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BRAC 95 DATA CALL #13

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T&E

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**NAVAL AIR WARFARE CENTER
WEAPONS DIVISION
Point Mugu, CA**

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

May 13, 1994

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T&E JOINT CROSS-SERVICE GROUP DATA REPORT

SECTION 1: INTRODUCTION	2
1.1 INSTALLATION OVERVIEW	2
1.2 IDENTIFICATION OF T&E FACILITIES/CAPABILITIES	5
1.3 FUNCTIONAL AREA ASSUMPTIONS	10
1.3.A Air Vehicles.....	10
1.3.B Electronic Combat (EC) Systems	10
1.3.C Armaments/Weapons	10
SECTION 2: CAPACITY & TECHNICAL RESOURCES.....	11
2.1 WORKLOAD.....	11
2.1.A Historical Workload	11
2.1.B Forecasted Workload	12
2.2 UNCONSTRAINED CAPACITY	24
2.3 TECHNICAL RESOURCES.....	25
SECTION 3: MEASURES OF MERIT	
3.1 OVER-ARCHING MEASURES OF MERIT	46
3.1.A Interconnectivity	47
3.1.B Facility Condition	62
3.1.C Environmental and Encroachment Carrying Capacity	63
3.1.D Specialized Test Support Facilities and Targets	65
3.1.E Expandability	89
3.1.F Uniqueness	109
3.1.G Available Air, Land, and Sea Space	120
3.1.H Geographic/Climatological Features	123
3.2 AIR VEHICLES	128
3.2.A Supersonic Airspace	128
3.2.B Airfield and Facility Characteristics.....	129
3.2.C Test Operations.....	134
3.3 ELECTRONIC COMBAT	138
3.3.A Threat Environment	138
3.3.B Test Article Support	140
3.4 ARMAMENTS/WEAPONS.....	141
3.4.A Directed Energy	141
3.4.B Rocket/Missile/Bomb Systems	142

T&E JOINT CROSS-SERVICE GROUP**SECTION 1: INTRODUCTION****1.1 INSTALLATION OVERVIEW**

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

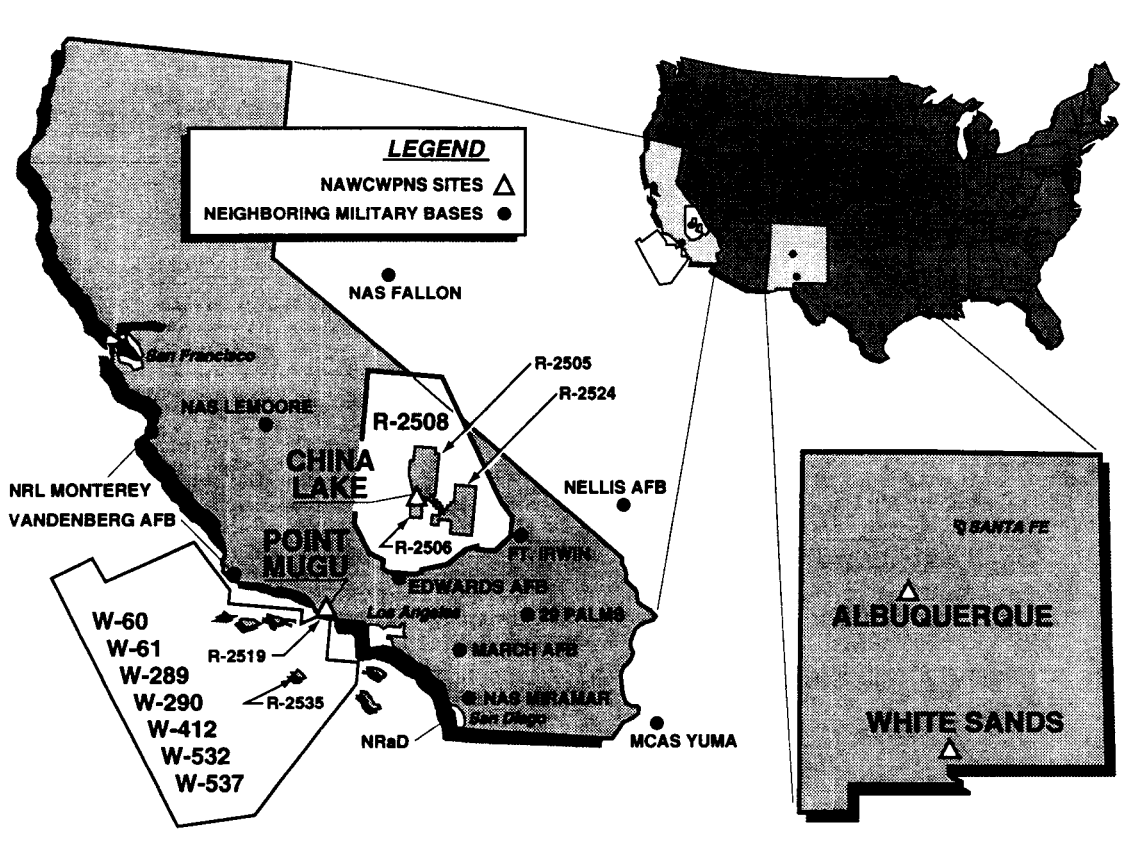
NAWCWPNS was formed through the combination of four Navy shore facilities: the Naval Weapons Evaluation Facility, Albuquerque, New Mexico; the Naval Ordnance Missile Test Station, White Sands, New Mexico; the Pacific Missile Test Center, Point Mugu, California; and the Naval Weapons Center, China Lake,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

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

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

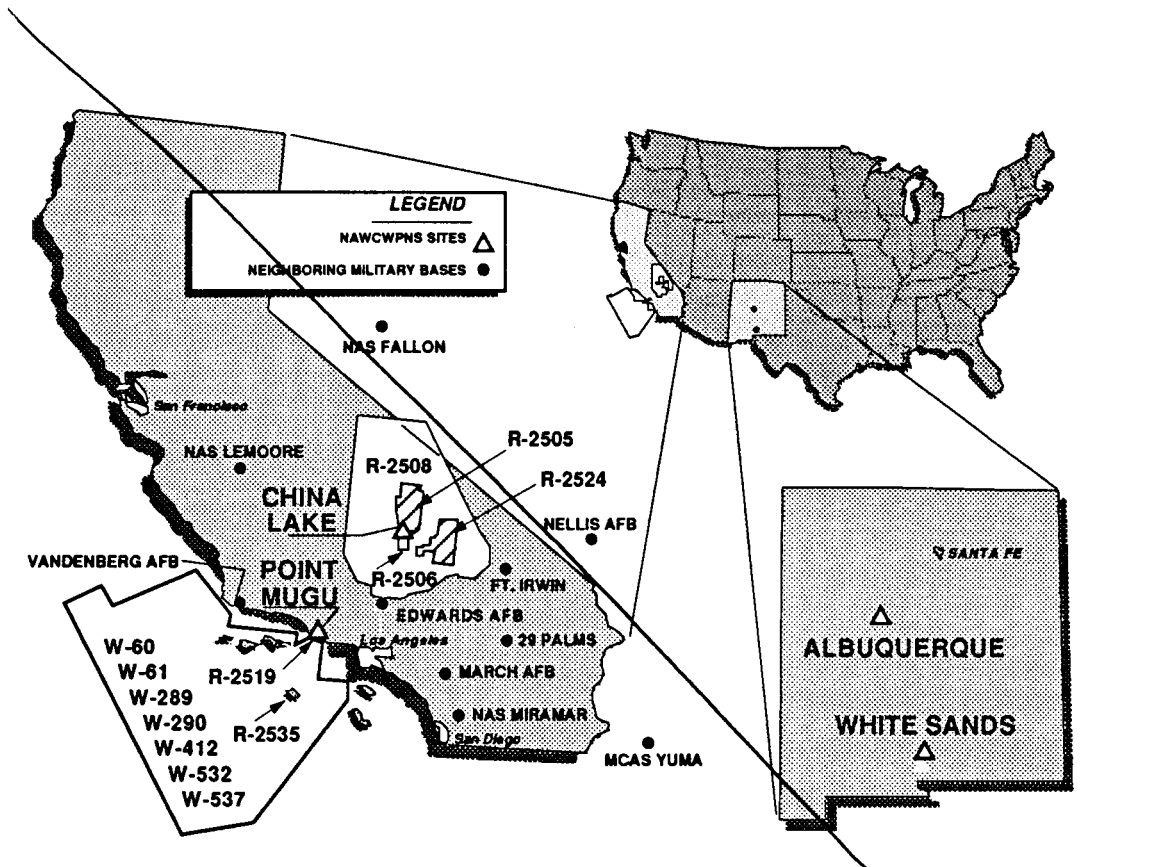
NAWCWPNS as a total entity represents the work of more than 8,000 civilian employees and 1,300 military personnel. It is the Navy's complete sector of scientific and technical knowledge for air warfare systems, guided missiles, and aircraft weapon integration. Existence at China Lake of DOD's largest weapons R&D laboratory in immediate proximity to the land test range has repeatedly been shown to be of great significance in furthering the air weapons development function. Equally significant is NAWCWPNS Point Mugu's role as the Navy's primary weapons

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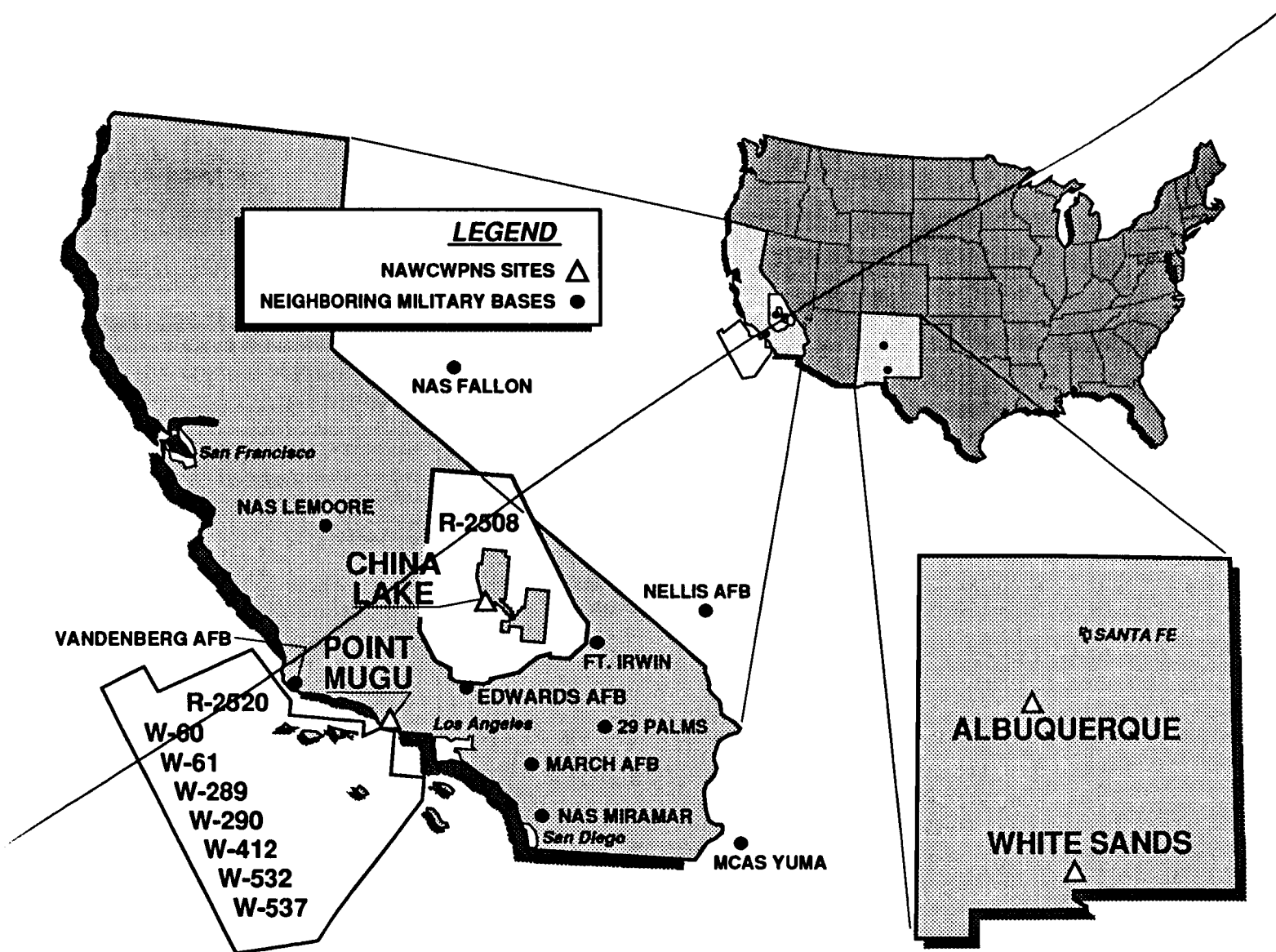


NAWCWPNS Site Locations

Revised 168 pg



NAWCWPNS Site Locations



T&E site and air weapons in-service engineering support site with its contiguous Sea Test Range and its air weapons in-service engineering support, which complements the China Lake R&D role.

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

1.2 IDENTIFICATION OF T&E FACILITIES /CAPABILITIES

The NAWCWPNS Point Mugu site provides a primary DOD test and evaluation capability. One of the principal assets at Point Mugu is its Sea Test Range, a vast expanse of heavily instrumented open ocean and airspace with over 125,000 square miles of the adjacent Pacific Ocean within which some of the most complex test and training operations within DOD are conducted. Extensive additional test and test support resources including weapons simulation laboratories, air platform systems integration laboratories, ground test facilities, and a major Naval Air Weapons Station with two 10,000-foot runways provide a synergistic team supporting naval air weapons RDT&E as well as other Navy, DOD, and FMS customers.

Unique geographical features that make the Sea Test Range ideal for flight testing include

- Direct access to the broad Pacific Ocean
- Large offshore islands (San Nicolas and Santa Cruz Islands) and high coastal mountains (Laguna Peak and the Santa Ynez mountains) for siting range instrumentation
- A nearby deepwater port (Port Hueneme)
- Close proximity of other DOD major test centers (Vandenberg, Edwards, China Lake)
- Close proximity to the aerospace industry in Southern California

The Point Mugu team conducts in excess of 3,000 test operations annually for a wide variety of customers including NAVAIR, NAVSEA, the Air Force, the Fleet, COMOPTEVFOR, other DOD, non-DOD, and FMS. NAWCWPNS Point Mugu has conducted such complex test programs as

- The Tomahawk Land Attack Missile test program, flying from launch platforms in the Sea Test Range to land targets at China Lake, Fallon, Utah, and San Clemente. Some tests have included realistic command and control and coordinated strike scenarios with Fleet personnel.
- The Trident Follow-on Test program with submarine-launched ICBMs up to four at one time, flying to distant missile impact areas around the South Pacific thousands of miles away.
- The Aegis/Standard Missile, Phoenix, and AMRAAM missile multitarget test programs with nine, six, and four targets and missiles, respectively, flying simultaneously
- The Joint Electromagnetic Interference (JEMI) graduation test program involving 25 triservice systems performing in an operationally relevant scenario under tight track and control.

The Sea Test Range is also used to conduct all Fleet training exercises in the Eastern Pacific involving missile firings from single ship or aircraft exercises to the most advanced carrier battle group scenarios involving up to 70 aircraft, 10 surface combatants, two submarines, and 10 simultaneously controlled airborne targets. During a recent battle group exercise nearly 50 missiles were fired over a 2-day period.

The Sea Test Range has earned a high reputation as THE leader for planning and conducting very complex test and training operations.

Complementing this strong range team at Point Mugu are the other key components required by Navy airborne weapons T&E, namely

- The Navy's airborne and surface target team providing target support in the Sea Test Range as well as throughout the world
- A test and evaluation team with extensive expertise in air-launched and cruise missiles as well as advanced weapons simulation facilities; hardware-in-the-loop laboratories; climatic, RF, and environmental chambers supporting assigned weapon systems throughout their life cycle; and airborne instrumentation
- An experienced team of engineers who develop and support information and electronic combat systems for the Fleet as well as support complex test scenarios

- An experienced operations and maintenance team providing extensive airbase services including operating two airports with three runways (two at 10,000 foot length) and the concomitant base services such as public works, security, and supply

The basic fact that within the Southwestern U.S. there are 14 large DOD test and training ranges within tactical range of one another must be given strong consideration because of their ready availability and flexibility in meeting the dynamic changes faced by DOD in areas such as multiple threats, joint operations, theater-level systems, and littoral warfare.

Point Mugu is headquarters for an extensive complex of advanced laboratories and test facilities to be applied to weapons T&E. The Bistatic Radar Reflectivity Laboratory is the only indoor facility capable of near-field and far-field bistatic measurements of full-scale missiles and other aerial vehicles, models, or components up to 30 feet in length. The Strike Weapons Evaluation Facility and the Intercept Weapons Evaluation Facility perform full-spectrum evaluation for strike and air-intercept weapon systems. The Hardware-in-the-Loop Facility supports performance evaluation of intercept weapons against multiple maneuvering threats in an environment of sophisticated jamming. The Threat System Facility develops radar signal and electronic countermeasures simulators that are utilized in laboratories, on manned aircraft, on targets, and on land-based simulators worldwide. The EA-6B Systems Facility acts as a systems engineering center for the development and Fleet support of assigned Navy and Marine Corps Electronic Warfare and Intelligence Support Systems. The F-14 Weapon System Support Activity (WSSA) is the only facility capable of performing the full development and test of F-14 software, including emergency tactical software releases necessary to counter unexpected wartime observed tactics and threats. The Electronic Combat Simulations and Evaluation Laboratory is the principal Department of the Navy laboratory complex for RDT&E and in-service engineering for naval airborne electronic warfare equipment. The following listing of the major facilities and capabilities is organized into the five categories established by the DOD Reliance Study effort; i.e., modeling and simulation, measurement, integration laboratory, hardware-in-the-loop, and open air. NAWCWPNS Point Mugu's 31 facilities/capabilities are listed below.

MODELING AND SIMULATION

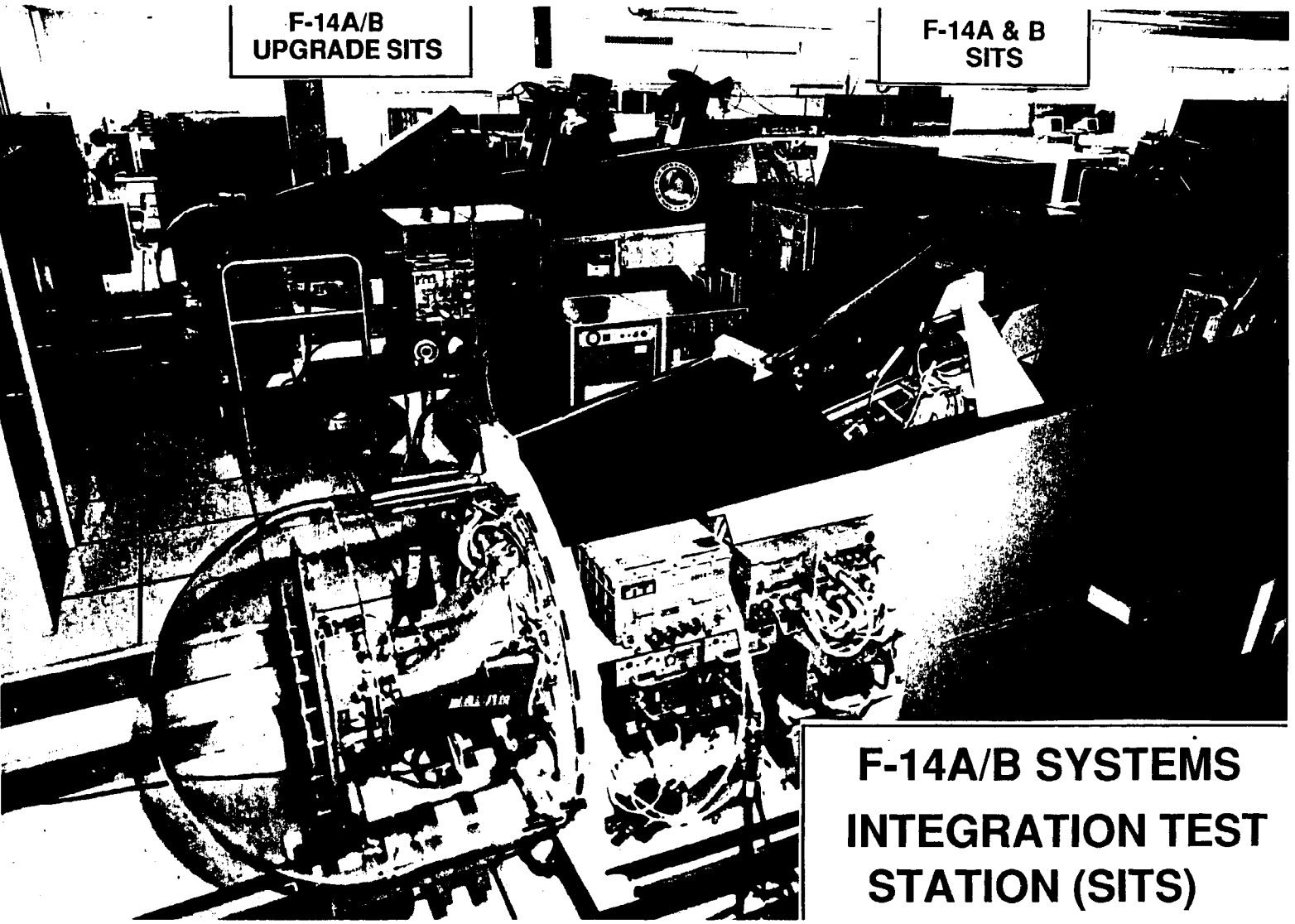
Simulation And Effectiveness Center
Target Systems Modeling And Simulation Capability

MEASUREMENT

Airborne Infrared Measurements Capability
Bistatic Radar Reflectivity Laboratory
Electromagnetic Environment Effects Laboratory
Environmental Test Facility
Monostatic Radar Reflectivity Laboratory
Ready Missile Test Facility
Reliability Test Facility
Sea Level Climatic Chamber
Support Equipment Engineering And Test Complex
Telemetry/Test Article Instrumentation

INTEGRATION LABORATORY

Electronic Warfare Countermeasures Systems Capability
EW/Radar Support Equipment
Information Warfare Systems Laboratory Complex



**F-14A/B SYSTEMS
INTEGRATION TEST
STATION (SITS)**

F-14 SITS Laboratory

Intercept Weapons Evaluation Facility
Laser And Stabilized Optics
Warning And Surveillance Systems Capability
Weapons Systems Support Activity (WSSA), F-14
Weapons Systems Support Laboratory (WSSL), EA-6B

HARDWARE-IN-THE-LOOP

Electronic Combat Simulation And Evaluation Laboratory (ECSEL)
Missile Hardware In The Loop Facility
Strike Weapons Evaluation Facility

OPEN AIR

Aerial Targets Complex
Aircraft Operations And Maintenance Capability
Sea Test Range
Surface Targets Complex
Target Augmentation Systems Capability
Target Control Systems Capability
Threat Electronic Countermeasures Simulators
Threat Radar Signals Simulators

1.3 FUNCTIONAL AREA ASSUMPTIONS

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

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

1.3.A Air Vehicles

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

1.3.B Electronic Combat (EC) Systems

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

1.3.C Armaments/Weapons

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

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.

Historical workload for each of the NAWCWPNS Point Mugu 31 facilities/capabilities are given in the Historical Workload forms in Appendix A, Tabs 1 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.

Forecasted workload is shown in the following tables.

FORECASTED WORKLOAD*
FY92 \$(K)

T&E Category	RDT&E										Other**				All		Grand Total
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	OPN	WPN	SCN	Navy	Other			
Air Vehicles	0.0	0.0	284.6	144.9	40.5	0.0	1,306.3	1,258.6	4,527.3	9.2	0.0	0.0	0.0	0.0	10,673.4	18,244.8	
Armaments/ Weapons	0.0	325.9	33,693.0	23,421.6	114,146.3	0.0	21,432.1	46,384.1	11,654.2	9,053.9	106,926.6	15,956.6	0.0	40,435.7	423,428.6		
Electronic Combat	0.0	103.1	42.1	739.0	383.8	183.5	2,437.6	349.4	772.3	481.6	9.2	0.1	0.0	283.1	5,786.2		
TOTAL	0.0	429.0	34,019.7	24,305.5	114,570.6	183.5	25,176.0	47,992.1	16,953.8	9,544.7	106,935.8	15,956.7	0.0	51,392.2	447,459.6		

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

FORECASTED WORKLOAD*
FY93 \$(K)

T&E Category	RDT&E						Other**						Other	All	Grand
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	OPN	WPN	SCN	Navy	Other	Total
Air Vehicles	0.0	0.0	294.7	150.0	42.0	0.0	1,352.3	1,302.9	4,686.7	9.5	0.0	0.0	0.0	11,049.1	18,887.2
Armament/ Weapons	0.0	345.8	34,870.6	24,246.8	118,163.8	0	22,078.0	48,014.5	12,064.4	9,370.9	111,453.2	16,519.0	0.0	41,838.9	438,964.5
Electronic Combat	0.0	106.7	43.5	765.0	397.3	191.4	2,523.4	361.7	799.6	498.5	9.5	0.1	0.0	294.0	5,990.7
TOTAL	0.0	452.5	35,208.8	25,161.8	118,603.1	191.4	25,953.7	49,679.1	17,550.7	9,878.9	111,462.7	16,519.1	0.0	53,182.0	463,842.4

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

FORECASTED WORKLOAD*
FY94 \$(K)

T&E Category	RDT&E						Other**						Other	All	Grand
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	OPN	WPN	SCN	Navy	Other	Total
Air Vehicles	0.0	0.0	293.8	149.6	41.9	0.0	1,348.3	1,299.0	4,672.6	9.5	0.0	0.0	0.0	11,016.0	18,830.7
Armament/ Weapons	0.0	344.8	34,766.1	24,174.1	117,808.4	0	22,011.7	47,870.4	12,028.3	9,342.9	111,118.6	16,469.0	0.0	41,713.3	437,646.2
Electronic Combat	0.0	106.4	43.5	762.7	396.1	190.8	2,515.8	360.6	797.2	497.0	9.5	0.1	0.0	293.0	5,972.7
TOTAL	0.0	451.2	35,103.4	25,086.4	118,246.4	190.8	25,875.8	49,530.0	17,498.1	9,849.4	111,128.1	16,469.1	0.0	53,022.3	462,449.6

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

FORECASTED WORKLOAD*
FY95 \$(K)

T&E Category	RDT&E						Other**						Other	All	Grand
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	OPN	WPN	SCN	Navy	Other	Total
Air Vehicles	0.0	0.0	290.0	147.6	41.3	0.0	1,330.7	1,282.1	4,611.9	9.4	0.0	0.0	0.0	10,872.7	18,585.7
Armament/ Weapons	0.0	340.3	34,314.1	23,859.8	116,277.8	0	21,725.7	47,248.0	11,871.7	9,221.5	109,676.4	16,255.4	0.0	41,169.0	431,958.3
Electronic Combat	0.0	105.1	42.8	752.8	391.0	188.3	2,483.1	356.0	786.8	490.6	9.3	0.1	0.0	289.3	5,895.2
TOTAL	0.0	445.4	34,646.9	24,760.2	116,710.1	188.3	25,539.5	48,886.1	17,270.4	9,721.5	109,685.7	16,255.5	0.0	52,331.0	456,439.2

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

FORECASTED WORKLOAD*
FY96 \$(K)

T&E Category	RDT&E						Other**						Other	All	Grand
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	OPN	WPN	SCN	Navy	Other	Total
Air Vehicles	0.0	0.0	278.0	141.5	39.6	0.0	1,275.7	1,229.2	4,421.5	9.0	0.0	0.0	0.0	10,423.7	17,818.2
Armament/ Weapons	0.0	326.2	32,897.0	22,874.4	111,475.5	0	20,828.4	45,296.9	11,381.3	8,840.7	105,147.8	15,584.0	0.0	39,468.9	414,119.8
Electronic Combat	0.0	100.8	41.1	721.7	374.8	180.5	2,380.5	341.3	754.4	470.3	8.9	0.1	0.0	277.5	5,651.9
TOTAL	0.0	427.0	33,216.1	23,737.6	111,889.9	180.5	24,484.6	46,867.4	16,557.2	9,320.0	105,156.7	15,584.1	0.0	50,170.1	437,589.9

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

FORECASTED WORKLOAD*
FY97 \$(K)

T&E Category	RDT&E						Other**						Other	All	Grand
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	.OPN	WPN	SCN	Navy	Other	Total
Air Vehicles	0.0	0.0	270.4	137.7	38.5	0.0	1,241.1	1,195.9	4,301.7	8.8	0.0	0.0	0.0	10,141.2	17,335.3
Armament/ Weapons	0.0	443.0	32,005.4	22,264.4	108,454.6	0.0	20,263.9	44,069.3	11,072.9	8,601.1	102,299.2	15,171.8	0.0	38,399.4	403,045.0
Electronic Combat	0.0	98.0	40.0	702.2	364.7	175.6	2,316.0	332.1	733.9	457.6	8.7	0.1	0.0	282.5	5,511.4
TOTAL	0.0	541.0	32,315.8	23,104.3	108,857.8	175.6	23,821.0	45,597.3	16,108.5	9,067.5	102,307.9	15,171.9	0.0	48,823.1	425,891.7

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

FORECASTED WORKLOAD*
FY98 \$(K)

T&E Category	RDT&E						Other**						Other	All	Grand
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	OPN	WPN	SCN	Navy	Other	Total
Air Vehicles	0.0	0.0	278.5	141.8	39.6	0.0	1,278.3	1,231.8	4,430.7	9.0	0.0	0.0	0.0	10,445.4	17,855.1
Armament/ Weapons	0.0	456.3	32,965.5	22,932.3	111,708.3	0.0	20,871.8	45,391.4	11,405.0	8,859.0	105,368.2	15,627.0	0.0	39,551.6	415,136.4
Electronic Combat	0.0	101.0	41.2	723.3	375.6	180.9	2,385.5	342.0	755.8	471.3	9.0	0.1	0.0	291.0	5,676.7
TOTAL	0.0	557.3	33,285.2	23,797.4	112,123.5	180.9	24,535.6	46,965.2	16,591.5	9,339.3	105,377.2	15,627.1	0.0	50,288.0	438,668.2

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

FORECASTED WORKLOAD*
FY99 \$(K)

T&E Category	RDT&E						Other**						Other	All	Grand
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	OPN	WPN	SCN	Navy	Other	Total
Air Vehicles	0.0	0.0	286.9	146.0	40.8	0.0	1,316.6	1,268.8	4,563.6	9.3	0.0	0.0	0.0	10,758.8	18,390.8
Armament/ Weapons	0.0	470.0	33,954.6	23,620.2	115,059.5	0.0	21,498.1	46,753.0	11,747.2	9,124.8	108,529.2	16,095.8	0.0	40,738.3	427,590.7
Electronic Combat	0.0	104.1	42.4	745.0	386.9	186.3	2,457.0	352.3	778.4	485.4	9.3	0.1	0.0	299.7	5,846.9
TOTAL	0.0	574.1	34,283.9	24,511.2	115,487.2	186.3	25,271.7	48,374.1	17,089.2	9,619.5	108,538.5	16,095.9	0.0	51,796.8	451,828.4

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

-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?*

Test work performed in FY92 and FY93 is shown in the following tables.

TEST WORK PERFORMED*
FY92 (WORK YEARS)

T&E Category	RDT&E						Other**						Other	All	Grand
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	OPN	WPN	SCN	Navy	Other	Total
Air Vehicles	0.00	0.00	0.67	0.34	0.10	0.00	3.11	3.01	10.81	0.02	0.00	0.00	0.00	25.49	43.55
Armament/ Weapons	0.00	2.12	158.78	107.49	523.79	0.00	166.20	218.19	53.48	42.38	490.69	73.23	0.00	206.58	2042.93
Electronic Combat	0.00	0.30	0.12	2.12	1.11	0.53	7.02	1.00	2.22	1.38	0.03	0.00	0.00	0.81	16.64
TOTAL	0.00	2.42	159.57	109.95	525.00	0.53	176.33	222.20	66.51	43.78	490.72	73.23	0.00	232.88	2103.12

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

TEST WORK PERFORMED*
FY93 (WORK YEARS)

T&E Category	RDT&E						Other**						Other	All	Grand
	6.1	6.2	6.3	6.4	6.5	6.6	RDT&E	OMN	APN	OPN	WPN	SCN	Navy	Other	Total
Air Vehicles	0.00	0.00	0.70	0.35	0.10	0.00	3.17	3.05	10.98	0.02	0.00	0.00	0.00	25.89	44.26
Armament/ Weapons	0.00	1.40	141.11	98.12	478.15	0.00	92.08	195.16	48.82	37.92	529.34	66.84	0.00	171.53	1860.47
Electronic Combat	0.00	0.27	0.11	1.95	1.01	0.49	6.43	0.93	2.04	1.27	0.03	0.00	0.00	0.75	15.28
TOTAL	0.00	1.67	141.92	100.42	479.26	0.49	101.68	199.14	61.84	39.21	529.37	66.84	0.00	198.17	1920.01

*Data not readily available in requested format. Point Mugu Comptroller does not track financial data to the specific Program Element level.

**Includes Army and Air Force RDT&E.

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.

Unconstrained capacity for each of NAWCWPNS Point Mugu's 31 facilities/capabilities is shown in the Unconstrained Capacity forms contained in Appendix A, Tabs 1 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.?

No. As a facility, NAWCWPNS Point Mugu has significant potential to accommodate additional workload. Excess hangar space is currently available, and sufficient ramp space is available to accommodate many additional aircraft. Operational and maintenance support of additional test aircraft and other test articles can be provided. Adequate facility support systems and infrastructure exists; commercial utility availability is adequate and readily expandable. The Point Mugu complex of aircraft and weapon systems integration laboratories; electronic warfare, radar, and optical integration laboratories; RF and environmental measurement facilities; installed system test facilities; modeling and simulation facilities; and target complexes are fully capable of accommodating a significant increase in workload with no significant physical, safety, health, or utility capacity limitations. Point Mugu is already heavily utilized for testing of weapon systems with large hazard areas, multiparticipant test and training operations, and Special Access programs. Significant potential exists, utilizing existing over-the-horizon instrumentation, to expand operations even further into ocean areas north, south, and west of existing NAWCWPNS Warning Areas and to increase littoral and strike operations into adjacent DOD land test and training areas. Point Mugu personnel comprise a trained team that is expert in the conduct of such complex, large-scale operations.

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. In our chain of command (Naval Air Systems Command (NAVAIR)), we are part of an approved war plan. None of the 31 individual facilities/capabilities has its own war-time contingency plan. Official mobilization requirements are based on Naval Reserve Unit Assignments as directed by Chief of Naval Reserve by Reserve UIC. In the case of the Naval Air Warfare Center Weapons Division, the following units are assigned on site as indicated:

- NR NAWS 0176 China Lake, CA supported by NAR Point Mugu
- NR NAWS 0376 Point Mugu, CA supported by NAR Point Mugu
- NR NAWS 0170 China Lake, CA supported by NAR Dallas, TX
- NR NAWS 0276 China Lake, CA supported by NAR Point Mugu
- NR NAWS 1076 Point Mugu, CA supported by NAR Minn/St. Paul

The most recent military mobilization plan is based on February 1988 data. The Bottoms-up Review concluded that a heavier reliance on reserve component capabilities in the future was warranted in order to carry out the military strategy and to provide emergency domestic response. Presently mobilization plans are being sized and shaped to ensure success of the DOD strategy to win two nearly simultaneous major regional contingencies.

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

Yes.

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

Yes. The Sea Range provides critical support to other major DOD and contractor test facilities in the vicinity including Edwards and Vandenberg AFBs, China Lake, the Naval Surface Warfare Center Port Hueneme Division, and the Santa Cruz Radar Imaging Facility. The specific support is described below.

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

The answers to 2.3.B., B.1., and B.2. for each of the 31 NAWCWPNS Point Mugu facilities/capabilities are as follows.

MODELING AND SIMULATION

SIMULATION AND EFFECTIVENESS CENTER

B. Yes.

B.1 Yes.

B.2 Yes. This facility supports the OPTEVFOR, NAWCWPNS-China Lake and contractor missions. Loss of the Simulation & Effectiveness Center will impact the Navy complying with Congressionally mandated objective test and evaluation of new and modified air intercept missile systems prior to deployment/production. Additionally, the Navy will be unable to reach conclusions concerning the system's technical suitability, to predict system effectiveness in combat environments/scenarios, and will impede the Navy's ability to develop system improvements, assess contractor performance, and provide missile life cycle support.

TARGET SYSTEMS MODELING AND SIMULATION CAPABILITY

B. Yes.

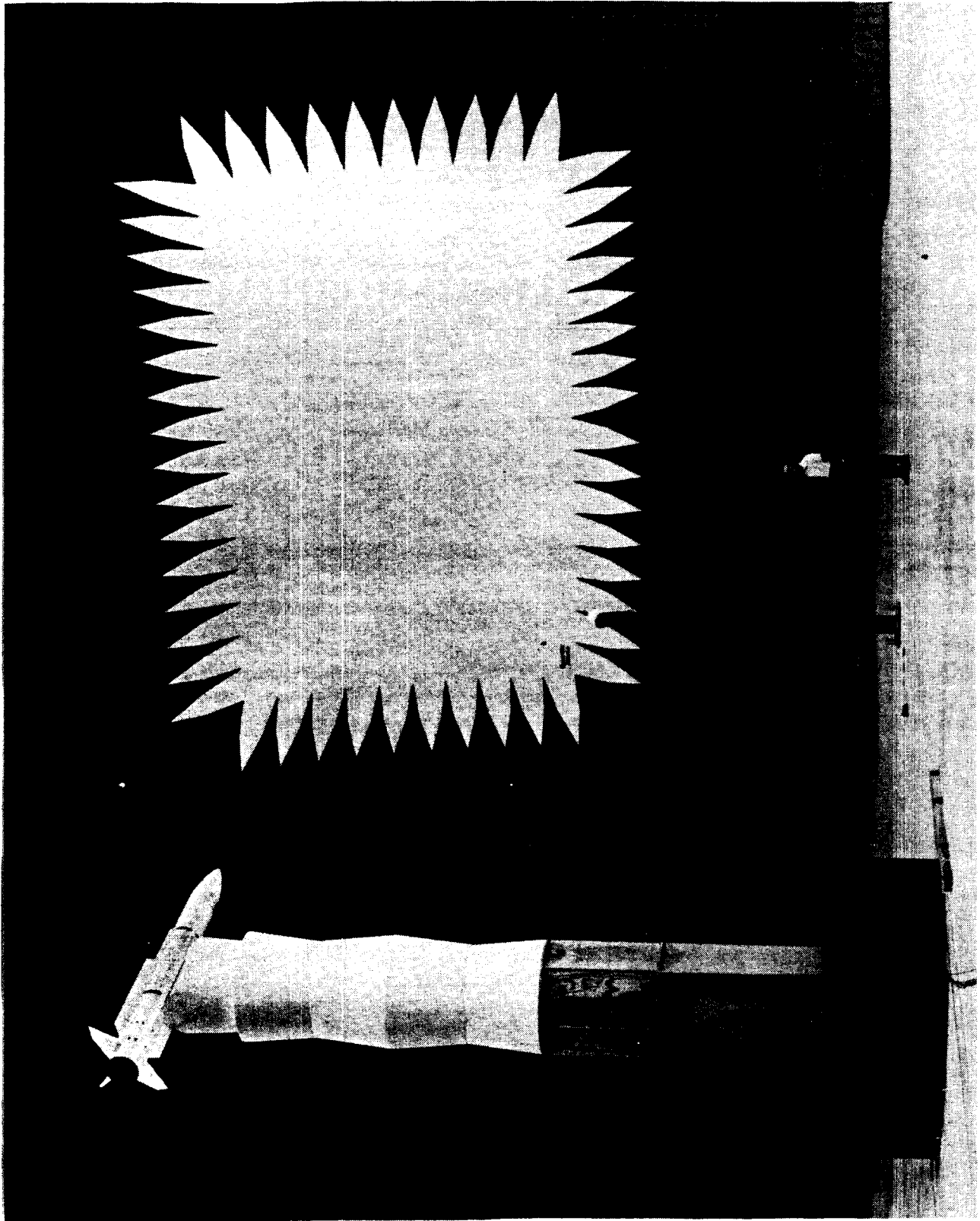
B.1 Yes.

B.2 Yes. This capability provides for the design, development, installation, and in-service engineering updates for Navy target modeling and simulation systems. Without this continued capability the Navy would no longer be able to acquire and field operational targets for weapons system T&E or Fleet training without extreme project risk. Since many of these programs are interrelated or joint-service efforts, this capability also impacts all other services and the ultimate operational capability of the Armed Forces.

This capability provides for

1. Development of new target models to meet the needs of target acquisition, and operational requirements.
2. Coordination of the validation and verification of the models and simulations used for target performance.
3. Maintenance and update of existing target models and simulations.
4. Use of existing models and simulations to develop products required by the acquisition, design and development, in-service engineering and weapon/Fleet T&E users.

Target systems modeling and simulation efforts that currently exist or are now under development fall under three use categories: target technology development, target system acquisition support, and target/weapon system and Fleet T&E planning/execution support



Bistatic Radar Reflectivity Laboratory

Detailed information pertaining to this capability is provided in Appendix A (A-2).

This total capability and breadth of modeling activities for the support of targets requirements throughout the product life cycle exists at no other location.

MEASUREMENT

AIRBORNE INFRARED MEASUREMENTS CAPABILITY

B. Yes.

B.1 Yes.

B.2 Yes. The Support Systems and Measurements facilities test the effectiveness of decoy flares in protecting U.S. aircraft from infrared-guided missiles, perform lot acceptance testing of Navy flares, perform aircraft store separation photo analysis, and perform tests and evaluations of ground-support equipment and software for aircraft electronic warfare systems.

BISTATIC RADAR REFLECTIVITY LABORATORY

B. Yes.

B.1 Yes.

B.2 Yes. The Bistatic Radar Reflectivity Laboratory (RRL), as a National Asset, supports weapons test programs and weapon or target low observable development programs and is the only indoor facility capable of near-field and far-field bistatic and monostatic radar signature measurements. Radar signature characterization (bistatic and monostatic) of threats and U.S. weapons systems is critical for predicting weapons effectiveness or survivability and to improve the design of these weapons. The signature data forms an integral part of the test and evaluation process for missile weapons systems. The chamber, which measures 150'x150'x60', is the largest indoor reflectivity facility and the only one specifically designed for bistatic measurements. The indoor facility provides all-weather, day-night capability in a secure environment. These capabilities are not achieved in any other indoor or outdoor DOD or contractor facility.

Loss of this facility would severely impact weapons development for all three services. The following projects from all three services have required the unique capabilities of the Bistatic RRL during the period 1992 through 1994: ERINT, GLOM, MESA, AEGIS (various targets), SM-2, MRUAV, GUILDER HAWK, HERA (STORM), BLACKJACK (BMD), F-117 airframe components, Advance Weapons Development Project, and AQM and BQM targets for various NAWCWD flight test support. These measurements support signature requirements for targets used in flight tests of missile weapon systems, for survivability analyses of new cruise missile designs, and development and T&E of low observable materials and techniques.

ELECTROMAGNETIC ENVIRONMENT EFFECTS LABORATORY

B. No.

B.1. No.

B.2. No.

ENVIRONMENTAL TEST FACILITY

B. No.

B.1. No.

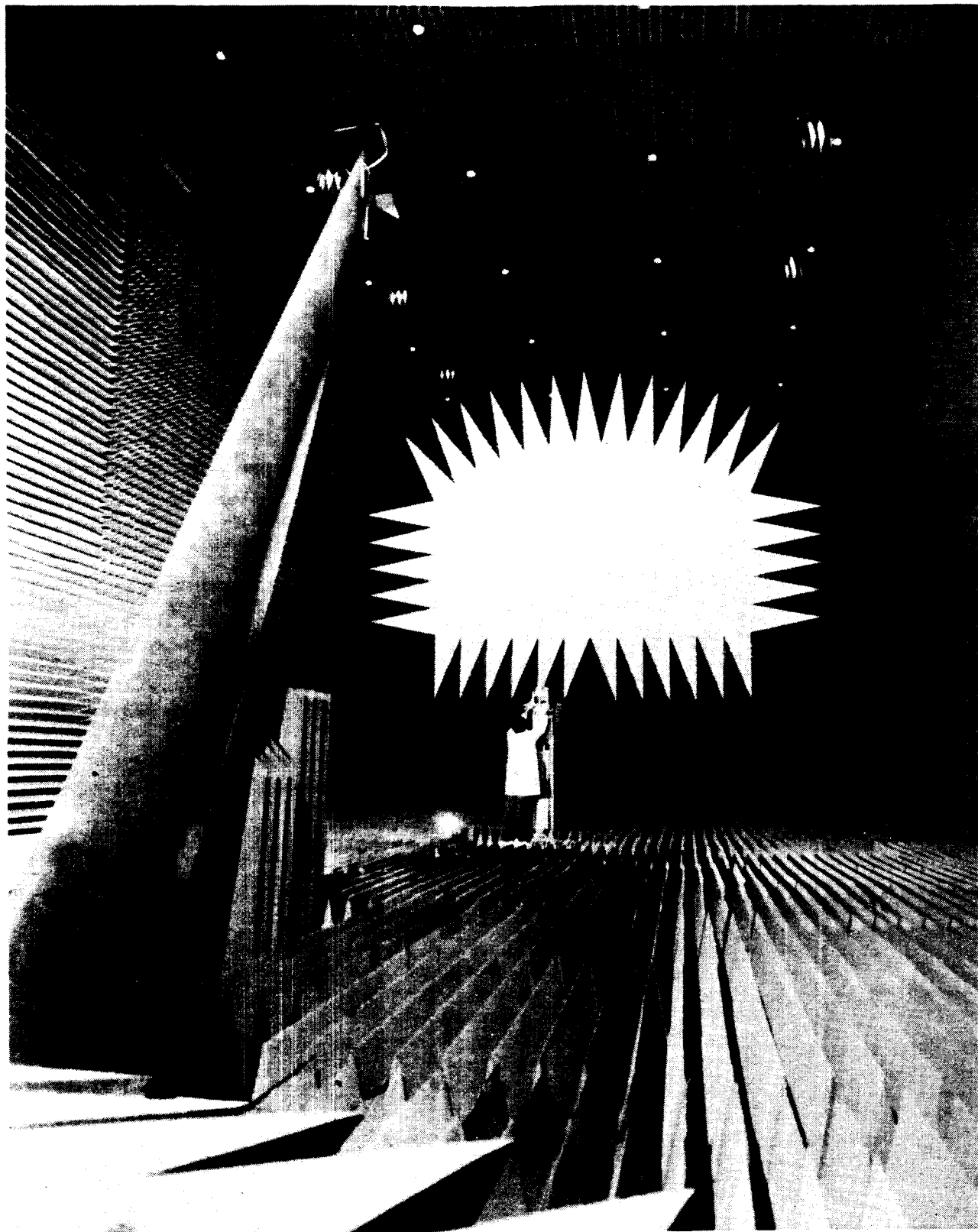
B.2. No.

MONOSTATIC RADAR REFLECTIVITY LABORATORY

B. Yes.

B.1. Yes.

B.2. Yes. The Monostatic Radar Reflectivity Lab is the only Navy indoor chamber capable of near and far-field monostatic measurements of full size missile, sub-scale targets and aircraft model up



Monostatic Radar Reflectivity Laboratory

to 16 feet in length from VHF through W-Band. Similar chambers exist at Wright Lab. and contractors but with less capability. Both Air Force and contractor projects utilize this capability when required to meet test requirements. Loss of this facility will impact the ability of all three services and numerous contractors to conduct monostatic RCS measurements, to develop, test, and counter low observable vehicles, and to conduct engagement/encounter simulation and survivability analyses. Congressionally mandated weapons systems objective test and evaluation capability will be impaired by the loss of this facility.

READY MISSILE TEST FACILITY

B. Yes.

B.1. Yes.

B.2. Yes. This facility provides missile buildup and functional testing in support of missile evaluation test flights/firing and Fleet training missile firings.

RELIABILITY TEST FACILITY

B. No.

B.1. No

B.2. No

SEA LEVEL CLIMATIC CHAMBER

B. No.

B.1. No.

B.2. No.

SUPPORT EQUIPMENT ENGINEERING AND TEST COMPLEX

B. Yes.

B.1. Yes.

B.2. Yes. This facility provides pre-flight readiness test and integration for air-launched missiles including telemetry integration. Flight test programs at this activity could not be carried out without this function. Also, this facility supports similar flight test programs for the Air Force and other Navy activities. This facility's Sparrow Telemetry Integration capabilities are unique on the West Coast and are used to support all Fleet training operations involving Sparrow in the Western U.S. and Pacific region.

TELEMETRY/TEST ARTICLE INSTRUMENTATION

B. Yes.

B.1. Yes.

B.2. No. The Telemetry Division provides weapons system instrumentation; i.e., warhead compatible telemetry for SM-2 and AMRAAM, which are not available from any other sources.

INTEGRATION LABORATORY

ELECTRONIC WARFARE COUNTERMEASURES SYSTEMS CAPABILITY

B. Yes.

B.1. Yes.

B.2. Yes. User Data File (UDF) and Mission Data File (MDF) changes; Quick Reaction Test (QRT) pods. Ability to test and verify User Data Files and Operational Flight Programs (OFPs). This facility provides the mission-critical software updates (including threat file updates) to the AN/ALQ-126B and the AN/ALQ-162. These two systems provide protection against radar-guided missiles and guns for the F/A-18, A-6E, and AV-8. Electronic warfare suite integration is conducted in close unison with personnel from the electronic warfare radar systems capability and the Electronic Combat Simulation Evaluation Laboratory (ECSEL).

This facility directly supports operational effectiveness. Immediately after the invasion of Kuwait, countermeasures (CM) personnel reprogrammed ALQ-126B jammers in the Persian Gulf with a new worldwide threat file. In January 1991 they returned and reprogrammed both the ALQ-126B and ALQ-162 jammers with modified threat files based on intelligence files. Based on feedback from pilots flying across the U.S. and getting false missile launch indication as they flew near U.S. airfields and around friendly carrier groups, our software personnel developed a software change that was also reprogrammed into the ALR-67 in January 1991. Without this change, pilots would likely have turned the ALR-67 Radar Warning Receiver (RWR) off during the ground and air war. If they had kept the unchanged RWR on, it would have been ineffective.

EW/RADAR SUPPORT EQUIPMENT

B. Yes.

B.1. Yes.

B.2. Yes. Supports the evaluation of the software support activity software updates. Supports other activities' technical evaluations for aircraft platforms. Critical to organizational level aircraft preoperational testing, aircraft fault diagnostic testing and intermediate level WRA/SRA testing. Supports the Rapid Reprogrammable Terminal software development to support reprogramming of multiservice avionics systems. Critical to aircraft mission readiness verification.

INFORMATION WARFARE SYSTEMS LABORATORY COMPLEX

B. Yes.

B.1. Yes.

B.2. Yes. This facility is the only site currently in existence that supports development, test and evaluation of the Tactical Electronic Reconnaissance Processing and Evaluation System (TERPES) for the United States Marine Corps. Development efforts on the Tactical Aircraft Mission Planning System (TAMPS) are critical at this location as a result of their electronic connection to both the TERPES systems and the EA-6B Weapons System Support Laboratory.

INTERCEPT WEAPONS EVALUATION FACILITY

B. Yes.

B.1. Yes.

B.2. Yes. This facility supports the OPTEVFOR, NAWCWPNS-China Lake and contractor missions. Loss of the Intercept Weapons Evaluation Facility will prevent the Navy from complying with Congressionally mandated objective test and evaluation of new and modified air intercept missile systems prior to deployment/production. Additionally, the Navy will be unable to reach conclusions concerning the system's technical suitability, to predict system effectiveness in combat environments/scenarios, and will impede the Navy's ability to develop system improvements, assess contractor performance, and provide missile life cycle support.

LASER AND STABILIZED OPTICS

B. No.

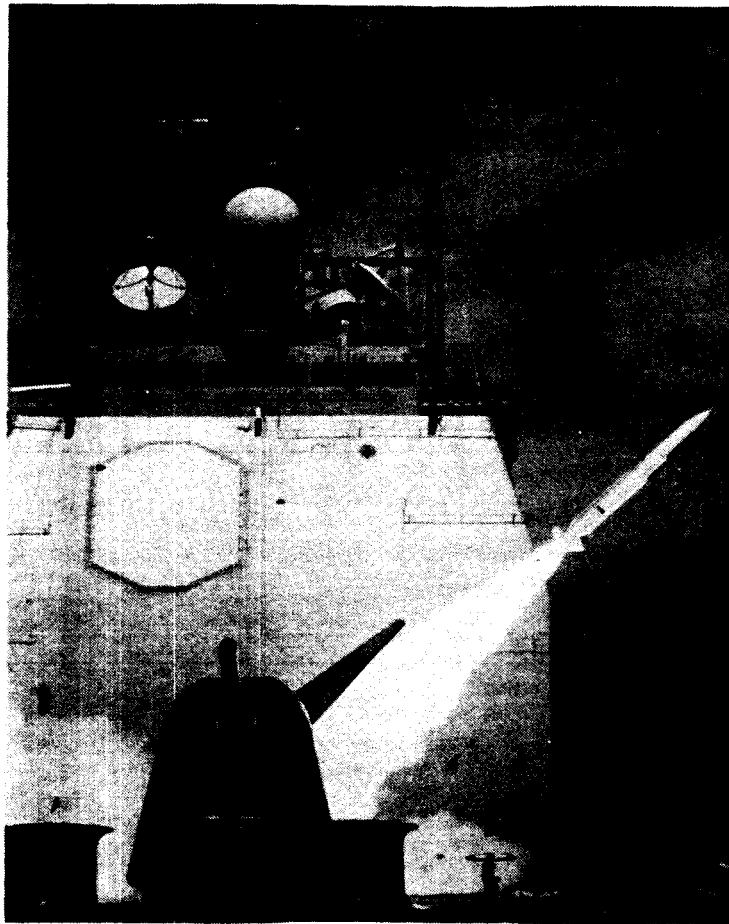
B.1. No.

