capable ship models, command and control models, earth, atmospherics, electromagnetic etc.

Components of the ACETEF such as the Manned Flight Simulator (MFS) models the aircraft to simulate its flying qualities and capabilities. These capabilities are used to perform pre-flight testing where critical and dangerous flight conditions maybe found in the test regime to enhance the safety of flight for the test program. Additionally the facility provides these simulations to support the flight control computer software support activity for the F/A-18 digital flight control computer and the development of the F-14 digital flight control computer system. MFS has also been used in several efforts to perform accident

investigations, isolating the causes and providing the means of avoiding future repetitions.

DMS facilities at Patuxent River operate either singly, linked internally, and linked externally. Internal linkages include the ACETEF/SGS to support the SH-60B helo/ship integration efforts, the ACETEF/CTR link to provide enhanced training for the conduct of radar cross section flight test, the ACETEF/ESTEL to support aircraft data link integration with the E-2C airplane. External integration's have included the ACETEF/Real-time Electromagnetic Digitally Controlled Analyzer Processor (REDCAP) demonstration to provide enhanced threat command and control simulations, participation in the WARBREAKER exercises, participation in the Multi-Service Distributed Training Test Bed (MDTT) effort. These efforts have been accomplished using secure, encrypted digital data links. Locations linked to have included: REDCAP, Buffalo, NY., Pt. Mugu, China Lake, Ft Rucker, Edwards Air Force Base, Grumman Aerospace, Rockwell International, Loral Systems, actual combatants (DDG-51 at Bath, Me., live ships in the Chesapeake Bay (FFG-7, DD-963), and facilities/ships in the Norfolk/Dam Neck, Va. area).

Specific descriptions of NAWCAD Patuxent River DMS capabilities are contained throughout all of the remaining five test facilities.

INTEGRATION LABORATORIES

SECTION 2: CAPACITY & TECHNICAL RESOURCES

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

2.1 WORKLOAD

Annual workload will be reported in units as follows: for open air ranges involving flight testing, report test hours and missions. For all other T&E facilities direct labor hours and test hours must be reported; if available, missions must be reported. If an estimation of test hours based on direct labor hours is necessary, refer to the instructions for Determination of Unconstrained Capacity on page 28.

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

See Appendix A, TABS 1 through 5.

2.1.B Forecasted Workload

-2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP. The Military Departments will provide total funding amounts appropriated for all PEs identified in each functional area shown above.

See Installation Response 2.1.B.1

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

See Appendix A, TABS 1 through 5.

2.2 UNCONSTRAINED CAPACITY

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

See Appendix A, TABS 1 through 5.

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

See Installation response 2.2.B.

2.3 TECHNICAL RESOURCES

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

Yes. See Installation Response 2.3.A.

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

[Airborne Strategic Communication Engineering and Test Facility- Appendix A, TAB 1]
Yes. Without this facility, test and evaluation and system engineering functions for Navy Airborne Strategic Communications (ASC) aircraft, avionics, and mission systems could not be adequately supported in a cost effective manner. This is a one-of-a-kind laboratory of E-6A Mission Avionics Systems, built to the manufacturer's (Boeing) specifications.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
Yes. Loss of this facility would eliminate the only U.S. Government laboratory designed to support T&E functions for the E-2C early warning aircraft.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Yes. Loss of this support center would eliminate the only U.S. Government Laboratory providing direct RDT&E support for multi-service and non-DoD (Coast Guard and Presidential Executive Transport) helicopters and their related avionics/sensor mission systems.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Yes. Without the Fixed Wing ASUW and ASW Lab, the Navy

would lose simulation/stimulation test support for the P-3 and S-3 aircraft as well as navigation system RDT&E support for all Navy aircraft.

The S-3 Avionics Test Portion of the Fixed Wing ASW/ASUW laboratory has communications, navigation, and acoustic capabilities which are imperative to testing weapons systems for the fleet in the wake of a shortage of genuine test assets. There is also the added capability in the laboratory to troubleshoot new equipment before it is placed on the aircraft to determine if it is defective and exactly where it is defective, saving installation dollars and time, but more importantly, the lives of the aircrew who would be put in danger by defective equipment.

The navigation laboratory, with its inertial pedestal and system test benches, is used for calibration and verification of proper operation and accuracy of all navigation systems currently used on Navy aircraft, prior to aircraft installation of those systems, as well as for preflight and postflight data reduction. Without this laboratory, these things would not be possible.

While the P-3/S-3 Transition Software Support Activity (TSSA) does not exist yet (operational date Aug '95), it is essential to provide our P-3 and S-3 program sponsors with continuous laboratory software development, implementation, testing and fleet problem solving capability throughout the NAWC realignment processes. If this facility does not come to fruition, there will be up to a fourteen month period where there will be no software support for P-3 operational programs, and up to a 4-6 month period of downtime for S-3 operational software, while NAWCAD Warminster transitions to Patuxent River. While this is not an immediate impact to the Patuxent River host installation, once Warminster shuts down, they become part of this host installation.

[BEARTRAP-Appendix A, TAB 5]
Yes. This facility provides preflight and postflight BEARTRAP-quality (precise and documented) aircraft equipment calibrations for other NAWCAD Patuxent River Flight Test Programs. BEARTRAP project personnel also provide fleet orientation and operator/maintenance training on the AN/ASQ-208 advanced digital MAD system and its associated data

recording suite.

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

[Airborne Strategic Communication Engineering and Test Facility- Appendix A, TAB 1]
Yes. Without this facility, Airborne Strategic Communications (ASC) engineering support for NADEP Jacksonville and T&E support to DISA could not be maintained.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
Yes. Without ESTEL, the Air Combat Environment Test and Evaluation Facility (ACETEF) command and control functions would have to be simulated, diluting the realism required to validate the utility of that facility. ESTEL provides for command control for the Blue Force in ACETEF simulated battle group scenarios. ESTEL provides actual E-2C hardware to track Red and Blue simulated forces and provides targeting information via voice and Link-4 to vector Blue Forces to their targets.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
The HMSSC provides linked ASW helicopter (SH-60B, SH-2G) data and encrypted communications support to the Navy Ship Ground Station for sustained engineering analysis, software debugging, and sensor performance measurements, system preflight and ship crew mission rehearsals.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Yes. Without the Fixed Wing ASUW and ASW Laboratories, both NAWCAD Patuxent River and NAWCAD Warminster Software Support Activity (SSA) missions will be significantly degraded.

If the TSSA in the fixed wing ASW/ASUW laboratory did not come to fruition, NAWCAD could not do any P-3 or S-3 software development or testing during the transition of the NAWCAD Warminster functions to NAWCAD Patuxent River.

[BEARTRAP-Appendix A, TAB 5]
Yes. This facility supports other NAWC activities as well as providing direct support to the fleet. Without this facility, support specific to the BEARTRAP program could not be provided to other facilities, or the fleet.

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

[Airborne Strategic Communication Engineering and Test Facility- Appendix A, TAB 1]
Yes. Without this facility, the Navy's ASC capability will be adversely affected, which will also affect the capability of other services to interact with Navy forces.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
Yes. Without the ESTEL, airborne early warning T&E requirements could not be supported.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
The HMSSC is the Navy's lead DT&E Laboratory for helicopter mission system performance measurement and sensor evaluation. These systems directly affect interoperability of ASW/ASUW helicopters with other ship air weapons systems.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Yes. Without the Fixed Wing ASUW and ASW Lab, the Navy would not be able to support navigation system RDT&E. Current RDT&E activities include inertial navigation systems, Global Positioning System, LORAN, and Omega navigation systems.

If the TSSA did not come to fruition, the fleet would have to live with the version of operational software in use at the time of Warminster's shutdown, and would not be able to get any fixes or improvements until after Warminster's SSA was back in operation at Patuxent River.

[BEARTRAP-Appendix A, TAB 5]
Yes. The fleet would not be able to support missions requiring BEARTRAP specific capabilities without a facility such as this to support installation, calibration and test.

SECTION 3: MEASURES OF MERIT

This section relates the measures of merit and the required data to the four criteria that have been established for Military Value. The four military value (MV) criteria are:

CRITERION 1: The current and future mission requirements and the impact on operational readiness of the Department of Defense's total force.

CRITERION 2: The availability and condition of land, facilities and associated airspace at both the existing and potential receiving locations.

CRITERION 3: The ability to accommodate contingency, mobilization, and future total force requirements at both the existing and potential receiving locations.

CRITERION 4: The cost and manpower implications.

3.1 OVER-ARCHING MEASURES OF MERIT

The over-arching measures of merit are listed with accompanying questions (or data requirements) intended to elicit standard information upon which the cross-service analyses can be based, and on which the Joint Cross-Service Groups can base their reviews of the Military Department analyses. Additional specific measures of merit are shown under individual functional areas. The numbers in parentheses () before each measure of merit indicate the BRAC selection criteria for military value.

3.1.A. Interconnectivity (MV I) - Measure of Merit: *Extent of linkage of this facility with other facilities and assessment of single-node failure potential.*

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

[Airborne Strategic Communication Engineering and Test Facility- Appendix A, TAB 1]
Approximately 2 percent of workload was involved in real-time exchange of data/control with one (or more) in-flight E-6A aircraft participating in JCS National Command Authority Communications exercises (external to NAWCAD Patuxent River site/non-simultaneous).

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
15 percent of workload was involved in real-time exchange of data with the ACETEF Facility Operations Control Center (OCC) (internal to NAWCAD Patuxent River site/non-simultaneous).

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Approximately 10% of test operations (approximately 35-40 events per year) involved interconnectivity with the Chesapeake Test Range and Ship Ground Station (both internal to NAWCAD Patuxent River site) and in-flight helicopters conducting tests (external to NAWCAD Patuxent River site). These linkages can all be accomplished simultaneously.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Approximately 5% of test operations involve the real-time linkage of sonobuoy radio frequency and acoustic information to the Ship Ground Station, Helicopter Mission Systems Support Center and Air Combat Environment Test and Evaluation Facilities for Aircraft Sensor Performance Measurements. These transmissions are internal to the NAWCAD Patuxent River installation and can be accomplished simultaneously to all three functions.

[BEARTRAP-Appendix A, TAB 5]
0%.

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

[Airborne Strategic Communication Engineering and Test Facility- Appendix A, TAB 1]
Yes. This facility conducts engineering work for NADEP Jacksonville and provides test and evaluation support to DISA. If it were closed, this support would not be available to them.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
Yes. E-2C Systems Test and Evaluation Lab (ESTEL) provides for command and control for the Blue Force in ACETEF simulated battle group scenarios. ESTEL provides actual E-2C aircraft hardware to track Red and Blue simulated forces and provides targeting information via voice and Link-4 data links to vector Blue Forces to their targets. Without ESTEL the ACETEF command and control functions would have to be simulated, diluting the realism required to validate the utility of their facility.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Yes. Some impact to the Ship Ground Station facility at Patuxent River would result because the Helicopter Mission Systems Support Center provides sonobuoy (simulated) acoustic audio via RF link and navigation/tactical plot data via the ASN-123A/150A tactical navigation data links. The Ship Ground Station would need to obtain these services elsewhere or upgrade their own capability if they were to avoid impact.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Yes. The HMSSC and SGS facilities exchange/transfer of acoustic data would be impacted.

[BEARTRAP-Appendix A, TAB 5]
No.

3.1.B Facility Condition (MV II) - Measure of merit: *Current and planned status of the T&E facilities for supporting assigned test missions.*

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

See Appendix A, Tabs 1-5

3.1.C Environmental and Encroachment Carrying Capacity (MV II) - Measure of Merit: *Extent of current and future potential environmental and encroachment impacts on air, land, and sea space for testing.*

See Installation Response 3.1.C.

3.1.D Specialized Test Support Facilities and Targets (MV I) - Measure of Merit: *Extent to which specialized test support facilities and targets are available.*

See Installation Response 3.1.D.

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

3.1.E Expandability (MV III) - Measure of Merit: *Extent to which an installation/facility is able to expand to accommodate additional workload or new missions.*

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

[Airborne Strategic Communication Engineering and Test Facility-Appendix A, TAB 1]
No.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
No.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Yes. The Helicopter Mission Systems Support Center is capable of providing developmental and test support for various aircraft and other platforms or vehicles and its function could easily be expanded, if required. The Helicopter Mission Systems Support Center configuration is updated as needed/funded for sponsor/customer support of current projects.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
No.

[BEARTRAP-Appendix A, TAB 5]
Yes. BEARTRAP test/calibration equipment can be upgraded with additional memory and processor modules which would enhance output productivity.

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

[Airborne Strategic Communication Engineering and Test Facility-Appendix A, TAB 1]
Yes. E-6B Air Vehicle, Software, Mission Avionics Integration, Special Monitoring and In-Service Engineering.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
No.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Yes The Helicopter Mission Systems Support Center could support test and evaluation, software analysis, DE, and IE for commercial and other government agencies, if required.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Yes. Different acoustic processors could be tested/evaluated if they were made available.

[BEARTRAP-Appendix A, TAB 5]

Yes. Project BEARTRAP equipment and technical expertise are adaptable to new workload in the following test types: System engineering, design, development and equipment integration/installation.

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

Yes. See Installation Response. 3.1.E.2

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

[Airborne Strategic Communication Engineering and Test Facility-Appendix A, TAB 1]
Yes. TOP SECRET.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
Yes. SECRET.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Yes. SECRET. The Helicopter Mission Systems Support Center is specially equipped to support secure operations and maintains an approved strong room which facilitates secure ADP computer systems (SECRET, upgradable to TOP SECRET with 30 days lead-time) and material storage to the TOP SECRET level. STU III provisions support secure voice and Fax requirements. Ground-to-aircraft radio communications systems are installed which operate at the SECRET level.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Yes. SECRET.

[BEARTRAP-Appendix A, TAB 5]
Yes. SECRET.

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

[Airborne Strategic Communication Engineering and Test Facility-Appendix A, TAB 1]
Yes. BRAC 91 adding 6,000 + square feet for addition/consolidation of Warminster R&D group.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
Yes. Link-16 data link capability is being added.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Yes. Acquisition and implementation of communications test equipment in support of ground and flight tests of helicopter integrated communications systems installed in the VH-60N and VH-3D Executive Transport Helicopters. Upgrade of existing computer resources to support ground, real-time, and post flight data reduction and analysis of helicopter test data in direct support of the LAMPS SH-60R and VH-60N/VH-3D Executive Transport helicopters. Complete details of these upgrades are included on the "facility condition" form in Appendix A, TAB 3.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Yes. The P-3/S-3 Transitional SSA is in the planning stages and is scheduled to be operational by August 95. It is being established as a result of the BRAC 91 decision to relocate the Warminster RDT&E facilities to Patuxent River. Its purpose is to provide continuous support of all P-3 and S-3 aircraft software development and maintenance during the transition of the Warminster software support activities to NAWCAD Patuxent River.

[BEARTRAP-Appendix A, TAB 5]
No.

3.1.F Uniqueness (MV I) - Measure of Merit: *Extent to which the facility is one-of-a kind.*

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

[Airborne Strategic Communication Engineering and Test Facility-Appendix A, TAB 1]
Yes. Includes the E-6A Mission Avionics System built to manufacturers' (Boeing) specifications. An actual E-6A aircraft is the only other comparable asset but they are of limited availability and typically not suitable or configured for T&E and systems engineering support.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
Yes. Only Navy E-2C Laboratory designed to support comprehensive test and evaluation functions.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Yes. The Helicopter Mission Systems Support Center is a specialized facility supporting a wide range of helicopter-unique mission systems avionics. There is no comparable facility anywhere else in the DoD (This facility supports all DoD helicopter customers).

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
No.

[BEARTRAP-Appendix A, TAB 5]
No.

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

[Airborne Strategic Communication Engineering and Test Facility-Appendix A, TAB 1]
Yes. E-6A Mission Avionics System built to manufacturers' (Boeing) specifications. An actual E-6A aircraft is the only other comparable asset.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
Yes. No other E-2C test and evaluation laboratory exists in the Government.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Yes. The HMSSC is a specialized facility supporting a wide range of helicopter-unique mission systems avionics. There is no comparable facility anywhere in the U.S. Government (This facility supports both DoD and non-DoD helicopter customers).

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
No.

[BEARTRAP-Appendix A, TAB 5]
No.

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

[Airborne Strategic Communication Engineering and Test Facility-Appendix A, TAB 1]
Yes. E-6A Mission Avionics System built to manufacturers' (Boeing) specifications. An actual E-6A aircraft is the only other comparable asset.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
No. Grumman Aerospace Systems Division has a similar facility dedicated to corporate research and development.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Yes. The HMSSC is a specialized facility supporting a wide range of helicopter-unique mission systems avionics. There is no comparable facility anywhere within the U.S. (this facility supports DoD, other government, and Foreign Military Sales helicopter customers).

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
No.

[BEARTRAP-Appendix A, TAB 5]
No.

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

[Airborne Strategic Communication Engineering and Test Facility-Appendix A, TAB 1]
Yes. FY94 2% DISA.

[E-2C Systems Test and Evaluation Lab-Appendix A, TAB 2]
No.

[Helicopter Mission Systems Support Center-Appendix A, TAB 3]
Currently, no. However, in the past, the Helicopter Mission Systems Support Center has supported transient test teams (hosted for 1-3 months typically) working on helicopter avionics related developmental testing for the Army, Air Force, special agencies, and Foreign Military Sales (FMS) and Foreign Weapons Evaluation (FWE) projects.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
No.

[BEARTRAP-Appendix A, TAB 5]
No.

-3.4.A.1 Do you currently test directed energy weapon systems? Yes/no.

If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

3.1.G Available Air, Land, and Sea Space (MV II) - Measure of Merit: *Extent to which controlled test ranges satisfy weapon system test requirements.*

See Installation Response 3.1.G.

3.1.H Geographic/Climatological Features (MV II) - Measure of Merit: *Extent to which types of climatic/geographic conditions represent world-wide operational conditions.*

See Installation Response 3.1.H.

3.2 AIR VEHICLES

This functional area includes facilities involved in the testing of all air vehicles/subsystems/components whether fixed wing or rotary wing and test of major subsystems (e.g., avionics, engines, and sensors). This includes flight testing and the testing involving pre- and post-flight preparation and processing of the air vehicle. Unmanned air vehicles and cruise missiles are included.

3.2.A Supersonic Airspace (MV II) - Measure of Merit: *Extent of range size to support weapon system requirements.*

See Installation Response 3.2.A.

-3.2.B Airfield and Facility Characteristics (MV II) - Measure of Merit: *Extent of air vehicle infrastructure to support T&E operations.*

See Installation Response 3.2.B.

-3.2.C Test Operations (MV II) - Measure of Merit: *Extent of T&E operations that the airspace can accommodate.*

See Installation Response 3.2.C.

3.3 ELECTRONIC COMBAT

This functional area includes facilities involved in the testing of stand-alone electronic combat systems and electronic combat subsystems that are normally integrated into other weapon systems. It includes the testing of systems or subsystems that have as their primary mission threat warning, testing of systems that provide countermeasures in the RF (radio frequency) spectrum against radars and other RF sensors, systems that provide countermeasures that are used against sensors in the electro-optical or infrared spectrum as well as

testing of electronic and C3 countermeasures.

3.3.A Threat Environment (MV I) - Measure of Merit: *Extent to which the capability satisfies weapon system requirements.*

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

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
500 active emitters (1000 platforms)

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

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
500 active emitters (shipborne or airborne emitters, i.e., missiles, tracking search radars, etc.)

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

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
No.

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

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
No (open loop), No (reactive), Yes (closed loop).

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

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Description provided in P-3 Update IV PID (classified).

-3.3.A.6 Are you capable of simulating land threats? Sea

threats? Combined land/sea threats? Yes/no. If yes, describe.

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
No (land threats) Yes (sea threats), No (combined).

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

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
A 500km on a side geographic dispersion can be simulated.

-3.3.A.7.A Threat lay down?

Not applicable.

-3.3.A.7.B Representative distance?

Not applicable.

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

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Yes. Threats are dynamic.

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

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
No, not at this time. Planning in progress to link to ACETEF and NUWC Sub-Surface Threat Simulations.

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

[Fixed Wing ASUW and ASW Labs-Appendix A, TAB 4]
Yes, (only one prime platform under test).

3.3.B Test Article Support (MV II) - Measure of Merit: *Extent to which test support satisfies weapon system test*

requirements.

See Installation Response 3.3.B.

3.4 ARMAMENTS / WEAPONS

This functional area includes facilities involved in the testing of the weapons portion of a weapon system. In those cases where the weapon system is composed almost exclusively of the weapon, it may include system-level and platform integration testing. In other cases, it addresses just the weapon subsystem (e.g., guidance and control, propulsion, warheads, and airframe), while the testing of the weapon system's vehicle is in another functional area.

See Installation Response 3.4.

MEASUREMENT FACILITIES

SECTION 2: CAPACITY & TECHNICAL RESOURCES

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

2.1 WORKLOAD

Annual workload will be reported in units as follows: for open air ranges involving flight testing, report test hours and missions. For all other T&E facilities direct labor hours and test hours must be reported; if available, missions must be reported. If an estimation of test hours based on direct labor hours is necessary, refer to the instructions for Determination of Unconstrained Capacity on page 28.

2.1.A Historical Workload

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

See Appendix A, TABS 6 through 19

2.1.B Forecasted Workload

-2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP. The Military Departments will provide total funding amounts appropriated for all PEs identified in each functional area shown above.

Requested information is provided in paragraph 2.1.B.1 of the installation section of this report.

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

See Appendix A, TABS 6 through 19.

2.2 UNCONSTRAINED CAPACITY

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

See Appendix A, TABS 6 through 19, unconstrained capacity form.

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

See Installation Response 2.2.B.

2.3 TECHNICAL RESOURCES

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

Yes. See installation response 2.3.A.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
Yes. The catapult and arresting gear facilities are used to determine that the aircraft and aircraft systems are capable of withstanding the loads and accelerations that are imposed during take-off and landing during operations aboard ship. These facilities are essential for determining that the aircraft is compatible with the catapult and arresting gear equipment. The catapult and arresting gear are essential technical capabilities for the core competency of evaluating shipboard suitability of all naval aircraft and associated subsystems. These facilities provide onsite capability to conduct build-up field carrier trials during integrated test programs without which significant cost increases and schedule slippages would be incurred. The capability to perform total integrated aircraft testing at NAWCAD Patuxent River would be severely impacted.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. The Landing System Test Facility provides the capability to develop and evaluate new airborne and surface based landing system concepts and designs, and modifications/upgrades to existing systems prior to fleet introduction. It is an integrated electronic, visual landing aid, and air traffic control lab and flight test facility with real time automatic data recording, reduction, and processing capability.

The consolidation of all the Navy and Marine landing systems allows system integration, performance and tracking comparison tests of the various ground and surface based landing system components with various aircraft avionics landing system components. The facility allows interoperability of multi-role and multi-mission aircraft landing systems to be evaluated from initial approach to landing under manual, semi-automatic, and automatic control.

The test and evaluation mission of landing aids for carrier-based aircraft cannot be accomplished at the host installation without these facilities.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
Yes. The Propulsion System Evaluation Facility is the only Navy facility which provides the complete range of testing, development, reliability and fleet service engineering support for fixed and rotary wing air vehicle engines, engine components and accessories; and test and evaluation services for small engine air-breathing propulsion systems, power drive systems, fuels and lubrications.

[Ship Ground Station-Appendix A, TAB 9]
Yes. The Ship Ground Station is the only Navy facility fully capable of test and evaluation of the ship/air interface of helicopter mission systems. The facility incorporates shipboard, airborne, and joint ship/air data extraction and reduction systems for conducting quantitative test and evaluation.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
Yes. Without this facility, significant additional flight tests will be required to evaluate the full ordnance/aircraft platform capability. Significant cost and schedule increases would be incurred.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. This is the only facility capable of measuring aircraft in-flight electronic warfare in real-time to determine radar warning receivers' direction of arrival, receiver performance, chaff bloom rate, decoy performance, jam-to-signal ratio measurements, and jammers technique analysis. It is also the primary source of dynamic RCS data for DoD is this facility. The fully operational effectiveness of Naval aircraft avionics systems cannot be assessed without this facility.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes. The in-flight antenna patterns measured by ATLAS provide a critical parameter in determining the system performance for the associate/avionics systems. System in-flight performance tests are limited in determining performance at all aspect and elevation angles. Antenna patterns along with system

performance results are used to predict performance across other aspect and elevation angle not covered during testing. This information is vital for the effectiveness and safety of the mission of the platform.

[Aircraft Test and Evaluation Facility (ATEF)-Appendix A, TAB 13]
Yes. The ATEF provides the capability to accurately test high technology fixed wing tactical sized aircraft with engines running indoors in a secure environment. The close tolerances required to insure accurate data, real time monitoring requirements, and environmental and safety requirements dictate the need for this facility. Without this facility, testing and maintenance checks with engines operating would be hampered at night, or with secure coverage. NAWCAD Patuxent River would be unable to meet required program schedules.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. Based on the DoD Fixed Wing Reliance Study, this facility provides the most capable Electro-Optical target for Electro-Optical sensor performance assessment. Without this facility, aircraft platform sensor integration of electro-optical and reconnaissance cannot be accomplished.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
Yes. Without this facility to validate flight tests, computer model tests cannot be validated and system performance of identification systems cannot be accurately assessed.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
Yes. The GRATF is used to validate aircraft antenna performance prior to aircraft system flight tests. Additional flight time will be incurred if tests are conducted with faulty system antennas with resultant cost and schedule increases.

[Acoustic Test Facility (ATF)-Appendix A, TAB 17]
Yes. The ATF is the only facility in the Navy that has the capability to do fully repeatable checkout and test of P-3 and S-3 acoustic processors and software. In addition, it has the

Navy's only 32 channel sonobuoy transmitter capability, using the Multiple Channel Transmitter Systems (MCTS) specially designed, developed and built for this facility. It is also the only current way of playing SECRET/NOFORN data (acoustic tapes with U.S. target signatures) out to a test aircraft. With the exception of NSWC White Oak, it is the Navy's only other facility which can do Minimum Discernible Signal (MDS) testing.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
Yes. Without the COMTEL facility, NAWCAD Patuxent River, would have no capability to evaluate, investigate and provide engineering support to aircraft HF, VHF, UHF, L-Band, SATCOM and ECCM communications systems. Intersystem operability of these systems is vital to Naval operations.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes. NAWCAD Patuxent River would have no capability to evaluate surveillance, weather, and topological capability of airborne radars.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
Yes. Catapult and arresting gear equipment are also located at Lakehurst, NJ. These facilities are used primarily for development and test Aircraft Launch and Recovery Equipment (ALRE). Accommodating aircraft T&E work will impact development programs of ALRE. The lack of aviation support capability at Lakehurst would result in significant increases to individual program costs.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. The mission of Naval In-Service Engineering-East DET St. Inigoes, Maryland would be severely impacted if the Landing System Test Facility was unavailable for RDT&E of new surface based (ship board and shore based) landing system concepts and designs, or modifications/upgrades to existing systems.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
Yes. The Propulsion System Evaluation Facility provided direct support to the test mission of other DoD activities and selected industry customers requiring evaluation of fixed and rotary wing engine and drive train components, and accessories, and fuels and lubricants.

[Ship Ground Station-Appendix A, TAB 9]
The AN/SLQ-32(V) Electromagnetic Surveillance Measures (ESM) set incorporated into the combat direction system at the SGS is utilized by the Range Directorate Chesapeake Test Range (CTR) to simultaneously receive the radiated electromagnetic threat emitters and send data back to CTR as a scientific control. Without the SGS and integrated AN/SLQ-32(V) ESM, it would be impossible to validate in real-time, the electromagnetic signals necessary to test and evaluate the current generation of electronic warfare equipment.

The SGS provided simulated sonobuoy signals using the integrated AN/SQQ-89(V)T On Board Trainer for supporting the test and evaluation of maritime aircraft mission systems by Air Test and Evaluation Squadron ONE (VX-1). Further, the SGS provides training for test and evaluation work-ups conducted by

VX-1 prior to their tests on range. Without this capability, VX-1 would be required to consume many more expendables, and burn more fuel to prepare for and conduct aircraft test and evaluation.

The Rotary Wing Ship Ground Station is the only Navy facility fully capable of test and evaluation of the ship/air interface of helicopter mission systems. The facility incorporates shipboard, airborne, and joint ship/air data extraction and reduction systems for conducting quantitative test and evaluation. All of the activities listed below require the services of the SGS to accomplish their test and evaluation missions:

Naval Surface Warfare Center, Port Hueneme Division
Naval Undersea Warfare Center, New London Division
Naval Surface Warfare Center, Dahlgren Division
AEGIS Combat Systems Engineering Development Site
NISE East Coast Detachment

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
No.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. The bulk of the Radar Cross Section data in the U.S. Air Force AF/WC database is provided by this facility. The need for this information by activities testing radar systems could not be satisfied.

This facility plays an important role in the DoD test and evaluation process. The collocation with the ACETEF facility enables aircraft electronic warfare lab and flight testing to be performed at the same test site.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes, Testing of the associated avionics systems are dependent on the antenna pattern data to determine their test capability envelopes. Other activities including U.S. Army, NASA, and U.S. Coast Guard are dependent upon this facility.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
Yes. The ATEF provides night vision testing for the Navy, Air Force, Army, and Coast Guard. This facility provides a singular capability for insuring safe, effective implementation of this state-of-the-art technology for cockpits.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. As shown during the Fixed Wing T&E Reliance Study, this capability exists at no other activity. This facility is routinely used by other DoD activities as well as contractors.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
Yes. Without this facility, unsafe non-functional and unsupportable Combat Identification Systems (CIS) would be utilized in the Fleet with potential harm to Fleet resources including personnel, thus impeding the test mission of other activities.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
Yes. Data from airborne antenna obtained at other DoD and contractor ground ranges is verified at this facility.

[Acoustic Test Facility-Appendix A, TAB 17]
Yes. Without the ATF, NAWCAD Patuxent River could not provide acoustic signature support to the Operational Test and Evaluation Squadron ONE (VX-1). This is needed to validate operational assessments of acoustic processors. VX-1 has been using the ATF capabilities in the conduct of their ground tests of the P-3 Extended Echo Ranging (EER) software. They have no other way of playing back two simultaneous flight data tapes for postflight data analysis.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
Yes. Without the COMTEL facility, NUWC, NCCOSC NISE and NRAD activity would lose a remote communication station and test capability for evaluation of HF, VHF, UHF, SATCOM, and RI^2 data links.

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[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]

Yes. Surveillance radar systems for NASA and U.S. Coast Guard could not be adequately evaluated.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
Yes. These facilities are essential to determining the capability of Naval aircraft and aircraft systems to operate in the shipboard environment. Carrier-based aircraft could not be developed without these capabilities severely impacting this tool of U.S. Armed Forces.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. This facility is mandatory for developing all carrier-based aircraft.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
Yes. This facility provides comprehensive aircraft engine, propulsion system component and accessories, fuels and lubricants, and drive train performance evaluations for fleet aircraft to improve mission effectiveness and resolve critical in-service problems.

[Ship Ground Station-Appendix A, TAB 9]
The Ship Ground Station provides ASW and ASUW test and evaluation support to:

Mobile Inshore Undersea Warfare Group Two
Naval Research Laboratory, Stennis Space Flight Center
Atlantic Undersea Test and Evaluation Center
NAWCAD Lakehurst
NUWC Keyport Division
AEGIS Test Teams (Bath, ME and Pascagoula, MS)

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
Yes. Air-to-ground capability for carrier-based aircraft would be severely impaired.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. This facility provides survivability/vulnerability

information crucial to operations in hostile environments.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes. Without accurate antenna radiation patterns, operational tactics for these aircraft could not be developed.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
Yes. The use of Night Vision Devices has become crucial to a wartime advantage for U.S. Forces and this facility provides the test environment.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. The mapping of Electro-Optical system capability for all such equipped aircraft is crucial to define total aircraft system effectiveness.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
Yes. Capability to correct Fleet CID problems would be severely degraded. The characterization of individual aircraft identification characteristics is critical to hostile engagements.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
No.

[Acoustic Test Facility-Appendix A, TAB 17]
Yes. This facility provides technical performance measurements of ASW Acoustic Processors used in all maritime aircraft flown by the U.S. Navy.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
Yes. This facility provides the needed capability to assess multi-service interoperability of HF, VHF, UHF, L-Band, SATCOM and ECCM communications systems.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes. Ocean surveillance and weather detection are critical

capabilities needed by U.S. Forces in hostile environments and this facility provides the assessment of operational characteristics.

SECTION 3: MEASURES OF MERIT

This section relates the measures of merit and the required data to the four criteria that have been established for Military Value. The four military value (MV) criteria are:

CRITERION 1: The current and future mission requirements and the impact on operational readiness of the Department of Defense's total force.

CRITERION 2: The availability and condition of land, facilities and associated airspace at both the existing and potential receiving locations.

CRITERION 3: The ability to accommodate contingency, mobilization, and future total force requirements at both the existing and potential receiving locations.

CRITERION 4: The cost and manpower implications.

3.1 OVER-ARCHING MEASURES OF MERIT

The over-arching measures of merit are listed with accompanying questions (or data requirements) intended to elicit standard information upon which the cross-service analyses can be based, and on which the Joint Cross-Service Groups can base their reviews of the Military Department analyses. Additional specific measures of merit are shown under individual functional areas. The numbers in parentheses () before each measure of merit indicate the BRAC selection criteria for military value.

3.1.A. Interconnectivity (MV I) - Measure of Merit: *Extent of linkage of this facility with other facilities and assessment of single-node failure potential.*

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

Catapult and Arresting Gear-Appendix A, TAB 6]
Aircraft test at the catapult and arresting gear facility used the Real-Time Telemetry Processing Systems (RTPS) for real-time data extraction on 80% of the missions. The catapult and arresting gear are not utilized simultaneously. Aircraft tests off-site (e.g., shipboard) require the use of the NAWCAD Patuxent River portable Integrated Telemetry Analysis Station (ITAS) and were used for 100% of the missions. These are internal to the NAWCAD site.

[Landing Systems Test Facility-Appendix A, TAB 7]
Aircraft flights at the Landing Systems Test Facility use the Chesapeake Test Range Laser, Optical and IR tracking facility on 10% of the missions and the Telemetry Data Systems aircraft tracking facilities and aircraft instrumentation calibrations on 85% of the missions. Aircraft tests off-site (Shipboard or Tactical) use the portable Integrated Telemetry Acquisition System (ITAS) on 50% of the missions. These facilities are internal to NAWCAD Patuxent River.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
None.

[Ship Ground Station-Appendix A, TAB 9]
Approximately 10 percent of test events (e.g., approximately 25-30 per year) involved interconnectivity with one or more of the following: Chesapeake Test Range (internal), AIR COMBAT TEST AND EVALUATION FACILITY EWISTL/E3 laboratories (internal), and AEGIS Combat Systems Center Wallops Island, VA (external). These involve simulations used during testing of integrated aircraft/ship mission systems.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]

None.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
80% of the testing involves real-time data communications. Facilities included Telemetry (internal), Ship Ground Station (internal), Chesapeake Test Range command and control and tracking information (internal), and the Remote Emitter Simulator (internal), ACETEF (internal).

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
During ATLAS's acquisition mode for collecting antenna pattern data, 100% real time link with the Chesapeake Test Range (internal) is required to receive radar tracking information.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
25%. Real-time telemetry system of the Telemetry Data Systems Facility which is internal to NAWCAD Patuxent River.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Approximately 10% of total workload in FY93 involved the real-time or near real time exchange of data with the Open Air Range Facility (Chesapeake Test Range & Real-Time Processing System). CTR & RTPS are internal to the Patuxent River site. All tests were conducted as independent test events. Simultaneous operations could have been conducted if required.

Combat Identification Systems Test Facility (IFF)-Appendix A, TAB 15]
25% Real-time. The CID Facility interconnects with the Chesapeake Test Range (internal).

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
0%.

[Acoustic Test Facility-Appendix A, TAB 17]
35%. Real-time. The ATF links to the Ship Ground Station, Helicopter Missions Systems Support Center, and the Air Combat Environment Test and Evaluation Facility.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
30% of total test workload in FY93 involved data exchange with other facility. These facilities were external and included Naval Undersea Warfare Center, New London CT., Naval In-Service Engineering, Charleston NC., and Weapon Support System Activity NAWCWD China Lake.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
40% of test workload involved the real-time or near real time exchange of data or control with another facility. The other facilities are identified as the Chesapeake Test Range (CTR) facility of Range Directorate at NAWCAD Patuxent River, the Combat Identification Lab, and Communications Test and Evaluation Laboratory. All facilities are internal to the site.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
Yes. Closure of these facilities would require that all testing be conducted off site. Connectivity to the NAWCAD Patuxent River real-time Telemetry Processing System would need to be established.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes, there are no other DoD facilities that provide total visual and electronic landing system integration and flight test support of Navy/Marine Corps. Air Traffic Control and Landing system RDT&E. The Navy In-Service Engineering EAST DET St. Inigoes, Maryland would have no place to flight test new, and/or upgrades to the Navy/Marine ship/shore based Air Traffic Control and Landing System.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
No.

[Ship Ground Station-Appendix A, TAB 9]
Yes. SGS provides scenario coordination and radio frequency emissions monitor support to Air Test and Evaluation Squadron ONE (VX-1), the Helicopter Mission Systems Support Center (HMSSC), and the Range Directorate, Chesapeake Test Range (CTR) for preflight checkouts, mission scenario verification, emitter signal validation, and in-flight operational support.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
No. This facility is not connected to other facilities.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. The LAMPS Mark IV program testing with the Ship Ground Station and the link to tie flight testing and ground testing (ACETEF) interaction would be lost.

[Antenna Testing Laboratory Automated System (ATLAS) In-

flight Testing-Appendix A, TAB 12]
No.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
No.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. The capability to conduct flight test supported by this highly capable controlled target would be lost.

Combat Identification Systems (CID)-Appendix A, TAB 15]
No.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
No.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
Yes. Other external facilities would lose a remote communication station and test asset to evaluate HF, VHF, UHF, L-Band, SATCOM and ECCM communications systems.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes, there would be an impact on other facilities to which we are connected should this facility be closed. NAWCAD is interconnected through Chesapeake Test Range with the NASA Wallops Island tracking facility for tracking of down range air vehicles and weapons. Closure of our facility would disrupt the ability to conduct Light Airborne Multipurpose System (LAMPS) MK III avionics suite testing especially long range tracking capability of the LAMPS MK III radar system currently in development.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes.

Service	FY92	FY93
Air Force	5%	4%
Army	3%	1%

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes:

Service	FY92	FY93
Air Force	1%	11%
Army	0%	15%

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
Yes. FY92 - Army Less than 1%
FY93 - Air Force 11%
Army Less than 1%

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. We are currently providing and have provided FY92 and FY93 support to other DoD departments. Total workload was approximately 20 percent.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
Yes.

FY92 - 10% (Army, Air Force, Coast Guard); FMS 20%
FY93 - 10% (Army, Air Force, Coast Guard); FMS 20%

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
Yes. US ARMY FY92 - 20% FY93 - 30%

[Acoustic Test Facility-Appendix A, TAB 17]
No.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes, we are currently providing support to DoD users outside our Military Department. FMS: 15%.

3.1.G Available Air, Land, and Sea Space (MV II) - Measure of Merit: *Extent to which controlled test ranges satisfy weapon system test requirements.*

See Installation Response 3.1.G.

3.1.H Geographic/Climatological Features (MV II) - Measure of Merit: *Extent to which types of climatic/geographic conditions represent world-wide operational conditions.*

See Installation response, paragraph 3.1.H.

3.2 AIR VEHICLES

This functional area includes facilities involved in the testing of all air vehicles/subsystems/components whether fixed wing or rotary wing and test of major subsystems (e.g., avionics, engines, and sensors). This includes flight testing and the testing involving pre- and post-flight preparation and processing of the air vehicle. Unmanned air vehicles and cruise missiles are included.

3.2.A Supersonic Airspace (MV II) - Measure of Merit: *Extent of range size to support weapon system requirements.*

See Installation response paragraph 3.2.A.

-3.2.B Airfield and Facility Characteristics (MV II) - Measure of Merit: *Extent of air vehicle infrastructure to support T&E operations.*

See Installation response, paragraph 3.2.B.

-3.2.C Test Operations (MV II) - Measure of Merit: *Extent of T&E operations that the airspace can accommodate.*

See Installation Response 3.2.C.

3.1.B Facility Condition (MV II) - Measure of merit: *Current and planned status of the T&E facilities for supporting assigned test missions.*

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

See Appendix A, TABS 6 through 19

3.1.C Environmental and Encroachment Carrying Capacity (MV II) - Measure of Merit: *Extent of current and future potential environmental and encroachment impacts on air, land, and sea space for testing.*

See Installation Response 3.1.C.

3.1.D Specialized Test Support Facilities and Targets (MV I) - Measure of Merit: *Extent to which specialized test support facilities and targets are available.*

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

See Installation Response 3.1.D.1.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
No.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. Specially sized corner reflectors and Ka/X-band target augmentors (beacon) are installed and surveyed in at specific locations for systems calibration and alignment, operation and performance validation under various environmental conditions.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
No.

[Ship Ground Station-Appendix A, TAB 9]
None.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
No.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
No.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
No.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. The Electro-Optic Test Target (EOTT) photographic resolution targets are required to validate system performance. Comparisons are made between ground and flight tests to determine effects due to platform integration, vibration, and atmospherics. Technical flight test data is utilized to determine mission capabilities and operational effectiveness.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
Yes. Learjets and DOD aircraft are equipped with specific

Combat Identification System equipment and function as specialized targets for particular mission profiles.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
No.

[Acoustic Test Facility-Appendix A, TAB 17]
No.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
No.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes. Specialized targets are required of known radar cross section (RCS) in order to perform ocean surveillance radar testing.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
N/A.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. The reflector targets and augmentor positions are surveyed in by the Chesapeake Test Range. Size of the reflectors and performance of the beacons are verified by Navy In-Service Engineering-East DET St. Indigoes, Maryland.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
N/A.