B.2. Yes. The Laser and Stabilized Optics Facility/Capability is the sole source for operational support for Laser Training Systems (AN/UEQ-T1, AN/FXH-T1, AN/GAQ-T1, AN/FAQ-1, MX-11485/U) and Imaging Weapons Training Systems (developmental) used by Naval attack squadrons for training in the delivery of laser guided weapons (bombs and missiles) and imaging weapons (Walleye and SLAM) at Naval Tactical Training Ranges and deployed battle groups world wide.

The Laser and Stabilized Optics Facility/Capability is the sole source for operational support for a series of gyroscopically stabilized, long focal length, high resolution tactical imaging systems. These systems (Cast Glance, Cast Eyes, Star Cast, Sea Glance, CASOS) and their derivatives are



Intercept Weapons Systems Laboratory Evaluation Facility



Intercept Weapons Systems Laboratory Evaluation Facility

used by tactical theater commanders and various Systems agencies to provide high resolution images of specific areas and operations for tactical mission planning.

WARNING AND SURVEILLANCE SYSTEMS CAPABILITY

B. Yes.

B.1. Yes.

B.2. Yes. Provides the system engineering and acquisition capability for design, develop, test, production support, acceptance, integration, verification and validation, in-service engineering, upgrade and modernization, and rapid reprogramming of Navy Electronic Warfare RF/LASER/EO/IR Warning and Surveillance Systems for tactical Navy fixed and rotary winged aircraft, assigned Army and Air Force platforms, and Foreign Military Sales (FMS) customers.

WSSA, F-14

B. Yes.

B.1. Yes.

B.2. Yes. The F-14 WSSA is the only facility that can make emergency tactical software releases necessary to counter unexpected war-time observed tactics and threat. The facility offers both a controlled laboratory and Fleet configured aircraft which provide instrumented platforms for air-to-air weapons test and evaluation captive flights and live weapons firings. In addition, for Navy and other agencies, it provides missile/aircraft separation test and the laboratory and aircraft both support Navy and other agency ECM and DECM test and evaluation tests. For the operational forces, the F-14 WSSA provides the resources to investigate and resolve reported problems with weapon selection and release and with sensor system deficiencies.

WSSL, EA-6B

B. Yes.

B.1. Yes.

B.2. Yes. Currently, Point Mugu has the only facility which can function as the EA-6B Weapon Systems Support Activity (WSSA), the Technical Design Agent for the EA-6B's mission support system (AN/TSQ-142), and the primary technical agent and field activity in support of PEO(T)'s acquisition and support of the Navy's only tactical support jamming aircraft. These roles and capabilities are unique in DOD. It is unclear whether the support supplied by EA-6B WSSA and Intelligence support work could be duplicated in the long term in the industrial base.

HARDWARE-IN-THE-LOOP

ELECTRONIC COMBAT SIMULATION AND EVALUATION LABORATORY (ECSEL)

B. Yes.

B.1. No.

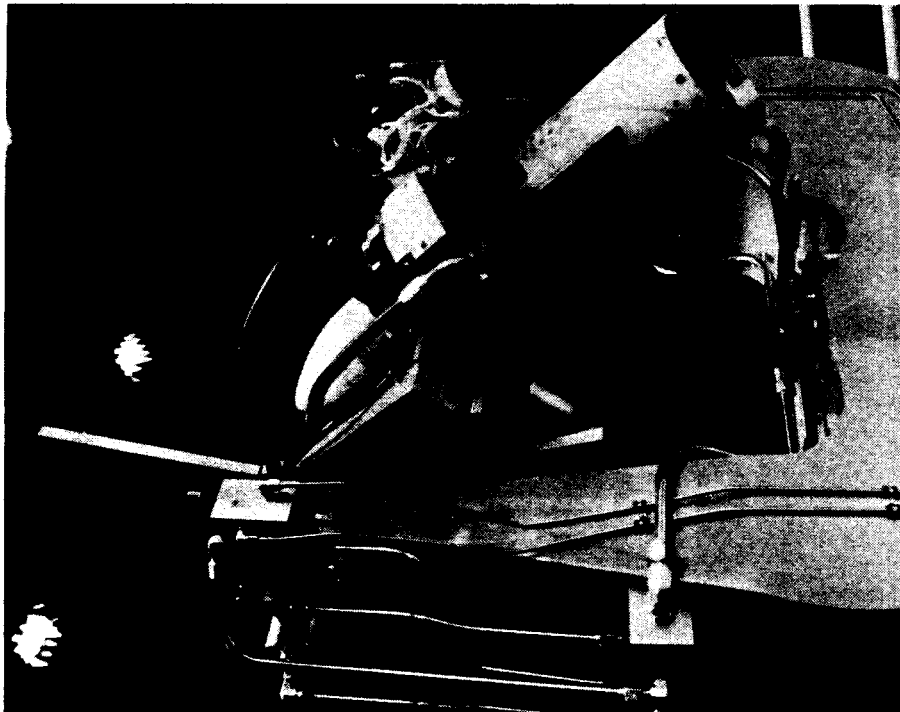
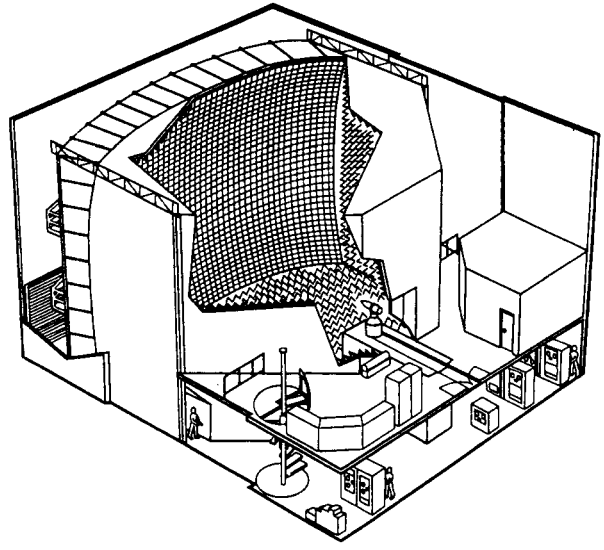
B.2. Yes. The ECSEL facility services are used by countermeasures systems and warning systems programs in their development and in-service operations. These two capabilities could not perform their work without the ECSEL. The services required are the capability to realistically simulate the threat environment. The threat simulations are used to stimulate the countermeasures and warning systems during development and in-service testing. The ECSEL also provides EW system "hot benches" that power up, integrate, and allow access to the software as well as physical hook up of the threat simulations.

MISSILE HARDWARE IN THE LOOP FACILITY

B. Yes.

B.1. Yes.

B.2. Yes. This facility supports OPTEVFOR, NATO, NAVY, AIR FORCE and contractor missions. Loss of the Missile Hardware-in-the-Loop Facility will prevent the Navy from



Missile Hardware in the Loop Facility

complying with Congressionally mandated objective test and evaluation of new and modified air intercept missile systems prior to deployment/production. Additionally, the Navy will be unable to reach conclusions concerning the system's technical suitability, to predict system effectiveness in combat environments/scenarios, and will impede the Navy's ability to develop system improvements, assess contractor performance, and provide missile life cycle support.

STRIKE WEAPONS EVALUATION FACILITY

B. No.

B.1. No.

B.2. No.

OPEN AIR

AERIAL TARGETS COMPLEX

B. Yes.

B.1. Yes.

B.2. Yes. Aerial targets are integral to the test mission of the Point Mugu Range. If targets did not exist the ability of the Range to provide T&E of air-to-air, and surface-to air weapons would be irreparably harmed. The test missions for specific activities such as OPTEVFOR, the Weapons Systems Evaluation Directorate, and the Aircraft Weapons Systems Directorate require the use of targets to accomplish their tasking. Additionally, systems engineering, logistics management and deployed operational services are critical to the missions of the Pacific Missile Range Facility, Hawaii; the Atlantic Fleet Weapons Training Facility, Puerto Rico; NAWCWPNS China Lake; White Sands Missile Range, New Mexico; and the NAVSEA Ship trials in the gulf of Maine. The facility also provides target services which are critical to the operational readiness and effectiveness of the Fleet. The T&E capability to support intra and inter service as well as FMS customers would be irreparably harmed without this facility. Specifically this facility supports the Fleet, NAVAIR, NAVSEA, Marines, Army, Air Force, Japanese Defense Force, German Navy and Air Force, and other FMS and industry customers. Urgent national defense requirements such as Operation Desert Storm requiring specific aerial target services unique to this facility would be irreparably damaged if the facility did not exist.

AIRCRAFT OPERATIONS AND MAINTENANCE CAPABILITY

B. Yes.

B.1. No.

B.2. Yes.

Aircraft operation and maintenance is essential to ensure the availability of range and project aircraft to support airborne weapon system and weapon/platform integration testing on the Sea Test Range. This capability also supports the deployment of aircraft from various tenant activities such as VX-4 and VXE-6 and from other activities in the area. Significant among these is the deployment of the Naval Construction Battalion forces.

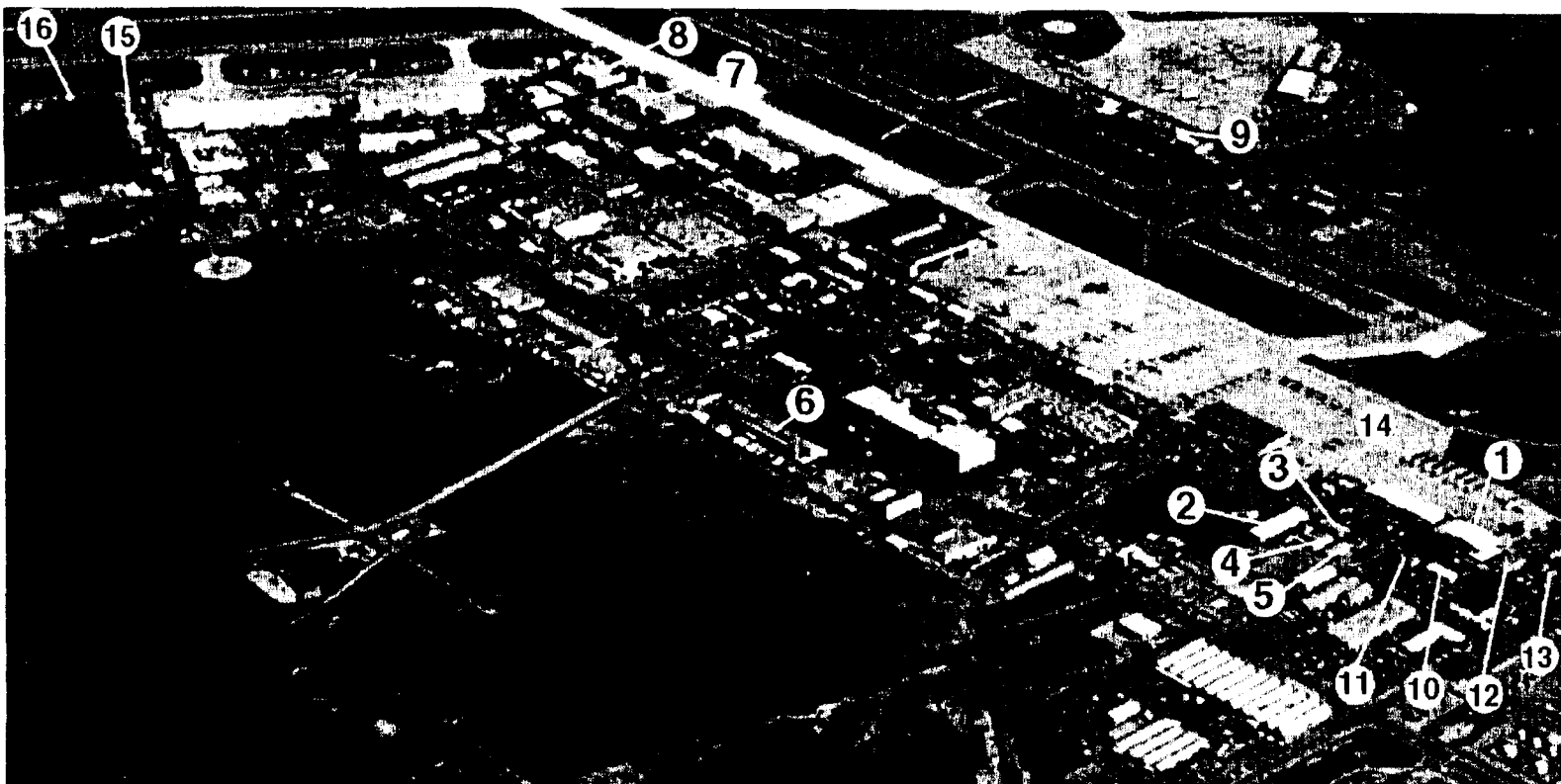
SEA TEST RANGE

B. Yes. The Sea Range provides the T&E sea surface, air space, instrumentation, and support services required for the T&E of weapons systems that are the responsibility of other directorates at NAWCWPNS Point Mugu and China Lake. Without these capabilities, the T&E of many of the other directorates would have to be moved to other ranges, resulting in large moving and investment costs.

B.1. Yes. Edwards AFB and Vandenberg AFB have programs that require the use of large sea surface areas, large impact hazard areas, littoral environment, and extensive range instrumentation. Edwards requires sea surface targets for some of their testing and does not have any on base areas for the firing of live ordnance. Such tests must be conducted at China Lake or Point Mugu. China

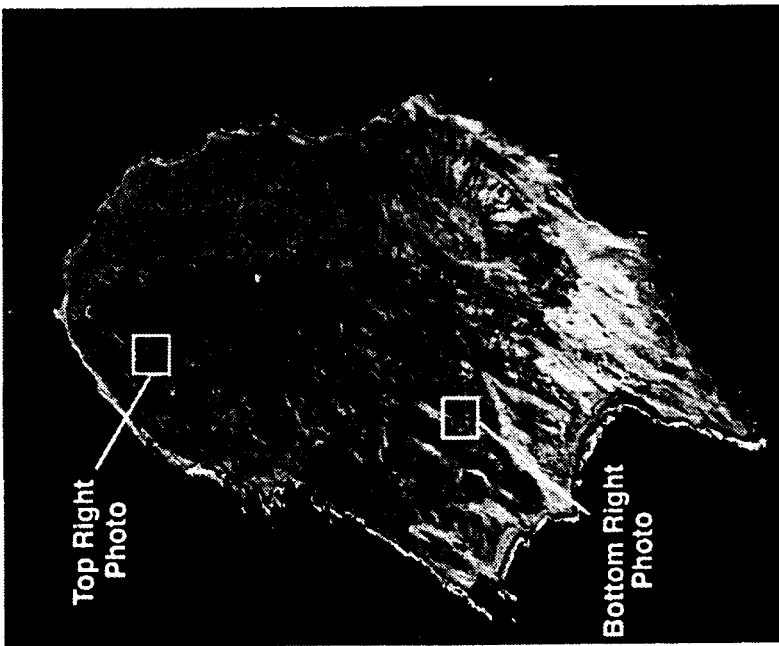
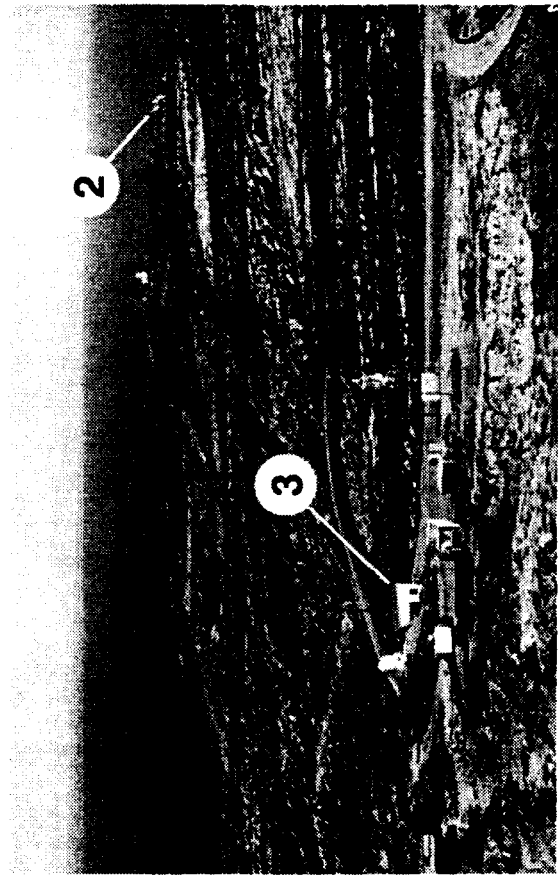
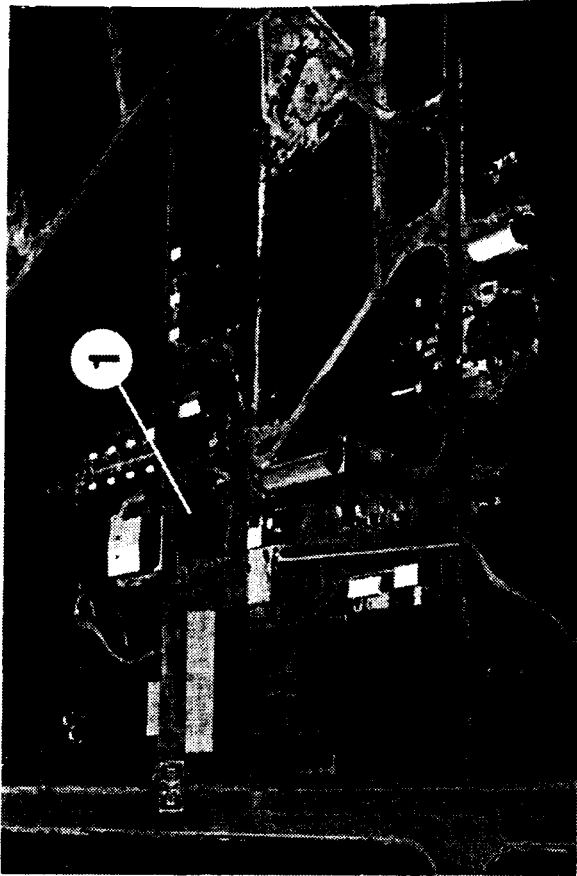


Aerial Targets Complex Facilities



- | | | |
|--|---------------------------------------|------------------------------------|
| 1. B-333 Tgt. Systems Dept. Main Bldg. | 6. B-512 Target Systems Support Bldg. | 11. B-665 Target Program Office |
| 2. B-667 Advanced Targets | 7. B-355 Missile Target Project Bldg. | 12. B-392 Target Ready Storage |
| 3. B-329 Tow Targets Lab | 8. B-362 Missile Target Maintenance | 13. B-393 Target Engine Test Cell |
| 4. B-645 Target Equipment Storage | 9. B-325 Target Storage/Shop Space | 14. B-334 Target Generator Shelter |
| 5. B-6-59 Targets RDT&E Storage | 10. B-666 Secure Targets Facility | 15. B-557 Target Engine Test Cell |

Target Systems Department Buildings, Point Mugu



- KEY:**
- 1 - Targets Hangar**
 - 2 - VANDAL Launch Facility**
 - 3 - VANDAL Buildup Facility**

Target Facilities, San Nicolas Island

Lake does not have a large enough area for most missile firings, so the great majority of Edwards' firings are done on the Point Mugu Sea Range. Programs that would be impacted are listed below along with an explanation of their requirements.

Current Edwards support includes:

AGM-142A HAVE NAP. Captive carry testing and one live launch per year are planned against a sea surface target. The tests require a littoral target with a sea to land transition. Tracking, telemetry, communications, and data reduction facilities are required.

F-16 Software validations. Live gunnery firings are performed against tow and missile targets, and Harpoon launches are conducted against sea surface targets.

F-15E software validations. Advanced Medium Range Air-to-Air Missile (AMRAAM) firings have and will be conducted against missile and aircraft targets to validate aircraft performance software.

F-22. AMRAAM firings are supported for weapons integration testing.

B-52, B-1, and B-2. B-52 Harpoon launches are conducted against targets designated by Navy P-3 aircraft, and mine release operations are conducted. The B-1 also does mine releases and bombing tests against sea surface targets. B-2 avionics equipment and navigation systems are also tested on the Sea Test Range.

Vandenberg support includes:

Peacekeeper and Minuteman. Vandenberg is the only facility in the country available for the T&E and training launches of ICBMs. NAWCWPNS radar, telemetry, and Command Destruct instrumentation are mandatory in order for these tests to be conducted. Vandenberg cannot perform these missions without NAWCWPNS, and there would have to be a major investment in facilities to move the launches anywhere else.

Polar Satellite Launches. Vandenberg Air Force Base is the only facility in the United States that can launch satellites into a polar orbit. This capability is vital to the defense of the country. Vandenberg cannot perform this role without the use of NAWCWPNS radars and Command Destruct transmitters. The line of sight from Vandenberg's instrumentation is through the rocket's plume, and Command signals are blocked by the ionized gasses.

In addition to the above test requirements to support Edwards and Vandenberg, there are other agencies that perform testing at Point Mugu that would be severely impacted by closure of the Sea Range.

China Lake.

The Joint Stand Off Weapon (JSOW) program is managed by NAWCWPNS China Lake. The JSOW requires a larger hazard pattern and a larger target area (cleared, flat land for bomblet impact scoring) than is available at China Lake. The combination of NAWCWPNS, Point Mugu, and San Clemente Island is the closest suitable area.

Boeing.

The radar upgrade program for the E-3 requires the use of sea surface targets in an open ocean and littoral environment. Aircraft and sea surface targets, tracking, communications, and data-reduction capabilities are required. This program is being managed by the Air Force from Boeing facilities in Seattle Washington.

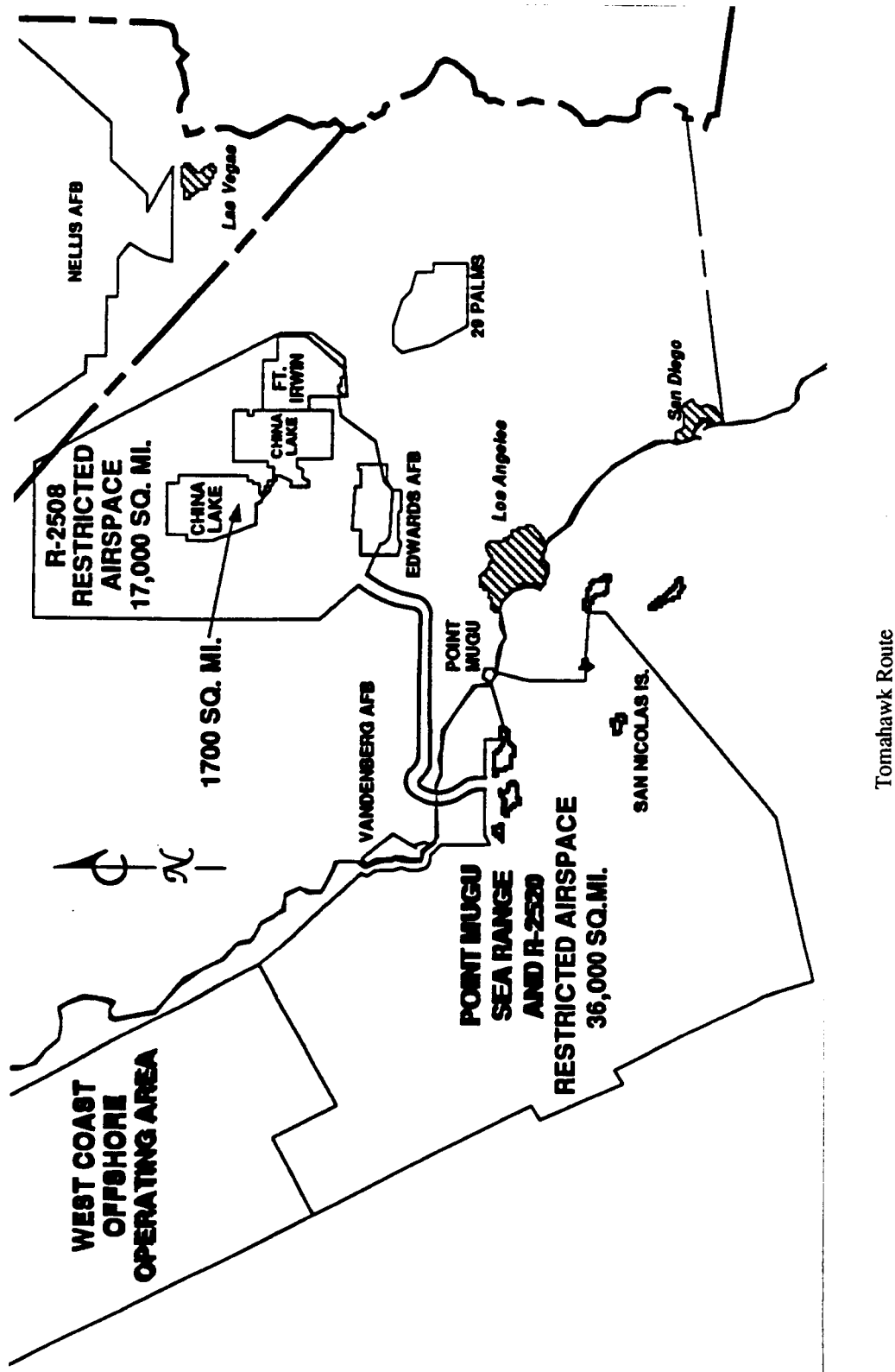
The Naval Surface Warfare Center Port Hueneme Division performs Close In Weapon System (CIWS) and Rolling Airframe Missile (RAM) testing at NAWCWPNS. CIWS testing was previously done utilizing the ex-*Stoddard* remote-controlled, self-propelled destroyer target. The ex-*Decatur* is being prepared by NAWCWPNS to replace the ex-*Stoddard* and will be capable of testing the RAM and the NATO Sea Sparrow. Live antiship missiles such as Harpoon are fired at these systems to perform live fire testing that cannot be performed anywhere else in the world (the ex-*Decatur* will be a one-of-a-kind asset). Without true live fire testing of the above weapons, there is no way to be assured of their operational effectiveness.

The Santa Cruz Radar Imaging Facility (SCRIF) and the Santa Cruz Acoustic Range Facility (SCARF) are operated by the Naval Surface Warfare Center, Carderock Division as a tenant on our Santa Cruz Island facility. These facilities could not operate without our on site support for radar tracking, electrical power, housekeeping and messing, communications, and transportation. If NAWCWPNS were to close, Carderock would have to assume responsibility for operation and maintenance of the facilities. Since the facilities only operate a small portion of the year, this undertaking could be extremely costly to them and might be impossible to accomplish with current funding restrictions. The SCRIF is a one-of-a-kind facility used to determine the radar cross sections of various Navy surface craft and to evaluate radar cross section reduction efforts. This loss to the Navy might be irreparable.

B.2. Yes. The Third Fleet conducts its major Fleet Training Exercises at NAWCWPNS. These exercises are required as "graduation exercises" for the Fleet units prior to their deployment. Without these exercises, there would be no way to determine if the units were ready to fight with maximum efficiency. Fleet readiness would be adversely effected. Tracking, air and sea surface targets, aircraft, telemetry, data reduction, communication, control facilities, and command-destroy capabilities are required. Safety considerations dictate that all live fire weapons launches be conducted on a fully-instrumented range. The next closest facilities for these exercises would be PMRF or AFWTF. PMRF must rely on NAWCWPNS launch aircraft and personnel to present airborne targets to the Fleet. NAWCWPNS also provides the airborne targets for all Second Fleet training exercises at AFWTF.

The Third Fleet also uses the Southern California Offshore Range (SCORE) for antisubmarine (ASW) warfare training. NAWCWPNS provides instrumentation for tracking of all airborne participants, tracking units, and maintenance and calibration of the tracking units. Without NAWCWPNS support, the Fleet's readiness to conduct ASW operations would be adversely effected.

The operational effectiveness of the Tomahawk weapon system and T&E of planned upgrades could not be accomplished without NAWCWPNS. Tomahawk can be tested on the East Coast but not all variants can be tested, and warheads are prohibited. The Tomahawk program office has an agreement with the states of Florida and Alabama that only Tomahawks with parachute recovery packages will be flown over the state. Several crashes have occurred during past flights, and testing could be suspended if further crashes of Tomahawks occur in Florida or Alabama. The D version of Tomahawk carries submunitions and does not have a parachute recovery package. Thus, the D version can only be tested at NAWCWPNS. The C version of Tomahawk carries a unitary warhead, and live testing can only be tested using NAWCWPNS and San Clemente Island. NAWCWPNS and the existing Inland Route to our China Lake facilities; Fallon, Nevada; and Utah, offer the only possible test sites for testing in mountainous and desert terrain. The operational effectiveness of Tomahawk over much of the world's surface (such as Iraq) couldn't be tested if NAWCWPNS were not available. The Tomahawk Baseline Improvement Program (TBIP) will not be able to fully satisfy all Operational Test objectives and therefore reach full operational readiness, if NAWCWPNS is closed.



SURFACE TARGETS COMPLEX

B. Yes. This is the only organizational element dedicated to surface/seaborne targets. The mission involves systems development, systems integration, operation & maintenance, in-service engineering, and logistics support. Without these functions the host installation could not provide seaborne target services to support RDT&E and/or OT&E of weapon systems. T&E of weapon systems is amongst the primary missions of the NAWCWPNS, Pt Mugu. Historically this includes the successful fielding of the TOMAHAWK, HARPOON, HARM, WALLEYE, MAVERICK, SLAM, and other major weapon systems. Seaborne and other surface targets are also essential elements in the support of Fleet training, another major command mission.

B.1. Yes. This organizational element provides the only seaborne target systems development within the DOD. NAWCWPNS is the only designated Navy T&E site with complete Seaborne Target capability. Testing of weapons by the Navy's systems commands, the Navy's Operational Test and Evaluation Force from Norfolk, Va, and other services depend upon the local capabilities for development, systems integration, and operational and logistics skills of this organization to provide Seaborne Targets for test of air-to-surface and surface-to-surface weapon systems. This organization also provides the capabilities for both fundamental and specialized Seaborne Target services at other Navy activities including the Pacific Missile Range Facility, Kauai, Hawaii; Atlantic Fleet Weapons Training Facility, Puerto Rico, which support considerable Navy and Air Force weapons T&E.

B.2. Yes. As life-cycle lead for seaborne targets, all other Navy Seaborne Target operating activities are dependent for engineering and logistics services worldwide. These missions of the activities includes forces training. The activities include the Naval Air Warfare Center Aircraft Division in Patuxent River, Maryland; the Mid-Atlantic Littoral Warfare Training Center in Cherry Point, North Carolina; the Atlantic Fleet Weapons Training Facility in Puerto Rico; the NATO test and training range in Namfi Crete; the Pacific Missile Range Facility in Hawaii; and an operational capability under establishment in Okinawa, Japan.

As the designated Reliance lead for Seaborne Target systems, all other services are dependent on the effectiveness of this organization.

Targets are integral to the test mission of the Point Mugu Range. If targets did not exist the ability of the Range to provide T&E of air-to-air, surface-to air and surface-to-surface weapons would be irreparably harmed. The test missions for specific activities such as OPTEVFOR, the Weapons Systems Evaluation Directorate, and the Aircraft Weapons Systems Directorate require the use of targets to accomplish their tasking. Additionally, systems engineering, logistics management and deployed operational services are critical to the missions of the Pacific Missile Range Facility, Hawaii; the Atlantic Fleet Weapons Training Facility, Puerto Rico; NAWCWPNS China Lake; and White Sands Missile Range, New Mexico. The facility also provides target services which are critical to the operational readiness and effectiveness of the Fleet. The T&E capability to support intra and inter service as well as FMS customers would be irreparably harmed without this facility. Specifically this facility supports the Fleet, NAVAIR, NAVSEA, Marines, Army, Air Force, Japanese Defense Force, German Navy and Air Force, and other FMS and industry customers. Urgent national defense requirements such as Operation Desert Storm requiring specific target services unique to this facility would be irreparably damaged if the facility did not exist.

TARGET AUGMENTATION SYSTEMS CAPABILITY

B. Yes.

B.1. Yes.

B.2. Yes. Both Target Auxiliary Systems (TAS) and Common Target Auxiliary Systems (CTAS) provide basic capability to all targets, i.e., Command and Control, Navigation, and Location and Identification, since the target could not begin to be operated without these most basic of CTAS systems. Beyond this, TAS/CTAS adds enhanced capabilities to targets and added value to the target users by providing the threat environment against which a weapon system can be tested (the

very purpose of the target), i.e., Radar Augmentation, Electronic Countermeasures, Emitters, Infrared and Visual Augmentation, and by providing the users with the tools to capture and evaluate the effects of their weapon on the target, i.e., Scaled Scoring. These capabilities, available via the appropriately configurations of TAS/CTAS hardware, enable target users to test the weapons systems for accuracy, lethality, vulnerability, and other threat assessment parameters. Just as Aerial Targets are integral to the test mission of the Point Mugu Range, TAS/CTAS components are integral to the configuration of every target to provide the threat environment necessary for weapons test and evaluation, and Fleet training. If the TAS/CTAS did not exist the ability of the Range to provide T&E of air-to-air and surface-to-air weapons would be irreparably harmed.

The test missions for specific activities such as OPTEVFOR, the Weapons Systems Evaluation Directorate, and the Aircraft Systems Directorate require the use of appropriately configured targets to accomplish their tasking. Additionally, targets configured with the various TAS/CTAS components are required from NAWCWPNS, Point Mugu to deployed sites worldwide and are mission critical, including; Pacific Missile Range Facility (PMRF), Hawaii; the Atlantic Fleet Weapons Training Facility (AFWTF), Puerto Rico; NAWCWPNS China Lake, California and White Sands Missile Range (WSMR), New Mexico; and the NAVSEA Ship Trials off the Gulf of Maine; and Wallops Island, Virginia. Appropriately configured targets are also provided, and are critical, to the operational readiness of the Fleet.

TARGET CONTROL SYSTEMS CAPABILITY

B. Yes.

B.1. Yes.

B.2. Yes. This capability provides for the design, development, installation, in-service engineering updates for all Navy Target command, control and data link systems. Without this continued capability the Navy would no longer be able to field operational Targets for Weapons System T&E or Fleet training. Since many of these programs are inter-related this capability also impacts all other services and the ultimate operational capability of the armed forces.

Target command, control and data link systems provide the direct connection between the operator and target for most target operations. Tracking and telemetry capabilities also provide information to assess target performance during and after the operations.

At a T&E test range, a target command, control and data link system functions as a subsystem of the range operations system. The target command, control and data link system not only provides the target operator with command and control (and sometimes position information) capability, it may also provide the range operations, range safety, and weapons systems engineering personnel with pertinent target information with which to make real-time operational decisions.

Target Command & Control Systems Supported:

- Integrated Target Control System (ITCS)
- Portable Radar Tracking and Control System (PRTCS)
- New Generation Target Control System (NGTCS)
- Multiple Over The Horizon Range (MOTHR)
- Multiple Aircraft GPS Integrated Command & Control (MAGIC²)
- Large Area Tracking Range (LATR)

THREAT ELECTRONIC COUNTERMEASURES SIMULATORS

B. Yes.

B.1. Yes.

B.2. Yes. The threat simulators are utilized in laboratories, with manned aircraft, and in/on unmanned targets at ranges and facilities worldwide and land-based on T&E and training ranges. Threat simulators utilized in conjunction with the aircraft, target or range are used to support the test and evaluation of virtually all DOD weapons systems. The threat simulators have also been used tactically to provide self-protection of U.S. aircraft during all conflicts since 1980.

THREAT RADAR SIGNALS SIMULATORS

B. Yes.

B.1. Yes.

B.2. Yes. The threat simulators are utilized in laboratories, with manned aircraft, and in/on unmanned targets at ranges and facilities worldwide and land-based on T&E and training ranges. Threat simulators utilized in conjunction with the aircraft, target or range are used to support the test and evaluation of virtually all DOD weapons systems.

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.*

The NAWCWPNS Point Mugu is extensively internettted with nearly 100 dedicated voice and data networks to leverage its key location and functions with other DOD ranges and facilities as well as other government agencies in the area. Use of these networks varies from real-time command control of inter-range operations (such as, Tomahawk) to exchange of range data between various ranges, exchange of air surveillance and coordination with the Federal Aviation Administration, and exchange of weather information with the National Weather Service as well as local government agencies. As a Major Range, the Sea Range also nets with other major ranges throughout the United States in support of Space Shuttle and various satellite programs.

NAWCWPNS extensive knowledge and experience with internetting has led OSD's DDR&E to designate Point Mugu as the primary West Coast site for high-data-rate internetting systems for test and evaluation.

The most noteworthy of these networks are the microwave network with the Western Space and Missile Center, Vandenberg AFB (with further connections to the Flight Test Center at Edwards AFB, China Lake, and the Utah Test and Training Range); the link with the Southern California Offshore Range; the Defense Simulation Internet; and various Navy tactical data links, i.e. links 4A, 11, 16.

The specific networks are listed below:

Joint Inter-Range Microwave System (JMS).

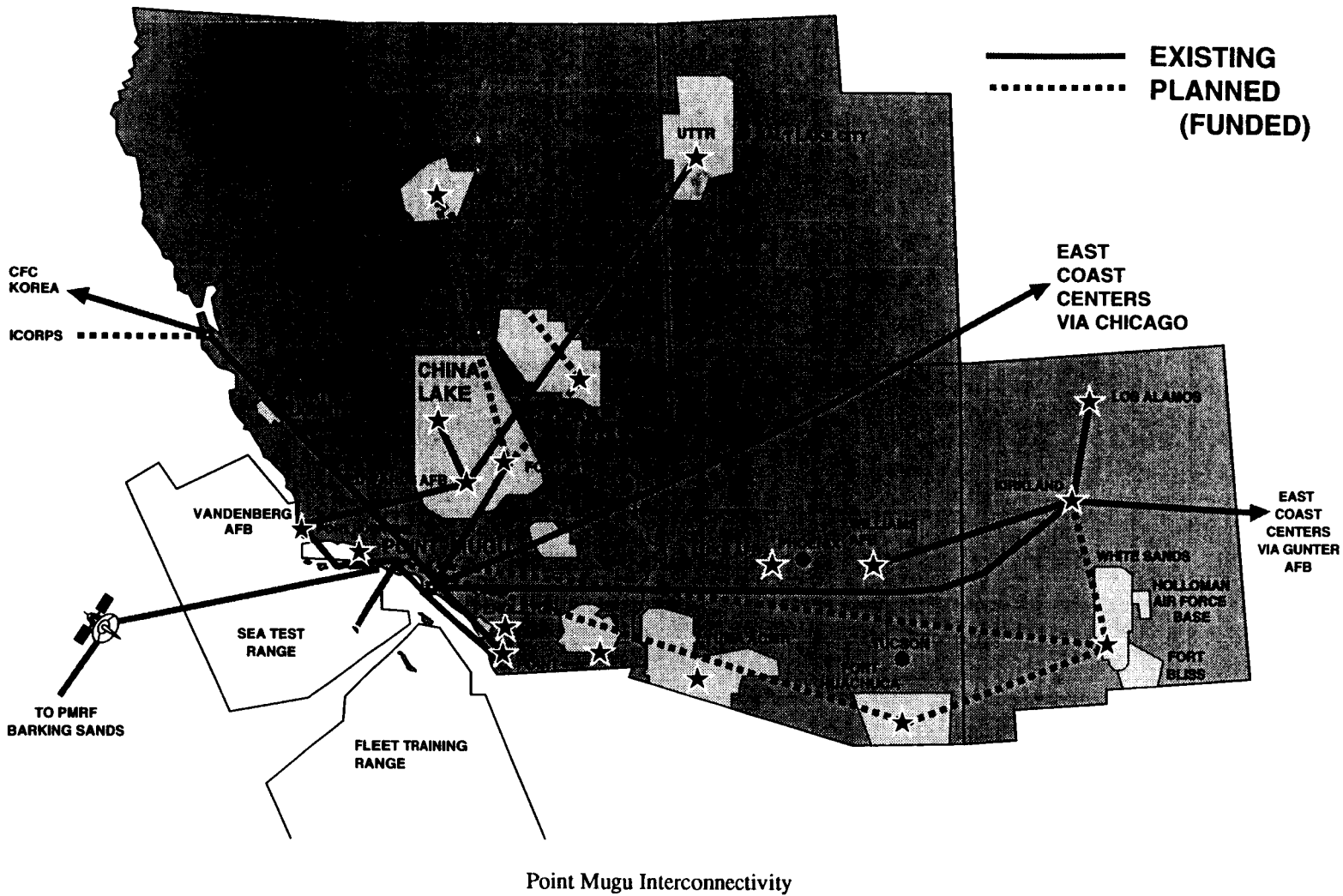
The Joint Inter-Range Microwave System is used for the major joint inter-range trunking of operational data and voice communications for linking Point Mugu, Vandenberg AFB, Edwards AFB, China Lake, and Utah Test and Training Range. This network is used continuously to pass air surveillance data between the Sea Range and Vandenberg. In addition, metric radar and telemetry data is passed from the Sea Range to Vandenberg for all satellite and ICBM launches, and command-destruct commands are passed from Vandenberg to the Sea Range. Further, for operations involving aircraft from Edwards, the data link passes the Sea Range data to Edwards. Cruise missile operations such as Tomahawk use the entire network to pass data up and down the network of ranges supporting the specific scenario. (Typically Tomahawks are launched within the Sea Range and fly to China Lake.) Potential for single node failure is less than 1%, based on historical data.

Extended Area Tracking System (EATS).

The Extended Area Tracking System (EATS) is linked to the SCORE Complex located at North Island. This network is used to pass metric tracks of air and surface vehicles on the SCORE from the Sea Range to North Island to combine with underwater tracks to provide the complete tactical "picture" of the critical ASW operations occurring at SCORE. Potential for single node failure is less than 1%, based on historical data.

Defense Simulation Internet (DSI).

The Defense Simulation Internet, intended to be a worldwide network, is sponsored by the Advanced Research Projects Agency (ARPA) and is used for distributed high-speed simulation and wargaming at simulation sites among the joint uniformed services. As an experimental network, 67 DSI nodes were implemented (one of which is at Point Mugu) in phases during 1989-1991, with expansion plans for the network to grow to as many as 86 nodes. DSI is the largest and most dispersed operational network. It is also the only network with sites outside Continental United States (CONUS). The DSI is compliant with Distributed Interactive Simulation protocols, which



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48

are based on IEEE 1278 standards and are currently being implemented as the DOD-wide standard. Potential for single node failure is less than 1%.

Tactical Data Links A and J (Links 11 and 16, Respectively).

The Sea Range supports tactical data link operations with other ranges and tactical units as follows:

- Tactical Data Link 11 connectivity with North Island and China Lake as well as all Navy Fleet ships and aircraft and Air Force Link 11-equipped aircraft.
- Tactical Data Link 16 connectivity with Naval Research and Development (NRaD) Center System Integration Facility (SIF) in San Diego. This data link is currently under development and operational testing. As it matures, this link will expand to various operational units as well as other facilities. Potential for single node failure is minimal since connectivity is via Radio Frequency (RF). RF can be very susceptible to atmospherics and thus, frequency shifts to facilitate more robust connectivity are routine.

Internetted Range Interactive Simulation (IRIS).

The Internetted Range Interactive Simulation project is funded by the Defense Modeling and Simulation Office for FY93/94. The project will internet the Sea Range's Battle Management Interoperability Center (BMIC), and China Lake's Weapons and Tactics Analysis Center (WEPTAC) and F/A-18 Weapon System Support Facility (WSSF). IRIS is using DIS protocols and will be compatible with and exploit the Defense Simulation Internet. IRIS is an experimental internet that shows great promise in supporting complex test and training operations being conducted on the Sea Range and elsewhere. This capability will be unique among DOD's test ranges. Potential for single node failure is not currently available. Assessment is scheduled for October/November 1994.

Joint Environment for Testing, Training, and Analysis (JETTA).

The JETTA project is funded by the Defense Modeling and Simulation Office for FY94/95. The project will internet key facilities from each of the three services as follows:

- Navy: Point Mugu's BMIC, NRaD's Research, Evaluation; Systems Analysis/Enhanced Naval Wargaming System and the Systems Integration Facility; China Lake's Weapons Tactics Analysis Center; and the Patuxent River EA-6B Simulator,.
- Air Force: Theater Command and Control Simulation Facility, National Test Facility, and the Real-Time Electromagnetic Digitally Controlled Analyzer and Processor.
- Army: Depth and Simultaneous Attack Battle Lab and White Sands Missile Range (WSMR).
- Other facilities include the Exercise Capability (EXCAP) and the Joint Interoperability Test Center, Fort Huachuca, Arizona.

JETTA is using DIS protocols and will be compatible with and exploit the IRIS technologies and Defense Simulation Internet. Potential for single node failure is undetermined at this time.

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

The answers to 3.1.A.1. for each of the 31 NAWCWPNS Point Mugu facilities/capabilities are as follows.

MODELING AND SIMULATION

SIMULATION AND EFFECTIVENESS CENTER

3.1.A.1. The SEC, as part of the Missile Systems Evaluation Laboratory(MSEL) with its state-of-the-art communications center, can be networked to any other facility in the United States. The center consists of digital and analog telephone lines, high bandwidth non-secure ethernet, and high-bandwidth fiber-optic secure ethernet. The laboratories that make up the facility are all interconnected on a secure network and additionally are interconnected with the Intercept Weapons Evaluation Facility laboratories that are also part of the MSEL. This interconnectivity permits transfer of data between the SEC laboratories conducting real time guidance simulations with the data reduction and lethality laboratories which performs missile telemetry analysis and end game analysis. The data is also available and interchangeable over the network to the flight test data analysis laboratory for comparison and validation with actual flight test telemetry data.

TARGET SYSTEMS MODELING AND SIMULATION CAPABILITY

3.1.A.1. The Target Engineering offices and laboratories are connected via a state of the art communications network consisting of secure fiber optic and broadband coaxial lines, various Ethernet topologies, and wireless LAN links which facilitates the sharing of video and data, and information transfer. These laboratories have non-secure lines to the Sea Test Range, China Lake supercomputer facilities, and the NAVAIR Wide Area Network (NAVWAN). Network gateways to MILNET and NAVNET provide access to DOD research agencies, universities, contractor facilities, and the Internet.

The laboratories are in the process of establishing a secure Wide Area Network (WAN) connection to the Defense Simulation Internet (DSI). The DSI connection will provide a dedicated, secure on-line link to other Modeling & Simulation efforts throughout the DOD community. DSI will enable access to the ARGUS database of validated models and facilitate distributed interactive simulation (DIS). DIS will allow the real-time participation in live T&E events by simulator-based players at remote sites.

This communication network coupled with the physical proximity of test personnel and resources facilitate the interaction of both live test and simulation operations between the evaluation planners, tester, and analysts necessary to achieve full benefits from T&E operations.

There are single-node failure paths existing with the current and proposed systems. To a great extent these problems are mitigated by the use of redundant disk based transfer systems. Failures which require the use of these systems will provide some user inconvenience, but are judged to prevent any significant down-time delays (Certainly no operational impacts would arise).

MEASUREMENT

AIRBORNE INFRARED MEASUREMENTS CAPABILITY

3.1.A.1. There is no requirement for this facility to perform real-time or near-real-time exchange of data or control. Facility is used by Air Force for testing developmental expendables for the F-22 program and for surveillance testing of production decoy flares.

BISTATIC RADAR REFLECTIVITY LABORATORY

3.1.A.1. There is no requirement for this facility to perform real-time or near-real-time exchange of data or control. NAWCWPNS directorates, triservice agencies and DOD contractors are supported in the definition and diagnostic analyses of radar signatures for weapons system development, planning and analyses of flight-test operations, and for engagement/encounter simulations. Support is also provided for survivability analyses and development and production testing of low-observable vehicles.

ELECTROMAGNETIC ENVIRONMENT EFFECTS LABORATORY

3.1.A.1. There is no requirement for this facility to perform real-time or near-real-time exchange of data or control. The laboratory was the first DOD facility certified by the National Institute of standards and Technology (NIST) in 1989. Working with the ACCB, the section conducts ground tests, laboratory test, or analysis on all modifications of air vehicles to fulfill SOF requirements. The section provides extensive EMC analysis, test, and measurement services to prevent and resolve EMI problems to the Western Area Frequency Coordinator (WAFC).

ENVIRONMENTAL TEST FACILITY

3.1.A.1. There is no requirement for this facility to perform real-time or near-real-time exchange of data or control. All the environmental test equipment is used to support multiple uses and in multiple programs. DALT is the only facility that can induce the stresses of captive flight maneuvers inertially, both vector and angular. Inducing stresses inertially is essential when the stresses of concern are caused by internal body forces, e.g., in the bonding of rocket motor grains.

MONOSTATIC RADAR REFLECTIVITY LABORATORY

3.1.A.1. There is no requirement for this facility to perform real-time or near-real-time exchange of data or control. NAWCWPNS directorates, triservice agencies and DOD contractors are supported in the definition and diagnostic analyses of radar signatures for weapons system development, planning and analyses of flight-test operations, and for engagement/encounter simulations. Support is also provided for survivability analyses and development and production testing of low-observable vehicles.

READY MISSILE TEST FACILITY

3.1.A.1. There is no requirement for this facility to perform involved real-time or near-real-time exchange of data or control. This is the only facility that can reproduce the stresses of captive flight environments on live all-up-rounds, both dynamically (acoustics and shakers) and temperature. Inducing field stresses in this manor are essential when the desire is to measure the production reliability of tactical missiles prior to field usage.

RELIABILITY TEST FACILITY

3.1.A.1. There is no requirement for this facility to perform real-time or near-real-time exchange of data or control. This type of environmental simulation is unique to DOD and not performed any where else. This is the only facility that can reproduce the stresses of captive flight environments, dynamically (acoustics and shakers), thermally, and functionally. Inducing field stresses in this manor are essential when the desire is to measure the production reliability of weapons prior to field usage.

SEA LEVEL CLIMATIC CHAMBER

3.1.A.1. There is no requirement for this facility to perform real-time or near-real-time exchange of data or control. The Sea Level Chamber, with a testing volume of nearly 100,000 cubic feet, is the largest climatic test facility on the west coast of the United States.

SUPPORT EQUIPMENT ENGINEERING AND TEST COMPLEX

3.1.A.1. There is no requirement for this facility to perform real-time or near-real-time exchange of data or control.

TELEMETRY/TEST ARTICLE INSTRUMENTATION

3.1.A.1. There is no requirement for this facility to perform real-time or near-real-time exchange of data or control.

INTEGRATION LABORATORY**ELECTRONIC WARFARE COUNTERMEASURES SYSTEMS CAPABILITY**

3.1.A.1. The capability exists for external exchange of data to other on-base and off-base facilities via secure and nonsecure nets in both real-time and near-real-time modes. Physically close proximity to and working relationship with personnel and facilities of the warning systems capability and the Electronic Combat Simulation Evaluation Laboratory (ECSEL) provide for effective integration and testing of electronic warfare suites. Electronic mail and local area computer networking provide effective work linkages for EW suite integration and project management.

EW/RADAR SUPPORT EQUIPMENT

3.1.A.1. The capability exists for external exchange of data to other on-base and off-base facilities via secure and nonsecure nets in both real-time and near-real-time modes. The T&E facility is configured to support multiple Navy aircraft systems. It can be reconfigured to support helicopters and aircraft from all branches of the service.

INFORMATION WARFARE SYSTEMS LABORATORY COMPLEX

3.1.A.1. The lab is currently connected in a secure point to point environment with Austin, TX, Fairfax, VA, the NAWCWPNS China Lake Precision Strike Lab, the EA-6B Lab, and the NAWCWPNS Battle Management Interoperability Center (BMIC) supplying requested Intel information required for local T&E efforts. In addition, IWS personnel are working with Range personnel to provide a networked modeling and simulation capability in support of future T&E efforts. This capability will create a "virtual" range with the flexibility to seamlessly integrate real and simulated exercises over the national Defense Simulation Internet.

INTERCEPT WEAPONS EVALUATION FACILITY

3.1.A.1. IWEF, as part of the MSEL, through its state-of-the-art communications center can be networked to any other facility in the United States. The center consists of digital and analog telephone lines, high bandwidth wire non-secure ethernet, and high-bandwidth fiber-optic secure ethernet. The laboratories that make up the facility are all interconnected on a secure network and additionally are interconnected with the Hardware-In-The Loop (HITL) laboratories that are also part of the MSEL. This interconnectivity permits transfer of data between the HITL laboratories conducting real time guidance simulations with the data reduction and lethality laboratories which performs missile telemetry analysis and end game analysis. The data is also available and interchangeable over the network to the flight test data analysis laboratory for comparison and validation with actual flight test telemetry data.

LASER AND STABILIZED OPTICS

3.1.A.1. Configured for interconnection by standard video, common Novell configurations, and custom T1 type data paths.

WARNING AND SURVEILLANCE SYSTEMS CAPABILITY

3.1.A.1. Specialized EW system/suite test and integration support is accomplished in the ECSEL and F-14 labs in support of development and in-service tasking. Specialized support in the EWIL/HARM and F/A-18 WSSL integration labs at China Lake is essential. Internal electro-

optical, software development, hardware-in-the-loop, and integration labs are essential for development testing. The capability exists for external exchange of data to other on-base and off-base facilities via secure and nonsecure nets in both real-time and near-real-time modes. Operational requirements for external data exchange in FY 93 represented less than 1% of total workload.

WSSA, F-14

3.1.A.1. Multiple high-speed encrypted links are available from 9600 to 10 Mb/sec to other sites, with the capability to rapidly bring other sites up to receive encrypted data using data-compression on STU-III's. Currently software development transfers occur between two F-14 prime contractor facilities and the WSSA for Operational Flight Software development using this method. Permanent land lines exist for T-1 access to this facility and are currently being used for JTIDS testing, along with STU-III's for voice communications with NRAD, San Diego. The ability to utilize encrypted DIS (Distributed Interactive Simulations) protocols at 10 Mb/sec on the DSI (Defense Simulations Internet) was developed for use in the HYDY project and is being made available for the Joint Advanced Distributed Simulation (JADS) project for its interoperability demonstrations.