[Ship Ground Station-Appendix A TAB 9]
N/A.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
N/A.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
N/A.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
N/A.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. These targets have been validated by the Electro-Optical/Infrared test community and are designed to a national standard. Energy outputs measurements and target temperature monitoring is accomplished by calibrated test equipment to include radiometers and thermal imaging systems.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
Yes. They have been validated by laboratory measurements.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
N/A.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
N/A.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes, the specialized targets have been validated. Our calibrated targets are measured by their respective manufacturers and checked by the NAWCAD Patuxent River Chesapeake Test Range.

3.1.E Expandability (MV III) - Measure of Merit: *Extent to which an installation/facility is able to expand to accommodate additional workload or new missions.*

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
Yes. Aircraft Launch & Recovery Equipment development and T&E would be conducted either by using the existing catapult and arresting gear for all functions (requires periodic reconfigurations) or by installing additional equipment at the catapult arresting gear sites. The arresting gear site is already sized for additional arresting gear and the catapult boiler can service additional catapults.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. Some Air Traffic Control and Landing System currently being developed are to provide Low Probability of Intercept operations aboard aircraft carriers and amphibs. Landing System Test Facility can provide radio frequency signal emulation for the Carrier based landing system radars for those platforms that have threat warning capability and require test of countermeasure in the air traffic control and landing control and landing systems radio frequency spectrums. The lab test capabilities could also be use for platform integration testing. Simulation analysis and test techniques of Guidance and Control algorithms developed for the automatic carrier landing systems have previously been used for auto bombing test, are currently being used for unmanned vehicle tests and could be used for guidance and control of weapons systems.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
No.

[Ship Ground Station-Appendix A, TAB 9]
Yes. Since SGS is capable of general development and data link support its functions could be expanded to include unmanned air vehicles and other platforms.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
No.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. This facility currently can simulate 140 Emitters signatures and 32 Command, Control, and Communication (C^3) signatures providing a dense radio frequency flight test environment. The number of signatures is easily expandable by the addition of specialized equipment.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
No.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
Yes. Air Vehicles. Electromagnetic Interference (EMI) testing with the engines running could also be performed with the addition of some radio frequency shielding. This would enhance current EMI testing capabilities which require external power hookups.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. This facility has special unique test equipment. This equipment is specifically designed to support aircraft installed testing, however, this equipment is portable and is capable of being configured to interface with other laboratories.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
Yes. This facility was designed to be general in purpose in accordance with DOD-STD-2167A so it may support all currently identified CID test efforts and allow easy modification to support future test efforts. This facility provides a data reduction and analysis tool for raw data gathered during flight, simulation, and laboratory tests. All data structures, databases, user-interfaces, input/output support, and data management tools currently in place could be easily modified to accept data associated with

various T&E functional areas involving communications.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
No.

[Acoustic Test Facility-Appendix A, TAB 17]
Yes. With additional equipment, expanded simulation/validation of acoustical data can be done.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
No.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes. This facility has the capability to incorporate any type of surface or airborne radar system. Adequate power supplies, square footage, and line of sight propagation conditions available make it capable of working with any radar system in the Department of Navy inventory.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
No.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. Landing Systems Test Facility could be used for correlation of any radio frequency signals or other transmitted data with sensors or any system that provides countermeasures. Any system that requires time correlation of command and control data with air vehicle control and dynamic data could be tested at the Landing Systems Test Facility using the Chesapeake Test Range tracking radar's and range.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
No.

[Ship Ground Station-Appendix A, TAB 9]
Yes. Could support commercial and federal agencies (such as U.S. Coast Guard air vehicle testing).

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
Yes. This facility could be used to evaluate individual armament system control components in the T&E functional areas of Armament/Weapons and Air Vehicles. It could also be used to conduct some limited Verification and Validation (V&V) of Operational Flight Programs.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. This facility can expand into a multi-spectral measurement capability for air vehicle signature measurements.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes. This facility can measure antenna patterns on Navy ships that are capable of turning circles in the Chesapeake Bay off the shore from our facility. Antenna pattern measurements for any

other airborne platforms can also be performed.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
Yes. Air Vehicles uninstalled engine testing can be performed by adding engine test stands.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. New T&E workload could be performed at this facility. Specifically, uninstalled subsystem performance testing could be conducted for electro-optical/reconnaissance systems. Existing capabilities at NAWCAD Patuxent River would be leveraged to provide required stimulus for supporting the development of electro-optic/reconnaissance avionics. Existing unique Electro-Optical equipment as well as EW threat data bases, stimulation hardware outputs from other systems, computational processing capabilities, and aircraft avionics systems signals would be utilized in supporting uninstalled sensor and component level tests.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
Yes. Additional similar workload from other activities can be accommodated.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
Yes. Radar cross-section measurements, full scale UAV testing, and weapon's guidance systems tests could also be performed with minimal equipment upgrades.

[Acoustic Test Facility-Appendix A, TAB 17]
Yes. Acoustic processor baseline assessment and technical performance as compared to production sensor systems (included Foreign Weapons Evaluation (FWE) and Foreign Military Sales (FMS) tasks.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
Yes. Air vehicle workload can be expanded into new communication technology areas such as Low Probability of Intercept, Electronic Counter-Counter Measures (ECCM)

waveforms, and SATCOM.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes. Reliability and maintainability assessments during both ground and flight testing of these radars can be performed.

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

See Installation Response 3.1.E.2.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
No.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. SECRET.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
No.

[Ship Ground Station-Appendix A, TAB 9]
Yes. SECRET.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
Yes. CONFIDENTIAL.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. TOP SECRET, special access required.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes, the ATLAS lab is located in a large shielded enclosure with power utility filtering. This would allow us to conduct TOP SECRET as required.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
Yes. TOP SECRET, special access required.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. This facility routinely supports operations up to the SECRET level. This facility is also equipped to handle secure operations at the TOP SECRET and special access required levels.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]

Yes. SECRET.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
Yes. CONFIDENTIAL.

[Acoustic Test Facility-Appendix A, TAB 17]
Yes, SECRET.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
Yes, This facility is equipped to support secure communications operations up to TOP SECRET levels.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes. SECRET.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
No.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. The addition of a Silicon Graphics work station to expand and improve the graphics and applications capability of the data acquisition/reduction system.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
Yes. This facility is being relocated to NAWCAD Patuxent River into new spaces and was approved as part of BRAC '93 and is defined as MILCON project No. P-953T.

[Ship Ground Station-Appendix A, TAB 9]
Yes. Listed on the "Facilities Condition" data sheet provides in Appendix A, TAB 9.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
No.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
The Chesapeake Test Range (CTR) is currently developing (FY94) an inverse synthetic aperature radar (ISAR) system. This system will enable in-flight RCS measurements of air vehicles including Doppler signature such as Jet Engine Modulation (JEM), blade modulation, and high resolution imagery measurements. Imagery measurements can identify RCS scattering centers of the target to determine RCS "hot spots" on the target at various look angles.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes, The new multi-processor system that will replace ATLAS's computer control system will be completed in early FY-95. This will increase both capacity and capabilities.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
No.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
No.

[Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
Yes.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
No.

[Acoustic Test Facility-Appendix A, TAB 17]
No.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
No.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
No.

3.1.F Uniqueness (MV I) - Measure of Merit: *Extent to which the facility is one-of-a kind.*

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

Catapult and Arresting Gear-Appendix A, TAB 6]
Yes. The catapult and arresting gear portion of this facility are not one-of a kind but the take-off assist portion is the only T&E facility in the United States.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. This is only DoD flight test facility that consolidates all Navy shipboard and shorebased air traffic control and landing systems, Marine Corps. tactical Air Traffic Control and Automatic Landing Systems, and shipboard visual landing aid systems with long and close range precision tracking capability, a real time automatic data correlation, acquisition, reduction and processing system in an electronically shielded laboratory building which provides a centralized test control station and integrated data processing center. The test site provides both over water and over land approach test capability and an interface between the test facility, engineering office space work stations, manned flight simulator, telemetry data systems, Chesapeake Test Range and computer test directorate. Geographic location of the facility also provides the climate conditions necessary for all weather test and evaluation of landing systems representative of the operational environment.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
Yes. Under Project Reliance, Air-Breathing Engines, coordinated with the Air Force, this facility is the only facility capable of performing its assigned mission. This facility houses a series of rotor spin chambers that are the largest and most capable within the DoD allowing for detailed test and evaluation of high-speed rotating propulsion system components. In addition, the Helicopter Engine and Power Transmission Facility is the only facility within DoD that can test and evaluate a complete helicopter propulsion system without incurring the risk of manned flight tests.

[Ship Ground Station-Appendix A, TAB 9]
Yes. The Rotary Wing SGS is the only DoD facility capable of test and evaluation of the ship/air interface of helicopter mission systems. The SGS replicates the Combat Direction Systems, and USW/EW subsystems, and USW/EW subsystems of DD-963 and FFC-7 class ships in a land based test and evaluation facility. This it the only facility that is capable of supporting helicopter mission systems test and evaluation that can provide representative electromagnetic, acoustic, and atmospheric propagation conditions. Further, this the only facility that incorporates shipboard, airborne, and joint ship/air data extraction and reduction systems for conducting quantitative test and evaluation.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
No.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. The Chesapeake Test Range (CTR) of NAWCAD Patuxent River has been designated as the lead DoD test and evaluation facility in providing full scale dynamic RCS measurements. The facility provides real-time, simultaneous multifrequency dynamic in-flight RCS measurements across 1-35 GHz. Data collected is pulse-to-pulse to allow determination of probability distribution functions (PDF) necessary to evaluate aircraft vulnerability. CTR's imaging radar system is capable of quickly and accurately determining aircraft RCS parameters necessary to evaluate vulnerability and assess the impact of configuration and rework on the aircraft to locate scattering centers and changes in RCS due to maintenance practices or environmental factors.

The facility provides a baseline transfer of dynamic aircraft RCS data with other RCS facilities for comparison of computer modeling, indoors static testing, and outdoor static testing RCS measurements.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes, ATLAS is the only DoD in-flight antenna measurement

facility that can conduct measurements from 2 MHz to 18 GHz. 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 it's antennas with an unobstructed electromagnetic propagation path over a calm body of water which serves as a reflection surface for radio frequency energy. The calmness of the Bay allows accurate characterization of reflecting electromagnetic energy which is used to determine antenna gains relative to isotropic radiators. No other facility has this capability over this frequency range.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
Yes. The facility contains and enclosed thrust/scales platform connected to a real-time, on site, data processing/recording system which allows precision testing in a protected environment. It is also equipped with an environmental test system capable of providing wind, rain, and heat on a small scale bases.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. Although other DoD facilities have some capability to do aircraft installed electro-optical/Reconnaissance testing, no other facility has the unique target capabilities combining ground and flight stimuli.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
No.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
No.

[Acoustic Test Facility-Appendix A, TAB 17]
Yes. No other known equivalent capability exists.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
Yes. No other known equivalent capability exists.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]

Yes. This is the only DoD overwater test facility. It contains the only functional shipsets of the APS-80 and APS-115 Search Radar Systems installed in such a facility in a waterfront location.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
Yes. The take-off assist portion is the only test and evaluation facility of its kind in the United States.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. Primarily for Navy/Marine Air Traffic Control and Landing System. However, data correlation support has been provided to NASA Langley for Global Positioning System (GPS) precision approach accuracy analysis. Although the FAA Tech Center, Atlantic City, NJ has a precision tracking capability and civil landing systems, it does not have a real-time data merging, correlation and reduction capability. Memorandum of Agreements/Understandings are currently being developed with the U.S. Air Force to support navigation and landing system tests. Interagency agreements are being in work with the FAA to support Automatic Dependent Surveillance system tests in a Navy P-3 aircraft and airport surveillance tests and with NASA to support GPS precision approach tests.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
Yes. Under Project Reliance, Air-Breathing Engines, coordinated with the Air Force, this facility is the only facility capable of performing its assigned mission. This facility houses a series of rotor spin chambers that are the largest and most capable within the DoD allowing for detailed test and evaluation of high-speed rotating propulsion system components. In addition, the Helicopter Engine and Power Transmission Facility is the only facility within DoD that can test and evaluate a complete helicopter propulsion system without incurring the risk of manned flight tests.

[Ship Ground Station-Appendix A, TAB 9]
Yes. The Rotary Wing SGS is the only U.S. Government facility fully capable of test and evaluation of the ship/air interface of helicopter mission systems. The SGS replicates the Combat Direction Systems, and USW/EW subsystems of DD-963 and FFC-7 class ships in a land based test and evaluation facility. This is the only facility that is capable of supporting helicopter mission

systems test and evaluation that can provide representative electromagnetic, acoustic, and atmospheric propagation conditions. Further, this is the only facility that incorporates shipboard, airborne, and joint ship/air data extraction and reduction systems for conducting quantitative test and evaluation.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
No.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. Other government agencies rely on NAWCAD Patuxent River for dynamic RCS measurements.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes, ATLAS is the only in-flight antenna measurement facility that can conduct measurements from 2 MHz to 18 GHz. 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 it's antennas with an unobstructed electromagnetic propagation path over a calm body of water which serves as a reflection surface for radio frequency energy. The calmness of the Bay allows accurate characterization of reflecting electromagnetic energy which is used to determine antenna gains relative to isotropic radiators. No other facility has this capability over this frequency range.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
Yes. The facility contains and enclosed thrust/scales platform connected to a real-time, on site, data processing/recording system which allows precision testing in a protected environment. It is also equipped with an environmental test system capable of providing wind, rain, and heat on a small scale bases.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. Although other DoD facilities have some capability to do

aircraft installed electro-optical/Reconnaissance testing, no other facility has the unique target capabilities combined ground and flight stimuli.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
No.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
No.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
No.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes, this is a one-of-a-kind facility within the U.S. Government. It is the only overwater test facility. Additionally, this facility contains the only functional shipsets of the APS-80 and APS-115 Search Radar Systems installed in an overwater test facility in the U.S. Government.

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
Yes. The take-off assist portion is the only T&E facility in the United States.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. Primarily for Navy/Marine Air Traffic Control and Landing System. However, data correlation support has been provided to NASA Langley for Global Positioning System (GPS) precision approach accuracy analysis. Although the FAA Tech Center, Atlantic City, NJ has a precision tracking capability and civil landing systems, it does not have a real-time data merging, correlation and reduction capability. Memorandum of Agreements/Understandings are currently being developed with the U.S. Air Force to support navigation and landing system tests. Interagency agreements are being in work with the FAA to support Automatic Dependent Surveillance system tests in a Navy P-3 aircraft and airport surveillance tests and with NASA to support GPS precision approach tests.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
Yes. Under Project Reliance, Air-Breathing Engines, coordinated with the Air Force, this facility is the only facility capable of performing its assigned mission. This facility houses a series of rotor spin chambers that are the largest and most capable within the DoD allowing for detailed test and evaluation of high-speed rotating propulsion system components. In addition, the Helicopter Engine and Power Transmission Facility is the only facility within DoD that can test and evaluate a complete helicopter propulsion system without incurring the risk of manned flight tests.

[Ship Ground Station-Appendix A, TAB 9]
Yes. The Rotary Wing SGS is the only facility in the U.S. fully capable of test and evaluation of the ship/air interface of helicopter mission systems. The SGS replicates the Combat Direction Systems, and USW/EW subsystems of DD-963 and FFC-7 class ships in a land based test and evaluation that can provide representative electromagnetic, acoustic, and atmospheric propagation conditions. Further, this is the only facility that

incorporates shipboard, airborne, and joint ship/air data extraction and reduction systems for conducting quantitative test and evaluation.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
No.

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. Other government agencies rely on NAWCAD Patuxent River for dynamic RCS measurements.

[Antenna Testing Laboratory Automated System (ATLAS) In-flight Testing-Appendix A, TAB 12]
Yes, ATLAS is the only in-flight antenna measurement facility that can conduct measurements from 2 MHz to 18 GHz. 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 it's antennas with an unobstructed electromagnetic propagation path over a calm body of water which serves as a reflection surface for radio frequency energy. The calmness of the Bay allows accurate characterization of reflecting electromagnetic energy which is used to determine antenna gains relative to isotropic radiators. No other facility has this capability over this frequency range.

[Aircraft Test and Evaluation Facility-Appendix A, TAB 13]
Yes. The facility contains an enclosed thrust/scales platform connected to a real-time, on site, data processing/recording system which allows precision testing in a protected environment. It is also equipped with an environmental test system capable of providing wind, rain, and heat on a small scale bases.

[Electro-Optical and Reconnaissance System Test Facility-Appendix A, TAB 14]
Yes. Although other DoD facilities have some capability to do aircraft installed electro-optical/Reconnaissance testing, no other facility has the unique target capabilities combined ground and flight stimuli.

Combat Identification Systems Test Facility (CID)-Appendix A, TAB 15]
No.

[Ground Range Antenna Test Facility (GRATF)-Appendix A, TAB 16]
No.

[Communications Test and Evaluation Laboratory (COMTEL)-Appendix A, TAB 18]
No.

[Surveillance & Topographical Radar Systems (STARS) Laboratory-Appendix A, TAB 19]
Yes, this is a one-of-a-kind facility within the U.S. It is the only overwater test facility. Additionally, this facility contains the only functional shipsets of the APS-80 and APS-115 Search Radar Systems installed in an overwater test facility in the U.S..

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

[Catapult and Arresting Gear-Appendix A, TAB 6]
No.

[Landing Systems Test Facility-Appendix A, TAB 7]
Yes. Support was provided to the United States Air Force for evaluating their portable Microwave Landing system at the LSTF. Currently less than 10 percent of the work is provided to other DoD users. However, MOU's are being established with the United States Air Force on Navigation flight test support, Precision Approach and Autonomous Landing System development efforts for FY94/95.

[Propulsion System Evaluation Facility-Appendix A, TAB 8]
Yes.

	FY92	FY93
ARMY	3.2%	1.0%
AIR FORCE	2.3%	1.1%
ARPA	0.1%	0.1%

[Ship Ground Station-Appendix A, TAB 9]
No.

[Aircraft Armament Systems Simulation Engineering Test Station-Appendix A, TAB 10]
No.

3.3 ELECTRONIC COMBAT

This functional area includes facilities involved in the testing of stand-alone electronic combat systems and electronic combat subsystems that are normally integrated into other weapon systems. It includes the testing of systems or subsystems that have as their primary mission threat warning, testing of systems that provide countermeasures in the radio frequency (radio frequency) spectrum against radars and other radio frequency sensors, systems that provide countermeasures that are used against sensors in the electro-optical or infrared spectrum as well as testing of electronic and C3 countermeasures.

3.3.A Threat Environment (MV I) - Measure of Merit: *Extent to which the capability satisfies weapon system requirements.*

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Approximately 8,000 radio frequency emitter signatures are resident in emitter simulators which are completely programmable allowing generation of any of these library emitters or any generic parameters.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Simultaneous open loop radio frequency signatures:

40 radar signatures from Cedar Point
64 radar signatures from Pt Lookout
20 communications signatures from Cedar Point
16 communications signatures from Pt Lookout

Types:

Early Warning, Acquisition, Fire Control, Guidance, Navigation, IFF, Target Tracking and Target Illumination.

Maximum Signal Density:

Signal density is limited only by the duty cycle of the transmitters as follows:
15 TWTA's at 6% Duty Cycle
11 TWTA's operating CW
6 Magnetrons at .032% Duty Cycle

Maximum Power Level:

Magnetrons - 128 dBm Effective Radiated Power (ERP)
Pulse TWTA's - 105 dBm ERP
CW TWTA's - 98 dBm ERP

Bands:

HF, VHF, UHF, D, E, F, G, H, I, J, K

All Radiation is Free Space.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. The emitter library was built and is maintained through various intelligence data bases including Kilting, EWIR, EPL, etc. Additionally, a sampling of the emitter signatures held in the library have been validated by NSA.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. Open loop testing is conducted.

No reactive or closed loop testing is performed.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]

Up to 140 radar and/or communication threat signals are represented simultaneously with every parameter except effective radiated power accurately generated at radio frequency. Signal density is limited only by duty cycle of the transmitters. This system capability exceeded all DT&E requirements for the EA-6B ADVCAP and EP-3E programs. R

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Up to 112 radar and/or communication threat signals are represented simultaneously with every parameter except effective radiated power accurately generated at radio frequency. Signal density is limited only by duty cycle of the transmitters. This system capability exceeded all DT&E requirements for the EA-6B ADVCAP and EP-3E programs.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. Land, Sea and Air threat signatures (allowed by OPNAVINST 3430.21A) can be generated. Parameters are extracted from the emitter library.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Complete hardware emitter generation stations are located at two locations along the western shore of the Chesapeake Bay, one at Cedar Point and the other at Point Lookout, which provide a baseline geometry to radiate to the test aircraft flying in 2,400 square miles of controlled airspace over the radiating sites. This actual baseline is typically supplemented in three dimensions by inclusion of emitters installed on target vessels operating under positive range control procedures in the Chesapeake Bay. The geography of the Chesapeake Bay tidal area and Atlantic Ocean coastal environment, within the NAWCAD Patuxent River operating area, enhances the geometry of a land, sea or combined land/sea threat signal dispersion scenario.

-3.3.A.7.A Threat lay down?

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
The EW/AFTF provided a test and evaluation threat lay down scenario which meets all requirements to verify emitter/jammer performance from a technical perspective.

-3.3.A.7.B Representative distance?

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
The actual geographic separation of the two fixed-site hardware emitter generation stations at Cedar Point and Point Lookout is 16 nmi. The addition of supplemental moving target emitters located on target vessels operating within the NAWCAD Patuxent River controlled test range operating areas provides land, sea, and combined land/sea threat test scenarios that meet all test requirements to verify emitter/jammer performance from a technical perspective.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. The emitter generators are located at two fixed locations and on multiple target vessels operating within the NAWCAD Patuxent River controlled test range operating areas. The moving (dynamic) emitters provide the flexibility to construct representative test scenarios which will satisfy all test requirements for verification of aircraft emitter/jammer technical performance.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
No.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
Yes. Airspace restrictions and the number of TSPI radars available limit the number of simultaneous users. The actual number depending on the assets required by each user.

3.3.B Test Article Support (MV II) - Measure of Merit: *Extent to which test support satisfies weapon system test requirements.*

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
No. All aircraft are supported in-flight and controlled within 2400 sq miles of restricted airspace ranging from the surface to 80,000 feet.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
There is no limit to the number or kinds of countermeasures that can be evaluated. Any number and combination of jammers, chaff, decoys, flares can be deployed.

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
The test spectra ranges from HF to millimeter wave (2MHz to 35 GHz).

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

[Electronic Warfare/Avionics Flight Test Facility-Appendix A, TAB 11]
All radiation is free space and must be controlled and coordinated through the Mid Atlantic Frequency Coordination office. Through close coordination with this office, frequency restrictions are minimized.

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

No. Scene generation capability is not required nor applicable.

3.4 ARMAMENTS / WEAPONS

This functional area includes facilities involved in the testing of the weapons portion of a weapon system. In those cases where the weapon system is composed almost exclusively of the weapon, it may include system-level and platform integration testing. In other cases, it addresses just the weapon subsystem (e.g., guidance and control, propulsion, warheads, and airframe), while the testing of the weapon system's vehicle is in another functional area.

See Installation Response 3.4.

HARDWARE-IN-THE-LOOP FACILITIES

SECTION 2: CAPACITY & TECHNICAL RESOURCES

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

2.1 WORKLOAD

Annual workload will be reported in units as follows: for open air ranges involving flight testing, report test hours and missions. For all other T&E facilities direct labor hours and test hours must be reported; if available, missions must be reported. If an estimation of test hours based on direct labor hours is necessary, refer to the instructions for Determination of Unconstrained Capacity on page 28.

2.1.A Historical Workload

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

See Appendix A, TABS 20 through 25.

2.1.B Forecasted Workload

-2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP. The Military Departments will provide total funding amounts appropriated for all PEs identified in each functional area shown above.

See Installation Response 2.1.B.1

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

2.2 UNCONSTRAINED CAPACITY

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

See Appendix A, TABS 20 through 25.

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

See Installation Response 2.2.B.

2.3 TECHNICAL RESOURCES

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

Yes. See Installation Response 2.3.A.

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
Yes. The Aircraft Electrical Evaluation Facility supports the Naval Air Warfare Center Aircraft Division Patuxent River by providing two very important services. First, the Aircraft Electrical Evaluation Facility provides engineering support and test and evaluation support for aircraft electrical power systems. This is a critical support area to NAWCAD because of the need to determine the impact of modifications to the aircraft electrical power system and investigate fleet problems. Modifications to the aircraft electrical system typically result in increased aircraft electrical load. Engineering analysis is required to determine if modifications to the aircraft impact the aircraft electrical bus architecture, MIL-STD-704 power quality, and electrical power capacity. The Aircraft Electrical Evaluation Facility also provides test and evaluation support to verify fleet problems and the impact of aircraft modifications to the aircraft electrical system both in the laboratory and on the aircraft. Secondly, the Aircraft Electrical Evaluation Facility provides laboratory environmental and MIL-STD-461 electromagnetic interference test and evaluation support to NAWCAD. This test and evaluation support is required to determine equipment operational capability and safety of flight prior to testing on the aircraft.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes. The T&E facility has two types of clientele requiring services. However, for aircraft systems which are modifications to existing aircraft, this function is stand alone and imposes no harm to the test mission. For a new aircraft being tested or major aircraft updates, this capability is an integrated part of the total systems testing and can significantly impact a program and impose harm to the overall test mission.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
Without this facility, NAWCAD would not be able to provide aircraft stores certification T&E services without an adverse

impact to schedule and cost. The T&E efforts would take more time and additional expensive flight tests would have to be conducted to accomplish the T&E goals.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. The Flight Control Computer Test Facility supports the research, development and acquisition of digital flight control systems and provides a unique capability for T&E of Navy aircraft consisting of independent verification and validation of operational flight programs and an simulation environment for the planning and execution of flight tests.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory - Yes. Without a facility available to provide a generic hot bench capability for radar and avionics systems integration and troubleshooting testing, NAWCAD Patuxent River would be limited to systems level testing installed in test aircraft and depend solely on contractor facilities and labor. The amount of risk inserted due to this methodology would impact both cost and schedule of programs already constrained to limited funding and fleet response time. Experience has proven this to be true. In addition, the Government DT&E corporate knowledge gained through hands-on systems hot bench testing will be lost and reside solely with the contractor. The experience and training gained through on-site system bench testing is critical to maintaining a technical expertise focus within the Government.

[Aircraft Support Systems Test Facility-Appendix A, TAB 25]
Yes. The test mission of the host installation is to be the Navy's principal aircraft weapons system test and evaluation activity through active T&E participation in all phases of the weapons system life cycle process. This includes providing a principal site for development T&E during full scale development. The aviation support equipment (SE) systems are integral parts of the aircraft weapons systems and must be tested and evaluated to determine if they are suitable to support the maintenance and operation of the aircraft weapons systems in the Fleet environment and to determine if the SE systems are, themselves, supportable in the Fleet environment.

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
Yes. The Aircraft Electrical Evaluation Facility aircraft electrical power and environmental test T&E mission supports, the Naval Air Systems Command, other NAWCAD locations, NADEPs, Naval Research Laboratory, David Taylor Laboratories, Air Force, Army, and Coast Guard.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes. If the test facility service were eliminated, it would impact the operational effectiveness of all the components of the armed services as well as the U.S. Coast Guard since this is the only facility of its kind in the United States. It currently supports all components of DoD.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
Yes. This facility handles the majority of ordnance-related work for the all of the principal flight test organizations at NAWCAD Patuxent River, including fixed and rotary wing aircraft/armament compatibility evaluation munitions measurements and weapon release verifications. Loss of this facility and personnel expertise would have a significant negative impact on operational capabilities.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. The Flight Control Computer Test Facility is part of the software support organizations for aircraft such as the F-18 and provides all flight control inputs needed for integration of digital flight control and aircraft avionics systems.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
[Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory - Yes. The availability of Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory becomes even more critical to NAWC as consolidation of Navy activities (i.e., Warminster, Indianapolis, etc.) to Patuxent River, MD occurs.

[Aircraft Support Systems Test facility-Appendix A, TAB 25]
Yes. The test mission of the Operational Test and Evaluation Force (OPTEVFOR) is to determine by testing in an operational (Fleet) environment if a weapons system is operationally suitable and supportable in performing its assigned mission. However, most SE is not tested by OPTEVFOR because:

(1) If it is acquired with the weapon system as specifically peculiar for that system (peculiar SE) it is usually not available at the time the weapon system undergoes operation T&E, or

(2) If it is acquired as common SE (applicable for use for several weapon systems) the item most often does not fit into a category of acquisition requiring an official operational T&E. The Aircraft Support Systems Test Facility fills these gaps and assures that SE is operationally suitable and supportable prior to issuance to the Fleet. If this facility did not exist the role of OPTEVFOR would have to increase or we would have to accept the significant risk of releasing SE to the Fleet without complete and adequate T&E.

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
Yes. Research and Development, and production integrity. In the area of Research and Development, the Aircraft Electrical Evaluation Facility works very closely with personnel at NAWCAD Warminster and Wright Patterson Air Force base concerning aircraft electrical power research and development. In the area of production integrity, the Aircraft Electrical Evaluation Facility is the qualifying activity for aircraft electrical power components, and conducts installation inspections and investigations with regard to aircraft wiring and equipment installation.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes. If the test facility service were eliminated, it would impact the operational effectiveness of all the components of the armed services as well as the U.S. Coast Guard since this is the only facility of its kind in the United States. It currently supports all components of DoD.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
Yes. This facility includes two very specialized test assets (the munitions/store laboratory with its two enclosed firing tunnels and the rocket test stand) which are extensively used for weapons integration and performance measurements on multi-service aircraft and foreign military sales (FMS) air vehicles. The test results directly result in equipment changes and upgrades that improve the mission and operational effectiveness of the equipment used by the U.S. Armed Forces.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. Without this facility, NAWCAD would not be able to provide the T&E flight control computer verification and validation without an adverse impact to schedule and cost. The T&E efforts would take more time and additional expensive flight tests would have to be conducted to accomplish final checkout of changes to flight control computer programs.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory - No.

[Aircraft Support Systems Test Facility-Appendix A, TAB 25]
Yes. The Naval aviation weapon systems are only effective if they can be maintained in a Ready" condition. This is only possible if the SE is suitable to do its mission and itself in a "ready" condition. The task of this facility is to make sure this happens.

SECTION 3: MEASURES OF MERIT

This section relates the measures of merit and the required data to the four criteria that have been established for Military Value. The four military value (MV) criteria are:

CRITERION 1: The current and future mission requirements and the impact on operational readiness of the Department of Defense's total force.

CRITERION 2: The availability and condition of land, facilities and associated airspace at both the existing and potential receiving locations.

CRITERION 3: The ability to accommodate contingency, mobilization, and future total force requirements at both the existing and potential receiving locations.

CRITERION 4: The cost and manpower implications.

3.1 OVER-ARCHING MEASURES OF MERIT

The over-arching measures of merit are listed with accompanying questions (or data requirements) intended to elicit standard information upon which the cross-service analyses can be based, and on which the Joint Cross-Service Groups can base their reviews of the Military Department analyses. Additional specific measures of merit are shown under individual functional areas. The numbers in parentheses () before each measure of merit indicate the BRAC selection criteria for military value.

3.1.A. Interconnectivity (MV I) - Measure of Merit: *Extent of linkage of this facility with other facilities and assessment of single-node failure potential.*

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
About 20 percent of the work load of the Aircraft Electrical Evaluation Facility involves near real-time exchange of data with another facility. This near real-time exchange of data is in the form of computer modem and facsimile exchanges of data. This exchange is held with the Naval Air Systems Command; NADEPs; and other activities at NAWCAD Patuxent River, NAWCADs Indianapolis, Trenton, and Warminster. All of these activities are external to Aircraft Electrical Evaluation Facility, and all but the activities at NAWCAD Patuxent River are external to the site.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
The facility is not currently linked with another facility for exchange of data or control with another facility. As there is no current requirement to do so.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
0%.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
In FY93 we interconnected to Rockwell International in Las Angeles to evaluate X-31 aircraft flying qualities and flight control characteristics in real-time dome to dome simulation exercises. This consisted of less than 1% of our effort in FY93.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory - None. Plans are being developed near term (less than 2 years) to provide a communication fiber optic linkage (data and voice) between the Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory, Chesapeake Test Range, and ACETEF (Offensive Sensors Laboratory)

[Aircraft Support Systems Test facility-Appendix A, TAB 25]
None.

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
Yes. We provide engineering support and T&E support to the activities listed in question 3.1.A.1. The T&E support is unique and not available anywhere else in DoD. Other DoD activities have environmental test capability, but no other DoD activity has environmental test facilities interfaced with drivestands to provide shaft driven capability for rotating equipment.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
No. This facility has no requirement to be connected to other facilities.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
No. This facility has no requirement to be connected to other facilities.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. This facility provides specific aircraft flight control computer capability to support critical ACETEF efforts. Loss of this capability would require complicated simulations to simulate even a significantly less capability at a much increased costs and time.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory- No-not at this time.

[Aircraft Support Systems Test facility-Appendix A, TAB 25]
No. This facility has no requirement to be connected to other facilities.

3.1.B Facility Condition (MV II) - Measure of merit: *Current and planned status of the T&E facilities for supporting assigned test missions.*

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

See Appendix A, TABS 20 through 25.

3.1.C Environmental and Encroachment Carrying Capacity (MV II) - Measure of Merit: *Extent of current and future potential environmental and encroachment impacts on air, land, and sea space for testing.*

See Installation Response 3.1.C.

3.1.D Specialized Test Support Facilities and Targets (MV I) - Measure of Merit: *Extent to which specialized test support facilities and targets are available.*

See Installation Response 3.1.D.

3.1.E Expandability (MV III) - Measure of Merit: *Extent to which an installation/facility is able to expand to accommodate additional workload or new missions.*

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
Yes. The capability exists to support all three functional areas (air vehicle, electronic combat and armament/weapons). The environmental and MIL-STD-461 EMI facilities at the Aircraft Electrical Evaluation Facility are capable of operationally testing components from each of the three functional areas. Ability to support these functional areas depends on physical limitations of existing facilities (e.g. chamber size, temperature/altitude capability, etc.) The Aircraft Electrical Evaluation Facility is particularly oriented toward the T&E of electrical components, but also has the capability of supporting the T&E of mechanical and hydraulic components.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes. Most of the laboratory facilities have automated data gathering capabilities which allows expanded output above the basic current capacity. This feature has demonstrated expanded capability when multiple programs have overlapping schedules.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
No. This facility has no special aspects to expand output.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. The Flight Control Computer Test Facility and Manned

Flight Simulator were designed to be flexible to support all Navy aircraft simulation and flight control requirements. All operations/test software, simulation hardware and flight control computer interfaces have standard designs and are easily adapted to any aircraft simulation/flight control requirement.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory - Yes. The prime location of the Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory in relation to the water, shipping lanes, commercial corridors, restricted airspace and close proximity of the runway forced the adaptability of the laboratory to be a priority from its inception. The lab was designed and remodeled with mobility, adaptability, and consolidation as its structural foundation. Only the power (affixed to the ceiling) and the floor are permanent structures allowing for near 100 percent reconfiguration of lab supported programs. The lab has been and will continue to be a generic engineering tool to fully address all end user test requirements. The best example of this was during one recent program where the lab supported R&D and T&E Engineers, Technicians, Programmers, Maintenance support, and Aircrew training.

[Aircraft Support Systems Test facility-Appendix A, TAB 25]
The most important aspect of this facility that enhances its ability to expand is its location at NAWCAD Patuxent River which gives it access to other specialized activities listed below: avionics intermediate shops; propulsion intermediate shops; mechanical/hydraulic/pneumatic intermediate shops; electrical intermediate shops; stable of Navy/Marine Corps aircraft available at NAWCAD Patuxent River; enlisted Navy/Marine Corps maintenance personnel available at NAWCAD Patuxent River; electromagnetic vulnerability test equipment available at NAWCAD Patuxent River and NSWC Dahlgren, VA; and electromagnetic interference test equipment available at NAWCAD Patuxent River.

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Yes. As discussed in 3.1.E.1, the Aircraft Electrical Evaluation Facility has the capability to provide environmental and MIL-STD-461 T&E support to all three functional areas. This is subject to physical limitations of existing facilities as discussed above.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes. The facilities we operate are used primarily to conduct tests of preproduction configuration systems. More work will become involved in the test and evaluation of experimental systems configurations as other activities and their development functions are consolidated at the NAWCAD Patuxent River Complex.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
Yes. The facility could accept work in the T&E functional area of Armament/Weapons. The facility has the capability of performing T&E for gun system components, ammunition performance, rocket launcher and rocket firing evaluations, and bomb fuze ground and flight tests.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. Expanding into other service's flight control acquisition requirements and propulsion digital engine control tasking can be accepted.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory - The Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory provides a generic roof-top laboratory work environment designed to support a multitude of radar and avionics test and evaluation programs.

[Aircraft Support Systems Test facility-Appendix A, TAB 25]
Yes. The workload would fall in the same functional area. This facility could be used in an expanded role in conducting support equipment (SE) first article testing for both new SE items and items purchased on re-buys by the Naval Aviation Supply Office (ASO).

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

See Installation Response 3.1.E.2.

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

Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
Yes. Most of the T&E conducted at Aircraft Electrical Evaluation Facility is unclassified. SECRET operations can easily be handled. Beyond secret, special procedures would have to developed and security devices would have to be installed.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes. The test facility is located in a building designed to DIAM 50-3 requirements. Laboratories can operate at the Secret level and testing within the building can be at the Top Secret and Special Access. Personnel manning the facilities also have the Special Access and Top Secret clearances to perform the tests.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
Yes, the facility is capable of being used for tests up to the SECRET level.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. TOP SECRET and/or special access required.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]

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Radar and Avionics Systems Test and Evaluation Roof-Top Laboratory - Yes. SECRET.

[Aircraft Support Systems Test Facility-Appendix A, TAB 25] No.

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
No.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
No.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
No.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. The test stations are currently being updated to add the standard automatic flight control computers used in the F-18E/F, V-22, and F-14 aircraft.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
No.

[Aircraft Support Systems Test Facility-Appendix A, TAB 25]
Yes. - FY94 Electrical Upgrades to Uninstalled Engine Test Facility will permit testing to occur on two test pads concurrently.

- FY94 New Engine Test Pad Construction will permit safe operation utilizing highest powered Naval aircraft jet engines.

- FY95 Addition to Propulsion Support Equipment (SE) Engineering Space will increase capacity.

- FY95 Engine Correlation Building will satisfy a requirement generated by BRAC-93 directed move of NAWCAD-Trenton to Patuxent. Trenton, Patuxent River, and NAWCAD-Lakehurst efforts combined in engine correlation program working out of Patuxent River.

- FY95 Addition to SE Evaluation Facility will increase Avionics Laboratory and engineering capacity.

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3.1.F Uniqueness (MV I) - Measure of Merit: *Extent to which the facility is one-of-a kind.*

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Yes. Aircraft Electrical Evaluation Facility is the only facility within DON, DoD and industry having the capability of complete laboratory T&E of aircraft electrical power systems and components, and complete environmental testing of various aircraft, shipboard and ground support equipment systems and components. One of the unique features of this facility is the ability to test mechanically driven equipment while undergoing environmental testing. Other activities may have limited ability to mechanically drive equipment or limited environmental test facilities, but no other activity has these capabilities combined. In addition, no other activity has the variety of environmental test facilities that are located at Aircraft Electrical Evaluation Facility. This facility has full capability of MIL-STD-810 Temperature, Altitude, Humidity, Fungus, Salt Fog, Sand and Dust, Vibration, Shock, and combined environmental testing. Also, no other DoD activity or industry has the facilities to conduct MIL-STD-461 EMI testing of mechanically driven equipment. These capabilities coupled with the NAWCAD Patuxent River flight test capabilities are unequaled anywhere in DoD or industry. The aircraft Electrical Evaluation Facility would be extremely difficult to move or replicate because of the unique and extensive nature of the facilities. In addition, the facility consists of large environmental test chambers, drive motors and EMI chambers which would be difficult to move and re-calibrate.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes. Within the facility there are eight laboratories. Three of the eight laboratories (Crew Technology Laboratory, Lighting Laboratory and VTOL Downwash) are unique within DoD. Two of these three laboratories which perform the aircraft night vision systems testing are routinely used by all DoD components, FAA and the U.S. Coast Guard. Although functions within the remaining five the laboratories are available at other Air Force

activities (Wright-Patterson AFB and Brooks AFB), none are designed to conduct both laboratory and on-airframe testing to allow both component laboratory analysis and total installed, end-to-end systems test.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
Yes. The gun firing tunnels are the only fully enclosed, ventilated, and instrumented firing tunnels in the DoD of a size big enough to contain an entire aircraft.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
No.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
No.

[Aircraft Support Systems Test facility-Appendix A, TAB 25]
Yes. This is the only facility conducting the T&E of Naval aviation SE within the government to determine operational suitability and supportability.

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
Yes. See 3.1.F.1.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes. See 3.1.F.1.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
Yes. The gun firing tunnels are the only fully enclosed, ventilated and instrumented firing tunnels in the United States Government of a size big enough to contain an entire aircraft.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. The Flight Control Computer Test Facility coupled with the Manned Flight Simulator is a one of a kind facility within the government. We are the only government facility that provides a piloted simulation facility coupled with actual aircraft flight control computers for acquisition and testing support.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
No.

[Aircraft Support Systems Test facility-Appendix A, TAB 25]
The facility has been used by the US Coast Guard (Department of Transportation) for some SE T&E. No other government agency or department has the difficult operational environments from which they must operate; i.e. aircraft carriers and small ships.

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Yes. See 3.1.F.1.

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes. See 3.1.F.1.

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
Yes. The gun firing tunnels are the only fully enclosed, ventilated, and instrumented firing tunnels in the United States of a size big enough to contain an entire aircraft.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
No.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
No.

[Aircraft Support Systems Test facility-Appendix A, TAB 25]
Yes. U.S. Navy requirements for support equipment (SE) are unique due to the demanding Maritime environment in which the SE must be used.

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

[Aircraft Electrical Evaluation Facility-Appendix A, TAB 20]
Electrical Systems Department
Yes.

DoD Department	Percentage FY92	Percentage FY93
Air Force	5	5
Army	5	4
Marines	3	4
Coast Guard	1	0
Total	14	13

[Aircrew Systems Test Facility-Appendix A, TAB 21]
Yes, as noted below.

	Percent Workload FY92	FY93
Navy/Marine	59	61
Army	12	6
Air Force	12	22
Coast Guard	17	11

[Aircraft Stores Certification Test Facility-Appendix A, TAB 22]
Yes. Air Force FY92 3% FY93 3%.

[Flight Control Computer Test Facility-Appendix A, TAB 23]
Yes. Less than 1% for FY92/93.

[Integrated Aircraft Test Laboratory-Appendix A, TAB 24]
No.

[Aircraft Support Systems Test Facility-Appendix A, TAB 25]
No.

3.1.G Available Air, Land, and Sea Space (MV II) - Measure of Merit: *Extent to which controlled test ranges satisfy weapon system test requirements.*

See Installation Response 3.1.G.

3.1.H Geographic/Climatological Features (MV II) - Measure of Merit: *Extent to which types of climatic/geographic conditions represent world-wide operational conditions.*

See Installation Response 3.1.H.

3.2 AIR VEHICLES

This functional area includes facilities involved in the testing of all air vehicles/subsystems/components whether fixed wing or rotary wing and test of major subsystems (e.g., avionics, engines, and sensors). This includes flight testing and the testing involving pre- and post-flight preparation and processing of the air vehicle. Unmanned air vehicles and cruise missiles are included.

See Installation Response 3.2.

3.3 ELECTRONIC COMBAT

This functional area includes facilities involved in the testing of stand-alone electronic combat systems and electronic combat subsystems that are normally integrated into other weapon systems. It includes the testing of systems or subsystems that have as their primary mission threat warning, testing of systems that provide countermeasures in the RF (radio frequency) spectrum against radars and other RF sensors, systems that provide countermeasures that are used against sensors in the electro-optical or infrared spectrum as well as testing of electronic and C3 countermeasures.

See Installation Response 3.3.

3.4 ARMAMENTS / WEAPONS

This functional area includes facilities involved in the testing of the weapons portion of a weapon system. In those cases where the weapon system is composed almost exclusively of the weapon, it may include system-level and platform integration testing. In other cases, it addresses just the weapon subsystem (e.g., guidance and control, propulsion, warheads, and airframe), while the testing of the weapon system's vehicle is in another functional area.

See Installation Response 3.4.

INSTALLED SYSTEMS TEST FACILITIES

SECTION 2: CAPACITY & TECHNICAL RESOURCES

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

2.1 WORKLOAD

Annual workload will be reported in units as follows: for open air ranges involving flight testing, report test hours and missions. For all other T&E facilities direct labor hours and test hours must be reported; if available, missions must be reported. If an estimation of test hours based on direct labor hours is necessary, refer to the instructions for Determination of Unconstrained Capacity on page 28.

See Appendix A, TAB 26

2.1.A Historical Workload

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

See Appendix A, TAB 26

2.1.B Forecasted Workload

-2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP. The Military Departments will provide total funding amounts appropriated for all PEs identified in each functional area shown above.

See Installation Response 2.1.B.1

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

See Appendix A, TAB 26

2.2 UNCONSTRAINED CAPACITY

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

See Appendix A, TAB 26

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

Nearly all facilities are limited by the facility's physical space for additional personnel and equipment.

2.3 TECHNICAL RESOURCES

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

Yes. See Installation response 2.3.A.

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

Air Combat Environment Test and Evaluation Facility (ACETEF)-Appendix A, TAB 26]
Yes. Patuxent River's Air Combat Environment Test & Evaluation Facility (ACETEF) is currently the only facility of its kind in the world. It supports air vehicle . avionic mission systems, Electromagnetic Environmental Effects (E^3) and human factor T&E for all Navy as well as other DOD, contractor, and friendly foreign government aircraft. ACETEF is on the cutting edge of modeling/simulation/stimulation technology. The ACETEF labs with the aircraft sized anechoic chamber provides in-band (e.g. Radio Frequency, Infrared, etc.) stimulation of aircraft sensors, combined with low to high fidelity man-in-the-loop crewstation simulations, and a robust wargaming environment. ACETEF is currently used for fixed and rotary wing aircraft/avionic conceptual systems (modeling & simulation), uninstalled sensors & systems (hardware-in-the-loop), and installed systems & sensors (installed systems test facility). As consolidations occur at Pax River, the Naval Air Systems Command Acquisition and Warminster R&D efforts will take increase advantage of ACETEF thereby increasing it utilization as a full spectrum RDT&E facility. The E^3 portion of ACETEF is the desginated DOD lead and is the only DoD E^3 capable of certifying aircraft systems vulnerability to high power radiated fields.

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

Air Combat Environment Test and Evaluation Facility (ACETEF)-Appendix A, TAB 26]
Yes. Other Navy and DoD activities depend on ACETEF for critical

test and evaluation functions. Its lose would require replication of those functions at other sites.

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

Air Combat Environment Test and Evaluation Facility (ACETEF)- Appendix A, TAB 26]
Yes. ACETEF provides facility support to Army, Air Force, contractor, industry, and foreign government test activities. Loss of ACETEF would preclude the use of installed systems test of mission systems for the Army, Navy, Air Force, industry, and foreign governments.

SECTION 3: MEASURES OF MERIT

This section relates the measures of merit and the required data to the four criteria that have been established for Military Value. The four military value (MV) criteria are:

CRITERION 1: The current and future mission requirements and the impact on operational readiness of the Department of Defense's total force.

CRITERION 2: The availability and condition of land, facilities and associated airspace at both the existing and potential receiving locations.

CRITERION 3: The ability to accommodate contingency, mobilization, and future total force requirements at both the existing and potential receiving locations.

CRITERION 4: The cost and manpower implications.

3.1 OVER-ARCHING MEASURES OF MERIT

The over-arching measures of merit are listed with accompanying questions (or data requirements) intended to elicit standard information upon which the cross-service analyses can be based, and on which the Joint Cross-Service Groups can base their reviews of the Military Department analyses. Additional specific measures of merit are shown under individual functional areas. The numbers in parentheses () before each measure of merit indicate the BRAC selection criteria for military value.

3.1.A. Interconnectivity (MV I) - Measure of Merit: *Extent of linkage of this facility with other facilities and assessment of single-node failure potential.*

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

Air Combat Environment Test and Evaluation Facility (ACETEF)- Appendix A, TAB 26]
For FY 93, roughly 5% of the total test workload involved real-time exchange of data and/or control with another facility. Interconnections were made with the Warbreaker facility in Arlington, VA and Rockwell in Los Angeles, CA. ACETEF is also currently part of the Defense Simulation Internet and participates in numerous multi-party simulation efforts with players from around the country. In addition, ACETEF is linked to other local facilities such as the Chesapeake Test Range and E-2C System Test and Evaluation Laboratory.

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

Air Combat Environment Test and Evaluation Facility (ACETEF)-Appendix A, TAB 26]
Yes, other facilities ability to interconnect would be adversely affected. Projects impacted would include Warbreaker, FAA activities, Wright Patterson interconnections, Multi-Service Distributed Training Testbed, Strategic Theater of War-Europe, and Joint Advanced Strike Technology. As a DSI node, ACETEF provides local services to NAWC-AD Patuxent River activities as well as other facilities that reach DSI through ACETEF.

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

See Appendix A, TAB 26

3.1.C Environmental and Encroachment Carrying Capacity (MV II) - Measure of Merit: *Extent of current and future potential environmental and encroachment impacts on air, land, and sea space for testing.*

See Installation response 3.1.C.

3.1.D Specialized Test Support Facilities and Targets (MV I) - Measure of Merit: *Extent to which specialized test support facilities and targets are available.*

See Installation response 3.1.D.

3.1.E Expandability (MV III) - Measure of Merit: *Extent to which an installation/facility is able to expand to accommodate additional workload or new missions.*

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

Air Combat Environment Test and Evaluation Facility (ACETEF)-Appendix A, TAB 26]
Yes. The technologies inherent in an Installed Systems Test Facility (wargaming, sensor stimulation, and man-in-the-loop simulation) are equally relevant to all three functional areas. In addition, an Installed Systems Test Facility must inherently provide the same types of services as Modeling & Simulation and Hardware-in-the-Loop facilities. The combat environment and man-in-the-loop interface must be simulated, and sensors and hardware must be stimulated.

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

Air Combat Environment Test and Evaluation Facility (ACETEF)-Appendix A, TAB 26]
Yes. The technologies inherent in an Installed Systems Test Facility (wargaming, sensor stimulation, and man-in-the-loop simulation) are equally relevant to all three functional areas. In addition, an Installed Systems Test Facility must inherently provide the same types of services as Modeling & Simulation and Hardware-in-the-Loop facilities. The combat environment and man-in-the-loop interface must be simulated, and sensors and hardware must be stimulated. Additional test support to Operational Test and Evaluation can be provided plus increased test and evaluation of battle tanks and other combat land vehicles, satellites, weapons etc.

-3.1.E.2 Are airspace, land, and water areas--adjacent to areas under DoD control--available and/or suited for physical

expansion to support new missions or increased footprints? Yes/no. If yes, please explain.

Yes. See Installation response 3.1.E.2.

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

[Air Combat Environment Test and Evaluation Facility (ACETEF)-Appendix A, TAB 26]
Yes. The facility is maintained to DIAM standards and is certified as a Temporary Secure Working Area up to the TS level.

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

Air Combat Environment Test and Evaluation Facility (ACETEF)-Appendix A, TAB 26]
Yes. The Central Test & Evaluation Improvement Program has identified a funding line through FY90 for the enhancement of installed systems test facilities. Detailed apportionment to various DoD facilities has not yet been allocated. However, it is anticipated that as the premier installed systems test facility, ACETEF development will continue under this funding line.

3.1.F Uniqueness (MV I) - Measure of Merit: *Extent to which the facility is one-of-a kind.*

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

Air Combat Environment Test and Evaluation Facility (ACETEF)-Appendix A, TAB 26]
Yes. While some ACETEF facilities may have counterparts within the DOD, most are unique or are used for unique applications. No other facility provides the integrated, platform level test

capability that ACETEF provides. ACETEF is currently the only Category I Installed Systems Test Facility (ISTF) in the world. There are currently plans to develop a less capable Category II ISTF at Edwards Air Force Base. Major capability advancements of Category I over Category II facilities include man-in-the-loop, many vs. many engagements, C^3I simulations, and coordinated stimulation of multispectral sensors.

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

Air Combat Environment Test and Evaluation Facility (ACETEF)- Appendix A, TAB 26]
Yes. There are no other known facilities that have the capabilities of ACETEF.

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

Air Combat Environment Test and Evaluation Facility (ACETEF)- Appendix A, TAB 26]
Yes. There are no other known facilities that have the capabilities of ACETEF.

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

Yes.

Department	FY92 %	FY93 %
Air Force	15	8
Army	3	8
Coast Guard	2	4

3.1.G Available Air, Land, and Sea Space (MV II) - Measure of Merit: *Extent to which controlled test ranges satisfy weapon system test requirements.*

See Installation response 3.1.G.

3.1.H Geographic/Climatological Features (MV II) - Measure of Merit: *Extent to which types of climatic/geographic conditions represent world-wide operational conditions.*

See Installation response 3.1.H.

3.2 AIR VEHICLES

This functional area includes facilities involved in the testing of all air vehicles/subsystems/components whether fixed wing or rotary wing and test of major subsystems (e.g., avionics, engines, and sensors). This includes flight testing and the testing involving pre- and post-flight preparation and processing of the air vehicle. Unmanned air vehicles and cruise missiles are included.

See Installation response 3.2.

-3.2.C Test Operations (MV II) - Measure of Merit: *Extent of T&E operations that the airspace can accommodate.*

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

See Installation Response 3.2.C.1

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

Air Combat Environment Test and Evaluation Facility (ACETEF)- Appendix A, TAB 26]
Yes. Aircrew flying cockpit simulators in ACETEF's Manned Flight Simulator can prefly test points for the Patuxent River area, China Lake area, and the Nellis Air Force Base area. In addition, a real-time link exists between the Chesapeake Test Range Operations Center and ACETEF facilities to provide mission rehearsal for the extended test team including air space controllers and test coordinators when appropriate.

-3.2.C.3 What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?

N00421

Air Combat Environment Test and Evaluation Facility (ACETEF)-Appendix A, TAB 26]

ACETEF's Manned Flight Simulator has four high fidelity simulation stations--a 6 DOF motion base, 40 ft visual dome, and 265 degree by 180 degree visual stations. Current high fidelity cockpits exist for the F/A-18A, V-22, F-14, and AH-1W and can be used in any station. In addition, a medium fidelity Multi-Reconfigurable Cockpit (MRC) is available for those projects which do not need a high fidelity cockpit. For projects where lower fidelity crew stations and visuals are needed, eight workstation-based mini-crewstations are available to support projects. All cockpits and crewstations can be interfaced with remote locations and ACETEF's combat environment.

3.3 ELECTRONIC COMBAT

This functional area includes facilities involved in the testing of stand-alone electronic combat systems and electronic combat subsystems that are normally integrated into other weapon systems. It includes the testing of systems or subsystems that have as their primary mission threat warning, testing of systems that provide countermeasures in the RF (radio frequency) spectrum against radars and other RF sensors, systems that provide countermeasures that are used against sensors in the electro-optical or infrared spectrum as well as testing of electronic and C3 countermeasures.

3.3.A Threat Environment (MV I) - Measure of Merit: *Extent to which the capability satisfies weapon system requirements.*

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
Approximately 8,000 RF and 200 EO threats are resident in threat libraries. These libraries also include friendly and gray systems.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
Simultaneous open loop RF Threats:

1024>Enhanced Tactical EW Environment Simulator (ETEWES)
1024>Advanced Tactical EW Environment Simulator (ATEWES)
32>Micro Tactical EW Environment Simulator (uTEWES)
1>Frequency Agile Signal Simulator (FASS)
4>Multiple EW Emitter Simulator (MEWES)

32>Communications Environment Simulator (CES)
4>Threat Data Link Simulator
1>ECM Technique Generator
2122 Total

Simultaneous open loop EO Threats:

8>Laser
4>UV
1>IR
13 Total

Simultaneous closed loop RF Threats:

1>Surface to Air Weapon system (I15)
1>Early Warning/Acquisition system (EW/ACQ)
1>Identify Friend or Foe (IFF) system (IFF)
4>HF/VHF/UHF tactical radio sets
7 Total

Types: Air to Air, Anti-Aircraft Artillery, Surface to Air Missile, Airborne Intercept, Surface to Surface Missile, Air To Surface Missile, Early Warning, Height Finder, Airborne Search and Bombing, Altimeter, Airborne Reconnaissance, Air Traffic, Beacon, Transponder, Battlefield Surveillance, Controlled Approach, Ground To Ship, Controlled Intercept (Air, Ground, and Ship), Coastal Surveillance, Decoy/Mimic, Data Transmission, Earth Surveillance, Fire Control, Gun Laying Beacon, Ground Mapping, Harbor Surveillance, Identification Friend or Foe, Instrument Landing System, Jamming (Noise, Pulsed, Spot), Missile Acquisition, Missile Down link, Meteorological, Multi-Function, Missile Homing, Missile Guidance, Missile Tracking, Navigation, Instrumentation, Range Only, Radiosonde, Sonobouy, Space, Surface Search, Shell Tracking, Target Acquisition, Target Illumination, Target Tracking.

Maximum Signal Density: 6 million RF pulses per second.

Maximum Power Level: +25 dBm.

Most simulators have standard output of +25 dBm, however all systems can be amplified.

Bands: HF, VHF, A, B, C, D, E, F, G, H, I, J, K, L
0.5 - 10.6 microns laser

Threats may be radiated or injected.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF) [Appendix A, TAB 26]
The Surface to Air Weapon System (I15), Communications Environment Simulator (CES), and EW/ACQ have been validated through the Crossbow Simval Office. The EW simulations validations are being studied by CROSSBOW (the DoD EW simulator program office. Specific emitters from all RF simulators have been validated by NSA. UV signatures are based upon live fire missile plume data which have not been specifically validated by an external agent.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
Yes. Open loop testing is conducted, both scripted and reactive. Yes. Closed loop testing is also conducted. ACETEF provides the capability for aircrew to fly through various scenarios in free form and react accordingly.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]

Threat signals are represented which match, equal or exceed any current open air range capability and/or any operational threat area. Maximum radar signal density is 6 million pulses per

second; up to 250 communication/data link signals simultaneously plus 13 electro-optical type signals, all signals are taped and verified by NSA.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
Land and sea threats can be simulated. Combined land/sea threats can be simulated. Accurate platform/emitter laydowns of all current DoD open air ranges have been completed and are used regularly. See 3.3.A.2 for a more complete description.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]

Threat signals are represented which match, equal or exceed any current open air range capability and/or any operational threat area. Maximum radar signal density is 6 million pulses per second; up to 250 communication/data link signals simultaneously plus 13 electro-optical type signals, all signals are taped and verified by NSA.

-3.3.A.7.A Threat lay down?

The robust ACETEF computer simulation capability provides precise threat layout scenarios for any required threat representation. They are representative of real layouts with realistic distances and altitudes.

-3.3.A.7.B Representative distance?

Baseline representative distances for any required threat lay down can be precisely simulated by the ACETEF computer systems.

-3.3.A.8 Are the threats moveable (i.e.dynamic) within a test

scenario? relocatable to new scenarios? yes/no

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
Yes. The threats are moveable (dynamic). Since all threat emitter parameters are resident in libraries, they are easily relocatable to new scenarios. Dynamic movement of threats can be simulated to the system under test in both phase and amplitude.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]

Yes. ACETEF laboratories are able to operate both independently to provide a stand alone test capability and integrated in with other local and remote facilities to provide a more complex test capability when required. 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 and seaborne assets has been accomplished using both tactical data links and test support data links.

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 Pax River's Patuxent River communication 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 P-3 Avionics Test Laboratory. Examples include the ACETEF/ESTEL link to support aircraft interoperability with AEW aircraft; the ACETEF/Ships Ground Station/CTR to support the integration testing of the SH-60B LAMPS EW and ASW integration with the FFG and DD class ships; and the ACETEF/CTR

to provide pre-flight training for RCS flight testing; SGS/Wallops to support multi-ship LAMPS testing. Other efforts have include participation in ACETEF/REDCAP integrations, WARBREAKER, Synthetic theater of War - Europe, MDT-2 exercises. Threat capabilities at these sites are reflected into the ACETEF environment.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]

Yes. Simultaneous limitations include one aircraft in Anechoic Chamber, seven aircraft in the Shielded Hangar and four aircraft on the ramp.

3.3.B Test Article Support (MV II) - Measure of Merit: *Extent to which test support satisfies weapon system test requirements.*

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
Yes. The anechoic chamber is 100X60X40 and is capable of supporting tactical sized aircraft. The shielded hangar is 150X300X70 and is capable of handling all but C-5/C-17 sized aircraft.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
There is no limit to the number of countermeasures that can be evaluated. Refer to 3.3.A.10.

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
The range of spectra that can be tested and evaluated is from sonic to ultraviolet (10^0Hz to 10^{16}Hz).

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
The range of available spectra is from sonic to ultraviolet (10^0 Hz to 10^{16}Hz).

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

[AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)-Appendix A, TAB 26]
Yes. ACETEF provides visible scene generation, multiple articulated black body sources for IRST/FLIR/MWS test requirements, and digital IR scene injection.

3.4 ARMAMENTS / WEAPONS

This functional area includes facilities involved in the testing of the weapons portion of a weapon system. In those cases where the weapon system is composed almost exclusively of the weapon, it may include system-level and platform integration testing. In other cases, it addresses just the weapon subsystem (e.g., guidance and control, propulsion, warheads, and airframe), while the testing of the weapon system's vehicle is in another functional area.

See Installation response 3.4

OPEN AIR RANGES

SECTION 2: CAPACITY & TECHNICAL RESOURCES

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

2.1 WORKLOAD

Annual workload will be reported in units as follows: for open air ranges involving flight testing, report test hours and missions. For all other T&E facilities direct labor hours and test hours must be reported; if available, missions must be reported. If an estimation of test hours based on direct labor hours is necessary, refer to the instructions for Determination of Unconstrained Capacity on page 28.

2.1.A Historical Workload

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

See Appendix A, TABS 27 through 31.

2.1.B Forecasted Workload

-2.1.B.1 Identify all appropriations (by program element) that generated a requirement for testing or test support, or are expected to generate a requirement for testing/test support in your Military Department (by functional areas of air vehicles, electronic combat (EC), armament/ weapons, and other test) for FY92, FY93, and each year in the FY95 FYDP. The Military Departments will provide total funding amounts appropriated for all PEs identified in each functional area shown above.

See Installation Response 2.1.B.1.

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

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
Air Vehicles - FY92- 94.79 workyears , FY93- 96.1 workyears.

2.2 UNCONSTRAINED CAPACITY

See Appendix A, Tabs 27 through 31.

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

See Appendix A, Tabs 27 through 31.

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

[Chesapeake Test Range-Appendix A, TAB 27]
The unconstrained capacity is limited to the levels discussed in 2.2 by the facility's physical space for additional equipment and personnel. Also, at some point the unconstrained capacity could eventually become limited by the physical range space available (but given the large volume of range space and capability, other practical limitations would dominate prior to this).

[Telemetry Data System Facility-Appendix A, TAB 28]
The unconstrained capacity is limited to the levels discussed in 2.2 by the facility's physical space for additional equipment and personnel.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
The unconstrained capacity is limited by the facility's physical space for additional personnel, shop/equipment and instrumentation hangar space.

[Target Support Facility-Appendix A, TAB 30]
The unconstrained capacity is limited by the facility's physical space for additional personnel and equipment space.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
The unconstrained capacity is limited by the facility's physical space for additional personnel and equipment space.

2.3 TECHNICAL RESOURCES

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

[Chesapeake Test Range-Appendix A, TAB 27]
No specific war-time or contingency role is established for this facility. But, this facility was heavily utilized to support Desert Storm buildup efforts.

[Telemetry Data System Facility-Appendix A, TAB 28]
No specific war-time or contingency role is established for this facility. But, this facility was heavily utilized to support Desert Storm buildup efforts.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
No specific war-time or contingency role is established for this facility. But, this facility was heavily utilized to support Desert Storm buildup efforts.

[Target Support Facility-Appendix A, TAB 30]
No specific war-time or contingency role is established for this facility. But, this facility was heavily utilized to support Desert Storm buildup efforts.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
No specific war-time or contingency role is established for this facility. But, this facility was heavily utilized to support Desert Storm buildup efforts.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. This facility is the hub for NAWCAD Patuxent River open air flight testing operations control and truth data collection. Without this capability Patuxent River's test mission would be irreparable harmed. Loss of this capability would deny flight test truth data (T&E products) to carrier suitability facilities, ATLAS, ACETEF, etc.. This facility provides aircraft and ship tracking capability which is used for range control and safety, in addition to providing the project test engineer with aircraft position reference data. This data is considered critical to testing of air vehicles and related systems.

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes. Loss of this capacity would cause irreparable harm on NAWCAD Patuxent River's test mission and flight safety program. The Telemetry Data System Facility is NAWCAD Patuxent River primary capability for real-time monitor, via telemetry, of test flights for safety-of-flight coverage and quantitative data collection in support of critical aircraft development and T&E efforts.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
Yes. Loss of the Airborne Instrumentation Support Facility capability would cause irreparable harm to the test mission and flight safety program of NAWCAD Patuxent River. This facility provides NAWCAD Patuxent River capabilities to instrument, modify and provide instrumentation support for test aircraft in support of T&E flight testing.

Instrumentation/modification work within NAWCAD has been consolidated with NAWCAD Patuxent River being the single hub. Also NAWCAD Patuxent River has been designated as the only site to conduct major structural aircraft modifications for the NAWC beginning FY95. (As per Decision Memorandum For Mission Purification Of Aircraft Instrumentation/Modification dated 10 December 1992). This facility houses the

instrumentation/modification function. Without this facility, the installation and maintenance of airborne instrumentation hardware as well as aircraft modifications such as those performed at this facility would be greatly damaged the test mission of capability. Capabilities' loss with this facility would also include the following:

Loss of the Mechanical Design and CAD/CAM System which provides T&E projects with state-of-the-art support in the areas of Mechanical Design, Drafting and Analysis Modeling.

Loss of the Mechanical Fabrication capability which provides the fabrication and installation of aircraft hardware to support T&E operations.

Loss of the Strain Gage Instrumentation and Structural Calibrations and test.

Loss of the Airborne Instruments and Calibration capability which provides calibration support for ALL Flight Test Programs at NAWCAD Patuxent River.

Loss of the Special Flight Test Instrumentation Pool which provides instrumentation for all Navy aircraft Test Programs, at NAWC or contractor facilities. (East Coast and West Coast)

[Target Support Facility-Appendix A, TAB 30]
Yes. The facility does provide a T&E service which if lost would have critical impact on the ability of NAWCAD Patuxent River to conduct flight testing in support of its mission. The impact would be felt in the following areas:

The Target Support Facility provides range support vessels that provide critical support to range safety.

The Target Support Facility provides target services to all the flight test directorates at the NAWCAD Patuxent River. These target services are geared towards realistic targets/threat simulation to fully exercise the capabilities of a weapon system undergoing test and evaluation. If these target services were not available adequate system testing would not be possible.

The Target Support Facility provides an organic dive recovery capability at the NAWCAD. The dive teams routinely recover ordnance test items and weapons system components that have been dropped from aircraft. These items frequently have a dollar value in the tens to hundreds of thousands of dollars and can be one of a kind test items. If this diving capability were lost it would have a severe impact on the ability of the NAWCAD Patuxent River to continue its' T&E mission.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes, provides direct T&E products and services support to T&E activities at NAWCAD Patuxent River. Without pretest, real-time, and post flight support for NAWCAD Patuxent River resulting in T&E products and services will be severely impacted.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. This facility provides T&E products/services to Naval Surface Warfare Center, Dahlgren, VA, the Coast Guard aircraft and vessel tracking development testing, NASA aircraft testing and the Naval Warfare Assessment Division for Atlantic Fleet exercises. Loss of this capability would deny these activities these T&E products/services impacting their test missions.

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes. This facility provides real-time telemetry support and data collection and processing for efforts including joint service programs, Army programs and contractor development efforts. It provides the most extensive and flexible real-time telemetry effort available. Therefore, loss of this capability will impact to the test mission of these activities.

[Airborne Instrumentation Support Facility-Appendix A, TAB 29]
Yes. NAWCAD Patuxent River is designated as the only site to conduct major structural aircraft modifications for the NAWC beginning FY95. and without this instrumentation facility the test and evaluation mission of other activities and facilities within NAWC can not be accomplished. Also, loss of included capabilities would have the following impacts:

Loss of the Mechanical Design and CAD/CAM would impact tenant activities located at Patuxent River such as NRL, VQ-4 Squadron, Bell Boeing, McDonnell Douglas, Grumman.

Loss of the Mechanical Fabrication capability would impact Tenant activities located at Patuxent River such as NRL, VQ-4 Squadron, Bell Boeing, McDonnell Douglas, Grumman Aircraft.

Loss of the Strain Gage and Structures capability would impact the NAVSEA Detachment, Naval Air Station, Patuxent River.

Loss of the Special Flight Test Instrumentation Pool which is responsible for tracking 55,000 items of instrumentation at NAWC and Airframe Contractors would have broad impact to other activities.

[Target Support Facility-Appendix A, TAB 30]
Yes. Loss of the T&E service provided by the Chesapeake Test Range Target Support Facility would have a profound impact on the test mission of several DoD test activities as well as the Federal Aviation Administration. The Target Support Facility section provides T&E target services to the NSWC Dahlgren VA, the Carderock Division of the Naval Surface Warfare Center, the PEO for cruise missile and UAV testing, Navy International Programs Office and the Command-in-Chief Atlantic Fleet, Norfolk VA. Support is also provided to the Department of the Air Force for target ship test support and the Federal Aviation Administration on the Aircraft Hardening Program. Loss of these T&E support services would impact all of these activities.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes. Loss of the test and evaluation data processing capability products would cause irreparable harm on the test missions of other activities that utilize NAWCAD Patuxent River test data including other Navy activities, Army and Coast Guard activities and contractor activities. This facility provides preflight, real-time and post flight data processing and analysis support and photogrametric support for all flight testing efforts. Reliance studies have shown that NAWCAD Patuxent River has the most extensive aircraft test and evaluation real-time and post flight capabilities of any test and evaluation activity. Therefore, loss of this test and evaluation data would cause irreparable harm on the test mission of a number of other activities by preventing the availability of these products to them.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. This facility provides test and evaluation products and services critical to the operational effectiveness of U.S. Forces. These products/services include support for: Atlantic Fleet training, operational test launches for cruise missile and Fleet exercises, unmanned air vehicle operational training, tactical manual development, and quick reaction developments/improvements in support of operational efforts such as was done for operational Desert Storm, etc..

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes. This facility provides test and evaluation products and services critical to the operational effectiveness of U.S. Forces. These products/services include providing off-site telemetry support for aircraft carrier landing system certification, cruise missile operational training launches, and other Fleet exercises.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
Yes. This facility has been able to provide the quickest turn-around possible when critical testing needs to be performed on aircraft or aircraft systems during peacetime as well as during such critical periods as Desert Storm. By taking advantage of its proximity to critical facilities within NAWCAD Patuxent River, this facility is able to provide quick response instrumentation and prototype installation to support to the fleet. For example, this facility supported prototype installation of the Maverick missile on P-3 to provide a limited operational capability and quick reaction teams which have provide development and installation at fleet locations all over the world.

[Target Support Facility-Appendix A, TAB 30]
Yes. Specifically the electronic emitter support provided by the Target Support Facility critical to the training requirements for the Fleet in conducting the Suppression of Enemy Air Defense (SEAD) mission.

Target Section technicians install and operate the HARM emitter during at-sea fleet training exercises. Without the emitter support provided by the Chesapeake Test Range's Target Section the ability of our east coast naval forces to train in conducting HARM missile strikes on enemy air defense radars would be severely impacted.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes. This facility provides test and evaluation products/services without which irreparable harm would be imposed on fleet missions critical to fleet operational effectiveness. These products/services include support for: tactical manual development, aircraft carrier landing system certification, and cruise missile operational test launches.

SECTION 3: MEASURES OF MERIT

This section relates the measures of merit and the required data to the four criteria that have been established for Military Value. The four military value (MV) criteria are:

CRITERION 1: The current and future mission requirements and the impact on operational readiness of the Department of Defense's total force.

CRITERION 2: The availability and condition of land, facilities and associated airspace at both the existing and potential receiving locations.

CRITERION 3: The ability to accommodate contingency, mobilization, and future total force requirements at both the existing and potential receiving locations.

CRITERION 4: The cost and manpower implications.

3.1 OVER-ARCHING MEASURES OF MERIT

The over-arching measures of merit are listed with accompanying questions (or data requirements) intended to elicit standard information upon which the cross-service analyses can be based, and on which the Joint Cross-Service Groups can base their reviews of the Military Department analyses. Additional specific measures of merit are shown under individual functional areas. The numbers in parentheses () before each measure of merit indicate the BRAC selection criteria for military value.

3.1.A. Interconnectivity (MV I) - Measure of Merit: *Extent of linkage of this facility with other facilities and assessment of single-node failure potential.*

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

[Chesapeake Test Range-Appendix A, TAB 27]
40% of missions involved real-time exchange of data or control with another facility

a. External interconnects:

a.1 Link to NASA Wallops Flight Facility (WFF), VA: Real-time bidirectional data link for transmitting telemetry, raw radar tracking, raw multilateration tracking, and voice radio data from WFF to CTR, and for transmitting processed TSPI to WFF for range safety and control. This data link and its accompanying sub-links at WFF to specific sites enables expansion of CTR's area of tracking/telemetry/communications coverage to include 40,000 sq. nautical miles of airspace over the Atlantic ocean.

Main link:	**CTR to WFF wideband microwave link**	**12.9Mbps (DSA)**
Sublinks:	**WFF TSPI microwave link**	**128kbps**
	WFF Safety link (landline)	**9.6kbps**
	WFF comm system (fiber)	**1.5Mbps (T1)**
	WFF MATS data link (microwave)	**64kbps**

a.2. Link from Fleet Area Control & Surveillance Facility (FACSFAC), Virginia Capes, NAS Oceana, VA: Real-time unidirectional commercial encrypted dedicated link for transmission of radar surveillance, IFF, and LINK-11 data from FACSFAC to CTR. Data is used for range safety and surveillance during tests conducted over the Atlantic ocean, and for transmission of IFF data to CTR during Atlantic FLEETEXes for processing and forwarding to the Naval Warfare Assessment Division, Corona, CA. Data rate: 56kbps (DS0)

a.3. Link to Naval Warfare Assessment Division (NWAD), Corona, CA: Commercial encrypted telephone link using STU-III encryption devices for transmission of IFF, multilateration, and tactical training range tracking data from CTR to NWAD during Atlantic FLEETEXes. Data rate: 9.6kbps

a.4. Link from Acoustical Underwater T&E Complex (AUTEC), Bahamas (via West Palm Beach, FL): Real-time unidirectional commercial link from AUTEC to CTR to enable display of AUTEC range tracks in CTR control room; used to conduct Rotary Wing and Force Warfare test projects. Data rate: 56kbps (DS0).

b. Internal Links:

b.1. Link to NISE-East (Webster Field): Real-time bidirectional microwave link for transmission of telemetry, radar tracking data, video, and voice communications from Webster Field. Data rate: 6Mbps (DS2)

b.2. Link to ATLAS: Real-time unidirectional landline link for transmission of processed TSPI data and voice to ATLAS from CTR for use in coordinated flight testing. Data rate: 56kbps

b.3. Link to Telemetry Data Center (TDC): Real-time bidirectional wire link for transmission of TSPI data to TDC from

CTR's TSPI equipment, and for transmission of TM data from TDC to CTR. Used to satisfy flight test data project requirements. Data rate: 1.5Mbps (DS1)

b.4. Link to Landing Site Test Facility (LSTF): Real-time unidirectional landline link for transmission of TSPI from CTR to LSTF for use in carrier suitability and field landing tests. Data rate: 56 kbps

b.5. Link to Ships Ground Station (SGS): Real-time bidirectional encrypted fiber optic link for transmission of voice communications between CTR and SGS and LINK-11 data from SGS to CTR. Used ASW fixed and rotary wing platform testing. Data rate: 1.5Mbps (DS1)

b.6. Link to Coast Guard Vessel Traffic Control System (CGVTS) development facility: Real-time unidirectional landline link for transmission of suveillance radar and voice data from CTR to CGVTS, used in vessel tracking control system development. Data rate: 56kbps

b.7. Link to NAS Patuxent River Broadband Communication Network: Real-time unidirectional CATV coaxial link for transmission of video and data to multiple sites throughout the Patuxent River complex. Used to transmit flight test video and data to customers throughout Pax River, and to receive video from other Pax River nodes (e.g., HRO for training). Data rate: Broadband.

b.8. Link to Air Combat Environment T&E Facility (ACETEF): Real-time bidirectional encrypted landline link for transmission of telemetry and TSPI from CTR to ACETEF. Used to support projects in ACETEF facilities. Data reate: 1.5Mbps (DS1).

All of these can be simultaneous activities.

[Telemetry Data System Facility-Appendix A, TAB 28]
In FY93 approximately 10% of test workload involved the electronic exchange of test data with other facilities. However, essentially 100% of workload involved providing test data in real-time or near real-time to other facilities (Strike Aircraft Test Directorate, Rotary Wing Aircraft Test Directorate, Force

Warfare Test Directorate, and Systems Engineering Test Directorate) and aerospace contractors where those facilities (project, customer teams) used RTPS capabilities in our facility, i.e., worked at our Project Engineer Stations analyzing telemetry data processed by RTPS.

TDS interconnects electronically with the following facilities. All are simultaneous (concurrent) activities with RPTS operations. Internal/external site connectivity is indicated.

- Electronic Warfare/Avionics Flight Test Facility - internal
- Chesapeake Test Range, - internal
- Landing Systems Test Facility (LSTF) - internal
- Grumman Aerospace, Calverton ATS Facility - external
- Bell Helicopter-Textron, Ft. Worth Facility - external

[Airborne Instrumentation Support Facility-Appendix A, TAB 29] It is estimated that approximately 5% of the workload involves real-time or near real-time efforts. This facility operates under scheduling constraints because of reserved range times and flight schedules. It is imperative that instrumentation installations and support be performed in the most expeditious manner possible. This requires the real time exchange of information and system personnel support that is vital to the flight tests performed at Patuxent River. This facility is chartered to provide NAWCAD Patuxent River with instrumentation support for major aircraft modifications. That mission cannot be accomplished without this facility being within the physical confines of NAWCAD Patuxent River.

The real-time exchange of data or control with other facilities is a vital part of this facility's mission. Requirements for aircraft instrumentation are transmitted with associated project office personnel, and engineering departments external to this facility but located at NAWCAD Patuxent River. This facility requires close proximity to NAWCAD Patuxent River's Telemetry Data System's facility in order to facilitate the induction and verification of aircraft instrumentation system calibrations into the TDS. This facility requires the design and fabrication support of the mechanical engineering section and machine shop located at NAWCAD Patuxent River.

Personnel from this facility are charged with instrumentation monitoring duties on behalf of the various Project offices with NAWCAD Patuxent River. These monitoring duties involve monitoring and oversight of MDA-East instrumentation installations in T-45's, and Bell/Boeing instrumentation installed in V-22's at NAWCAD Patuxent River. Also, numerous other contractor installed instrumentation systems in various NAWCAD Patuxent River owned platforms.

This facility is responsible for the instrumentation system installed in NAWCAD Patuxent River's catapult. This facility is also responsible for aircraft instrumentation in support of NAWCAD Patuxent River's Carrier Suitability Department.

All support of the above type requires a real-time exchange of data with the TDS facility, aircraft contractors, Patuxent River project engineers/pilots, and other NAWCAD Patuxent River departments.

Approximately 75% of the time the Special Flight Test Instrumentation Pool is exchanging and tracking instrumentation equipment. The Facilities interconnected are NAWCWD Pt. Mugu, NAWCWD China Lake, McDonnell Douglas, Lockheed, Boeing Sikorsky, Kaman, Bell Helicopter all are external to the site.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
45% pertaining to data prepared directly by T&EDP for NAWCAD Patuxent River Engineers. This data is primarily transmitted internally over internal local communication networks and an intrafacility network (Broadband communication network). As required commercial data links are established and data is transmitted to contractor sites or other activities. The interconnectivity with the Test and Evaluation Data Processing facility includes both hardwire and gateway connections to several sites across CONUS. Specifically, there are the connections among Patuxent River, Dallas, and Wilmington (DE) in support of the V-22 flight test program. The workstations at Patuxent River have access to the flight test data base maintained for the test results from the V-22. In addition, there is a server in the facility that has an address on Internet via the gateway at Patuxent River. This provides accessibility by McDonnell Douglas Aerospace (MDA), Texas Instruments,

Warminster, and other commercial/government activities for the Joint Stand-Off Weapon (JSOW) provided the appropriate access codes are met. In the future, there will be support for a specific project (Drag Fin Tee) which requires interconnected workstation support among both commercial and government sectors.

In FY93, the Test and Evaluation Data Processing facility provided near-real-time support over interconnections which amounted to 45% of the total test workload. Among which the following are listed:

External - connections among Patuxent River, Dallas, and Wilmington (DE) in support of the V-22 flight test program prior to collocation at Patuxent River. The workstations at Patuxent River have access to the flight test data base maintained for the test.

External - a terminal in the facility had access via Internet through the gateway at Patuxent River. This provided accessibility by McDonnell Douglas Aerospace (MDA) to the latest results reduced from film reading performed at Patuxent River.

Internal - the local half-dozen users of the workstations in FY93 were simultaneously accessing the server interconnections over the base-wide area network at Patuxent River.

[Target Support Facility-Appendix A, TAB 30]
40% of workload in FY93 is estimated to involved the real-time or near real-time exchange of data or control with another facility. The principal facilities that are interconnected to include the Chesapeake Test Range and the National Aeronautics and Space Administration, Wallops Island Flight Facility. While conducting target operations in the Atlantic Coast offshore warning areas, these operations are normally conducted simultaneously and include the exchange of command and control and target performance data.

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

[Chesapeake Test Range-Appendix A, TAB 27]

- Strike Aircraft Test Directorate, Force Warfare, Rotary Wing, and NAWCAD Patuxent River Staff would lose the capability of receiving real-time video of test operations conducted at Chesapeake Test Range via the Communication Network, limiting their test monitoring capability.

- Telemetry Data Center would not receive Time-Space Position Information data from aircraft under test, limiting their test data capability.

- ACETEF would not receive real-time TSPI from Chesapeake Test Range, eliminating their live track and telemetry capability.

- Naval Warfare Assessment Division, Corona, CA would not receive IFF tracking data from Chesapeake Test Range (originating from VACAPES, VA), decreasing their capability of FLEETEX assessment and analysis.

- NISE-EAST would not receive data and voice from the Landing Systems test facility via the Chesapeake Test Range/NISE microwave link, or video and audio form the Broadband Communications Network.