WSSL, EA-6B

3.1.A.1. The EA-6B Weapons System Support Laboratory (WSSL) is currently connected in a secure point to point environment with the Information Warfare Systems (IWS) laboratory complex at NAWCWPNS, Point Mugu. Intelligence data, as well as ESM data collected during EA-6B laboratory simulated flights are transmitted in real-time to IWS data fusion terminals. This capability is required to support T&E efforts for Marine Corps specific configurations. The Electronic Warfare Data Support (EWDS), which has the ability to receive and utilize intelligence data from DMA, NID, MIIDS/IDB, EWIR/Kilting, and EPL shares this engineered and non-engineered electronic data with the Electronic Countermeasure Systems and RWR/ESM Systems facilities.

HARDWARE-IN-THE-LOOP

ELECTRONIC COMBAT SIMULATION AND EVALUATION LABORATORY (ECSEL)

3.1.A.1. The high-fidelity closed loop simulations are indoor versions of the Naval threat simulators located at the Electronic Combat Range at NAWCWPNS China Lake. These simulators have been, in most cases, developed jointly to ensure compatibility between sites. Although real-time data links do not presently exist, data sharing is possible between the HITL at Point Mugu and the OAR at China Lake.

The ECSEL Facility includes a support station for U.S. Navy TACAIR and ESM suites. This provides short turnaround test times needed for In-Service Engineering during crisis situations. Support stations also exist for some U.S. Army EW suites and the CARAPACE RWR for F-16 aircraft sold to foreign countries.

MISSILE HARDWARE IN THE LOOP FACILITY

3.1.A.1. The HITL Facility, as part of the Missile Systems Evaluation Laboratory (MSEL) with its state-of-the-art communications center, can be networked to any other facility in the U.S. The system consists of digital and analog telephone lines, high-bandwidth nonsecure ethernet, and high-bandwidth fiber-optic secure ethernet. The laboratories that make up the facility are all interconnected on a secure network and additionally are interconnected with the Intercept Evaluation Facility laboratories that are also part of the MSEL. This interconnectivity permits transfer of data between the HITL laboratories conducting real-time guidance simulation with the data reduction and lethality laboratories which perform missile telemetry analysis and end game

analysis. The data are also available and interchangeable over the network to the flight test data analysis laboratory for comparison and validation with actual flight test telemetry data.

STRIKE WEAPONS EVALUATION FACILITY

3.1.A.1. Data products from these laboratories are combined and used to evaluate overall weapon system performance. Physical interconnectivity of the laboratories is generally restricted to low bandwidth data and communications circuits. A direct link between the SWEF and the NSWCPHD's Harpoon Engineering Test Facility allows direct downloading of surface launch platform missile initialization data into the Harpoon Digital Simulation and allows evaluation of the complete weapon system. The Santa Cruz Lab, located 150 feet above sea level overlooking the inner sea test range and the Santa Cruz Acoustic Range, allows joint usage of targets being tested at the Santa Cruz Radar Imaging Facility.

The Facility continues to upgrade network capability, currently completing installation and expansion of a Video Teleconference capability leading to a secure facility for VTC of classified Department projects.

The VTC uses a high-speed digital telecommunications network based on a PacTel System 4000. The System 4000 generates analog video and audio signals. These signals are digitized and finally compressed for transmission to a separate KG-194A digital encryption unit. The resulting signal is transmitted over a standard AT&T T1 data line. The reverse process is used for received digital VTC data. The VTC facility consist of two monitors, a remote pan-tilt-zoom camera, a document camera, and a VHS and UMATIC VCR.

OPEN AIR

AERIAL TARGETS COMPLEX

3.1.A.1. A physical/electronic interconnect for target systems engineering is provided to the Weapons Hardware in the Loop Laboratories (AMRAAM, PHOENIX, SPARROW) for developing target modeling simulations and models; to the Radar Reflectivity Laboratory for radar cross section measurement critical to the target/threat validation process; and between the Integrated Target Control System Laboratory, Target System Development Laboratory, Software Validation/Verification facility and Operator Training Simulator facility for target and target system design, development, test and evaluation, and training.

Electronic data interconnect for target logistics management between Point Mugu and Field Service Representatives at Norfolk, VA; Radar Bomb Scoring Unit, Spokane WA; Naval Air Facility, Kadina, Okinawa; Naval Air Station Sigonella, Italy; and NAB Little Creek, VA. Additionally documentation and support services are linked to China Lake, CA; Dugway Proving Grounds, UT; Aberdeen, MD; Eglin, FL; White Sand, NM; Wallops Island, VA; Pacific Range Missile Facility, HI; Atlantic Fleet Training Facility, PR; and Yuma, AZ.

The Aerial Target and Surface Target Complexes, Target Control Systems Capability, Target Augmentation Systems Capability, Target Support Aircraft Capability, Target Systems Modeling and Simulation Capability, and the Target Spectral Signatures Capability are all interconnected via electronic capabilities and physical (location) interconnect. The synergism of physical location as well as the electronic interconnect provide a capability unmatched any where in the world for providing the triservice needs in development, acquisition and production of all missile, and sub-scale targets and for life-cycle support management of all target systems within the Navy. This target capability is unique in that it has the personnel resources, geography, airspace and open ocean available to provide the full spectrum engineering service. It has deep water harbor facilities for seaborne targets at Port Hueneme, 125,000 square miles of instrumented sea range and airspace to conduct test and evaluation, aircraft runway and instrumentation facilities both at Point

Mugu and San Nicolas Island, as well as target ground and air launch facilities which when combined provide a one of a kind facility unique in the world.

AIRCRAFT OPERATIONS AND MAINTENANCE CAPABILITY

3.1.A.1. No requirement exists for this facility to perform real-time or near-real-time exchange of data or control.

SEA TEST RANGE

3.1.A.1. Currently, 49% of NAWCWPNS Point Mugu's operational hours require real-time exchange of data with other facilities. As noted above, the principal networks have been with the Joint Inter-range Microwave System and the Extended Area Test System, which are used almost continuously.

Joint Inter-range Microwave System (JMS).

While connectivity through JMS is with Vandenberg AFB, Edwards AFB, China Lake, and Utah Test and Training Range, our FY93 use was primarily with Vandenberg. About 9% of the Sea Range operational hours included this network. All activities were simultaneous and external to the site.

Extended Area Tracking System (EATS).

Connectivity to the Southern California Offshore Range (SCORE) Complex at North Island is used daily for up to 12 hours. As a function of total operations conducted by the Sea Range, this amounts to 31% of the operational hours. All activities are simultaneous and external to the site.

Defense Simulation Internet (DSI).

Connectivity to various combinations of the 67 networked nodes supported such projects such as the Highly Dynamic Vehicle (HYDY) Project and COMPASS, and supporting demonstrations such as Marine Corps Modeling and Simulation Management Office (MCMSSMO). To date, all use of DSI has been experimental demonstrations and has been a negligible portion of the total workload. All activities are simultaneous and external to the site.

Tactical Data Links A and J (Link 11 and 16 respectively).

Point Mugu's tactical data links (TADIL) are capable of linking with a myriad of platforms. Link 11 or TADIL A is primarily with DON surface vessels and a few select Navy and Air Force aircraft. This linkage is automatic when these platforms operate on the Sea Range and represents 9% of the total operational hours. The links with North Island, San Diego, are continuous, providing the air surveillance picture from the south. Link 16 or TADIL J is a tactical data link that will facilitate RF linking with all service Command and Control platforms that have a TADIL J or Link 16 host terminal. All activities are simultaneous and external to the site.

Internetted Range Interactive Simulation (IRIS).

IRIS has the capability through its connectivity with DSI to internet with the 85 nodes programmed in the DSI project. Additionally, IRIS architecture will be exploited in the follow-on Defense Modeling and Simulation Office funded project JETTA, connecting even more facilities, some of which are not scheduled to be connected to the DSI. Since these projects are still evolving, workload data is unavailable.

All activities are simultaneous and are primarily external to the site. The exceptions are the Tactical Mission Planning Lab at Point Mugu and F-14D System Integration Test Station (SITS), which are located within the Point Mugu facility.

Target Augmentation Systems Capability

3.1.A.1. Yes. Targets are remote controlled using TAS/CTAS Integrated Target Control Systems (ITCS), VEGA and UHF system which provide command control, telemetry and tracking capability. The TAS/CTAS installed in every target provides that target with this needed capability. These systems are interconnected to Point Mugu, Channel Islands, San Nicolas Island and Laguna Peak through microwave and fiber optics thus extending range, control and data collection capabilities. These resources are also available at China Lake, Puerto Rico, Pacific Missile Range Hawaii and Wallops Island providing a common interconnect for target services. TAS/CTAS Radar tracking, telemetry, navigation and communications linkages between Point Mugu, Vandenberg Air Force Base, Edwards Air Force Base, China Lake, Channel Islands, Laguna Peak and San Nicolas Island are used via fiber optics and microwave for real time position display and post operation data reduction. Electronic data interconnect for TAS/CTAS logistics management between Point Mugu and Field Service Representatives at Norfolk, VA; Radar Bomb Scoring Unit, Spokane WA; Naval Air Facility, Kadina, Okinawa; Naval Air Station Sigonella, Italy; and NAB Little Creek, VA. Additionally documentation and support services are linked to China Lake, CA; Dugway Proving Grounds, UT; Aberdeen, MD; Eglin, FL; White Sand, NM; Wallops Island, VA; Pacific Range Missile Facility, HI; Atlantic Fleet Training Facility, PR; and Yuma, AZ.

Threat Electronic Countermeasures Simulators

3.1.A.1. Less than 1% of the total FY93 workload of this facility involved real-time or near-real-time exchange of data or control.

Threat Radar Signals Simulators

3.1.A.1. Less than 1% of the total FY93 workload of this facility involved real-time or near-real-time exchange of data or control.

Surface Targets Complex

3.1.A.1. Yes. Targets are remote controlled using the Integrated Target Control Systems (ITCS), VEGA and UHF system which provide command control, telemetry and tracking capability. These systems are interconnected to Point Mugu, Channel Islands, San Nicolas Island and Laguna Peak through microwave and fiber optics thus extending range, control and data collection capabilities. These resources are also available at China Lake, Puerto Rico, Pacific Missile Range Hawaii and Wallops Island providing a common interconnect for target services. Radar tracking, telemetry, navigation and communications linkages between Point Mugu, Vandenberg Air Force Base, Edwards Air Force Base, China Lake, Channel Islands, Laguna Peak and San Nicolas Island are used via fiber optics and microwave for real time position display and post operation data reduction.

The Port Hueneme harbor facilities provides a physical interconnect to the Sea Test Range at Point Mugu for seaborne targets and with the Port Hueneme Division Naval Surface Warfare Center for development, test and operation of the Self Defense Test Ship facilities which are unique to the NAWCWPNS Sea Test Range. This linkage is vital to the proposed Ballistic Missile Defense Office (BMDO) use of seaborne targets.

A physical/electronic interconnect for target systems engineering is provided to the Weapons Hardware in the Loop Laboratories (HARPOON, TOMAHAWK, SLAM) for developing target modeling simulations and models; to the Radar Reflectivity Laboratory for radar cross section measurement critical to the target/threat validation process; and between the Integrated Target Control System Laboratory, Target System Development Laboratory, Software Validation/Verification facility and Operator Training Simulator facility for target and target system design, development, test and evaluation, and training.

Electronic data interconnect for target logistics management between Point Mugu and Field Service Representatives at Norfolk, VA; Radar Bomb Scoring Unit, Spokane WA; Naval Air Facility,

Kadina, Okinawa; Naval Air Station Sigonella, Italy; and NAB Little Creek, VA. Additionally documentation and support services are linked to China Lake, CA; Dugway Proving Grounds, UT; Aberdeen, MD; Eglin, FL; White Sand, NM; Wallops Island, VA; Pacific Range Missile Facility, HI; Atlantic Fleet Training Facility, PR; and Yuma, AZ.

Harbor facilities at Port Hueneme, Ca provide ready access to NAWCWPNS Sea Test Range at Pt Mugu, Ca. Links with NAWCWPNS China Lake for ARM target resources. Working with PHD NSWC to develop, support, and operate the Self Defense Test Ship (SDTS). SDTS, as a remotely-controlled ship to test shipboard weapon systems is a unique test asset located here for access to the NAWCWPNS Sea Test Range. Proposed as lead activity for seaborne launch of targets to evaluate BMDO systems.

Target Control Systems Capability

3.1.A.1. Targets are remote controlled using the Integrated Target Control Systems (ITCS), VEGA and UHF system which provide command control, telemetry and tracking capability. These systems are interconnected to Point Mugu, Channel Islands, San Nicolas Island and Laguna Peak through microwave and fiber optics thus extending range, control and data collection capabilities.

-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.

SEA TEST RANGE.

The Point Mugu site facility the closure of which would most significantly impact on interconnectivity with other facilities is the Sea Test Range. There would be significant impact on Vandenberg AFB, NAWCWPNS China Lake, and Third Fleet. The most critical internets are the microwave to Vandenberg, China Lake, and UTTR and the network with the Southern California Offshore Range. The closure of the Sea Range would have severe negative impacts.

Joint Inter-range Microwave System (JMS).

Point Mugu sends critical range safety data such as Time Space Position Information (TSPI), fused from radar, Extended Area Test System (EATS), and some telemetry to Vandenberg and China Lake in support of projects such as Space Shuttle, polar-orbital satellite launches (e.g., Titan IV, Scout), Tomahawk Cruise Missile Land Attack Missile test flights, Intercontinental Ballistic Missile, (Minuteman III, Peacekeeper), and routine daily operations taking place in Warning Area 532/283/285. Additionally, command-destruct commands are issued via this network, which directly impact Range Safety. Without these data, these operations could not be conducted without a considerable expense to develop alternative instrumentation sites elsewhere in Southern California.

Extended Area Test System (EATS).

The EATS data network to the SCORE Complex is critical in that the data provided is TSPI data for surface and air vehicles for which there is no present alternative source available.

The SCORE Range conducts ASW training for the Fleet in Southern California as well as smaller/special operational training. Fleet readiness would be severely negatively impacted without surface and air tracks from the Sea Range. (Loss of this capability would result in a shortfall in the ASW arena, with regard to tactics development, training, and testing, as the EATS capability provides the "other two thirds" of the "big picture" at the SCORE Complex).

Defense Simulation Internet (DSI).

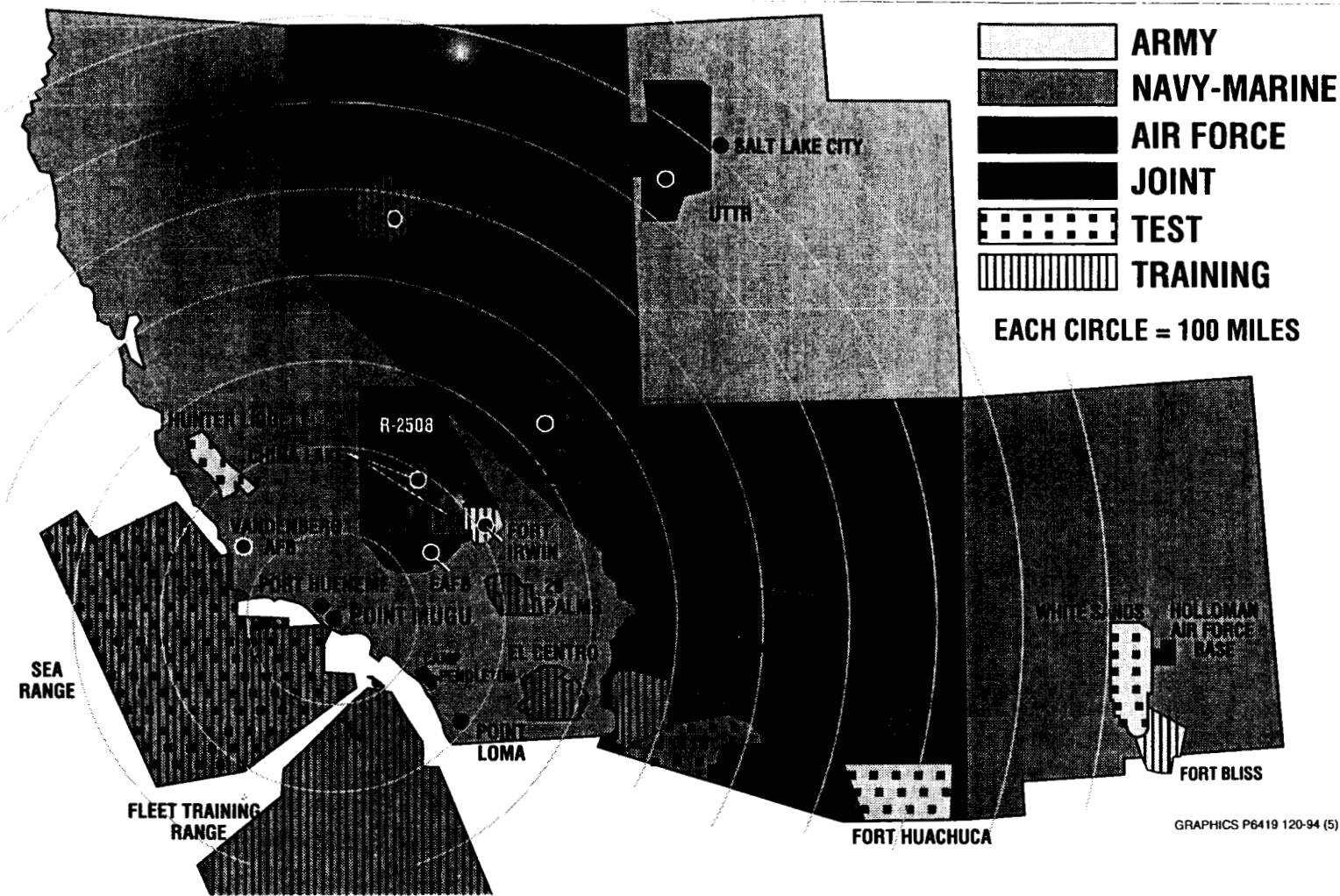
The impact of the loss of DSI is undetermined in that while DOD is investing millions of dollars in this technology in anticipation of significant savings, the demonstrated savings have yet to occur. Point Mugu has already demonstrated utility of the DSI through the HYDY Project, an ARPA sponsored project, which will also mutually exploit technologies such as Internetted Range Interactive Simulation (IRIS) and Joint Environment for Testing, Training, and Analysis (JETTA), both Defense Modeling and Simulation Office sponsored projects, through technologies such as the DSI. The DSI gives Point Mugu a unique capability in that as a test range we can support more operationally realistic tests. In other words, we can now conduct testing in a distributed fashion, bringing all of the critical elements of the test to a "common battlefield" with technologies such as the DSI.

Tactical Data Links A and J (Link 11 and 16 respectively).

These tactical data links are at the Sea Range for internetting with tactical units using the Sea Range for training. If the Sea Range were closed, removal of this capability would not adversely affect the daily flow of operations as these units would link elsewhere.

AERIAL TARGETS COMPLEX.

If the Aerial Targets complex were closed, the Point Mugu Sea Test Range would be severely impacted. T&E of all air-to-air and surface-to-air missiles, shipboard and airborne gun systems,



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and fighter aircraft weapons systems would be eliminated. Additionally, since the Point Mugu target facility provides all of the target services at the China Lake land range, the above T&E operations would also be eliminated at that facility. Since the Point Mugu Targets facility functions as the lead activity for development, operation, and logistical support of all Navy aerial targets at all Navy test and training ranges, closure of the Point Mugu facility would severely impact test and training operations at White Sands Missile Range (WSMR), Pacific Missile Range Facility (PMRF), Atlantic Fleet Weapons Training Facility (AFWTF) and the Gulf of Maine operating area. In particular, AQM-37 and MQM-8 target operations at WSMR and PMRF, QF-4 and AQM-37 target operations at AFWTF, and air-launched BQM-74 target operations in the Gulf of Maine would be eliminated, and all of the current engineering, operations, and logistical support of other target activities at those facilities would cease.

SURFACE TARGETS COMPLEX.

This facility/capability is unique within DOD, the U.S. Government and the U.S. It is a one-stop-shopping-center for targets; that is, it provides for the complete life cycle management of target systems. This capability includes full-spectrum engineering support (acquisition, T&E, production, in-service, phase out), world wide operational services, and cradle to the grave logistics management services. The inventory of targets both in number and types, is unmatched anywhere and includes seaborne boats, combatant ship replicas, towed targets, and land targets. Additionally, all target auxiliary/augmentation systems are provided by this facility, including target control systems, payloads, and advanced target systems. It has the capability, as well as the responsibility, through the Local Engineering Change process to provide target modifications to satisfy customer unique requirements (i.e. performance, radar cross section, electronic countermeasures, infrared, infrared countermeasures, payloads, and maneuvering.) This capability is uniquely chartered by the seaborne targets seaborne targets manager of the Naval Sea Systems Command. No other target organization of this magnitude or capability exists anywhere in the world. Port Hueneme provides required conventional and deep-water berthing.

TARGET AUGMENTATION SYSTEM CAPABILITY.

If the TAS/CTAS did not exist, the target requirements that are mission essential would not be met. The impact of having no appropriately configured targets available would be devastating DOD-wide, and most specifically on activities that require TAS/CTAS support from NAWCWPNS Point Mugu such as Pacific Missile Range Facility (PMRF), Hawaii; the Atlantic Fleet Weapons Training Facility (AFWTF), Puerto Rico; NAWCWPNS China Lake, California and White Sands Missile Range (WSMR), New Mexico; the NAVSEA Ship Trials off the Gulf of Maine; and Wallops Island, Virginia. This loss of TAS/CTAS configured targets would also have a dramatic impact on the operational readiness of the Fleet.

TARGET CONTROL SYSTEM CAPABILITY.

The Targets Systems Department provides in-service engineering support of target command, control, and data link systems to Navy T&E and training ranges with software, hardware, and logistics engineering services that are essential to the operational success of the missions of these test ranges.

Major DOD Range Sites:

Point Mugu Sea Test Range:

Point Mugu main site, Channel Islands, San Nicolas Island and Laguna Peak

China Lake Range Complex

Puerto Rico Range (AFWTF)

Pacific Missile Range Hawaii

Wallops Island

Since the Target command, control, and data link systems form a part of the total Target System package all Target engineering efforts at the NAWCWPNS would be impacted.

TARGET MODELING AND SIMULATION CAPABILITY.

The Target modeling and simulation capability supports the NAWCWPNS Target Systems Department in all facets of target design, development, in-service engineering, and operations. If this capability were closed, those activities who are the users of these services would sustain serious impacts on their independent ability to accomplish their full mission requirements. In essence, the capability would have to be performed either in its component parts or by establishing a new organization to accomplish these needed functions.

A secondary impact would occur to the following facilities which provide support to the target modeling and simulation capability and would no longer have target modeling and simulation as a sponsor for their full line of capabilities.

- RADAR Cross Section measurement facility
- EO measurement laboratories and flight measurement systems
- Availability of captive and free flight target operations and testing capability
- Specialized instrumentation development capability
- Specialized computer, instrumentation and LAN maintenance and calibration capability

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

Current and planned status of the 31 NAWCWPNS Point Mugu facilities/capabilities are shown in the Facility Condition forms contained in Appendix A, Tabs 1 through 31.

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ACTIVITY UIC: 63126

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.*

Personnel at the Point Mugu site are regular participants in local planning efforts and are successful in presenting Navy concerns. Site personnel have developed good relations with local communities, governing agencies, and landowners. As a result, potential environmental issues are usually resolved favorably.

Main Base.

Wetland and endangered-species issues are generally limited to usable beach areas (seasonally) and some open areas on the base. However, beach operations are extremely rare here and are only a very minor part of our test program. Other operations are usually sited at existing facilities.

San Nicolas Island.

Marine-mammal and endangered-species issues have limited usable beach areas around the island. However we only perform about one test operation per year on island beaches, and with proper scheduling, there have been no operational conflicts.

Santa Cruz Island

The island is administered by the Nature Conservancy, the Channel Islands National Park, and private parties. The 10 acres leased by the Navy for critical range instrumentation (i.e., microwave relay linking Point Mugu with Vandenberg; the surface surveillance radar, and RF communications systems) as well as the SCRIF are closely controlled under the lease agreement. All Navy personnel must stay within the complex or on the roadways to the pier to minimize environmental impact.

- **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.*

It is estimated that an 200% increase in testing could be performed on the over-water portion of the Sea Test Range before local authorities would become concerned with environmental issues. There are no set limits to workload actually performed on the main base and San Nicolas Island, assuming ecologically-sensitive areas continue to be avoided.

- **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 have a number of voluntary agreements that deal with various natural resource concerns. These agreements have no expiration date and are not critical for continued operations.

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

Based on U. S. Census Bureau data, estimates for population are as follows.

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.*

Personnel at the Point Mugu site are regular participants in local planning efforts and are successful in presenting Navy concerns. Site personnel have developed good relations with local communities, governing agencies, and landowners. As a result, potential environmental issues are usually resolved favorably.

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Santa Cruz Island

The island is administered by the Nature Conservancy, the Channel Islands National Park, and private parties. The 10 acres leased by the Navy for critical range instrumentation (i.e., microwave relay linking Point Mugu with Vandenberg; the surface surveillance radar, and RF communications systems) as well as the SCRIF are closely controlled under the lease agreement. All Navy personnel must stay within the complex or on the roadways to the pier to minimize environmental impact.

- **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.*

It is estimated that an 200% increase in testing could be performed on the over-water portion of the Sea Test Range before local authorities would become concerned with environmental issues. There are no set limits to workload actually performed on the main base and San Nicolas Island, assuming ecologically-sensitive areas continue to be avoided.

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We have a number of voluntary agreements that deal with various natural resource concerns. These agreements have no expiration date and are not critical for continued operations.

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

The U. S. Census Bureau does not have information available in the format requested; however, populations exceed 2 million within a fifty-mile radius including the large cities of Oxnard, Ventura, Santa Barbara, Thousand Oaks, Simi Valley, Santa Clarita, Santa Monica, West

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50 mile radius	700,000 to 10 million
100 mile radius	10 to 17 million
150 mile radius	14 to 21 million
200 mile radius	19 to 21 million (portions of Mexico not included)

- **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.*

Sea Space.

Except for the Naval Surface Restricted Area that surrounds San Nicolas Island (extending from the high-water mark to 3 miles off shore), the public has complete access to the sea areas within the Sea Range. There is one commercial shipping route that transits the Range. Pleasure craft frequent the coastal area and northern Channel Islands but usually not within hazardous testing areas. Site personnel have developed a good relationship with the local commercial and sport fishing communities. A recorded phone message system has been established to inform local fishing and commercial interests of the schedule for hazardous range operations. Commercial and sport fishing and commercial shipping traffic usually cooperate in clearing hazardous areas and, when necessary, the Sea Range's large size usually allows movement of hazard patterns to avoid surface craft.

Air Space.

Other than the Restricted Airspace Areas over Point Mugu (R-2519) and over SNI (R-2535A and R-2435B), the public has complete access to all airspace within the Sea Range boundaries. Aircraft may transit through restricted airspace with prior permission from the controlling agency. There are five FAA corridors that cross the Sea Range from west to east. These Control Area Extensions (CAEs) are designated CAE-1155, -1176, -1316, -1318, and -1177. Two of these CAEs must remain open at all times to facilitate the flow of trans-Pacific air traffic. (NAWCWPNS can close any three through a joint scheduling agreement with the FAA. When not in use for range activities they are released to the FAA.) The Pacific Offshore Route and the Pacific Route Airspace cross twenty miles of the Inner Sea Test Range and are released to Los Angeles Air Route Traffic Control Center when not required for test operations.

Land Space.

No access is permitted to the land areas managed by the Navy. Landing on San Nicolas Island is permitted only in the event of a life-threatening emergency, i.e., ship on fire or in danger of sinking. San Miguel is a Navy-owned island but is managed by the Park Service, and no entry is permitted except with a Park Service escort. The Point Mugu beaches are closed (except for two) to all personnel, including station personnel, because an abundance of environmentally sensitive areas exist. These areas are managed jointly by Point Mugu environmental personnel and State Fish and Game and California Coastal Commission personnel.

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

None. Operations are scheduled to avoid the 2 or 3 days of the Point Mugu air show and the 3 days of the Channel Islands Harbor Sailing Regatta.

- **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?*

NAWCWPNS found it necessary to cancel or prematurely terminate 9 out of 1,407 firing operations (FY92) and 5 out of 1,300 firing operations (FY93) due to the presence of civilian ocean vessels within the safety hazard area.

64R (25 August 1994)

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Hollywood, Culver City, and the many cities of the San Fernando Valley. Within a 200-mile radius, populations would encompass most of the Southern California area, which would total over 17 million people.

- **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.*

Sea Space.

Except for the Naval Surface Restricted Area that surrounds San Nicolas Island (extending from the high-water mark to 3 miles off shore), the public has complete access to the sea areas within the Sea Range. There is one commercial shipping route that transits the Range. Pleasure craft frequent the coastal area and northern Channel Islands but usually not within hazardous testing areas. Site personnel have developed a good relationship with the local commercial and sport fishing communities. A recorded phone message system has been established to inform local fishing and commercial interests of the schedule for hazardous range operations. Commercial and sport fishing and commercial shipping traffic usually cooperate in clearing hazardous areas and, when necessary, the Sea Range's large size usually allows movement of hazard patterns to avoid surface craft.

Air Space.

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NAWCWPNS found it necessary to cancel or prematurely terminate 9 out of 1,407 firing operations (FY92) and 5 out of 1,300 firing operations (FY93) due to the presence of civilian ocean vessels within the safety hazard area.

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.*

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

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

Answers to the above three specialized facilities/targets questions for each of the 31 NAWCWPNS Point Mugu facilities/capabilities are as follows.

MODELING AND SIMULATION

SIMULATION AND EFFECTIVENESS CENTER

D.1. No.

D.2. No.

D.2.A. No.

TARGET SYSTEMS MODELING AND SIMULATION CAPABILITY

D.1. Yes. The following facilities and laboratories provide support to the target modeling & simulation capability. This support ranges from primary source data to the capabilities necessary to determine the adequacy of the target modeling & simulation efforts.

- RADAR Cross Section measurement facility
- EO measurement laboratories and flight measurement systems
- Availability of captive and free flight target operations and testing capability
- Specialized instrumentation development capability
- Specialized computer, instrumentation and LAN maintenance and calibration capability

In addition to these specialized activities the target modeling & simulation capability needs the general support required to design, instrument and conduct target operations necessary for the verification and validation of the simulation efforts. These target operations require telemetry data collection/reduction facilities, frequency management facilities, geophysics facilities, Integrated Target Control System facilities, a wide array of specialized Test Range facilities, including; range aircraft, recovery vehicles, instrumentation systems, communication systems, and Cyber computer center. Associated testing requires anechoic chamber facilities, environmental chamber/labs, and explosive ordnance handling, storage, and disposal facilities. Current technology would also dictate the need for highly specialized hardware-in-the-loop laboratory facilities and specialized calibration laboratory facilities for the verification/validation of all target test results.

D.2. Yes. The majority of target modeling & simulation use is for standard Targets. However the modeling & simulation efforts are a small, but even more important aspect of specialized target use. This is because without a large experience base these specialized targets must rely on modeling and simulation to an even greater extent than for standard targets. This area looks at the modeling and simulations appropriate to such specialized targets as the Sett 8, SSN2D, AQM-37C, AQM-34L/M, BQM-34E, BATS, QF-4N, and the self propelled target ship. These targets are peculiar to Point Mugu and are provided in response to unique COMOPTEVFOR and NAVSEA test requirements as well as weapons system and Fleet requirements. These requirements are dynamic in nature and required constant reconfiguration (redesign) of targets and their augmentation

systems to meet one-time or limited specific need. Modeling & simulation also requires specialized instrumentation and data systems for existing targets to verify the adequacy and accuracy of these models and simulations.

D.2.A. Yes. The specialized targets are validated through the Naval Acquisition process, Weapon System Operational Requirement Documents, Weapons Systems Test and Evaluation Master Plans, by Weapons Systems use and in the near future by a well defined process for Threat/ Target Validation (see below) which this capability helps develop.

One of the primary functions of the targets modeling & simulation capability is to provide validated target models (kinematic, dynamic, structural, spectral) which assist the Weapon System development communities in their development of computer models and simulations appropriate to their specific technology applications.

Efforts are now underway to update the validation of existing target models using the process defined by DOD Directive 5000.59. Additional effort is being undertaken in assisting with the development and publishing of the Navy implementing instruction resulting from this DOD Directive; the Verification, Validation, and Accreditation of Navy Models and Simulations. The target modeling & simulation capability has also been active with the Defense Modeling & Simulation organizations. One specifically activity is to assist in the preparation of a Modeling and Simulation Handbook by the Defense Systems Management College.

As part of the Joint Targets Oversight Council (A triservice organization with overview for all service Target development activities), this activity is currently tasked by DOD with the joint service coordination of a Target/ Threat Validation Process. The planning for this process is scheduled for FY-94—FY-95 with implementation funding currently budgeted for FY-96 through FY-98. This activity is tasked to provide an answer to the Inspector General's comments of concern about Target/ Threat validation efforts.

MEASUREMENT

AIRBORNE INFRARED MEASUREMENTS CAPABILITY

D.1. Yes. A minimum of three F-4 aircraft with all aircraft maintenance and airfield facilities are required to support airborne missions. A minimum of two Sgt. York air defense vehicles are required to support ground-to-air missions.

D.2. No.

D.2.A. N/A.

BISTATIC RADAR REFLECTIVITY LABORATORY

D.1. Yes. Ordnance handling and storage support is required to store, transport, and remove explosive items or flammable fuels from missiles or vehicles to be measured in the laboratory. This requires magazine storage that can be secured to Top Secret/SAR levels.

D.2. Yes. Target vehicles are required, however, they are provided by the customer.

D.2.A. Yes. The RCS measurement data are used to support validation of a specialized target.

ELECTROMAGNETIC ENVIRONMENT EFFECTS LABORATORY

D.1. No.

D.2. No.

D.2.A. No.

ENVIRONMENTAL TEST FACILITY

D.1. No.

D.2. No.

D.2.A. N/A.

MONOSTATIC RADAR REFLECTIVITY LABORATORY

D.1. Yes. Ordnance handling and storage support is required to store, transport, and remove explosive items or flammable fuels from missiles or vehicles to be measured in the laboratory. This requires magazine storage that can be secured to Top Secret/SAR levels.

D.2. Yes. Target vehicles are required, however, they are provided by the customer.

D.2.A. Yes. The RCS measurement data are used to support validation of a specialized target.

READY MISSILE TEST FACILITY

D.1. No.

D.2. No.

D.2.A. N/A

RELIABILITY TEST FACILITY

D.1. No.

D.2. No.

D.2.A. N/A.

SEA LEVEL CLIMATIC CHAMBER

D.1. No.

D.2. No.

D.2.A. N/A.

SUPPORT EQUIPMENT ENGINEERING AND TEST COMPLEX

D.1. Yes. 3,000 Gallon, 3,500 psi Nitrogen pumping station; 3,000 psi Hydraulic system; 3 phase 400Hz power; specialized air-conditioned clean rooms for weapons testing and teardown; security measures including a 7800 sq. ft. secure holding area for in-coming and outgoing weapons section and a facility wide cypher lock system; All Up Round (AUR) Test facility with 4 test control rooms and 8 explosively rated test chambers with environmental and functional test capabilities.

D.2. No.

D.2.A. N/A.

TELEMETRY/TEST ARTICLE INSTRUMENTATION

D.1. No.

D.2. No.

D.2.A. N/A.

INTEGRATION LABORATORY

ELECTRONIC WARFARE COUNTERMEASURES SYSTEMS CAPABILITY

D.1. Yes. The Electronic Combat Simulation Evaluation Laboratory (ECSEL) that integrate the EW suite (AN/ALR-67, AN/ALQ-126B, AN/ALQ-162) for the F/A-18, A-6E, and AV-8B. F-14 Weapon System Support Activity (WSSA), for D/T support and restart of O/T.

D.2. Yes. F-14 Weapon System Support Activity (WSSA), QF-4 EW Test Bed, ECSEL (provides computer simulations of radar guided threats, including closed loop threats necessary to develop radar jammer techniques)

D.2.A. Yes. Targets Directorate-Safety of Flight QA in ECSEL lab.

EW/RADAR SUPPORT EQUIPMENT

D.1. Yes. Specialized aircraft (A/C) platform Integrated Support Station (ISS) lab for developing and testing A/C systems and conducting support systems test and evaluation. The ISS also supports radio frequency transmission line distance-to-fault testing and evaluation. An O-Level lab with specialized test equipment for development, test and evaluation of hardware and software to

support fleet A/C maintenance. A Rapid Reprogramming Terminal (RRT) lab for the development of software to interface the RRT with multiservice avionics systems.

D.2. No.

D.2.A. N/A.

INFORMATION WARFARE SYSTEMS LABORATORY COMPLEX

D.1. Yes. The Information Warfare Systems (IWS) Lab Complex provides full support for the design, development, integration, training, rapid prototyping and life cycle support of the new fully open architecture Tactical Aircraft Mission Planning System (TAMPS) version 6.0 and beyond. The lab is currently connected in a secure point to point environment with Austin, TX, Fairfax, VA, the NAWCWPNS China Lake Precision Strike Lab, the EA-6B Lab, and the NAWCWPNS Battle Management Interoperability Center (BMIC) supplying requested Intel information required for local T&E efforts.

D.2. No.

D.2.A. N/A.

INTERCEPT WEAPONS EVALUATION FACILITY

D.1. Yes. To accomplish the flight test portion of intercept missile evaluations, the full infrastructure of the airfield, the open air range, test aircraft, ordnance handling/buildup/storage, missile functional test/telemetry installation/calibration, targets and electronic countermeasures are required. The hardware-in-the-loop simulations are required for pre-flight and post flight planning and analysis. Radar Reflectivity Facility support required for complex 6-DOF and end game simulations/analysis.

D.2. Yes. The full spectrum of targets are required. These include full-scale drones, sub-scale drones and real threat vehicles(Special Evaluation Targets(SETs)). Low observable modifications, electronic and infrared countermeasures, flares and RCS augmentation are used frequently.

D.2.A. Yes. Technical experts at other Government and contractor activities and by OPTEVFOR.

LASER AND STABILIZED OPTICS

D.1. Yes. Specialized facilities are required to support the design, fabrication, test, and depot level maintenance of state of the art electro-optical systems including electronic design, fabrication, repair, and test; optical design, assembly, repair and test; and inertial reference repair, test, and calibration.

D.2. No.

D.2.A. N/A.

WARNING AND SURVEILLANCE SYSTEMS CAPABILITY

D.1. Yes. Specialized hardware-in-the-loop and integration laboratories are required to support stand-alone and suite integration, flight testing, and Development Test and Evaluation. The ECSEL and F-14 WSSL labs at Point Mugu and the EWIL/HARM and F/A-18 WSSL labs at China Lake are absolutely essential and an integral part of our process. These specialized facilities are also used to document test results and recommend design changes, aid in the final design of ECPs, and provide life cycle support for avionics software and hardware changes.

D.2. Yes. We have the capacity to expand our system software capability output and providing life cycle support for additional EW systems (including variants), deployed on triservice and FMS customer platforms. We also have the inherent capability to expand our suite integration support for additional aircraft, including rotary wing.

D.2.A. N/A.

WSSA, F-14

D.1. Yes. The F-14 WSSA depends on several specialized facilities for efficient operations. They are: an intermediate maintenance activity that supports the F-14 WSSA avionics test, repair, and replacement, an ordnance facility for storing live ammunition, and a ready missile test facility

which provide test, reconfiguration and a mixture of Operational, Intermediate, and Depot level maintenance for various air-to-air missiles.

D.2. Yes. The F-14 WSSA uses full and subscale aerial targets for target acquisition and release tests. It also uses specialized captive carry aircraft for anti-missile warfare tests. Lastly, it uses ECM and DECM augmentation for both standoff and penetration tests for the F-14 sensor and carried weapons.

D.2.A. Yes. By the Director, Operational Test and Evaluation

WSSL, EA-6B

D.1. Yes. The following specialized facilities support the development and in-service engineering efforts within the EA-6B Systems facility: EA-6B Weapons System Support Laboratory (WSSL), EA-6B Electronic Warfare Data Support (EWDS) Laboratory, Jammer Technique Optimization (JATO) Mobile Test Vehicles (MTV), and EA-6B Advanced Development Laboratory (ADL)

D.2. No.

D.2.A. N/A.

HARDWARE-IN-THE-LOOP

ELECTRONIC COMBAT SIMULATION AND EVALUATION LABORATORY (ECSEL)

D.1. No.

D.2. No.

D.2.A. No.

MISSILE HARDWARE IN THE LOOP FACILITY

D.1. Yes. The missile buildup/test facility is required to provide the properly configured and functionally tested missiles to the facility. The electronic vulnerability(test jammers) facility support is required for specialized lab EW support. Radar Reflectivity Facility, Intercept Weapons Evaluation Facility and open air range are required to provide target signature/modeling data, data reduction/analysis and free flight validation.

D.2. No.

D.2.A. N/A.

STRIKE WEAPONS EVALUATION FACILITY

D.1. No.

D.2. Yes. Ship targets outfitted with threat representative countermeasures equipment are required for anti-ship missile seeker evaluation. Electronic active countermeasures equipment and passive countermeasures equipment such as chaff and decoys are used to support evaluations. Surface targets are outfitted and based at Port Hueneme, Calif.

D.2.A. Yes. Technical experts at other Government and contractor activities and by OPTEVFOR.

OPEN AIR

AERIAL TARGETS COMPLEX

D.1. Yes. Aerial target operations require air operations/air traffic control facilities, aircraft intermediate maintenance facilities, parachute drying facilities, and sub scale target launch facilities. Launch support aircraft including the DC-130 aircraft, for launch of BQM-74 and BQM-34 targets, and the QF-4 aircraft , for launch of the AQM-37C, are required. Helicopter aircraft and recovery boats are required to retrieve subscale targets from the sea test range. Decontamination facilities for cleaning targets following salt water immersion are required. All target operations require telemetry data collection/reduction facilities, frequency management facilities, geophysics facilities, Integrated Target Control System facilities, a wide array of specialized Test Range facilities, including; range surveillance aircraft, target recovery aircraft and boats, instrumentation systems, communication systems, and Cyber computer center. Associated testing requires anechoic chamber

facilities, environmental chamber/labs, and explosive ordnance handling, storage, and disposal facilities. Current technology also dictates the need for highly specialized hardware-in-the-loop laboratory facilities and specialized calibration laboratory facilities for the verification/validation of all target test results.

D.2. Yes. Specialized targets include Sett 8, SSN2D, AQM-37C, AQM-34L/M, BQM-34E, BATS, QF-4N and special access targets. These targets are unique to Point Mugu and are provided in response to COMOPTEVFOR and NAVSEA test requirements as well as weapons system specific need and Fleet requirements. Additionally, non-standard target configurations including special payloads, radar cross section enhancement (reduced and increased), maneuvering capability, ECM enhancement, tow capability, target survival enhancement, infra red enhancement, low altitude performance, scoring provisions, and formation capabilities are required using standard targets modified by the Point Mugu Local Engineering Change process. These requirements are dynamic in nature and required constant reconfiguration (redesign) of targets and their augmentation systems to meet one-time or limited specific need. The products of the LEC process are also provided to the White Sands Missile Range, the Pacific Missile Range in Hawaii, the Atlantic Fleet Weapons Training Facility in Puerto Rico, Wallops Island and Fleet activities to meet specific weapons system test and Fleet training requirements.

D.2.A. Yes. The specialized targets are validated through the Naval acquisition process, Weapon System Operational Requirement Documents, Weapons Systems Test and Evaluation Master Plans, Mission Needs Statements, and by weapons systems usage.

AIRCRAFT OPERATIONS AND MAINTENANCE CAPABILITY

D.1. NO.

D.2. No.

D.2.A. No.

SEA TEST RANGE

D.1. Yes. The Sea Test Range consists of over 125,000 square miles of instrumented ocean area and 36,000 square miles of controlled airspace bordered by coastal mountains and a long island chain. In addition, the large island of San Nicolas provides an excellent location for land-based range instrumentation, weapons and target launchers, and land impact areas. The Range's instrumentation is housed in facilities at Point Mugu (sea level) and nearby Laguna Peak (1500 feet MSL) as well as at San Nicolas and Santa Cruz Islands. About 25 remote antennas and ground stations are also located throughout the coastal mountains in Southern California and on the offshore islands. In addition, a boat division is housed in pier and warehouse facilities at nearby Port Hueneme.

The Range buildings total 572,106 square feet, of which 462,382 square feet is at Point Mugu, 6,020 square feet is at Laguna Peak, 79,998 on San Nicolas Island, 6,562 square feet on Santa Cruz Island, and 17,154 square feet at Port Hueneme.

The Sea Test Range support complex encompasses several specialized test support facilities, the most significant of which are as follows:

- AN/FPS-16 Metric Radars (Point Mugu and San Nicolas Island)
- AN/FPS-114 Surface Surveillance Radars (Laguna Peak, SNI, SCI)
- AN/ARSR-1 Air Surveillance Radar (SNI)
- Multilateration Systems Remote Site Equipment
- Telemetry Data Collection (Point Mugu and SNI)
- Geophysics (Point Mugu and SNI)
- Range Operations Center (Point Mugu)
- Range Communications Facility (Point Mugu, LP, SNI, SCI)
- Photo Instrumentation (Point Mugu, LP, SNI)

- Target Launch Facilities (Point Mugu, SNI)
- VANDAL Launch Facility (SNI)
- Antenna Test Range (Point Mugu)
- Frequency Monitoring Facility (Point Mugu and SNI)
- Integrated Target Control System trackers (Point Mugu and SNI)
- Surface Craft (Port Hueneme)
- P-3 Airborne Instrumentation Stations (Point Mugu)
- Airborne Target Support Facility (Point Mugu)
- Surface Target Support Facility (Port Hueneme)
- Range Engineering Complex (Point Mugu)
- Range Instrumentation Maintenance Support Complex (Point Mugu)
- Special Project Support Facilities (19)

Further descriptions of some of these facilities are contained within the following paragraphs.

POINT MUGU FACILITIES.

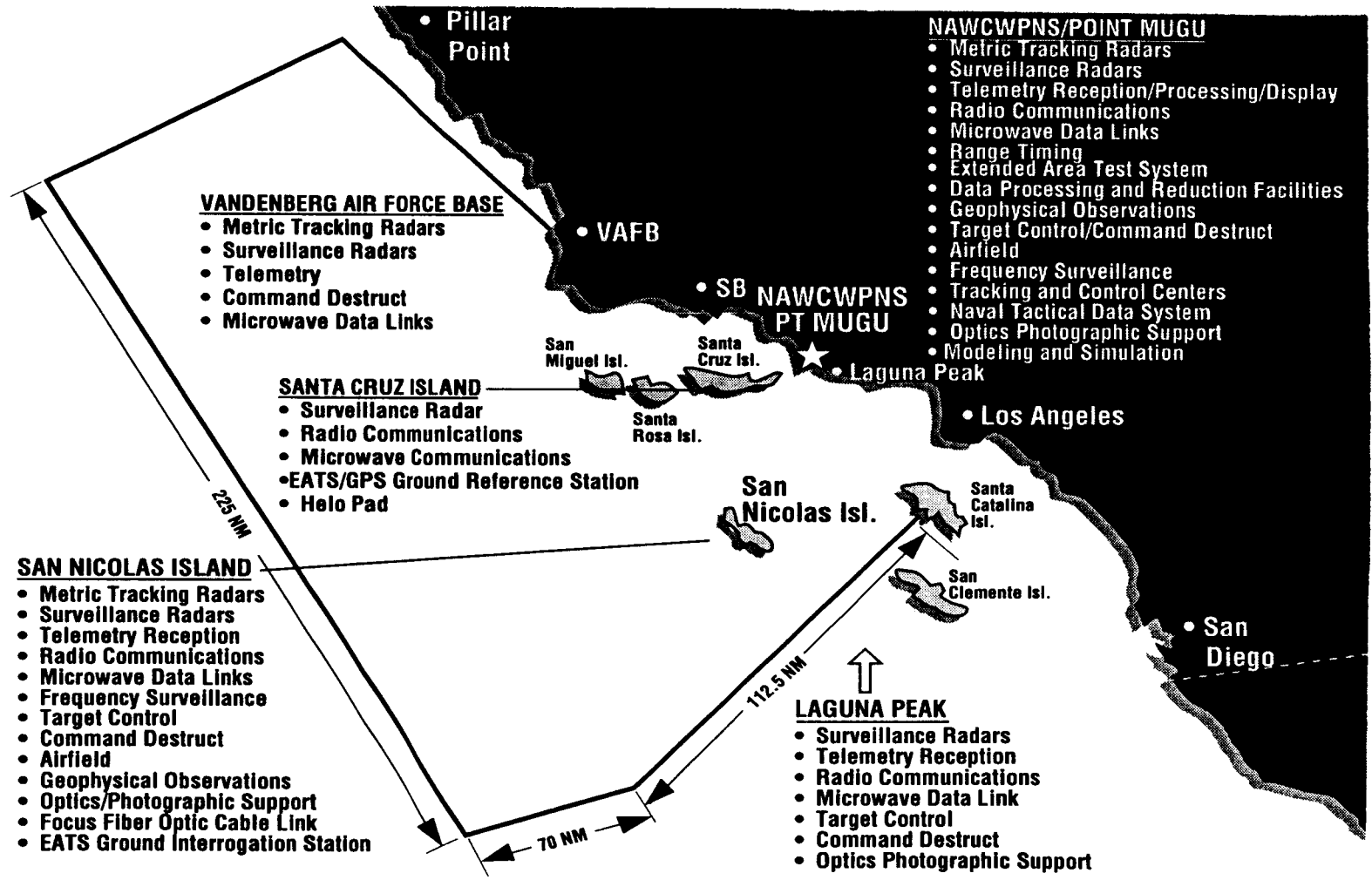
Point Mugu Sea Range facilities consist of 419,985 square feet of specialized facilities (heavy construction, air conditioned, etc.) that house range instrumentation—145,000 square feet of which meets stringent operational security (Level 2 and/or 3) requirements. In addition, 152,121 square feet are assigned to engineering and offices or other purposes related to the range mission. Buildings of particular interest include:

RANGE OPERATIONS CENTER.

A 91,000-square-foot, three-story concrete building (shown below) housing the primary range systems for processing and displaying range data and controlling range operations in real time. The entire building is a Level 2 secure facility with major portions at higher levels of security. The Center houses the Range Data Processing Center; the Telemetry Processing Systems, with its four separate display rooms; the Extended Area Test System Mission Operations Control Site; three tracking and control rooms including ALPHA, which is capable of supporting up to 30 real-time operations personnel as well as six target control consoles; the Range Surveillance Center; the Battle Management Center; and the Range Scheduling Center.

The Range Operations Center is the key element in the Sea Range at Point Mugu. The real-time end products of the Range become focused in this facility. Information and control for remote instrumentation sites along the California coast from San Diego to San Francisco flow to and from the Range Operations Center. Clearing the operating areas of intruders, ensuring the inflight safety of test articles and platforms, destruction or flight termination of errant missiles, monitoring of test weapons performance, introduction of drone vehicles, and directing of aircraft and ships are all functions that are controlled in and from this facility. In addition, the Range customer's personal interface with the Range is centralized in this facility. The major functional capabilities in the Center are as follows.

Range Display And Control. Range Display and Control supports management, planning scheduling, coordinating, and conducting of Sea Range operations. Major facilities and equipment that support this function include Operations Control Rooms, the Battle Management Interoperability Center. Air Traffic Control, Range Clearance and Control Center, NTDS/ACDS and Surveillance Radar Processing Systems, Range Scheduling System, and Target (drone) Control Systems. This function also has office facilities for the technical staff who manage the operational workload, provide range clearance and range control, control operations, operate equipment and provide engineering and life-cycle support for the operational systems within the building or at remote sites, and provide direct support and assistance to the Range Customers in their interface with the Range.



Range Instrumentation and Facilities

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OPS Control Center

Range Data Processing. The Range Data Processing Systems include systems that are primarily the interface between the main processing systems, the external range instrumentation and the display systems. Included in the interfacing systems are AN-UYK-43 real-time computers, peripherals, communications, support equipment, the Real-time Information Distribution Environment (RIDE), and the Sensor Position and Readback System I.O. Buffer. The main processing systems include the real-time computers, peripherals, communications, and support equipment which perform the complex processing of test data for display and control during real-time test and evaluation missions. The equipment consists of four CDC CYBER computers and peripherals, and the Range Data System (RDS). The data processing systems are centrally located to allow for hundreds of vital connections to instrumentation, timing, other systems, and the Operational Control Rooms.

Telemetry Data Processing And Display. Telemetry data from weapons and other articles under test are received by remote instrumentation and routed to the Range Operations Center via the Range communication system. The Telemetry data is then routed in the Range Operations Center to the Telemetry Data Center for processing and display. The Telemetry Data Center is where the Range Customer engineers and scientists observe the detailed performance of their test articles in real-time. The Telemetry Data Center provides for the setup, processing, display, and recording of telemetry data in support of weapon systems test and evaluation (T&E). The Center also provides post-flight data reduction functions, with capability of preparing digital magnetic tapes in formats that are compatible with the Center/User computer systems. Engineering and special processing/handling is provided for nonstandard TM formats/synchronization strategies that preclude the use of commonly available TM ground station equipment.

Extended Area Test System. The Extended Area Test System (EATS) simultaneously provides accurate Time and Space Position Information (TSPI) for up to 50 participants, and control of up to 12 target (drones). While the core of this system is located in the Range Operation Center, the system includes instrumentation at remote sites up and down the California coast, on the offshore islands, and on aircraft and ships. EATS has the capability to provide tracking data by both multilateration techniques and data determined using the Global Positioning System (GPS) via the NAVSTAR GPS satellite network. EATS covers an area from Mexico to San Francisco. The EATS functions are controlled by a state-of-the-art computer suite which is housed in the EATS Master Operations Control Station (MOCS) of the Range Operations Center.

RANGE COMMUNICATIONS FACILITY.

The primary purpose of the Sea Range Communications Facility is to provide secure and nonsecure voice, radio, data, and video communications and timing, command control, and frequency monitoring services to Sea Range customers. This communications facility provides all the communications between range instrumentation systems and range operations control facilities.

The facility consists of equipment located in 300 buildings and sites at Point Mugu, Laguna Peak, San Nicolas Island, and Santa Cruz Island which provide an integrated Sea Range communications capability. These locations and the equipment in the buildings at these locations are interconnected via cable plants consisting of fiber optic, copper pair, and coaxial cables, and microwave. Primary inter-site connectivity is via fiber optic cables including an underwater fiber optic cable between Point Mugu and San Nicolas Island. Connectivity between buildings at each site is a combination of fiber and copper cables.

TELEMETRY DATA COLLECTION FACILITY.

The Telemetry Data Collection Facilities at Point Mugu and San Nicolas Island are utilized to receive, record, and process real-time telemetry data to support weapons systems test and evaluation and fleet training exercises. The facilities contain antenna control equipment to operate adjacent L-, S-, and P-band telemetry antenna systems, automated receiver/recorder stations, best source selector, and related support equipment.



Telemetry Data Processing and Display

AN/FPS-16 METRIC RADARS.

There are four AN/FPS-16 radars at Point Mugu and three on San Nicolas Island. The AN/FPS-16 Metric Radars are used to track objects on the Sea Test Range. These radars provide precision position location measurement to 20 arc seconds in azimuth and elevation and three yards in range. Typically these radars can provide position location within 30 feet at a range of 20 miles from each radar. At a range of 130 miles from a radar this accuracy is to 200 feet. The radars can track objects that do not have any transponder on them or can use a small transponder for greater tracking range or to pinpoint the track to a particular spot on the object being tracked. These radars provide dynamic motion data on objects moving at multiples of the speed of sound and accelerating at high rates. Typical objects include ship launched missiles, ballistic missiles, space objects, aircraft, and ships. Nearly all operations on the Sea Range are supported by these radars.

SURFACE LAUNCH CONTROL FACILITY.

A 20,000-square-foot, two-story concrete structure specially designed with 16-inch-thick walls and 20 inches of reinforced concrete ceiling to withstand impacts of errant missiles and targets. This facility can support up to ten target launches simultaneously from launchers on top of the building (shown below), and houses three launch control centers along with a small shops area and equipment and office space.

FREQUENCY MONITORING FACILITY.

A 12,000-square-foot, two-story concrete building (shown below) houses the frequency spectrum monitoring equipment with its two large direction-finding antenna complexes, an anechoic chamber for electromagnetic compatibility studies, and associated offices for coordination of frequency assignment scheduling and interface with the FCC. Two monitoring vans are housed in an adjacent garage.

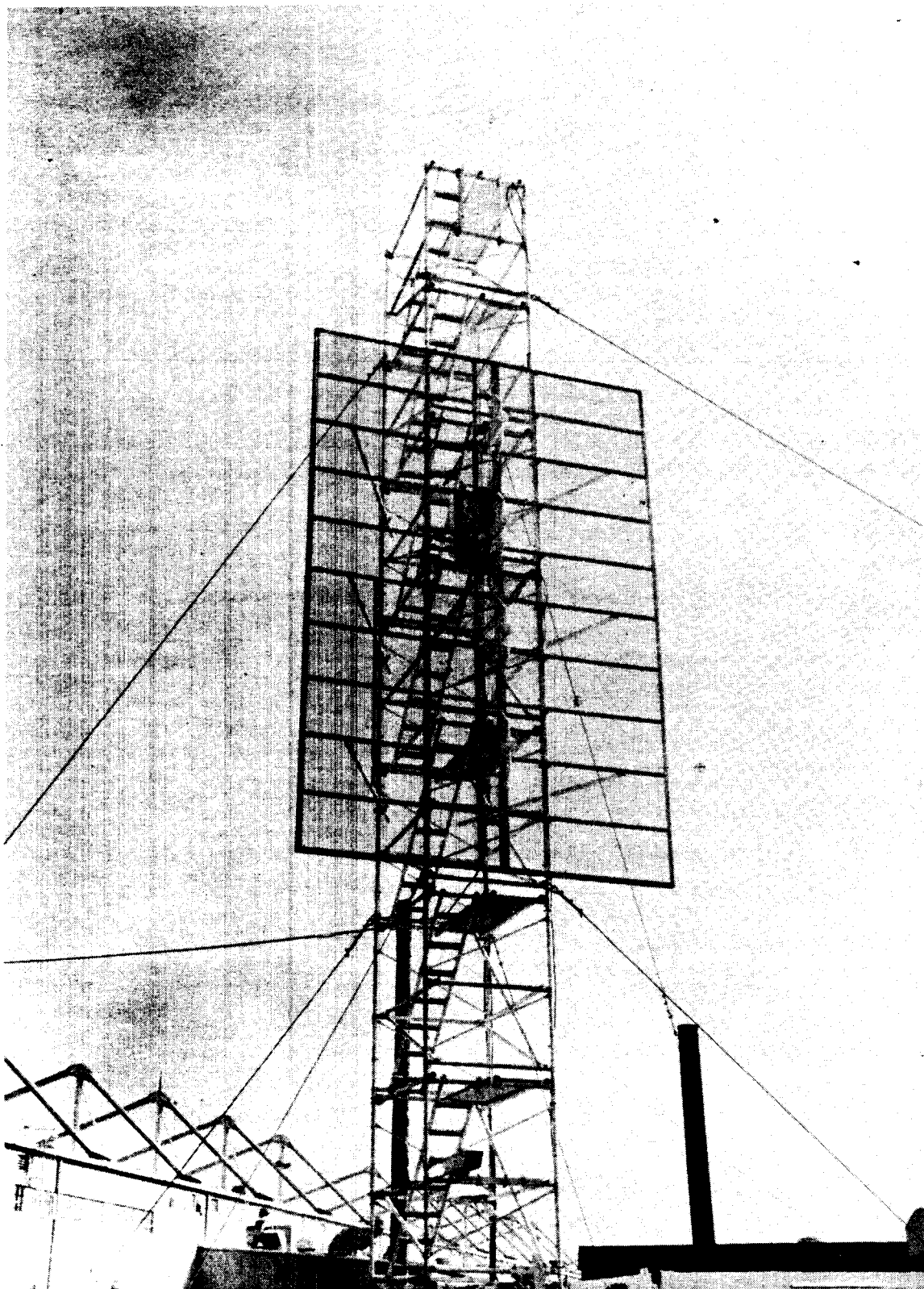
LAGUNA PEAK COMPLEX.

The Laguna Peak Complex is located 1500 feet above the eastern corner of Point Mugu and consists of 6,020 square feet of specialized facilities housing range instrumentation. Four main buildings house range-communications transmission and reception equipment, UHF command control/destroy, target control transmitters, a microwave relay system, a surface surveillance radar, and two telemetry antenna systems. Laguna Peak provides elevated line of sight location for overlapping coverage of the Sea Test Range, providing telemetry, airborne and surface target control, radio communication and data transmission, surveillance, and optics coverage. Laguna Peak is a primary site for range safety command-destroy for all ballistic missile launches from Vandenberg AFB.

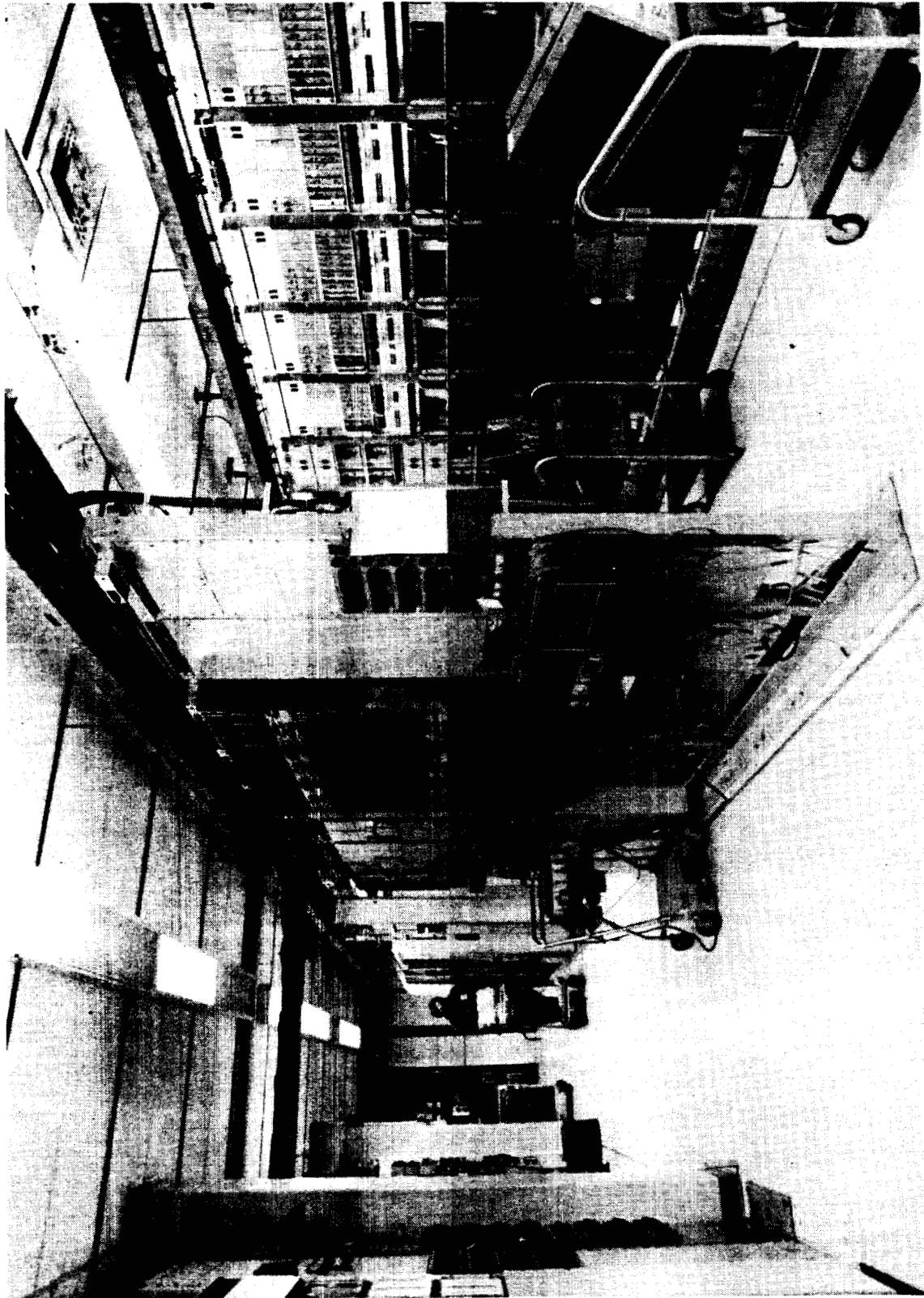
SAN NICOLAS ISLAND COMPLEX.

Located 60 nautical miles southwest of the Mugu complex, SNI is one of the cornerstones in the Sea Test Range capabilities because of its land mass and depth of surrounding waters. It allows the unique replication of some high-threat areas around the world. Because of its remoteness and secured environment, SNI is frequently utilized as a test site for special-access programs. SNI is heavily-instrumented with metric tracking, optics, telemetry and communications necessary to support long range and over the horizon weapons testing, Fleet training and Theater Missile Defense exercises. Because of its isolated environment and shoreline characteristics, SNI is ideal for providing littoral warfare training exercises, including triservice and theater warfare exercises. SNI provides extensive instrumentation capabilities required to support ICBM and Polar satellite launches from Vandenberg AFB.

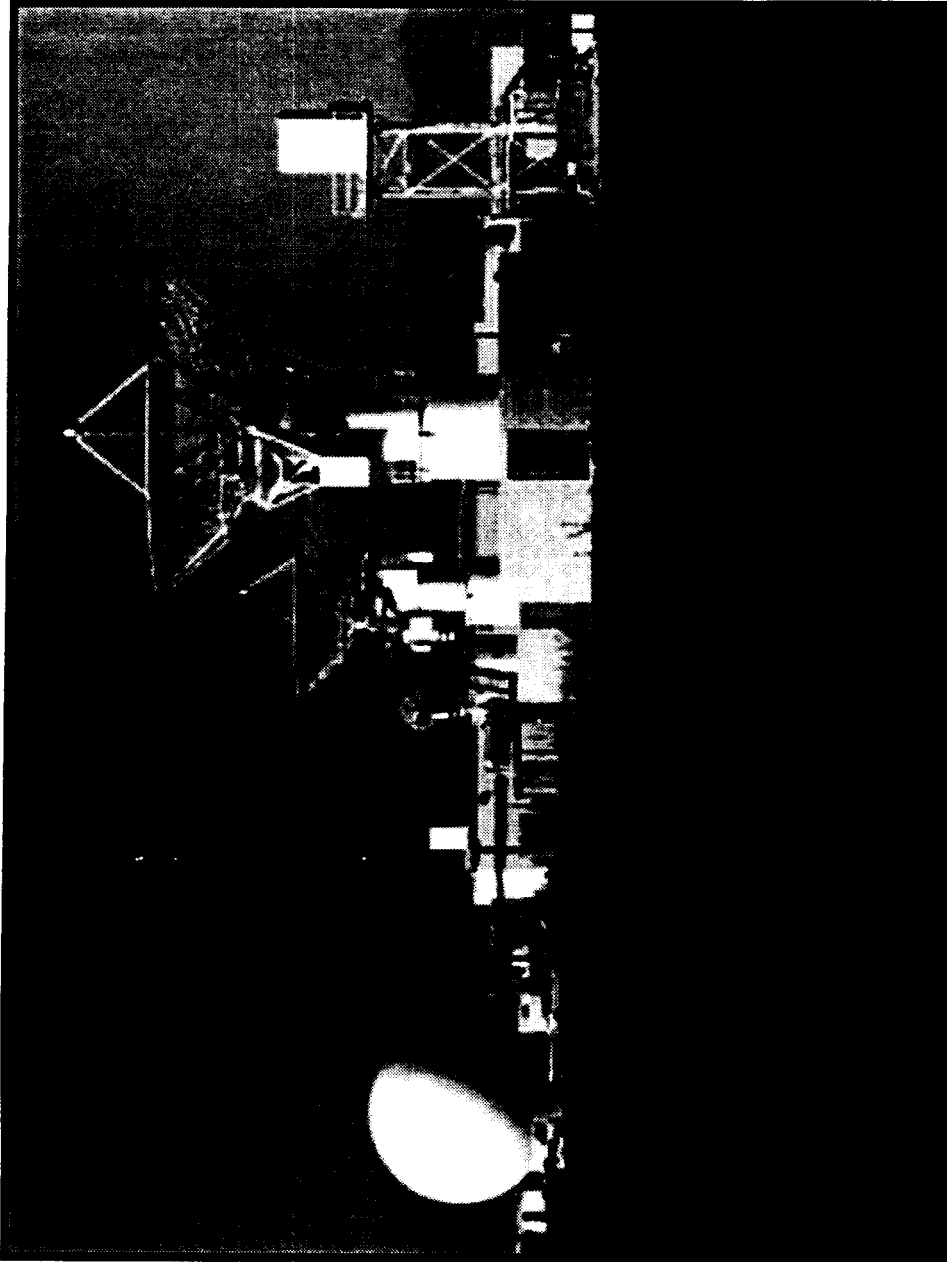
79,988 square feet of specialized facilities housing range instrumentation, of which 30,909 square feet meet stringent operational security requirements. There are 7,146 square feet of specially designed buildings used for ordnance storage and assembly, 3,675 square feet of shop space, and



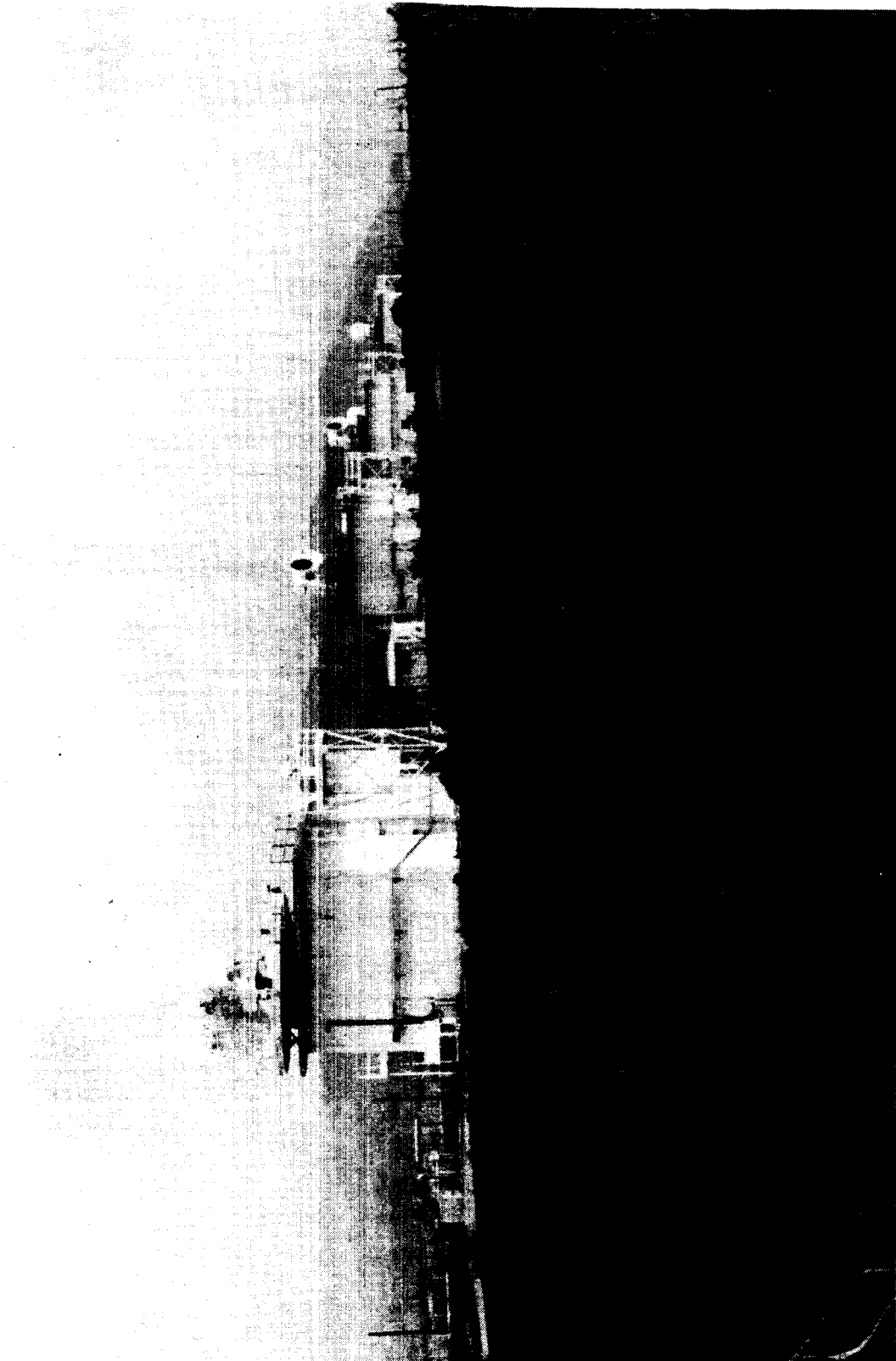
Extended Area Test System



Range Communications Facility



Telemetry Data Collection Facility



AN/FPS-16 Metric Radar

3,000 square feet used for offices. Shown below is an aerial view of the Island. The most significant buildings include:

Range Communications Building.

A 12,000-square-foot, single-story concrete/corrugated sheeting building (shown below) housing the central switch and microwave terminus on the Island, as well as six FRW-2 command-destruct transmitters, Integrated Target Control Systems tracker equipment, and timing. Also included are associated shops and office spaces.

Four metric radar buildings are similarly sized and configured as those at Point Mugu described above.

Telemetry Receiver Building.

A 5,200-square-foot, single-story concrete block building (shown below) is used for five antenna control stations, six receiver/recording stations, and related shops.

Launch Control Equipment Building.

A 3,000-square-foot, single-story concrete structure designed to withstand some over-pressure due to missile launch failures with a control room to support an adjacent dual-Vandal target launcher and a meteorological launcher.

SANTA CRUZ ISLAND COMPLEX.

Santa Cruz Island (SCI) is located approximately 25 nautical miles west of Point Mugu. The instrumentation complex consists of meteorological data collection, secure VHF/UHF radio communications and data transmission, microwave relay to/from Vandenberg AFB, and surface surveillance radar coverage of the inner Sea Test Range. The complex is housed on a 7-acre parcel and consists of 6,562 square feet of specialized facilities housing range instrumentation. Shown below is the surface surveillance radar building as well as the two communications buildings.

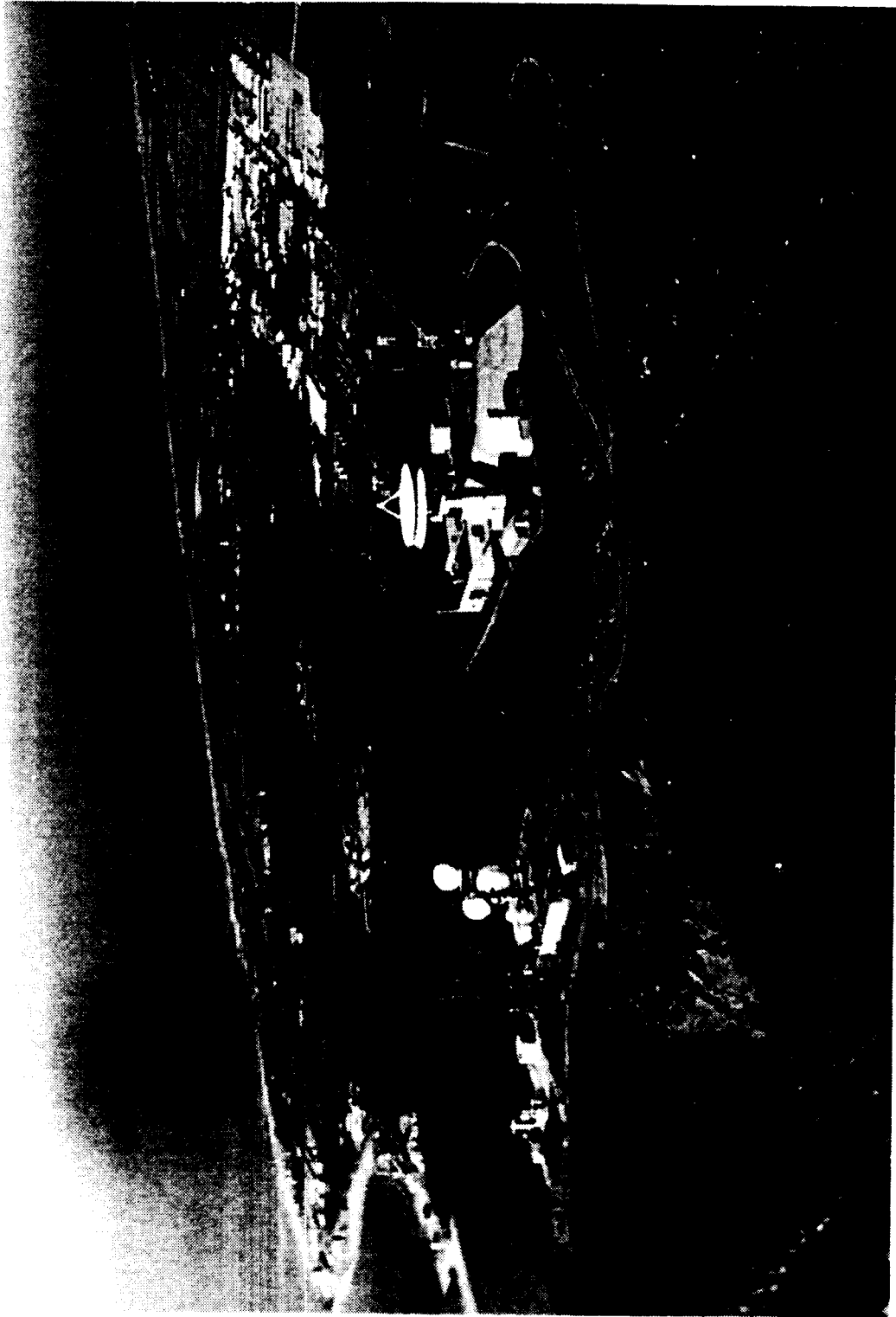
PORT HUENEME FACILITY.

The facility consists of about 300 feet of pier space with adjacent shop and office space housed in a 16,134-square-foot building. A small engine test stand (570 square foot) is located near this building. Additional space (9,936 square feet) for warehousing of equipment and supplies is also used. The Port Hueneme facility supports four range surface craft utilized for target recovery, security support, and specialized functions.

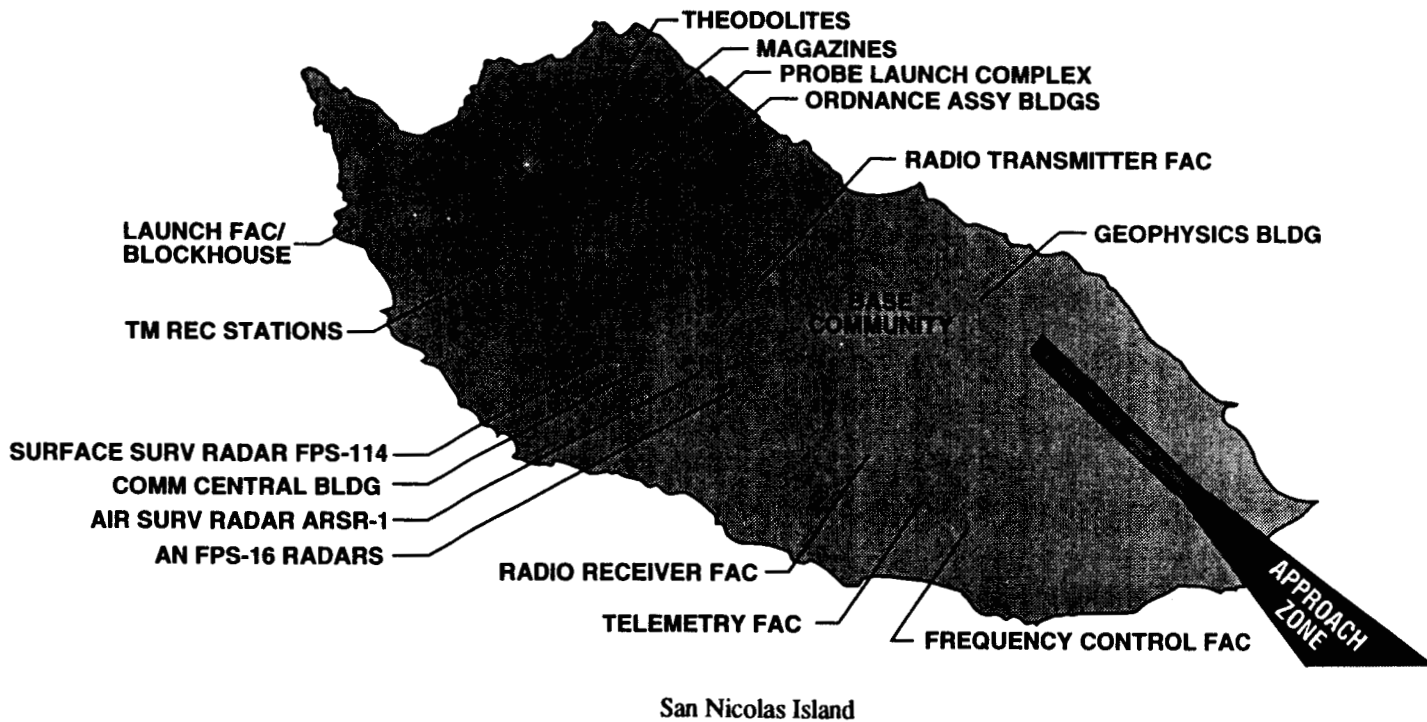
D.2. Yes. Specialized targets include Sett 8, SSN2D, AQM-37C, AQM-34L/M, BQM-34E, BATS, QF-4N, and the self-propelled target ship. These targets are peculiar to Point Mugu and are provided in response to unique COMOPTEVFOR and Naval Sea Systems Command (NAVSEA) test requirements as well as weapons system and Fleet requirements. Additionally, nonstandard target configurations including payloads, radar cross section, maneuvering capability, electronic countermeasures (ECM) enhancement, tow capability, target survival enhancement, infrared enhancement, low-altitude performance, scoring provisions, and formation capabilities are required using standard targets modified by the Point Mugu local engineering change process. These requirements are dynamic in nature and require constant reconfiguration (redesign) of targets and their augmentation systems to meet one-time or limited, specific needs. D.2.A. Yes. The specialized targets are validated through the Naval Acquisition process, Weapon Systems Operational Requirement Documents, Weapons Systems Test and Evaluation Master Plan, and by weapons systems usage.

SURFACE TARGETS COMPLEX

D.1. Yes. Port Hueneme provides required conventional and deep-water berthing. This allows berthing of both target boats and target ships. The target ships, which are up to 620 ft in length require the facilities of a deep water port. This facility is unique in that it abuts the only



Laguna Peak



instrumented, west coast, weapons sea test range. The Target Systems Department is a unique one of a kind facility/capability which exists no where else in the world. It is a one stop shopping center for targets. It provides for the triservice needs in development, acquisition and production of all seaborne targets and for life-cycle support management of all seaborne target systems within the Navy. Operational services are provided locally and deployed world wide. The inventory of targets, both in number and types, is unmatched anywhere and includes seaborne boats, combatant ship replicas, towed targets, and land targets as well as target control systems. The facility is unique in that it has the personnel resources, geography, airspace and open ocean available to operate any target contained within its inventory on site. It has deep water harbor facilities for its seaborne targets at Port Hueneme, which are uniquely combined with 125,000 square miles of instrumented sea range and airspace to conduct test and evaluation, aircraft runway facilities both at Point Mugu and San Nicolas Island, as well as target ground and air launch facilities.

D.2. Yes. Specialized targets include the Mobile Ship Target and the QST-35A. These targets are unique to Point Mugu and are provided in response to COMOPTEVFOR and NAVSEA test requirements as well as weapons system specific need and Fleet requirements. Additionally, non-standard target configurations including special payloads, radar cross section enhancement (reduced and increased), maneuvering capability, ECM enhancement, tow capability, target survival enhancement, and scoring provisions are required using standard targets modified by the Point Mugu Local Engineering Change process. These requirements are dynamic in nature and require constant reconfiguration (redesign) of targets and their augmentation systems to meet one-time or limited specific need. The products of the LEC process are also provided to the Pacific Missile Range in Hawaii, the Atlantic Fleet Weapons Training Facility in Puerto Rico, and Fleet activities to meet specific weapons system test and Fleet training requirements.

D.2.A. Yes. The specialized targets are validated through the Naval Acquisition process, Weapon System Operational Requirement Documents, Weapons Systems Test and Evaluation Master Plan, Mission Needs Statement, and by weapons systems usage.

TARGET AUGMENTATION SYSTEMS CAPABILITY

D.1. Yes. The following facilities are necessary to support TAS/CTAS: Intermediate Maintenance Activity (IMA) avionics shops for the maintenance and repair of TAS/CTAS components, Target buildup and maintenance facilities for the installation, checkout (intermediate and operational), and removal of TAS/CTAS components, and Calibration Laboratories for the calibration/validation of the TAS/CTAS components.

D.2. Yes. All TAS/CTAS components are configured to each target specifically to meet user's requirements. This facility is the only facility in the world that can provide common and unique TAS/CTAS configurations for any aerial target in response to test demands.

D.2.A. Yes. Specialized targets and TAS/CTAS components are validated via the Naval acquisition process, including; Mission Need Statements, Operational Requirement Documents, Test and Evaluation Master Plans (TEMPs), and by weapons systems evaluators.

TARGET CONTROL SYSTEMS CAPABILITY

D.1. Availability of captive and free flight target operations and testing capability.

Specialized instrumentation development capability.

Specialized computer, instrumentation and LAN maintenance and calibration capability. All target operations require telemetry data collection/reduction facilities, frequency management facilities, geophysics facilities, Integrated Target Control System facilities, a wide array of specialized Test Range facilities, including; range aircraft, recovery vehicles, instrumentation systems, communication systems at the Range facilities shown below. Associated testing requires anechoic chamber facilities, environmental chamber/labs, and explosive ordnance handling, storage, and disposal facilities. Current technology would also dictate the need for highly specialized hardware-in-the-loop laboratory facilities and specialized calibration laboratory facilities for the verification/validation of all target test results.



Santa Cruz Island

D.2. Yes. Specialized targets include Sett 8, SSN2D, AQM-37C, AQM-34L/M, BQM-34E, BATS, QF-4N, and the self propelled target ship. These targets are peculiar to Point Mugu and are provided in response to unique COMOPTEVFOR and NAVSEA test requirements as well as weapons system and Fleet requirements. Additionally, non-standard target configurations including payloads, radar cross section, maneuvering capability, ECM enhancement, tow capability, target survival enhancement, infra red enhancement, low altitude performance, scoring provisions, and formation capabilities are required using standard targets modified by the Point Mugu Local Engineering Change process. These requirements are dynamic in nature and required constant reconfiguration (redesign) of targets and their augmentation systems to meet one-time or limited specific need.

D.2.A. N/A.

THREAT ELECTRONIC COUNTERMEASURES SIMULATORS

D.1. No.

D.2. Yes. Specialized targets include Sett 8, SSN2D, AQM-37C, AQM-34L/M, BQM-34E, BATS, QF-4N, and the self-propelled target ship. These target are peculiar to Point Mugu and are provided in response to unique COMOPTEVFOR and NAVSEA test requirements as well as weapons system and Fleet requirements. Additionally, nonstandard target configurations including payloads, radar cross section, maneuvering capability, ECM enhancement, tow capability, target survival enhancement, infrared enhancement, low altitude performance, scoring provisions, and formation capabilities are required using standard targets modified by the Point Mugu Local Engineering change process. These requirements are dynamic in nature and require constant reconfiguration (redesign) of targets and their augmentation systems to meet one-time or limited specific need.

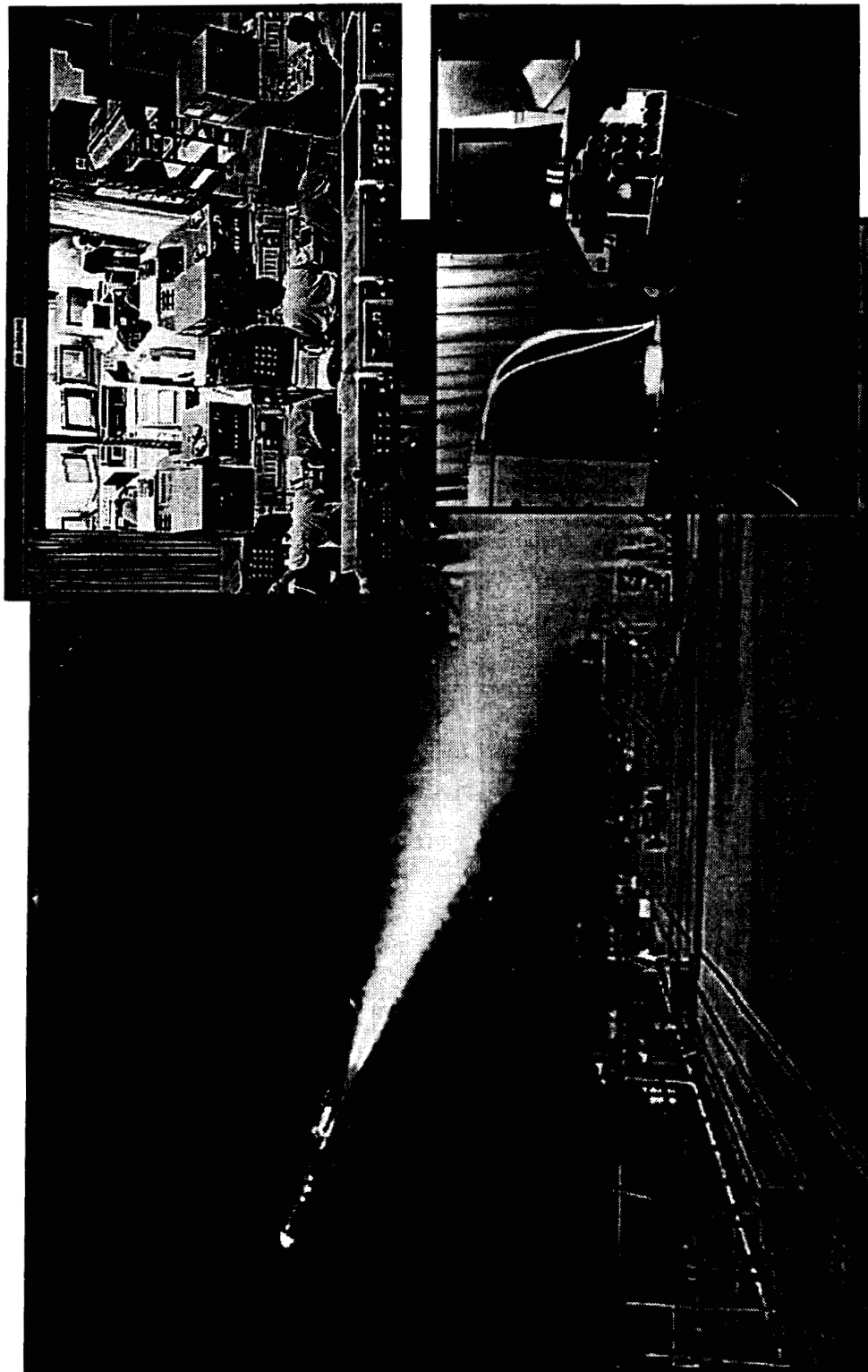
D.2.A. Yes. The specialized targets are validated through the Naval Acquisition process, Weapons System Operation Requirement Documents, Weapons System Test and Evaluation Master Plan, and by weapons system usage.

THREAT RADAR SIGNALS SIMULATORS

D.1. No.

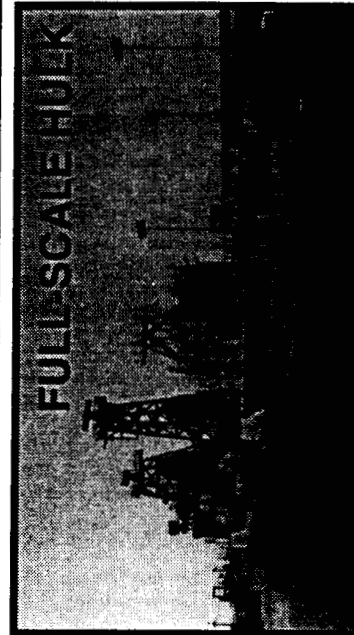
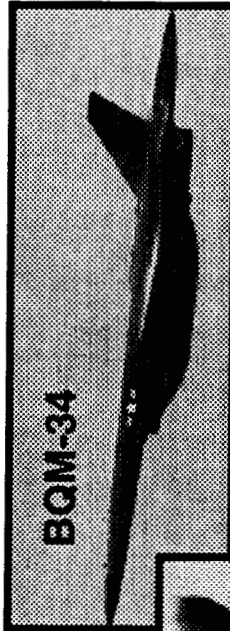
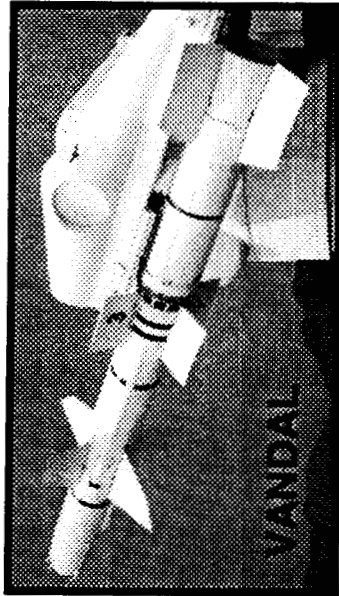
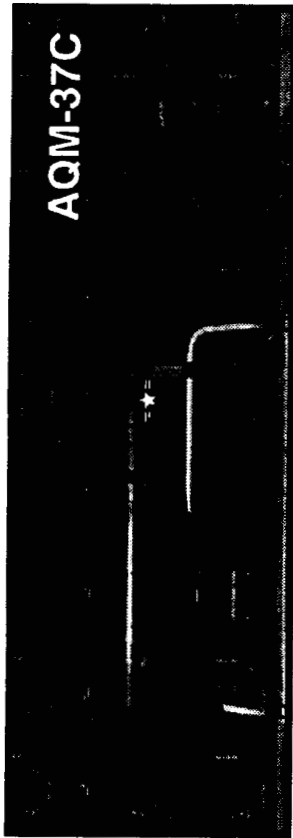
D.2. Yes. Specialized targets include Sett 8, SSN2D, AQM-37C, AQM-34L/M, BQM-34E, BATS, QF-4N, and the self-propelled target ship. These target are peculiar to Point Mugu and are provided in response to unique COMOPTEVFOR and NAVSEA test requirements as well as weapons system and Fleet requirements. Additionally, nonstandard target configurations including payloads, radar cross section, maneuvering capability, ECM enhancement, tow capability, target survival enhancement, infrared enhancement, low altitude performance, scoring provisions, and formation capabilities are required using standard targets modified by the Point Mugu Local Engineering change process. These requirements are dynamic in nature and require constant reconfiguration (redesign) of targets and their augmentation systems to meet one-time or limited specific need.

D.2.A. The specialized targets are validated through the Naval Acquisition process, Weapons System Operation Requirement Documents, Weapons System Test and Evaluation Master Plan, and by weapons system usage.



Integrated Target Control System

THREAT SIMULATION



Targets

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.*

Information is contained in the responses to questions 3.1.E.1 and 3.1.E.1.A.

-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.*

Answers to this question are collocated with the answers to question 3.1.E.1.A.

-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.*

Expansion potential for each of the 31 NAWCWPNS Point Mugu facilities/capabilities is as follows.

MODELING AND SIMULATION

SIMULATION AND EFFECTIVENESS CENTER

E.1. Yes. The facility is new and has adequate floor space, flexibility, and utilities to add equipment.

E.1.A. Yes. The facility is general purpose in nature with respect to indoor lab testing and computer labs. The facility is able to support all three functional areas for digital modeling and simulation, data reduction, and analysis.

TARGET SYSTEMS MODELING AND SIMULATION CAPABILITY

E.1. Yes. Expansion and additional workload are both unlimited aspects of this facility. The capability to increase operational tempo is flexible via personnel sizing and funding allocation. The proximity of other air and surface target service organizations, aircraft runways, San Nicolas Island, open air range, Port Hueneme harbor, ship berthing facilities and the NAWS Point Mugu facilities allow for expanded output in the area of target engineering, logistics and operations. These facilities are uniquely located to provide synergism among target capabilities. Additional workload in the areas of modeling and simulation for target , target command, control and target auxiliary systems using existing weapon system modeling and simulation facilities could readily be implemented.

E.1.A. Yes. Functional areas of Air Vehicles, Armament/ Weapons.

MEASUREMENT

AIRBORNE INFRARED MEASUREMENTS CAPABILITY

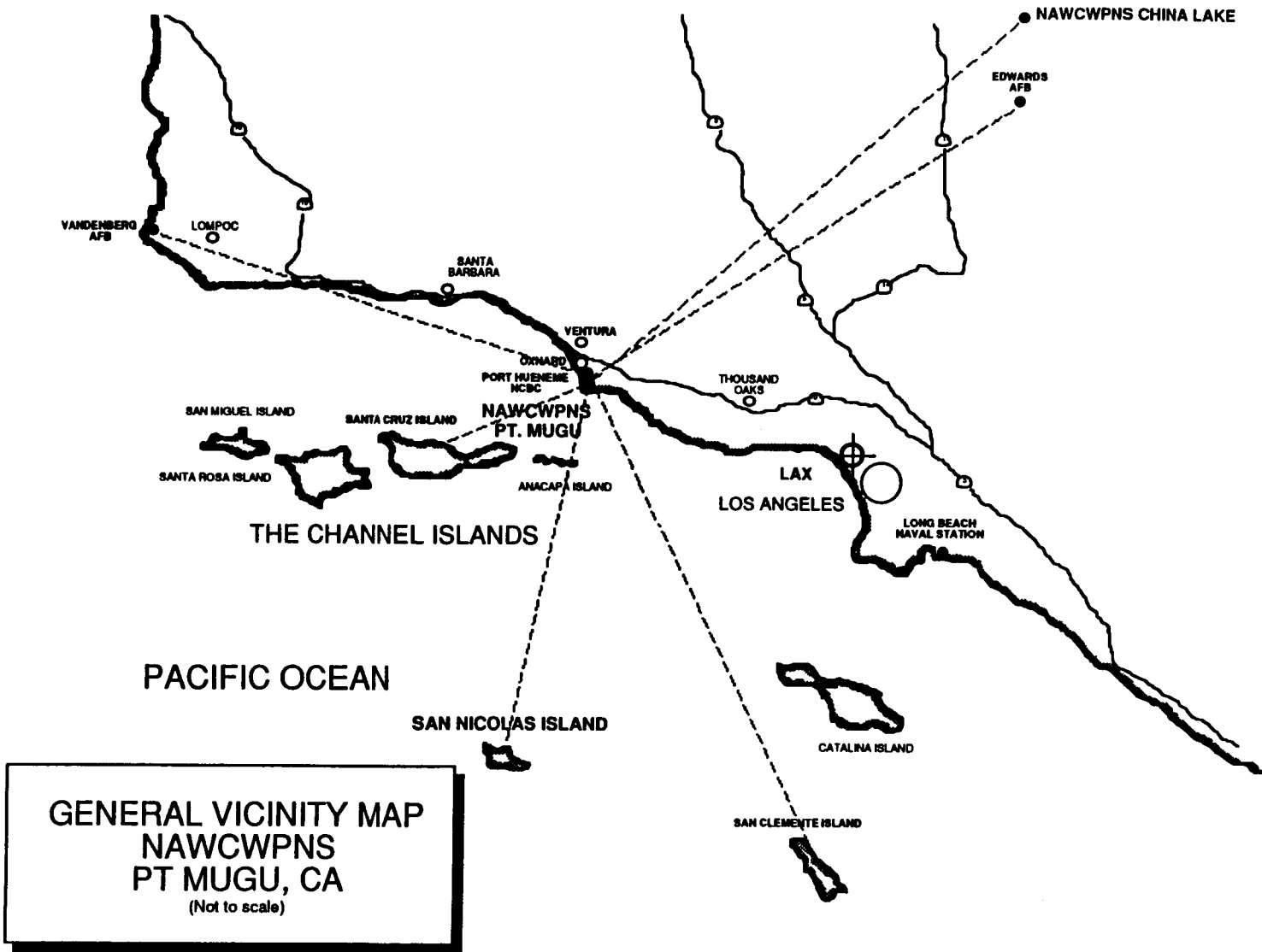
E.1. No

E.1.A. Yes. Facilities could be adapted to perform missions in environmental protection and monitoring, drug enforcement and surveillance, and aircraft Electronic Warfare (EW) suite integration.

BISTATIC RADAR REFLECTIVITY LABORATORY

E.1. Yes.

E.1.A. Yes. Work in all three functional areas that require RF anechoic chambers and instrumentation radar equipment can be adapted to this facility. Most RF-related projects that require measurements, analysis, diagnostics, or modeling data can be accommodated. Low observable development support for S&T or exploratory development programs could be expanded. Extensive data reduction and display capability/knowledge can be adapted to other data



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presentation/analysis requirements. The large chamber size was designed so that a compact monostatic test range could be accommodated in conjunction with the bistatic range. The addition of another collimating reflector and feeds would permit rapid switching between bistatic and monostatic measurement setups. The addition of an anechoic dividing wall and some additional instrumentation would permit simultaneous bistatic and monostatic tests.

ELECTROMAGNETIC ENVIRONMENT EFFECTS LABORATORY

E.1. No.

E.1.A. Yes. Hazardous Electromagnetic Radiation to Personnel (HERP)

ENVIRONMENTAL TEST FACILITY

E.1. No.

E.1.A. No.

MONOSTATIC RADAR REFLECTIVITY LABORATORY

E.1. No.

E.1.A. Yes. Work in all three functional areas that require RF anechoic chambers and instrumentation radar equipment can be adapted to this facility. Most RF-related projects that require measurements, analysis, diagnostics, or modeling data can be accommodated. Low observable development support for S&T or exploratory development programs could be expanded. Extensive data reduction and display capability/knowledge can be adapted to other data presentation/analysis requirements.

READY MISSILE TEST FACILITY

E.1. Yes. These are ordnance environmental test bunkers, which allow us to test and evaluate a much wider range of live ordnance products than currently tested.

E.1.A. Yes. Air Vehicles - Acoustic & Temperature Tests - Engine Power Runs

RELIABILITY TEST FACILITIES

E.1. No.

E.1.A. Yes. Air Vehicles - Acoustic & Temperature Tests

SEA LEVEL CLIMATIC CHAMBER

E.1. No.

E.1.A. Yes. Air Vehicles - Climatic Testing/Armament/Weapons - Climatic Testing

SUPPORT EQUIPMENT ENGINEERING AND TEST COMPLEX

E.1. Yes. This facility includes areas and equipment dedicated to the U.S. Navy CASS initiative. Specifically, this equipment is a set of CASS stations set aside for TPS development for Navy missile systems. The capability exists with this to accommodate other CASS related programs such as a presently proposed CASS function for the Dept. of Commerce. The facility can also maintain a greater load on its power, hydraulic, and pneumatic capabilities to support functions requiring any of those items. Also, addition of 2 shifts would accommodate 3x current workload capability.

E.1.A. Yes. This facility has appropriate facilities in terms of power, pneumatics, hydraulics, clean rooms, and secure areas to allow for, at a minimum, sub-system testing of the Air vehicle (subsystem only) and Armaments/Weapons functional areas. Test types include functional, limited environmental, surveillance, and teardown/inspection.

TELEMETRY/TEST ARTICLE INSTRUMENTATION

E.1. Yes. The output of both the Microelectronics and Surface Mount facilities could be expanded because of the nature of the automated equipment; i.e., the throughout of the machines is greater than the normal demand.

E.1.A. Yes. Armaments/weapons—any modifications to electronic systems requiring special packaging and testing.

INTEGRATION LABORATORY

ELECTRONIC WARFARE COUNTERMEASURES SYSTEMS CAPABILITY

E.1. No.

E.1.A. Yes. EW Systems Development -DT & OT Radar Systems Development - DT & OT

EW/RADAR SUPPORT EQUIPMENT

E.1. Yes. The ISS is used to support Navy TACAIR platforms. The ISS has excess capacity and could also support helicopter integration testing. Space is available to expand software development for the Rapid Reprogramming Terminal. Reconfiguration of the ISS will accommodate other service platforms.

E.1.A. Yes. Present support systems T&E can be expanded to include systems T&E along with the expansion to complete aircraft integration system T&E.

INFORMATION WARFARE SYSTEMS LABORATORY COMPLEX

E.1. Yes. The IWS Lab Complex is currently connected to the NAWCWPNS Range to furnish requested Intel information in support of T&E exercises. In addition, IWS personnel are working with Range personnel to provide a modeling and simulation capability in support of future T&E efforts. This capability will create a “virtual” range with the flexibility to seamlessly integrate real and simulated exercises.

E.1.A. Yes. Modeling and Simulation

INTERCEPT WEAPONS EVALUATION FACILITY

E.1. Yes. The facility is new and has adequate floor space, flexibility and utilities to add additional equipment & functions.

E.1.A. Yes. The facility is general purpose in nature with respect to indoor lab testing and computer labs. The facility could be utilized to support all three functional areas for digital modeling & simulation, data reduction and analysis.

LASER AND STABILIZED OPTICS

E.1. No.

E.1.A. No.

WARNING AND SURVEILLANCE SYSTEMS CAPABILITY

E.1. No.

E.1.A. Yes. The capability is inherent to support similar efforts for Army, Air Force, and FMS customer unique warning and surveillance systems, for system software support activity and reprogrammability of a variety of software dependent multi-spectral avionic systems.

WSSA, F-14

E.1. Yes. The facility could accommodate the WSSA assignment of an aircraft using a 1553B Computer bus, avionics and using a Hughes Aircraft Corporation radar system.

E.1.A. Yes. The design of the test environment laboratories and instrumentation provides the capability to support other current (i.e. F-15, FA-18) or future digital avionics aircraft platforms as the computer architecture for test simulation and stimulation, system observability and data analysis is modular and generalized. The laboratory can be tailored to other platforms by a combination of data protocols and hardware interfaces. The F-14 WSSA is adding the capability to support the Block 1 avionics upgrade. This facility improvement will provide test capability for smart weapons, GPS, and ground mapping (using the AN/APG-71 radar). The trainers laboratory is adding the capability to develop the F-14 A/B upgrade trainer software at the Point Mugu site.

WSSL, EA-6B

E.1. Yes. Laboratories are capable of supporting additional development and in-service engineering work in support of the EA-6B Block 89A Upgrade Program and EA-6B Maintenance Diagnostics (current plans for Block 82 and Block 86 in-service engineering support to transition from aircraft prime contractor to NAWCWPNS, Point Mugu). Technical expertise is available to support other service tactical jamming A/C.

E.1.A. Yes. Facility is capable of supporting additional development work in support of AN/ALQ-99 Foreign Material Sales (FMS).

HARDWARE-IN-THE-LOOP

ELECTRONIC COMBAT SIMULATION AND EVALUATION LABORATORY (ECSEL)

E.1. No.

E.1.A. Yes. Because of the high fidelity used in threat simulations and the scenario generation capability the ECSEL could be used to support training efforts.

MISSILE HARDWARE IN THE LOOP FACILITY

E.1. Yes. The facility is new and has adequate floor space and utilities to accommodate additional equipment and functions. One anechoic chamber is currently unassigned and is available for additional projects.

E.1.A. Yes. Can be enhanced for increased IR HITL performance testing. Could accommodate performance testing of Electronic Combat Systems. Approved MILCON(P199) will add enhanced capability to perform HITL for W-Band and Multi-Mode missiles.

STRIKE WEAPONS EVALUATION FACILITY

E.1. Yes. Laboratory space and specialized test hardware, such as motion base simulators and anechoic chambers, are available for reutilization from programs which have been reduced in scope.

E.1.A. Yes.