- Antenna Testing Laboratory Automated Systems would not receive Time Space Position Information data from Chesapeake Test Range used to allow pointing of antennas for antenna testing, and would not receive voice communications used for project operations.

- Ships Ground Station would not receive data and voice via a secure link for data processing and the Operational Communications System. Ship Ground Station is also connected to the Chesapeake Test Range High Frequency radio located at Point Lookout.

- The Coast Guard Vessel Traffic System would not receive VHF radios and radars data from Chesapeake Test Range. There is a T1 (1.54Mbps) data link between Chesapeake Test Range and Coast Guard Vessel Traffic System which allows Chesapeake Test Range to emulate a Coast Guard remote site for Vessel Traffic System software and hardware operational checks.

[Telemetry Data System Facility-Appendix A TAB 28
Yes. The facility provides the central telemetry receiving and processing capabilities supporting the entire NAWCAD Patuxent River complex. All NAWCAD Patuxent River directorates requiring telemetered data from test aircraft or weapons utilized our telemetry receiving and processing facilities. RTPS performs decommutation, calibration and computation of telemetry data, and provides six Project Engineer Stations where project engineers from all test directorates (i.e., facilities) monitor and analyze real-time flight data. If this facility were closed, there would be no real-time telemetry processing support for aircraft and weapons test projects.

In addition to the resident use of RTPS by project customers, the TDS facility electronically shares telemetry data in real-time with the facilities listed in 3.1.A.1. For the internal sites, closing of this facility would mean the loss of their only source of telemetered test data, which would destroy their ability to perform real-time tests requiring correlation of instrumentation sensor data with aircraft on-board measured data. For the external sites, aircraft contractors would be denied the ability to conduct test flights at NAWCAD Patuxent River while processing telemetered data with unique facilities developed at their own sites.

The Integrated Test Team (ITT) for V-22 is critically dependent on the three-way connection for accessibility by all the interested parties. Since the collocation of the ITT has occurred, there is even more dependency on the data flow across this network for quick decisions from the respective engineering centers before expanding the envelope. Specifically, the Bell, Boeing and NAVAIR engineers would resort to non-electronic capability resulting in a ten-fold delay in turnaround.

Without the MDA interconnection, the data would be either unavailable or if the test events were re-scheduled the equipment for reduction of the data from film would also need to be re-located along with the appropriate skilled labor.

[Airborne Instrumentation Support Facility-Appendix A, TAB 29] Yes. This facility functions as the major source for instrumentation expertise and hardware for NAWCAD Patuxent River and the Navy. It provides instrumentation services to NAWCAD Patuxent River test directorates as well as the United States Naval Test Pilot School. It is an integral part of the Navy's test and evaluation process. Installations/modifications at NAWCAD Patuxent River are dependent upon this facilities in order to insure timely and well coordinated instrumentation services. Also, the Special Flight Test Instrumentation Pool effect would have on impact on their operation e.g., cost for programs would increase considerably and instrumentation reuse would be significantly reduced. All facilities which are connect to and serviced by this facility would be significantly impacted.

3.1.B Facility Condition (MV II) - Measure of merit: *Current and planned status of the T&E facilities for supporting assigned test missions.*

Facility Condition Forms are provided in Appendix A.

See Appendix A, TABS 27 through 31.

3.1.C Environmental and Encroachment Carrying Capacity (MV II) - Measure of Merit: *Extent of current and future potential environmental and encroachment impacts on air, land, and sea space for testing.*

See Installation Response 3.1.C.

3.1.D Specialized Test Support Facilities and Targets (MV I) - Measure of Merit: *Extent to which specialized test support facilities and targets are available.*

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

[Chesapeake Test Range-Appendix A, TAB 27]
No.

[Telemetry Data System Facility-Appendix A, TAB 28]
No.

[Airborne Instrumentation Support Facility-Appendix A, TAB 29]
Yes. Although this facility contains most of the personnel, hardware and equipment necessary to complete the instrumentation/modification process, it depends on the services of other specialized facilities as well. Not only are these other facilities required for the instrumentation or modification of an aircraft to take place, they must be conveniently located in order to help insure timely completion of the effort. Mechanical fabrication requires the Aircraft Intermediate Maintenance Department for pressure checking fabricated aircraft pressure lines and custom fittings for special system tests. Also, the support of the NAWCAD Directorates maintenance facilities are required for aircraft movements maintenance, etc..

[Target Support Facility-Appendix A,-TAB 30]
No.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
No.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. Specialized targets are required to support this facilities required to support this facilities efforts. These targets are provided and support by the Target Support Facility which is described below.

[Telemetry Data System Facility-Appendix A, TAB 28]
No.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
No.

[Target Support Facility-Appendix A, TAB 30]
Yes. The Chesapeake Test Range, Range Directorate of the Naval Air Warfare Center Aircraft Division maintains several specialized facilities that are required to support test operations. These facilities referred to as the Target Support Facility, are briefly described in the following information.

The Target Support Facility is responsible for the management, design, operation and maintenance of all surface and aerial targets operated at the Naval Air Warfare Center Aircraft Division. It is also tasked with providing ocean engineering services required to support test and evaluation projects conducted by the flight test directorates. Services provided includes diving support services to recover expended ordnance test items, range patrol services to ensure safety of operations and operation of scoring systems required to collect data.

The Vandal Target Launch Facility is located at the National Aeronautic and Space Administration's Wallops Island launch site. Operating under the sponsorship of the Naval Air Systems Command, its primary purpose is the preparation buildup, launch and over-the-horizon control of the VANDAL supersonic sea-skimming missile target used to support RDT&E and fleet training requirements. The Wallops Island launch site is the

Navy's single site on the east coast for simulating the supersonic sea-skimming cruise missile threat.

The Target Hulk Preparation Facility is located at the Naval Air Station, Patuxent River's Solomons Annex. The primary purpose of the facility is to prepare decommissioned ship hulks into target ships which are utilized to support anti-ship missile and anti-radiation missile test and evaluation and training exercises. The facility supports the installation of towing and navigation packages and the environmental preparations required to prepare a ship for an at-sea exercise. Installation of target command and control equipment, photographic instrumentation and electronic emitters are also accomplished at this facility. Programs supported by this facility include the Tomahawk, Harpoon missiles, High Speed Anti-Radiation Missile (HARM) operational training launches, LPD-17 ship acquisition program, and the SH-70/Penguin Foreign Military Sales (FMS) program.

The Plastivac Armored Vehicle Fabrication Facility, located at the Industrial side of the Naval Air Station's Patuxent River Solomons Annex, designs and produces plastic vacuum thermal formed threat armored vehicle targets. Vehicle models produced include the Soviet T-72 main battle tank, ZSU-23 quad 23mm self-propelled anti-aircraft gun system, BRDM amphibious scout vehicle, SA-9 Gaskin and the SA-13 Telear. These low cost, light weight, recyclable skid mounted targets are easily moved by towing behind an ordinary pickup truck. In addition to the high fidelity visual image they present, by application of a metal sprayed coating they also provide a realistic radar cross section (RCS) signature. Millimeter wave tests conducted by Eglin Air Force Base and the Naval Research Laboratory concluded that "simulations of excellent quality were obtained using ABS plastic with a metal sprayed zinc coating on the outside surface." Ongoing efforts also include looking at means to provide a realistic IR presentation for these targets.

Plastic targets have been provided to Navy, Marine Corps, Army, Air Force, and Air National Guard sponsors. They have been used for research and development, test and evaluation, and training purposes.

NAWCAD has developed facilities (such as the Tarantul Facility), and related expertise, enabling operation of former adversary Maritime hardware. The principal existing component, a 500 ton Russian-built Fast Attack Craft (FAC) has now become a specialized facility for the laboratory investigation of combat vessel magnetic silencing techniques. Other ship systems such as the operable fire control and surface search and targeting radars are periodically used for evaluation of optimized U.S. countering systems, software, and techniques. Also, laboratory focus at the facility surrounds the demonstrated use of titanium in the combat ship environment. This facility is organized to utilize available support infrastructure elements for all operations and maintenance to a most efficient mix of U.S. and former adversary methods and standards as well as to provide responsible test and evaluation for customer needs. Testing has been accomplished for ONI, NSWC, NRL, NAWCAD, and NAVSEA.

A wide variety of specialized targets are required to support this facility. These targets consist of land, surface and aerial targets required to validate the performance of naval aircraft weapons systems. They include:

- Hooper Target Complex. A one half mile radius prohibited area in the Chesapeake Bay consisting of a concrete reinforced center-main target surrounded by four smaller peripheral targets rising from steel cases in the bay bottom. The targets are located in close proximity to cinetheodolite stations along the bay shore which allow for scoring on weapons delivery projects.

- Fixed Site Radar Reflector Arrays. Four sets of trihedral radar reflector arrays are maintained and operated at the NICE-EAST Webster Field, St. Inigoes, MD. The arrays consist of 38 $100m^2$ trihedrals at surveyed locations and positioned at various elevation angles and run-in headings. One $100m^2$ reflector at Bishops Head, MD on the eastern shore compliments the Webster Field array. Eleven $3000m^2$ trihedrals are located on Bloodsworth Island in the Chesapeake Bay for radar azimuth and range resolution measurements. The arrays are used in support of Navy test and evaluation, private industry research and development efforts and U.S. Navy test pilot school training

syllabus. They also support other service aircraft radar development effort.

- Very Low Observable Spar Buoys that have been developed to position Lundberg lens reflectors in an at-sea environment to support radar systems evaluation trials. These spar buoys have satisfactory stabilized pitch and roll in all tested sea state conditions to allow a full 360° azimuth approach.

- Full-Scale Target Ships NAWCAD Patuxent River has seven full-scale target ships assigned to support various Navy acquisition and weapon system test and evaluation projects. The ships range from 180' (1,025 tons) to 521' (11,000 tons) and are operated at open-ocean test sites on the east coast and Gulf of Mexico. Some of the programs supported include: LPD-17 ship acquisition, Tomahawk Cruise Missile, Harpoon Missile, Penguin Missile, HARM Missile, and Fleet training requirements.

The following standard Navy targets are also operated in support of the NAWCAD mission:

QLT-1C Remote control land vehicle target incorporating a real-time video link.

QST-35 Remote control sea powered target (SEPTAR) designed to replicate the missile boat/destroyer class target.

QST-33 Remote control sea powered target (SEPTAR) designed to replicate the fast patrol craft threat.

ISTT Improved surface tow target designed to support at-sea surface gunnery and strafing exercises.

VANDAL A supersonic sea skimming missile designed to replicate the cruise missile threat used in test and evaluation and training exercises.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. The target validation is described in the response for the Target Support Facility.

[Telemetry Data System Facility-Appendix A, TAB 28]
N/A.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
N/A.

[Target Support Facility-Appendix A, TAB 30]
Yes. The specialized targets operated at the NAWCAD Patuxent River have been validated by a combination of means. In-house laboratory and field measurements have been used to validate some targets. Other activities, such as NRL, have been utilized to validate other targets. NRL and an Air Force laboratory validated the excellent simulation quality of the plastic armored vehicle targets. The standard Navy targets have been validated by their respective Naval Air Systems Command and Naval Sea Systems Command Target Program Office. Additionally, performance and radar cross section data are obtained independently by the developing agency prior to initial operating capability (IOC) of these standard Navy targets.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
N/A.

3.1.E Expandability (MV III) - Measure of Merit: *Extent to which an installation/facility is able to expand to accommodate additional workload or new missions.*

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. The Chesapeake Test Range Facility architecture is designed to be inherently expandable. Additional equipment can be added (for example, by exercising contract options for Range Computation and Control Systems II equipments) to increase computational and control capability at primary and/or remote sites. Also, for example additional metric capability and/or larger quantities of multi-lateration units can be easily added to provide additional measurement and/or participant tracking capability. This inherent expandability of the Chesapeake Test Range all it to expand output to appropriate support any of the functional areas.

Also, the real-time and data fusion capability inherent in the systems design at the Chesapeake Test Range has demonstrated an exceptional capability to maximize the data output during flight test operation at NAWCAD. Unique real-time data displays and aircraft control display have provided the project engineer and range operations team with test-tools designed to significantly enhance accurate data collection and reduce the requirement to re-test or re-fly test scenarios. An example is a graphical three dimensional display tool which allows the aircraft test controller to accurately control critical pitch, roll, yaw flights scenarios during the collection of accurate antenna patterns. This real-time capability has demonstrated a greater than two to one data collection capability over traditional flight test methods which include the post processing of data, and re-flying scenarios to complete the data collection. Thus, the real-time and data fusion capability inherent in the systems design allows flexibility and productivity improvements to effectively yield expandability.

Although our prime emphasis is collection of test data associated with air vehicles testing our general systems capability is well suited for collecting similar data associated with electronic combat system and weapons/armaments. Our real-time capabilities could be applied to these other functional areas and yield similar gains in productivity and test data accuracy as we have demonstrated in our air vehicles testing.

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes, with regard to Telemetry (TM) capacity. Due to circumstances of equipment availability there are basic concurrent TM operations possible with full system services. However, there is overflow capacity in the form of a scaled down stream with less elaborate display and processing capacity but fully file and decommutation compatible. There are also 8 portable systems at the center. Five of the eight are in dedicated applications and three support remote-site TM work and preparation. Also, beyond seven full tracking dishes of 8 foot or greater diameter, several smaller antennas and receivers exist. Thus, the concurrent TM flights support and tape playbacks capability can be easily expanded. Beyond this expandability, additional equipment can be added to increase capability even more if required.

This capability can be utilized to expand output with the air vehicle or other areas where telemetry capability is required. Also, the application of the real-time processing system capability, which includes the most flexible and highly productive application software capability available of any existing capability, to additional Electronic Combat and Munitions functional areas should provide significant efficiency improvement resulting in the ability to handle more workload.

[Airborne Instrumentation Support Facility-Appendix A, TAB 29]
Yes. This facility and capability is additionally expandable. Instrumentation hardware and the expertise to design instrumentation systems can be applied across T&E functional areas to a great extent. Knowledge accrued by this facility in the aircraft instrumentation/modification process is not totally restricted to aircraft platforms. A great deal of expertise has been obtained in other functional areas as well. For example, this facility performs numerous instrumentation installations

that include the instrumentation of ordnance and electronic combat avionics. Also, the following capabilities are easily expandable:

Yes. The Strain Gage and Structures capability can provide support to any functional area requiring strain gage and structural test support.

Yes. The airborne instruments and calibration capably can provide a calibration service to other T&E functional areas this type of support.

Yes. The Special Flight Test Instrumentation Pool could support other test programs for the Army and Air Force as well as other appropriate test and evaluation functional areas.

[Target Support Facility-Appendix A, TAB 30]
Yes. This facility is easily and readily expandable. The facility is located in relatively close proximity to the NAWCAD air space operations area in R4005 North and South. Cycles for target turn around time are short ensuring and adequate supply of targets to meet mission test and evaluation objectives. Various target can be used to support additional workload in all test and evaluation areas.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes. This facility and capability is easily expandable by application of the existing software application packages to move test and evaluation support efforts in air vehicle, electronic combat, and munitions test and evaluation functional areas. Significant expandability is available with existing equipment to support these expansions. If additional expandability beyond this level were required, additional equipment could be easily added through e.g., software, memory or equipment upgrades. Also, for example the investment of multi-processor client-server arrangements of the workstations can triple the workload capacity for each client-server.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. New test and evaluation workload different from what is currently planned can be accepted. The NAWCAD Patuxent River test range infrastructure is well suited for the collection of test data which is applicable to weapons, armament and electronic combat testing as well as our normally predominant air vehicles functional test area. CTR has demonstrated the capability to conduct tests and provide the required data in support of programs in these other functional areas or air vehicle programs which required similar test and evaluation products and services. For example, support has been provided in the off-shore warning areas aircraft-weapons integration efforts utilizing Maverick, Sidewinder, Sparrow and Penguin, and fleet training efforts utilizing cruise missile, Harpoon and HARM. This demonstrates the potential to support some aspects of the weapons functional area. Also, appropriate additional workload in support of Navy Surface Ship Warfare and Subsurface Warfare Test and Evaluation are areas that additional and/or different workload could be supported in.

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes. New test and evaluation workload different from what is currently planned can be accepted in other functional areas where telemetry capabilities is required. Also, support can be provided to other areas such as ships. For example we did, at one time, do playback work for the surface effects ships but no longer have that type customers. Basically, we can support nearly anything that is instrumented and supported by telemetry.

[Airborne Instrumentation Support Facility-Appendix A, TAB 29]
Yes. This facility specializes in the instrumentation/ modification of air vehicles. This facility can accept new T&E workload across different functional areas that centers around the instrumentation/modification process. This includes accepting workload in the following areas:

Strain Gage and Structures Lab can accept Weapon Systems, special operations for Strain Gage and Structural Test Support.

Airborne Instruments and Calibration capability can support all functional area including (EC and munitions) requiring test support.

The Special Flight Test Instrumentation Pool could support all functional areas that require Data Acquisition for test programs.

[Target Support Facility-Appendix A, TAB 30]
Yes. The nature of the infrastructure required to operate a Target Support Facility lends itself well to supporting new test and evaluation workload requirements. This Support Facility has been principally involved in supporting the Air Vehicle test and evaluation functional area during the past several years. Test and evaluation functional areas that could be supported are Weapons/Armaments, and Electronic Combat (e.g., installing specific threat emulator on target ships, hulks, etc.). Another area that could be supported is Navy ship surface warfare test and evaluation such as: the mine warfare role supporting the test and evaluation of new systems designed to counter the mine threat in littoral waters. (i.e., forward looking small boat mounted SONARS).

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes. The test and evaluation data processing capability can accept new test and evaluation workload different from what is currently being performed. The additional workload in Electronic Combat and/or weapons that would utilize some of the existing software application packages could be accepted easily. Also, additional workload in the weapon functional areas that utilize capability such as the photogrametric capability, that currently support aircraft-stores integration, could be accepted (e.g., utilizing animated depictions of weapon separation data to support weapons modeling validation.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. The installation response describes adjacent airspace, land, and water areas avialble for use or sutied for physical expansion to support new missions or increased footprints. The range capability to provide adaptable range support for appropriate new missions.

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes. The installation response describes adjacent airspace, land, and water areas available for use or suited for physical expansion to support new missions. The Telemetry Data System Facility resources including remote telemetry capability and airborne relayed capability can provide adaptable support for appropriate new missions.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29]
N/A.

[Target Support Facility-Appendix A, TAB 30]
Yes. The installation response describes adjacent airspace, land, and water areas available for use or suited for physical expansion to support new missions or increased footprints. The target support facility can utilize its flexible capability to provide appropriate support for new missions.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
N/A.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. The Chesapeake Test Range facility is equipped to support secure operations up to and including the top secret level, including special access required.

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes. The Telemetry Data Center was designed from the ground up to accommodate six simultaneous classified (or corporate proprietary) and unrelated test flights. Certification at the SECRET level has been done in the past. SECRET COMPARTMENTED preparation was completed. TOP SECRET and other classifications are feasible but not certified-ready. Full COMSEC facilities are present including decryption, custodians, accounts and vaults.

[Airborne Instrumentation Support Facility-Appendix A, TAB 29)
Yes. This facility can be made secure if necessary because of fencing, electronic security hardware, and etc.. However, this facility currently operates so as to allow free access to personnel during working hours and limited access at all other times. As required work is performed in appropriate classified environment up to and including TOP SECRET and special access required.

[Target Support Facility-Appendix A, TAB 30]
Yes. In general operations are conducted in the open air environment and are considered unclassified in nature. Data transferred from targets to control facilities such as scoring or miss-distances data can be encrypted and controlled at any level of classification. Appropriate, classified capabilities up to the SECRET level are available.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes. These capabilities contain various facilities equipped to support the various levels of classification up to an including TOP SECRET and special access required.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. The capability will be improved and modernized by programmed FYDP capital improvements. The underway Range Computation and Control System II (RCCS II) upgrades and replaces all Chesapeake Test Range data processing, display, and control equipment and software. It enables tracking of more systems under test (aircraft, ships, UAVs, etc.), and greater test data processing, display, and output performance and replaces obsolete equipment.

The underway Range Secure Communications upgrade will enable secure intra-range voice communications. It also replaces obsolete unsecured voice communications system.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
Yes. Refer to Facility Condition form.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes. FYDP programmed I&M investments will improve capability and expand capacity in workstations, photogrammetrics of video, and classified requirements.

3.1.F Uniqueness (MV I) - Measure of Merit: *Extent to which the facility is one-of-a kind.*

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. This test range facility has evolved over the past fifty years with an emphasis toward meeting all the unique test data requirements associated with the evaluation of Naval Aircraft Systems and associated major subsystems. Our ability to support the full range of avionic testing at one site is unique. One example of our unique capability is our high precision laser tracker integrated with our carrier landing system test facility. This integrated capability allows us to test Navy aircraft providing integrated and highly accurate tracking data, and instrumented aircraft performance data will conducting actual catapult takeoffs and arresting landing. No other similar fully integrated system capability exists. The composite capability based on its demonstrated expertise, capability to provide support over its large operating area, and flexibility in application of equipment resources also supports the uniqueness of this capability.

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes. There are several some-what similar facilities. However, this facility has the only aircraft flutter test capability in the U.S. Navy. Also, for quick response, more capability exists in this facility for project support without writing a single line of software code than any other aircraft test facility in the U.S.. This has been continuously true for 20 years and three system generations.

[Airborne Instrumentation Support Facility-Appendix A, TAB 29]
Yes. This facility is probably one of two DoD facilities able to handle complex aircraft instrumentation installations as well as smaller installation requiring quick response. This facility is staffed by personnel experienced in all facets of airborne instrumentation and contains functional groups that posses unique instrumentation expertise. Additional areas of uniqueness include the following:

The Airborne Instruments and Calibration capability is unique in that the level of accuracy and calibration techniques is better than any other Naval Facility.

The Strain Gage and Structures instrumentational/calibration capability is only one the Navy has.

The Special Flight Test Instrumentation Pool is not replicated by either the Air Force or Army.

[Target Support Facility-Appendix A, TAB 30]
Yes. The Target Support Facility is uniquely the only known facility to operate a Soviet built surface vessel in support of OT&E and fleet training exercises. Also, the Vandal target launch facility at NASA, Wallops Flight Facility provides low altitude (less than 50 feet AGL) at speeds greater than Mach 2. Although this is not the only Vandal launch facility in the U.S., it is unique to the east coast. Also, it provides unique Atlantic target support to the U.S. Navy and, for example, recently to the Italian Navy. This facility is unique in meeting Atlantic fleet mission test and evaluation and training requirements.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes. The uniqueness of this capability is based on the level of data collection, processing and analysis capability in support of aircraft test and evaluation. The Fixed Wing Aircraft Reliance Study and Report shows that this capability has the most extensive post flight processing capability of the test centers.

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

[Chesapeake Test Range-Appendix A, Tab 27]
Yes. This is a one-of-a-kind facility within the U.S. Government when the capability described in 3.1.F.1 is coupled with the other integrated capability and facilities (e.g. Catapult/Arresting Facility, Landing System Test Facility, ACETEF) available at NAWCAD Patuxent River. There is no other equivalent capability for support of the total Navy aircraft system test and evaluation.

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes. As stated in 3.1.F.1, this facility is unique within the U.S. Government.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
Yes. See answer to 3.1.F.1.

[Target Support Facility-Appendix A, TAB 30]
Yes. For the reasons stated in paragraph 3.1.F.1, this facility capability is considered unique within the U.S. Government.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes. For the reasons stated in paragraph 3.1.F.1, this facility capability is considered unique within the U.S. Government.

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

[Chesapeake Test Range-Appendix A, Tab 27]
Yes. This is a one-of-a-kind facility within the U.S. Government when the capability described in 3.1.F.1 is coupled with the other integrated capability and facilities (e.g. Catapult/Arresting Facility, Landing System Test Facility, ACETEF) available at NAWCAD Patuxent River. There is no other equivalent capability for support of the total Navy aircraft system test and evaluation.

[Telemetry Data System Facility-Appendix A, TAB 28]
Yes. As stated in 3.1.F.1, this facility is unique within the U.S. Government.

[Airborne Instrumentation Support Facility (AISF)-Appendix A, TAB 29)
No. All aircraft manufacturers have expertise in airborne instrumentation and own facilities to design and install instrumentation. Many of these however, do not possess the level of flexibility that this facility maintains. NAWCAD Patuxent River's instrumentation facility can instrument or modify most types of aircraft at any time. Aircraft companies are somewhat restricted to the platforms their company manufactures. The level of experience of the inhouse personnel and their breadth of exposure (to instrumentation of every type Navy aircraft) is unique within the U.S. Navy.

[Target Support Facility-Appendix A, TAB 30]
Yes. For the reasons stated in paragraph 3.1.F.1, this facility capability is considered unique within the U.S.

[Test and Evaluation Data Processing-Appendix A, TAB 31]
Yes. For the reasons stated in paragraph 3.1.F.1, this facility capability is considered unique within the U.S. Government. There is no known industry equivalent total capability.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. Air Force FY92 = 5% FY93 = 4%
Army FY92 = 3% FY93 = 1%

[Telemetry Data System-Appendix A, TAB 28]

Yes.	**FY92**	**FY93**
Army	**1%**	**1%**
Joint Service	**2%**	**13%**

[Airborne Instrumentation Support Facility-Appendix A, TAB 29] Yes. This facility historically has provided limited support to non DoN users. It has provided a limited amount of airborne imaging support. It also periodically provides instrumentation support for United States Army aircraft through another NAWCAD Patuxent River Directorate.

	FY92	**FY93**
Army	**2%**	**-**
Joint Service	**≈3%**	**≈3%**
U.S. Coast Guard	**1%**	**3%**
Air Force	**1%**	**-**

[Test and Evaluation Data Processing-Appendix A, TAB 31] Yes, approximately 10% indirectly in support of joint-service programs. Ex. V-22, JSOW, JDAM, and CAIS).

3.1.G Available Air, Land, and Sea Space (MV II) - Measure of Merit: *Extent to which controlled test ranges satisfy weapon system test requirements.*

See Installation response -3.1.G

3.1.H Geographic/Climatological Features (MV II) - Measure of Merit: *Extent to which types of climatic/geographic conditions represent world-wide operational conditions.*

See Installation response 3.1.H.

3.2 AIR VEHICLES

This functional area includes facilities involved in the testing of all air vehicles/subsystems/components whether fixed wing or rotary wing and test of major subsystems (e.g., avionics, engines, and sensors). This includes flight testing and the testing involving pre- and post-flight preparation and processing of the air vehicle. Unmanned air vehicles and cruise missiles are included.

3.2.A Supersonic Airspace (MV II) - Measure of Merit: *Extent of range size to support weapon system requirements.*

See Installation response 3.2.A

-3.2.B Airfield and Facility Characteristics (MV II) - Measure of Merit: *Extent of air vehicle infrastructure to support T&E operations.*

See Installation Response 3.2.B.

-3.2.C Test Operations (MV II) - Measure of Merit: *Extent of T&E operations that the airspace can accommodate.*

See Installation Response 3.2.C.

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

[Telemetry Data System Facility-Appendix A TAB 28]
Twelve simultaneous test missions that require telemetry can be supported.

3.3 ELECTRONIC COMBAT

This functional area includes facilities involved in the testing of stand-alone electronic combat systems and electronic combat subsystems that are normally integrated into other weapon systems. It includes the testing of systems or subsystems that have as their primary mission threat warning, testing of systems that provide countermeasures in the RF (radio frequency) spectrum against radars and other RF sensors, systems that provide countermeasures that are used against sensors in the electro-optical or infrared spectrum as well as testing of electronic and C3 countermeasures.

3.3.A Threat Environment (MV I) - Measure of Merit: *Extent to which the capability satisfies weapon system requirements.*

See Installation Response 3.3.A.

3.3.B Test Article Support (MV II) - Measure of Merit: *Extent to which test support satisfies weapon system test requirements.*

See Installation Response 3.3.B.

3.4 ARMAMENTS / WEAPONS

This functional area includes facilities involved in the testing of the weapons portion of a weapon system. In those cases where the weapon system is composed almost exclusively of the weapon, it may include system-level and platform integration testing. In other cases, it addresses just the weapon subsystem (e.g., guidance and control, propulsion, warheads, and airframe), while the testing of the weapon system's vehicle is in another functional area.

3.4.A Directed Energy (MV II) - Measure of Merit: *Extent to which the facility satisfies directed energy weapon system test requirements.*

This includes testing of all types of directed energy weapons.

-3.4.A.1 Do you currently test directed energy weapon systems? Yes/no.

If yes, explain. Describe the power source(s) you have available. What is your maximum downrange distance?

No.

3.4.B Rocket / Missile / Bomb Systems (MV II) - Measure of Merit: *Extent capability satisfies weapon system test requirements.*

This includes the testing of all types of rocket, missile, and bomb systems at the system/subsystem/component level, both stand alone and integrated into the launch platform. This includes testing of air-to-air, air-to-surface, and surface-to-air missiles.

-3.4.B.1 Ground Space

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

[Chesapeake Test Range-Appendix A, TAB 27]

AREA	NUMBER OF SQUARE MILES
R-4005N	113
R-4005S	110
R-6609	120
R-4002	39.6
W-108A/B/C	2972.5
W-386A/B/C/D/E	6612.1
W-387A/B	2254
W-72A/B	16276.65
W-110	2170
W-122A/B/C/D/E/F/G/H/I/J	19699.1
W-107A/B/C/D/E	6318.48
W-106A/B	1558.62
W-105A/B/C/D/E/F	11852.04
TOTAL SQUARE MILES	70337.09

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

[Chesapeake Test Range-Appendix A, TAB 27]

AREA	ACRES
R-4002	25344
W-108A	784179.2
W-108B	1118208
W-386A	1418784
W-386B	2376960
W-386C/D	436000
W-386E	154240
W-387A/B	1442560
W-72A	3491840
W-72B	6925216
W-110	1388800
W-122A	917440
W-122B	1268800
W-122C	1952000
W-122D/E	446080
W-122F	1626880
W-122G	1309440
W-122H	842240
W-122I	2230016
W-122J	1951168
W-106A	311430.4
W-106B	217753.6
W-107A	2575360
W-107B	389888
W-107C	403200
W-107D	544819.2
W-107E	130560
W-105A	59860224
W-105B	779760
W-105C/D	611200
W-105E/F	95040
TOTAL ACRES FOR ALL AREAS	98025430.4

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

Weapons ranges up to 500 nautical miles can be tested using the available test facilities and associated tracking capabilities of the Chesapeake Test Range. This allows testing of the following classes of weapons, including missiles, rockets, or guided bomb systems: unguided 2,000 pound-class ballistic weapons guided weapons, standoff weapons, short range missiles, and long range missiles.

Furthermore, if required existing extended tracking systems, such as MATS using relays and GPS, can increase this effective weapons testing range beyond 500 nautical miles (i.e., up to 900 nautical miles).

The following are the maximum required test ranges associated with the five categories of weapons shown in paragraph 3.4.B.2.A. All of the listed maximum ranges were derived from NAWCAD Patuxent River historical data of weapons systems tests conducted on both the inner and offshore range areas.

- **Unguided 2000 pound-class ballistic weapons (Mk-80 series weapons)** — **10 nm**
- **Guided weapons (GBU series weapons)** — **20 nm**
- **Standoff weapons (AGM-65, Penguin)** — **35 nm**
- **Short range missile (AIM-9)** — **30 nm**
- **Long range missile (SM-2 series weapons, AIM-54)** — **150 nm**

Tests involving the release or firing of unguided weapons with associated hazard patterns less than 10 nm can be accommodated in our inner Chesapeake Range operating area. Tests requiring larger hazard patterns for guided weapons can be accommodated in our offshore Atlantic test range area.

3.4.B.2 Test Operations

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

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

The following test missions were completed on the Chesapeake Test Range during FY92 and FY93:

Inner Range:
FY92. 166 flights were completed for inert unguided 2000 pound-class ballistic weapons.

FY93. 182 flights were completed for inert unguided 2000 pound-class ballistic weapons.

FY93. 44 flights were completed for inert GBU-24 class.

No AGM-130 class flights were scheduled for FY92 or FY93.

Outer Range:

FY92. 4 AIM-9 flights were completed at 10,000 - 15,000 ft

FY93. 3 AIM-9 flights were completed at 5,000 ft.
3 ITALD flights were completed at 20,000 ft.

FY92. 6 SM-2 launches were fired against a VANDAL target successfully below 5,000 ft.

FY93. 6 SM-2 launches were fired against a VANDAL target successfully below 5,000 ft.

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

[Chesapeake Test Range-Appendix A, TAB 27]
Yes. Flight termination systems were required on the Vandal exercises and cruise missile exercises.

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

[Chesapeake Test Range-Appendix A, TAB 27]
No. Support was required in the standoff weapons category.

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

[Chesapeake Test Range-Appendix A, TAB 27]
No. During FY92 one scheduled mission in the offshore warning area was postponed due to temporary encroachment into the large safety footprint. This mission was successfully completed the next day.

R

T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG **UIC:** N00421

Facility/Capability Title: ELECTRONIC WARFARE/AVIONICS FLIGHT TEST FACILITY/DATACALL #13, APPENDIX A, TAB #11

T&E Test Facility Category: MF
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)	X	
Infrared (IR)	X	
Millimeter Waves (MMW)	X	
Ultra Violet (UV)	X	
Laser	X	

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

R

FOR OFFICIAL USE ONLY
T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: ATLAS/DATACALL #13, APPENDIX A, TAB #12

T&E Test Facility Category: MF
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)		X
Infrared (IR)		X
Millimeter Waves (MMW)	X	
Ultra Violet (UV)		X
Laser		X

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

R

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T&E JCSG CLARIFICATION - FORM #3
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: ATLAS/DATACALL #13, APPENDIX A, TAB #12

T&E Test Facility Category: MF
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated T&E testing can be conducted by this Measurement Facility

Spectra	Yes	No
Environmental T&E		X
Safety T&E	X	
Warhead Performance T&E		X
Faze T&E		X
Seaker, sensor, and guidance/control performance and target/background signature characterization	X	
Propulsion Performance T&E		X
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes		X
Gun Performance T&E		X
Electromagnetic Environmental Effects		X
Directed Energy		X

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

R

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: COMBAT IDENTIFICATION SYSTEMS
DATACALL #13, APPENDIX A, TAB #15

T&E Test Facility Category: MF
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)		X
Infrared (IR)		X
Millimeter Waves (MMW)		X
Ultra Violet (UV)		X
Laser		X

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes ___ No X.

R

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: GRATF/DATACALL #13, APPENDIX A, TAB #16

T&E Test Facility Category: MF
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)		X
Infrared (IR)		X
Millimeter Waves (MMW)	X	
Ultra Violet (UV)		X
Laser		X

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes ___ No X.

R

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: COMTEL/DATACALL #13, APPENDIX A, TAB #18

T&E Test Facility Category: MF
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)		X
Infrared (IR)		X
Millimeter Waves (MMW)		X
Ultra Violet (UV)		X
Laser		X

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

R

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: STARS/DATACALL #13, APPENDIX A, TAB #19

T&E Test Facility Category: MF
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)		X
Infrared (IR)		X
Millimeter Waves (MMW)		X
Ultra Violet (UV)		X
Laser		X

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes ___ No X.

R

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG **UIC:** N00421

Facility/Capability Title: ACETEF/DATACALL #13, APPENDIX A, TAB #26

T&E Test Facility Category: ISTF
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)	X	
Infrared (IR)	X	
Millimeter Waves (MMW)	X	
Ultra Violet (UV)	X	
Laser	X	

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

R

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T&E JCSG CLARIFICATION - FORM #2
Armament/Weapons (HITL & ISTF)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: ACETEF/DATACALL #13, APPENDIX A, TAB #26

T&E Test Facility Category: ISTF
(HITL or ISTF)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)	X	
Infrared (IR)	X	
Millimeter Waves (MMW)	X	
Ultra Violet (UV)		X
Laser	X	
Midcourse Inertial/GPS (HITL only)	X	

Is this Facility/Capability equipped to support Top Secret or Special Access Required work? Yes X No____.

R

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: CHESAPEAKE TEST RANGE (CTR)/DATACALL #13, APPENDIX A, TAB #27

T&E Test Facility Category: OAR
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)	X	
Infrared (IR)	X	
Millimeter Waves (MMW)	X	
Ultra Violet (UV)	X	
Laser	X	

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

Note: CTR provides the space and supporting capability for flight testing including support of the Electronic Warfare/Avionics Flight Test Facility. Therefore, CTR is involved in providing the test spectra shown.

R

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: TELEMETRY DATA SYSTEM FACILITY/DATACALL #13, APPENDIX A, TAB #28

T&E Test Facility Category: OAR
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability. N/A.

Spectra	Yes	No
Radio Frequency (RF)		
Electro-Optical (EO)		
Infrared (IR)		
Millimeter Waves (MMW)		
Ultra Violet (UV)		
Laser		

Note: Telemetry Data reception and processing provides no "spectra to test against". Therefore, not applicable. But, this capability can be used to support telemetry data collection and processing in support of testing involving any/all of these areas.

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: AIRBORNE INSTRUMENTATION SUPPORT FACILITY/DATACALL #13, APPENDIX A, TAB #29

T&E Test Facility Category: OAR
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)		X
Infrared (IR)		X
Millimeter Waves (MMW)	X	
Ultra Violet (UV)		X
Laser	X	

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

Note: Calibration Standards used to provide calibration support of generic purpose test equipment at other Measurement Facilities (RF, MMW, Laser). However, Airborne Instrumentation support provides airborne data collection to support all EC programs (RF, EO, IR, MMW, UV).

R

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: Target Support Facility/DATACALL #13, APPENDIX A, TAB #30

T&E Test Facility Category: OAR
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability.

Spectra	Yes	No
Radio Frequency (RF)	X	
Electro-Optical (EO)	X	
Infrared (IR)	X	
Millimeter Waves (MMW)		X
Ultra Violet (UV)		X
Laser	X	

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

Note: Target Support Facility can support Data Transfer to any level of classification including Special Access and Top Secret. Other capabilities up to Secret are available and Special Access with appropriate handling.

R

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCAD FTEG UIC: N00421

Facility/Capability Title: Test and Evaluation Data Processing (Software and Applications)/DATACALL #13, APPENDIX A, TAB #31

T&E Test Facility Category: OAR
(MF, HITL, ISTF, or OAR)

Utilize the following table to indicate which of the indicated spectra are available to test against with this Facility/Capability. N/A.

Spectra	Yes	No
Radio Frequency (RF)		
Electro-Optical (EO)		
Infrared (IR)		
Millimeter Waves (MMW)		
Ultra Violet (UV)		
Laser		

Note: Test and Evaluation Data Processing (Software and Applications) provides no Spectra to Test against. This capability supports TM Real-Time and Postflight data collection processing and analysis including on-board aircraft data collection. This provides a capability for supporting tests involving all the above spectra.

Is this Facility/Capability equipped to support Top Secret or Special Access required work? Yes X No___.

DATA CALL 13
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."

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

BARTON D. STRONG
NAME (Please type or print)

Barton D. Strong
Signature

MAY 13 1994
Date

COMMANDER
Title

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
Activity

*NAVAIR did not provide data for inclusion in this package.

BRAC 95
DATA CALL 13

PATUXENT RIVER SITE
NAWC AIRCRAFT DIVISION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

G. H. Strohsahl, RADM, USN
NAME (Please type or print)

Signature

Commander
Title

5/16/94
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

16 May 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)

J. B. Greene, Jr
NAME (Please type or print)

Signature

Acting
Title

27 May 1994
Date

Revised pg AI101, A167

DATA CALL 13 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)

W E Newman
Signature

COMMANDER
Title

8/31/94
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

2 Sep 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)

W A Earner
Signature

Title

9/6/94
Date

DATA CALL 13 CHANGE 1
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

29 August 1994
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
Activity

*NAVAIR did not provide data for inclusion in this package.

163 AII, AI67, AI110, AI143, AI144, AI147

DATA CALL #13 CHANGE OF 22 SEP 94
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 — W E Newman
NAME (Please type or print) — Signature

COMMANDER — 9/28/94
Title — 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 — W C Bowes
NAME (Please type or print) — Signature

COMMANDER — 29 Sep 94
Title — 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)

NAME (Please type or print) — Signature

Title — 10/1/94
Date

DATA CALL #13 CHANGE OF 22 SEP 94
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

CAPTAIN JOHN B. PATTERSON
NAME (Please type or print)

J. B. Patterson
Signature

ACTING COMMANDER
Title

9/22/94
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD

✓ 163

DATA CALL #13 - BSAT
REQUEST FOR CLARIFICATION CONTROL #EC-035
BRAC-95 CERTIFICATION

AI76 clarification

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 — W E Newman
NAME (Please type or print) — Signature

COMMANDER — 9/28/94
Title — 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 — W C Bowes
NAME (Please type or print) — Signature

COMMANDER — 29 Sep 94
Title — 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)

NAME (Please type or print) — W T Eaves — Signature

Title — 10/1/94 — Date

DATA CALL #13 - BSAT
REQUEST FOR CLARIFICATION CONTROL #EC-035
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

CAPTAIN JOHN B. PATTERSON
NAME (Please type or print)

Signature

ACTING COMMANDER
Title

9/22/94
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD

✓ 163

DATA CALL #13 - RFC AW-093/AW-096
BRAC-95 CERTIFICATION

AI97 clarification

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

9/29/94
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

29 Sep 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)

NAME (Please type or print)

Signature

Title

10/1/94
Date

DATA CALL #13 - RFC AW-093/AW-096
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

29 September 1994
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
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)

W. E. NEWMAN, RADM, USN
NAME (Please type or print)

W E Newman
Signature

COMMANDER
Title

9/16/94
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)

W C Bowes
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 and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

M. A. EARNER
NAME (Please type or print)

M A Earner
Signature

Title

9/26/94
Date

DATA CALL #13

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."