OPEN AIR

AERIAL TARGETS COMPLEX

E.1. Yes. Expansion and additional workload are both unlimited aspects of this facility. The capability to increase operational tempo is flexible via personnel sizing and funding allocation. The proximity of other air and surface target service organizations, aircraft runways, San Nicolas Island, open air range, Port Hueneme harbor, ship berthing facilities and the NAWS Point Mugu facilities are unique and provide synergism for ready made expansion in the areas of systems engineering, logistics and operations.

The remote location of San Nicolas Island with its runway facilities for launch and recovery of full scale targets and support aircraft, its ground launch facilities for sub-scale targets and the Vandal MQM-8G, and its sea test range instrumentation facilities (communications, radar, navigation, telemetry, microwave and fiber optics transmission systems) provide a unique and one of a kind capability for expansion with limited influence on surrounding population and environment. Additionally the remote location provides added capability for special access programs. The isolation also allows for test of weapons systems such as the Close In Weapon System with its high speed gun which can be located on the island and fired at incoming targets without danger to population.

The target and range facilities are uniquely located with Laguna Peak at Point Mugu providing a facility 1600 feet above the Sea Test Range for transmission and receipt of R-F energy, thus extending R-F range capability; San Nicolas Island located 50 miles off shore with its range

instrumentation capabilities; and the Channel Islands extending from 12 miles off shore to 50 miles providing location for micro wave facilities for further extending the range of R-F capabilities. The use of these unique geographical sites and interface with Vandenberg Air Force Base instrumentation capability provides Point Mugu with a one of a kind Sea Test Range encompassing 125,000 square miles of instrumented Range for operation and test of weapons systems.

Additional workload in the areas of modeling and simulation for target, target control and target auxiliary systems utilizing existing weapon system modeling and simulation facilities could readily be implemented.

E.1.A. Yes. New workload could readily be accepted in such areas as the Unmanned Air Vehicles (UAV), Target and Threat validation, mobile at sea target launch platforms for aerial targets, air vehicle integration of target launch and control systems, Full Scale aircraft target development, development/T&E of decoys (TALD and ITALD) and target control systems. The capability for accomplishing this workload exists presently within the Aerial Targets complex and is parallel to that workload. The existing full spectrum engineering capability for target systems including development, acquisition, production, T&E, in-service engineering, logistics management, and world wide operational service provides an ideal blend for accepting the above workload. The functional areas for this workload are Armament/Weapons and Other. The Other is defined as development and T&E of target systems.

SEA TEST RANGE

E.1. Yes. The Sea Range is primarily used for flight testing of air munitions systems, e.g., air-to-air missiles, surface-to-air missiles. The Sea Range has also been used extensively to support fixed-wing aircraft flight testing (e.g., B-1, B-2, F-14, F-15), ICBM and satellite launches, and Fleet training.

The Sea Range is extremely flexible in its capability to expand to accommodate additional workload and new missions. Because of versatile, land-based instrumentation strategically located along the California coast bordering the Sea Range at Point Mugu, Laguna Peak, San Nicolas Island, Vandenberg AFB, and Pillar Point, large-scale scenarios as well as multiple smaller operations can readily be accomplished simultaneously.

The close proximity of Edwards AFB, Vandenberg AFB, NAWCWPNS China Lake, Naval Surface Warfare Center Port Hueneme Division, a deep water port 6 miles away (Port Hueneme), and numerous Army and Marine facilities, as well as our large area coverage by instrumentation, all enhance our ability to expand in multiservice air vehicle and armaments/Weapons T&E functional areas. Between NAWCWPNS Point Mugu and China Lake, virtually any air-to-air, surface-to-air, and air-to-surface munitions or aircraft can be tested. By including San Clemente Island (currently used by NAWCWPNS for Tomahawk impacts), ship launched surface-to-surface munitions can also be tested. The combination of NAWCWPNS, Vandenberg, and San Clemente Island also offer a capability for testing Theater Missile Defense weapons launched from air, ground, or ship platforms. The availability of relatively shallow water also lends itself to the T&E of underwater ordnance and submarine T&E. Surf and beach conditions at SNI lend themselves to shallow water mines, and mine countermeasures and clearance T&E.

The special aspects of the Sea Range that enhance its ability to expand output with each T&E functional area are described as follows:

While most test operations are typically done within the confines of the 36,000 square miles of controlled air and sea space assigned to the Sea Range, westward expansion of the operating areas

can rapidly occur through publication of proper notification to civilian air and sea traffic with as little as 48 hours notice. A region of over 125,000 square miles is readily accessible and fully instrumented with land-based instrumentation. Even further expansion beyond this distance is possible through the use of up to four sophisticated range instrumentation aircraft .

With our extensive internetting with Edwards AFB, China Lake, Southern California Operating Area Range, and others, test operations involving sea and land components are readily achieved for weapons such as long-range cruise missiles and sea-based deep strike operations.

E.1.A. Yes. The Sea Range is currently pursuing new T&E workload/missions in theater missile defense, littoral and expeditionary force warfare, and integration of interactive modeling and simulation into test and evaluation—all of which require large, highly versatile capabilities to support. Due to the Sea Range's extensive capabilities and expandability, these missions can be accommodated with minimal investment.

Additional workload could also be accommodated through the use of overtime on workday evenings and weekends. Currently the Sea Range operates a 9 1/2-hour day, 5 days a week. While some portion of the Sea Range is generally being used throughout this time, additional operations, occurring simultaneously, could be added to the range schedule without a significant change in workforce. A further increase in workload can be accommodated; however, this would necessitate a permanent increase in the Range operating hours which would, in turn, necessitate an increase in staffing.

SURFACE TARGETS COMPLEX

E.1. Yes. Expansion and additional workload are both unlimited aspects of this facility. The capability to increase operational tempo is flexible via personnel sizing and funding allocation. The proximity of Port Hueneme harbor, ship berthing facilities and the NAWS Point Mugu facilities allow for expanded output in the area of engineering, logistics and operations. These facilities are uniquely located to provide synergism among target facilities. Additional workload in the areas of modeling and simulation for target, target control and target auxiliary systems utilizing existing weapon system modeling and simulation facilities could readily be implemented. The facility can provide operations as a higher tempo than presently required. Additionally, Port Hueneme has excess berthing capacity currently being shared with commercial interests. There is adequate real estate to accommodate substantial growth.

A Surface Targets Development Lab is currently planned under MILCON P061. Additionally, a material/commodity utilization database and engineering/logistics data repository for targets is being developed. This effort includes enhancement of current computer hardware and software and the addition of DOD specification/standards and material information services.

This facility/capability is unique within DOD, the U.S. Government and the United States. It is a one-stop-shopping-center for targets; that is, it provides for the complete life cycle management of target systems. This capability includes full spectrum engineering support (acquisition, T&E, production, in-service, phase out); world wide operational services; and cradle to the grave logistics management services. The inventory of targets both in number and types, is unmatched anywhere and includes seaborne boats, combatant ship replicas, towed targets, and land targets.

Additionally, all target auxiliary/augmentation systems are provided by this facility, including; target control systems, payloads, and advanced target systems. It has the capability, as well as the responsibility, through the Local Engineering Change process to provide target modifications to satisfy customer unique requirements (i.e. performance, radar cross section, electronic countermeasures, infrared, infrared countermeasures, payloads, and maneuvering.) This capability is uniquely chartered by the Seaborne Target Project Manager of the Naval Sea Systems

Command. No other target organization of this magnitude or capability exists anywhere in the world.

It has deep water harbor facilities for its seaborne targets at Port Hueneme, uniquely linked to 125,000 square miles of instrumented sea range and airspace to conduct test and evaluation. Targets are remote controlled using the Integrated Target Control Systems (ITCS), VEGA or UHF system which provide command control, telemetry and tracking capability. These systems are interconnected to Point Mugu, Channel Islands, San Nicolas Island and Laguna Peak through microwave and fiber optics thus extending range, control and data collection capabilities. These resources are also available at China Lake, Puerto Rico, Pacific Missile Range Hawaii and Wallops Island providing a common interconnect for target services. Radar tracking, telemetry, navigation and communications linkages between Point Mugu, Vandenberg Air Force Base, Edwards Air Force Base, China Lake, Channel Islands, Laguna Peak and San Nicolas Island are used via fiber optics and microwave for real time position display and post operation data reduction .

The Port Hueneme harbor facilities provides a physical interconnect to the Sea Test Range at Point Mugu for seaborne targets and with the Port Hueneme Division Naval Surface Warfare Center for development, test and operation of the Self Defense Test Ship facilities which are unique to the NAWCWPNS Sea Test Range. This linkage is vital to the proposed Ballistic Missile Defense Office (BMDO) use of seaborne targets as launch platforms for unique aerial targets

T&E for air-to-surface and surface-to-surface weapons systems. Targets are used for radar acquisition test, electronic countermeasures (jamming) evaluation, infrared measurement/test, radar cross evaluation, decoy effectiveness, maneuver analysis, electronic warfare, warhead effectiveness and evaluation of Fleet tactics, Fleet readiness and Fleet effectiveness. Target specific testing involves Target development and T&E; Target Auxiliary and Augmentation System development and T&E; and Target Control System development and T&E.

E.1.A. Yes. Plans are being formulated to utilize ships as launch platforms for a variety of aerial target systems. This is both feasible and practical. We are currently designing adaptations to the DOD's newest target ship configuration to add the capability to launch high-performance, supersonic, sea-skimming targets. This capability will greatly expand the complexity of operational scenarios. As the launch platform can be operated without personnel aboard, the launch platform can operate within areas heretofore considered unsafe. We can also increase the level of support currently provided to other services and to FMS.

TARGET AUGMENTATION SYSTEMS CAPABILITY

E.1. Yes. Expansion in terms of more/new T&E and target support capabilities are virtually unlimited within allocated funding availability. The facility can provide operations at a higher tempo than presently required, i.e., overtime, second shift, test overlaps, workforce/workload realignments, and/or a combination of each of these measures.

E.1.A. Yes. Armament/Weapons: Given the current facilities and TAS/CTAS expertise we are capable of providing target configurations to a greater number and variety of targets—aerial (full and sub scale) surface, land, and particularly Unmanned Air Vehicles (UAV's)

TARGET CONTROL SYSTEMS CAPABILITY

E.1. Yes. Colocation with Ranges, Targets development and operations, Expansion and additional workload are both unlimited aspects of this facility. The capability to increase operational tempo is flexible via personnel sizing and funding allocation. The proximity of other air and surface target service organizations, aircraft runways, San Nicolas Island, open air range, Port Hueneme harbor, ship berthing facilities and the NAWSP Point Mugu facilities allow for expanded output in the area of engineering, logistics and operations. These facilities are uniquely located to provide synergism among target facilities. Additional workload in the areas of target command, control and data link

systems, modeling and simulation for target, and target auxiliary systems utilizing existing weapon system modeling and simulation facilities could readily be implemented.

E.1.A. Yes. Functional areas of Air Vehicles, Armament/ Weapons.

Workload could easily be accepted in the areas of Command and control of Unmanned Air Vehicles, Remotely Piloted Vehicles, Seaborne vehicles or Ground vehicles. Data links design, development and in-service support could be provided for almost any conceivable vehicle application

THREAT ELECTRONIC COUNTERMEASURES SIMULATORS

E.1. Yes. Expansion and additional workload are both unlimited aspects of this facility. The capability to increase operation tempo is flexible via personnel sizing and funding allocation. The proximity of other air and surface target service organizations, aircraft runways, San Nicolas Island, open air range, Port Hueneme harbor, ship berthing facilities, and the NAWS Point Mugu facilities allow for expanded output in the areas of engineering, logistics, and operations. These facilities are uniquely located to provide synergism among target facilities. Additional workload in the areas of modeling and simulation for target, target control, and target auxiliary system utilizing existing weapon system modeling and simulation facilities could readily be implemented.

E.1.A. Yes. Support additional new or upgraded DOD weapons ECCM and ESM capabilities could be accomplished. An example of this would be the ECM/ECCM support that is being initiated for the Air Force F-22 program.

THREAT RADAR SIGNALS SIMULATORS

E.1. Yes. Expansion and additional workload are both unlimited aspects of this facility. The capability to increase operation tempo is flexible via personnel sizing and funding allocation. The proximity of other air and surface target service organizations, aircraft runways, San Nicolas Island, open air range, Port Hueneme harbor, ship berthing facilities, and the NAWS Point Mugu facilities allow for expanded output in the areas of engineering, logistics, and operations. These facilities are uniquely located to provide synergism among target facilities. Additional workload in the areas of modeling and simulation for target, target control, and target auxiliary system utilizing existing weapon system modeling and simulation facilities could readily be implemented.

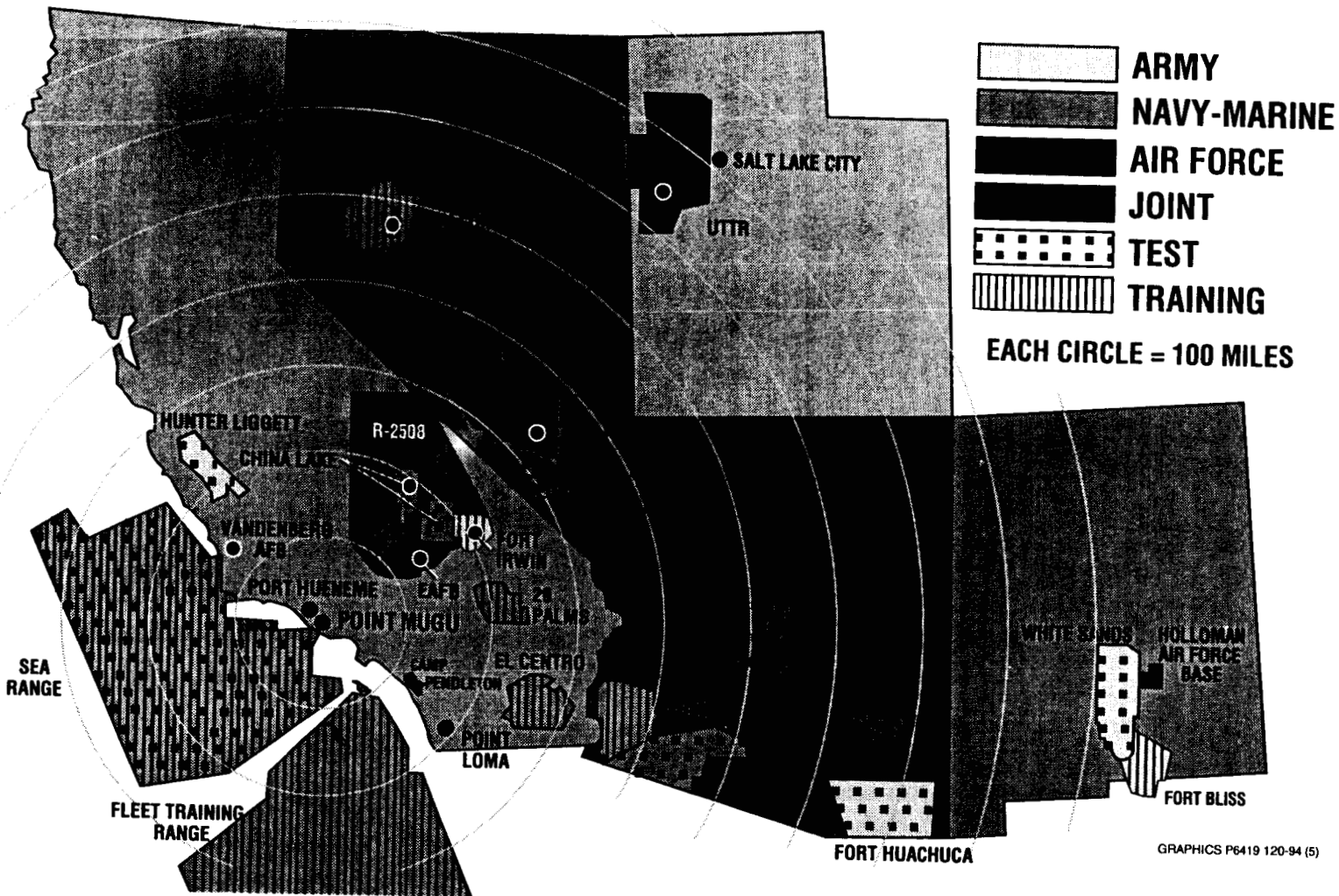
E.1.A. Yes. Support additional new or upgraded DOD weapons ECCM and ESM capabilities could be accomplished. An example of this would be the ECM/ECCM support that is being initiated for the Air Force F-22 program.

-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. The Sea Range is situated between warning areas controlled by the Fleet Area Coordination and Scheduling Facility in San Diego; thus, large expanses of DOD-controlled sea space are readily available and used (e.g., Trident FOT&E operations). In addition, inland routes to R-2508 (Edwards/China Lake/Fort Irwin controlled airspace of over 17,000 square miles) provide expanded test operations for cruise missile and other long-range systems.

A major initiative now under way is further expansion of operations with other test and training ranges in the Southwestern United States. A Memorandum of Agreement with the Marine Corps will further partnership efforts to conduct scenarios between the Sea Range and the Marine Training Center at Twentynine Palms for both test and training applications. Camp Pendleton is also under evaluation.

The basic fact that within the Southwestern U.S. there are 14 large DOD test and training ranges within tactical range of one another must be given strong consideration because of their ready availability and flexibility in meeting the dynamic changes faced by DOD in areas such as multiple threats, joint operations, theater-level systems, and littoral warfare.



GRAPHICS P6419 120-94 (5)

West Coast Resources: Large Service Test and Training Ranges

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

Yes. NAWCWPNS Point Mugu provides research, development, test, and evaluation (RDT&E) for projects involving highly classified technology. These projects are composed of various tasks involving all directorates at Point Mugu. The site offers a unique capability to test such systems in a sea environment, providing test results in real-life conditions.

The number and size of these programs at Point Mugu have steadily increased over the past several years as a result of the successful T&E of these highly classified systems.

The specific major technical roles performed at the Point Mugu site are:

- **Special Projects Security Support:** Includes development and enforcement of operational security procedures, physical security, personnel security, test and evaluation security support.
- **Special Projects RDT&E:** Includes test planning, operation execution, material acquisition, test site preparation, data collection, real-time data analysis, post-operational data analysis, laboratory, simulation, and flight tests.

NAWCWPNS Point Mugu currently has 19 facilities in which Special Projects are supported. These facilities were designed to meet Defense Intelligence Agency Memorandum (DIAM) 50-3 security requirements. These include engineering laboratories, classified storage facilities, ordnance assembly buildings, secure hangars, secure data reduction and analysis facilities, and computer facilities. Some of these facilities are specially designed and constructed to meet strict TEMPEST requirements. Radar cross-section laboratories and chambers are utilized for Special Projects.

In addition, nondedicated temporary secure working areas have been established, including test control rooms, telemetry processing and display areas, and data reduction and analysis facilities.

In order to support classified Special Projects data reduction and analysis, NAWCWPNS Point Mugu has several VAX computers and computer work stations that are specially configured to process highly classified data in accordance with all relevant regulations. These stand-alone computer systems are completely dedicated to Special Projects.

In addition, unique telemetry processing equipment, computers, and facilities are approved on a nondedicated basis for Special Projects use. Missile testing laboratories are equipped with special missile test equipment that is utilized by Special Projects.

The answers to 3.1.E.3 for each of the 31 NAWCWPNS Point Mugu facilities/capabilities are as follows.

MODELING AND SIMULATION.

SIMULATION AND EFFECTIVENESS CENTER

E.3. Yes. Top Secret/Special Access Required.

TARGET SYSTEMS AND MODELING AND SIMULATION CAPABILITY

E.3. Yes. Top Secret/Special Access Required.

MEASUREMENT.

AIRBORNE INFRARED MEASUREMENTS CAPABILITY

E.3. Yes. Secret.

BISTATIC RADAR REFLECTIVITY LABORATORY

E.3. Yes. Top Secret/Special Access Required.

ELECTROMAGNETIC ENVIRONMENTAL EFFECTS LABORATORY

E.3. Yes. Secret.

ENVIRONMENTAL TEST FACILITY

E.3. Yes. Confidential.

MONOSTATIC RADAR REFLECTIVITY LABORATORY

E.3. Yes. Top Secret/Special Access Required.

READY MISSILE TEST FACILITY

E.3. Yes. Secret.

RELIABILITY TEST FACILITY

E.3. Yes. Confidential.

SEA LEVEL CLIMATIC CHAMBER

E.3. No.

SUPPORT EQUIPMENT ENGINEERING AND TEST COMPLEX

E.3. Yes. Secret.

TELEMETRY/TEST ARTICLE INSTRUMENTATION

E.3. Yes. Secret.

INTEGRATION LABORATORY.

ELECTRONIC WARFARE COUNTERMEASURES SYSTEMS CAPABILITY

E.3. Yes. Secret.

EW/RADAR SUPPORT EQUIPMENT

E.3. Yes. Secret.

INFORMATION WARFARE SYSTEMS LABORATORY COMPLEX

E.3. Yes. Top Secret/Special Access Required.

INTERCEPT WEAPONS EVALUATION FACILITY

E.3. Yes. Top Secret/Special Access Required.

LASER AND STABILIZED OPTICS

E.3. Yes. Secret.

WARNING AND SURVEILLANCE SYSTEMS CAPABILITY

E.3. Yes. Secret.

WEAPON SYSTEMS SUPPORT ACTIVITY (WSSA), F-14

E.3. Yes. Top Secret/Special Access Required.

WEAPONS SYSTEMS SUPPORT LABORATORY (WSSL), EA-6B

E.3. Yes. Top Secret/Special Access Required.

HARDWARE-IN-THE-LOOP.

ELECTRONIC COMBAT SIMULATION AND EVALUATION LABORATORY (ECSEL)

E.3. Yes. Secret.

MISSILE HARDWARE-IN-THE-LOOP FACILITY

E.3. Yes. Top Secret/Special Access Required.

STRIKE WEAPONS EVALUATION FACILITY

E.3. Yes. Top Secret/Special Access Required.

OPEN AIR.

AERIAL TARGETS COMPLEX

E.3. Yes. Top Secret/Special Access Required.

AIRCRAFT OPERATIONS AND MAINTENANCE CAPABILITY

E.3. Yes. Secret.

SEA TEST RANGE

E.3. Yes. Top Secret/Special Access Required.

SURFACE TARGETS COMPLEX

E.3. Yes. Top Secret/Special Access Required.

TARGET AUGMENTATION SYSTEMS CAPABILITY

E.3. Yes. Top Secret/Special Access Required.

TARGET CONTROL SYSTEMS CAPABILITY

E.3. Yes. Top Secret/Special Access Required.

THREAT ELECTRONIC COUNTERMEASURES SIMULATORS

E.3. Yes. Top Secret/Special Access Required.

THREAT RADAR SIGNAL SIMULATORS

E.3. Yes. Top Secret/Special Access Required.

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

The answers to 3.1.E.4 for each of the 31 NAWCWPNS Point Mugu facilities/capabilities are as follows.

MODELING AND SIMULATION

SIMULATION AND EFFECTIVENESS CENTER

E.4. Yes. Upgrade of computer equipment will keep the facility current, increase computing and simulation capabilities by becoming more reliable and faster. These upgrades will be funded primarily by reimbursement.

TARGET SYSTEMS MODELING AND SIMULATION CAPABILITY

E.4. Yes. A Surface Targets Development Laboratory is currently planned under MILCON P061. Additionally, a material/commodity utilization database and engineering/ logistics data repository for targets is being developed. This effort includes enhancement of current modeling & simulation computer hardware and software and the addition of DOD specification/standards and material information services.

MEASUREMENT

AIRBORNE INFRARED MEASUREMENTS CAPABILITY

E.4. No.

BISTATIC RADAR REFLECTIVITY LABORATORY

E.4. Yes. In FY94, \$1.3M was received to acquire a new radar system and provide additional radar absorbing. Additionally, \$150K enhancement of the vertical bistatic measurement capability is planned for FY94. Funding (\$2.5M) for a collimator and feeds to provide full capability for far field horizontal bistatic measurements is planned for FY96/97. During 1988 through 1993, approximately \$3.5M was invested in upgrades.

ELECTROMAGNETIC ENVIRONMENT EFFECTS LABORATORY

E.4. No.

ENVIRONMENTAL TEST FACILITY

E.4. No.

MONOSTATIC RADAR REFLECTIVITY LABORATORY

E.4. Yes. Enhance radar instrumentation frequency range through W band.

READY MISSILE TEST FACILITY

E.4. No.

RELIABILITY TEST FACILITY

E.4. No.

SEA LEVEL CLIMATIC CHAMBER

E.4. Yes. MIL-STD-810 - Solar Radiation Capability

SUPPORT EQUIPMENT ENGINEERING AND TEST COMPLEX

E.4. Yes. Modernization and upgrade existing office spaces and conversion of available space will allow for a larger compliment of personnel on site to support existing as well as anticipated programs.

TELEMETRY/TEST ARTICLE INSTRUMENTATION

E.4. No.

INTEGRATION LABORATORY**ELECTRONIC WARFARE COUNTERMEASURES SYSTEMS CAPABILITY**

E.4. No.

EW/RADAR SUPPORT EQUIPMENT

E.4. No.

INFORMATION WARFARE SYSTEMS LABORATORY COMPLEX

E.4. Yes. Efforts are currently underway to interconnect the IWS Lab Complex with National Assets over the Defense Simulation Internet. Once accomplished our modeling and simulation capability will be significantly enhanced by our ability to utilized other national assets. In addition, a state of the art virtual reality engine (Silicon Graphics Onyx) is planned for procurement in FY-95. This acquisition will improve our simulation capability immensely.

INTERCEPT WEAPONS EVALUATION FACILITY

E.4. Yes. Upgrade of computer equipment will keep the facility current, increase computing & simulation capability and could increase capacity by virtue of being more reliable & faster. These upgrades will be funded primarily by projects.

LASER AND STABILIZED OPTICS

E.4. No.

WARNING AND SURVEILLANCE SYSTEMS CAPABILITY

E.4. No.

WSSA, F-14

E.4. Yes.

WSSL, EA-6B

E.4. Yes. Facility capacity and capability will be increased due to planned improvements to the EA-6B WSSL to support EA-6B Block upgrades. In addition, the Tactical EA-6B Mission Support (TEAMS) system is being upgraded and added to the EA-6B Systems facility.

HARDWARE-IN-THE-LOOP**ELECTRONIC COMBAT SIMULATION AND EVALUATION LABORATORY (ECSEL)**

E.4. Yes. New open loop simulation capability is being developed to simulate threat weapon systems with complex waveforms. A new J Band advanced technology simulator will allow closed loop testing of advanced threats.

MISSILE HARDWARE IN THE LOOP FACILITY

E.4. Yes. NAWCWPNS has proposed a FY 1997 MILCON project (P-199) to expand the Missile Hardware-in-the Loop Facility at the Naval Air Warfare Center, Point Mugu, California, to incorporate an Advanced Multimode Missile Test Laboratory (AMMTL). The Advanced Multimode

Missile Test Laboratory is designed to provide a completely new capability for testing any tactical missile in a Hardware-in-the-Loop environment (HWIL) with millimeter wave RF guidance plus an additional mode, or modes, using IR, EO, UV or laser sensors separately or in combination on the same missile. Neither the military services nor industry has a laboratory adequate to fill this need. The AMMTL will use a dynamic 3-axis flight table in the anechoic chamber to produce realistic missile body rates and angles. A phased array of dual polarized horns will furnish dynamic target motion providing multiple simulated targets. RF sources will be available to provide skin return, cross-pole noise, scintillation, phase noise, glint, JEM, front and rear multi-path effects, ducting and any ECM technique available. The size of the AMMTL will be 80 feet wide, 60 feet high, and will provide a missile-to-target range of 90 feet.

STRIKE WEAPONS EVALUATION FACILITY

E.4. No.

OPEN AIR

AERIAL TARGETS COMPLEX

E.4. Yes. A material/commodity utilization database and engineering/logistics data repository for targets is being developed. This effort includes enhancement of current computer hardware and software and the addition of DOD specification/standards and material information services.

AIRCRAFT OPERATIONS AND MAINTENANCE CAPABILITY

E.4. No.

SEA TEST RANGE

E.4. Yes. The Sea Range has for many years pursued an improvement and modernization program designed to support the myriad of DOD users of the range while bringing expanded capacity and flexible support capabilities to this broad customer base. Current (through FY95) capital improvements to increase our capacity/ capability include:

FOCUS.

This fiber-optic data link between Point Mugu and San Nicolas Island provides significantly broader bandwidth for data transfer between telemetry, tracking, and surveillance sensors on the island and processing/display systems on the mainland. Data security will also be improved.

Internetted Range Interactive Simulation.

This project, sponsored by the Defense Modeling and Simulation Office in FY93 and FY94, will link virtual and constructive simulations at China Lake (the F-18 Weapons Software Support Facility and the Weapons and Tactical Analysis Center) with live entities on the Sea Range, greatly enhancing a "realistic" combat environment for testing and training.

Global Positioning System.

The Sea Range is participating with other DOD ranges in the acquisition of Global Position System (GPS) air- and ground-based tracking systems. The Range Joint Program Office (RAJPO) will acquire this equipment, which will be common to all the participating ranges. The Sea Range is acting as the executive agent for all the Navy ranges in this acquisition. The GPS equipment suite will provide the extension of precision instrumentation tracking, for those vehicles equipped with the RAJPO GPS units, well beyond the 36,000 square miles of controlled air and sea space assigned to the Sea Range. This will result in expansion of precision instrumented area to over 137,000 square miles —125,000 square miles in the westerly direction (the sea portion of a circle 250 nautical miles in radius centered at San Nicolas Island) and 12,000 square miles in an easterly direction (the land portion of a circle 90 nautical miles in radius centered at Point Mugu).

Telemetry Processing System.

This newly acquired system provides faster real-time processing and display of more and denser telemetry data streams with versatile CRT displays as well as traditional strip charts. Four parallel systems allow coverage of large operations, high-density data weapons, or up to four simultaneous secure operations.

Range Data System.

This project makes use of advanced technology to replace our high-cost, high-powered mainframe central computers. Low-priced, high-powered workstations and network sharing of processing tasks will replace current data-processing techniques for real-time and post operation analysis. Existing software is being ported over to open architecture based software. System flexibility and expandability inherent in this architecture allows the system to adapt its computer power to apply to various simultaneous real-time and non-real-time operations, applying required computer power as demands change. This is significant to expandability since processing power can be added to or removed from the active processing of range data on demand.

Control Room Upgrades.

This project, nearing completion, will completely remodel the three operational control rooms to fully equip them with advanced workstations, replacing outdated CRT display units. The rooms support simultaneous operations conducted on the Sea Range and elsewhere. The new workstations function under a Windowstm-like environment for ease of operation, greatly simplifying real-time operations and facilitating restructuring support within and between operations. The new workstations accommodate modeling and simulation with live entities, provide 3-D display for better real-time analysis, and support sophisticated real-time displays combining numerous telemetered functions in various formats with TSPI data displayed on maps and/or axes. All control rooms have extensive secure and unsecured communications. Two control rooms are equipped with target-control systems.

Mobile Metric Radar.

This FY95 project will provide the Sea Range with a relocatable metric radar with an accuracy of that of an AN/FPS-16. While principally located at one of several sites on San Nicolas Island, to support weapons T&E against very low-flying threats (e.g., RAM and CIWS), the mobile feature will provide easy expandability of metric tracking around the Sea Range when test geometries dictate. Several radar sites will be prepared on the offshore islands to accommodate this radar and the Multiple Object Tracking Radar (MOTR) located at Vandenberg AFB.

SURFACE TARGETS COMPLEX

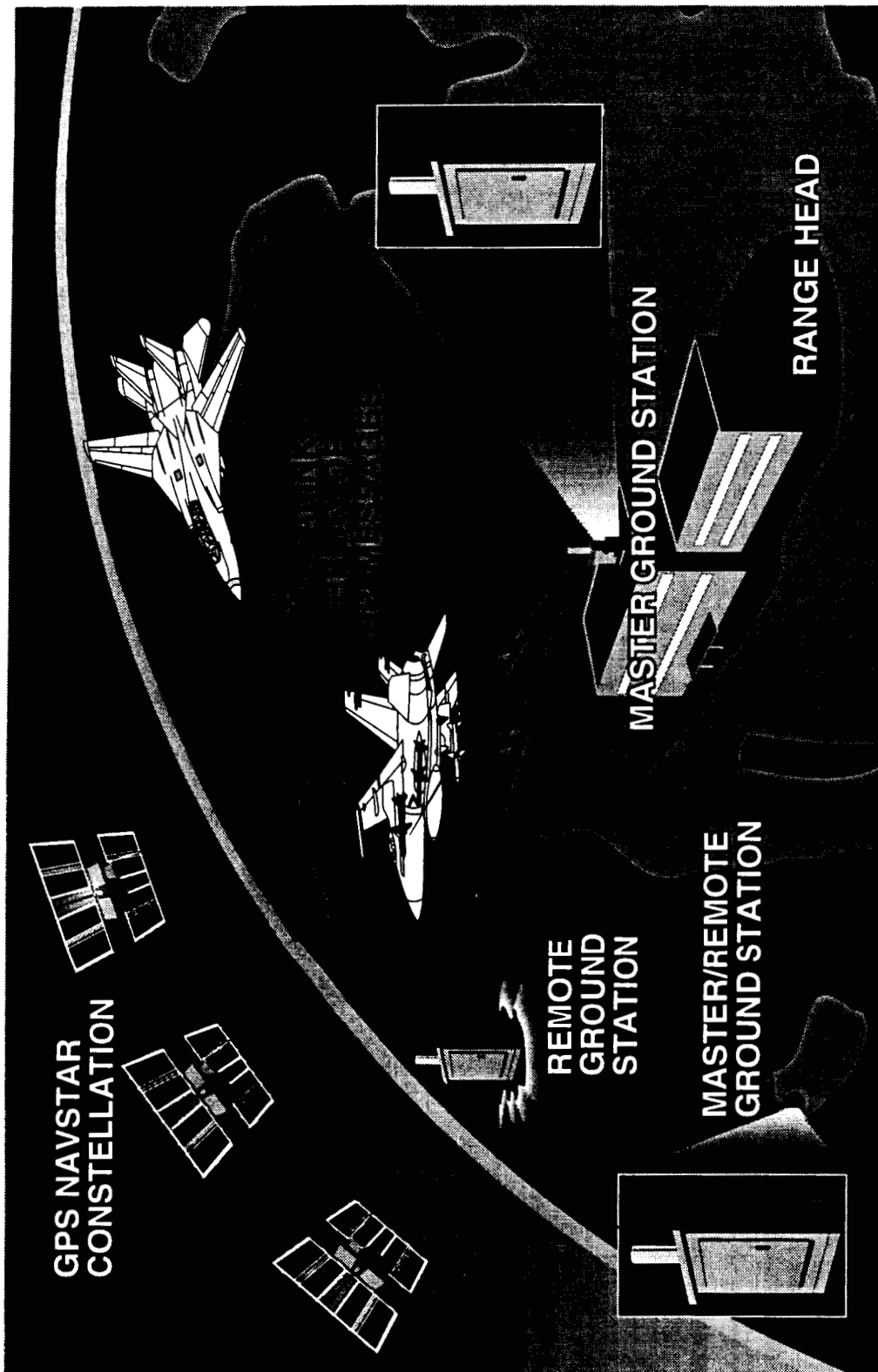
E.4. Yes. The Surface Targets Development Lab is programmed as MILCON P061. This facility will significantly increase the capacity and complexity of seaborne target development work. This is especially significant with the advent of more sophisticated and discriminating weapon systems. Testing these weapons will demand a significantly higher degree augmentation systems which can provide much higher pedigree of threat simulation.

TARGET AUGMENTATION SYSTEMS CAPABILITY

E.4. No.

TARGET CONTROL SYSTEMS CAPABILITY

E.4. Yes. A Surface Targets Development Lab is currently planned under MILCON P061. Additionally, a material/commodity utilization database and engineering/logistics data repository for targets is being developed. This effort includes enhancement of current computer hardware and software and the addition of DOD specification/standards and material information services.



Global Positioning System

BRAC 95 DATA CALL #13

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T&E

ACTIVITY UIC: 63126

THREAT ELECTRONIC COUNTERMEASURES SIMULATORS
E.4. No.

THREAT RADAR SIGNALS SIMULATORS
E.4. 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.*

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

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

The answers to 3.1.F.1., 3.1.F.1.A., and 3.1.F.1.B. for each of the 31 NAWCWPNS Point Mugu facilities/capabilities are as follows.

MODELING AND SIMULATION

SIMULATION AND EFFECTIVENESS CENTER

F.1. No.

F.1.A. No.

F.1.B. No.

TARGET SYSTEMS MODELING AND SIMULATION CAPABILITY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. This facility/capability is unique within DOD, the U.S. Government and the United States. It is a one-stop-shopping-center for targets; that is, it provides for the complete life cycle management of target systems. This capability includes full spectrum engineering support (acquisition, T&E, production, in-service, phase out); world wide operational services; and cradle to the grave logistics management services. The inventory of targets both in number and types, is unmatched anywhere and includes full-scale, subscale, missile, seaborne, and land targets. Additionally, all target auxiliary/augmentation systems are provided by this facility, including; target control systems, payloads, and advanced target systems. It has the capability, as well as the responsibility, through the Local Engineering Change process to provide target modifications to satisfy customer unique requirements (i.e. performance, radar cross section, electronic countermeasures, infrared, infrared countermeasures, payloads, and maneuvering.) This capability is uniquely chartered by the targets class desk of the Naval Air Systems Command. No other target organization of this magnitude or capability exists anywhere in the world.

MEASUREMENT

AIRBORNE INFRARED MEASUREMENTS CAPABILITY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. Airborne system is unique in its capability to collect simultaneous data from three infrared instruments and four captive infrared missiles and in its capability to perform tests at supersonic speeds.

BISTATIC RADAR REFLECTIVITY LABORATORY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. The Bistatic Radar Reflectivity Laboratory (RRL) is the only indoor facility capable of near-field and far-field bistatic measurements of full-scale missile and other aerial vehicles, models, or components up to 30 feet in length. These measurements can be achieved over a very wide frequency range from VHF through W-Band. The large size provides for measurements at bistatic angles from 0-180 degrees horizontally and 0-90 degrees vertically and also supports the full requirements for monostatic measurements. The indoor facility provides all-weather, day-night

capability in a secure environment. These capabilities are not achieved in any other indoor or outdoor DOD or contractor facility.

The following projects have required the unique capabilities of the Bistatic RRL during the period 1992 through 1994: ERINT, GLOM, MESA, AEGIS (various targets), SM-2, MRUAV, GUILDER HAWK, HERA (STORM), BLACKJACK (BMD), AQM, and BQM targets for various NAWCWD flight test support. These measurements support signature requirements for targets used in flight tests of missile weapon systems, for survivability analyses of new cruise missile designs, and development and T&E of low observable materials and techniques.

The 13 members of the Bistatic and Monostatic RRL technical staff have a combined experience of over 150 years in RCS measurements and related fields of electromagnetic radiation phenomena. The staff include two Ph.Ds, one Ph.D. candidate, and four MSEEs. The collocation of the bistatic and monostatic capabilities supported by a single workforce and infrastructure provide significant efficiency. Outdoor RCS ranges are very limited in achievable bistatic angles and their availability and cost of use are impacted by weather and hostile surveillance concerns. Measurement costs for the indoor facility are typically one-half for comparable tests on outdoor ranges.

ELECTROMAGNETIC ENVIRONMENT EFFECTS LABORATORY

F.1. No.

F.1.A. No.

F.1.B. No.

ENVIRONMENTAL TEST FACILITY

F.1. No.

F.1.A. No.

F.1.B. No.

MONOSTATIC RADAR REFLECTIVITY LABORATORY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. The capabilities of the monostatic facility at Point Mugu are not easily achieved in any existing or planned facility. The facility has been in operations since 1968 and major upgrades were completed in 1990. The laboratory offers a high degree of flexibility to accommodate a wide variety of unique measurement tasks for missiles or targets weighing up to 2,000 pounds. The facility offers measurement capability over a wider frequency range and with more varied data products than other indoor ranges. These measurement support requirements for targets used in flight missile weapon systems and for survivability analysis of new cruise missile designs.

The 13 members of the Bistatic and Monostatic RRL technical staff have a combined experience of over 150 years in RCS measurements and related fields of electromagnetic radiation phenomena. The staff include two Ph.Ds, one Ph.D. candidate, and four MSEEs. The collocation of the bistatic and monostatic capabilities supported by a single workforce and infrastructure provide significant efficiency. Outdoor RCS ranges are very limited in achievable bistatic angles and their availability and cost of use are impacted by weather and hostile surveillance concerns. Measurement costs for the indoor facility are typically one-half for comparable tests on outdoor ranges.

READY MISSILE TEST FACILITY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. These are the only ordnance approved test facilities, which allow the combined environments testing on all-up-round tactical missiles.

RELIABILITY TEST FACILITY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. This is the only facility that can reproduce the stresses of captive flight environments, dynamically (acoustics and shakers), thermally, and functionally.

SEA LEVEL CLIMATIC CHAMBER

F.1. No.

F.1.A. No.

F.1.B. No.

SUPPORT EQUIPMENT ENGINEERING AND TEST COMPLEX

F.1. Yes.

F.1.A. No.

F.1.B. No. The uniqueness of the Sea Range together with the specialized missile test capabilities of our facilities have attracted weapon and aircraft TECHEVAL efforts for across DOD

TELEMETRY/TEST ARTICLE INSTRUMENTATION

F.1. No.

F.1.A. No.

F.1.B. No.

INTEGRATION LABORATORY

ELECTRONIC WARFARE COUNTERMEASURES SYSTEMS CAPABILITY

F.1. No.

F.1.A. No.

F.1.B. No.

EW/RADAR SUPPORT EQUIPMENT

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. The EW/Radar Support Equipment Laboratory is the only facility, with installed avionics systems and actual aircraft platform radio frequency transmission lines, available to perform support systems integration and T&E. The laboratory has been used for US Air Force support systems development.

INFORMATION WARFARE SYSTEMS LABORATORY COMPLEX

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. The IWS Lab Complex is the only facility providing development, production, and in-service engineering support to the Tactical Electronic Reconnaissance Processing and Evaluation System. The IWS Lab Complex is unique in that it is the only facility currently integrating development efforts on intelligence processing systems with mission planning systems in an open architecture environment. Further, this complex is unique in the fact that it is colocated and interconnected to the EA-6B WSSA and the NAWCWPNS Battle Management Interoperability Center.

INTERCEPT WEAPONS EVALUATION FACILITY

F.1. No.

F.1.A. No.

F.1.B. No.

LASER AND STABILIZED OPTICS

F.1. No.

F.1.A. No.

F.1.B. No.

WARNING AND SURVEILLANCE SYSTEMS CAPABILITY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. The overall capability, including expertise and laboratory support, to perform the services for the multi-spectral systems previously described is unique and not available elsewhere.

WSSA, F-14

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. The F-14 WSSA is the only facility capable of performing the full development and test of F-14 tactical software anywhere. The physical assets and technical expertise only exist at this facility and within its local support contractors.

WSSL, EA-6B

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. Currently, the EA-6B Weapons System Support Laboratory (WSSL) is the only facility which can support the EA-6B Weapons System Support Activity (WSSA). The Electronic Warfare Data Support (EWDS) laboratory is the only facility which can support specific intelligence data engineering for the EA-6B Tactical Jamming System. These roles and capabilities are unique in DOD. In addition the EA-6B laboratories are networked with the Information Warfare Support laboratory complex and shares resources with the Electronic Combat Simulation and Evaluation Laboratory.

HARDWARE-IN-THE-LOOP

ELECTRONIC COMBAT SIMULATION AND EVALUATION LABORATORY (ECSEL)

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. The magnitude of the naval threat open loop simulation capability is not available anywhere else.

MISSILE HARDWARE IN THE LOOP FACILITY

F.1. No.

F.1.A. No.

F.1.B. No.

STRIKE WEAPONS EVALUATION FACILITY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. There is no other facility with the unique set of target generation equipment and instrumentation in proximity to a real test environment representative of the operational need. Proximity to other technical assets, such as RCS measurement chambers and the sea and land test range assets, provides and unmatched evaluation capability.

OPEN AIR

AERIAL TARGETS COMPLEX

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. This facility/capability is unique within DOD, the U.S. Government and the United States. It is a one-stop-shopping-center for targets; that is, it provides for the complete life cycle management of target systems. This capability includes full spectrum engineering support (acquisition, T&E, production, in-service, phase out); world wide operational services; and cradle to the grave logistics management services. The inventory of targets both in number and types, is unmatched anywhere and includes full-scale, subscale, missile, seaborne, and land targets. Additionally, all target auxiliary/augmentation systems are provided by this facility, including; target control systems, payloads, and advanced target systems. It has the capability, as well as the responsibility, through the Local Engineering Change process to provide target modifications to satisfy customer unique requirements (i.e. performance, radar cross section, electronic countermeasures, infrared, infrared countermeasures, payloads, and maneuvering.) This capability is uniquely chartered to Point Mugu by the targets class desk of the Naval Air Systems Command. No other target organization of this magnitude or capability exists anywhere in the world.

AIRCRAFT OPERATIONS AND MAINTENANCE CAPABILITY

F.1. No.

F.1.A. No.

F.1.B. No.

SEA TEST RANGE

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. The Sea Test Range at Point Mugu is DOD's largest and most heavily instrumented sea/air range, encompassing 125,000 square miles of instrumented test space with 36,000 square-nautical miles of controlled airspace. This Range has the unique feature of geographic location combined with a highly-instrumented coastal region and offshore islands. The Point Mugu Sea Test Range has the capability of providing and supporting true at-sea and littoral scenarios. Facilities that are located at Point Mugu, Laguna Peak, and on the outlying islands of San Nicolas, Santa Cruz, Santa Rosa, and San Clemente, as well as up the coast to Tassajera Peak and as far south as San Diego, provide capability for precision metric tracking of up to 35 objects, target control for up to 10 airborne and surface targets, and telemetry for up to 20 sources. The Point Mugu site offers the advantage of laboratories colocated with operational air and sea test range capabilities. The combination of location, extensive instrumentation capacity, over-the-horizon command and control, unique test capabilities, and a highly-skilled, experienced technical work force provides a realistic sea/air environment for conducting large integrated, joint test and evaluation, and training exercises with integrated subsurface, surface, and air coverage. Finally, Laguna Peak supports command-and-destroy capabilities for ICBM and Polar satellite launches.

Unique Sea Test Range Capabilities.

- Complex multiparticipant, multiple warfare area operations
- Coordinated air, surface, and submarine operations
- Submarine, surface, and air-launched cruise weapons testing
- Long-range, large-hazard-pattern weapons testing
- Ballistic missile operations support
- ICBM and Polar-orbit satellite launch operations support
- Sea-environment special access program support
- Classified target development and testing

- Joint engagement zone scenarios
- Simulated regional conflict operations
- Multiple participant live-fire exercises
- Theater missile defense
- Radar-cross-section measurement of sea and air platforms

SAN NICOLAS ISLAND (SNI).

SNI is located 60 miles southwest of the Point Mugu main base and is one of the cornerstones in the Sea Test Range capabilities because of its land mass and depth of surrounding waters. It allows the unique replication of some high-threat areas around the world. Furthermore, because of its remoteness and secured environment, multiple special-access programs can be conducted. SNI is heavily-instrumented with metric tracking, telemetry, and communications necessary to support testing and Fleet training and theater missile defense exercises. Finally, because of its isolated environment and shoreline characteristics, SNI is ideal for providing littoral warfare training exercises, including triservice and theater warfare exercises. SNI provides unique instrumentation capabilities required to support Polar satellite launches from Vandenberg AFB.

SANTA CRUZ ISLAND (SCI).

Located approximately 25 nautical miles west of Point Mugu is another unique instrumented island used for meteorological data collection, secure VHF/UHF radio communications, and data transmission, including microwave relay to/from Vandenberg AFB, and surveillance radar coverage of the inner Sea Test Range. Also located on the island is the Santa Cruz Acoustic Range Facility (SCARF),, which is a unique underwater test capability used to measure acoustic characteristics of underwater weapons systems; and the Santa Cruz Radar Imaging Facility (SCRIF), which uses surface surveillance radar to track and collect radar-cross-section data on test ships up to 20 miles off the coast.

LAGUNA PEAK.

Located 1567' above the eastern corner of the Point Mugu complex, Laguna Peak provides an elevated line of sight and over-the-horizon transmitter capability for flight control of guided missiles and pilotless aircraft and command control/command-destruct of test and ballistic missiles launched from Vandenberg AFB. In addition, Laguna Peak is instrumented for metric and surveillance radars, telemetry reception, optics, UHF/VHF (including mobile) communications, and RF retransmission of Range data.

DEEP WATER HARBOR.

Located 60 miles north of Los Angeles/Long Beach Harbor, Port Hueneme Harbor provides direct, adjacent access to the NAWCWPNS Sea Test Range. While handling a moderate amount of commercial cargo traffic, a significant amount of the harbor is dedicated to Navy and Military Sealift Command use; it provides the only available deep water harbor for military use between San Diego and Puget Sound. Port Hueneme, by virtue of its location, provides for efficient and cost-effective deployment of a variety of surface targets in support of weapon system T&E as well as for Fleet training. The harbor geography allows for utilization of all surface threats from small, remote-controlled fiberglass vessels, tow targets, DD-class target ships, as well as the next-generation Mobile Ship Target. Adjacent docks, piers and buildings allow for all major target conversion, modifications, and repairs, apart from scheduled large ship dry-docking, to be completed on the Navy's facilities. Direct land access to NAWCWPNS Point Mugu allows for efficient utilization of organic technical expertise required in the multidisciplinary nature of test and evaluation.

THREAT SIMULATION.

NAWCWPNS Point Mugu is the Navy's single facility providing full-spectrum services for all Navy aerial and surface targets, target auxiliary/augmentation systems and support systems. That

service includes development, test, operations, life cycle systems engineering and logistics support, cognizant field activity service, training and field service support, and world-wide operational deployment services for Navy, inter-service and foreign military sales support. The operational services provided on site at the Sea Test Range include the largest and most varied inventory of target services available for Fleet and test and evaluation users. Several EW Threat Simulator Development Laboratories support test operations by providing threat systems for DOD users. The Threat Simulation Support Facilities occupy 121,000 square feet for target development, engineering maintenance, and operational support for full- and sub-scale aerial targets and EW threat simulators.

In summary, the one-of-a-kind features of the Sea Test Range at Point Mugu include:

- Mandatory support instrumentation for ballistic missile and polar-orbit satellite launches from Vandenberg AFB, the only site in the U.S. from which polar-orbit satellites are launched.
- The only range complex capable of testing certain advanced variants of the Tomahawk missile.
- The only West Coast site utilized by Third Fleet for training operations incorporating live-fire weapons launches.
- Optimized siting for certain sea-environment Special Access Programs.
- Support of complex joint-service, multiparticipant, multiple warfare area operations incorporating littoral and joint strike evolutions.
- Support of long-range, large-hazard-pattern, air and surface weapons testing.

SURFACE TARGETS COMPLEX

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. This facility/capability is unique within DOD, the U.S. Government and the United States. It is a one-stop-shopping-center for targets; that is, it provides for the complete life cycle management of target systems. This capability includes full spectrum engineering support (acquisition, T&E, production, in-service, phase out); world wide operational services; and cradle to the grave logistics management services. The inventory of targets both in number and types, is unmatched anywhere and includes seaborne boats, combatant ship replicas, towed targets, and land targets. Additionally, all target auxiliary/augmentation systems are provided by this facility, including; target control systems, payloads, and advanced target systems. It has the capability, as well as the responsibility, through the Local Engineering Change process to provide target modifications to satisfy customer unique requirements (i.e. performance, radar cross section, electronic countermeasures, infrared, infrared countermeasures, payloads, and maneuvering.) This capability is uniquely chartered by the seaborne targets project management office of the Naval Sea Systems Command. No other target organization of this magnitude or capability exists anywhere in the world. It is DOD's only seaborne targets development activity. It is also the only U.S. T&E activity with direct access to a deep-water port adjacent to its operating range.

TARGET AUGMENTATION SYSTEMS CAPABILITY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. Target operations, as performed at NAWCWPNS, Point Mugu, is a one-stop shopping center for targets; providing the most complete inventory, both in number and type, anywhere and includes full scale, subscale, missile, seaborne, and land targets. Consequently, all target TAS/CTAS systems and components are provided by this facility including; command and control systems, location and identification systems, navigation systems, scoring systems, radar augmentation systems, electronic countermeasure, emitter systems, infrared augmentation systems, and visual augmentation systems. No other target organization of this magnitude or capability exists anywhere in the world.

TARGET CONTROL SYSTEMS CAPABILITY

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. Existing total Target system area with multiple range sites, experience with establishing total Range Target tracking, command, control and data link capabilities.

This facility/capability is unique within DOD, the U.S. Government and the United States. It is a one-stop-shopping-center for targets; that is, it provides for the complete life cycle management of target systems. This capability includes full spectrum engineering support (acquisition, T&E, production, in-service, phase out); world wide operational services; and cradle to the grave logistics management services. The inventory of targets both in number and types, is unmatched anywhere and includes full-scale, subscale, missile, seaborne, and land targets. Additionally, all target auxiliary/augmentation systems are provided by this facility, including; target control systems, payloads, and advanced target systems. It has the capability, as well as the responsibility, through the Local Engineering Change process to provide target modifications to satisfy customer unique requirements (i.e. performance, radar cross section, electronic countermeasures, infrared, infrared countermeasures, payloads, and maneuvering.) This capability is uniquely chartered by the targets class desk of the Naval Air Systems Command. No other target organization of this magnitude or capability exists anywhere in the world.

THREAT ELECTRONIC COUNTERMEASURES SIMULATORS

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. As the triservice leader for target emitter systems, the Vulnerability Assessment Division is the DOD focal point for developing and providing a realistic threat environment and the assessment and improvement of the performance of U.S. weapons in this environment.

THREAT RADAR SIGNALS SIMULATORS

F.1. Yes.

F.1.A. Yes.

F.1.B. Yes. As the triservice leader for target emitter systems, the Vulnerability Assessment Division is the DOD focal point for developing and providing a realistic threat environment and the assessment and improvement of the performance of U.S. weapons in this environment.

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

Program	FY92	FY93
MODELING AND SIMULATION		
Simulation and Effectiveness Center		
Army	0%	0%
Air Force	25%	25%
Target Systems Modeling and Simulation Capability		
Army	1%	1%
Air Force	2%	2%
MEASUREMENT		
Airborne Infrared Measurements Capability		
Army	0%	0%
Air Force	30%	30%
Bistatic Radar Reflectivity Laboratory		
Army	7%	7%
Air Force	15%	15%
Electromagnetic Environment Effects Laboratory		
Army	0%	0%
Air Force	0%	0%
Environmental Test Facility		
Army	1%	1%
Air Force	5%	5%
Monostatic Radar Reflectivity Laboratory		
Army	7%	7%
Air Force	15%	15%
Ready Missile Test Facility		
Army	0%	0%
Air Force	25%	25%
Reliability Test Facility		
Army	0%	0%
Air Force	25%	25%
Sea Level Climatic Chamber		
Army	0%	0%
Air Force	0%	0%

Support Equipment Engineering and Test Complex		
Army	0%	0%
Air Force	6%	6%
Telemetry/Test Article Instrumentation		
Army	1%	1%
Air Force	11%	11%
INTEGRATION LABORATORY		
Electronic Warfare Countermeasures Systems Capability		
Army	3%	3%
Air Force	3%	3%
EW/Radar Support Equipment		
Army	0%	0%
Air Force	5%	5%
Information Warfare Systems Laboratory Complex		
Army	0%	0%
Air Force	0%	0%
Intercept Weapons Evaluation Facility		
Army	0%	0%
Air Force	25%	25%
Laser and Stabilized Optics		
Army	0%	0%
Air Force	20%	10%
Warning and Surveillance Systems Capability		
Army	10%	10%
Air Force	0%	0%
WSSA, F-14		
Army	0%	0%
Air Force	0%	0%
WSSL, EA-6B		
Army	0%	0%
Air Force	0%	0%

HARDWARE-IN-THE-LOOP		
Electronic Combat Simulation and Evaluation Laboratory		
Army	5%	5%
Air Force	0%	0%
Missile Hardware-in-the-Loop Facility		
Army	0%	0%
Air Force	25%	25%
Strike Weapons Evaluation Facility		
Army	0%	0%
Air Force	0%	0%
OPEN AIR		
Aerial Targets Complex		
Army	10%	10%
Air Force	1%	1%
Aircraft Operations and Maintenance Capability		
Army	5%	5%
Air Force	5%	5%
Sea Test Range		
Army	0%	0.4%
Air Force	6%	10.2%
Surface Targets Complex		
Army	1%	1%
Air Force	2%	2%
Target Augmentation Systems Capability		
Army	4%	4%
Air Force	3%	3%
Target Control Systems Capability		
Army	1%	1%
Air Force	3%	3%
Threat Electronic Countermeasures Simulators		
Army	0%	0%
Air Force	10%	10%
Threat Radar Signals Simulators		
Army	0%	0%
Air Force	10%	10%

R 168

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ACTIVITY UIC: 63126

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

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

Airspace: The Sea Range has 125,000 square miles of operating area within reach of over-the horizon instrumentation including 36,051 square miles of directly-controlled air space. The Sea Range has instrumentation located so as to provide TSPI and telemetry reception over 125,000 square miles. Included within the 125,000-square-mile area is the Point Mugu warning areas, which total 36,051 square miles. The larger area is often used when operating in cooperation with NAVSEA, to the south, and with the Air Force, to the north.

The Extended Area Target System (EATS) consists of 24 transmitter/receiver sites stretching from San Diego to Pillar Point near San Francisco (including island sites) plus any airborne or seaborne systems which may be in an operation. The EATS range is 250 nautical miles from a receiver/transmitter site (from sea level to 100,000 feet). For a typical scenario, centered around San Nicolas Island, the chart shows the 250 mile (nautical) radius. The area of the half-circle (the area over water where the operations can and do take place) is πR^2 divided by 2 (the half-circle). This is about 95,000 square miles (nautical), which converts to about 125,000 square miles (statute).

TSPI coverage by EATS (and GPS in the future) is actually larger than 125,000 square miles in that theoretically 250 nautical mile arcs could be drawn from the northern-most and southern-most EATS sites rather than just from San Nicolas Island. However, those additional areas are only periodically used by Sea Test Range to date.

The 125,000 square mile area is roughly one-half of a 250-nautical-mile-radius circle that defines the reach of the instrumentation assets situated at San Nicolas Island. This larger area encompasses the sea from Pillar Point, near San Francisco, and southward into waters off Baja California. The warning areas to the north and south of the Sea Test Range are under the control of FACSFAC San Diego. These areas are utilized for NAWCWPNS operations through coordination with FACSFAC. Warning Areas to the north of the Sea Test Range, identified as W-283 and W-285, are approximately 12,000 square miles in size. Warning Area W-291, south of the Sea Test Range, is comprised of approximately 55,000 square miles. Areas west of the stated warning areas are under the control of the Oakland Air Route Traffic Control Center. This area is available for NAWCWPNS operational use through coordination with Oakland Air Route Traffic Control Center.

This Warning Area composite—the northern area, the Sea Test Range, and the southern area—is in excess of 103,000 square miles of scheduled controlled airspace.

Land space: 219 square miles.

Sea Space: The Sea Range has 125,000 square miles of operating area within reach of over-the horizon instrumentation of which 36,000 square miles are directly-controlled sea surface. The larger area is often used when operating in cooperation with NAVSEA, to the south, and with the Air Force, to the north.

The NAWCWPNS Point Mugu air, sea, land space, and instrumentation are fully capable of supporting Navy and Air Force tactical air and surface missile tests, including long-range standoff weapons; airborne weapons/platform integration tests; surface Navy combat system tests; air surface and submarine-launched ship and land attack cruise weapons tests; ballistic missile and

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The NAWCWPNS Point Mugu air, sea, land space, and instrumentation are fully capable of supporting Navy and Air Force tactical air and surface missile tests, including long-range standoff weapons; airborne weapons/platform integration tests; surface Navy combat system tests; air surface and submarine-launched ship and land attack cruise weapons tests; ballistic missile and satellite launch operations; as well as, Navy and joint-service large-scale, multiparticipant, multi-warfare area training exercises including littoral and strike operations into NAWCWPNS China Lake and other Southern California DOD range and training complexes.

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

The Navy owns mainland Point Mugu and San Nicolas Island. The Navy controls airspace and sea surface within the 36,000 square mile controlled area. Two of the three Channel Islands at the periphery of our operating area are owned by the National Park Service and a Nature Conservancy. The third is Navy owned but operations and management have been turned over to the Park service and the Conservancy

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

The 25 square miles surrounding San Nicolas Island are restricted. Altitude limits are surface to 110,000 feet.

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. NAWCWPNS Point Mugu has restricted areas and warning areas. We do not have corridors specifically for supersonic, but conduct supersonic operations over water when the mission dictates.

We support over-water and littoral-warfare tests including air-to-air; air-to-surface; surface-to-air; land-attack cruise; ship-attack cruise; multiple-participant; Developmental Testing/Operational Testing/Operational Evaluation (DT/OT/OPEVAL); and training exercises involving Fleet

120R (30 August 1994)

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BRAC 95 DATA CALL #13

T&E

ACTIVITY UIC: 63126

satellite launch operations; as well as, Navy and joint-service large-scale, multiparticipant, multi-warfare area training exercises including littoral and strike operations into NAWCWPNS China Lake and other Southern California DOD range and training complexes.

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

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The 25 square miles surrounding San Nicolas Island are restricted. Altitude limits are surface to 110,000 feet.

The majority of Sea Range areas are comprised of warning areas. One restricted area is contained within the largest of these warning areas, W-289. This restricted are, R-2535A/B, exists from the surface to 100,000 feet and surrounds San Nicolas Island to a distance of about 3 nautical miles. Otherwise, the Sea Range is comprised of contiguous warning areas described as follows:

W-60	Surface to unlimited
W-61	Surface to unlimited
W-289	Surface to unlimited
W-289N	Surface to Flight Level 240
W-290	Surface to Flight Level 800
W-412	Surface to 3000 feet
W-532	Surface to unlimited
W-537	Surface to unlimited (by NOTAM only)

The vast majority of NAWCWPNS Point Mugu airspace is surface to unlimited.

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. NAWCWPNS Point Mugu has restricted areas and warning areas. We do not have corridors specifically for supersonic, but conduct supersonic operations over water when the mission dictates.

We support over-water and littoral-warfare tests including air-to-air; air-to-surface; surface-to-air; land-attack cruise; ship-attack cruise; multiple-participant; Developmental Testing/Operational Testing/Operational Evaluation (DT/OT/OPEVAL); and training exercises involving Fleet components here and elsewhere. The Range frequently and normally supports simultaneous users.

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

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

Airspace: The Sea Range has 125,000 square miles of operating area within reach of over-the-horizon instrumentation including 36,000 square miles of directly-controlled air space. The larger area is often used when operating in cooperation with NAVSEA, to the south, and with the Air Force, to the north.

Land space: 66 square miles.

Sea Space: The Sea Range has 125,000 square miles of operating area within reach of over-the-horizon instrumentation of which 36,000 square miles are directly-controlled sea surface. The larger area is often used when operating in cooperation with NAVSEA, to the south, and with the Air Force, to the north.

The NAWCWPNS Point Mugu air, sea, land space, and instrumentation are fully capable of supporting Navy and Air Force tactical air and surface missile tests, including long-range standoff weapons; airborne weapons/platform integration tests; surface Navy combat system tests; air surface and submarine-launched ship and land attack cruise weapons tests; ballistic missile and satellite launch operations; as well as, Navy and joint-service large-scale, multiparticipant, multi-warfare area training exercises including littoral and strike operations into NAWCWPNS China Lake and other Southern California DOD range and training complexes.

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

The Navy owns mainland Point Mugu and San Nicolas Island. The Navy controls airspace and sea surface within the 36,000 square mile controlled area. Two of the three Channel Islands at the periphery of our operating area are owned by the National Park Service and a Nature Conservancy. The third is Navy owned but operations and management have been turned over to the Park service and the Conservancy

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The 25 square miles surrounding San Nicolas Island are restricted. Altitude limits are surface to 110,000 feet.

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. NAWCWPNS Point Mugu has restricted areas and warning areas. We do not have corridors specifically for supersonic, but conduct supersonic operations over water when the mission dictates.

We support over-water and littoral-warfare tests including air-to-air; air-to-surface; surface-to-air; land-attack cruise; ship-attack cruise; multiple-participant; Developmental Testing/Operational Testing/Operational Evaluation (DT/OT/OPEVAL); and training exercises involving Fleet components here and elsewhere. The Range frequently and normally supports simultaneous users.

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ACTIVITY UIC: 63126

Some are in different (partitioned) operating areas within the overall operating area, and some are in the same (partitioned) operating area at different altitudes.

The dimensions of the controlled airspace/sea surface are approximately 220 miles by 200 miles. The 36,000 square mile area forms roughly a trapezoid. The base of the trapezoid is the seaward edge and southwestern limit of the controlled operating area and runs parallel to the coastline.

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

The Sea Range has 36,051 square miles of airspace with 35,832 over water and 219 over land. The land figure combines San Nicolas Island (25 square miles); San Miguel Island (30 square miles); Santa Rosa Island (82 square miles); Santa Cruz Island (95 square miles) Anacapa Island (1 square mile); and Santa Barbara Island (1 square mile). This area does not include 7 square miles directly over the Point Mugu main complex. We also manage military instrument routes IR-200 and IR-206. These routes allow us, for example, to fly cruise missiles inland from the Sea Range to China Lake or to Utah. Control of IR 200 and IR-206 is under the FAA.

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

No problems are identified. We continue to share our airspace with adjacent air traffic control agencies, including Los Angeles Air Route Traffic Control Center. Pacific flights are routinely routed through our airspace with no problems. The Air Route Surveillance Radar and Air Traffic Control Display consoles are part of planned upgrades, and will be replaced with newer equipment in the late 1990's

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

Within the maximum over-the-horizon operational area, at a 250 mile radius from San Nicolas Island, the maximum straight line segment is 500 nautical miles. The maximum straight line segment within our controlled airspace is 264 nautical miles, from the southeastern corner to northwestern corner.

Although not a straight line segment, cruise missile tests are conducted over the entire length of the designated military instrument routes IR-200 and IR-206 from the Sea Test Range via NAWCWPNS China Lake to UTTR, Dugway, Utah, a nominal 1,000-mile flight length.

All ICBM test and training launches from Vandenberg AFB are supported by NAWCWPNS Point Mugu during this launch/boost phase. Metric radar data is collected until PMRF instrumentation assumes mid-trajectory track. Kwajalein (KMR) performs this terminal area tracking and telemetry data collection. This routine inter-service cooperation provides continuous track over the entire 4,200-nautical-mile flight path.

-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.*

Cruise missile tests originate in the Sea Test Range and are directed inland to NAWCWPNS, China Lake or UTTR, Dugway, Utah. During these tests, the military instrument routes IR-200 and IR-206 are invoked. This airspace is specifically designated for use by the military; public NOTAMS are issued, therefore, the airspace is not public airspace during its use. No difficulties have been experienced during any of our cruise missile tests and none are anticipated.

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T&E

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components here and elsewhere. The Range frequently and normally supports simultaneous users. Some are in different (partitioned) operating areas within the overall operating area, and some are in the same (partitioned) operating area at different altitudes.

The dimensions of the controlled airspace/sea surface are approximately 220 miles by 200 miles. The 36,000 square mile area forms roughly a trapezoid. The base of the trapezoid is the seaward edge and southwestern limit of the controlled operating area and runs parallel to the coastline.

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

No problems are identified. We continue to share our airspace with adjacent air traffic control agencies, including Los Angeles Air Route Traffic Control Center. Pacific flights are routinely routed through our airspace with no problems. The Air Route Surveillance Radar and Air Traffic Control Display consoles are part of planned upgrades, and will be replaced with newer equipment in the late 1990's

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-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.*

Cruise missile tests originate in the Sea Test Range and are directed inland to NAWCWPNS, China Lake or UTTR, Dugway, Utah. During these tests, the military instrument routes IR-200 and IR-206 are invoked. This airspace is specifically designated for use by the military; public NOTAMS are issued, therefore, the airspace is not public airspace during its use. No difficulties have been experienced during any of our cruise missile tests and none are anticipated.

121R (30 August 1994)

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The dimensions of the controlled airspace/sea surface are approximately 220 miles by 200 miles. The 36,000 square mile area forms roughly a trapezoid. The base of the trapezoid is the seaward edge and southwestern limit of the controlled operating area and runs parallel to the coastline.

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

The Sea Range has 35,952 square miles of airspace over water and 66 square miles over land. The land figure combines 25 square miles around San Nicolas Island, 7 square miles over mainland Point Mugu, and 23 square miles in the Channel Islands (Santa Cruz, Santa Rosa, and San Miguel). We also manage military instrument routes IR-200 and IR-206. These routes allow us, for example, to fly cruise missiles inland from the Sea Range to China Lake or to Utah. Control of IR 200 and IR-206 is under the FAA.

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Cruise missile tests originate in the Sea Test Range and are directed inland to NAWCWPNS, China Lake or UTTR, Dugway, Utah. During these tests, the military instrument routes IR-200 and IR-206 are invoked. This airspace is specifically designated for use by the military; public NOTAMS are issued, therefore, the airspace is not public airspace during its use. No difficulties have been experienced during any of our cruise missile tests and none are anticipated.

Five FAA corridors cross the Sea Test Range from west to east. These Control Area Extensions (CAEs) are designated CAE-1155, -1176, -1177, -1316, -1318. All except -1177 are contained within our Warning and Restricted Areas. Our agreement with the FAA is that at least two of these CAEs must remain open at all times. When not in use for range activities, they are released to the FAA. We coordinate continuously with the FAA. Our working relationship with the FAA is excellent, so we anticipate no problems in the future.

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

The NAWCWPNS Point Mugu Sea Range provides an irreplaceable operationally-realistic environment that combines open ocean, islands, coastal air and sea influences, and adjacent mountains and desert within its controlled airspace. The NAWCWPNS Point Mugu site provides precisely the combination of factors needed to satisfy DOD's emphasis on precision guided munitions and smart stand-off weapons. It also provides the realistic test and evaluation setting required to address the needs of strike, littoral, antisurface, antiair, and joint special warfare requirements.

While Point Mugu's atmosphere is typically mild and favorable for conducting test operations, it also incorporates many of the features needed to ensure that T&E of weapons systems will be performed not only under ideal conditions but also in settings that duplicate conditions experienced in the most prominent and likely theaters of operation world-wide. These features address the highest CINCPACFLT and CINCLANTFLT environmental support requirements, EM/EO propagation, and Tomahawk support. For example, the strong ducting conditions that occur in the Point Mugu area are precisely those experienced in the Northern Arabian Sea and Persian Gulf areas and which challenge AEGIS ('Shield of the Fleet') and all threat-detection system capabilities. The ability to test shipboard detection and Standard Missile capabilities in this environment enhances operational AEGIS capabilities. Testing in this environment now minimizes such uncertainties for future engagements. The Point Mugu atmosphere provides the vehicle for testing the various near-sea-surface capabilities developed by or for the Navy to measure, model, and forecast radar propagation in the shipboard boundary layer environment, where the threat from sea-skimming missiles is greatest.

In recognition of these attributes, the second phase of the NAVCENT/CNO SHAREM 110 and follow-on exercises are being planned with NAWCWPNS Point Mugu's Battle Management Interoperability Center (BMIC) serving in the role of a simulated shipboard platform. In this capacity, Point Mugu is being tasked to test the connectivity, data flow, and representativeness of model input/output of a new environmental support system being developed by the Navy prior to a ship/shore-based installation in the Mid-East. There it will be used to mitigate vulnerabilities at the 'point of the sword' for NAVCENT. Testing this new capability in the refractive environment under both surface and elevated ducting conditions off Point Mugu will ensure that the right data and expertise can be brought to bear on this high priority effort.

The development of the Tomahawk Block 3 and the Tomahawk Baseline Improvement Program (TBIP) require test and evaluation of multispectral and IR sensor performance for realistic scenarios of missile flight from a cool, moist, and potentially cloudy marine environment to a hot inland desert environment. The Point Mugu site is already designated as lead range for Tomahawk testing, and the local geography and atmospheric environment combined with the IR-200 route into China Lake provide exactly the amount of extreme inland heat, overall temperature contrast, mountain-top snow, and varying aerosol and moisture conditions to test the new and emerging Tomahawk variant and ensure it will provide the intended operational capability.

The Cruise Missile Program's Mission Planning Office has provided NAWCWPNS Point Mugu with an upgraded Mission Distribution System (MDS) in BMIC so that its capability for including meaningful environmental inputs from TESS(3), from the Navy Integrated Tactical Environmental Sub-System (NITES), and from other planned sources can be successfully incorporated and tested to enhance the mission and strike planning process. The MDS will be an integral part of the Afloat Planning System (APS), which will provide the Fleet and joint forces with an afloat capability to perform mission planning. It is essential to incorporate real-time weather considerations into this capability, and the developers are looking to NAWCWPNS Point Mugu to fill this important void

because of the ongoing work and experience with supporting Tomahawk in the NAWCWPNS air-sea environment. As capabilities are developed, they will be tested in concert with Tomahawk operational and developmental (OT/DT) tests to eliminate deficiencies and significant weather-related sensitivities encountered during Desert Storm.

During FY92, NAWCWPNS Point Mugu supported Joint Exercise Tandem Thrust and demonstrated the capability of using TESS(3) to improve on previously manual procedures for supporting Tomahawk that were employed during Desert Storm.

The importance and uniqueness of the NAWCWPNS Point Mugu air-sea environment is also demonstrated by the role that it has played in supporting the Joint Target Signatures Program (TSP). To provide a basis for making recommendations to Congress on potential investments and tradeoffs between radio frequency (RF) and electro-optical (EO) sensors, the TSP and EOMET programs conducted a Nation-wide site survey to locate an atmospheric transmission facility where sensor and weapons performance could be closely monitored in a marine environment over operationally required over-water path lengths, at the same time that the environment itself was monitored. San Nicolas Island in Point Mugu's Sea Range was selected as the best site in the Nation.

The Point Mugu-San Nicolas Island environment was also exploited throughout FY94 under Project VOCAR (Variability of Coastal Atmospheric Refractivity) wherein the Navy performed comprehensive surface, ship, land, and airborne measurements of the environment and radio propagation conditions to provide a basis for determining the magnitude of variations, and their impact on radio/radar propagation in the Fleet. Data collected then and in the future will be analyzed and used in the development of a Navy standard range-dependent propagation model.

An unsurpassable geographic and climatological asset is Laguna Peak, a 1500-foot instrumented mountain peak on the perimeter of Point Mugu that provides realistic air-to-surface paths for testing EO sensors under very controlled conditions. A variety of targets including aircraft, runways, ships at sea, islands, buildings, tanks, and various wet and dry vegetation cover can be looked at by actual weapon seekers (e.g., SLAM) in a variety of backgrounds. The Joint Test Director for the Smart Weapons Operability Enhancement (SWOE) Program has expressed interest in the utilization of this capability and sponsored an initial measurement effort in FY93 to address the void in coastal data.

During late FY93 and FY94, NAWCWPNS Point Mugu was selected as the site for testing a laser atmospheric profiling system (LIDAR) under development by the Navy as a potential shipboard replacement of balloon radiosonde systems for determining the atmospheric refractive profile. Point Mugu was selected as the site again because of the availability of the refractive conditions locally, and alternating periods of clear and clouds, which are needed to establish if the remote-sensing technique is technically and operationally feasible for the type of conditions the Fleet will operate in.

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

The NAWCWPNS Point Mugu topography and ground cover consist of a vast open ocean sea range; a chain of islands with elevations up to 2,471 feet (including the completely Navy-owned, highly instrumented, secure San Nicolas Island); a wide, developed base complete with range, airfield, launching, tracking, laboratory, simulation, communications, telemetry, geophysics and support services at Point Mugu itself; adjacent mountains and instrumented peaks; flat farmland and marshy coastal areas; and rugged tree and brush covered inland terrain ending in the Topa Topa and Santa Ynez Mountains with peaks up to 8,000 feet. Beyond the mountains, airspace opens up into the high-desert areas leading to the NAWCWPNS Land Range. Nearby Point Mugu are the major industrial and technical complexes of Los Angeles, Ventura, Orange and Santa Barbara Counties; the network of major universities, colleges and contractor organizations; and the major population centers.

The Sea Range has 36,051 square miles of airspace with 35,832 over water and 219 over land. The land figure combines San Nicolas Island (25 square miles); San Miguel Island (15 square miles); Santa Rosa Island (82 square miles); Santa Cruz Island (95 square miles); Anacapa Island (1 square mile); and Santa Barbara Island (1 square mile). This does not include 7 square miles directly over the Point Mugu main complex. We also manage military instrument routes IR-200 and IR-206. The route allows us, for example, to fly Cruise missiles inland from the Sea Range to China Lake or to Utah. Control of IR-200 and IR-206 is under the FAA.

From a T&E standpoint, the combined assets and technical base of the NAWCWPNS Point Mugu and China Lake sites provides an unparalleled location with access to abundant technical and logistical support to ensure operational realism and weapons that work.

The approximate area of each category of the topography/ground cover, including inland test areas is as follows:

Category	Approximate Area (Square Miles)
Sea	36,051 controlled, approximately 125,000 square miles instrumented
Islands (including San Nicolas Island which is 22 sq mi)	219 square miles
Mountains	100 (650 including IR-200 routes)
Cultivated lowlands	Less than 1 sq mi (325 sq mi including IR-200 routes)
Base facilities at Point Mugu	6.7
Swamp/lagoon	3.5
Forests/woodlands	20 (325 including IR-200 routes)
Desert	None (650 sq mi including IR-200 route)

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

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Yes. The open, flat, sandy beach areas and adjacent marshy Mugu Lagoon provide an unobstructed view of surface contacts over the Sea Range and enhances tracking at grazing elevation angles.

Laguna Peak serves as an excellent backdrop and target for laser and transmission tests, and its 1567 foot top serves as an incomparable air-to-surface test bed for scene/target discrimination (as discussed in 3.1.H). Further to the north, the mountains and higher terrain along the IR-200 route provide a perfect backdrop for the testing of land-attack cruise missiles. The coastal terrain

-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.

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From a T&E standpoint, the combined assets and technical base of the NAWCWPNS Point Mugu and China Lake sites provides an unparalleled location with access to abundant technical and logistical support to ensure operational realism and weapons that work.

The approximate area of each category of the topography/ground cover, including inland test areas is as follows:

Category	Approximate Area (Square Miles)
Sea	36,051 controlled, approximately 125,000 square miles instrumented
Islands (including San Nicolas Island which is 22 sq mi)	150 (66 square miles under direct control)
Mountains	100 (650 including IR-200 routes)
Cultivated lowlands	100 (325 including IR-200 routes)
Base facilities at Point Mugu	6.7
Swamp/lagoon	3.5
Forests/woodlands	20 (325 including IR-200 routes)
Desert (not including land)	650 from IR-200 route

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

Yes. The open, flat, sandy beach areas and adjacent marshy Mugu Lagoon provide an unobstructed view of surface contacts over the Sea Range and enhances tracking at grazing elevation angles.

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provides the nearly identical geographical scenario as presented in Mid-East theaters, facilitating the realistic testing of climb, thrust, mission day-type response, and other critical issues. The nature of the mountain terrain is a good exercise for the Terrain Contour Matching Correlation (TERCOM) guidance, and the higher sometimes snow-capped elevations and target areas provide a wide spectrum of scenes to exercise Digital Scene Matching Area Correlation (DSMAC) target detection capabilities as well as future routes for testing TBIP sensors.

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

No.

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

- Below 32 degrees F 0
- Between 32 and 95 degrees 365
- Above 95 degrees F 0

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

- Below 30% 5.5
- Between 30 and 80% 262.3
- Above 80% 97.2

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

- * Point Mugu averages 48.4 launch operations (2.7%) per year canceled or delayed due to weather.
- * Point Mugu averages 86.4 support operations (1.5%) per year canceled or delayed due to weather.

Overall, only 1.8% of scheduled operations are canceled or delayed due to weather.

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

Point Mugu averages 3 days (0.8%) per year of test days canceled due to weather. There is rarely any day when no operation can be conducted on the range.

-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?*

For daytime operating hours:

Number of days per year visibility is:

- Less than 1 mile 6
- Between 1 and 3 miles 36
- Greater than 3 miles 323

-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.*

Point Mugu averages VFR flying conditions 83% of the time during daytime operating hours (80.5% overall). Only 0.5% of the time during daytime operating hours (1.8% overall) are conditions below PAR. At Point Mugu, nearly all of the IFR conditions occur in the late night and near dawn early morning hours.

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

At Point Mugu, only a small percentage of test operations conducted are restricted by weather. Once the decision to proceed is made, no more than 1% of operations are adversely impacted to the extent that primary test objectives are not met. In terms of the overall percentage, Section 3.1.H.6 provided statistics showing 2.7% launch operations cancelled and 1.5% support operations cancelled for the years requested. A previous study conducted in 1973 for a 19-month period, examining weather influences from visibility, ceiling, wind, rain, electrical storms, seas, etc., showed a total of 4.2% cancellations and scrubs due to weather. Part of the percentage of scrubs were forecast or anticipated weather. With the much greater real-time weather assessment (by satellite systems) and forecast capability now installed at NAWCWPNS Point Mugu, predictions are more accurate and estimates of scrubs due to weather will be reduced.

From the standpoint of susceptibility to hazards and test cancellations from thunderstorms, icing, and severe or destructive winds, NAWCWPNS experiences a very low percentage of such adverse conditions.

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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.*

Supersonic flights of aircraft, missiles, and missile targets are conducted in the Sea Range. There are no supersonic corridors in the Sea Range, but supersonic operations are allowed in all areas that are greater than 30 miles from the coast line and the northern Channel Islands and/or above 30,000 feet in altitude.

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

Supersonic flight is authorized (without prior coordination) only beyond 30 miles from the shoreline, south and westward into the Sea Test Range, or above 30,000 feet above range areas. The airfield at Point Mugu is located on the beach about 1 mile inland (intersection of runways 03/21 and 09/27). Supersonic flight then is permitted to the west and south of the Point Mugu airfield about 31 miles from the runway intersection. Supersonic flight areas surround the airfield at San Nicolas Island, beyond the 30 miles "buffer" requirement, or above 30,000 feet. The supersonic flight areas begin 31 miles from the airfield.

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

Altitudes where supersonic flight is authorized exist from the sea surface upwards beyond 30 miles from the shoreline or from any of the Channel Islands. Otherwise, if above 30,000 feet, over Sea Test Range areas, supersonic flight is authorized from that altitude upward.

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

The length and width vary with the shape of the Sea Range, coast line, and Northern Channel Islands. Straight line distances of almost 300 miles are achievable.

The entire Sea Range is usable for supersonic operations, if those operations are above 30,000 feet. The prescribed area normally used for supersonic operations below 30,000 feet is about 200 by 70 nmi. Additionally, scheduling of Warning Area W-283 to the north results in additional area for supersonic operations. This additional area is routinely scheduled, upon request, for NAWCWPNS operations from FACSFAC San Diego. Doing so results in a prescribed area of supersonic operations of about 260 nmi long by about 70 nmi wide.

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

No. There are no restrictions on use of this space other than the previously mentioned FAA agreements on air corridors.

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

There are no limits on the number of simultaneous users other than common flight safety and separation rules.

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

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

The length and width vary with the shape of the Sea Range, coast line, and Northern Channel Islands. Straight line distances of almost 300 miles are achievable.

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

No. There are no restrictions on use of this space other than the previously mentioned FAA agreements on air corridors.

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

There are no limits on the number of simultaneous users other than common flight safety and separation rules.

-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.*

The Main Base Airfield at Point Mugu, located at sea level, has a primary runway 3-21 that is 11,000 feet long and a secondary runway, 9-27, which is 5,500 feet long. The length of the overrun at Runway 3 is 950 feet, at Runway 21 is 150 feet, at Runway 9 is 900 feet, and at Runway 27 is 240 feet.

There are visual landing aids (mirrors) for runways 3, 21, and 27. PAR and ASR approaches are provided for runways 3 and 21 with TACAN and ILS approaches provided for runway 21. There is a passenger terminal building that is primarily used by the civilians and military flying on the CONVAIR 440 and other small aircraft. Each runway (3, 21, 9, and 27) has an E-28 type arresting gear. The total apron areas are approximately 4,348,900 square feet. Pavements at the Main Base Airfield are both Portland Cement Concrete (PCC) and Asphaltic Concrete (AC). Runways 9, 27, and 3 are AC; runway 21 is PCC. Parallel to Runway 3-21, Taxiways TNS-2 and TNS-3 are AC; TNS-1 is PCC. Parallel to Runway 9-27, the taxiway is all PCC. Six cross Taxiways are AC and seven cross Taxiways are PCC. The majority of the parking aprons are PCC. The loading capabilities of the airfield pavements are in terms of a C5-A aircraft. The loads shown for each location are in the maximum average capacity of all features within that location. The loading capabilities are as follows:

Designation	Loading Capability (Pounds)
Runway 3-21	700,000
Runway 9-27	700,000
North/South Taxiway	597,000
East/West Taxiway	800,000
Taxiway A	604,000
Taxiway B	611,000
Taxiway C	625,000
Taxiway D	442,000
Taxiway 1	622,000
Taxiway 2	556,000
Taxiway 3	774,000
Taxiway 5	685,000
Taxiway 5A	438,000
Taxiway 6	800,000
Taxiway 7	658,000

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Taxiway 8	777,000
Taxiway 9	671,000
Taxiway 10	800,000
Parking Apron 1A	654,000
Parking Apron 2	729,000
Parking Apron 2A	652,000
Parking Apron 3	515,000
Parking Apron 3A	468,000
Parking Apron 4	718,000
Parking Apron 6	489,000
Parking Apron 7	637,000
Parking Apron 8	642,000
Compass Rose	580,000
High Power	634,000
Wash Rack 1A	739,000
Wash Rack 3A	397,000
Wash Rack 6	601,000

The Point Mugu Main Base has 10 hangars. The total combined area of these hangars is approximately 771,332 square feet. The hangar space includes associated shop and administrative spaces.

Of the 771,322 square feet gross of hangar buildings at this activity, 315,968 square feet of hangar deck space is currently used for aircraft operations. An additional 37,630 square feet of hangar deck space is currently used for other types of operations making a total of 353,598 square feet of hangar deck space existing at this activity.

In addition to the Main Base Airfield, there is the San Nicolas Island Outlying Field (SNI-OLF). SNI is located approximately 70 miles south of Point Mugu and 70 miles west of Los Angeles. The SNI-OLF Runway 12-30 is 10,000 feet long. The elevation is approximately 510 feet MSL. The 30 end has a concrete blast pad that extends the length approximately 150 feet. There is a visual landing aid (mirror) and PAR, ASR, and ILS approach provided for runway 30. SNI has a passenger terminal building that is primarily used by all civilians and military personnel flying to and from SNI. Both runways 12 and 30 have an E-28 type arresting gear. The total apron areas are approximately 450,000 square feet. The pavements are both PCC and AC. The majority of the runways, taxiways, and aprons are AC. 500 feet of runway is concrete at each end as are the ends of the parallel taxiway. The apron areas are AC except for one area of PCC that is 25,000 square feet. The loading capabilities of the airfield pavements are in terms of C5-A aircraft. The loads shown for each location are the maximum average capacity:

Taxiway 8	777,000
Taxiway 9	671,000
Taxiway 10	800,000
Parking Apron 1A	654,000
Parking Apron 2	729,000
Parking Apron 2A	652,000
Parking Apron 3	515,000
Parking Apron 3A	468,000
Parking Apron 4	718,000
Parking Apron 6	489,000
Parking Apron 7	637,000
Parking Apron 8	642,000
Compass Rose	580,000
High Power	634,000
Wash Rack 1A	739,000
Wash Rack 3A	397,000
Wash Rack 6	601,000

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Designation	Maximum Average Capacity Load
Runway 12-30	398,000 Lbs.
Taxiway 12-30	318,000 Lbs.*
Taxiway A	318,000 Lbs.*
Taxiway B	318,000 Lbs.*
Taxiway C	840,000 Lbs.
Taxiway D	840,000 Lbs.
Apron	318,000 Lbs.*

The minimum operating weight of a C5-A is 318,000 pounds. Allowable load is less than the minimum operating weight of the design aircraft. Modifications are currently underway to further increase the capacity to accommodate occasional use of C-5As.

The SNI-OLF has one hangar that has a total area of 11,979 square feet.

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

Within the immediate area there are five runways: Point Mugu primary (3-21), Point Mugu secondary (9-27), San Nicolas Island (12-30), and the Oxnard and Camarillo Commercial Airports. Within the extended area is also Naval Air Weapons Station (NAWS) China Lake; NAS Lemoore, North Island, and Mirimar; Edwards, Vandenberg, and March AFB; and Los Angeles and John Wayne commercial airports.

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

The Point Mugu airfield is located at the eastern edge of the Sea Test Range controlled airspace. The SNI airfield is located within the southern portion of the controlled airspace near the center of the most heavily utilized operational areas.

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

The coastal location makes it prime for weapons testing. It is highly desirable for aircraft carrying live weapons to be able to take off directly over the ocean. Likewise, aircraft returning from sea with unexpended weapons have the added safety of not having to fly over inhabited areas. Additionally, the main base and offshore airports mentioned above can, for test purposes, be considered an aircraft carrier for departure and arrival purposes. Weather in and around the airport is like being at sea.

-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. C-5 aircraft regularly use the airport, and the runways are also used for Field Carrier Landing Practice (FCIP).

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

Aircraft Type	Current # of Aircraft Parked/Stationed	Maximum Additional Capacity (# of Aircraft)		Total	
		NAVFAC	Surge	NAVFAC	Surge
F-14	19	29	130	48	149
F/A-18	18	29	123	47	141
A-7	5	7	34	12	39
F-4	16	28	109	44	125
P-3	13	9	28	22	41
C-130	11	5	24	16	35
HH-60	12	6	81	18	93
H-1	6	20	39	26	45
TOTAL	100	133	568	233	668

Provide the details of your calculations, including your assumptions on the minimum separation between aircraft, parking angle, folding of aircraft wings and any obstructions that may limit the placement of aircraft on the parking apron spaces. Indicate if taxiway aprons are used in the projection.

NAVFAC Aircraft Parking Assumptions.

Assume P-80 required space between aircraft is required for safety of aircraft movement under its own power.

- Assume parking permitted adjacent to street where blast fence exists (Building 355).
- Assume parking in portions of peripheral taxiways not required for access to main taxiways.
- Assume parking permitted on aprons constrained by airfield clearance requirements due to change in classification of runway.

Surge Aircraft Parking Assumptions.

- The total aircraft apron area of 462,130 square yards was proportioned with the NAVFAC aircraft area multiplied by the current number of aircraft assigned to this station. These areas were divided by the NAVFAC parking area and rounded down to the nearest whole aircraft.
- Assume 24 inches between aircraft; 45 degree angle parking for jet aircraft; 90 degree parking for P-3, C-130, and helicopter.
- Patrol and Transport aircraft and 90 degree parking could not be maneuvered safely with 12 inch wingtip to wingtip parking and restricted interior and peripheral taxi lanes. The aircraft mix currently assigned to the station was used to proportion the aircraft apron. The number of patrol and transport aircraft which could be parked on the portion of the apron allocated was recalculated to provide for requirements provided by NAVFAC Table 113-20B for these aircraft.
- Some of the parking aprons at this activity were designed for propeller powered aircraft and are substandard for military jet aircraft.
- Only DOD (military) aircraft are included in the Table. Non-DOD aircraft assigned to or operating from Naval Air Weapons Station, Point Mugu are listed in question 21 of this Tab B. They include light aircraft operated by FBI which are usually parked in designated aircraft parking spaces. Light aircraft and propeller driven training aircraft operated by the Aero Club are parked on a substandard apron. The three San Nicolas Island commuter aircraft are parked near the air terminal and on substandard aprons near the Aero Club parking. There is adequate substandard apron at this activity to park all current light/commuter aircraft and at least a 200% surge increase on the substandard apron north of the crosswind runway.
- Taxiway aprons were not used in the calculation.

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NAWCWPNS has supported deployments of 60 Air Force and Navy jets at one time for a week long period, and up to 50 Army helicopters for a 20-day detail.

-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)*

Fixed-wing, rotary-wing, unmanned aerial vehicle (UAV), and cruise missile testing are routinely conducted at NAWCWPNS. Air vehicle test operations have been performed utilizing a wide variety of Navy, Marine, and Air Force fighter attack and bomber aircraft, including A-6, EA-6B, F-14, F-15, F-16, F/A-18, F-22, B-1, B-2, and B-52. Several types of UAVs have been tested and utilized as support air vehicles. Cruise missiles including Harpoon, SLAM, and Tomahawk (ship and land-attack versions) are routinely tested at NAWCWPNS. Environmental facilities are available that can provide climatic testing of full-scale aircraft, UAVs, and cruise missiles. Full environmental testing of cruise missiles could be performed with modifications to existing chambers. Physical integration of external stores and avionics are routinely conducted, and a stores release facility is available

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

Ground facilities exist for preflight checkout of all above listed air vehicles. Revetment areas are available for loading and checkout of live ordnance on aircraft.

-3.2.C.3 *What kinds, numbers of aircraft and mix can be supported (manned and unmanned)?*

Operations are conducted that utilize all the above types of aircraft on the same operation. For example, a Tomahawk launch was conducted on 21 April 1994 (and on prior occasions) that used a UAV for targeting, tactical jets for safety chase, P-3s for area clearance, and helicopters for emergency recovery standby. The numbers of aircraft and other air vehicles are limited only by the safety of flight and would be limited by the availability of air vehicles before they would be limited by the size of the test area.

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

UAV and rotary-wing operations pose no limitations on other types of missions. UAV operations are frequently flown over the land area at Point Mugu while normal air field operations are ongoing.

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

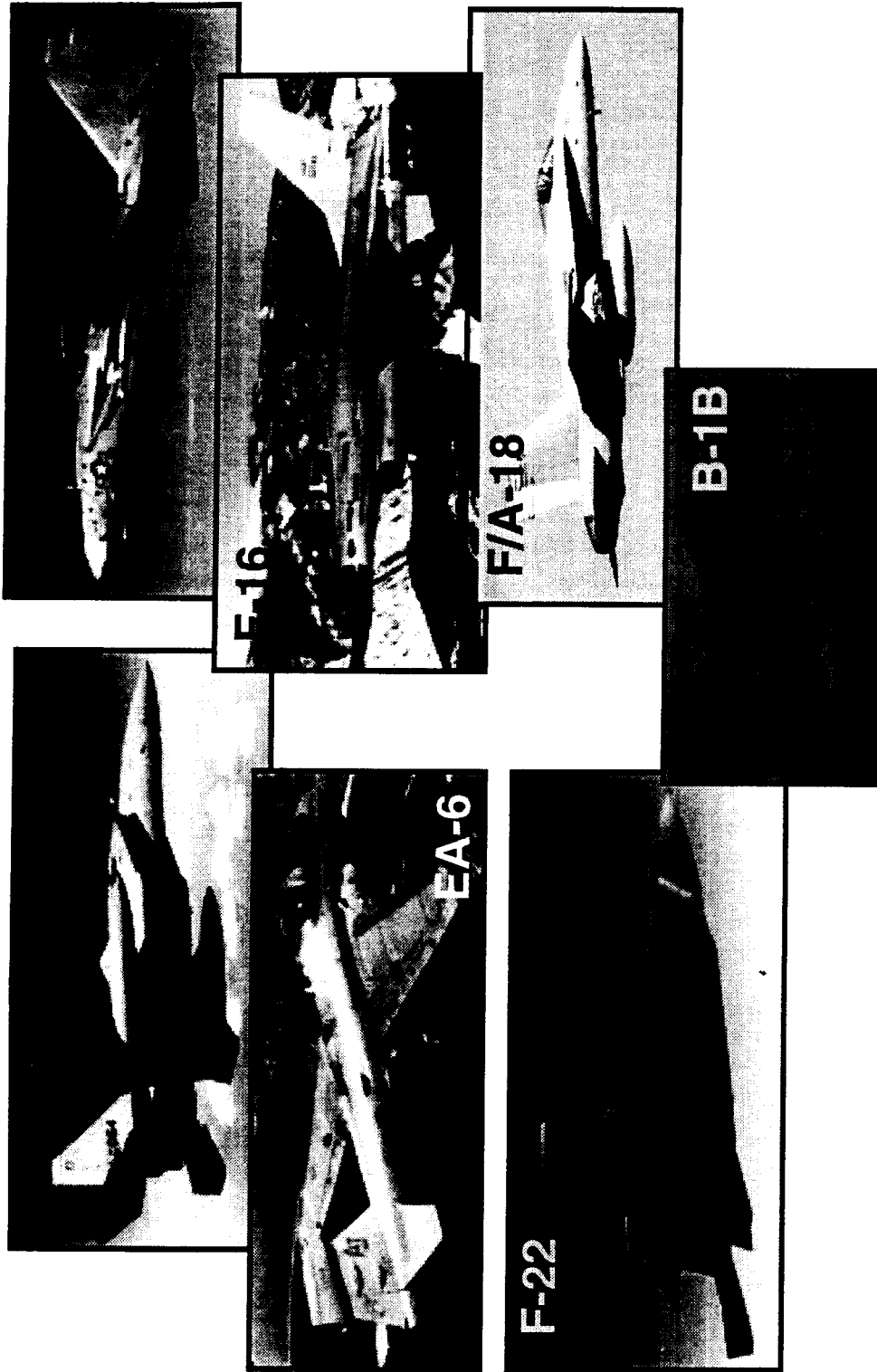
Air-to-air, air-to-surface, surface-to-surface, surface-to-air, refueling, air combat maneuvering, air- and sea-launched cruise missile, target T&E, UAV, mine drops, and large-scale combined operations can be flown within local air space.

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

NAWCWPNS Point Mugu can simultaneously track, receive, and record up to 30 independent telemetry sources. Each tracking antenna is configured with 12 telemetry data receivers and six data combiners providing the capability for receiving up to six simultaneous telemetry sources, provided that the multiple sources can be contained within the beamwidth of the antenna. This



F-18 Augmented with R³ Transponders



Aircraft Systems

R

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scenario would increase the number of simultaneous sources to greater than 30. A single missile AMRAAM launch against a full-scale QF-4 requires a minimum of three independent telemetry down-links. Using this AMRAAM scenario as a "typical" operation, NAWCWPNS could accommodate four simultaneous operations taking into account the normal requirement for redundant backup telemetry coverage. Under conditions that would impose the minimum number of telemetry requirements per mission, the maximum number of simultaneous missions that can be supported is 15.

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

Up to twelve operations of varying complexity have been simultaneously supported.

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

Custodian	No. of Aircraft (PAA*)	Aircraft (T/M/S**)
NAWS	1	UC-12
NAWCWPNS	1	RC-12
NAWCWPNS	7	F-14A/B
NAWCWPNS	5	F-14D
NAWCWPNS	3	TA-7C
NAWCWPNS	5	RP-3A
NAWCWPNS	15	QF-4N
NAWCWPNS	1	QF-4S
NAWCWPNS	1	YF-4J
NAWCWPNS	1	A-6E
VX-4***	4	F-14A/B
VX-4	6	F/A-18A/B/C
VXE-6	7	C-130
VXE-6	6	UH-1N
VFA-305	10	F/A-18A
VP-65	8	P-3C
HCS-5	6	HH-60H
CANG	12	C-130
AVTEL	3	DC-130
Flying Club	2	T-34B
FBI	4	Cessna 182
FBI	2	OH-6
Air Resorts	1	CV-340
Renown	1	CV-440
Renown	1	CV-580
Total	113	

*Presently assigned aircraft.

**Type/model/series

***It is planned by COMOPTEVFOR to consolidate the Operational Test & Evaluation Squadrons (VX-5 at China Lake and VX-4 at Point Mugu) into a single squadron (VX-9) headquartered at China Lake. On 29 April 1994 VX-9 officially stood up and VX-5 was disestablished. COMOPTEVFOR has proposed that VX-4 be disestablished as a squadron in September 1994 and transition to an F-14 detachment of VX-9 at Point Mugu.

137R (28 September 1994)

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Up to twelve operations of varying complexity have been simultaneously supported.

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

Custodian	No. of Aircraft (PAA*)	Aircraft (T/M/S**)
NAWS	1	UC-12
NAWCWPNS	1	RC-12
NAWCWPNS	7	F-14A/B
NAWCWPNS	5	F-14D
NAWCWPNS	3	TA-7C
NAWCWPNS	5	RP-3A
NAWCWPNS	15	QF-4N
NAWCWPNS	1	QF-4S
NAWCWPNS	1	YF-4J
NAWCWPNS	1	A-6E
VX-4***	4	F-14A/B
VX-4	6	F/A-18A/B/C
VXE-6	7	C-130
VXE-6	6	UH-1N
VFA-305	10	F/A-18A
VP-65	8	P-3C
HCS-5	6	HH-60H
CANG	12	C-130
AVTEL	3	DC-130
Flying Club	2	T-34B
FBI	4	Cessna182
FBI	2	OH-6
Air Resorts	1	CV-340
Renown	1	CV-440
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Total	113	

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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?*

Closed-loop RF Threat Systems: 7 Unique Threats (2 Early Warning, 5 SAM)

Open-loop RF Threats: 306 certified threats in current master library

Simulator capacity is virtually unlimited

-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?*

Closed-loop RF Threats: 5 simultaneous, 1 early warning radar, 4 SAMs.

Open-loop RF Threats: 6 simulators for a combined output of 200 (depending upon type), AI, AAA, SAM, early warning, communication, navigation.

Max. Density (Open-loop): >4 Million pulses per second (PPS) (depending upon signal types per simulator).

Average Density (Open-loop): 200,000 to 500,000 PPS from any one simulator.

Power Level: All simulators operate below 100 milliwatts (signals scaled to represent EC system receiver levels).

Bands: ECSEL Simulations cover 10KHz to 95GHz.

Most simulation signals are injected directly into system under test. An anechoic chamber within the facility provides radiated modes of operation when required.

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

Yes. Various activities perform validation. Closed-loop threat radars are validated by Navy Simulator Evaluation (SimEval) process against Defense Intelligence Agency (DIA) data. Open-loop simulations are validated by an ECSEL Quality Assurance (QA) team against current EWIR data and DIA reports. A subset of the open-loop simulations are validated through the Navy SimEval process.

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

Yes. Open-loop testing represents approx. 80% of ECSEL workload.

Yes. Reactive test capability is currently available for open-loop simulators. Closed-loop reactive capability will be on-line by 1st quarter FY-95.

Yes. See item 3.3.A.1.

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

All open simulations are provided with true radio frequency (RF) characteristics (frequency, pulse interval, pulse width, modulation, power level, etc.).

Closed-loop threat simulations are designed to represent the full functionality of the threat to the best estimates from the Intelligence agencies. The closed-loop systems are a hybrid of hardware and software models. Hardware is used wherever possible to represent threat equipment. Real-time software models are used to represent threat elements which cannot be implemented in hardware (missile flight models, target dynamics, etc.).

Combining closed-loop threat systems with open-loop background environments provides evaluation capability for active Electronic countermeasures (ECM) in a dense RF environment.

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

Land threats, yes. Sea threat, yes. Combined land/sea threats, yes. ECSEL open-loop simulators are fully programmable and can simulate any radar directed weapons (including missile guidance links), communication, etc. (See section 3.3.A.2).

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

All simulations employ user defined gaming areas. Defense Mapping Agency (DMA) digital terrain elevation data is used to build the geographic models for gaming areas.

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

Threat laydown is also completely user definable. Scenarios can include land, sea, and airborne threats in any combination.

-3.3.A.7.B *Representative distance?*

Closed-loop simulations account for threat to target range with accurate pulse delay and power levels. Doppler frequency shifts are applied to account for range rates.

Open-loop simulators provide power levels which dynamically track ranges to threats.

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

Yes. All open-loop simulations are capable of operating in dynamic scenarios with moving emitters. Emitters are defined by software files that may be used in any scenario definition.

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

No. Investigations are ongoing. ECSEL representatives are part of a NAWCWPNIS Interoperability Team which is studying the prospects of interlinking through the Distributed Interactive Simulation network.

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

Yes. The ECSEL facility can support a maximum of 11 simultaneous users (6 open-loop and 5 closed-loop). This is, however, very dependent on the nature of the user requirements (simulation type and floor space) and the number of available laboratory personnel.

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.*

Yes. The ECSEL is an indoor laboratory designed to test EC systems at the bench level. As such, there is a limitation on the size of the test article that can be supported. Four of the six open-loop simulators can be moved to the adjacent hangar or flight line for testing of EC systems installed on aircraft. The ECSEL floor can support the full weight of aircraft pods or related equipment.

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

Seven.. Five closed-loop simulators can be operated simultaneously. Two of these are capable of multiple targets, each with independent countermeasures.

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

Communications band
Microwave
Millimeter Wave
Laser
UV

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

RF Range
10 KiloHertz to 95 GigaHertz
Electro-Optic
Classified

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

No.

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. We are not currently testing directed-energy weapons on the Sea Range; however, directed-energy weapons were tested for several years in the past. High Energy Laser testing using the Air Force Airborne Laser Laboratory and airborne targets was conducted. Antioptical sensor laser systems have also been tested on airborne platforms. The maximum downrange distance is limited only by the power of the laser. Dispersion and atmospheric absorption will be the restricting factors, not available Sea Range area; thus the capability for testing directed energy weapons has been demonstrated.

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?*

We have approximately 36,000 square miles of Sea Range within which we may conduct live firings. We have no land space where live ordnance is permitted to impact. There is a small land area on SNI for limited inert impacts. Nearby San Clemente Island is utilized for ground impacts using instrumentation support and control from NAWCWPNS.

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

The Sea Range is divided into over twenty separate areas that can be scheduled individually and are available for live weapons testing. Typical live-fire operations require several areas at one time, so the number supported is limited by weapon type and data requirements, not numbers of areas available.

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

Missiles, and powered and glide bombs can be tested over ranges in excess of 200 nautical miles. High-altitude missile launches could be tracked, provided with command-destruct and telemetry coverage, over ranges of 300 nautical miles. Cruise missiles can be tested to their maximum range using the established IR-200 from the Sea Test Range to Dugway, Utah.

All ICBM test and training launches from Vandenberg AFB are supported by NAWCWPNS Point Mugu during this launch/boost phase. Metric radar data is collected until PMRF instrumentation assumes mid-trajectory track. Kwajalein (KMR) performs this terminal area tracking and telemetry data collection. This routine inter-service cooperation provides continuous track over the entire 4,200 nautical mile flight path.

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:*

	FY92	FY93
<i>Unguided 2000-pound-class ballistic weapon</i>	0	5
---live?		
---inert?		
<i>Guided weapon (e.g., GBU-24 class)</i>	0	0
---live?		
---inert?		
<i>Stand-off weapon (e.g., AGM-130 class)</i>	117	94
---live?		
---inert?		
<i>Short-range missile (e.g., AIM-9)</i>	184	168
---below 5000 feet MSL		
---between 5000 and 20,000 feet MSL		
---above 20,000 feet MSL		
<i>--Long-range missile (e.g., AIM-120)</i>	212	264
---below 5000 feet MSL		
---between 5000 and 20,000 feet MSL		
---above 20,000 feet MSL		
Other	894	769
TOTAL	1,407	1,300

In FY92, there were 1,407 operations scheduled at NAWCWPNS Point Mugu that required the various described footprints as shown above.

In FY93, there were 1,300 operations scheduled at NAWCWPNS Point Mugu that required the various described footprints as shown above

In FY92, the 894 operations in the other category required a safety footprint broken out as follows: 524 targets (BQM, AQM, tow and surface) and 103 aerial mining operations; the remaining 267 involved gunnery, torpedoes, UAV operations, sonobuoy and flare drops, etc.

In FY 93, the 789 operations in the other category required a safety footprint broken out as follows: 496 targets (BQM, AQM, tow and surface) and 72 aerial mining operations; and the remaining 201 involved gunnery, torpedoes, UAV operations, sonobuoy and flare drops, etc.

-3.4.B.2.B *Were flight termination systems required? Yes/no.*

Yes. In FY 92, 300 of the 1,407 operations required flight termination systems. In FY93, 317 of the 1,300 operations required flight termination systems.