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

CAPTAIN JOHN B. PATTERSON
NAME (Please type or print)

John B. Patterson
Signature

ACTING COMMANDER
Title

9/14/94
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
Activity

DATA CALL 1: GENERAL INSTALLATION INFORMATION

1. ACTIVITY: Follow example as provided in the table below (*delete the examples when providing your input*). If any of the questions have multiple responses, please provide all. If any of the information requested is subject to change between now and the end of Fiscal Year (FY) 1995 due to known redesignations, realignments/closures or other action, provide current and projected data and so annotate.

° Name

Official name	**Naval Air Warfare Center Aircraft Division, Patuxent River**
Acronym(s) used in correspondence	**NAVAIRWARCENACDIV Patuxent River**
Commonly accepted short title(s)	**NAWCAD PAX RIVER**

° Complete Mailing Address

Commander
Naval Air Warfare Center Aircraft Division
Patuxent River, Maryland 20670-5304

° PLAD

NAVAIRWARCENACDIV PATUXENT RIVER

° PRIMARY UIC: **N00421** (Plant Account UIC for Plant Account Holders)
Enter this number as the Activity identifier at the top of each Data Call response page.

° ALL OTHER UIC(s): PURPOSE: _____

35679	**NAVAIRWARCENACDIV PATUXENT RIVER A/C OPERATING DET**
42846	**TPS - Students**
44689	**TPS - Instructors**
47608	**NAVAIRWARCENACDIV PATUXENT RIVER NON-NIF**
48711	**NAVAIRWARCENACDIV PATUXENT RIVER NAS FAMILY SERVICE CENTER**
49860	**NAVAIRWARCENACDIV-DBOF PAX**
68122	**NAVAIRWARCENACDIV PATUXENT RIVER NAS CAA**
67356	**MARAVNDET PATUXENT RIVER**
NX1430	**DEFINVSER DET PATUXENT RIVER**
NX2104	**DECA**
NZZ212	**NISRA**
N09962	**VQ-4**

N30904	INSURV PATUXENT RIVER
N31686	NRLFLTSUPDET PATUXENT RIVER
N32172	SESTF PATUXENT RIVER
N49861	DBOF WILLOW GROVE
47395	NAVAIRWARCENACDIV PATUXENT RIVER FT. WORTH, TX
47396	NAVAIRWARCENACDIV PATUXENT RIVER WILMINGTON, DE
N39229	NEX PATUXENT RIVER
N41499	NAVOCEANCOMDET PATUXENT RIVER
N42325	PERSUPPDET
N43629	DPSDBO PATUXENT RIVER
N44198	CHESDIVCONTOFC PATUXENT RIVER
N48906	NAVTELECOMCEN
N55243	VC-6
N55600	VX-1
N65980	NESEA
N66098	NAVHOSP
N66133	BUPERS DET MWRTU DET
N68520	NAVAVNDEPTOPNSCEN
N68626	NAVAVNMAINTOFF
62376	NAVAIRWARCENACDIV TRENTON
62269	NAVAIRWARCENACDIV WARMINSTER (DBOF)
47624	NAVAIRWARCENACDIV WARMINSTER

2. PLANT ACCOUNT HOLDER:

° Yes __X__ No ____ (check one)

3. ACTIVITY TYPE: Choose most appropriate type that describes your activity and completely answer all questions.

° HOST COMMAND: A host command is an activity that provides facilities for its own functions and the functions of other (tenant) activities. A host has accountability for Class 1 (land), and/or Class 2 (buildings, structures, and utilities) property, regardless of occupancy. It can also be a tenant at other host activities.

·Yes __X__ No ___ (check one)

° TENANT COMMAND: A tenant command is an activity or unit that occupies facilities for which another activity (i.e., the host) has accountability. A tenant may have several hosts, although one is usually designated its primary host. If answer is "Yes," provide best known information for your primary host only.

·Yes ___ No __X__ (check one)

·Primary Host (current) UIC:
·Primary Host (as of 01 Oct 1995) UIC:
·Primary Host (as of 01 Oct 2001) UIC:

° INDEPENDENT ACTIVITY: For the purposes of this Data Call, this is the "catch-all" designator, and is defined as any activity not previously identified as a host or a tenant. The activity may occupy owned or leased space. Government Owned/Contractor Operated facilities should be included in this designation if not covered elsewhere.

-Yes __ No __X__ (check one)

4. SPECIAL AREAS: List all Special Areas. Special Areas are defined as Class 1/Class 2 property for which your command has responsibility that is not located on or contiguous to main complex.

Name	Location	UIC
SHARPS ISLAND	TALBOT, MD	N00421
POINT NO POINT	PATUXENT RIVER, MD	N00421
BELLA VISTA	PATUXENT RIVER, MD	N00421
ST JAMES	ST MARY'S, MD	N00421
CEDAR POINT ISLAND	PATUXENT RIVER, MD	N00421
HERMANVILLE	PATUXENT RIVER, MD	N00421
BRANDYWINE RR	BRANDYWINE, MD	N00421
GLENN FOREST	LEXINGTON PART, MD	N00421
CHESAPEAKE BAY	TALBOT, MD	N00421
BAY FOREST	ST MARY'S, MD	N00421
PT LOOKOUT LIGHT STA.	POINT LOOKOUT, MD	N00421
BISHOPS HEAD	DORCHESTER, MD	N00421
SOLOMONS ISLAND	SOLOMONS, MD	N00421

5. DETACHMENTS: If your activity has detachments at other locations, please list them in the table below.

Name	UIC	Location	Host name	Host UIC
V-22 TEST DET	00421	FORT WORTH, TX	BELL	47395
V-22 TEST DET	00421	WILMINGTON, DE	BOEING	47396
NAVAIRWAR-CENACDIV WILLOW GROVE	00421	WILLOW GROVE, PA	NAS WILLOW GROVE	49861
NAVAIRWAR-CENACDIV DET AEDC TULLAHOMA	49886	TULLAHOMA, TN	AEDC TULLAHOMA, TN	49886

6. BRAC IMPACT: Were you affected by previous Base Closure and Realignment decisions (BRAC-88, -91, and/or -93)? If so, please provide a brief narrative.

Yes.

BRAC-91 WARMINSTER:

In a memorandum for the Chief of Naval Operations dated 12 April 1991, the Secretary of the Navy approved the implementation plan to consolidate Navy Research Development, Test and Evaluation (RDT&E), Engineering and Fleet Support Activities into four Warfare Centers and a Corporate Laboratory. OPNAVNOTE 5450 of 23 December 1991 established the NAVAIRWARCEN and its Aircraft Division Headquarters located at Patuxent River, Maryland. On 2 January 1992 the former Naval Air Test Center, Patuxent River, and the Naval Air Development Center Warminster, PA, along with other activities, merged to become the NAVAIRWARCENACDIV.

As a result of BRAC-91, the NAVAIRWARCENACDIV Warminster is scheduled to be relocated to Patuxent River in the 1995/96 timeframe. This includes all functions except a Navigation and Communications Department which was realigned under the Naval Command & Control and Ocean Surveillance Center (NCCOSC) to remain as a smaller base at Warminster PA. A small detachment of the NAVAIRWARCENACDIV will remain at Warminster to operate the Dynamic Flight Simulator facility. The mission of the detachment is:

Maintains and operates the worlds largest man-rated centrifuge and related biomedical and engineering support facilities needed to conduct testing on: human subjects; related crew escape equipment to determine their performance under the dynamic conditions encountered in high performance aircraft by the crew in current high performance aircraft and of conducting tests on notional configurations related to proposed aircraft and cockpit designs to optimize the man-machine interface under the dynamic conditions. Pilot training is also conducted to maximize the individual's ability to function effectively and survive in High-G environments future aircraft will encounter.

The Warminster group that is being realigned to Patuxent River also maintains a detachment at NAS Key West Florida (UIC 00213) whose mission is:

Managing all ocean tests conducted by NAVAIRWARCENACDIV. The detachment provides facilities, staff, research vessels, and associated laboratories to design, support, and conduct ocean environment Test and Evaluation of developmental and production sensors and systems.

The realignment to Patuxent River includes 1,656 civilian and 143 military billets and the related Aircraft Systems Development Functions. The current on-board count as of 1 January 94 includes 56 officers, 93 enlisted, and 1862 FTE civilian personnel. Authorized portions of the 30 September 94 include 46 officers, 104 enlisted, and 1934 FTE civilians. In addition, there are 4 Canadian, 1 Australian, and 1 United Kingdom officers assigned as liaison or project support functions that would be relocated with the mission.

BRAC-91/93 TRENTON:

Under BRAC-91, the Naval Air Propulsion Center was realigned into the NAVAIRWARCENACDIV. As part of that realignment, the large engine high altitude testing was transferred to U. S. Air Force Arnold Engineering Development Center (AEDC), Tullahoma, TN. In addition, 157 non-test scientists and engineers that constitute the engineering staff were transferred to NAVAIRWARCENACDIV Patuxent River, MD with relocation scheduled in the 1994 timeframe. Following these decisions in BRAC-93 the activity at Trenton was closed with additional facilities and personnel scheduled for transfer to AEDC and Patuxent River in the FY97/98 timeframe. The following facilities will be located at Patuxent River: Helicopter Transmission Test Facility, Propulsion System Accessories Test Facility, UAV Propulsion System Development Facility, Rotating Component Test Facility, Fuel System Test Facility, and Fuel and Lubricant Test and Analysis Facility. New construction is underway to house 39 test chambers, laboratories, and support areas. Operational closure of the site is scheduled for FY98. The current on-board count at Trenton consists of 7 officers and 601 full-time equivalent civilians. The authorized end strength for 30 September 94 is 7 officers and 614 full-time equivalent civilians.

BRAC-93 NESEA:

Data to be provided by NAVAIRWARCEN, Ms. Alisandra Snyder. See page 5.a.

BRAC-93 NAVAIRSYSCOM:

BRAC-93 specified that Headquarters, NAVAIRSYSCOM will be functionally relocated from Arlington, VA, to Patuxent River, MD, which lies approximately 70 miles south of the National Capital Region. BRAC-93 specified 14 positions to be reassigned to SPAWARS and to remain in the National Capital Region; an additional 15 positions will be relocated to NAVAIRWARCENWPNDIV China Lake, California. The relocation will start and be completed in FY97. A total of 2,774 positions (2,141 civilians, 633 military) will be relocated to Patuxent River in 1997/1998.

7. MISSION: Do not simply report the standard mission statement. Instead, describe important functions in a bulletized format. Include anticipated mission changes and brief narrative explanation of change; also indicate if any current/projected mission changes are a result of previous BRAC-88, -91,-93 action(s).

Current Missions

NAVAIRWARCENACDIV Patuxent River, Headquarters:

Supports the Naval Air Systems Command (NAVAIRSYSCOM) and the Naval Air Warfare Center (NAWC) in the development, acquisition, and support of aeronautical and related technology systems for the operating forces. Commnads units in various locations that comprise the Aircraft Division.

BRAC-93 NESEA:

As a result of BRAC-93 decisions, three Naval Electronic Systems Engineering centers were directed to close. These included the Naval Electronic Systems Engineering Activity St. Inigoes, Maryland, and the Naval Electronic Systems Security Engineering Center, Washington DC. These activities, on 9 January 1994, were consolidated with the Former Naval Electronic Systems Engineering Center, Charleston to form the Naval Command, Control and Ocean Surveillance Center East Coast In Service Engineering Division (NISE East). The primary operational site and headquarters for NISE East will be located in renovated and newly constructed facilities at the Charleston Naval Weapons Station South Annex.

NISE East Detachments were also established on 9 January 1994 at St. Inigoes, Portsmouth and Washington DC.

The existing Class 1 and Class 2 property at St. Inigoes will be transferred to the Naval Air Station, Patuxent River, Maryland, an activity of the Naval Air Systems Command. The NISE East detachment at that site will occupy facilities under a host/tenant agreement with the Naval Air Station Patuxent River, and will perform functions specified in the 1993 Defense Base Closure and Realignment Report to the President.

NAVAIRWARCENACDIV Patuxent River, Flight Test and Engineering Group:

- Test and evaluate aircraft weapons systems
- Develop and operate major instrumented ranges and test facilities
- Serve as principal site aircraft development programs
- Provide mission support, quality of life support, and facilities to tenants and regional activities
- Provide engineering and range support to fleet activities
- Operate the U.S. Naval Test Pilot School for Navy, Marine, and Army aviators and engineers

NAVAIRWARCENACDIV Patuxent River, Naval Air Station:

- Operation of Airfield
- Maintenance and Operation of Base Complex Facilities
- Services and Materials to Support Operations of NAVAIRWARCEN-ACDIV Patuxent River/FTEG and Other Tenant Activities
- Environmental Protection/Management
- Welfare of Assigned Personnel
- Community Support

Narrative:

The NAVAIRWARCENACDIV Patuxent River has evolved into a unique national asset essential to the effective application of naval air and sea power. Our strengths are founded on the unique talents of our technical work force, our aircraft and an all-weather airfield with controlled airspace and Atlantic warning areas, and highly capable integrated laboratories and facilities which subject current technology to real and simulated operating conditions. Our hallmark has been the test and evaluation of developmental and production aircraft weapon systems, subsystems, and components. We also have contributed many innovative design improvements through direct involvement in Fleet problem resolution. We have been equally innovative in advancing technology, particularly the technology of testing, but also such technologies as weapon integration, acoustic processing, and navigation. Our workload policy and guidance achieve a balance in the full spectrum of technical activity (from advanced development to fleet support). The Patuxent River complex has a full spectrum of unique aircraft, test facilities, and capabilities which establish it as the principal site for Naval aircraft during the Engineering and Manufacturing Development (EMD) phase. For example, Patuxent River has been designated the principal site for the Integrated Test Teams (ITT) (contractor and government) during the development and testing of the V-22 and F-18E/F programs.

NAS Patuxent River maintains and operates facilities and provides services and materials to support operations of Flight Test and Engineering Group (FTEG), VX-1, VQ-4, Naval Research Laboratory (NRL), Naval Aviation Depot Operations Center (NADOC), Naval Aviation Maintenance Office (NAMO), and other tenants assigned to the air station.

Expanded Mission Resulting From BRAC Decisions:

Warminster Functions:

- Air USW 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.

Trenton Functions:

- Develop, test and evaluate fighter/attack, turboprop, turboshaft, UAV air-breathing air vehicle engines under simulated altitude conditions, severe environmental conditions, and unusual operating conditions.
- Analyze, via test and evaluation, turbine engine rotating parts for strength and life.
- Develop, test and evaluate helicopter gearboxes, transmissions and drive trains under simulated operational loads. Test and evaluate aircraft engine accessories.
- Manage and conduct applied research and development leading to new or improved propulsion systems.
- Provide technical and engineering support to the design, development, test and in-service support of aircraft engines, their components and accessories.
- Provide engineering and technical support, research and development services and testing of aircraft fuels and lubricants and their systems.
- Develop and manage all Navy propulsion specifications and apply them to acquisition programs.

Naval Air Systems Command Headquarters Functions:

NAVAIR is responsible for the development, acquisition, and support of aeronautical and related technology systems for the operating forces. NAVAIR Headquarters and the PEO's and PMA's supported by NAVAIRHQ lead the command to perform the following functions:

- Translate operational requirements into technical performance statements.

- Select the best offer based on competitive bidding.

- Conduct informed assessment of best offer.

- Test and evaluate; provides ranges and facilities for common purposes.

- Provide responsive inservice engineering.

- Apply program to program and life cycle lessons learned.

- Provide logistics support and conduct depot maintenance of active aircraft.

Projected Missions for FY 2001

The Patuxent River mission is being expanded due to the BRAC 91 and 93 realignments cited earlier. The results of these expansions and the overall realignment of the Naval Air Systems Team will result in the following projected mission for the Patuxent River site:

Responsible for full spectrum Acquisition and Life Cycle support of Naval Aviation systems including:

Integrated Acquisition Capability for Naval Aircraft
Research & Development (R&D) of Maritime Aircraft Systems
Flight & Ground Test & Evaluation (T&E) of Maritime Aircraft Systems
Maritime Logistic & Aircraft Maintenance Management
Shore Station Operations and Maintenance

Narrative:

INTEGRATED ACQUISITION CAPABILITY FOR NAVAL AIRCRAFT

The collocation of a large portion of the Naval Air Systems Command at Patuxent River will significantly enhance the integration of management, technical, and support efforts; better utilize our workforce, facility, and laboratory resources and shorten the time for acquiring and updating Naval aircraft/systems. This collocation provides Naval aviation Program Executive Officers (PEO)/Program Managers (PM) with an integrated Headquarters, Research, and Development, Systems Engineering, Test and Evaluation, Maintenance Engineering, and Integrated Logistics Support for all fixed and rotary wing airplane types including, fighter, attack, electronic warfare, reconnaissance, airborne early warning, antisubmarine, command, control and communications, observation, utility, cargo, trainer, and special warfare aircraft. The close proximity to the Washington DC arena and the large operational communities in Norfolk, Virginia is a distinct major advantage for timely communications and integrating acquisition and operational processes. This acquisition integration will be Unique within DoD.

RESEARCH AND DEVELOPMENT OF MARITIME AIRCRAFT SYSTEMS

Research and development activities in air warfare systems are integral to resolving the needs of maritime air warfare systems and to guiding acquisition managers and system engineers throughout the acquisition cycle. Patuxent River will perform research and development in those areas unique to Navy needs. Included areas are:

- New and updated avionics/mission systems for maritime tactical aircraft (Unique within Navy)
- New and updated air vehicle systems, materials, and processes (Unique within DoD)
- New and updated maritime aircrew life support, escape, and survival systems (Unique within Navy)
- Airborne undersea warfare anti-surface warfare sensors and systems including reconnaissance, surveillance and ASW (Unique within DoD)
- Maritime air breathing propulsion systems (small aircraft engines) (Unique within Navy)
- Propulsion system components and accessories (Unique within DoD)
- Engineering support for Fleet aviation fuels, lubricants, fuel storage and delivery systems (Unique within Navy)

Integration and collocation of maritime research and development capabilities with integrated acquisition management, flight and ground test engineering, logistic and maintenance management at Patuxent River will improve the air warfare system acquisition process by reducing acquisition time and costs.

FLIGHT AND GROUND T&E OF MARITIME AIRCRAFT SYSTEMS

Patuxent River's capabilities and facilities provide development test and support operational test activities essential to acquisition and fleet support functions for all Naval aircraft throughout the aircraft's life cycle. The flight and ground test functions include air vehicle system testing, aircraft propulsion system testing, avionics/mission system testing and those test disciplines such as flying qualities and performance, carrier suitability for tactical aircraft and dynamic interface between rotary wing aircraft and the various ships on which they operate, store/weapon compatibility with the aircraft. Patuxent River also serves as the lead DoD facility for aircraft electromagnetic environmental effects test and evaluation. Extensive simulation and aircraft stimulation capabilities are utilized to facilitate early-on testing during concept exploration and demonstration and validation phases of acquisition. When the Naval Air Systems Team is consolidated at Patuxent River, the total maritime acquisition cycle (from determination of mission need to fleet operations) will be supported at a single site. Principal site operations for fixed wing and rotary wing flight and ground

test activities covering the complete fighter, attack, electronic warfare, reconnaissance, airborne early warning, antisubmarine, command/control/communications, observation, utility, cargo, trainer and special operations aircraft and its avionics systems is Unique within Navy, although certain mission critical test environments associated with aircraft carrier and other aviation capable ship operations and extremely high-density EMI testing are Unique within DoD.

MARITIME LOGISTIC AND AIRCRAFT MAINTENANCE MANAGEMENT

Aircraft and aircraft system logistic management and aircraft maintenance management are integrated with all other acquisition management elements to fully describe and plan for support and operations of the aircraft/system. This includes consideration of all elements of integrated logistic support (ILS) and all elements of the Navy maintenance plan. The scope of this activity includes ILS element plans and acquisitions, management of shore and ship aircraft maintenance facilities, and the maintenance plan formulation and execution for all in-service and new aircraft/systems. The former Naval Aviation Depot Operations Center (NADOC) and the Naval Aviation Maintenance Office (NAMO) are consolidated with other NAVAIR fleet/product support functions which significantly enhance the acquisition management of aircraft systems. Integration of this area with "Research and Development of Maritime Aircraft Systems" and "Flight and Ground Test and Evaluation of Maritime Systems" at Patuxent River will significantly contribute to improved acquisition processes for Naval air warfare aircraft/systems. This area is Unique within Navy, but the special requirements of sustainability aboard aircraft carriers and other aviation capable ships is Unique within DoD.

SHORE STATION OPERATIONS & MANAGEMENT

The Naval Air Station (NAS) Patuxent River provides base infrastructure support. The Naval Air Systems Team, Naval Research Laboratory Detachment, and the Air Development Squadron 1 are several major organizations comprising a total of 58 tenants onboard. NAS Patuxent River manages and provides supply support including full authority financial services, procurement services, centralized computer support for both T&E and administrative activities, public works, airfield operations, intermediate maintenance, fire, safety, and security support. The NAS also provides all administrative services for military and civilian personnel attached to Patuxent River. Patuxent River is a sea level air station dedicated to the maritime support of RDT&E of Naval aircraft. It is key to the principal site test and evaluation operations carried out at Patuxent River. Its facilities, originally designed to support Navy aircraft T&E have been continually improved and modernized to handle the Tri-Service/full spectrum RDT&E mission. Test sites such as catapult, arresting gear, and landing system test facilities as well as hangar, engine repair and aircraft maintenance facilities are all integral to the total Patuxent River infrastructure. With collocation of the Naval Air Systems Team all shore station management functions will be performed by the NAS.

8. UNIQUE MISSIONS: Describe any missions which are unique or relatively unique to the activity. Include information on projected changes. Indicate if your command has any National Command Authority or classified mission responsibilities.

NATIONAL COMMAND AUTHORITY

- **NAVAIRSYSCOM is responsible for execution of select classified missions**
- **NAS Patuxent River provides support to fleet tenant classified missions.**
- **Host for VQ-4 National Command Authority**

Current Unique Missions

FLIGHT & GROUND TEST & EVALUATION OF MARITIME AIRCRAFT SYSTEMS

Provide flight and ground test and evaluation capabilities and facilities to support requirements of all acquisition phases (Unique within Navy) except test of Maritime aircraft operations/shipboard environment (Unique within DoD):

- **Fixed Wing & Rotary Wing Aircraft Development Test & Evaluation (DT&E)**
- **Fixed Wing & Rotary Wing Aircraft Avionics Systems DT&E**
- **Fixed Wing & Rotary Wing Aircraft/Ship Compatibility DT&E**
- **UAV & Systems DT&E**
- **Aircraft Related Support Equipment**
- **Test & Evaluation Facilities/Support**

USNTPS PATUXENT RIVER:

- **U.S. ARMY - TRAINS ALL ARMY TEST PILOTS (NINE PER YEAR) AS THE ARMY DOES NOT HAVE ITS OWN TEST PILOT SCHOOL**
- **FOREIGN MILITARY SUPPORT - TRAINS A MINIMUM OF TWO TEST PILOTS FROM FOREIGN ALLIES IN SUPPORT OF THE FMS PROGRAM**
- **NAWCWD - TRAINS APPROXIMATELY SEVEN TEST PILOTS/FLIGHT OFFICERS AND FOUR ENGINEERS PER YR ASSIGNED TO NAVAIRWARCENACDIV**
- **AIRTEVRON 9 - TRAINS APPROXIMATELY TWO TEST PILOTS/FLIGHT OFFICERS PER YEAR ASSIGNED TO VX-9**

The Center is ideally located to provide and receive support from other RDT&E centers: NSWC-Dalghren, White Oak, Indian Head, and Carderock; NRL; Aberdeen; Washington Headquarters; NASA and FAA Center-Atlantic City; Major Defense Companies, Grumman, McDonald Douglas, Sikorsky, General Electric, Westinghouse, RCA, Bendix; and Operational units, Norfolk Oceana, Aegis Training Center-Wallops and Atlantic Range Op areas; AUTEC, NASA Wallops, VACAPES, and Maine and Florida Tomahawk ranges. The Center's location in rural Southern Maryland has an established base of contractor and industry support that facilitates all its mission operations. The Center's relatively close proximity to Washington D.C. allows for rapid and efficient communication and

direct liaison with its customers and decision makers. In addition, the access to fleet units on the east coast allows for real world input into the developmental T&E process. The area around the base has over the years been populated with a number of technical support contractors that are critical to the completion of mission activities. Some of these contract operations provide support both on and off base and are a major part of the technical establishment.

Projected Unique Missions For FY01

INTEGRATED ACQUISITION CAPABILITY FOR NAVAL AIRCRAFT

Provide full spectrum acquisition management for Naval aircraft (Unique within DoD)

RESEARCH & DEVELOPMENT OF MARITIME AIRCRAFT SYSTEMS

Provide R&D for maritime aircraft, aircraft systems/subsystems, materials and components (Unique within DoD)

FLIGHT & GROUND T&E OF MARITIME AIRCRAFT SYSTEMS

Provide flight and ground T&E capabilities and facilities to support requirements of all acquisition phases (Unique within Navy) except test of maritime aircraft operations/shipboard environment (Unique within DoD)

MARITIME LOGISTICS & MAINTENANCE MANAGEMENT

Provide aircraft logistic and maintenance management to support shore (Unique within Navy) and ship based Naval aircraft (Unique within DoD)

Narrative Backup:

INTEGRATED ACQUISITION CAPABILITY FOR NAVAL AIRCRAFT

- Provide full spectrum acquisition management for Naval Aircraft (Unique within DoD)
  - PEO/PMA
  - Contracts
  - Fleet Support & Field Activity Management
  - Systems Engineering
  - Comptroller/Financial Systems/Budget
  - Corporate Management

INTEGRATED ACQUISITION CAPABILITY FOR NAVAL AIRCRAFT

The collocation of Naval Air Systems Team at Patuxent River will significantly enhance the integration of management, technical, and support efforts; better utilize our workforce, facility, and laboratory resources and shorten the time for acquiring and updating Naval aircraft/systems. This collocation provides Naval aviation Program Executive Officers (PEO)/Program Managers (PM) with a single integrated Headquarters, Research, and Development, Systems Engineering, Test and Evaluation, Maintenance Engineering, and Integrated Logistics Support for all fixed and rotary wing airplane types including fighter, attack, electronic warfare, reconnaissance, airborne early warning, antisubmarine, command, control and communications, observation, utility, cargo, trainer, and special warfare aircraft. The close proximity to the Washington DC arena and the large operational communities in Norfolk, Virginia is a distinct major advantage for timely communications and integrating acquisition and operational processes. This acquisition integration will be Unique within DoD.

RESEARCH & DEVELOPMENT OF MARITIME AIRCRAFT SYSTEMS

Provide R&D for maritime aircraft, aircraft systems/subsystems, materials and components (Unique within DoD)

- Avionics/Mission System
- Air Vehicle Systems
- Aircrew Systems
- ASW & ASUW Sensors & Systems
- Propulsion Systems (small aircraft engines) Including Components & Accessories
- Fleet Aviation Fuels, Lubricants, Fuel Storage & Delivery Systems
- Warfare Systems Analysis
- Software Technology & Development

RESEARCH AND DEVELOPMENT OF MARITIME AIRCRAFT SYSTEMS

Research and development activities in air warfare systems are integral to resolving the needs of maritime air warfare systems and to guiding acquisition managers and system engineers throughout the acquisition cycle. Patuxent River will perform research and development in those areas unique to Navy needs. Included areas are:

- New and Updated Avionics/Mission Systems for Maritime Tactical Aircraft (Unique within Navy)

- New and Updated Air Vehicle Systems, Materials, and Processes (Unique within DoD)

- New and Updated Maritime Aircrew Life Support, Escape, and Survival Systems (Unique within Navy)

- Airborne Undersea Warfare Anti-Surface Warfare Sensors and Systems Including Reconnaissance, Surveillance and ASW (Unique within DoD)

- Maritime Air Breathing Propulsion Systems (small aircraft engines) (Unique within Navy)
- Propulsion System Components and Accessories (Unique within DoD)
- Engineering Support for Fleet Aviation Fuels, Lubricants, Fuel Storage and Delivery Systems (Unique within Navy)

Integration and collocation of maritime research and development capabilities with integrated acquisition management, flight and ground test engineering, logistic and maintenance management at Patuxent River will improve the air warfare system acquisition process by reducing acquisition time and costs.

FLIGHT & GROUND T&E OF MARITIME AIRCRAFT SYSTEMS

Provide flight and ground T&E capabilities and facilities to support requirements of all acquisition phases (Unique within Navy) except test of Maritime aircraft operations/shipboard environment (Unique within DoD)

- Fixed Wing & Rotary Wing Aircraft DT&E
- Fixed Wing & Rotary Wing Aircraft Avionics Systems DT&E
- Fixed Wing & Rotary Wing Aircraft/Ship Compatibility DT&E
- UAV & UAV Systems DT&E
- Aircraft Related Support Equipment
- T&E Facilities/Support

FLIGHT AND GROUND T&E OF MARITIME AIRCRAFT SYSTEMS

Patuxent River's capabilities and facilities provide development test and support operational test activities essential to acquisition and fleet support functions for all Naval aircraft throughout the aircraft's life cycle. The flight and ground test functions include air vehicle system testing, aircraft propulsion system testing, avionics/mission system testing and those test disciplines such as flying qualities and performance, carrier suitability for tactical aircraft and dynamic interface between rotary wing aircraft and the various ships on which they operate, store/weapon compatibility with the aircraft. Patuxent River also serves as the lead DoD facility for aircraft electromagnetic environmental effects test and evaluation. Extensive simulation and aircraft stimulation capabilities are utilized to facilitate early-on testing during concept exploration and demonstration and validation phases of acquisition. When the Naval Air Systems Team is consolidated at Patuxent River, the total maritime acquisition cycle (from determination of mission need to fleet operations) will be supported at a single site. Principal site operations for fixed wing and rotary wing flight and ground test activities covering the complete fighter, attack, electronic warfare, reconnaissance, airborne early warning, antisubmarine, command/control/communications, observation, utility, cargo, trainer and special operations aircraft and its avionics systems are Unique within Navy, although certain mission critical test environments associated with aircraft carrier and other aviation capable ship operations and extremely high-density EMI testing are Unique within DoD.

MARITIME LOGISTICS & MAINTENANCE MANAGEMENT

Provide aircraft logistic and maintenance management to support shore (Unique within Navy) and ship based Naval aircraft (Unique within DoD)

- **Integrated Logistic Support for Ship & Shore Aircraft Systems**
- **Logistic & Maintenance Policy & Plans**
- **Airborne Weapon Logistics-Ship & Shore**
- **Product Support for In-Service Aircraft**

MARITIME LOGISTIC AND AIRCRAFT MAINTENANCE MANAGEMENT

Aircraft and aircraft system logistic management and aircraft maintenance management are integrated with all other acquisition management elements to fully describe and plan for support and operations of the aircraft/system. This includes consideration of all elements of integrated logistic support (ILS) and all elements of the Navy maintenance plan. The scope of this activity includes ILS element plans and acquisitions, management of shore and ship aircraft maintenance facilities, and the maintenance plan formulation and execution for all in-service and new aircraft/systems. The former Naval Aviation Depot Operations Center (NADOC) and the Naval Aviation Maintenance Office (NAMO) are consolidated with other NAVAIR fleet/product support functions which significantly enhance the acquisition management of aircraft systems. Integration of this area with "Research and Development of Maritime Aircraft Systems" and "Flight and Ground Test and Evaluation of Maritime Systems" at Patuxent River will significantly contribute to improved acquisition processes for Naval air warfare aircraft/systems. This area is Unique within Navy, but the special requirements of sustainability aboard aircraft carriers and other aviation capable ships is Unique within DoD.

9. IMMEDIATE SUPERIOR IN COMMAND (ISIC): Identify your ISIC. If your ISIC is not your funding source, please identify that source in addition to the operational ISIC.

° Operational name	UIC
RADM George H Strohsahl, USN	**N68395**

*° Funding Source	UIC

*** NAVAIRWARCENACDIV Patuxent River is an industrially funded activity, operating under Defense Business Operations Fund (DBOF) Regulations. All funding is received as reimbursable or direct cite from multiple sources, including all services, DoD, and other Government Agencies. (NAVAIRWARCEN/NAVAIRSYSCOM (MRTFB/BOS)).**

10. PERSONNEL NUMBERS: Host activities are responsible for totaling the personnel numbers for all of their tenant commands, even if the tenant command has been asked to separately report the data. The tenant totals here should match the total tally for the tenant listing provided subsequently in this Data Call (see Tenant Activity list). (Civilian count shall include Appropriated Fund personnel only.)

On Board Count as of 01 January 1994

	Officers	Enlisted	Civilian (Appropriated)	
° Reporting Command	212	1186	2775 FTE	
° Tenants (total)	254	1106	1003	R

Authorized Positions as of 30 September 1994

	Officers	Enlisted	Civilian (Appropriated)	
° Reporting Command	215	1250	2610 FTE	R
° Tenants (total)	268	1064	983	R

Page Numbers corrected @ NAWCHQ.
VBC 9/20/94
NAWC-21D

10. PERSONNEL NUMBERS: Host activities are responsible for totaling the personnel numbers for all of their tenant commands, even if the tenant command has been asked to separately report the data. The tenant totals here should match the total tally for the tenant listing provided subsequently in this Data Call (see Tenant Activity list). (Civilian count shall include Appropriated Fund personnel only.)

On Board Count as of 01 January 1994

	Officers	Enlisted	Civilian (Appropriated)
° Reporting Command	212	1186	2775 FTE
° Tenants (total)	246	1138	995

Authorized Positions as of 30 September 1994

	Officers	Enlisted	Civilian (Appropriated)
° Reporting Command	204	1161	2610 FTE
° Tenants (total)	260	1086	984

11. KEY POINTS OF CONTACT (POC): Provide the work, FAX, and home telephone numbers for the Commanding Officer or OIC, and the Duty Officer. Include area code(s). You may provide other key POCs if so desired in addition to those above.

Title/Name	Office	Fax	Home
NAVAIRWARCENACDIV COMMANDER			
RADM Barton Strong	**301-826-1100**	**301-826-1112**	**301-862-4061**
NAVAIRWARCENACDIV BRAC POC:			
Director, Resources & Policy Stu Simon	**301-826-1122**	**301-826-7684**	**215-345-9295**
NAVAIRWARCENACDIV PATUXENT RIVER BRAC POC's:			
Executive Director, NAS Tim Smith	**301-826-1019**	**301-826-1033**	**301-862-4029**
Director, Resources & Policy Patty Robrecht	**301-826-1650**	**301-826-1657**	**301-475-2210**

Revised

Data Call 1: General Installation Information **Activity: N00421**

11. KEY POINTS OF CONTACT (POC): Provide the work, FAX, and home telephone numbers for the Commanding Officer or OIC, and the Duty Officer. Include area code(s). You may provide other key POCs if so desired in addition to those above.

Title/Name	Office	Fax	Home
NAVAIRWARCENACDIV COMMANDER			
RADM Barton Strong	**301-826-1100**	**301-826-1112**	**301-862-4061**
NAVAIRWARCENACDIV BRAC POC:			
Director, Resources & Policy Stu Simon	**301-826-1122**	**301-826-7684**	**215-345-9295**
NAVAIRWARCENACDIV PATUXENT RIVER BRAC POC's:			
Executive Director, NAS Tim Smith	**301-826-1019**	**301-826-1033**	**301-862-4029**
Director, Resources & Policy Patty Robrecht	**301-826-1650**	**301-826-1657**	**301-475-2210**

12. TENANT ACTIVITY LIST: This list must be all-inclusive. Tenant activities are to ensure that their host is aware of their existence and any "subleasing" of space. This list should include the name and UIC(s) of all organizations, shore commands and homeported units, active or reserve, DoD or non-DoD (include commercial entities). The tenant listing should be reported in the format provided below, listed in numerical order by UIC, separated into the categories listed below. Host activities are responsible for including authorized personnel numbers, on board as of **30 September 1994**, for all tenants, even if those tenants have also been asked to provide this information on a separate Data Call. (Civilian count shall include Appropriated Fund personnel only.)

NOTE: The number of personnel listed herein may overlap with the number of personnel listed under item 10 personnel numbers.

° Tenants residing on main complex (shore commands)

Tenant Command Name	UIC	Officer	Enlisted	Civilian
NRL Flight Support	**31686**	**4**	**36**	**5**
Detachment	**48498**	**9**	**39**	**0**
Naval Aviation Maintenance Office	**45663**	**2**	**41**	**0**
	68626	**10**	**74**	**138**
	68757	**0**	**8**	**0**

12. TENANT ACTIVITY LIST: This list must be all-inclusive. Tenant activities are to ensure that their host is aware of their existence and any "subleasing" of space. This list should include the name and UIC(s) of all organizations, shore commands and homeported units, active or reserve, DoD or non-DoD (include commercial entities). The tenant listing should be reported in the format provided below, listed in numerical order by UIC, separated into the categories listed below. Host activities are responsible for including authorized personnel numbers, on board as of **30 September 1994**, for all tenants, even if those tenants have also been asked to provide this information on a separate Data Call. (Civilian count shall include Appropriated Fund personnel only.)

NOTE: The number of personnel listed herein may overlap with the number of personnel listed under item 10 personnel numbers.

° Tenants residing on main complex (shore commands)

Tenant Command Name	UIC	Officer	Enlisted	Civilian
NRL Flight Support Detachment	31686	4	36	5
	48498	9	39	0
Naval Aviation Maintenance Office	45663	2	41	0
	68626	10	74	138
	68757	0	8	0
Naval Aviation Depot Operations Ctr	48912	1	0	0
	68520	15	15	299
Naval Hospital	66098	58	106	84
Deployable Medical System (Naval Hospital)	47136	0	35	0
Marine Aviation Detachment	67356	24	78	1
Special Trials Unit	45705	1	15	0
	46007	2	22	0
Personnel Support Activity Det	42325	1	20	14
Defense Commissary Agency	49180	0	7	26
Resident Officer in Charge of Cons.	44198	4	2	26
Naval Audit Service	31863	0	0	15
Branch Dental Clinic	35751	3	8	4
Naval Oceanography Command Det	66124	1	12	1
DPS Det Branch Office	43629	0	0	12
Defense Reutilization & Marketing Office	68264	0	0	10
Aviation Board of Inspect. & Survey	30904	4	1	3
Naval Investigative Service Regional Office	68896	0	0	8
Enlisted Educational Advmnt Program	44880	0	7	0
	49047	0	1	0
Nat'l Weather Ser. Meteor-ological Observatory	46766	0	0	6

Naval Aviation Depot Operations Ctr	48912	1	0	0
	68520	15	15	299
Naval Hospital	66098	58	106	84
Deployable Medical System (Naval Hospital)	47136	0	35	0
Special Trials Unit	45705	1	15	0
	46007	2	22	0
Personnel Support Activity Det	42325	1	20	14
Defense Commissary Agency	49180	0	7	26
Resident Officer in Charge of Cons.	44198	4	2	26
Naval Audit Service	31863	0	0	15
Branch Dental Clinic	35751	3	8	4
Naval Oceanography Command Det	66124	1	12	1
DPS Det Branch Office	43629	0	0	12
Defense Reutilization & Marketing Office	68264	0	0	10
Aviation Board of Inspect. & Survey	30904	4	1	3
Naval Investigative Service Regional Office	68896	0	0	8
Enlisted Educational Advmnt Program	44880	0	7	0
	49047	0	1	0
Nat'l Weather Ser. Meteor-ological Observatory	46766	0	0	6
Naval Oceanographic Office Aircraft Support Branch	62306	0	0	6
Defense Investigative Service	68181	0	0	4
NAES Unit Det	30343	0	0	2
Navy Exchange	39229	1	0	0
TOTAL		116	449	645

° Tenants residing on main complex (homeported units.)

Tenant Command Name	UIC	Officer	Enlisted	Civilian
Fleet Air Reconnaissance Squadron Four	49403	1	47	0
Fleet Composite Squadron Six	46550	0	1	0
	55243	9	43	0
Air Test & Evaluation Squadron One	48101	0	16	0
	52819	4	6	0
	55600	100	375	0
TOTAL		114	488	0

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° Tenants residing in Special Areas (Special Areas are defined as real estate owned by host command not contiguous with main complex; e.g. outlying fields).

Tenant Command Name	UIC	Location	Officer	Enlisted	Civilian
Navy Recreation Center	**66843**	**Solomons Island, MD**	**1**	**15**	**1**
TOTAL			**1**	**15**	**1**

° Tenants (Other than those identified previously)

Tenant Command Name	UIC	Location	Officer	Enlisted	Civilian
Naval Electronic Systems Engineering Activity (NESEA)	**45539** **47863** **65980** **68558**	**St. Inigoes, MD**	**1** **0** **2** **2**	**10** **1** **15** **6**	**0** **0** **336** **0**
Israeli Air Force	**42846**	**NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER**	**1**	**0**	**0**
Naval Reserve Recruiting Command Det V	**47767**	**Lexington Park, MD**	**0**	**2**	**0**
MARINE AVIATION DETACHMENT	**67356**	**NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER**	**24**	**78**	**1**
Swiss Air Force	**42846**		**1**		
Royal Navy	**44689**	**NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER**	**1**		
Royal Airforce	**42846**	**NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER**	**1**		
Italian Air Force	**42846**	**NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER**	**2**		
Canadian Forces	**42846**	**NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER**	**2**		
TOTAL			**37**	**112**	**337**

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Naval Oceanographic Office Aircraft Support Branch	62306	0	0	6
Defense Investigative Service	68181	0	0	4
NAES Unit Det	30343	0	0	2
Navy Exchange	39229	1	0	0
TOTAL		140	527	646

° Tenants residing on main complex (homeported units.)

Tenant Command Name	UIC	Officer	Enlisted	Civilian
Fleet Air Reconnaissance Squadron Four	49403	1	47	0
Fleet Composite Squadron Six	46550	0	1	0
	55243	9	43	0
Air Test & Evaluation Squadron One	48101	0	16	0
	52819	4	6	0
	55600	100	375	0
TOTAL		114	488	0

° Tenants residing in Special Areas (Special Areas are defined as real estate owned by host command not contiguous with main complex; e.g. outlying fields).

Tenant Command Name	UIC	Location	Officer	Enlisted	Civilian
Navy Recreation Center	66843	Solomons Island, MD	1	15	1
TOTAL			1	15	1

° Tenants (Other than those identified previously)

Tenant Command Name	UIC	Location	Officer	Enlisted	Civilian
Naval Reserve Recruiting Command Det V	47767	Lexington Park, MD	0	2	0
MARINE AVIATION DETACHMENT	MAD	NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER	36	33	
Swiss Air Force	42846		1		
Royal Navy	44689	NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER	1		

Revised pg

COMMERCIAL ENTITIES AND OTHER MEMORANDUM OF AGREEMENT/LETTER OF AGREEMENT:

- **Patuxent River Post Office**
- **First National Bank**
- **Cedar Point Federal Credit Union**
- **McDonald's Corp Restaurant**
- **MD State Police Aviation Div**
- **American Red Cross**
- **Navy Relief Society**

RECEIVER

- **NAS Oceana/NAVAIRWARCENACDIV (Range) - Weapons/Missile Exercises Virginia Capes**
- **Boeing Helicopter Co./NAVAIRWARCENACDIV (Rotary Wing) - RDT&E of V-22 at Wilmington, DE**
- **NAS Brunswick/NAVAIRWARCENACDIV (Range) - Cruise Missile**
- **BWI Airport/NAS (Air Ops) - IFR Tower Enroute Control Service**
- **Naval Hospital Philadelphia/NAS (Safety Dept) - Inter Laboratory Asbestos Fiber Counting QA Program**
- **U.S. Customs Service/NAVAIRWARCENACDIV - Customs Inspections**

13. REGIONAL SUPPORT: Identify your relationship with other activities, not reported as a host/tenant, for which you provide support. Again, this list should be all-inclusive. The intent of this question is to capture the full breadth of the mission of your command and your customer/supplier relationships. Include in your answer any Government Owned/Contractor Operated facilities for which you provide administrative oversight and control.

NAVAIRWARCENACDIV Patuxent River has been assigned area coordination authority by Commandant, Naval District Washington as specified in NDWINST 5400.3C which is being revised.

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Royal Airforce	42846	NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER	1		
Italian Air Force	42846	NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER	2		
Canadian Forces	42846	NAVAIR-WARCEN-ACDIV PATUX-ENT RIVER	2		
TOTAL			43	35	0

COMMERCIAL ENTITIES AND OTHER MEMORANDUM OF AGREEMENT/LETTER OF AGREEMENT:

- **Patuxent River Post Office**
- **First National Bank**
- **Cedar Point Federal Credit Union**
- **McDonald's Corp Restaurant**
- **MD State Police Aviation Div**
- **American Red Cross**
- **Navy Relief Society**

RECEIVER

- **NAS Oceana/NAVAIRWARCENACDIV (Range) - Weapons/Missile Exercises Virginia Capes**
- **Boeing Helicopter Co./NAVAIRWARCENACDIV (Rotary Wing) - RDT&E of V-22 at Wilmington, DE**
- **NAS Brunswick/NAVAIRWARCENACDIV (Range) - Cruise Missile**
- **BWI Airport/NAS (Air Ops) - IFR Tower Enroute Control Service**
- **Naval Hospital Philadelphia/NAS (Safety Dept) - Inter Laboratory Asbestos Fiber Counting QA Program**
- **U.S. Customs Service/NAVAIRWARCENACDIV - Customs Inspections**

13. REGIONAL SUPPORT: Identify your relationship with other activities, not reported as a host/tenant, for which you provide support. Again, this list should be all-inclusive. The intent of this question is to capture the full breadth of the mission of your command and your customer/supplier relationships. Include in your answer any Government Owned/Contractor Operated facilities for which you provide administrative oversight and control.

NAVAIRWARCENACDIV Patuxent River has been assigned area coordination authority by Commandant, Naval District Washington as specified in NDWINST 5400.3C which is being revised.

Activity name	Location	Support function (include mechanism such as ISSA, MOU, etc.)
ACSC	Wallops Island, VA	
AEGIS	Moorestown, NJ	Aircraft/T&E/Engineering; Provides R&M Data Analysis
AERO CON	Silver Springs, MD	Technical Support
Air Nat'l Guard Andrews AFB		Technical Training (PCDS)
AIRLANT	Norfolk, VA	Logistics Support; Technical; Technical Support; Aircraft Support; ATC & LS Technical Support; Fleet Support
AMDDCA Andrews AFB	Indian Head, MD	Fleet & Calibration Standards
APL	Wash., DC	Engineering Support
APL John Hopkins	Baltimore, MD	Technical Support
Army Research Institute	Alexandria, VA	MDT2 Project (MOA); Synthetic Environment (MOA)
Army T&E Command	Aberdeen, MD	Aircraft/Technical/Program Support
ARPA	Arlington, VA	Technical Support
ASO	Arlington, VA	Technical/Administrative Support
ASO	Philadelphia, PA	Perform Fit, Form and Function Testing of Second Source Aircraft Parts and Equipment
Bay District Fire Department	Lexington Park, MD	NAS Air Ops
Bell-Boeing	Arlington, VA	V-22 Full Scale Development Testing (MOA)
Belvoir R&D Center	Fort Belvoir, VA	AN/AVS-6 Testing
Calvert Co. Brd. of Commissioners	Prince Frederick, MD	NAS Air Ops
Charles Co. Community College	La Plata, MD	Educational Services (MOA)
Chicago Museum of Science	Patuxent River, MD	Flight Certification of Instrument
CHINFO PENTAGON	Patuxent River, MD	Flight Certification of Instrument
CIA	Langley, VA	Aircraft/Technical Support
CINCLANTFLT	Norfolk, VA	Technical

Clemson Univ. (SPAWARS)	Crystal City, VA	Technical Services Contract Mission Critical Computer Resources (MCCR)
Clemson University (SPAWARS)	Crystal City, VA	Technical Services Contract; Mission Critical Computer Resources (MCCR)
Columbia LNG Corp	Lusby, MD	Auth to Operate A/C in Restricted Area (MOA)
COMMATWING-LANT	Norfolk, VA	Technical Support; Perform Component Validation/Verification Testing, Develop Degrader Lists, Failure Analysis Listings, Technical Data Support and Provide Fleet/Test Center Support on Various Aircraft Parts/Support Equipment
COMNAVAIRLANT	USS A/C Carriers	Bingo/Divert Field
COMOPTEVFOR	Norfolk, VA	Test Support Including Aircraft. Technical Support during OT Evolutions; Aircraft/Technical Support; Tactical EA-6B Mission Support (TEAMS); Technical Support; Aircraft Support; ATC & LS Technical Support
COMSURFLANT	Norfolk, VA	Fleet & Calibration Standards; Perform R&M T&E for EA-6B; Perform R&M Analyses and Maintain R&M Database; Perform Component Validation/Verification Testing, Develop Degrader Lists, Failure Analysis Listings, Technical Data Support and Provide Fleet/Test Center Support on Various Aircraft Parts/Support Equipment
David Taylor	Annapolis, MD	Photo Support, Target Instrumentation
DEC (U.S. Army)	Arlington, VA	Technical
Dept of Energy	Gaithersburg MD	A/C Tech Support (AMPS Fit Test)
Dir Navy Labs	NS Dam Neck	Shipboard Radar Cal/GPS Tech Supt
DISA	Wash., DC	Strategic Communication Support (MOU)
Discovery Channel	Patuxent River, MD	Flight Certification of Instrument
EA-6B Program Office	NAVAIR-WARCENAC DIV Patuxent River, MD	Tactical EA-6B Mission Support (TEAMS)
ECAC	Annapolis, MD	Frequency Coordinator

Embry Riddle Aeronautical Univ	Daytona Beach, FL	Educational Services (MOA)
FAA	Wash., DC	Wind Sensor Evaluation (MOA); Technical/Admin Aircraft (MOU); ATC & LS Technical Support; Aircraft Support; Laboratory & Simulation Support; Policy & Certification Support
FAA	Atlantic City, NJ	Aircraft Hardening Program (MOA)
FAA Tech Center	Atlantic City, NJ	Joint Utilization of Research Facility; Test Range & Photo Support; Technical Support; Aircraft Support (Mechanism:NAVAIR)
FACSFAC	Oceana, VA	ECM Support
FBI	Wash. DC	Aircraft/Technical Support
FCDSSA	Dam Neck, VA	Aircraft/Technical Support; Conduct JTIDS Testing and Provide R&M Data
First National Bank of St. Mary's	NAS	Banking Services aboard NAS Patuxent River (MOU/MOA)
Flight Instrument Center	Andrews AFB, MD	ATC & LS Technical Support; Aircraft Support
Florida Institute of Technology	Patuxent River, MD	Educational Services (MOA)
FMFLANT	Norfolk, VA	Technical
Ford Aerospace	Multiple Locations	Technical Support
HCS-4	Norfolk, VA	Fleet
HMX-1	Quantico, VA	Aircraft/Technical/Logistics/Training
HSL-94	Willow Grove, PA	Technical
Jefferson Patterson Park and Museum	St. Leonard, MD	Archaeological Survey-Mattapany Sewall
Johns Hopkins Univ	Baltimore, MD	Fuel for APL Vessel (MOA), Applied Physical Lab; Technical Support R&D
LANTFLT	Norfolk, VA	Training Supt (Target & Emitter Serv)
Lexington Park Vol Rescue Squad	Lexington Park, MD	NAS/NAVHOSP Emergency Rescue Response
LSO	Virginia Beach, VA	Technical Support; Fleet Support; ATC & LS Technical Support
MARCORPSYS-COM	Quantico, VA	BQM-147A Very Low Cost UAV RDT&E and Acquisition Support (Work Unit): System and Payload Development Integration, and Test; Technical Coordination of Primary Contractor and DoD Field
Marine Systems Command	Quantico, Va	Technical Support; Aircraft Support

Maryland Air Nat'l Guard (175th FG/LGX)	Baltimore, MD	Hung Ordnance Procedures (MOU/MOA)
MD State Police Av. Div.	Baltimore, MD	SAR Support
MSTO	Arlington, VA	Emitter Test (ARPA)
Mutual Aid Fire Fighting Asst.		(MOA)
NAC, IN	Patuxent River, MD	Ordnance Structural Testing and Analysis Support
NADEP	Norfolk, VA	F-14D TS 4142; Technical Support; Perform R&M T&E for EA-6B; Perform R&M Analyses and Maintain R&M Database; F/A-18 F404-GE-402 Enhanced Performance Engine Life Used Indices, F-14A/B Upgrade R&M Analyses and Engineering Support
NAS Oceana	Virginia Beach, VA	Perform Component Validation/Verification Testing, Develop Degrader Lists, Failure Analysis Listings, Technical Data Support and Provide Fleet/Test Center Support on Various Aircraft Parts/Support Equipment; ATC & LS Technical Support; Aircraft Support; Training Support
NASA	Wallops Island, VA	Photo/Frequency/Telemetry Support Airspace Coordination; Test Support (Radar, and AEGIS site); Technical Support
NASA Langley AFB Research Center	Hampton, VA	GPS Precision Approach and Landing System (MOU/MOA); Technical Support; Technical/Radar Support; Aircraft Support; Landing Systems Test Facility (Mechanism: Interagency Agreement)
NAVEMSCEN	Wash., DC	National Frequency Support
NAVORDSTA	Indian Head, MD	Weapon/Ship Capability, System Safety Engineering; Testing Support
NAVSHIPS	Philadelphia, PA	Calibration Support
NAVSUP	West Virginia	Technical Support
Navy Aviation Depot	Norfolk, VA	AN/AYK-14 SRAID IV&V; ILS #2; ISR/NADEP; Navy Aircrew Common Ejection System
Navy Engineering Logistics Office	Arlington, VA	Gusty Ermine (E3 Testing)

Navy Medical Research and Development	Bethesda, MD	Crewstation Strength/Force Assessment
NAWSLANT	Oceana, VA	Technical/Radar Support
NDW	Wash., DC	Computer Support for DFAS
NELO	Arlington, VA	Aircraft/Certification/Fabrication/ Integration
NESEA	St. Inigoes, MD	Air Traffic Control Services; Global Positioning System; Photo & Frequency Support Aircraft/Technical/T&E/Engineering (MOA)
NESSEC	Wash., DC	Network Security
Newport News Shipyard	Newport News, VA	Technical Support; Aircraft Support
NISE EAST	St. Inigoes, MD	ATC & LS Technical Support; Aircraft Support
NOAA	Wash., DC	Inter-Agency Emergency Computer Support
NOC (EOD Tech. Ctr.	Indian Head, MD	Photo & Frequency & Range Support
NOSIH	Indian Head, MD	T&E Support
NRL	Wash., DC	Electrical on MATT; Quality Verification Test; WISSARD (SOW); CHAFFRCS; Lightning Composite; Testing of Advanced Fiber Optics; Aircraft Support; Tech Support for Radar & Emitter Sys; Aircraft/Technical Support; ATC & LS Technical Support (Mechanism: Work Request); T&E Support
NRL	Chesapeake Beach, MD	Frequency Coordination & Target Support; Aircraft Technical Support
NRL	Anacostia, MD	Frequency Coordination & Target Support; Aircraft/Technical Support
NRL	Langley, VA	Laser/Technical Support
NRL	Patuxent River, MD	Flight Certification Analysis and Support
NSA	Laurel, VA	Aircraft/Technical
NSA FT Meade	FT Meade, MD	Aircraft Support; T&E Support; Tech. Support R&D

NSWC	Dahlgren, VA	HERO & EMV (MOA); Air Transportation (C-28); BGPHES LBTS SPT (SOW); ESD Test; EMV PAT (SOW); AMITS; ALO; ESD Test; CH-46E HERO; Fleet & Calibration Standards; Aircraft/Frequency/Target & Instrumentation Support; Aircraft/Technical/Aircrew; Weapon/Ship Capability, System Safety Engineering; ATC & LS Technical Support; R&D
NSWC	Bethesda, MD	Reliability Pred Mech Equip; Technical Support
NSWC	White Oak, MD	Fleet Support; Photo/Frequency Support Target & Instrumentation Support; Aircraft/Technical Support R&D
NSWC	Indian Head, MD	Aircraft Tech Support (Harpoon testing); Perform Data Analysis for CEEDs Program; Exp Test on the Squib Used in CEEDs; Penguin CATM Flight Test Support
NSWC	Carderock	Aircraft/Technical Support; ATC & LS Technical Support
NSWC	Virginia Beach, VA	Aircraft/Technical Support
NTSA	Navy Yard, Wash., DC	Technical
NUAD Inc.	Leonardtown MD	Channel 10 "Pax River Update"
NUWC Det Norfolk	Norfolk, VA	Technical/Aircraft Support
NWS	Yorktown, VA	Technical Support; Weapon/Ship Capability, System Safety Engineering; Testing Support
Office of Special Technology	FT Washington, MD	Program Management/Technical; Technical/Administrative Support
OPNAV	Arlington, VA	Technical Support; Acquisition Support; Program Management Support; ATC & LS Technical Support
Patuxent Navy Flying Club	Lexington Park, MD	Aviation Weather Support (MOA)
Pentagon Dept of Army	Wash., DC	Aircraft/Technical/Program Support
Point Lookout State Park	Point Lookout, MD	Point Lookout Lighthouse Visitation (MOA)
Ridge Vol Fire Dept.	Ridge, MD	NAS Air Ops

ROM	McLean, VA	Technical Support
Sea Cadets	Patuxent River, MD	Sea Cadet Training Space
SEADDSA	Indian Head, Md	Technical Support
Secretary Air Force	Arlington, VA	ATC & LS Technical Support; Acquisition Support
St. Mary's Co. Dept of Social Services	Leonardtown MD	Family Advocacy Support
St. Mary's County Government	Leonardtown MD	Joint Use Agreement for Operation of Commuter Airline
State Job Service	NAS (FSC)	TAP Program (MOA)
SURFLANT	Norfolk, VA	Technical Support; Aircraft Support; Fleet Support; ATC & LS Technical Support
Univ. of Md Univ College	College Park, MD	Educational Services (MOA)
Univ. of Tenn Space Institute	Tullahoma, TN	Educational Services (MOA)
U. S. Army	AP Hill, VA	Technical Support (MATS)
U. S. Army	Fort Meade, MD	Technical Support
U. S. Army	Warrenton, VA	Separation Flight Test
U. S. Army Aviation Applied Technology Directorate	FT. Eustis, VA	Technical/Range Support (for air-to-air combat tests)
U. S. Army FT Monmoth		Aircraft Support
U. S. Customs Service	Wash., DC	Fast Frigate Docked at Solomons (MOA)
U. S. Naval Academy	Annapolis, MD	Computer Support for DFAS
USAF	Andrews AFB, MD	Laser/Photo Support
USCG	St. Inigoes, MD	SAR Helo Support
USCG	Wash., DC	Coast Guard Aircraft Certification; Technical Support (VTS)
USCG	HQ, Wash., DC	Technical Support
USCG	Stumpy Pt., VA	Video/Technical Support
Westinghouse Corp.	Baltimore, MD	Test Range Support

White House	Wash., DC	Alternate Landing Site for Air Force One; Aircraft/Technical Support
WING 12	Norfolk, VA	Mission Systems Tech Interface/A/C Update Implementation Support
WSSA	Multiple	Ballistic Parameter Analysis/Trajectories

14. FACILITY MAPS: This is a primary responsibility of the plant account holders/host commands. Tenant activities are not required to comply with submission if it is known that your host activity has complied with the request. Maps and photos should not be dated earlier than 01 January 1991, unless annotated that no changes have taken place. Any recent changes should be annotated on the appropriate map or photo. Date and label all copies.

° Local Area Map. This map should encompass, at a minimum, a 50 mile radius of your activity. Indicate the name and location of all DoD activities within this area, whether or not you support that activity. Map should also provide the geographical relationship to the major civilian communities within this radius. (Provide 12 copies.)

° Installation Map / Activity Map / Base Map / General Development Map / Site Map. Provide the most current map of your activity, clearly showing all the land under ownership/control of your activity, whether owned or leased. Include all outlying areas, special areas, and housing. Indicate date of last update. Map should show all structures (numbered with a legend, if available) and all significant restrictive use areas/zones that encumber further development such as HERO, HERP, HERF, ESQD arcs, agricultural/forestry programs, environmental restrictions (e.g., endangered species). (Provide in two sizes: 36"x 42" (2 copies, if available); and 11"x 17" (12 copies).)

° Aerial photo(s). Aerial shots should show all base use areas (both land and water) as well as any local encroachment sites/issues. You should ensure that these photos provide a good look at the areas identified on your Base Map as areas of concern/interest - remember, a picture tells a thousand words. Again, date and label all copies. (Provide 12 copies of each, 8_"x 11".)

° Air Installations Compatible Use Zones (AICUZ) Map. (Provide 12 copies.)

- **The General Development Encumbrances Maps are consolidated maps for Installation Map/Activity Map/Base Map**
- **General Development Encumbrances only include numbered buildings over 30K square feet. The attached list includes structures/building for the total complex**
- **Naval Electronic Systems Engineering Activity St. Inigoes, Maryland building structures are not included. Please contact Mr. Don Black at commercial 703-602-8485.**
- **No Aerial Views of Solomons Annex are available**

General Maps:

(12) Local Area Maps - 11" x 17"

Patuxent River Maps:

(2) General Development/Encumbrances Maps - 36" x 42"
(12) General Development/Encumbrances Maps - 11" x 17"
(2) General Development/Encumbrances Maps - 36" x 42"
(12) General Development/Encumbrances Maps - 11" x 17"
(2) Range Assets Maps - 36" x 42"
(12) Range Assets Maps - 11" x 17"
(12) Photos from a mosaic produced from Oct 91 aerial photography - 8" x 12"
(12) Air Installation Compatible use Zones Maps - 11" x 17"

Solomons Annex Maps:

(2) General Development/Encumbrances Maps - 36" x 42"
(12) General Development/Encumbrances Maps - 11" x 17"

St. Inigoes Maps:

(2) General Development/Encumbrances Maps - 36" x 42"
(12) General Development/Encumbrances Maps - 11" x 17"
(12) Photos from 15 Mar 90 aerial photography - 8" x 10"
(12) Air Installation Compatible Use Zones Maps - 11" x 17"

BRAC-95 CERTIFICATION

DATA CALL #1

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

BARTON D. STRONG
NAME (Please type or print)

Barton D. Strong
Signature

Commander
Title

22 Feb '94
Date

Naval Air Warfare Center Aircraft Division, Patuxent River, MD
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)

G. H. STROHSAHL
NAME (Please type or print)

Signature

Commander
Title

23 Feb 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
NAME (Please type or print)

Signature

Commander
Title

24 Feb 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)

S. F. Loftus
Vice Admiral, U.S. Navy
NAME (Please type or print)
Deputy Chief of Naval Operations (Logistics)

Signature

Title

3.11.94
Date

Data Call #1
Audit Changes
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

DONALD V. BOECKER, RADM USN
NAME (Please type or print)

Donald V. Boecker
Signature

COMMANDER (ACTING)
Title

21 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

9/29/94
Date

DATA CALL #1 - AUDIT
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."

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

CAPTAIN JOHN B. PATTERSON
NAME (Please type or print)

Signature

SEP 6 1994
Date

ACTING COMMANDER
Title

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD

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NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
PATUXENT RIVER

ENVIRONMENTAL DATA CALL: #33
DATA CALL TO BE SUBMITTED TO
ALL NAVY/MARINE CORPS HOST ACTIVITIES

Maps w/ original

1 June 1994

BRAC 1995 ENVIRONMENTAL DATA CALL:
All Navy/Marine Corps Host Ativities

INDEX

ist of tenant activities that are covered in this response.

s residing on main complex (shore commands)

Tenant Command Name	UIC
NRL Flight Support Detachment	31686
	48498
Naval Aviation Maintenance Office	45663
	68626
	68757
Naval Aviation Depot Operations Ctr	48912
	68520
Naval Hospital	66098
Deployable Medical System (Naval Hospital)	47136
Marine Aviation Detachment	67356
Special Trials Unit	45705
	46007
Personnel Support Activity Det	42325
Defense Commissary Agency	49180
Resident Officer in Charge of Cons.	44198
Naval Audit Service	31863
Branch Dental Clinic	35751
Naval Oceanography Command Det	66124
DPS Det Branch Office	43629
Defense Reutilization & Marketing Office	68264
Aviation Board of Inspect. & Survey	30904
Naval Investigative Service Regional Office	68896
Enlisted Educational Advmnt Program	44880
	49047
Nat'l Weather Ser. Meteor-ological Observatory	46766
Naval Oceanographic Office Aircraft Support Branch	62306
Defense Investigative Service	68181
NAES Unit Det	30343
Navy Exchange	39229

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:R NISE
DATA
CALL.

CIAL USE ONLY
IONAL INFORMATION

1. ENDANGERED/THREATENED SPECIES AND BIOLOGICAL HABITAT

1a. For federal or state listed endangered, threatened, or category 1 plant and/or animal species on your base, complete the following table. Critical/sensitive habitats for these species are designated by the U. S. Fish and Wildlife Service (USFWS). A species is present on your base if some part of its life-cycle occurs on Navy controlled property (e.g., nesting, feeding, loafing). Important Habitat refers to that number of acres of habitat that is important to some life cycle stage of the threatened/endangered species that is not formally designated.

SPECIES (plant or animal)	Designation (Threatened/ Endangered)	Federal/ State	Critical / Designated Habitat (Acres)	Important Habitat (acres)
Haliaeetus leucocephalus - bald eagle	**Threatened**	**Federal**	**0**	**40**
Caretta caretta - Loggerhead Sea Turtle	**Threatened**	**Federal**	**0**	**0**
Cicindela dorsalis dorsalis - Northeastern Beach Tiger Beetle	**Threatened**	**Federal**	**0**	**20**
Falcon peregrina - Peregrine falcon	**Endangered**	**Federal**	**0**	**200**
Gastrophryne carolinensis - Eastern Narrow-mouthed Toad	**Endangered**	**State**	**0**	**10**

See the attached map for locations of important habitat acreage on Station. Most areas are near Fishing Point, Hog Point, with small areas south of Pond 3 and north of Gate #1. There are no critical/designated habitats on Station.

Source Citation: **NAS Pax River Endangered Species Survey**

1b.

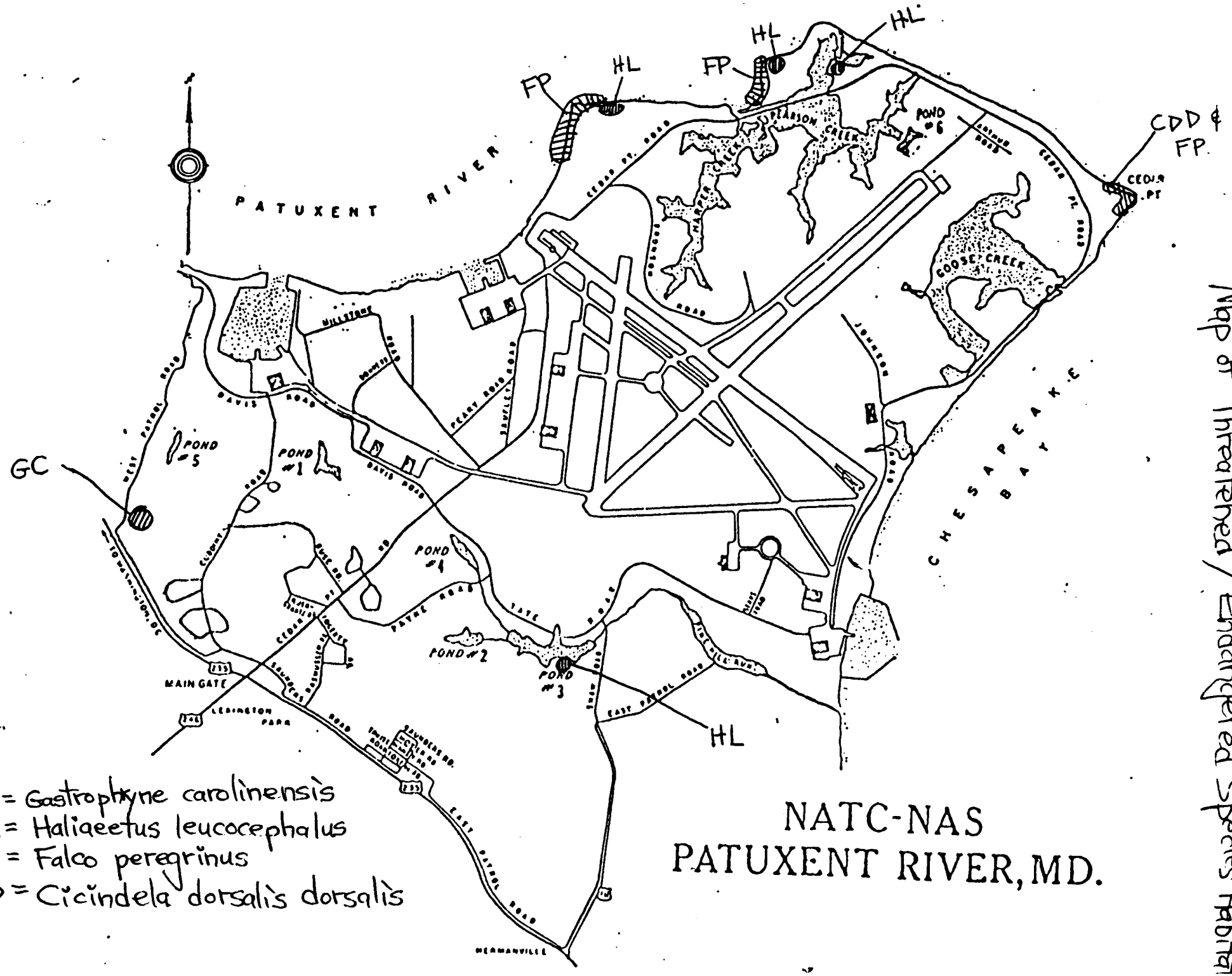
Have your base operations or development plans been constrained due to: - USFWS or National Marine Fisheries Service (NMFS)? - State required modifications or constraints? If so, identify below the impact of the constraints including any restrictions on land use.	**NO** **NO**
Are there any requirements resulting from species not residing on base, but which migrate or are present nearby? If so, summarize the impact of such constraints. **There are 3 known Bald Eagle nests located off-Station, but within 1/2 mile of the Station and within our operating airspace. We conduct annual aerial surveys to locate the eagle nests and monitor our potential for impact.**	**YES**

1c. If the area of the habitat and the associated species have not been identified on base maps provided in Data Call 1, submit this information on an updated version of Data Call 1 map.

See attached map for updated version of map provided in Data Call 1.

DATA CALL #33 - 1C

Map of Threatened / Endangered Species Habitat



GC = Gastrophryne carolinensis
HL = Haliaeetus leucocephalus
FP = Falco peregrinus
DD = Cicindela dorsalis dorsalis

5a

Revised pg

N00421

1d.

Have any efforts been made to relocate any species and/or conduct any mitigation with regards to critical habitats or endangered/threatened species? Explain what has been done and why. **There is no requirement to do so on this installation because we have no known significant impact to endangered species, and there are no critical habitats present.**	**NO**

1e.

Will any state or local laws and/or regulations applying to endangered/threatened species which have been enacted or promulgated but not yet effected, constrain base operations or development plans beyond those already identified? Explain.	**NO**

2. WETLANDS

Note: Jurisdictional wetlands are those areas that meet the wetland definitional criteria detailed in the Corps of Engineers (COE) Wetland Delineation Manual, 1987, Technical Report Y-87-1, U.S. Army Engineer Waterway Experiment Station, Vicksburg, MS or officially adapted state definitions.

2a.

Does your base possess federal jurisdictional wetlands?	**YES**
Has a wetlands survey in accordance with established standards been conducted for your base?	**YES**
When was the survey conducted or when will it be conducted? **In 1989 a Survey by photogrammetric interpretation could not identify non-tidal wetlands in densely forested areas. In 1995 we will conduct a supplemental survey in these forested areas.**	**1989**
What percent of the base has been surveyed? **Approximately 30% of the installation is covered by dense forest, and so was not adequately surveyed for non-tidal wetlands.**	**70%**
What is the total acreage of jurisdictional wetlands present on your base? **R** **235 acres are tidal; 402 acres are non-tidal.**	**637**

Source Citation: **1989 Geonex Wetlands Survey; National Wetlands Inventory (NWI) Maps; MD Non-tidal Wetlands Guidance Maps**

2b. If the area of the wetlands has not been identified on base maps provided in Data Call 1, submit this on an updated version of Data Call 1 map.

See attached map

NAVCHQ Change
Auth NAVC-21
9/19/94

1d.

Have any efforts been made to relocate any species and/or conduct any mitigation with regards to critical habitats or endangered/threatened species? Explain what has been done and why. **There is no requirement to do so on this installation because we have no known significant impact to endangered species, and there are no critical habitats present.**	**NO**

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2b. If the area of the wetlands has not been identified on base maps provided in Data Call 1, submit this on an updated version of Data Call 1 map.

See attached map. See page 6a. cc 6/24/94 AIR-0903

Has the EPA, COE or a state wetland regulatory agency required you to modify or constrain operations or development plans in any way in order to accommodate a jurisdictional nd?. If YES, summarize the results of such modifications or constraints.

y identification of wetlands during the planning process has allowed us to site design projects which avoid or minimize wetlands impacts while fulfilling ion objectives.

ULTURAL RESOURCES

a survey been conducted to determine historic sites, structures, districts or aeological resources which are listed, or determined eligible for listing, on the onal Register of Historic Places? If so, list the sites below.	YES

apany-Sewall (Site #18ST360), is listed on the National Register.

k Knox Elementary School (facility #2189) has been determined to be eligible isting on the National Register, but is not yet listed.

mprehensive survey of both archaeological and architectural features was ucted by Dennis Pogue, a local historian, along with the help of the National rical Trust in 1981. Several project-specific site surveys for Archaeological have been conducted since then, most associated with MILCON projects. e's 1981 survey evaluated structures built prior to the Navy's acquisition in . Structures built by the Navy during WWII have reached 50 years of age may now be eligible for listing on the National Register. A comprehensive y of WWII-era historic architecture was begun in December 1993 and should mpleted in September 1994. Final results are not yet available.

the President's Advisory Council on Historic Preservation or the cognizant Historic Preservation Officer required you to mitigate or constrain base ations or development plans in any way in order to accommodate a National ster cultural resource? If YES, list the results of such modifications or traints below.	YES

vation plans for Frank Knox Elementary School were modified after mination that the structure was eligible for listing on the National Register of ric Places. The most significant modification required retention of the nal wooden windows, which necessitated recalculation of the HVAC rements. However, modification did not effect the planned utilization of the ture. BASE OPERATIONS HAVE NOT BEEN CONSTRAINED.

4b. If there are any non-Navy users of the landfill, describe the user and conditions/agreements.

YES.

Contractors working on station construction projects are given conditional use for rubble debris only until the landfill is closed on 30 September 1994.

4c.

Does your base have any disposal, recycling, or incineration facilities for solid waste?					YES
Facility/Type of Operation	**Permitted Capacity**	**Ave Daily Throughput**	**Maximum Capacity**	**Permit Status**	**Comments**
Buildings 638 & 639, Recycling	N/A	1.2 ton/day	1.5 ton/day	N/A	

List any permit violations and projects to correct deficiencies or improve the facility.

C25-91 (Transfer Station Design Construction) will include provision for improving recycling on station by providing recycling bins for specific products.

4d.

Does your base own/operate a Domestic Wastewater Treatment Plant (WWTP) ?				NO	
ID/Location of WWTP	**Permitted Capacity**	**Ave Daily Discharge Rate**	**Maximum Capacity**	**Permit Status**	**Level of Treatment/Year Built**

All domestic sewage is handled by the St. Mary's Metropolitan Commission WWTP at Pine Hill Run. Patuxent River does not own/operate a WWTP.

List permit violations and discuss any projects to correct deficiencies.

Based on random sampling Patuxent River's Electroplating shop violates cadmium levels. A contract was awarded to install a zero discharge pretreatment unit to correct this problem.

4e. If you do not have a domestic WWTP, describe the average discharge rate of your base to the local sanitary sewer authority, discharge limits set by the sanitary sewer authority (flow and pollutants) and whether the base is in compliance with their permit. Discuss recurring discharge violations.

Average discharge rate per day is 800,000 gallons. Currently, Patuxent River's authority for peak capacity is 1.2 million gallons per day. The WWTP imposes discharge limitations on 16 specific characteristics. Patuxent River meets these limits in all areas except one. Cadmium metal discharges from our electroplating shop exceed limitations intermittently. A closed loop treatment system for metal plating process discharge pretreatment is ready for construction as a result of BRAC 91.

4f.

Does your base operate an Industrial Waste Treatment Plant (IWTP)?					NO
ID/Location of IWTP	Type of Treatment	Permitted Capacity	Ave Daily Discharge Rate	Maximum Capacity	Permit Status

List any permit violations and projects to correct deficiencies or improve the facility.

4g. Are there other waste treatment flows not accounted for in the previous tables? Estimate capacity and describe the system.

NO

4h.

Does your base operate drinking Water Treatment Plants (WTP)?					YES
ID/Location of WTP	Operating (GPD)		Method of Treatment	Maximum Capacity	Permit Status
	Permitted Capacity	Daily Rate			
18-0022 (16 wells)	830,000/ day	830,000/ day	Chlorination/some Fluoridation	1,240,000/ day	Current with increase pending. *
18-0022 (9 wells)	140,000/ day	140,000/ day	Chlorination	210,000/day	Current **

***Permit is current with increase in capacity pending approval from Department of Natural Resources.**

****Current with no increase/decrease expected.**

List permit violations and projects/actions to correct deficiencies or improve the facility.

No permit violations exist today. Current improvement to Patuxent River facilities include:

Solomons Annex Water distribution system currently being replaced.

Installation of 2 additional wells increasing water capacity by 300,000 gal./day.

4i. If you do not operate a WTP, what is the source of the base potable water supply. State terms and limits on capacity in the agreement/contract, if applicable. **NOT APPLICABLE.**

4j.

Does the presence of contaminants or lack of supply of water constrain base operations. Explain.	**NO**

Water quality is excellent. No detectable levels of regulated substances are present. We are currently petitioning for an increase in capacity as identified in question 4h. Patuxent River does not anticipate any limitations that would constrain base operations.

4k.

Other than those described above does your base hold any NPDES or stormwater permits? If YES, describe permit conditions.	**YES**
If NO, why not and provide explanation of plan to achieve permitted status.	

Patuxent River holds a NPDES Industrial Discharge Permit and a general permit for stormwater discharge. We are currently in compliance with permit conditions.

<u>NPDES Industrial Discharge Permit (MD0020150A)</u>

- **Regulates industrial process and stormwater discharges at 6 outfalls.**
- **Expires January 1996; renewal application to begin in 1995.**
- **Permit updated in January 1994 to reflect current conditions.**
- **Identifies stormwater only discharges at 22 other outfalls.**
- **Regulates use of washracks, station oil/water separators, spill containment structures and system maintenance.**

<u>General Permit to Discharge Stormwater (NAS Solomons Annex) (MDR000001)</u>

- **Covers all existing and future stormwater discharges that are associated with industrial activity.**
- **Received General Permit in December 1992.**
- **Required Pollution Prevention Plan (SW3P) completed in September 1993 and we are currently following it.**
- **NPDES Industrial Discharge permit not required as no industrial discharges exist at Solomons Annex.**

4l.

Does your base have bilge water discharge problem?	**NO**
Do you have a bilge water treatment facility?	**NO**

Patuxent River and Solomons Annex do not currently have facilities nor mechanisms in place to handle bilge water. Bilge water is currently handled by the requiring activity on a case by case basis and handled by contract for removal.

4m.

Will any state or local laws and/or regulations applying to Environmental Facilities, which have been enacted or promulgated but not yet effected, constrain base operations or development plans beyond those already identified? Explain.	**NO**

We closely monitor regulatory changes that are pending and we do not anticipate any unmanageable impacts.

4n. What expansion capacity is possible with these Environmental Facilities? Will any expansions/upgrades as a result of BRACON or projects programmed through the Presidents budget through FY1997 result in additional capacity? Explain.

We currently operate at 70% capacity of the sanitary sewer system. The remaining 30% is more than adequate to cover the BRAC 91 and BRAC 93 construction. The WWPT is in the process of expanding its overall capacity and the base can purchase additional capacity if required.

BRACON will be adding two 300 GPD drinking water wells, 60 MW electrical upgrades, traffic improvements, and additional telephone capacity.

4o. Do capacity limitations on any of the facilities discussed in question 4 pose a present or future limitation on base operations? Explain.

NO.

We will be able to purchase additional capacity at the WWTP and install additional wells as required. We are also not constrained by solid waste disposal since we are currently disposing it off-site.

5. AIR POLLUTION

5a.

What is the name of the Air Quality Control Areas (AQCAs) in which the base is located? **Southern Maryland Air Quality Control Region, which is located within the Northeast Ozone Transport Region.**
Is the installation or any of its OLFs or non-contiguous base properties located in different AQCAs? List site, location and name of AQCA. **YES.** **Naval Air Station Patuxent River - Solomons Annex, National Capital Air Quality Control Region, which is located within the Northeast Ozone Transport Region.**

5b. For each parcel in a separate AQCA fill in the following table. Identify with and "X" whether the status of each regulated pollutant is: attainment/nonattainment/maintenance. For those areas which are in non-attainment, state whether they are: Marginal, Moderate, Serious, Severe, or Extreme. State target attainment year.

Site: **Naval Air Station, Patuxent River, MD** AQCA: **Southern Maryland AQCR**

Pollutant	Attainment	Non-Attainment	Maintenance	Target Attainment Year[1]	Comments[2]
CO	X				
Ozone	X				
PM-10	X				
SO_2	X				
NO_2	X				
Pb	X				

Site: **Naval Air Station, Solomons Annex** AQCA: **National Capital AQCR**

Pollutant	Attainment	Non-Attainment	Maintenance	Target Attainment Year[1]	Comments[2]
CO	X				
Ozone		X		**Nov 15, 1999**	***Serious**
PM-10	X				
SO_2	X				
NO_2	X				
Pb	X				

[1] Based on national standard for Non-Attainment areas or SIP for Maintenance areas.
[2] Indicate if attainment is dependent upon BRACON, MILCON or Special Projects. Also indicate if the project is currently programmed within the Presidents FY1997 budget.

*** The classification "Serious" is an EPA derived term that describes Calvert County ozone pollution status. As shown in paragraph 5.b, the term Serious is equivalent to a rank of 3.0 on a 1-5 scale.**

Elements in column one 5b are:

CO	**Carbon Monoxide**
PM-10	**Particulate Matter less than 10 microns**
SO_2	**Sulfur Dioxide**
NO_2	**Nitrogen Dioxide**
Pb	**Lead**

Revised pg

N00421

5c. For your base, identify the baseline level of emissions, established in accordance with the Clean Air Act. Baseline information is assumed to be 1990 data or other year as specified. Determine the total level of emissions (tons/yr) for CO, NOx, VOC, PM10 for the general sources listed. For all data provide a list of the sources and show your calculations. Use known emissions data, or emissions derived from use of state methodologies, or identify other sources used. "Other Mobile" sources include such items as ground support equipment.