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

There are no GBU-24 class guided weapons tested in the NAWCWPNS Sea Test Range. Testing of this type was not requested by any agency.

-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.*

In FY92, NAWCWPNS had 9 operations that were canceled or terminated due to a civilian ocean vessel inside the safety footprint.

In FY93, NAWCWPNS had 5 operations that were canceled or terminated due to a civilian ocean vessel inside the safety footprint.

APPENDIX A: FACILITIES/CAPABILITIES FORMS

CATEGORY	PAGE
Modeling and Simulation	3
Simulation And Effectiveness Center	4
Target Systems And Modeling And Simulation Capability	13
Measurement	28
Airborne Infrared Measurements Capability	29
Bistatic Radar Reflectivity Laboratory	38
Electromagnetic Environmental Effects Laboratory	48
Environmental Test Facility	57
Monostatic Radar Reflectivity Laboratory	66
Ready Missile Test Facility	76
Reliability Test Facility	85
Sea Level Climatic Chamber	94
Support Equipment Engineering And Test Complex	102
Telemetry/Test Article Instrumentation	111
Integration Laboratory	119
Electronic Warfare Countermeasures Systems Capability	120
EW/Radar Support Equipment	130
Information Warfare Systems Laboratory Complex	142
Intercept Weapons Evaluation Facility	152
Laser And Stabilized Optics	162
Warning And Surveillance Systems Capability	170
Weapon Systems Support Activity (WSSA), F-14.....	179
Weapons Systems Support Laboratory (WSSL), EA-6b.....	191

CATEGORY	PAGE
Hardware-In-The-Loop	201
Electronic Combat Simulation And Evaluation	202
Missile Hardware-In-The-Loop Facility	212
Laboratory (ECSEL)	
Strike Weapons Evaluation Facility	222
Open Air	233
Aerial Targets Complex	234
Aircraft Operations And Maintenance Capability	255
Sea Test Range	263
Surface Targets Complex	291
Target Augmentation Systems Capability	317
Target Control Systems Capability	338
Threat Electronic Countermeasures Simulators	352
Threat Radar Signal Simulators	368

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Modeling and Simulation

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Tab 1: Simulation and Effectiveness Center

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GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Simulation and Effectiveness Center

Origin Date: 4/30/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>	
T&E FUNCTIONAL AREA: <u>ARMAMENTS/WEAPONS</u>				UIC = <u>N63126</u>		
T&E TEST FACILITY CATEGORY <u>DMS</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>80</u>	<u>0</u>	<u>20</u>	<u>0</u>	<u>0</u>	<u>0</u>
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Armament/Weapons	<u>80</u>	<u>0</u>	<u>20</u>	<u>0</u>	<u>0</u>	<u>0</u>
EC	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Other	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Simulation and Effectiveness Center

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The mission of the Simulation and Effectiveness Center (SEC) is to provide missile performance evaluation through the use of digital simulations. The SEC consists of computational facilities that provide missile performance assessment through the use of digital models and simulations. Data gathered from live missile flights, captive flights, and hardware-in-the-loop (HWIL) operations are used to predict weapon systems guidance accuracy, fuze detection ranges, warhead effectiveness, and probability of kill. This facility is used for developing, maintaining, and operating missile all-digital six degree-of-freedom (6-DOF) flyout and lethality simulations. Warhead, fuze, target vulnerability, and N-point radar cross-section models are also developed, supported, and used at this site. The SEC has developed tri-service models, such as JSEMS, that are distributed by the Joint Technical Coordinating Group on Munitions Effectiveness (JTTCG/ME). The SEC personnel analyze 6-DOF and lethality simulation data; flight test guidance and end-game performance data; and, using in-house developed analysis tools, generate preflight weapon systems risk assessments, missile kinematics assessments, detailed baseline performance matrix analyses, and fuze software and hardware evaluation. The results of these complex digital simulations are used to assess overall weapons system performance for a variety of different tactical situations and flight parameters.

The Integrated Radar and Infrared Analysis and Modeling System (IRIAMS) is a Point Mugu FY93/94 Defense Modeling and Simulation Organization (DMSO) project to develop a standard test bed for the integrated interactive display of multispectral sensor measurement and simulation data for comparison of modeling with the actual weapon systems test data. This laboratory serves as a test bed for electro-optical and infrared signature databases and models, supports the development of a Virtual Reality Presentation Engine (VRPE), and is used to demonstrate the interoperability of T&E support databases with modeling and simulation.

Several hundred man-years of experience are resident in this facility with individual personnel having in excess of 30 years experience. (NOTE: "Replacement Cost" includes equipment)

FACILITY/CAPABILITY TITLE: Simulation and Effectiveness Center

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

The SEC is collocated with missile HWILs, the Intercept Weapons Evaluation Center, and the Bistatic Radar Reflectivity Laboratory in the NAWCWPNS Missile Systems Evaluation Laboratory (MSEL). The MSEL's communications infrastructure internet facilitates the sharing of data and information transfer between the SEC and the other MSEL laboratories. This interconnectivity is via a state-of-the-art communications network consisting of secure fiber-optics cable and a 10-base-T cable. The MSEL has dedicated secure and nonsecure T1 lines to the Sea Test Range and is in the process of installing a Wide Area Network (WAN) link. The WAN allows dedicated, secure on-line data communication to the other facilities at Point Mugu and throughout the nation.

TYPE OF TEST SUPPORTED:

Missile performance evaluations (launch to intercept), missile 6-DOF flyout simulations, missile end-game simulation and analysis, digital models, computer simulations, flight test data reduction/display, missile countermeasures susceptibility

SUMMARY OF TECHNICAL CAPABILITIES:

Computers: Silicon Graphics, Alliant, VAX and SUN workstations, IBM RS6000 with graphics processor, IBM and MacIntosh Data Storage-Disk Drives, Optical, tape-secure and nonsecure ethernet, SAR, and Top Secret laboratory spaces.

KEYWORDS:

Missile simulations, end-game, lethality, vulnerability, 6-DOF flyout, missile performance evaluation.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Simulation and Effectiveness Center

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor*	33950	38513	30092	32339	28106	21582	25816	26017
	Test Hours*	8906	10103	7894	8483	7373	5662	6772	6825
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

* To calculate T&E hours only, use the % of T&E shown on the General Information sheet on page 5.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Simulation and Effectiveness Center

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	33950	38513	30092	32339	28106	21582	25816	26017
	Test Hours	8906	10103	7894	8483	7373	5662	6772	6825
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Simulation and Effectiveness Center

ANNUAL HOURS OF DOWNTIME (1) 1472
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 4
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 20

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
IRIAMS	2	1	2	160
Lethality	2	1	2	
Wpn Eff	4	1	4	
			TOTAL	58,400 test hrs
			8	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Simulation and Effectiveness Center

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	18	15	15	15	15	15	15
Contractor	0	0	0	0	0	0	0
Total	18	15	15	15	15	15	15

Total Square Footage: 8,734

Test Area Square Footage: 5,297

Tonnage of Equipment: 5

Annual Maintenance Cost: \$70,000

Office Space Square Footage: 3,437

Volume of Equipment: 6,000

Estimated Moving Cost: \$110,000

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FACILITY/CAPABILITY TITLE: Simulation and Effectiveness Center

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
195	100	50	50	50	25	25
32	25	20	20	70	45	45

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FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Simulation and Effectiveness Center

AGE: 2 Yrs.

REPLACEMENT VALUE: \$2,700,000

MAINTENANCE AND REPAIR BACKLOG None

DATE OF LAST UPGRADE: 1/15/94

NATURE OF LAST UPGRADE: Various equipment upgrades (computers, etc.)

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Equip EO/IR seeker/guidance test lab

TOTAL PROGRAMMED AMOUNT: \$60,000

SUMMARY DESCRIPTION: Install basic EO/IR lab test equip. To be obtained from various sources

2. UPGRADE TITLE: Equipment Upgrades

TOTAL PROGRAMMED AMOUNT: \$725,000

SUMMARY DESCRIPTION: Continuing upgrade of computing, primarily driven by project requirements, approx. \$725K thru 1999.

Tab 2: Target Systems Modeling and Simulation Capability

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

Origin Date: 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63126</u>	
T&E TEST FACILITY CATEGORY	<u>QAR/DMS/MF/IL/MR</u>	
	<u>T&E</u>	<u>S&T</u>
	<u>D&E</u>	<u>IE</u>
	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>100</u>	
BREAKOUT BY T&E FUNCTIONAL AREA (%)		
Air Vehicles		
Armament/Weapons	<u>35</u>	
EC		
Other	<u>65</u>	
Total in Breakout Must Equal "Percentage Use" On First Line		

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The Target Systems Modeling and Simulation mission is to provide full life-cycle modeling and simulation support for the analysis, design, development, in-service engineering, and operational use of Navy target systems. This includes all those modeling and simulation activities necessary to identify the target potential of existing and projected system designs. It also includes those activities necessary to support the Target/Threat Validation efforts associated with weapon system target user needs.

The Target Systems Modeling and Simulation capability is a part of the NAWCWPNS Target Systems Department. This is a unique one-of-a-kind facility/capability that exists nowhere else in the world. It is a one-stop shopping center for targets. It provides for tri-service needs in development, acquisition, and production of all missile, subscale, and surface/seaborne targets and for life-cycle support management of all target systems within the Navy. Operational services are provided locally and deployed worldwide. The inventory of targets, both in number and type, is unmatched anywhere and includes full-scale, subscale, missile, seaborne, and land targets, as well as target control systems. The facility is unique in that it has the personnel resources, geography, airspace, and open ocean available to operate any target contained within its inventory on-site. It has deep-water harbor facilities for its seaborne targets at Port Hueneme, 125,000 square miles of instrumented sea range and airspace to conduct test and evaluation, aircraft runway facilities both at Point Mugu and San Nicolas Island, as well as target ground- and air-launch facilities.

The Target Systems Department competencies consist of 400 technical, professional, and administrative personnel with 30 buildings providing 279,525 square feet of administrative, operational, and covered storage space and 10,650 square feet of outside storage space located at Point Mugu, Port Hueneme, and San Nicolas Island. The core mission of the Target Systems Department is managing the life-cycle support of target systems and subsystems; providing systems engineering for development, test, and evaluation; in-service engineering of targets and related systems; and operating, maintaining, and providing airborne and surface/seaborne target services.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

A physical/electronic interconnect for target systems engineering is provided to the weapons HWIL Laboratories (AMRAAM, Phoenix, Sparrow) for developing target modeling simulations and models; to the Radar Reflectivity Laboratory for radar cross-section measurement critical to the target/threat validation process; and between the Integrated Target Control System

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

Laboratory, Target System Development Laboratory, Software Validation/Verification Facility, and Operator Training Simulator Facility for target and target system design, development, test and evaluation, and training.

Targets are remote controlled using the Integrated Target Control Systems (ITCS), VEGA, and UHF systems that provide command control, telemetry, and tracking capability. These systems are interconnected to Point Mugu, the Channel Islands, San Nicolas Island, and Laguna Peak through microwave and fiber optics thus extending range, control, and data collection capabilities. These resources are also available at China Lake, Puerto Rico, Pacific Missile Range, Hawaii, and Wallops Island, providing a common interconnect for target services. Radar tracking, telemetry, navigation, and communications linkages between Point Mugu, Vandenberg Air Force Base, Edwards Air Force Base, China Lake, the Channel Islands, Laguna Peak, and San Nicolas Island are used via fiber optics and microwave for real-time position display and post-operation data reduction.

The Port Hueneme harbor facilities provide a physical interconnect to the Sea Test Range at Point Mugu for seaborne targets and with the Port Hueneme Division Naval Surface Warfare Center for development, test, and operation of the Self-Defense Test Ship facilities, which are unique to the NAWCWPNS Sea Test Range. This linkage is vital to the proposed Ballistic Missile Defense Office (BMDO) use of seaborne targets.

TYPE OF TEST SUPPORTED:

T&E for air-to-air, air-to-surface, surface-to-air, and surface-to-surface weapons systems. Targets are used for radar acquisition test, electronic countermeasures (jamming) evaluation, infrared measurement/test, radar cross evaluation, decoy effectiveness, maneuver analysis, electronic warfare, warhead effectiveness, and evaluation of Fleet tactics, Fleet readiness, and Fleet effectiveness. Target-specific testing involves target development and T&E; Target Auxiliary and Augmentation System development and T&E; and Target Control System development and T&E.

SUMMARY OF TECHNICAL CAPABILITIES:

This capability provides for:

- Development of new target models to meet target acquisition and operational requirements
- Independent validation and verification of models used
- Maintenance and update of existing target models
- Use of existing models to develop products required by the acquisition, design, and development, in-service engineering, and weapon/Fleet T&E users.

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

This total capability and breadth of modeling activities for targets requirements exist at no other location.

Target systems Modeling and Simulation efforts, which currently exist or are now under development, fall under three use categories:

- Target technology development
- Target system acquisition support
- Target/weapon system and Fleet T&E planning/execution support

The first category is Models and Simulations used within the targets community to provide an understanding of applications for new developing technologies into new or existing targets.

This product line includes:

- Target Vehicles
- Target Command and Control Systems
- Target Auxiliary Systems

Modeling and Simulation tools/efforts in this category include:

- Global Satellite Position models
- Inertial navigation models
- Digital autopilot models
- Target internal communication bus structure models
- New composite structural models

Modeling and Simulation products include:

The second category is Models and Simulations used within the targets community for target system acquisition, production/manufacturing, and in-service engineering support.

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

This product line includes:

Target vehicles supported:

**Subsonic Aerial Target (SAT)
Supersonic Sea-Skimming Target (SSST)
AQM-37 Series (A, B, C)
AQM-34 L/M
BQM-34E
BQM-74
MQM-8 (VANDAL) ER, E²R
QF-86
QF-4
TDU-34A/A
QST-33
QST-35
Mobile Ship Target (MST)**

Modeling and Simulation tools/efforts in this category include:

- **Target trajectory and kinematic models**
- **Autopilot models**
- **Actuator and control models**
- **Stability and control models**
- **Center of Gravity vs. Payload models**
- **Structural models**
- **Aircraft integration fit models**
- **Aircraft integration separation prediction models**
- **Propulsion system models**
- **Software development tools and SSA models**
- **Reliability assessment models**
- **Life-cycle cost development models**

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

Modeling and Simulation Products include

(Note: most of these products have more complete descriptions provided in the DOD 5000.2 series documentation that established requirements for their use for the acquisition of new systems.)

- Operational Requirements Documentation (ORD)
- Cost and Operational Effectiveness Assessment (COEA)
- Technical Risk Assessment
- Design Analyzes
- Subsystem assessment

Target Command and Control Systems supported:

Integrated Target Control System (ITCS)
VEGA Portable Radar Tracking and Control System (PRTCS)
New Generation Target Control System (NGTCS)
Multiple Over-The-Horizon Relay (MOTHR)
Multiple Aircraft GPS Integrated Command and Control (MAGIC²)
Large-Area Tracking Range (LATR)

Modeling and Simulation tools/efforts in this category include:

- Flyout models for each of the target systems with appropriate interfaces to the target command, control, and data-link systems.
- A full HWIL simulation for the ITCS. This simulation contains all the ITCS hardware and software elements. In conjunction with the target flyout models, it provides a total system capable of complete closed-loop system operation.
- Since the ITCS HWIL also uses a manned controller station, it provides a man-in-the-loop simulation capability as well.

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

- UseD as a software support activity for the ITCS, This capability allows for rapid change of ITCS software. It provides a development and dynamic code testing capability that provides for the development of a full understanding of any problems that exist within the software as they relate to the ITCS interfacing systems.

Modeling and Simulation products include:

- Software SSA products
 - Software development
 - Software verification
 - Software performance assessment
- Target command, control, and data-link performance assessment as used with any specific target.
- Development and assessment of mission profiles for T&E users. This work saves time and costs because it can be accomplished off line from normal range activities that would be otherwise required.
- Training for target control operators. This system is used as an inexpensive way to provide target controllers with hands-on time with the actual hardware and displays they will use during live operations. This capability also provides for the introduction of numerous possible systems failures so that the controller will be exposed to all types of problem occurrences without the potential loss of actual target assets.

The third category is Models and Simulations that support the weapon systems T&E and Fleet target planning, training, and execution requirements. The target systems being modeled are as shown above, however, in this category the interaction of these targets with the specific weapon systems under test is of overriding importance. This leads to different specific modeling techniques, normally focused on real-time capabilities not required of the modeling and simulation categories described above.

Modeling and Simulation efforts in this category include:

- Digital kinematic models of target systems trajectories, including the target command and control systems interactions. These simulations are used for target mission planning and to develop range safety requirements for specific proposed operations.

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

- Models to characterize the target signature in all spectra.
- Structural models of the targets for vulnerability assessment.
- We are currently developing a joint service PROCESS for target/threat validation. This effort is sponsored by DOD, with approval of the Joint Target Oversight Council, and is being coordinated with both the weapons and intelligence communities. Although not specifically a Modeling and Simulation effort, this tasking will use Modeling and Simulations developed by all three communities to demonstrate the validity of our current targets in threat roles.

Keywords:

Aerial targets, targets, aircraft targets, full-scale aircraft targets, full-scale aerial targets, FSAT, FSATs, QF-4N, QF-4, drone, universal control cockpit, universal control console (UCC), target control console (TCC), Integrated Target Control System (ITCS), target auxilliary/augmentation systems (TA/AS), Target Augmentation Systems (TAS), recoverable, sea test range, VANDAL, TALOS, MQM-8G, sea skimmer, subscale targets, missile targets, Chukar, BQM-74, Firebee, Dash, QH-50, Challenger, AQM-37, AQM-34L/M, VEGA, TDU-34, RMK-34, tow target, scoring, miss distance, engineering, systems engineering, interface, software, modeling, seaborne powered target, SEPTAR, Mobile Ship Target (MST), Target Ship, SEPTAR, Target Logistics Support, Support Equipment, In-Service Engineering, Configuration Management, Data Management, Material Management, Field Service.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	2450	2450	3080	3080	3080	3080	7350	7350
	Test Hours	1153	1153	1449	1449	1449	1449	3459	3459
	Missions*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other T&E	Direct Labor	4550	4550	5720	5720	5720	5720	13650	13650
	Test Hours	2141	2141	2692	2692	2692	2692	6423	6423
	Missions*								
Other	Direct Labor								
	Test Hours								
	Missions								

* There is no direct correlation between the number of missions and the number of direct labor man-years. Although missions are an output of the direct labor of the Target Systems Facility, systems engineering, logistics, and project management are also direct labor hours but do not influence the number of missions; each mission is one sortie.

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HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	7000	7000	8800	8800	8800	8800	21,000	21,000
	Test Hours	3294	3294	4141	4141	4141	4141	9882	9882
	Missions*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other T&E	Direct Labor								
	Test Hours								
	Missions*								
Other	Direct Labor								
	Test Hours								
	Missions								

* There is no direct correlation between the number of missions and the number of direct labor man-years. Although missions are an output of the direct labor of the Target Systems Facility, systems engineering, logistics, and project management are also direct labor hours but do not influence the number of missions; each mission is one sortie.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

ANNUAL HOURS OF DOWNTIME (1) 4.0

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 0.1

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 23.9

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Aero-performance	3	2	6	501.9
Tgt control	1	5	5	
Scenerio control	1	3	3	
Aerodynamics	1	1	1	
A/C separation	1	2	2	
	1	4	4	
				ANNUAL UNCONSTRAINED CAPACITY (9) 183,193

"Typical"

TOTAL 21

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO. Targets capability is not limited by the same constraints as typical T&E facilities (maintenance, weather, darkness, holidays, safety or health considerations, commercial utility availability, etc.). Targets are operated around the clock and, due to the mildness of the local climate, throughout the four seasons without interruption. Due to the built-in flexibility of Point Mugu target facilities (e.g. mainland surface launch, San Nicolas Island surface launch, seaborne launch and airborne launch), infrequent locally severe weather is not a limiting factor. Although limited by the same time constraints as every other T&E facility (only 24 hours per day), the Point Mugu targets facility alone has demonstrated its surge capability through routine

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

deployments to China Lake, Calif., Pacific Missile Range Facility, Hi., Atlantic Fleet Weapons Training Facility, P.R., White Sands Missile Range, N. Mex. and the Gulf of Maine operating area.

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation 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	15	16	17	18	18	18	18
Contractor	2	2	2	2	2	2	2
Total	17	18	19	20	20	20	20

Total Square Footage: 11,180

Test Area Square Footage: 11,025

Tonnage of Equipment: 13.8

Annual Maintenance Cost: \$22,156

Office Space Square Footage: 155

Volume of Equipment: 28,000

Estimated Moving Cost: \$159,061

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
18	8	66	68	46	46	46
16	15	20	23	21	23	23

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Target Systems Modeling and Simulation Capability

AGE: 3-35 Yrs.

REPLACEMENT VALUE: \$2,503,509

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE: None

MAJOR UPGRADES PROGRAMMED: None

1. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

Measurement

Tab 3: Airborne Infrared Measurements Capability

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Airborne Infrared Measurements Capability

Origin Date: _____

SERVICE: Navy ORGANIZATION/ACTIVITY: NAWCWPNS LOCATION: Point Mugu, California

T&E FUNCTIONAL AREA: Countermeasures Testing

UIC = None.

T&E TEST FACILITY CATEGORY MEASUREMENT

	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>50</u>		<u>50</u>			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>0</u>		<u>0</u>			
Armament/Weapons						
EC	<u>36</u>		<u>50</u>			
Other	<u>14</u>					

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

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Airborne Infrared Measurements Capability

<p>FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:</p> <p>The support systems and measurements facilities test the effectiveness of decoy flares in protecting U.S. aircraft from infrared-guided missiles, perform lot acceptance testing of Navy flares, perform aircraft store separation photo analysis, and perform test and evaluation of ground support equipment and software for aircraft electronic warfare systems.</p>
<p>INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:</p> <p>Facility is used by the Air Force for testing developmental expendables for the F-22 program and for surveillance testing of production decoy flares.</p>
<p>TYPE OF TEST SUPPORTED:</p> <p>See facility description above.</p>
<p>SUMMARY OF TECHNICAL CAPABILITIES:</p> <p>See facility description above.</p>
<p>KEYWORDS:</p> <p>Infrared, decoy flares, lot acceptance testing, store separation, ground support equipment.</p>

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Airborne Infrared Measurements Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor	7000	2000	0	5000	0	2000	5000	0
	Test Hours	1800	900	0	1650	0	850	1625	0
	Missions	6	1	0	5	0	2	3	0
EC	Direct Labor	25000	30000	32000	29000	34000	32000	27000	32000
	Test Hours	1500	1630	1650	1625	1875	1670	1560	1660
	Missions	20	0	7	29	18	31	16	12
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor							4000	4000
	Test Hours							1150	1400
	Missions							16	23
Other	Direct Labor								
	Test Hours								
	Missions								

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107

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Airborne Infrared Measurements Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor	7000	2000	0	5000	0	2000	5000	0
	Test Hours	7000	2000	0	5000	0	2000	5000	0
	Missions	6	1	0	5	0	2	3	0
EC	Direct Labor	25000	3000 0	32000	29000	34000	32000	27000	32000
	Test Hours	25000	3000 0	32000	29000	34000	32000	27000	32000
	Missions	20	0	7	29	18	31	16	12
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor							4000	4000
	Test Hours							4000	4000
	Missions							16	23
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Airborne Infrared Measurements Capability

ANNUAL HOURS OF DOWNTIME (1) 4000
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 11
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 13

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
IR meas	1	2	2	26
				ANNUAL UNCONSTRAINED CAPACITY
				(9)
				9490

"Typical" 1
 TOTAL 2

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? Yes.

If yes, explain: Most flight operations must be conducted during daylight hours.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Airborne Infrared Measurements Capability

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	0	0	0	0	0	0
Enlisted	9	6	2	0	0	0	0
Civilian	8	10	10	12	12	12	12
Contractor	0	4	5	10	5	5	5
Total	18	20	17	22	17	17	17

Total Square Footage: 11,265

Test Area Square Footage: 9,285

Tonnage of Equipment: 119

Annual Maintenance Cost: \$302K

Office Space Square Footage: 1980

Volume of Equipment: 100,000

Estimated Moving Cost: \$558K

FACILITY/CAPABILITY TITLE: Airborne Infrared Measurements Capability

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	150	0	0	0	0	0
0	0	0	0	0	0	0

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Airborne Infrared Measurements Capability

AGE: 10 Yrs.

REPLACEMENT VALUE: \$19,025,000

MAINTENANCE AND REPAIR BACKLOG: None.

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE: None.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: None.

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

2. UPGRADE TITLE: None.

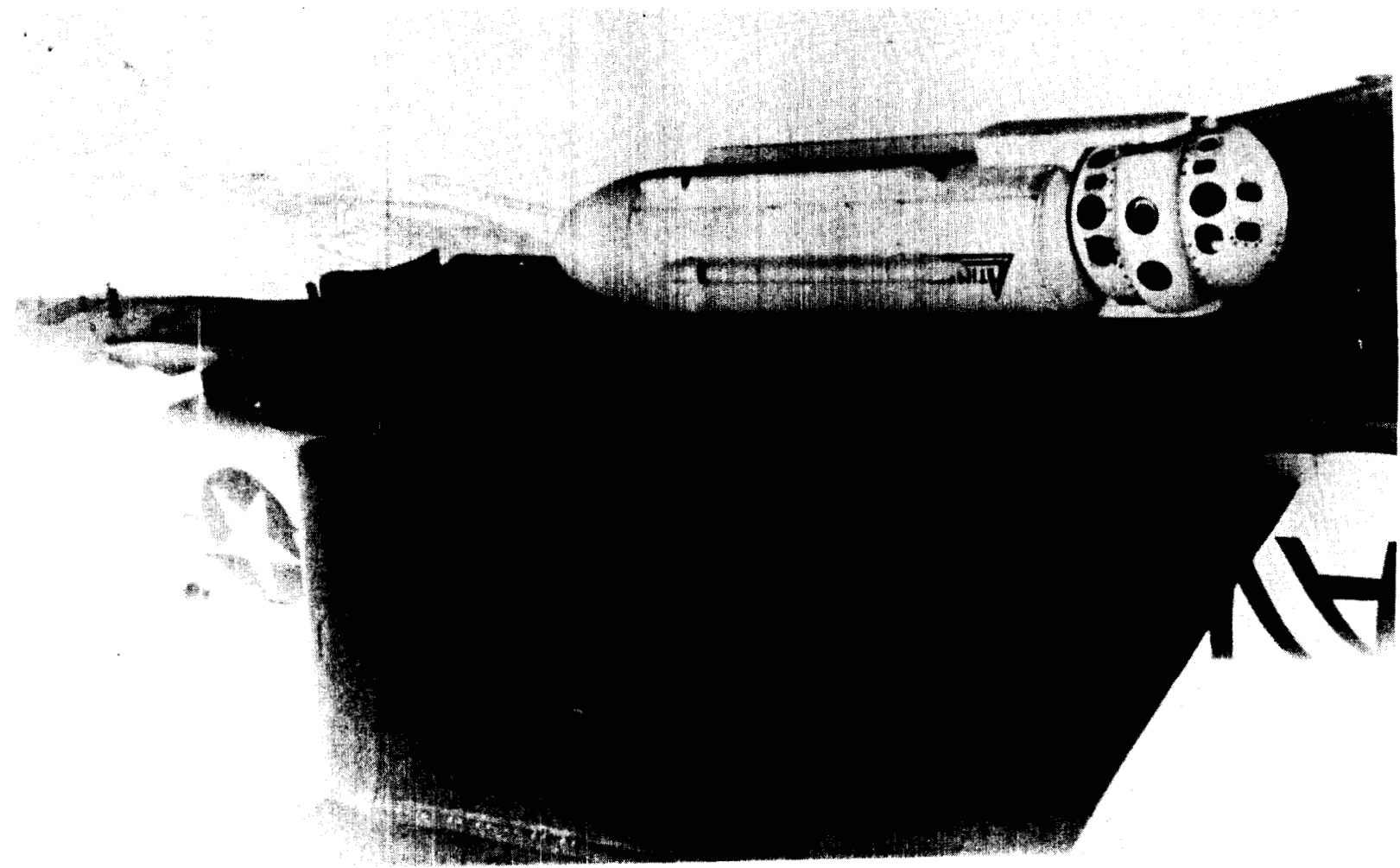
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

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BRAC 95 DATA CALL #13

ACTIVITY UIC: 63126



Airborne Turret Infrared Measurement System (ATIMS)

Tab 4: Bistatic Radar Reflectivity Laboratory

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Bistatic Radar Reflectivity LaboratoryOrigin Date: 4/28/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>				
T&E FUNCTIONAL AREA: <u>Armaments/Weapons</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Measurement Fac.</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>60</u>	<u>0</u>	<u>30</u>	<u>10</u>	<u>0</u>	<u>0</u>
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>2</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>0</u>	<u>0</u>
Armament/Weapons	<u>58</u>	<u>0</u>	<u>30</u>	<u>0</u>	<u>0</u>	<u>0</u>
EC	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Other	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Bistatic Radar Reflectivity Laboratory

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The Bistatic Radar Reflectivity Laboratory is a one-of-a-kind facility that consists of a large instrumented anechoic chamber for performing bistatic electromagnetic scattering and radiation measurements to determine radar signatures of air vehicles as large as 30 feet. The bistatic anechoic chamber (which measures 150'x150'x60') is a unique facility that provides free space, far-field or near-field conditions in a secure indoor environment. The range uses a collimator to provide far-field bistatic signature measurements. The facility is polarization diverse (VV, VH, HV, HH, RR, LL, LR) and is instrumented to measure UHF, L, S, C, X, Ku, Ka, V, and W bands (1-100 GHz). Bistatic angular coverage is provided from 0-180 degrees (horizontal) and 0-90 degrees (vertical). The facility can measure targets weighing up to 6,000 lbs. A very high degree of flexibility is provided with target supports, radar measurement, and data processing capabilities.

Mission Statement: To conduct and direct studies, analyses, experiments, and measurements in bistatic radar reflectivity, materials, and RF signatures.

Note: Replacement cost includes equipment.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

NAWCWPNS directorates, tri-service agencies, and DOD contractors are supported in the definition and diagnostic analyses of radar signatures for weapon systems development, planning, and analyses of flight-test operations, and for engagement/encounter simulations. Support is also provided for survivability analyses and development and production testing of low-observable vehicles.

TYPE OF TEST SUPPORTED:

Ultra-high speed, wideband vertical and horizontal bistatic radar cross section(RCS), glint, Doppler, high-resolution radar images, antenna patterns, augmentation systems, and background/clutter modeling.

FACILITY/CAPABILITY TITLE: Bistatic Radar Reflectivity Laboratory

SUMMARY OF TECHNICAL CAPABILITIES:

Lintek 0.1 to 100 GHz radar, scientific Atlanta 35'x45' radar collimator, support pylons (3000 lb, 1500 lb, 500 lb), 6,000-lb steel column support, 5-ton overhead crane, platform lifts, man-buckets (35-foot lift), HP Apollo 9000 series workstations, DEC VAX 8200, and physical security and storage to Top Secret level. SCRIF facility permits processing of Top Secret data.

KEYWORDS:

Radar cross section (RCS), bistatic RCS, monostatic RCS, radar signature

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Bistatic Radar Reflectivity Laboratory

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor*								1431
	Test Hours*								150
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor*								9486
	Test Hours*								1080
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

NOTE: Laboratory IOC was in FY93.

* To calculate T&E hours only, use the % of T&E shown on the General Information form on page 37.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Bistatic Radar Reflectivity Laboratory

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								1431
	Test Hours								150
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor								9486
	Test Hours								1080
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

NOTE: Laboratory IOC was in FY93.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Bistatic Radar Reflectivity Laboratory

ANNUAL HOURS OF DOWNTIME (1) 440

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 1.2

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 22.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Bistatic	1	1	1	22.8
				ANNUAL UNCONSTRAINED CAPACITY
				(9) 8,332 test hrs

TOTAL 1

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Bistatic Radar Reflectivity Laboratory

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0	0	0	0	0	0	0
Enlisted	0	0	0	0	0	0	0
Civilian	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Contractor	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Total	9.25	9.25	9.25	9.25	9.25	9.25	9.25

Total Square Footage: 39,500Test Area Square Footage: 38,000Office Space Square Footage: 1,500Tonnage of Equipment: 74Volume of Equipment: 75,000Annual Maintenance Cost: \$153,000Estimated Moving Cost: \$1,740,000

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Bistatic Radar Reflectivity Laboratory

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
1.5M	1.3M	0.5M	1.5M	1.0M	0	0
0	150K	0	0	0	0	0

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Bistatic Radar Reflectivity Laboratory

AGE: 2

REPLACEMENT VALUE: \$17,600,000

MAINTENANCE AND REPAIR BACKLOG: Elevator completion and certification-\$10K Fire protections system completion and cert.-\$35K. Control room heat and humidity controls-\$15K

DATE OF LAST UPGRADE: 4/1/94

NATURE OF LAST UPGRADE: Expanded frequency range. Installed additional radar absorption material.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Enhanced Vertical Bistatic Capability

TOTAL PROGRAMMED AMOUNT: \$150K

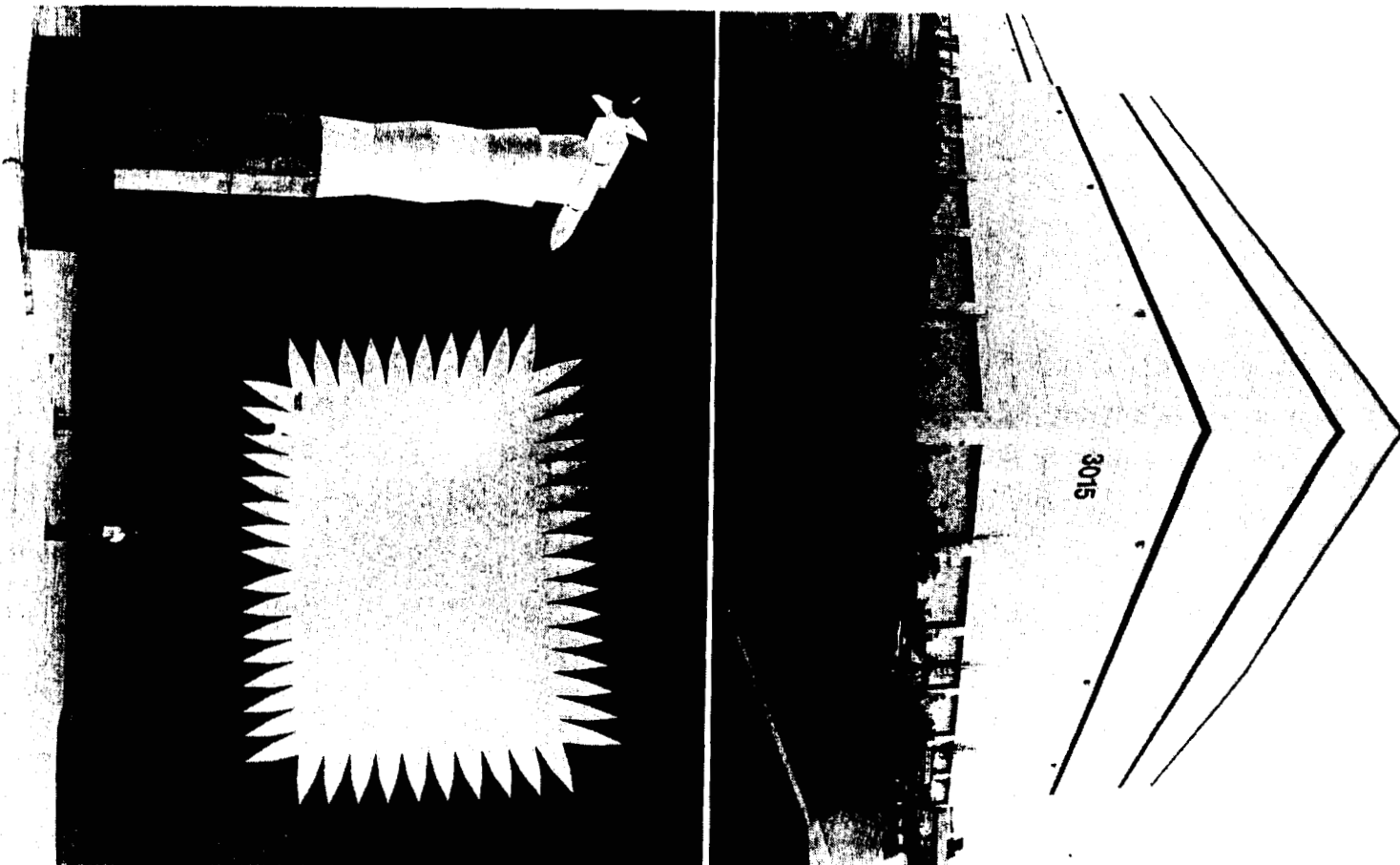
SUMMARY DESCRIPTION: The enhanced vertical bistatic system will provide improved support to current customers. The system will improve capability and speed for measurements from 0-90 degrees in the vertical plane. These measurements are required for targets used in flight tests of surface-to-air and air-to-air missile weapon systems and for survivability analyses of new cruise missile designs.

2. UPGRADE TITLE: Collimator and ancillary equipment for far-field bistatic system

TOTAL PROGRAMMED AMOUNT: \$2.5M

SUMMARY DESCRIPTION: This system will provide far-field bistatic measurements over the full range of angles (0-180 degrees). The system will consist of a second collimator and feeds and its integration with the present radar and data acquisition systems.

Bistatic Radar Reflectivity Laboratory



Tab 5: Electromagnetic Environmental Effects Laboratory

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Electromagnetic Environmental Effects Lab

Origin Date: 4-21-94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>				
T&E FUNCTIONAL AREA: <u>Air Armaments</u>	UIC = <u>N631126</u>					
T&E TEST FACILITY CATEGORY: <u>Measurements Facility</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>95</u>		<u>5</u>			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>20</u>					
Armament/Weapons	<u>40</u>					
EC						
Other	<u>35</u>		<u>5</u>			
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Electromagnetic Environmental, Effects Lab

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

Provides engineering support and measurement capability to ensure that naval weapons operate as expected in current and projected combat electromagnetic environments (EMES). The E³ section operates laboratory facilities to resolve issues concerning electromagnetic interference (EMI), electromagnetic compatibility (EMC), compatibility (EMC), and electromagnetic vulnerability. The section is involved with EMC safety of flight (SOF) on numerous projects requiring Aircraft Change Control Board (ACCB) approval. Section personnel are members or lead numerous Electromagnetic Advisory Boards (EMCABs). The laboratory includes a 2,500-ft anechoic chamber, a 300-ft 120-dB shielded enclosure along with a automated test system that includes \$3M of dedicated test instrumentation.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

The laboratory was the first DOD facility certified by the National Institute of Standards and Technology (NIST) in 1989. Working with the ACCB, the section conducts ground tests, laboratory test, or analysis on all modifications of air vehicles to fulfill SOF requirements. The section provides extensive EMC analysis, test, and measurement services to prevent and resolve EMI problems to the Western Area Frequency Coordinator (W AFC).

TYPE OF TEST SUPPORTED:

Free-flight electromagnetic vulnerability (EMC). Electromagnetic compatibility for safety of flight (SOF). MIL-STD-461
Electromagnetic interference (EMI) test. MIL-STD-704 Aircraft Electrical Power Characteristics. Electromagnetic Site Surveys.

SUMMARY OF TECHNICAL CAPABILITIES:

Calibrated frequency and amplitude measurements from DC to 40 GHz. Generate radiated electromagnetic fields from 10 KHz - 40 GHz Perform certified MIL-STD-461/A/B/C acceptance test. Perform electrostatic discharge survivability tests.

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Electromagnetic Environmental Effects Lab

KEYWORDS:

MIL-STD-461, MIL-STD-704, safety of flight (SOF), anechoic chamber, electrostatic discharge (ESD) electromagnetic compatibility (EMC), electromagnetic interference (EMI), electromagnetic vulnerability (EMV)

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Electromagnetic Environmental Effects Lab

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor	350	400	600	1700	1750	800	1000	600
	Test Hours	100	150	200	300	400	200	350	200
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	1700	2100	3500	4700	5500	5300	3000	2500
	Test Hours	500	600	100	1500	1700	1600	1150	1000
	Missions								
Other T&E	Direct Labor	1000	900	1250	950	1200	1500	1700	2000
	Test Hours	200	200	300	200	300	400	500	800
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Electromagnetic Environmental Effects Lab

ANNUAL HOURS OF DOWNTIME (1)
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) .2
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 23.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
EMV	1	.5	.5	23.8
EMI	1	.5	.5	23.8
				ANNUAL UNCONSTRAINED CAPACITY
				(9) 8680

"Typical"

TOTAL 1

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Electromagnetic Environmental, Effects Lab

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	9	9	8	8	8	8	8
Contractor	2	1	1	1	1	1	
Total	11	10	9	9	9	9	8

Total Square Footage: 7,488

Test Area Square Footage: 6,408

Office Space Square Footage: 1,081

Tonnage of Equipment: 62

Volume of Equipment: 50,000

Annual Maintenance Cost: 35K

Estimated Moving Cost: 1.7M

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0.3	0.05	0.05	0.05	0.05	0.05	0.05

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Electromagnetic Environmental Effects Lab

AGE: 19 Yrs.

REPLACEMENT VALUE: \$5M

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 11/30/85

NATURE OF LAST UPGRADE: Replaced old bolted steel screen room with solid-steel, welded room and improved filters, doors, access panels to meet required 120 dB

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

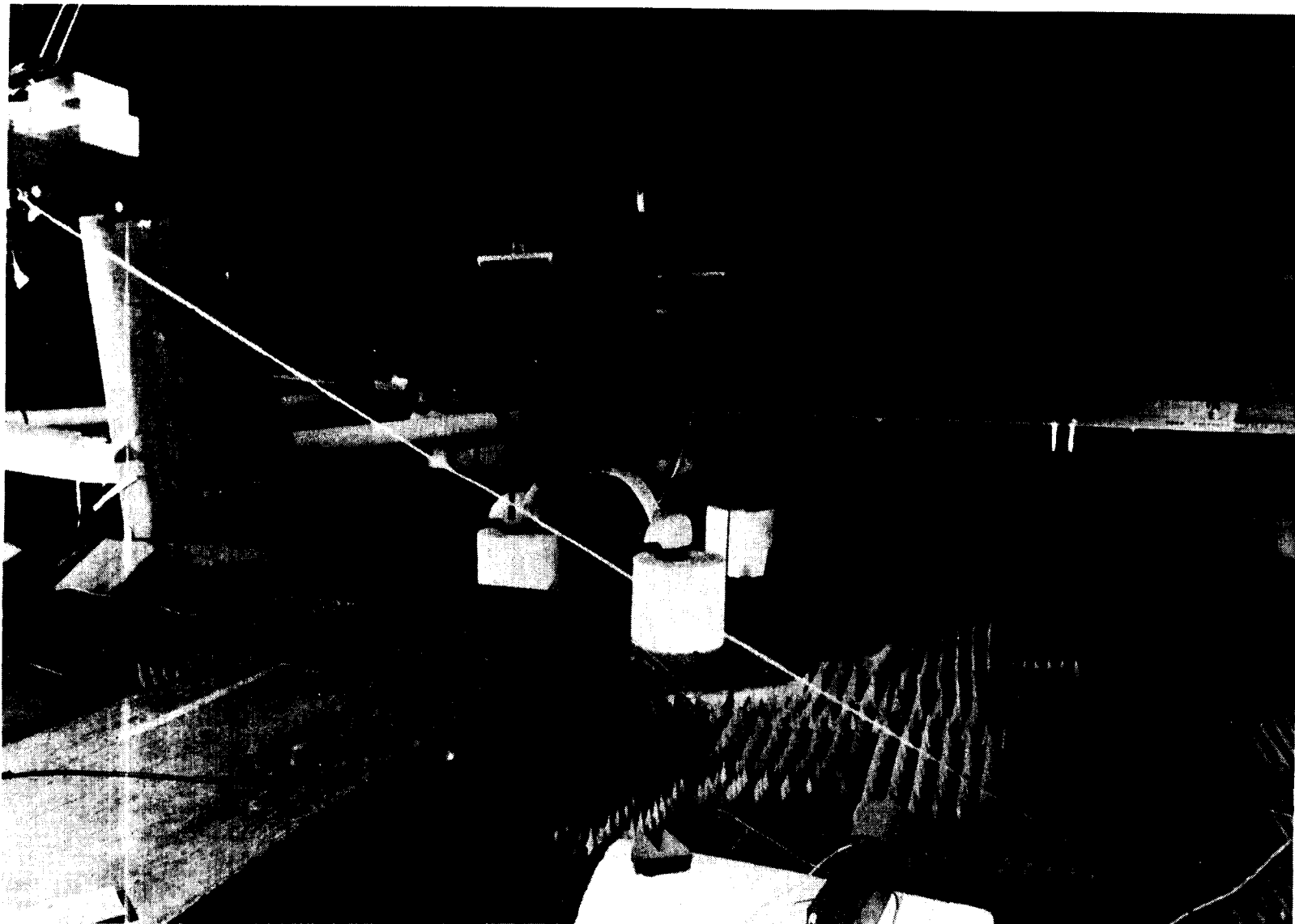
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



Electromagnetic Environmental Effects Facility

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ACTIVITY UIC: 63126

Tab 6: Environmental Test Facility

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Environmental Test Facility

Origin Date: 04/20/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>				
T&E FUNCTIONAL AREA: <u>Air Armament</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY <u>Measurement Facility</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>100</u>					
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>10</u>					
Armament/Weapons	<u>80</u>					
EC						
Other	<u>10</u>					
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Environmental Test Facility

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

Environmental Test Facility can reproduce a world of diverse climates and environments to more realistically test and evaluate test items response to environments they will encounter in daily field operations. Several environmental chambers are available to reproduce a multitude of climatic environments. Vibration stimulation can also be combined with the simulated climates to produce any environment that a product might encounter in the real world. Chambers are configured to support the full MIL-STD-810D/E spectrum of tests, with the exception of Sand/Dust and Fungus. The dynamic loads and aerodynamic loads test (DALT) facility can inertially load an aircraft store, including live ordnance, to the captive carriage limits of MIL-STD-8591, 12.5 G and 6 rad/sec², 0.4 sec duration, with all the tests being combined with temperature conditioning in the range -70 to +170°F.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

All the environmental test equipment is used to support multiple uses and in multiple programs. DALT is the only facility that can induce the stresses of captive flight maneuvers inertially, both vector and angular. Inducing stresses inertially is essential when the stresses of concern are caused by internal body forces, e.g. in the bonding of rocket motor grains.

TYPE OF TEST SUPPORTED:

Environmental qualification, developmental testing, failure mode duplication, ESS, TAAF, and missile dynamics

SUMMARY OF TECHNICAL CAPABILITIES:

Vibration Controllers, Temperature controllers, strain gauges, accelerometers, linear variable-displacement transducers, tape recorders, strip charts, and data loggers. Data can be transferred to other computers via floppy disks. Data acquisition is provided for 143 channels with sampling rates up to 8000 samples per second. Sensors include strain gauges, accelerometers, linear variable-displacement transducers. The data acquisition system is controlled by a Mini-VAX computer that provides calibration, scaling, and documentation.

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Environmental Test Facility

KEYWORDS:

Temperature, humidity, climatics, vibration, shock, agree, aircraft stores, maneuver loads, ejection, acceleration, fatigue.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Environmental Test Facility

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor	700	680	650	610	520	550	430	624
	Test Hours	350	340	325	305	260	275	215	312
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	5,600	5,440	5,200	4,880	4,160	4,400	3,440	4,992
	Test Hours	2,800	2,720	2,600	2,440	2,080	2,200	1,720	2,496
	Missions								
Other T&E	Direct Labor	700	680	650	610	520	550	430	624
	Test Hours	350	340	325	305	260	275	215	312
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Environmental Test Facility

ANNUAL HOURS OF DOWNTIME (1)
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 1.2
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 22.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Temp.	8	2	16	1253.7
Vib.	19	1	19	ANNUAL UNCONSTRAINED CAPACITY
				(9)
Salt Fog	1	1	1	457600
Temp/Vib	6	1	6	
Centrif.	1	1	1	
Acoustic	4	2	8	
Altitude	2	1	2	
Dynamics	1	2	2	
			TOTAL 55	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Environmental Test Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	7	7	7	7	7	7	7
Contractor							
Total	7	7	7	7	7	7	7

Total Square Footage: 17,050Test Area Square Footage: 16,000Office Space Square Footage: 1,050Tonnage of Equipment: 83.75Volume of Equipment: 25,600Annual Maintenance Cost: \$275,000Estimated Moving Cost: \$815,000

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	0	130,000	50,000	50,000	50,000	50,000

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Environmental Test Facility

AGE: 25 Yrs.

REPLACEMENT VALUE: 7.9 M (Facility and Equipment)

MAINTENANCE AND REPAIR BACKLOG: \$16,103

DATE OF LAST UPGRADE: 6/1/86

NATURE OF LAST UPGRADE: Raise roof, increase protective berm, installation of new test equipment, and minor repairs

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Replace Roof

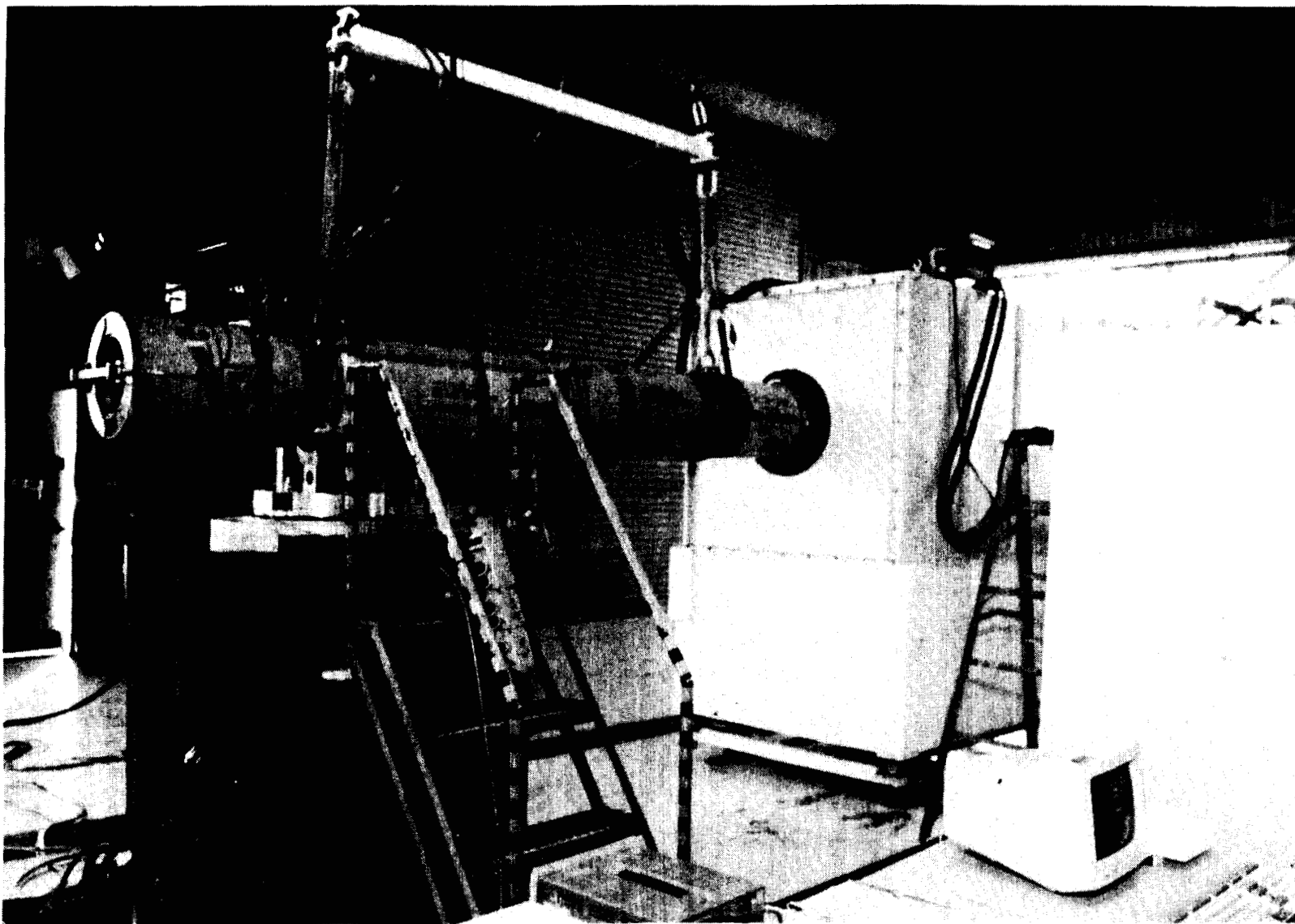
TOTAL PROGRAMMED AMOUNT: \$25K

SUMMARY DESCRIPTION: Repair/replace high bay roof on Bldg. 513

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



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ACTIVITY UIC: 63126

Tab 7: Monostatic Radar Reflectivity Laboratory

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Monostatic Radar Reflectivity Laboratory

Origin Date: 4/22/94

SERVICE: <u>Navy</u>		ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>			LOCATION: <u>Point Mugu, California</u>		
T&E FUNCTIONAL AREA: <u>Armaments/Weapons</u>		UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Measurement Facility</u>							
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>	
PERCENTAGE USE:	<u>60</u>	<u>0</u>	<u>30</u>	<u>10</u>	<u>0</u>	<u>0</u>	
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	<u>2</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>0</u>	<u>0</u>	
Armament/Weapons	<u>58</u>	<u>0</u>	<u>30</u>	<u>0</u>	<u>0</u>	<u>0</u>	
EC	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
Other	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
Total in Breakout Must Equal "Percentage Use" On First Line							

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Monostatic Radar Reflectivity Laboratory

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The Monostatic Radar Reflectivity Laboratory consists of two instrumented anechoic chambers. The large chamber (which measures 100'L x 40'W x 40'H) is equipped for performing electromagnetic scattering and radiation measurements to determine radar signatures of air vehicles as large as 16 feet. The anechoic chamber provides free space, far-field or near-field conditions in a secure indoor environment. The range uses a collimator to provide the far-field monostatic signature measurement capability. The facility is polarization diverse (VV, VH, HV, HH,RR,LL,LR), and can measure S, C, X, Ku, Ka, V, and W bands (2-100 GHz). The facility can measure targets weighing up to 2,000 lbs. A very high degree of flexibility is provided with target supports, radar measurement, and data processing capabilities. The second chamber (which measures 75'L x 27'W x 15'H) is used primarily for antenna and target augmentation device development and testing. The facility can provide monostatic near-field measurement data over the 2-95 GHz frequency range.