	Emission Sources (Tons/Year)				
Pollutant	Permitted Stationary	Personal Automobiles	Aircraft Emissions	Other Mobile*	Total
CO-32	1.4	108	137	20	266
NOx-4	6.0	14	51	5	76
VOC-3	0.1	8	39	2	49
PM10-0	0.4	0	0	0.02	0.42

Source Document: **AP-42**

See attachment 1 for sources and calculations.
***Other Mobile includes GSE and Government Fleet vehicles.**

5d. For your base, determine the total FY1993 level of emissions (tons/yr) for CO, NOx, VOC, PM10 for the general sources listed. For all data provide a list of the sources and show your calculations. Use known emissions data, or emissions derived from use of state methodologies, or identify other sources used. "Other Mobile" sources include such items as ground support equipment.

	Emissions Sources (Tons/Year)				
Pollutant	Permitted Stationary	Personal Automobiles	Aircraft Emissions	*Other Mobile	Total
CO-32	7	108	81	20	216
NOx-4	25	14	33	5	77
VOC-3	3	8	20	2	33
PM10-0	2				

R

Source Document: Air Emissions Certification CY1993, Air Emissions Inventory.

See attachment 1 for sources and calculations.
Other Mobile includes GSE and Government Fleet vehicles.

NAWCHQ Change
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9/19/94

5c. For your base, identify the baseline level of emissions, established in accordance with the Clean Air Act. Baseline information is assumed to be 1990 data or other year as specified. Determine the total level of emissions (tons/yr) for CO, NOx, VOC, PM10 for the general sources listed. For all data provide a list of the sources and show your calculations. Use known emissions data, or emissions derived from use of state methodologies, or identify other sources used. "Other Mobile" sources include such items as ground support equipment.

	Emission Sources (Tons/Year)				
Pollutant	**Permitted Stationary**	**Personal Automobiles**	**Aircraft Emissions**	**Other Mobile**	**Total**
CO	**1.4**	**108**	**137**	**20**	**266**
NOx	**6.0**	**14**	**51**	**5**	**76**
VOC	**0.1**	**8**	**39**	**2**	**49**
PM10	**0.4**	**0**	**0**	**0.02**	**0.42**

Source Document: **AP-42**

See Attachment 1 for Sources and Calculation.
***Other Mobile includes GSE and Government Fleet vehicles.**

5d. For your base, determine the total FY1993 level of emissions (tons/yr) for CO, NOx, VOC, PM10 for the general sources listed. For all data provide a list of the sources and show your calculations. Use known emissions data, or emissions derived from use of state methodologies, or identify other sources used. "Other Mobile" sources include such items as ground support equipment.

	Emissions Sources (Tons/Year)				
Pollutant	Permitted Stationary	Personal Automobiles	Aircraft Emissions	Other Mobile	Total
CO	**7**	**108**	**81**	**20**	**216**
NOx	**25**	**14**	**33**	**5**	**77**
VOC	**3**	**8**	**20**	**2**	**33**
PM10	**2**	**0**	**0**	**0.02**	**2.02**

Source Document: **Air Emissions Certification CY1993, Air Emissions Inventory.**

See Attachment 1 for Sources and Calculation.
Other Mobile includes GSE and Government Fleet vehicles.

5e. Provide estimated increases/decreases in air emissions (Tons/Year of CO, NOx, VOC, PM10) expected within the next six years (1995-2001). Either from previous BRAC realignments and/or previously planned downsizing shown in the Presidents FY1997 budget. Explain.

	FY95	FY96	FY97	FY98	FY99	FY00	FY01
CO	290	300	311	312	312	313	313
NOx	100	102	105	107	108	110	112
VOC	54	54	55	56	56	56	56
PM10	2.2	2.3	2.5	2.6	2.7	2.8	3.0

Assume automobile emission increase by 31% from FY93 to FY97 and 0% yearly afterwards based on forecasted Navy employment trends.

Assume 5% increase in emissions from permitted stationary sources.

Assume other mobile sources remain constant.

Assume aircraft emissions remain at 1990 levels.

5f. Are there any critical air quality regions (i.e. non-attainment areas, national parks, etc.) within 100 miles of the base?

YES.

The National Capital Air Quality Control Region is in non-attainment for ozone and is within 100 miles from Patuxent River. The base is also included in the Northeast Ozone Transport Region. The National Parks within 100 miles of the base are as follows: Blackwater National Wildlife Refuge, Eastern Neck Island National Wildlife Refuge, Arlington National Cemetary, Manassas National Battlefield Park, Piscataway National Park, Prime Hook National Wildlife Area, Chincoteague National Wildlife Refuge.

5g. Have any base operations/mission/functions (i.e.: training, R&D, ship movement, aircraft movement, military operations, support functions, vehicle trips per day, etc.) been restricted or delayed due to air quality considerations. Explain the reason for the restriction and the "fix" implemented or planned to correct.

No base operations/mission/functions have been restricted because of air quality concerns.

5h. Does your base have Emission Reduction Credits (ERCs) or is it subject to any emission offset requirements? If yes, provide details of the sources affected and conditions of the ERCs and offsets. Is there any potential for getting ERCs?

NO

Revised pg

N00421

6. ENVIRONMENTAL COMPLIANCE

6a. Identify compliance costs, currently known or estimated that are required for permits or other actions required to bring existing practices into compliance with appropriate regulations. Do not include Installation Restoration costs that are covered in Section 7. For the last two columns provide the combined total for those two FY's.

Program	Survey Completed?	Costs in $K to correct deficiencies *Assumed only PCRs with a Class I & II rating needed to be reported.					
		FY94	FY95	FY96	FY97	FY98 -99	FY00- 01
Air	Ongoing	142	575	585	250	150	150
Hazardous Waste	Ongoing						
Safe Drinking Water Act	Ongoing	50					
PCBs	Ongoing	20	6	6	7	10	10
Other (non-PCB) Toxic Substance Control Act	Ongoing						
Lead Based Paint	NO						
Radon	YES	-	-	-	-	-	-
Clean Water Act	Ongoing		492	80			
Solid Waste	Ongoing		3,500				
Oil Pollution Act	Ongoing						
USTs	Ongoing	1,186	402	2,756	506	1,000	750
Other		285	290	250	250	500	500
Total							

Provide a separate list of compliance projects in progress or required, with associated cost and estimated start/completion date.

PROJECT TITLE	$K Cost	START DATE	COMPLETION DATE	
Modify Fire Deluge System of Building 1669	32	Jan 94	Aug 94	
Install Aircraft Washrack Valve System	105	Oct 94	Jun 95	
Install Washrack at Transportation	140	Oct 94	Apr 95	
Upgrade Washrack Building 1586	115	Oct 94	Apr 95	
Repair Jet Engine Test Cell Building 1503	20	Oct 94	Dec 94	R
Fuel Spill Containment T/W "A"	133	Aug 93	Jun 94	
Develop Emergency Plan for Water System	50	Jul 94	Dec 94	
Investigate Photo Lab Leach Pit #1354	30	Oct 94	Dec 94	

NAVCHQ Change
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9/19/94

6. ENVIRONMENTAL COMPLIANCE

6a. Identify compliance costs, currently known or estimated that are required for permits or other actions required to bring existing practices into compliance with appropriate regulations. Do not include Installation Restoration costs that are covered in Section 7. For the last two columns provide the combined total for those two FY's.

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Hazardous Waste	Ongoing						
Safe Drinking Water Act	Ongoing	50					
PCBs	Ongoing	20	6	6	7	10	10
Other (non-PCB) Toxic Substance Control Act	Ongoing						
Lead Based Paint	NO						
Radon	YES						
Clean Water Act	Ongoing		492	80			
Solid Waste	Ongoing		3,500				
Oil Pollution Act	Ongoing						
USTs	Ongoing	1,186	402	2,756	506	1,000	750
Other		285	290	250	250	500	500
Total		1,683	5,265	3,677	1,013	1,660	1,410

NOTE: THIS INFORMATION IS BASED ON DATA THAT IS INCLUDED IN THE A-106 ENVIRONMENTAL REPORT.

Provide a separate list of compliance projects in progress or required, with associated cost and estimated start/completion date.

PROJECT TITLE	$K Cost	START DATE	COMPLETION DATE
Modify Fire Deluge System of Building 1669	32	Jan 94	Aug 94
Install Aircraft Washrack Valve System	105	Oct 94	Jun 95
Install Washrack at Transportation	140	Oct 94	Apr 95
Upgrade Washrack Building 1586	115	Oct 94	Apr 95
Repair Jet Engine Test Cell Building 1583	20	Oct 94	Dec 94
Fuel Spill Containment T/W "A"	133	Aug 93	Jun 94
Develop Emergency Plan for Water System	50	Jul 94	Dec 94
Investigate Photo Lab Leach Pit #1354	30	Oct 94	Dec 94

Revised pg

Convert Halon 1301 Deluge Systems	75	Mar 95	Sep 97	
Stage II Vapor Recovery	67	Oct 93	Sep 94	
Conversion of Halon Deluge Building 144	75	Sep 94	Sep 96	
Retrofit/Replace Centrifugal Chiller Building 2109	50	Mar 94	Dec 95	
Title V. Permit Application Preparation	150	Oct 94	Sep 95	
UST Assessment/Remediation NEX Gas Station	190	Mar 93	Aug 95	
Repair Berm at Hot Refuel Site	53	Apr 94	Nov 94	
Fuel Farm UST Remedial Action	300	Jan 91	Sep 99	
Recoat Tank 556	58	Apr 94	Jun 94	
Remove Abandon UST 562, 514, 566	42	Aug 94	Sep 94	
Pipeline Leak Detection	294	May 94	Jun 95	
Replace 3 USTs	70	Jan 95	Jan 95	
Remove Replace Failed Coating Tank 19	98	Jun 94	Aug 94	
Sample/Analyze UST Wells	24	Apr 94	Jun 95	R
Red Hill Leak Detection	79	May 94	Jun 95	
Install Monitoring Wells	22	Apr 94	Jun 95	
Site Investigation TC-7 Pipeline	50	Mar 93	Dec 96	
Upgrade/Replace ATSs/USTs	214	Oct 93	Jun 95	
Monitor UST at Building 106	50	May 92	Aug 95	
Hydraulic Study Pine Hill Run/Strike Beach	25	Sep 94	Sep 95	
Supplemental Survey Non-Tidal Wetlands	40	Feb 95	Jun 95	
Non-Point Source Study of Golf Course	25	Mar 95	Sep 95	
Environmental Compliance Inventory	235	Mar 94	Sep 97	
RCRA Corrective Action (Landfill Site 11)	3,200	Mar 91	Sep 96	
Construct Transfer System	330	Mar 94	Jun 95	

6b.
Does your base have structures containing asbestos?

YES.

They're 994 buildings located at NAS Patuxent River and Solomons Annex. This represents approximately 6,580,000 square feet. 90 of the buildings (with 325,000 square feet) were built before 1943, which was the start of NAS Patuxent River. 635 buildings (with 4,716,000 square feet) have been built between 1943 and 1976. This signifies approximately 5,000,000 total square feet. The EPA's Toxic Substances Control Act - Section 6 (TSCA) use as a general rule of thumb "the banning of sprayed fireproofing in 1971 and the use of mechanical applications such as pipe insulation, boiler or duct installation, boiler or duct insulation and any wet applied asbestos cement product in 1976". Because of EPA's ruling, there's a good indication that the buildings constructed on the NAS Patuxent River site and Solomon's Annex before 1976 have friable asbestos in the form of Thermal System Insulation (which is pipe, boiler and duct insulation).

What % of your base has been surveyed for asbestos?

Approximately 8% of the buildings and 27% of the square footage.

74% of approximately 994 buildings and 1,760,000 sq. ft. of approximately 6,580,000 sq. ft., that are described above, are described above, have been surveyed. This represents 8% of the total buildings and approximately 27% of the square footage.

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Convert Halon 1301 Deluge Systems	75	Mar 95	Sep 97
Stage II Vapor Recovery	67	Oct 93	Sep 94
Conversion of Halon Deluge Building 144	75	Sep 94	Sep 96
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Title V. Permit Application Preparation	150	Oct 94	Sep 95
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Repair Berm at Hot Refuel Site	53	Apr 94	Nov 94
Fuel Farm UST Remedial Action	300	Jan 91	Sep 99
Recoat Tank 556	58	Apr 94	Jun 94
Remove Abandon UST 562, 514, 566	42	Aug 94	Sep 94
Pipeline Leak Detection	294	May 94	Jun 95
Replace 3 USTs	70	Jan 95	Jan 95
Remove Replace Failed Coating Tank 19	98	Jun 94	Aug 94
Sample/Analyze UST Wells	74	Apr 94	Jun 95
Red Hill Leak Detection	79	May 94	Jun 95
Install Monitoring Wells	22	Apr 94	Jun 95
Site Investigation TC-7 Pipeline	50	Mar 93	Dec 96
Upgrade/Replace ATSs/USTs	214	Oct 93	Jun 95
Monitor UST at Building 196	50	May 92	Aug 95
Hydraulic Study Pine Hill Run/Strike Beach	25	Sep 94	Sep 95
Supplemental Survey Non-Tidal Wetlands	40	Feb 95	Jun 95
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YES.

The EPA's Toxic Substances Control Act - Section 6 (TSCA) use as a general rule of thumb "the banning of sprayed fireproofing in 1971 and the use of mechanical applications such as pipe insulation, boiler or duct installation, boiler or duct insulation and any wet applied asbestos cement product in 1976". Because of EPA's ruling, there's a good indication that the buildings constructed on the Patuxent River site and Solomon's Annex before 1976 have friable asbestos in the form of Thermal System Insulation (which is pipe, boiler and duct insulation). The facility constructed after 1976 have a minimal change of having friable asbestos.

There are 994 buildings located at Patuxent River and Solomons Annex. This represents approximately 6,580,000 square feet. 90 buildings with 325,000 square feet were built before 1943. 635 buildings with 4,716,000 square feet have been built between 1943 and 1976. This signifies approximately 5,000,000 total square feet. The remaining 1,255,000 square feet was constructed after 1976.

What % of your base has been surveyed for asbestos?

74 of the 994 buildings and 1,760,000 sq. ft. of approximately 6,580,000 sq. ft., that are described above have been surveyed. This represents 8% of the total buildings and approximately 27% of the square footage.

Are additional surveys planned?

YES.

124 buildings with approximately 982,000 sq. ft. are programmed to be surveyed. 58 of the buildings with 828,000 sq. ft. are located at the Patuxent River site with the remaining 66 buildings and 154,000 sq. ft. located at Solomons Annex.

What is the estimated cost to remediate asbestos ($K)?

Approximately 1,000,000 sq. ft. of the 6,580,000 total footage has been remediated. This leaves approximately 4,325,000 square feet. Based on a price of $12 per sq. ft., the cost of asbestos abatement for the remaining buildings at Patuxent River and Solomons Annex is approximately $51.9M.

Are asbestos survey costs based on encapsulation, removal or a combination of both?

Asbestos survey cost identified above is based on encapsulation and removal.

6c. Provide detailed cost of operational (environmental) compliance costs, with funding source.
$K

Funding Source	FY92	FY93	*FY94	FY95	FY96	FY97	FY98 -99	FY00 -01
O&MN	907	1,235	1,821	1,431	1,481	1,391	2,820	2,991
HA								
PA	9,046	2,024	3,953	12,490	9,025	11,150	10,000	10,000
Other (specify)	1,361	1,853	2,733	2,146	2,222	2,067	4,230	4,487
TOTAL	11,314	5,112	8,507	16,067	12,728	14,608	17,050	17,478

6d. Are there any compliance issues/requirements that have impacted operations and/or development plans at your base.

NO

All environmental requirements/issues are being met without impact on the operations and developments on base. We are currently in compliance with all known environmental requirements, except for some underground storage tank issues which action is underway to correct. We do not anticipate any unmanageable impacts due to emerging regulations. Patuxent River does not own or control any land ranges. Our water ranges appear secure from environmental impact restrictions. We are pursuing additional NEPA documentation to ensure the continued availability of these ranges. Patuxent River has well-trained staff of environmental professionals to deal with any future requirements.

7. INSTALLATION RESTORATION

7a.

Does your base have any sites that are contaminated with hazardous substances or petroleum products?	YES
Is your base an NPL site or proposed NPL site?	YES

January 18, 1994, the EPA proposed for inclusion on its National Priorities List (NPL).

Patuxent River was assigned a score of 50 under the EPA's Hazardous Ranking System (HRS).

7b. Provide the following information about your Installation Restoration (IR) program. Project list may be provided in separate table format. Note: List only projects eligible for funding under the Defense Environmental Restoration Account (DERA). Do not include UST compliance projects properly listed in section VI.

Site # or name	Type site [1]	Groundwater Contaminated?	Extends off base?	Drinking Water Source?	Cost to Complete ($M)/Est. Compl. Date	Status[2]/ Comments
Fishing Point Landfill	CERCLA	YES	YES	NO	$4 FY98	IRI Phase
Disposal Site	CERCLA	YES	NO	NO	.3 FY98	IRI
Disposal Site	CERCLA	No Data	NO	NO	.1 FY98	IAS
Hermanville Disposal	CERCLA	YES	NO	NO	3 FY98	IRI
Disposal Near Pine Hill Run	CERCLA	No Data	NO	NO	1 FY98	IAS
Boneyard	CERCLA	YES	NO	NO	6 FY98	IRI
North of Fuel Farm	RCRA (UST)	YES	NO	NO	2 FY00	IAS
Supply Pond	RCRA (UST)	YES	NO	NO	3 FY00	IAS
Former Drum Disposal	CERCLA	YES	NO	NO	2 FY98	IRI
Ordnance Strike Beach	ORD	No Data	YES	NO		IAS
Former Sanitary Landfill	CERCLA	YES	NO	NO	3.5 FY98	IRI
Landfill Behind Rifle Range	CERCLA	No Data	NO	NO	.1 FY98	IAS
PCB Spill	CERCLA	No Data	NO	NO	.1 FY98	IAS
Fire Training Area	RCRA	No Data	NO	NO	2 FY98	IAS
Washrack Discharge	CERCLA	No Data	NO	NO	.5 FY98	IAS
Drainage Ditch	CERCLA	No Data	NO	NO	.1 FY98	IAS
Pest Control Shop	CERCLA	YES	NO	NO	3 FY98	IRI
Building 415 Hobby Shop	CERCLA	No Data	NO	NO	. 1	IAS

Drainage Ditch, Building 101/109	CERCLA	No Data	NO	NO	. 1	IAS
Battery Shop Building 158	CERCLA	NO	NO	NO	. 1	IAS
Sludge Drying Beds	CERCLA	No Data	NO	NO	. 1	IAS
Washracks, Building 115/201	CERCLA	No Data	NO	NO	. 1	IAS
DPDO Salvage Yard	CERCLA	NO	NO	NO	2	IRI
Dry Well	CERCLA	YES	NO	NO	1	IRI
Solvent Spill Area	CERCLA	No Data	NO	NO	. 5	IAS
Red Hill	CERCLA	No Data	NO	NO	1	IAS
Const. Debris	CERCLA	No Data	NO	NO	. 1	IAS
Transformer Storage	CERCLA	NO	NO	NO	. 3	IRI
CTC Disposal	CERCLA	NO	NO	NO	. 5	IAS
Paint Locker	CERCLA	No Data	NO	NO	. 1	IAS
Tire Shop	CERCLA	No Data	NO	NO	. 1	IAS
Drum Disposal	CERCLA	YES	NO	NO	2 FY98	IRI

[1] Type site: CERCLA, 'RCRA corrective action (CA), UST or other (explain).

[2] Status = PA, SI, RI, RD, RA, long term monitoring, etc.

7c. Have any contamination sites been identified for which there is no recognized/accepted remediation process available? List.

NO.

Various Engineering Evaluation/Cost Analysis (EE/CA) determine the best methods of remediation on Installation Resoration Sites. Based on the EE/CA results comparative analysis of removal actions can be determined for the sites. EE/CA's will recommend different remedial clean-up methods for solidification and stabilization; such as, bulk excavation, offsite bioremediation, and land farming.

7d.

Is there a groundwater treatment system in place?	YES
Is there a groundwater treatment system planned?	NO

State scope and expected length of pump and treat operation.

Fuel Farm Project

Purpose: Stabilize site and prevent AVGAS from entering Bay

- **Nov 93 Start up**
- **Expected duration of operation - 10-15 years**

7e.

Has a RCRA Facilities Assessment been performed for your base?	YES

A cover letter for the Draft Report is shown here. See page 21a.

7f. Does your base operate any conforming storage facilities for handling **hazardous materials**? If YES, describe facility, capacity, restrictions, and permit conditions.

YES.

Building 533, Capacity - 4500 Sq. Ft.
Building 653, Capacity - 8300 Sq. Ft.

Both storage facilities typically store flammable and combustible materials in bulk, (55 gallon drums) as well as small containers such as, gallons, quart, pints, etc. Combustibles are the predominate material with additional small amounts of corrosives, compressed gases and oxidizers which are stored two ways, pallet racks and shelving. These facilities are used for storing the standard industrial type chemicals as those described above and are restricted from explosives/pyrotechnics. The facilities do not require permits so there are no "permit conditions" that need to be addressed. In addition, Patuxent River is currently designing a 13,065 sq ft "Hazardous Material Storage Facility" under MILCON P426 with an anticipated construction completion date of October 1995.

7g. Does your base operate any conforming storage facilities for handling **hazardous waste**? If YES, describe facility, capacity, restrictions, and permit conditions.

YES.

Two buildings are used for Hazardous Waste storage.

Building 2042 - Max Volume 15,850 gallons, max container capacity 288 x 55 gallon drums

Building 619 - Max Volume 7530 gallons, max containers allowed 115.

Patuxent River is in the process of withdrawing our RCRA Permit with the State of Maryland. Patuxent River will be able to dispose of it's HAZWASTE in less than 90 days; therefore not requiring a State of Maryland Permit.

Data Call #33

7e

(7e)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

In Reply Refer To: 3HW32

OCT 28 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commanding Officer
Naval Air Station - Patuxent River
NAS Administration
Patuxent River, Maryland 20670-5409

RE: Naval Air Station - Patuxent River - RCRA Facility Assessment (RFA)
Dated August 25, 1988
EPA I.D. No. MD7 17 002 4536

Dear Sir:

Enclosed is a Draft of the RFA report for the Naval Air Station - Patuxent River, which was prepared by A. T. Kearney, Inc., and The Earth Technology Corporation. EPA has not reviewed this report at this time. Should you wish to comment on the report, please provide comments to EPA within 6 weeks from the date of receipt of this RFA report, and certify your response as described in 40 CFR § 270.11(d).

Should you have any questions, please contact Sherman Latchaw of my staff at 215-597-7936.

Sincerely,

John J. Humphries, III, Chief
General State Section

Enclosure

cc: Mr. George R. Weeks, Environmental Energy Division Head (w/enclosure)
Public Works (Code 86)
Naval Air Station - Patuxent River

21a

7h. Is your base responsible for any non-appropriated fund facilities (exchange, gas station) that require cleanup? If so, describe facility/location and cleanup required/status.

YES.

Navy Exchange Gas Station has soil contamination around building 493. Clean-up requirement requires removal of contaminated petroleum in the soil. It will be a Remedial Removal Action scheduled for FY95.

7i.

Do the results of any radiological surveys conducted indicate limitations on future land use? Explain below.	**NONE**

7j. Have any base operations or development plans been restricted due to Installation Restoration considerations?

NO. Base opeations or developmental plans have not been restricted due to IR Sites.

7k. List any other hazardous waste treatment or disposal facilities not included in question 7b: above. Include capacity, restrictions and permit conditions.

This installation has <u>NO</u> Hazardous Waste Treatment or Hazardous Disposal Areas. 7f and 7g indicate that the only HAZMAT or HAZWASTE on this installation is <u>STORAGE ONLY</u>.

8. LAND / AIR / WATER USE

8a. List the acreage of each real estate component controlled or managed by your base (e.g., Main Base - 1,200 acres, Outlying Field - 200 acres, Remote Range - 1,000 acres, remote antenna site - 5 acres, Off-Base Housing Area - 25 acres).

Parcel Descriptor	Acres	Location
Main Base	6379	Patuxent River, MD
Naval Recreational Center	295	Solomons, MD
Theodolite Stations	16	Various Locations
Off Base Housing Area	139	Lexington Park, MD
Ranges (Ches. Bay)	234	Talbot, MD

8b. Provide the acreage of the land use categories listed in the table below:

LAND USE CATEGORY PATUXENT RIVER		ACRES
Total Developed: (administration, operational, housing, recreational, training, etc.)		4,250*
Total Undeveloped (areas that are left in their natural state but are under specific environmental development constraints, i.e.: wetlands, endangered species, etc.)		Wetlands: 480
		All Others: 1,643
Total Undeveloped land considered to be without development constraints, but which may have operational/man caused constraints (i.e.: HERO, HERF, HERP, ESQD, AICUZ, etc.) TOTAL		2,054
Total Undeveloped land considered to be without development constraints		100
Total Off-base lands held for easements/lease for specific purposes		16
Breakout of undeveloped, restricted areas. Some restricted areas may overlap:	ESQD	824
	HERF	27
	HERP	371
	HERO	603
	AICUZ	196*
	Airfield Safety Criteria	1,791
	Hero Unsafe Ordnance	4,912

***Includes taxiway and laterial clearance zones.**

NOTE: The areas above are non-additive. The totals would exceed the acreage of the complex since the areas reflected overlap due to the different criteria.

8c. How many acres on your base (includes off base sites) are dedicated for training purposes (e.g., vehicular, earth moving, mobilization)? This does not include buildings or interior small arms ranges used for training purposes.

NONE

8d. What is the date of your last AICUZ update? **10/05/79** Are any waivers of airfield safety criteria in effect on your base? Y/N Summarize the conditions of the waivers below.

YES. Airfield Safety Waivers exist only where navigational, operational, and RDT&E mission requirements dictate; i.e., radar towers, aircraft carrier landing systems, meteorological equipment. The following Airfield Safety Waivers are in effect:

PR-1

Site location Weather Radar tower.

Weather Radar Tower was sited close to the control tower to minimize airfield obstructions.

PR-9

To permit the existing Aircraft Control Tower attached to the Aircraft Operations Building (No. 103) to remain. The tower is located 4650 ft. from the 2 end of runway 2/20 and 1250 ft. west of the centerline. The tower is 87 ft. high and intrudes into the 7 to 1 transition surface by 25.6 ft.

PR-10

To permit the following existing structures to exist:

a. Tetrahedron of Structure 1179, 18 ft. high, located 4025 ft. inboard of the Runway 2 end and 600 ft. left of the Runway 2-20 centerline.

b. Very High Frequency Omnidirectional Range/Tactical (VORTAC) Air Navigation Station, located 4600 ft. inboard of the Runway 24 end and 1000 ft. left of the Runway 6-24 centerline. This structure is 38 ft. above the runway centerline elevation and violates the 7 to 1 transition slope by approx. 5 ft.

c. AN/UMQ-5 Wind Measuring Transmitter, & AN/GMQ-29A located 4455 ft. inboard of the Runway 14 end and 580 ft. north of the Runway 14-32 center line.

d. Airfield Lighting Transformer, 5 ft. high, located 725 ft. inboard of Runway 6 end and 325 ft. right of the Runway 6 centerline.

PR-11

To permit temporary and semi-permanent installations related to testing and evaluation of Mark 7 arresting gear, Aircraft Carrier Landing System (ACLS), and Test Catapult 7. Obstructions shall be limited to 30 ft. in height above runway elevation to be located with the areas on either side of Runway 31, starting 250 ft. outboard and extending 1850 inboard the end of the Runway 31 and starting 160 ft. and extending 650 ft. either side of the centerline of the runway.

PR-17

Permit for Married Officer Quarters 955, 956, 957, 960, 961, 962 and 963. These units violate the Type III Clear Zone at the Runway 32 end.

The single family officers quarters pre-date the establishment of the Patuxent River Site.

PR-19

Operational security needs at Tactical Airwarfare Complex (Hangar 115).

a. Permit for a security fence to be sited 162.5 ft. from the easterly edge of Taxiway D (125 ft. from the centerline vice the 150 ft. required by criteria).

b. To permit aircraft towing to be conducted between the fence and the east side of the hangar complex provided that no aircraft with a wing span greater that 40 ft. is towed. (Taxiing of aircraft in this towing area is not permitted).

c. To permit the fence to be located closer than the 100 ft. from a parking apron edge required by criteria. On the north side of the apron, the apron edge (on the ridge line). On the south side, the fence will be located virtually on the apron edge.

PR-20

To permit the following deviations to remain after Runway 6-24 overlay:

a. Longitudinal grade changes within last 3000 ft. of runway ends.

b. Distance between successive points intersections to be less than 1000 ft. minimum required.

c. Higher rates of longitudinal grade changes to runway edge at intersections than the 0.4% required.

d. Higher rates of longitudinal grade changes per 100 ft. than the 0.167% maximum required.

e. Runway shoulder transverse grades not meeting existing criteria.

This waiver was issued based upon the former NAVAIRTESTCEN assurance that a high degree of quality control will be maintained during the placement of the overlay.

PR-21

Operational need for precision approach radar for instrument.

Permit for an AN/FPN-63 Radar, 23 ft. high, to be located 500 ft. north of Runway 13-31's centerline and 650 ft. west of Runway 6-24's centerline.

PR-23

Operational need for fire fighting training. Allows access to base during training session and allows crash truck access.

To permit a smoke house training facility to violate the Type I Clear Zone at the Runway 20 end and penetrate the 50:1 approach surface. The facility is located 330 ft. outboard of the Runway 20 end and 430 ft. west of the Runway 2-20 centerline.

PR-25

Operational need for vehicular traffic control.

To permit two guidance signs, 6 ft. high by 8 ft. wide to be located 39 ft. from the Taxiway "A" edge and 550 ft. east and west of the Taxiway "A" - Cedar Point Road intersection.

PR-28

Operational need to support testing program.

To permit the following airfield safety violations to exist:

a. Mark VII arresting gear 1300 ft. inboard the Runway 32 end.

b. Centerline camera 900 ft. inboard the Runway 32 end.

c. A displaced alternate threshold on Runway 32 being position 1400 ft. inboard the Runway 32 end.

PR-30

To permit Taxiway ALPHA between DELTA and ECHO to be used as a through taxiway when the Tactical Airfield Fuel Dispensing System is not in use.

Revised pg

N00421

PR-32(T) To permit a metal cage encased UH-1 helicopter (no main rotor) to be located 270 ft. north of the Runway 14-32 centerline opposite the Runway 14 threshold end.

PR-32 To permit an Avionics Project Laboratory to be located 12 ft. off of an aircraft parking apron. The 40 ft. by 40 ft. laboratory is 70 ft. (scaled) east of the southeast corner of Hangar 306.

PR-33 Operational need for microwave landing system for radar approaches to airfield.

To permit a 49 ft. high AN/GPM-27 radar antenna to penetrate the 7:1 transitional surface of Runways 6-24 and 14-32 by 11 ft. and 8 ft., respectively. The antenna is located 1030 ft. northeast of the Runway 14-32 centerline and 1030 ft. northwest of the Runway 6-24 centerline.

PR-34

To permit the three 32 ft. high poles supporting the Low Homer Frequency Antenna System to violate the 7:1 transitional surface of Runway 6-24 or 14-32 as follows:

a. Pole #1: located 963 ft. east of the Runway 6-24 centerline and 1038 ft. east of the Runway 14-32 centerline. The pole penetrates the 7:1 transitional surface of Runway 6-24 by 4 ft.

b. Pole #2: located 963 ft. east of the Runway 6-24 centerline and 939 ft. east of the Runway 14-32 centerline. The pole penetrates the 7:1 transitional surface of Runway 14-32 by 7 ft.

c. Pole #3: located 963 ft. east of the runway 6-24 centerline and 840 ft. east of the Runway 14-32 centerline. The pole penetrates the 7:1 transitional surface of Runway 14-32 by 21 ft.

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PR-32(T)

To permit a metal cage encased UH-1 helicopter (no main rotor) to be located 270 ft north of the Runway 14-32 centerline opposite the Runway 14 threshold end.

PR-32

To permit an Avionics Project Laboratory to be located 12 ft. off of an aircraft parking apron. The 40 ft. by 40 ft. laboratory is 70 ft. (scaled) east of the southeast corner of Hangar 306.

PR-33

Operational need for microwave landing system for radar approaches to airfield.

To permit a 49 ft. high AN/GPM-27 radar antenna to penetrate the 7:1 transitional surface of Runways 6-24 and 14-32 by 11 ft. and 8 ft., respectively. The antenna is located 1030 ft. northeast of the Runway 14-32 centerline and 1030 ft. northwest of the Runway 6-24 centerline.

PR-34

To permit the three 32 ft. high poles supporting the Low Homer Frequency Antenna System to violate the 7:1 transitional surface of Runway 6-24 or 14-32 as follows:

a. Pole #1: located 963 ft. east of the Runway 6-24 centerline and 1038 ft. east of the Runway 14-32 centerline. The pole penetrates the 7:1 transitional surface of Runway 6-24 by 4 ft.

b. Pole #2: located 963 ft. east of the Runway 6-24 centerline and 939 ft. east of the Runway 14-32 centerline. The pole penetrates the 7:1 transitional surface of Runway 14-32 by 7 ft.

c. Pole #3: located 963 ft. east of the runway 6-24 centerline and 840 ft. east of the Runway 14-32 centerline. The pole penetrates the 7:1 transitional surface of runway 14-32 by 21 ft.

PR-37

Operational need for gathering line of sight position data at runway.

To permit the following to be located as noted:

a. Test equipment bldg. - 10 ft. high, 765 ft. east of the Runway 14-32 centerline and 3520 ft. inboard the Runway 32 threshold. The bldg. violates the 7:1 transitional surface of Runway 14-32 by 10 ft.

Revised pg

PR-40 To permit a UNQ-5 Windbird and GMQ-29 Weather Station, 14.5 ft. high to be located 500 ft. north of the Runway 14-32 centerline and 4600 ft. inboard the threshold end of Runway 14.

PR-42 To permit a 14 ft. x 38 ft. Tacamo Mission Systems EC-130 test van to be located 12 ft. from an aircraft parking apron. The van is located 110 ft. east of hangar 306's southeast corner.

PR-43 To permit a security fence to be placed along the southern edge of the aircraft parking apron adjacent to hangars 305 and 306. The fence will be as noted in references (c) and (f).

PR-44 To permit the construction of a concrete block addition to the north of hangar 305 extending 24 feet onto the aircraft parking apron. The addition is not to protrude past the hangar doors.

PR-46 Tacamo Mission System E-6A Test Van located 12 ft. off the aircraft apron located on the southwest side of hangar 306.

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b. Wheels Watch trailer - 12 ft. high, 780 ft. east of the Runway 13-32 centerline and 3520 ft. inboard the Runway 32 threshold. The trailer violates the 7:1 transitional surface.

PR-40

To permit a UNQ-5 Windbird and GMQ-29 Weather Station, 14.5 ft. high to be located 500 ft. north of the Runway 14-32 centerline and 4600 ft. inboard the threshold end of Runway 14.

PR-42

To permit a 14 ft. x 38 ft. Tacamo Mission Systems EC-130 test van to be located 12 ft. from an aircraft parking apron. The van is located 110 ft. east of hangar 306's southeast corner.

PR-43

To permit a security fence to be placed along the southern edge of the aircraft parking apron adjacent to hangars 305 and 306. The fence will be as noted in references (c) and (f).

PR-44

To permit the construction of a concrete block addition to the north of hangar 305 extending 24 feet onto the aircraft parking apron. The addition is not to protrude past the hangar doors.

PR-46

Tacamo Mission System E-6A Test Van located 12 ft. off the aircraft apron located on the southwest side of hangar 306.

8e. List the off-base land use *types* (e.g, residential, industrial, agricultural) and *acreage* within Noise Zones 2 & 3 generated by your flight operations and whether it is compatible/incompatible with AICUZ guidelines on land use.

Acreage/Location/ID	ZONE 2 or 3	Land Use	Compatible/ Incompatible
80/Lexington Park, MD/MAP 52*	2	Agricultural	Compatible
563/Lexington Park, MD/MAP 51*	2	Residential	Compatible
116/Lexington Park, MD/MAP 44*	2	Industrial	Compatible

*** ID numbers shown are the County Tax Map Grid numbers.**

8f. List the navigational channels and berthing areas controlled by your base which require maintenance dredging? Include the frequency, volume, current project depth, and costs of the maintenance requirement.

Navigational Channels/ Berthing Areas	Location / Description	Maintenance Dredging Requirement			
		Frequency	Volume (MCY)	Current Project Depth (FT)	Cost ($M)
West Basin	Patuxent River	10-15 Yrs	10,800	9'	
East Basin	Patuxent River	10-15 Yrs	1,400	9'	
Third Cove	Solomons	10-15 Yrs	560	8'	
Pier 360	Solomons	10-15 Yrs	1,200	24'	

8g. Summarize planned projects through FY 1997 requiring **new channel or berthing area** dredged depths, include location, volume and depth.

No requirement at this time for new channels or berthing areas.

8h

Are there available **designated dredge disposal areas** for maintenance dredging material? List location, remaining capacity, and future limitations.	**NO**
Are there available **designated dredge disposal areas** for new dredge material? List location, remaining capacity, and future limitations.	**NO**
Are the dredged materials considered contaminated? List known contaminants.	**NO**

8.i. List any requirements or constraints resulting from consistency with **State Coastal Zone Management Plans.**

The Maryland Coastal Zone Management Plan includes the Chesapeake Bay Critical Area Law and regulations in it's umbrella of incorporated Chesapeake Bay programs. The Critical Area Law limits development in certain areas within 1000 feet of tidal waters and prohibits construction (except water-dependent facilities) within a 100-foot buffer adjacent to tidal waters. It also requires us to mitigate, with replacement, any wetlands altered within the critical area. (The 5000 square foot and 1 acre isolated non-tidal wetland exemptions do not apply.)

8.j. Describe any **non-point source pollution problems affecting water quality** ,e.g.: coastal erosion.

°Coastal Erosion

Erosion of coastline along Chesapeake Bay and the Patuxent River is having a minimal impact at NAS Patuxent River. Four projects have been funded to refurbish bulkheads and install preventative measures. One of these will provide protection at an Installation Restoration site at Fishing Point. This project is 95% complete. Once these four projects are completed, 98% of NAS Patuxent River's coastline will be considered protected.

°Timber Harvesting

Approximately 10 acres a year are targeted for timber harvesting aboard the Station. Best Management Practices are used throughout this program.

°Agricultural Outlease

Approximately 500 acres aboard the Station are leased to farmers for agricultural use. Best Management Practices such as conservation tillage, contour planting and vegetative buffers are used throughout.

°Construction Activity

The potential erosion of soil is being minimized at the Station construction sites. Stormwater management and erosion controls are implemented at all sites to prevent soil loss.

8k.

If the base has a cooperative agreement with the US Fish and Wildlife Service and/or the State Fish and Game Department for conducting a hunting and fishing program, does the agreement or these resources constrain either current or future operations or activities? Explain the nature and extent of restrictions.	**NO**

8.l. List any other areas on your base which are indicated as protected or preserved habitat other than threatened/endangered species that have been listed in Section 1. List the species, whether or not treated, and the acres protected/preserved.

Approximately 20 acres of sandy/gravelly beach at Cedar Point and 2 acres of concrete rubble on the airfield are protected as nesting habitat for the Least Tern (Sterna antillarum), a rare species in Maryland which is not listed as endangered or threatened, but as a "species in need of conservation". This protected area designation is strictly voluntary.

9. WRAPUP

9a. Are there **existing or potential environmental showstoppers** that have affected or will affect the accomplishment of the installation mission that have not been covered in the previous 8 questions?

NO

Existing environmental regulations are being met with no adverse impact on mission requirements. A recent Environmental Compliance Evaluation (ECE) conducted by Engineering Field Activity (EFA) Chesapeake highlighted some area of concern, but they will be addressed without impacting our mission.

We are cuurently in compliance with all known environmental requirements, except for some underground storage tank issues which action is underway to correct. We do not anticipate any unmanageable impacts due to emerging regulations. Patuxent River does not own or control any land ranges. Our water ranges appear secure from environmental impact restrictions. We are pursuring additional NEPA documentation to ensure the continued availability of these ranges. Patuxent River has a well-trained staff of environmental professionals to deal with any future requirements.

9b. Are there any **other environmental permits** required for base operations, include any relating to industrial operations.

Currently we have a St. Mary's County Health Department Burning Permit for timber clearing debris. This permit is requested by Patuxent River to keep forest areas cleared of potential fire debris. We can terminate this permit at any time should it impact operations.

9c. Describe any **other environmental or encroachment restrictions** on base property not covered in the previous 8 sections.

The State of Maryland has a new Non-tidal Wetlands Protection Act which is applicable to Federal lands that protects not only wetlands, but also a 25-foot vegetated wetland buffer. This will increase our "wetland" acreage reported in section 2.

9d. List **any future/proposed laws/regulations or any proposed laws/regulations** which will constrain base operations or development plans in any way. Explain.

New species of plants and animals are proposed for listing as endangered or threatened each day, as published in the Federal Register. No one can predict exactly which species will be proposed for listing, which ones will actually be listed, or which of the newly listed species may be found at Patuxent River. But, an analysis of recent past listing trends shows a predominance of aquatic species or species found in wetlands and coastal habitats. Our aircraft operations have very little impact on aquatic species, and wetland/coastal species are found in habitats already constrained by requirements of the Clean Water Act and Maryland Critical Area Law. The probability of future listed species having a significant impact on installation development or operations is low.

N00421

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
PATUXENT RIVER

ENVIRONMENTAL DATA CALL: #33

SOURCES AND CALCULATIONS

(REFER TO QUESTION 5C AND 5D)

ATTACHMENT 1

FOR OFFICAIL USE ONLY
PREDECISIONAL INFORMATION

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
PATUXENT RIVER

ENVIRONMENTAL DATA CALL: #33

QUESTION 5C

EMISSION SOURCE CALCULATIONS OF PERMITTED STATIONARY SOURCES FOR 1990

QUESTION 5C - SOUP AND CALCULATIONS FOR
EMMISSION SOURCE (LATIONS OF PERMITTED
STATIONARY SOURCES FOR 1990.