Mission: To conduct and direct studies, analyses, experiments, and measurements in radar reflectivity, materials and RF signatures.

Note: Replacement cost includes equipment.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

NAWCWPNS directorates, tri-service agencies, and DOD contractors are supported in the definition and diagnostic analyses of radar signatures for weapons system development, planning, and analyses of flight-test operations, and for engagement/encounter simulations. Support is also provided for survivability analyses and development and production testing of low-observable vehicles.

TYPE OF TEST SUPPORTED:

Ultra-high speed, wideband vertical and horizontal bistatic radar cross-section (RCS), glint, Doppler, high-resolution radar images, antenna patterns, augmentation systems, and background/clutter modeling.

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Monostatic Radar Reflectivity Laboratory

SUMMARY OF TECHNICAL CAPABILITIES:

Linear FM high-resolution system 2-35 GHz radar, HP 8510 35-110 GHz radar system, scientific Atlanta 20'x30' radar collimator, support pylons (1500 lb, 500 lb), 2,000-lb foam column supports, 3-ton overhead crane, platform lifts, HP Apollo 9000 series workstations, DEC VAX 8200 and physical security and storage to Top Secret level. SCIF facility permits processing of Top Secret data.

KEYWORDS:

Radar cross section (RCS), monostatic RCS, radar signature

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Monostatic Radar Reflectivity Laboratory

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor*	3736	4236	3310	3557	3092	2374	2840	2862
	Test Hours*	171	211	165	177	154	117	141	145
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor*	27386	31067	24274	26087	22672	17410	20825	10495
	Test Hours*	1154	1422	1111	1194	1038	787	953	1000
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

* To calculate the % of T&E hours only, use the % of T&E shown on the General Information form on page 67.

BRAC 95 DATA CALL #13

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T&E

ACTIVITY UIC: 63126

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Monostatic Radar Reflectivity Laboratory

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor	3736	4236	3310	3557	3092	2374	2840	2862
	Test Hours	171	211	165	177	154	117	141	145
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	27386	31067	24274	26087	22672	17410	20825	10495
	Test Hours	1154	1422	1111	1194	1038	787	953	1000
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Monostatic Radar Reflectivity Laboratory

ANNUAL HOURS OF DOWNTIME (1) 440
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 1.2
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 22.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
RCS	1	1	1	45.6
Antenna	1	1	1	45.6
				ANNUAL UNCONSTRAINED CAPACITY
				(9) 16,664 test hrs

TOTAL 2

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Monostatic Radar Reflectivity Laboratory

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0	0	0	0	0	0	0
Enlisted	0	0	0	0	0	0	0
Civilian	8	8	8	8	8	8	8
Contractor	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Total	8.75	8.75	8.75	8.75	8.75	8.75	8.75

Total Square Footage: 15,500Test Area Square Footage: 14,000Office Space Square Footage: 1,500Tonnage of Equipment: 37Volume of Equipment: 34,000Annual Maintenance Cost: \$153,000Estimated Moving Cost: \$870,000

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Monostatic Radar Reflectivity Laboratory

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	0	0	0	0	0	0
0	20	0	0	0	0	0

BRAC 95 DATA CALL #13

FOR OFFICIAL USE ONLY
T&E

ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Monostatic Radar Reflectivity Laboratory

AGE: 27 Yrs.

REPLACEMENT VALUE: \$10,950,000

MAINTENANCE AND REPAIR BACKLOG: Reseal roof, refurbish lobby, refurbish control room.

DATE OF LAST UPGRADE: 1/30/90

NATURE OF LAST UPGRADE: Installed new collimator. Installed new radar absorption material.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Expand frequency range

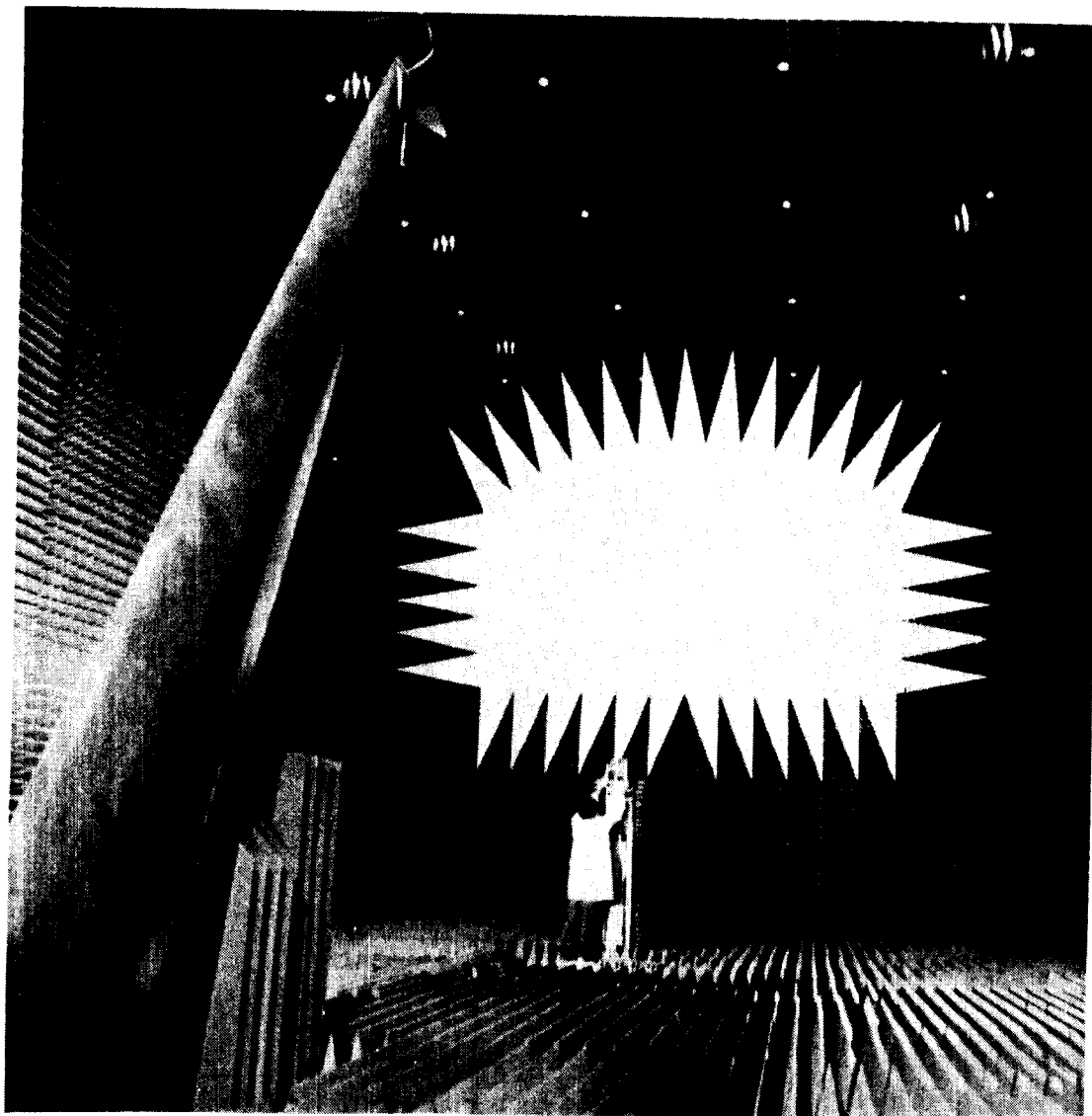
TOTAL PROGRAMMED AMOUNT: \$20K

SUMMARY DESCRIPTION: Expand frequency coverage through W band.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



Monostatic Radar Reflectivity Laboratory

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ACTIVITY UIC: 63126

Tab 8: Ready Missile Test Facility

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Ready Missile Test Facility

Origin Date: 4/20/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>		LOCATION: <u>Point Mugu, California</u>			
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGOR: <u>Measurement Facility</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>90</u>	<u>5</u>		<u>5</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	<u>90</u>	<u>5</u>		<u>5</u>		
EC						
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Ready Missile Test Facility

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

This facility provides the capability to conduct functional testing, acoustic/dynamic testing, thermal conditioning, real-time radiography, and assembly/disassembly of all-up-round weapons containing explosive loaded warheads and live rocket motors. This facility consists of four vibro-acoustic test cells rated at 650 lbs. or more of Class A explosives. These cells are capable of combining shaped acoustics to 457+ dB and mechanical shakers to cover a frequency range of 5 to 2000 Hz. There is a thermal capacity in each cell for a temperature range of -70 to +170°F with LN2 boost for high cooling ramps. There are four functional test cells on-site to provide the complete functional check-out of each missile in a live all-up-round configuration. There is also a real time X-ray capability to provide an evaluation of missile rocket motor integrity before and after being subjected to test environments. This facility also provides an assembly/disassembly building.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

This is the only facility that can reproduce the stresses of captive flight environments on live all-up-rounds, both dynamically (acoustics and shakers) and thermally. Inducing field stresses in this manor is essential when the desire is to measure the production reliability of tactical missiles prior to field usage.

TYPE OF TEST SUPPORTED:

Live missile production reliability acceptance testing, missile X-ray testing, all-up-round missile functional testing, missile build-up for flight test support

SUMMARY OF TECHNICAL CAPABILITIES:

All chambers are remotely controlled with data acquisition systems such as tape recorders, data loggers, strip charts, and computer systems.

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Ready Missile Test Facility

KEYWORDS:

PRAT, GLAT, PRT, acoustics, X-ray

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Ready Missile Test Facility

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	4746	5523	7037	4243	6250	1306 3	1115 6	1078 8
	Test Hours	1139 1	6628	8445	5090	7500	1567 5	1338 7	2589 0
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Ready Missile Test Facility

ANNUAL HOURS OF DOWNTIME (1)

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 6.1

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 17.9

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
REL. TEST	4	6	24	428.7
				ANNUAL UNCONSTRAINED CAPACITY
				(9) 156480

"Typical"

TOTAL 24

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Ready Missile Test Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	8	8	8	8	8	8	8
Contractor	15	11	11	11	11	11	11
Total	23	19	19	19	19	19	19

Total Square Footage: 15100

Test Area Square Footage: 14100

Office Space Square Footage: 1000

Tonnage of Equipment: 148

Volume of Equipment: 20000

Annual Maintenance Cost: \$250,000

Estimated Moving Cost: 12.5 M

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	125	35	15	15	15	15
		750				

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Ready Missile Test Facility

AGE: 16 Yrs.

REPLACEMENT VALUE: 12.5 M (Facility and Equip.)

MAINTENANCE AND REPAIR BACKLOG: \$199,946

DATE OF LAST UPGRADE: 4/30/94

NATURE OF LAST UPGRADE: Repair fire suppression system, repair compressors, install A/C units, repair ordnance grounds, remove storage tank, relocate power transformers, and repair doors and walls.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Replace A/C systems

TOTAL PROGRAMMED AMOUNT: \$39.9K

SUMMARY DESCRIPTION: Replace old A/C systems with new systems

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



Ready Missile Test Facility

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

Tab 9: Reliability Test Facility

85
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GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Reliability Test Facilities

Origin Date: 04/20/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>				
T&E FUNCTIONAL AREA: <u>Air Armaments</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Measurements Facility</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>90</u>	<u>5</u>		<u>5</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	<u>90</u>	<u>5</u>		<u>5</u>		
EC						
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Reliability Test Facilities

<p>FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:</p> <p>This facility provides the capability to conduct functional testing, acoustic/dynamic testing, thermal conditioning, and assembly/disassembly of missiles or components containing no explosives. This facility consists of four vibro-acoustic test cells capable of combining shaped acoustics to 157+ dB and mechanical shakers to cover a frequency range of 5 to 2000 Hz. There is a thermal capacity in each cell for a temperature range of -70 to +170°F with LN2 boost for high cooling ramps. These cells also provide for complete functional checkout of each missile while under test. This capability was designed to meet the requirements of MIL-STD-810D/E method 523 and to support the reliability measurements of MIL-STD-781 on new production weapons, as well as in-service usage items.</p>
<p>INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:</p> <p>This type of environmental simulation is unique to DOD and not performed any where else. This is the only facility that can reproduce the stresses of captive flight environments, dynamically (acoustics and shakers), thermally, and functionally. Inducing field stresses in this manor is essential when the desire is to measure the production reliability of weapons prior to field usage.</p>
<p>TYPE OF TEST SUPPORTED:</p> <p>Captive Carry Environments Simulation, Flight Test Simulation, Production Reliability Assessment Tests, Government Lot Acceptance Test, Reliability Demonstration, Reliability Growth</p>
<p>SUMMARY OF TECHNICAL CAPABILITIES:</p> <p>All chambers are remotely controlled with data acquisition systems, such as tape recorders, data loggers, strip charts, computer systems, and missile functional test equipment.</p>

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Reliability Test Facilities

KEYWORDS:

PRAT, GLAT, PRT, acoustics, FTS, vibro-acoustics

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T&E

ACTIVITY UIC: 63126

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Reliability Test Facilities

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	12580	12731	21007	14350	11585	10133	2717	396
	Test Hours	30194	30555	50418	34440	27804	24320	5434	594
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Reliability Test Facilities

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	1258 0	1273 1	2100 7	1435 0	1158 5	1013 3	2717	396
	Test Hours	3019 4	3055 5	5041 8	3444 0	2780 4	2432 0	5434	594
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Reliability Test Facilities

ANNUAL HOURS OF DOWNTIME (1) ____
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 2.7
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 21.3

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) FTS	(5) 4	(6) 6	(7) 24	(8) 511.6
				ANNUAL UNCONSTRAINED CAPACITY
				(9) 186720

"Typical"

TOTAL 24

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Reliability Test Facilities

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	21	21	21	21	21	21	21
Contractor							
Total	21	21	21	21	21	21	21

Total Square Footage: 12,350

Test Area Square Footage: 5,200

Tonnage of Equipment: 350

Annual Maintenance Cost: \$435,000

Office Space Square Footage: 7,150

Volume of Equipment: 12,350

Estimated Moving Cost: \$4.0 M

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
		185	75	75	75	75

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Reliability Test Facilities

AGE: 33 Yrs.

REPLACEMENT VALUE: 4.0 M (Facility and Equipment)

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 12/30/93

NATURE OF LAST UPGRADE: Upgrade and modernization of the Sidewinder production verification test chamber, including shakers, temperature conditioning units, test controller, missile tester, and electrical upgrades.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Test Support Equipment Modernization

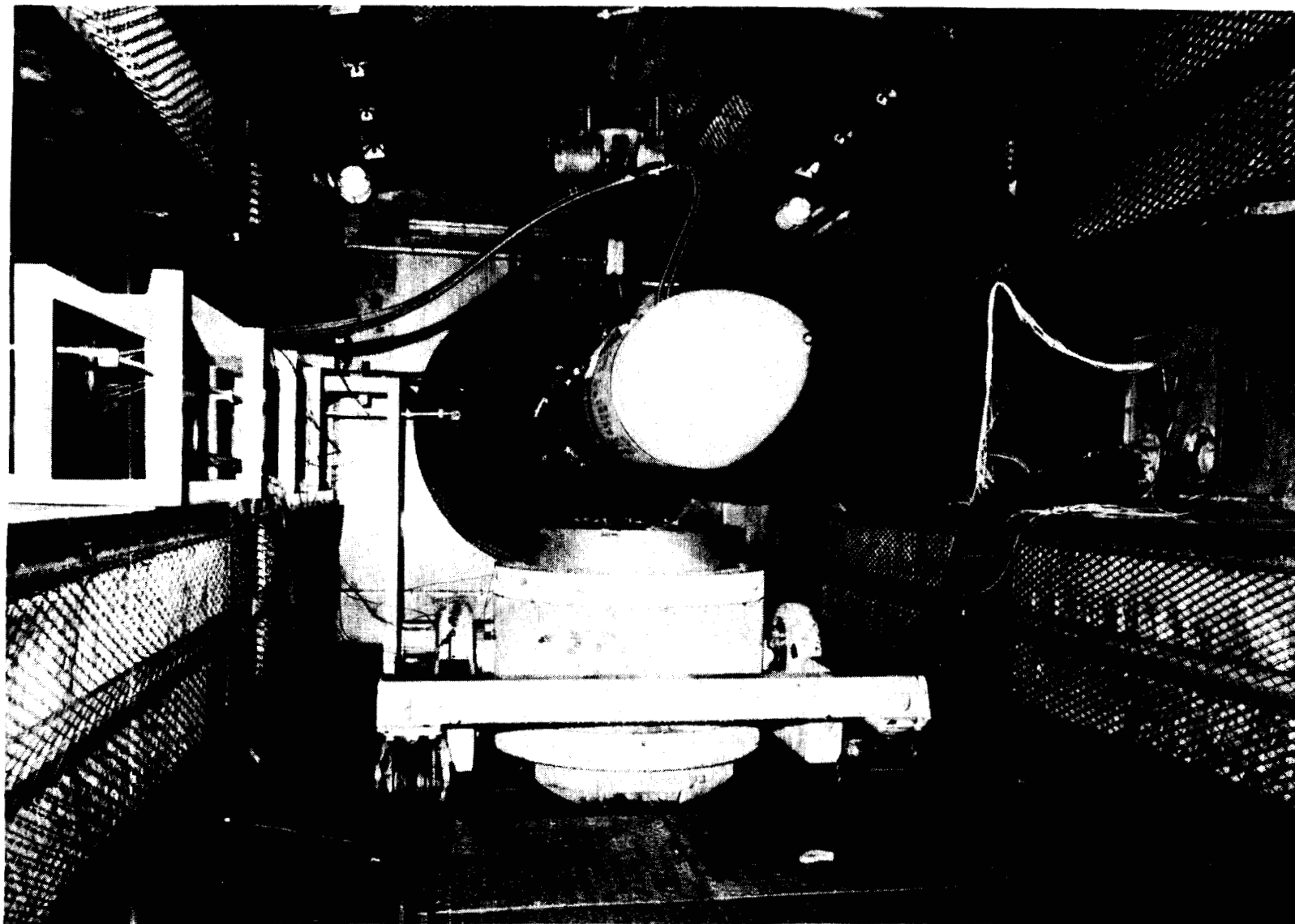
TOTAL PROGRAMMED AMOUNT: \$56.661

SUMMARY DESCRIPTION: Replace old unrepairable air compressor and cooling towers. Install waste heat recovery system.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



Reliability Test Facility

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

Tab 10: Sea Level Climatic Chamber

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Sea Level Climatic Chamber

Origin Date: 04/20/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>				
T&E FUNCTIONAL AREA: <u>Air Armament</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Measurement Facility</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>90</u>	<u>5</u>	<u>5</u>			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>40</u>	<u>2</u>	<u>2</u>			
Armament/Weapons	<u>40</u>	<u>3</u>	<u>3</u>			
EC						
Other	<u>10</u>					
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Sea Level Climatic Chamber

<p>FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:</p> <p>Within our Sea Level Climatic Chamber, various combinations of temperature, humidity, rain, snow, and wind environments can be established and controlled. In this fashion, we can test the largest military fighter aircraft or ground combat vehicle to climatic extremes from arid desert to monsoon rains to Arctic chills. Systems may be fully operational while testing is under way to validate operation while exposed to various climatic extremes. Sliding walls permit the chamber to be compartmented and operated as three independent chambers: one chamber at 63' x 60'; or, alternatively, two chambers at 30' x 60'; and an additional chamber at 20' x 25', all with a 24-foot-high ceiling Thus various parts or components of a system may be subjected simultaneously to entirely different climatic environments.</p>
<p>INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:</p> <p>The Sea Level Climatic Chamber, with a testing volume of nearly 100,000 cubic feet, is the largest climatic test facility on the West Coast. The chamber has been used by all DOD services.</p>
<p>TYPE OF TEST SUPPORTED:</p> <p>Temperature extremes (operational/nonoperational), snow loading, ice loading, rain fall, high humidity</p>
<p>SUMMARY OF TECHNICAL CAPABILITIES:</p> <p>All chambers are remotely controlled with data acquisition systems, such as: tape recorders, data loggers, strip charts, and computer systems.</p>
<p>KEYWORDS:</p> <p>Temperature, humidity, climatics, snow, rain</p>

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Sea Level Climatic Chamber

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor	1584	1584	1584	1584	1095	1095	1095	1900
	Test Hours	528	528	528	528	365	365	365	633
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	1104	1104	1104	1104	1140	1140	1140	1986
	Test Hours	552	552	552	552	380	380	380	662
	Missions								
Other T&E	Direct Labor	360	360	360	360	250	250	250	432
	Test Hours	120	120	120	120	83	83	83	144
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Sea Level Climatic Chamber

ANNUAL HOURS OF DOWNTIME (1) 110_____

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) .3

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 23.7

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) Environ.	(5) 2	(6) 1.5	(7) 3	(8) .71
				ANNUAL UNCONSTRAINED CAPACITY (9) 25920

"Typical"

TOTAL 3

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Sea Level Climatic Chamber

PERSONNEL

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

Total Square Footage: 7,035

Test Area Square Footage: 6,510

Office Space Square Footage: 525

Tonnage of Equipment: 14.1

Volume of Equipment: 14,175

Annual Maintenance Cost: 500.0 K

Estimated Moving Cost: 16.5 M

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	2.2 M					

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Sea Level Climatic Chamber

AGE: 33 YEARS

REPLACEMENT VALUE: 12.0M (Facility and Equipment)

MAINTENANCE AND REPAIR BACKLOG: \$2,267,871

DATE OF LAST UPGRADE: 7/10/94

NATURE OF LAST UPGRADE: Repair of the chamber walls, doors, air handlers, wiring, plumbing, and controls

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



Sea Level Climatic Chamber

Tab 11: Support Equipment Engineering and Test Complex

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Support Equipment Engineering and Test Complex

Origin Date: 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>	
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>						UIC = <u>N63126</u>
T&E TEST FACILITY CATEGORY: <u>Measurement Facilities</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>50</u>			<u>50</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	<u>50</u>			<u>50</u>		
EC						
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Support Equipment Engineering and Test Complex

<p>FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:</p> <p>The complex provides prelaunch test services for all NAWCWPNS operations at Point Mugu, as well as the engineering and technical support to upgrade missile functional test equipment. The laboratory provides the critical link between actual engineering performance requirements of weapon systems and the Fleet's ability to determine weapon readiness in the field.</p>
<p>INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:</p> <p>No real-time interconnectivity.</p>
<p>TYPE OF TEST SUPPORTED:</p> <p>Missile functional tests, missile telemetry integration tests, automatic test equipment (ATE) engineering evaluations, reliability tests, missile all-up round integration tests.</p>
<p>SUMMARY OF TECHNICAL CAPABILITIES:</p> <p>Field, intermediate-, depot-, and factory-level manual and automatic (computer controlled) test stations. Rate tables, anechoic chambers, IR and RF generators and receivers. Envircontrolled clean rooms, remote missile test facility for AUR testing. Three-phase power, hydraulic, and medium volume pneumatic (to 3500 psi) capabilities. This facility also maintains IBM PC/AT-compatible, Sun and VAX systems used for software development and computer-aided engineering (CAE) and (CAD) functions for mechanical and electrical/electronic systems.</p>

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Support Equipment Engineering and Test Complex

KEYWORDS:

--

BRAC 95 DATA CALL #13

FOR OFFICIAL USE ONLY
T&E

ACTIVITY UIC: 63126

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Support Equipment Engineering and Test Complex

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	39690	38070	36450	35640	33863	33863	33863	31238
	Test Hours	27755	26622	25490	24923	23680	23680	23680	21844
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Support Equipment Engineering and Test Complex

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	3969 0	3807 0	3645 0	3564 0	3386 3	3386 3	3386 3	3123 8
	Test Hours	2775 5	2662 2	2549 0	2492 3	2368 0	2368 0	2368 0	2184 4
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Support Equipment Engineering and Test Complex

ANNUAL HOURS OF DOWNTIME (1) 536

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 1.5

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 22.5

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
?	4	1.3	5.2	1453.3
Readiness	7	1.5	10.5	ANNUAL UNCONSTRAINED CAPACITY
Verify	2	1.2	2.4	(9)
1st Article	2	1.7	3.4	530448.0
Typical	30	1.43	43	
			TOTAL	64.5

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? No

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Support Equipment Engineering and Test Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	42	85	81	79	78	78	78
Contractor	10	14	8	6	5	5	5
Total	52	99	89	85	83	83	83

Total Square Footage: 17,854

Test Area Square Footage: 13737

Office Space Square Footage: 4117

Tonnage of Equipment: 120

Volume of Equipment: 27,450

Annual Maintenance Cost: 255K

Estimated Moving Cost: \$2.6 M

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	106.8	20	20	20	20	20
15	40	10	10	10	10	10

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Support Equipment Engineering and Test Complex

AGE: 24 Yrs.

REPLACEMENT VALUE: 54.58 Mil. bldg. and equip.

MAINTENANCE AND REPAIR BACKLOG: Heating system boiler replacement, roof repair, repaint job on bldg. Exterior.
Reseal east wall.

DATE OF LAST UPGRADE: 01/30/90

NATURE OF LAST UPGRADE: Clean room expansion, and a high-pressure nitrogen pumping facility. Increased the size of the existing clean room to accommodate supporting additional missile test sets. The nitrogen pumping facility allowed us to reduce downtime and expense of replacing water-saturated filters from the old air system.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Clean room upgrade

TOTAL PROGRAMMED AMOUNT: \$52.8K

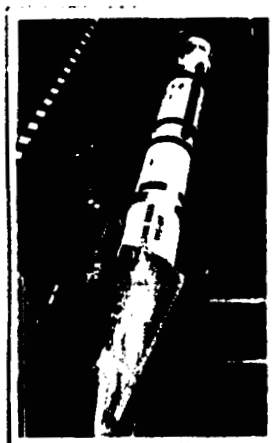
SUMMARY DESCRIPTION: Provides additional electrical and air conditioning capacity to accommodate more test systems.

2. UPGRADE TITLE: Engineering offices upgrade, telephone system upgrade, acoustic ceiling upgrade.

TOTAL PROGRAMMED AMOUNT: \$146.4K

SUMMARY DESCRIPTION: Phone system upgrade to handle additional personnel due to consolidation. Engineering office upgrade to provide adequate light, heat, acoustics, and improve employee morale.

Support Equipment Engineering Laboratory



HANDLING/PROTECTIVE ADAPTERS



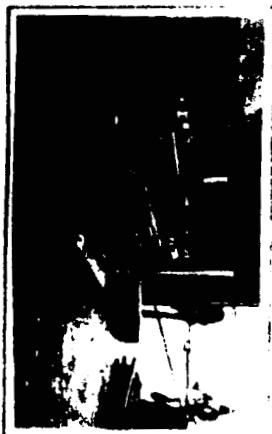
TEST ADAPTERS



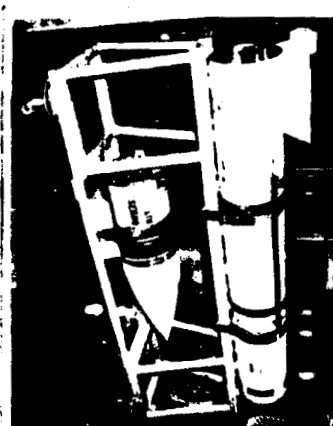
MAINTENANCE HOIST BEAMS



MAINTENANCE STANDS



DEVICE-TEST RESTRAINT



DEVICE-TEST SUPPORT



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ACTIVITY UIC: 63126

Tab 12: Telemetry/Test Article Instrumentation

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Telemetry/Test Article Instrumentation

Origin Date: 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>				
T&E FUNCTIONAL AREA: <u>Electronic Combat</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Integration Laboratory (IL)</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>100</u>					
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	100					
EC						
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Telemetry/Test Article Instrumentation**FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:**

The people, skills, knowledge, processes, facilities, and equipment required to design, develop, specify, document, build, procure, integrate, encrypt, install, test, evaluate, calibrate, configure, operate, repair, and maintain weapon instrumentation, telemetry, and flight termination for missiles, bombs, targets, platforms, and related systems. The mission is to provide for the planning, development, and application of instrumentation systems technology to ground and airborne vehicles, recovery-related systems, weapons, and air-to-ground data acquisition systems for gathering diagnostic information in support of test and evaluation programs.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

We interconnect with HWIL facilities, open-air ranges, integration laboratories, installed systems test facilities, and Naval Weapons Analysis Division (NWAC). The facility can be used for any application requiring the design, development, packaging, fabrication, test, and evaluation of electronic components subsystems and systems.

TYPE OF TEST SUPPORTED:

Weapon performance measurements.

SUMMARY OF TECHNICAL CAPABILITIES:

See fact sheets.

KEYWORDS:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Telemetry/Test Article Instrumentation

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	169,000	130,000	121,400	120,700	108,150	123,100	91,380	85,680
	Test Hours								
	Missions	Various	Various	Various	Various	Various	Various	Various	Various
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Telemetry/Test Article Instrumentation

ANNUAL HOURS OF DOWNTIME (1) 4875

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 13.36

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 10.64

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Electronic	20	18	360	10.64
Environ	4	4	16	ANNUAL
Anechoic	1	3	3	UNCONSTRAINED
Qual Assur	4	6	24	CAPACITY
				(9)
				3883.6

"Typical"

TOTAL 403

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? no

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Telemetry/Test Article Instrumentation

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	67	62	62	62	62	62	62
Contractor	0	0	0	0	0	0	0
Total	67	62	62	62	62	62	62

Total Square Footage: 46289

Test Area Square Footage: 25390

Tonnage of Equipment: 46.26

Annual Maintenance Cost: \$102,000

Office Space Square Footage: 20899

Volume of Equipment: 48,312

Estimated Moving Cost: \$3,600,000

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Telemetry/Test Article Instrumentation

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	0	0	0	0	0	0
0	30	0	0	0	0	0

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Telemetry/Test Article Instrumentation

AGE: 35 Yrs.

REPLACEMENT VALUE: \$19 M

MAINTENANCE AND REPAIR BACKLOG: Maintenance for this facility consists of contracts designed for upkeep of the internal facilities.

DATE OF LAST UPGRADE: 7/8/90

NATURE OF LAST UPGRADE: Conversion of machine shop space into engineering offices.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Mezzanine for Room 151.

TOTAL PROGRAMMED AMOUNT: \$ 25K

SUMMARY DESCRIPTION: A mezzanine is scheduled to be constructed with base funds that were approved through the facilities, equipment, and space process committees.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

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ACTIVITY UIC: 63126

Integration Laboratory

119
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Tab 13: Electronic Warfare Countermeasures Systems Capability

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Electronic Warfare Countermeasures Systems Capability

Origin Date: 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>		LOCATION: <u>Point Mugu, California</u>			
T&E FUNCTIONAL AREA: <u>Electronic Combat</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Integration Laboratory (IL)</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>5</u>	<u>15</u>	<u>25</u>	<u>55</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons						
EC	<u>5</u>	<u>15</u>	<u>25</u>	<u>55</u>		
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Electronic Warfare Countermeasures Systems Capability**FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:**

Act as NAVAIRSYSCOM's technical agent for the development and production of multispectral, self-protection electronic warfare countermeasures systems. Provide threat assessments and develop/improve countermeasures techniques for these on-board/off-board countermeasures systems. Integrate electronic warfare responses to provide optimum utilization of aircraft sensors and tactics. Produce and deliver software user data files for deployed countermeasures systems that reflect threat changes as required by the Fleet. Incorporate countermeasures techniques that are effective and increase aircraft survivability and mission success. Increase the survivability of fixed and rotary wing aircraft that use lightweight electronic warfare systems. Maintain engineering expertise and facilities for the analyses and exploitation of foreign electronic warfare and weapon systems. Perform full spectrum of project and business management support, including management of finances, acquisitions, facilities, and equipment; general administrative and clerical assistance in technical mission support; and project planning, control, scheduling, funding, and interfacing.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

Physically close proximity to and working relationship with personnel and facilities of the warning systems capability and the Electronic Combat Simulation Evaluation Laboratory (ECSEL) provide effective integration and testing of electronic warfare suites. Electronic mail and local area computer networking provide effective work linkages for EW suite integration and project management.

TYPE OF TEST SUPPORTED:

Integration testing, development test and evaluation, operational test and evaluation, technical evaluation, acceptance testing, software verification and validation.

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Electronic Warfare Countermeasures Systems Capability

SUMMARY OF TECHNICAL CAPABILITIES:

Engineering expertise to support design, development, deployment, integration testing, acceptance testing, simulation and modeling, and in-service engineering for electronic warfare countermeasure systems. Design, development, and test documentation of systems, hardware, and software.

KEYWORDS:

Electronic countermeasures, infrared and electro-optical countermeasures, jammers, chaff, flares, expendables, towed decoy, dispensers, electromagnetic interference, user data files, operational flight programs, jammer techniques, software support activity, electronic warfare suite integration, simulation and modeling.

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ACTIVITY UIC: 63126

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Electronic Warfare Countermeasures Systems Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	116500	116800	115000	113500	117000	118500	108300	87300
	Test Hours	8305	8326	8197	8091	8340	8447	7720	6223
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

R

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Electronic Warfare Countermeasures Systems Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	11650	11680	11500	11350	11700	11850	10830	8730
	Test Hours	0	0	0	0	0	0	0	0
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Electronic Warfare Countermeasures Systems Capability

ANNUAL HOURS OF DOWNTIME (1) 296

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 0.81

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 23.2

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) Devel	(5) 3	(6) 2	(7) 6	(8) 347.9
QA	3	3	9	ANNUAL UNCONSTRAINED CAPACITY
				(9) 126,965.3

"Typical"

TOTAL 15

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? no

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Electronic Warfare Countermeasures Systems Capability

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	1	1	1	1	1	1
Enlisted	0	0	0	0	0	0	0
Civilian	65	45	47	50	52	54	56
Contractor	26	22	20	31	32	32	32
Total	92	68	68	82	85	87	89

Total Square Footage: 5400Test Area Square Footage: 1900Tonnage of Equipment: 1.9Annual Maintenance Cost: \$20,000Office Space Square Footage: 3500Volume of Equipment: 2,000Estimated Moving Cost: \$35,000

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Electronic Warfare Countermeasures Systems Capability

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	163	163	173	184	195	206
	10*					

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Electronic Warfare Countermeasures Systems Capability

AGE: 7 Yrs.

REPLACEMENT VALUE: \$7,680,000

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE:

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: ALE-47 Integration Test Bench

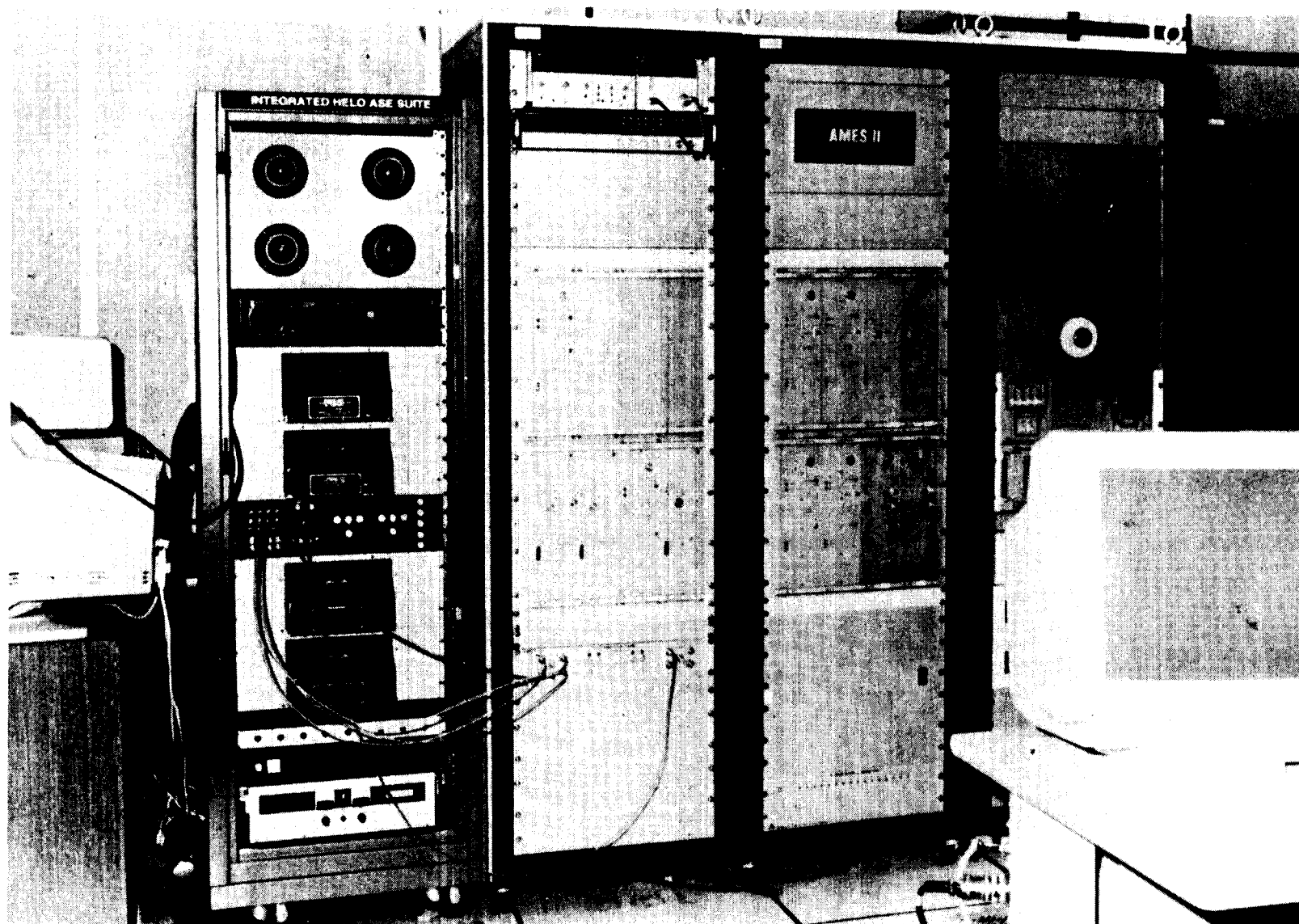
TOTAL PROGRAMMED AMOUNT: \$ 70K

SUMMARY DESCRIPTION: Upgrade test bench to incorporate avionics interface and provide enhanced data monitoring

2. UPGRADE TITLE: ALE-50 Power Up Test Set (PUTS)

TOTAL PROGRAMMED AMOUNT: \$ 50K

SUMMARY DESCRIPTION: Upgrade test set to include test capability for Lot II systems (new power supply)



HH-60H EW Suite Integration Laboratory

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ACTIVITY UIC: 63126

Tab 14: EW/Radar Support Equipment

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: EW/Radar Support Equipment

Origin Date: 04/21/94

Service: <u>Navy</u>	Organization/Activity: <u>NAWCWPNS</u>	Location: <u>PT. MUGU</u>				
T&E Functional Area: <u>Air Vehicles/Avionics</u>	UIC = <u>N63126</u>					
T&E Test Facility Category <u>Integration Laboratories (IL)</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>5</u>		<u>95</u>			
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons						
EC	<u>5</u>		<u>95</u>			
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: EW/Radar Support Equipment

<p>FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:</p> <p>Performs as the Navy's technical agent in the acquisition of EW and radar support systems. Serves as the designated commodity managers for Navy airborne EW and radar avionics automatic test equipment and test program software under authority from the Naval Air Systems Command. The historical role of the Naval Air Systems Command in the acquisition and support of these systems has changed as a result of decentralization. Full responsibility has been transferred to Point Mugu for acquisition, management, engineering, and integrated logistics support for EW and radar support systems. In addition, the mission includes maintaining laboratory and computer facilities to support acquisition, development, integration, and test and evaluation of cognizant support systems. The laboratory includes installed avionics systems and actual aircraft platform RF transmission lines that replicate actual aircraft platform installations.</p>
<p>INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:</p> <p>This T&E facility is configured to support multiple Navy aircraft systems. It can be reconfigured to support helicopters and aircraft from all branches of the service.</p>
<p>TYPE OF TEST SUPPORTED:</p> <p>Integration testing, development test and evaluation, technical evaluation, operational evaluation, acceptance testing, reliability and maintainability testing, environmental testing, and hardware and software verification and validation.</p>
<p>SUMMARY OF TECHNICAL CAPABILITIES:</p> <p>Engineering and logistics expertise to support design, development, deployment, life-cycle acquisition support, design acceptance testing, integration testing, and in-service engineering for EW and Radar support systems. Technical capability includes the development of all supporting documentation.</p>

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: EW/Radar Support Equipment

KEYWORDS:

Automatic Test Equipment, ATE, EW, Radar, Support Equipment, SE, OEWTPS, Rapid Reprogrammable Terminal, Iron Crow

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: EW/Radar Support Equipment

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	115500	127750	136500	141750	162750	180250	166250	168250
	Test Hours	5110	5110	5670	5670	6510	7210	6760	6760
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

R

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: EW/Radar Support Equipment

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	11550 0	12775 0	13650 0	14175 0	16275 0	18025 0	16625 0	16825 0
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: EW/Radar Support Equipment

ANNUAL HOURS OF DOWNTIME (1) 792
 AVERAGE DOWNTIME PER DAY (LINE DIVIDED BY 365) (2) 2.17
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 21.8

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Dev. Test	2	.43	.86	37.6
Interg.	2	.43	.86	ANNUAL UNCONSTRAINED CAPACITY
				(9) 13705

"Typical"

TOTAL 1.72

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? No

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: EW/Radar Support Equipment

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	0	2	2	2	2	2
Enlisted	6	6	1	0	1	1	1
Civilian	62	56	56	56	56	56	56
Contractor	49	40	39	39	36	36	36
Total	118	102	98	97	95	95	95

Total Square Footage: 16715Test Area Square Footage: 8775Office Space Square Footage: 7636Tonnage of Equipment: 26.8Volume of Equipment: 329,000Annual Maintenance Cost: \$30,000Estimated Moving Cost: \$409,000

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: EW/Radar Support Equipment

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	80	0	0	0	0	0
0	0	0	0	0	0	0

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: EW/Radar Support Equipment

AGE: 15 Yrs.

REPLACEMENT VALUE: \$18,493,000

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 06/01/88

NATURE OF LAST UPGRADE: Expanded aircraft type capability and increased overall size

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Helicopter Crow upgrade

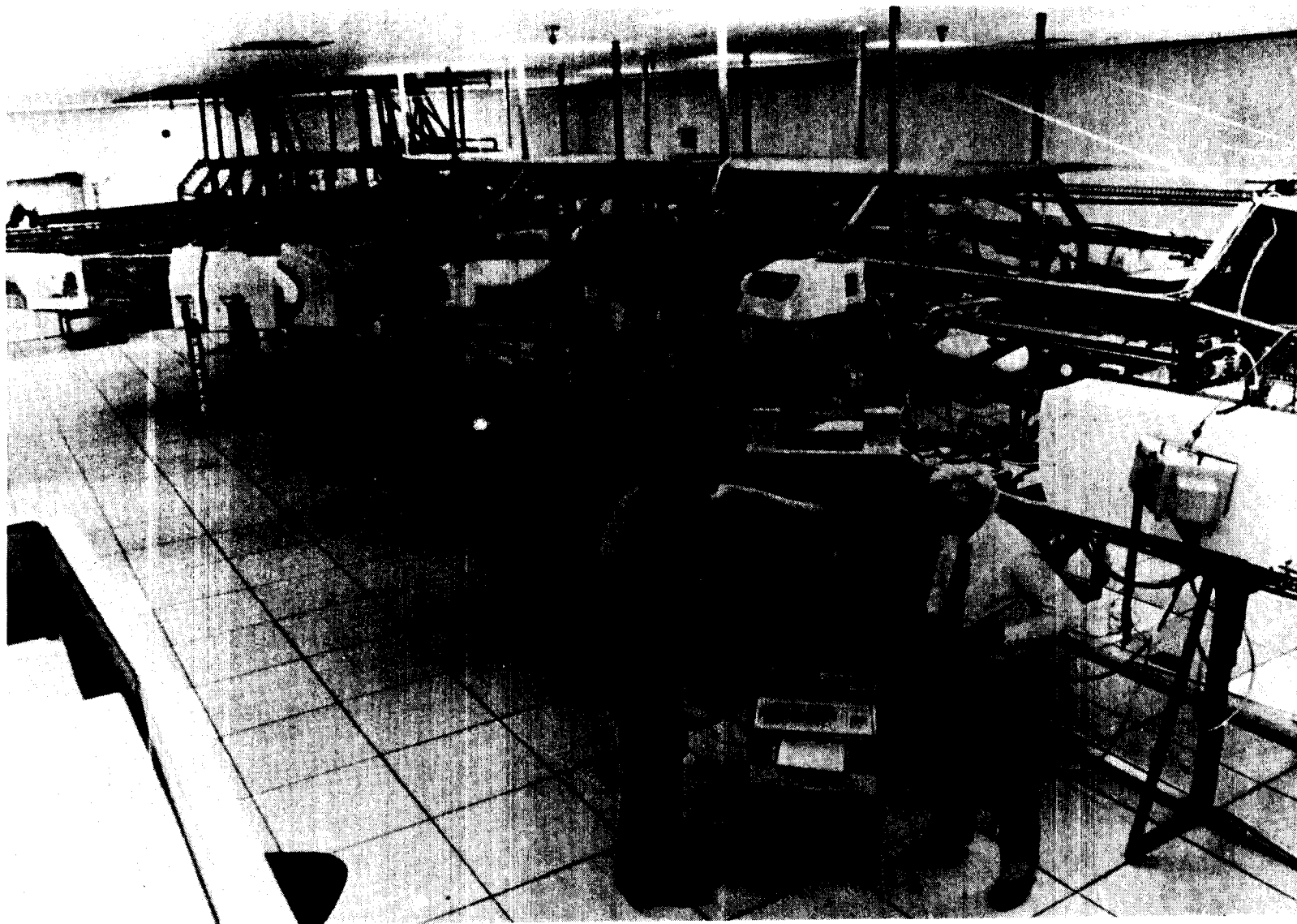
TOTAL PROGRAMMED AMOUNT: \$80,000

SUMMARY DESCRIPTION: Expanded laboratory capability to include RF transmission lines and EW avionics systems for Navy helicopters that will allow for development of systems integration as well as organizational-level systems testing.

2. UPGRADE TITLE:

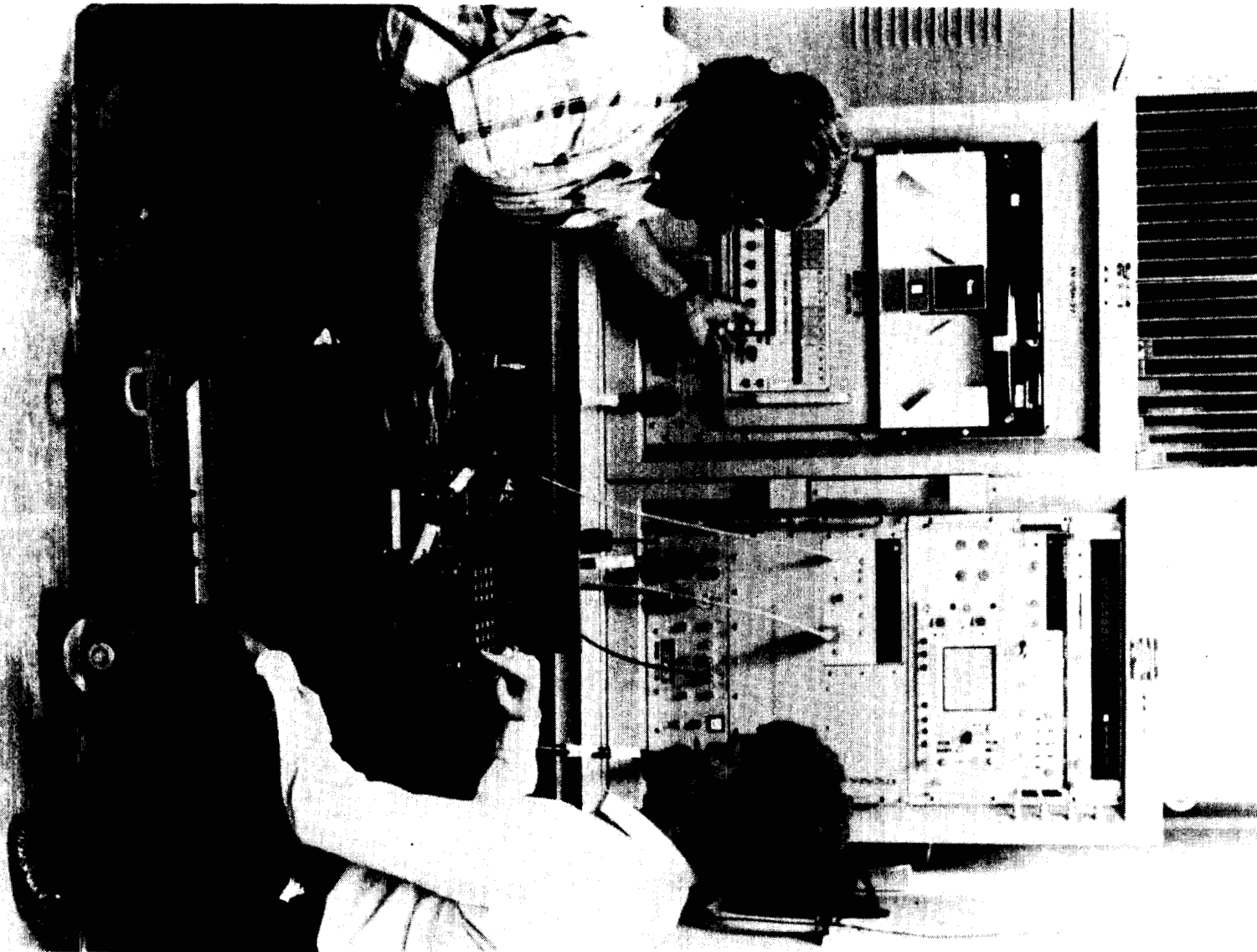
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



Integrated Systems Support Laboratory (ISSL)

EW Support Equipment Development Station





Rapid Reprogramming Terminal Development (RRT)

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ACTIVITY UIC: 63126

Tab 15: Information Warfare Systems Laboratory Complex

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ACTIVITY UIC: 63126

Tab 18: Warning and Surveillance Systems Capability

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Warning and Surveillance Systems Capability

Origin Date: 04/21/94

SERVICE: <u>Navy</u>		ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>			LOCATION: <u>Point Mugu, California</u>		
T&E FUNCTIONAL AREA: <u>Electronic Combat</u>					UIC = <u>N63126</u>		
T&E TEST FACILITY CATEGORY: <u>IL</u>							
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>	
PERCENTAGE USE:	<u>10</u>	<u>5</u>	<u>20</u>	<u>65</u>	<u>0</u>	<u>0</u>	
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles							
Armament/Weapons							
EC	<u>10</u>	<u>5</u>	<u>20</u>	<u>65</u>			
Other							
Total in Breakout Must Equal "Percentage Use" On First Line							

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Warning and Surveillance Systems Capability**FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:**

Serve as the principal technical systems engineering agent for Naval Air Systems Command for the development, test, and support of multispectral EW warning and surveillance systems and suites for tactical Navy aircraft, foreign military sales (FMS) customers, and joint-service programs. Provide life-cycle support that encompasses the design, development, systems engineering, test, verification, validation, integration, production support, acceptance, quality assurance, Fleet introduction, configuration management, distribution, control, modification, post deployment software support, and Fleet support of assigned systems and related software. Provide quick reaction and rapid reprogramming capability to deployed Fleet systems.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

Specialized EW system/suite test and integration support is accomplished in the ECSEL and F-14 labs in support of development and in-service tasking. Specialized support in the EWIL/HARM and F/A-18 WSSL integration labs at China Lake is essential. Internal electro-optical, software development, HWIL, and integration labs are essential for development testing.

TYPE OF TEST SUPPORTED:

System and software development, test, integration, in-service engineering.

SUMMARY OF TECHNICAL CAPABILITIES:

Provide system engineering capability for the design, development, test, production support, acceptance, integration, in-service engineering, and rapid reprogramming of RF/LASER/EO/IR warning and surveillance systems for Navy, joint-service, and FMS platforms. The warning and surveillance systems software development laboratory is a multipurpose system test and integration facility that allows software development, debugging, verification and validation testing as well as hardware-in-the-loop testing. The Laser/EO/IR lab provides design, development, and test capabilities for such systems.

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Warning and Surveillance Systems Capability

KEYWORDS:

Electronic Combat, Electronic Warfare, Threat, RF, laser, EO, IR, software support activity, RWR, integration, rapid reprogramming, ALR-67, ALR-66, APR-39, AAR-47, AVR-2

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Information Warfare Systems Lab Complex

Origin Date: 04/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>	
T&E FUNCTIONAL AREA: <u>Electronic Combat</u>						UIC = <u>N63126</u>
T&E TEST FACILITY CATEGORY: <u>Integration Laboratory</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>5</u>	<u>23</u>	<u>63</u>	<u>8</u>	<u>1</u>	
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons						
EC						
Other	<u>5</u>	<u>23</u>	<u>63</u>	<u>8</u>	<u>1</u>	
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Information Warfare Systems Lab Complex**FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:**

The Mission of the Information Warfare Systems Laboratory Complex is to conceive, develop, and deploy software and hardware products that result in the seamless integration of automated mission planning and intelligence systems in a common operating environment. The complex provides full support for the design, development, integration, training, rapid prototyping, and life cycle support of the new fully open architecture Tactical Aircraft Mission Planning System (TAMPS) version 6.0 and beyond, and the Tactical Electronic Reconnaissance Processing and Evaluation System (TERPES). Complex personnel define and specify new and improved systems in response to Fleet requirements and intelligence data. The complex is comprised of approximately 11,000 square feet of laboratory and office space that are electronically interconnected to a number of key facilities, and houses over \$2.3 million of computer resources, including several open architecture mainframe multi-user assets with significant computing power (2000