# 2 Fuel Oil Boilers	Heat Input (MM Btu/hr)	Estimated Annual Throughput (gals/yr)	Criteria Pollutants (tons per year)					
			Particulate	PM10	SOx	NOx	VOC	CO
101 A 01-01	3.103	25,000	0.0250	0.0135	0.5400	0.2500	0.0043	0.0625
02-01	3.103	25,000	0.0250	0.0135	0.5400	0.2500	0.0043	0.0625
103 01-01	1.357	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
106 01-01	1.958	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
109 A 01-01	4.718	25,000	0.0250	0.0135	0.5400	0.2500	0.0043	0.0625
02-01	4.718	25,000	0.0250	0.0135	0.5400	0.2500	0.0043	0.0625
110 A 01-01	4.718	25,000	0.0250	0.0135	0.5400	0.2500	0.0043	0.0625
02-01	4.718	25,000	0.0250	0.0135	0.5400	0.2500	0.0043	0.0625
111 A 01-01	4.718	25,000	0.0250	0.0135	0.5400	0.2500	0.0043	0.0625
02-01	4.718	25,000	0.0250	0.0135	0.5400	0.2500	0.0043	0.0625
115 A 01-01	6.695	31,091	0.0311	0.0168	0.6716	0.3109	0.0053	0.0777
02-01	6.695	31,091	0.0311	0.0168	0.6716	0.3109	0.0053	0.0777
117 A 01-01	2.713	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
144 A 01-01	5.021	26,369	0.0264	0.0142	0.5696	0.2637	0.0045	0.0659
02-01	5.021	26,369	0.0264	0.0142	0.5696	0.2637	0.0045	0.0659
162 01-01	10.042	21,000	0.0210	0.0105	0.4536	0.2100	0.0021	0.0525
01-02	29.3	8,000	0.0080	0.0040	0.1728	0.0800	0.0008	0.0200
01-03	29.3	10,000	0.0100	0.0050	0.2160	0.1000	0.0010	0.0250
177 01-01	1.357	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
201 A 01-01	6.695	47,407	0.0474	0.0256	1.0240	0.4741	0.0081	0.1185
02-01	6.695	47,407	0.0474	0.0256	1.0240	0.4741	0.0081	0.1185
312 01-01	2.008	16,281	0.0163	0.0088	0.3517	0.1628	0.0028	0.0407
331 02-01	0.12	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
423 01-01	3.216	490	0.0005	0.0003	0.0106	0.0049	0.0001	0.0012
01-02	1.218	490	0.0005	0.0003	0.0106	0.0049	0.0001	0.0012
461 01-01	4.2	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
01-02	4.2	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
464 01-01	1.338	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

490	01-01	2	6,137	0.0061	0.0033	0.1326	0.0614	0.0010	0.0153
	01-02	3.22	9,881	0.0099	0.0053	0.2134	0.0988	0.0017	0.0247
503 A	02-01	2.575	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
586	01-01	4.786	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1354	01-01	1.826	13,091	0.0131	0.0071	0.2828	0.1309	0.0022	0.0327
1461	03-01	1.084	7,636	0.0076	0.0041	0.1649	0.0764	0.0013	0.0191
1485	02-01	1.076	4,722	0.0047	0.0025	0.1020	0.0472	0.0008	0.0118
1489	01-01	2.936	20,018	0.0200	0.0108	0.4324	0.2002	0.0034	0.0500
	02-01	0.518	3,336	0.0033	0.0018	0.0721	0.0334	0.0006	0.0083
1490	01-01	2.261	16,032	0.0160	0.0087	0.3463	0.1603	0.0027	0.0401
	02-01	0.76	5,389	0.0054	0.0029	0.1164	0.0539	0.0009	0.0135
1581	01-01	0.5 - 1.0	1,923	0.0019	0.0010	0.0415	0.0192	0.0003	0.0048
1586	02-01	0.5 - 1.0	5,528	0.0055	0.0030	0.1194	0.0553	0.0009	0.0138
1652	01-01	0.5 - 1.0	2,407	0.0024	0.0013	0.0520	0.0241	0.0004	0.0060
1669	02-01	<0.5	1,538	0.0015	0.0000	0.0332	0.0154	0.0003	0.0038
1711	01-01	0.125	231	0.0002	0.0000	0.0050	0.0023	0.0000	0.0006
2035	01-01	1.2	3,708	0.0037	0.0020	0.0801	0.0371	0.0006	0.0093
2044	01-01	0.1	3,000	0.0030	0.0000	0.0648	0.0300	0.0005	0.0075
2071	01-01	0.25	464	0.0005	0.0000	0.0100	0.0046	0.0001	0.0012
2109	01-01	2.092	1,544	0.0015	0.0008	0.0334	0.0154	0.0003	0.0039
	01-02	2.092	1,544	0.0015	0.0008	0.0334	0.0154	0.0003	0.0039
2118	01-01	1.29	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2119	01-01	1	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2133	01-01	2.678	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	01-02	2.678	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		Emissions Factors:		**2**	**1**	**43.2**	**20**	**0.2**	**5**
		(lb/1,000 gals)		2	1.08	**43.2**	20	0.34	5
				2.5	1.08	**43.2**	18	0.713	5
					(Note 3)				
			574,121	***0.5739***	***0.3055***	***12.4014***	***5.7413***	***0.0954***	***1.4351***

#6 Fuel Boilers		Heat Input (MM Btu/hr)	Annual Throughput (gal/yr)	Criteria Pollutants: Particulate PM10	SOx	NOx	VOC	CO	
				(tons per year)					
501	01-01	65	1,087,090	0.0125	0.0074	0.1707	0.0299	0.0002	0.0027
	02-01	65	1,087,090	0.0125	0.0074	0.1707	0.0299	0.0002	0.0027
	03-01	65	1,087,090	0.0125	0.0074	0.1707	0.0299	0.0002	0.0027
		Emission Factors: (lb/1,000 gals)		**23**	**13.7**	**314**	**55**	**0.28**	**5**
			3,261,271	***0.0375***	***0.0222***	***0.5121***	***0.0897***	***0.0006***	***0.0081***

Boiler Type	***Estimated Annual Throughput***	***Criteria Pollutants: Particulate PM10***	***SOx***	***NOx***	***VOC***	***CO***	
		(tons per year)					
#2 Fuel Oil:	***574,121 (gals/yr)***	***0.5739***	***0.3055***	***12.4014***	***5.7413***	***0.0954***	***1.4351***
#6 Fuel Oil:	***3,261,271 (gals/yr)***	***0.0375***	***0.0222***	***0.5121***	***0.0897***	***0.0006***	***0.0081***
Total Boilers:		***0.6114***	***0.3277***	***12.9135***	***5.8310***	***0.0960***	***1.4432***

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
PATUXENT RIVER

ENVIRONMENTAL DATA CALL: #33

QUESTION 5C

EMISSION SOURCE CALCULATIONS OF AIRCRAFT EMISSIONS FOR 1990

Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	Criteria Pollutants CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
			J79-GE-10B												
			(lbs/1,000 lbs of fuel)												
Touch and Go:															
(Note 3)	Takeoff	0.4	13.25	4.72	1.05	34,315	655	2	299,684	3,971	1.9854	1,415	0.7073	315	0.1573
	Climbout	0.25	1.63	10.35	1.42	10,000	655	2	54,583	89	0.0445	565	0.2825	78	0.0388
	Approach	0.8	13.63	4.60	2.69	3,640	655	2	63,579	867	0.4333	292	0.1462	171	0.0855
Full Stop:															
(Note 4)	Approach	1.6	13.63	4.60	2.69	3,640	371	2	72,023	982	0.4908	331	0.1657	194	0.0969
	Taxi In	6.5	111.41	1.33	45.47	1250	371	2	100,479	11,194	5.5972	134	0.0668	4,569	2.2844
Approach:															
(Note 5)	Approach	1.6	13.63	4.60	2.69	3,640	211	2	40,962	558	0.2792	188	0.0942	110	0.0551
Departure:															
(Note 6)	Taxi Out	6.5	111.41	1.33	45.47	1250	525	2	142,188	15,841	7.9206	189	0.0946	6,465	3.2326
	Takeoff	0.4	13.25	4.72	1.05	34,315	525	2	240,205	3,183	1.5914	1,134	0.5669	252	0.1261
	Climbout	0.5	1.63	10.35	1.42	10,000	525	2	87,500	143	0.0713	906	0.4528	124	0.0621
							Totals:		1,101,204	*36,827*	***18.4136***	*5,154*	***2.5769***	*12,278*	***6.1388***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever assumes the Taxi In/Out modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever assumes normal Taxi Out, Takeoff and Climbout times only.

Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	Criteria Pollutants CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
							TF30-P-412A								
				(lbs/1,000 lbs of fuel)											
Touch and Go:															
(Note 3)	Takeoff	0.4	10.79	4.79	0.24	47,800	1,970	2	1,255,547	13,547	6.7737	6,014	3.0070	301	0.1507
	Climbout	0.25	1.38	19.60	0.90	7,050	1,970	2	115,738	160	0.0799	2,268	1.1342	104	0.0521
	Approach	0.8	3.43	10.74	1.72	4,300	1,970	2	225,893	775	0.3874	2,426	1.2130	389	0.1943
Full Stop:															
(Note 4)	Approach	1.6	3.43	10.74	1.72	4,300	746	2	171,083	587	0.2934	1,837	0.9187	294	0.1471
	Taxi In	6.5	55.6	3.22	36.45	920	746	2	148,703	8,268	4.1339	479	0.2394	5,420	2.7101
Approach:															
(Note 5)	Approach	1.6	3.43	10.74	1.72	4,300	641	2	147,003	504	0.2521	1,579	0.7894	253	0.1264
Departure:															
(Note 6)	Taxi Out	6.5	55.6	3.22	36.45	920	940	2	187,373	10,418	5.2090	603	0.3017	6,830	3.4149
	Takeoff	0.4	10.79	4.79	0.24	47,800	940	2	599,093	6,464	3.2321	2,870	1.4348	144	0.0719
	Climbout	0.5	1.38	19.60	0.90	7,050	940	2	110,450	152	0.0762	2,165	1.0824	99	0.0497
							Totals:		2,960,882	*40,875*	***20.4377***	*20,241*	***10.1207***	*13,834*	***6.9171***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever assumes the Taxi In/Out modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever assumes normal Taxi Out, Takeoff and Climbout times only.

Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO (lbs/1,000 lbs of fuel)	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	Criteria Pollutants CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
T56-A-16															
Touch and Go:															
(Note 3)	Takeoff	0.4	0.65	10.45	0.16	2,219	7,395	2	218,793	142	0.0711	2,286	1.1432	35	0.0175
	Climbout	0.25	0.65	10.45	0.16	2,219	7,395	2	136,746	89	0.0444	1,429	0.7145	22	0.0109
	Approach	0.8	0.42	9.93	0.19	1,996	7,395	2	393,611	165	0.0827	3,909	1.9543	75	0.0374
Full Stop:															
(Note 4)	Approach	1.6	0.42	9.93	0.19	1,996	2,371	2	252,401	106	0.0530	2,506	1.2532	48	0.0240
	Taxi In	6.5	30.11	3.53	22.32	599	2,371	2	307,716	9,265	4.6327	1,086	0.5431	6,868	3.4341
Approach:															
(Note 5)	Approach	1.6	0.42	9.93	0.19	1,996	1,468	2	156,273	66	0.0328	1,552	0.7759	30	0.0148
Departure:															
(Note 6)	Taxi Out	6.5	30.11	3.53	22.32	599	2,543	2	330,039	9,937	4.9687	1,165	0.5825	7,366	3.6832
	Takeoff	0.4	0.65	10.45	0.16	2,219	2,543	2	75,239	49	0.0245	786	0.3931	12	0.0060
	Climbout	0.5	0.65	10.45	0.16	2,219	2,543	2	94,049	61	0.0306	983	0.4914	15	0.0075
							Totals:		1,964,868	*19,881*	***9.9405***	*15,702*	***7.8512***	*14,471*	***7.2356***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever assumes the Taxi In/Out modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever assumes normal Taxi Out, Takeoff and Climbout times only.

F402

Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	Criteria Pollutants CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
			(lbs/1,000 lbs of fuel)												
Touch and Go:															
(Note 3)	Takeoff	0.4	2.70	14.80	0.41	10,712	6,978	1	498,322	1,345	0.6727	7,375	3.6876	204	0.1022
	Climbout	0.25	2.70	14.80	0.41	10,712	6,978	1	311,451	841	0.4205	4,609	2.3047	128	0.0638
	Approach	0.8	8.20	8.00	0.73	6,186	6,978	1	575,545	4,719	2.3597	4,604	2.3022	420	0.2101
Full Stop:															
(Note 4)	Approach	1.6	8.20	8.00	0.73	6,186	3,144	1	518,634	4,253	2.1264	4,149	2.0745	379	0.1893
	Taxi In	6.5	106.3	1.7	18.8	1,137	3,144	1	387,262	41,166	20.5830	658	0.3292	7,281	3.6403
Approach:															
(Note 5)	Approach	1.6	8.20	8.00	0.73	6,186	1,880	1	310,125	2,543	1.2715	2,481	1.2405	226	0.1132
Departure:															
(Note 6)	Taxi Out	6.5	106.3	1.7	18.8	1,137	3,328	1	409,926	43,575	21.7876	697	0.3484	7,707	3.8533
	Takeoff	0.4	2.70	14.80	0.41	10,712	3,328	1	237,664	642	0.3208	3,517	1.7587	97	0.0487
	Climbout	0.5	2.70	14.80	0.41	10,712	3,328	1	297,079	802	0.4011	4,397	2.1984	122	0.0609
							Totals:		3,546,010	*99,887*	***49.9433***	*32,489*	***16.2443***	*16,564*	***8.2818***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever assumes the Taxi In/Out modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever assumes normal Taxi Out, Takeoff and Climbout times only.

			T58-GE-8F											
				Emission Factors (Note 1)						Criteria Pollutants				
		Time at					Estimated			CO		NOx		VOC	
Manuever	Mode of Operation	Power Setting (min)	CO	NOx	VOC	Fuel Flow	Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	(lbs/yr)	(tpy)	(lbs/yr)	(tpy)	(lbs/yr)	(tpy)
				(lbs/1,000 lbs of fuel		(lbs/hr)									
Touch and Go:															
(Note 3)	Climbout	3.4	12.96	4.90	0.85	685	5,258	2	408,196	5,290	2.6451	2,000	1.0001	347	0.1735
	Approach	6.8	17.28	4.47	1.30	581	5,258	2	692,444	11,965	5.9827	3,095	1.5476	900	0.4501
Full Stop:															
(Note 4)	Approach	6.8	17.28	4.47	1.30	581	658	2	86,654	1,497	0.7487	387	0.1937	113	0.0563
	Taxi In	7.5	178.44	1.43	151.34	132	658	2	21,714	3,875	1.9373	31	0.0155	3,286	1.6431
Approach:															
(Note 5)	Approach	6.8	17.28	4.47	1.30	581	363	2	47,805	826	0.4130	214	0.1068	62	0.0311
Departure:															
(Note 6)	Taxi Out	7.5	178.44	1.43	151.34	132	498	2	16,434	2,932	1.4662	24	0.0118	2,487	1.2436
	Climbout	6.8	12.96	4.90	0.85	685	498	2	77,323	1,002	0.5011	379	0.1894	66	0.0329
							Totals:		1,350,569	*27,388*	***13.6942***	*6,130*	***3.0649***	*7,261*	***3.6305***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever for helicopters assumes the Taxi In/Out and Takeoff modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever for helicopters omits the Takeoff mode and assumes normal Taxi Out and Climbout times only.

Aircraft Source ID Number		Fuel Use (lbs/yr)	Criteria Pollutants					
			CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
AIRCR 01-01	***F404-GE-400***	1,813,649	48,937	24.4684	21,637	10.8187	12,622	6.3109
01-02	***J79-GE-10B***	1,101,204	36,827	18.4136	5,154	2.5769	12,278	6.1388
01-03	***TF30-P-412A***	2,960,882	40,875	20.4377	20,241	10.1207	13,834	6.9171
01-04	***T56-A-16***	1,964,868	19,881	9.9405	15,702	7.8512	14,471	7.2356
01-05	***F402***	3,546,010	99,887	49.9433	32,489	16.2443	16,564	8.2818
01-06	***T58-GE-8F***	1,350,569	27,388	13.6942	6,130	3.0649	7,261	3.6305
	Totals:	*12,737,181*	*273,795*	***136.8976***	*101,353*	***50.6767***	*77,029*	***38.5147***

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
PATUXENT RIVER

ENVIRONMENTAL DATA CALL: #33

QUESTION 5C AND 5D

EMISSION SOURCE CALCULATIONS OF PERSONAL AUTOMOBILE AND OTHER MOBILE SOURCES FOR 1990 AND 1993

QUESTIONS 5C AND 5D - SOURCES AND CALCULATIONS
FOR EMISSION SOURCE C LATIONS OF PERSONAL
AUTOMOBILE AND OTHER LE SOURCES FOR 1990
AND 1993.

ID Number	Vehicle Type (Note 1)	Number of Vehicles	Estimated Annual Miles (miles/yr)	Criteria Pollutants							
				VOC		CO		NOx		PM10	
				(lbs/yr)	(tpy)	(lbs/yr)	(tpy)	(lbs/yr)	(tpy)	(lbs/yr)	(tpy)
AUTO 01-01	LDGV	2,400	3,000,000	3,432.00	1.7160	46,266.00	23.1330	6,072.00	3.0360	0.00	0.0000
(Note 2) 01-02	LDGT	600	750,000	1,369.50	0.6848	16,896.00	8.4480	2,013.00	1.0065	0.00	0.0000
			Totals:	*4,801.50*	*2.4008*	*63,162.00*	*31.5810*	*8,085.00*	*4.0425*	*0.00*	*0.0000*
FLEET 01-01	LDGT	292	1,471,680	2,687.29	1.3436	33,154.01	16.5770	3,949.99	1.9750	0.00	0.0000
(Note 3) 01-02	LDDT	73	367,920	267.11	0.1336	518.03	0.2590	777.05	0.3885	16.19	0.0081
01-03	HDDV	80	190,800	562.48	0.2812	2,610.91	1.3055	3,937.35	1.9687	8.40	0.0042
			Totals:	*3,516.88*	*1.7584*	*36,282.95*	*18.1415*	*8,664.38*	*4.3322*	*24.58*	*0.0123*
GSE 01-01	LDGT	26	78,000	142.43	0.0712	1,757.18	0.8786	209.35	0.1047	0.00	0.0000
(Note 4) 01-02	LDDT	25	75,000	54.45	0.0272	105.60	0.0528	158.40	0.0792	3.30	0.0017
01-03	HDDV	13	39,000	114.97	0.0575	533.68	0.2668	804.80	0.4024	1.72	0.0009
			Totals:	*311.85*	*0.1559*	*2,396.46*	*1.1982*	*1,172.56*	*0.5863*	*5.02*	*0.0025*
		3,509	***5,972,400***	*8,630.23*	*4.3151*	*101,841.41*	*50.9207*	*17,921.94*	*8.9610*	*29.60*	*0.0148*

Note 1: LDGV (Light Duty Gas Powered Vehicle) LDGT (Light Duty Gas Powered Truck)
LDDT (Light Duty Diesel Powered Truck) HDDV (Heavy Duty Diesel Powered Vehicle)

Note 2: Basis for AUTO calculations: Assumed a vehicle mix of 80% LDGVs and 20% LDGTs.
Assumed 3,000 total vehicles, 5 miles per day, 250 days per year on the air station.

Note 3: Basis for FLEET calculations: Vehicle mix for LDGTs and LDDTs is 80%/20%, with approximately 80% in operation.
Operational LDGTs and LDDTs accumulate approximately 6,300 miles per vehicle annually.
Operational HDDVs accumulate approximately 3,000 miles per vehicle annually.

Note 4: Basis for GSE calculations: Approximately 80% of all vehicles are in operation.
Vehicles accummulate approximately 3,000 miles per vehicle annually.

		LDGV	LDGT	LDDT	HDDV	EMISSION FACTORS **
VOC:	(g/mile)	0.52	0.83	0.33	1.34	Table 1.5: VOC at 35 mph, 1995
	(lbs/mile)	0.0011	0.0018	0.0007	0.0029	
CO:	(g/mile)	7.01	10.24	0.64	6.22	Table 1.11: CO at 35 mph, 1995
	(lbs/mile)	0.0154	0.0225	0.0014	0.0137	
NOx:	(g/mile)	0.92	1.22	0.96	9.38	Table 1.17: NOx at 35 mph, 1995
	(lbs/mile)	0.0020	0.0027	0.0021	0.0206	
PM10:	(g/mile)	0	0	0.02	0.02	** Reference: AP-42, Volume II, Appendix J
	(lbs/mile)	0	0	0.0000	0.0000	

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
PATUXENT RIVER

ENVIRONMENTAL DATA CALL: #33

QUESTION 5D

EMISSION SOURCE CALCULATIONS
OF PERMITTED STATIONARY SOURCES
FOR 1993

QUESTION 5D - SOURCES CALCULATIONS FOR EMMISSION SOURCE CALC[illegible]IONS OF PERMITTED STATIONARY SOURCES FOR 1993.

# 2 Fuel Oil Boilers Building & ID #	Registration or Permit Number	Heat Input (MM Btu/hr)	Boiler Capacity (gals/hr)	Annual Throughput (gals/yr)	*Criteria Pollutants* Particulate (tons per year)	PM10	SOx	NOx	VOC	CO
101 A 01-01	18-4-0087	3.103	22	5,267	0.0053	0.0028	0.1138	0.0527	0.0009	0.0132
02-01	18-4-0088	3.103	22	5,267	0.0053	0.0028	0.1138	0.0527	0.0009	0.0132
103 01-01	18-4-0089	1.357	9.7	6,520	0.0065	0.0035	0.1408	0.0652	0.0011	0.0163
104 12-01	18-4-0090	1.703	12	8,075	0.0081	0.0044	0.1744	0.0808	0.0014	0.0202
106 01-01	18-4-0113	1.958	14	6,668	0.0067	0.0036	0.1440	0.0667	0.0011	0.0167
109 A 01-01	18-4-0091	4.718	33.7	4,864	0.0049	0.0026	0.1051	0.0486	0.0008	0.0122
02-01	18-4-0092	4.718	33.7	4,864	0.0049	0.0026	0.1051	0.0486	0.0008	0.0122
110 A 01-01	18-4-0093	4.718	33.7	5,728	0.0057	0.0031	0.1237	0.0573	0.0010	0.0143
02-01	18-4-0094	4.718	33.7	5,728	0.0057	0.0031	0.1237	0.0573	0.0010	0.0143
111 A 01-01	18-4-0095	4.718	33.7	6,356	0.0064	0.0034	0.1373	0.0636	0.0011	0.0159
02-01	18-4-0096	4.718	33.7	6,356	0.0064	0.0034	0.1373	0.0636	0.0011	0.0159
115 A 01-01	18-5-0002	3.4	24	40,434	0.0404	0.0218	0.8734	0.4043	0.0069	0.1011
02-01		3.4	24	40,434	0.0404	0.0218	0.8734	0.4043	0.0069	0.1011
117 A 01-01	18-4-0097	2.713	20	4,865	0.0049	0.0026	0.1051	0.0487	0.0008	0.0122
144 A 01-01	18-4-0106	6.275	45	27,427	0.0274	0.0148	0.5924	0.2743	0.0047	0.0686
02-01	18-4-0107	6.275	45	27,427	0.0274	0.0148	0.5924	0.2743	0.0047	0.0686
162 01-01	18-4-0103	10.042	72	20,800	0.0208	0.0104	0.4493	0.2080	0.0021	0.0520
01-02	18-4-0101	29.3	209	7,930	0.0079	0.0040	0.1713	0.0793	0.0008	0.0198
01-03	18-4-0102	29.3	209	9,699	0.0097	0.0048	0.2095	0.0970	0.0010	0.0242
177 01-01	18-4-0098	1.357	9.7	4,083	0.0041	0.0022	0.0882	0.0408	0.0007	0.0102
201 A 01-01	18-5-0003	3.4	24	39,545	0.0395	0.0214	0.8542	0.3954	0.0067	0.0989
02-01		3.4	24	39,545	0.0395	0.0214	0.8542	0.3954	0.0067	0.0989
423 01-01	18-4-0099	3.216	23		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
01-02		1.218	9		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
464 01-01	18-4-0110	1.338	10		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
490 01-01	18-4-0017	2	8.7	4,377	0.0044	0.0024	0.0945	0.0438	0.0007	0.0109
01-02		3.22	23	8,753	0.0088	0.0047	0.1891	0.0875	0.0015	0.0219
501 01-01	18-00017	65		129,667	0.1297	0.0648	2.8008	1.2967	0.0130	0.3242
02-01	18-00017	65		129,667	0.1297	0.0648	2.8008	1.2967	0.0130	0.3242
03-01	18-00017	65		129,667	0.1297	0.0648	2.8008	1.2967	0.0130	0.3242

503 A	02-01	18-4-0100	2.575	18	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1485	02-01	18-4-0108	1.076	11.1	6,935	0.0069	0.0037	0.1498	0.0694	0.0012	0.0173
1489	01-01	18-4-0109	2.936	21	23,123	0.0231	0.0125	0.4995	0.2312	0.0039	0.0578
	02-01	18-5-0017	0.518	4.7	11,562	0.0116	0.0062	0.2497	0.1156	0.0020	0.0289
1581	01-01	18-4-0111	0.5 - 1.0	4	2,495	0.0025	0.0013	0.0539	0.0250	0.0004	0.0062
2119	01-01	18-4-0086	1	9.7	2,605	0.0026	0.0014	0.0563	0.0261	0.0004	0.0065
			Emission Factors:	**Industrial: 10-100**		**2**	**1**	**43.2**	**20**	**0.2**	**5**
			(lb/1,000 gals)	**Commercial: 0.5 - 10**		**2**	**1.08**	**43.2**	**20**	**0.34**	**5**
				Residential: under 0.5		**2.5**	**(Note 1)**	**43.2**	**18**	**0.713**	**5**
					776,728	***0.7769***	***0.4019***	***16.7776***	***7.7676***	***0.1023***	***1.9421***

Natural Gas Boilers Building & ID #			Heat Input (MM Btu/hr)	Boiler Capacity (therms/hr)	Annual Throughput (therms/yr)	Criteria Pollutants Particulate PM10	SOx	NOx	VOC	CO
						(tons per year)				
501	01-01	18-00017	65	79,000	896,950	0.0000	0.5852	0.0256	5.9797	0.1189	1.4949
	02-01	18-00017	65	79,000	896,950	0.0000	0.5852	0.0256	5.9797	0.1189	1.4949
	03-01	18-00017	65	79,000	896,950	0.0000	0.5852	0.0256	5.9797	0.1189	1.4949
201 A	01-01	18-5-0003			208	0.0000	0.0001	0	0.001	0.0001	0.0002
2185		18-5-0006	4.185		(Note 3)						
		18-5-0007	4.185		(Note 3)						
2187		18-5-0004	12.555		(Note 3)						
		18-5-0005	12.555		(Note 3)						
		18-5-0008	1.674		(Note 3)						
		18-5-0009	1.674		(Note 3)						
		18-5-0010	1.25		(Note 3)						
2188		18-5-0001	3		(Note 3)						
		18-5-0011	3		(Note 3)						
		18-5-0012	1.5		(Note 3)						
			Emission Factors:		**Industrial: 10-100**	**(Note 2)**	**13.7**	**0.6**	**140**	**2.784**	**35**
			(lb/1,000,000 cu ft)		**Commercial: 0.3-10**	**(Note 2)**	**12**	**0.6**	**100**	**7.26**	**21**
					2,691,057	***0.0000***	***1.7557***	***0.0768***	***17.9401***	***0.3568***	***4.4849***

Note 1: AP-42 does not have a PM10 emission factor for residential boilers using #2 oil.

Note 2: AP-42 states that all particulate matter from natural gas combustion is less than 1 micrometer in size, therefore all particulate emissions are PM10 emissions.

Note 3: Not operational

1993 Boi. .nissions

Boiler Type	Annual Throughput	Criteria Pollutants (tons per year) Particulate	PM10	SOx	NOx	VOC	CO
#2 Fuel Oil:	776,728 (gals/yr)	0.7769	0.4019	16.7776	7.7676	0.1023	1.9421
Natural Gas:	2,691,057 (Therms/yr)	0.0000	1.7557	0.0768	17.9401	0.3568	4.4849
Total:		0.7769	2.1576	16.8544	25.7077	0.4591	6.4270

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
PATUXENT RIVER

ENVIRONMENTAL DATA CALL: #33

QUESTION 5D

EMISSION SOURCE CALCULATIONS
OF AIRCRAFT EMISSIONS FOR 1993

QUESTION 5 D – SC 'S AND CALCULATIONS
FOR EMISSION SOU ALCULATIONS OF
AIRCRAFT EMISSIONS FOR 1993.

F404-GE-400

Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO (lbs/1,000 lbs of fuel)	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	Criteria Pollutants CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
Touch and Go:															
(Note 3)	Takeoff	0.4	23.12	9.22	0.13	28,397	1,605	2	607,696	14,050	7.0250	5,603	2.8015	79	0.0395
	Climbout	0.25	1.05	25.16	0.31	8,587	1,605	2	114,851	121	0.0603	2,890	1.4448	36	0.0178
	Approach	0.8	1.09	14.80	0.33	6,541	1,605	2	279,955	305	0.1526	4,143	2.0717	92	0.0462
Full Stop:															
(Note 4)	Approach	1.6	1.09	14.80	0.33	6,541	365	2	127,331	139	0.0694	1,885	0.9423	42	0.0210
	Taxi In	6.5	137.34	1.16	58.18	624	365	2	49,348	6,777	3.3887	57	0.0286	2,871	1.4355
Approach:															
(Note 5)	Approach	1.6	1.09	14.80	0.33	6,541	90	2	31,397	34	0.0171	465	0.2323	10	0.0052
Departure:															
(Note 6)	Taxi Out	6.5	137.34	1.16	58.18	624	483	2	65,302	8,969	4.4843	76	0.0379	3,799	1.8996
	Takeoff	0.4	23.12	9.22	0.13	28,397	483	2	182,877	4,228	2.1141	1,686	0.8431	24	0.0119
	Climbout	0.5	1.05	25.16	0.31	8,587	483	2	69,125	73	0.0363	1,739	0.8696	21	0.0107
							Totals:		1,527,882	*34,695*	*17.3477*	*18,543*	*9.2717*	*6,975*	*3.4874*

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever assumes the Taxi In/Out modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever assumes normal Taxi Out, Takeoff and Climbout times only.

			J79-GE-10B							Criteria Pollutants					
Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
			(lbs/1,000 lbs of fuel)												
Touch and Go:															
(Note 3)	Takeoff	0.4	13.25	4.72	1.05	34,315	652	2	298,312	3,953	1.9763	1,408	0.7040	313	0.1566
	Climbout	0.25	1.63	10.35	1.42	10,000	652	2	54,333	89	0.0443	562	0.2812	77	0.0386
	Approach	0.8	13.63	4.60	2.69	3,640	652	2	63,287	863	0.4313	291	0.1456	170	0.0851
Full Stop:															
(Note 4)	Approach	1.6	13.63	4.60	2.69	3,640	138	2	26,790	365	0.1826	123	0.0616	72	0.0360
	Taxi In	6.5	111.41	1.33	45.47	1250	138	2	37,375	4,164	2.0820	50	0.0249	1,699	0.8497
Approach:															
(Note 5)	Approach	1.6	13.63	4.60	2.69	3,640	22	2	4,271	58	0.0291	20	0.0098	11	0.0057
Departure:															
(Note 6)	Taxi Out	6.5	111.41	1.33	45.47	1250	332	2	89,917	10,018	5.0088	120	0.0598	4,089	2.0443
	Takeoff	0.4	13.25	4.72	1.05	34,315	332	2	151,901	2,013	1.0063	717	0.3585	159	0.0797
	Climbout	0.5	1.63	10.35	1.42	10,000	332	2	55,333	90	0.0451	573	0.2864	79	0.0393
							Totals:		781,520	*21,612*	***10.8058***	*3,863*	***1.9317***	*6,670*	***3.3351***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever assumes the Taxi In/Out modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever assumes normal Taxi Out, Takeoff and Climbout times only.

Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	Criteria Pollutants CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
			TF30-P-412A	(lbs/1,000 lbs of fuel)											
Touch and Go:															
(Note 3)	Takeoff	0.4	10.79	4.79	0.24	47,800	1,257	2	801,128	8,644	4.3221	3,837	1.9187	192	0.0961
	Climbout	0.25	1.38	19.60	0.90	7,050	1,257	2	73,849	102	0.0510	1,447	0.7237	66	0.0332
	Approach	0.8	3.43	10.74	1.72	4,300	1,257	2	144,136	494	0.2472	1,548	0.7740	248	0.1240
Full Stop:															
(Note 4)	Approach	1.6	3.43	10.74	1.72	4,300	325	2	74,533	256	0.1278	800	0.4002	128	0.0641
	Taxi In	6.5	55.6	3.22	36.45	920	325	2	64,783	3,602	1.8010	209	0.1043	2,361	1.1807
Approach:															
(Note 5)	Approach	1.6	3.43	10.74	1.72	4,300	110	2	25,227	87	0.0433	271	0.1355	43	0.0217
Departure:															
(Note 6)	Taxi Out	6.5	55.6	3.22	36.45	920	460	2	91,693	5,098	2.5491	295	0.1476	3,342	1.6711
	Takeoff	0.4	10.79	4.79	0.24	47,800	460	2	293,173	3,163	1.5817	1,404	0.7022	70	0.0352
	Climbout	0.5	1.38	19.60	0.90	7,050	460	2	54,050	75	0.0373	1,059	0.5297	49	0.0243
							Totals:		1,622,573	*21,521*	***10.7603***	*10,872*	***5.4359***	*6,501*	***3.2504***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever assumes the Taxi In/Out modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever assumes normal Taxi Out, Takeoff and Climbout times only.

Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	Criteria Pollutants CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
						T56-A-16									
				(lbs/1,000 lbs of fuel)											
Touch and Go:															
(Note 3)	Takeoff	0.4	0.65	10.45	0.16	2,219	2,618	2	77,458	50	0.0252	809	0.4047	12	0.0062
	Climbout	0.25	0.65	10.45	0.16	2,219	2,618	2	48,411	31	0.0157	506	0.2529	8	0.0039
	Approach	0.8	0.42	9.93	0.19	1,996	2,618	2	139,347	59	0.0293	1,384	0.6919	26	0.0132
Full Stop:															
(Note 4)	Approach	1.6	0.42	9.93	0.19	1,996	872	2	92,827	39	0.0195	922	0.4609	18	0.0088
	Taxi In	6.5	30.11	3.53	22.32	599	872	2	113,171	3,408	1.7038	399	0.1997	2,526	1.2630
Approach:															
(Note 5)	Approach	1.6	0.42	9.93	0.19	1,996	618	2	65,788	28	0.0138	653	0.3266	12	0.0062
Departure:															
(Note 6)	Taxi Out	6.5	30.11	3.53	22.32	599	1,549	2	201,034	6,053	3.0266	710	0.3548	4,487	2.2435
	Takeoff	0.4	0.65	10.45	0.16	2,219	1,549	2	45,830	30	0.0149	479	0.2395	7	0.0037
	Climbout	0.5	0.65	10.45	0.16	2,219	1,549	2	57,287	37	0.0186	599	0.2993	9	0.0046
							Totals:		841,154	*9,735*	***4.8674***	*6,461*	***3.2304***	*7,106*	***3.5532***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever assumes the Taxi In/Out modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever assumes normal Taxi Out, Takeoff and Climbout times only.

F402

Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	Criteria Pollutants CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
			(lbs/1,000 lbs of fuel)												
Touch and Go:															
(Note 3)	Takeoff	0.4	2.70	14.80	0.41	10,712	5,534	1	395,201	1,067	0.5335	5,849	2.9245	162	0.0810
	Climbout	0.25	2.70	14.80	0.41	10,712	5,534	1	247,001	667	0.3335	3,656	1.8278	101	0.0506
	Approach	0.8	8.20	8.00	0.73	6,186	5,534	1	456,444	3,743	1.8714	3,652	1.8258	333	0.1666
Full Stop:															
(Note 4)	Approach	1.6	8.20	8.00	0.73	6,186	1,672	1	275,813	2,262	1.1308	2,207	1.1033	201	0.1007
	Taxi In	6.5	106.3	1.7	18.8	1,137	1,672	1	205,949	21,892	10.9462	350	0.1751	3,872	1.9359
Approach:															
(Note 5)	Approach	1.6	8.20	8.00	0.73	6,186	365	1	60,210	494	0.2469	482	0.2408	44	0.0220
Departure:															
(Note 6)	Taxi Out	6.5	106.3	1.7	18.8	1,137	2,181	1	268,645	28,557	14.2785	457	0.2283	5,051	2.5253
	Takeoff	0.4	2.70	14.80	0.41	10,712	2,181	1	155,752	421	0.2103	2,305	1.1526	64	0.0319
	Climbout	0.5	2.70	14.80	0.41	10,712	2,181	1	194,691	526	0.2628	2,881	1.4407	80	0.0399
							Totals:		2,259,706	*59,628*	***29.8138***	*21,838*	***10.9189***	*9,908*	***4.9539***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever assumes the Taxi In/Out modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever assumes normal Taxi Out, Takeoff and Climbout times only.

			T58-GE-8F							Criteria Pollutants					
Manuever	Mode of Operation	Time at Power Setting (min)	Emission Factors (Note 1) CO (lbs/1,000 lbs of fuel)	NOx	VOC	Fuel Flow (lbs/hr)	Estimated Annual Operations (Note 2)	Engines In Use	Fuel Use (lbs/yr)	CO (lbs/yr)	CO (tpy)	NOx (lbs/yr)	NOx (tpy)	VOC (lbs/yr)	VOC (tpy)
Touch and Go:															
(Note 3)	Climbout	3.4	12.96	4.90	0.85	685	1,911	2	148,357	1,923	0.9614	727	0.3635	126	0.0631
	Approach	6.8	17.28	4.47	1.30	581	1,911	2	251,666	4,349	2.1744	1,125	0.5625	327	0.1636
Full Stop:															
(Note 4)	Approach	6.8	17.28	4.47	1.30	581	184	2	24,232	419	0.2094	108	0.0542	32	0.0158
	Taxi In	7.5	178.44	1.43	151.34	132	184	2	6,072	1,083	0.5417	9	0.0043	919	0.4595
Approach:															
(Note 5)	Approach	6.8	17.28	4.47	1.30	581	1,962	2	258,382	4,465	2.2324	1,155	0.5775	336	0.1679
Departure:															
(Note 6)	Taxi Out	7.5	178.44	1.43	151.34	132	272	2	8,976	1,602	0.8008	13	0.0064	1,358	0.6792
	Climbout	6.8	12.96	4.90	0.85	685	272	2	42,233	547	0.2737	207	0.1035	36	0.0179
							Totals:		739,918	*14,388*	***7.1938***	*3,344*	***1.6718***	*3,134*	***1.5670***

Note 1: Aircraft emission factors obtained from the US Navy AESO Report # 1-87, Gaseous Emissions from Aircraft Engines, Sep 87.
Note 2: Data obtained from NAS Environmental Office (See Table 3 - 19).
Note 3: Touch and Go manuever for helicopters assumes the Taxi In/Out and Takeoff modes are omitted and the Climbout/Approach modes are 50 % shorter than normal duration.
Note 4: Full Stop manuever assumes normal Approach and Taxi In times only.
Note 5: Approach manuever assumes normal Approach times only.
Note 6: Departure manuever for helicopters omits the Takeoff mode and assumes normal Taxi Out and Climbout times only.

Aircraft Source ID Number		Fuel Use (lbs/yr)	Criteria Pollutants					
			CO		NOx		VOC	
			(lbs/yr)	(tpy)	(lbs/yr)	(tpy)	(lbs/yr)	(tpy)
AIRCR 01-01	***F404-GE-400***	1,527,882	34,695	17.3477	18,543	9.2717	6,975	3.4874
01-02	***J79-GE-10B***	781,520	21,612	10.8058	3,863	1.9317	6,670	3.3351
01-03	***TF30-P-412A***	1,622,573	21,521	10.7603	10,872	5.4359	6,501	3.2504
01-04	***T56-A-16***	841,154	9,735	4.8674	6,461	3.2304	7,106	3.5532
01-05	***F402***	2,259,706	59,628	29.8138	21,838	10.9189	9,908	4.9539
01-06	***T58-GE-8F***	739,918	14,388	7.1938	3,344	1.6718	3,134	1.5670
	Totals:	*7,772,753*	*161,578*	***80.7888***	*64,921*	***32.4604***	*40,294*	***20.1470***

DATA CALL 33
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."

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

BARTON D. STRONG
NAME (Please type or print)

Barton D. Strong
Signature

COMMANDER
Title

31 May 1994
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
Activity

DATA CALL 33
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

BARTON D. STRONG
NAME (Please type or print)

Barton D. Strong
Signature

COMMANDER
Title

31 May 1994
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
Activity

NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
DATA CALL # 33

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

G. H. Strohsahl, RADM, USN
NAME (Please type or print)

Signature

Commander
Title

6/7/94
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

24 JUN 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)

J. B. GREENE, JR.

NAME (Please type or print)

Signature

ACTING

Title

06 JUN 1994
Date

Data Call #33
Audit Changes
Pax River
00421

16 b [redacted] Original

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

9/19/94
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 Sept 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

9/26/94
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 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

00421

DATA CALL #33 - AUDIT
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."

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

CAPTAIN JOHN B. PATTERSON
NAME (Please type or print)

Signature

SEP 16 1994

ACTING COMMANDER
Title

Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD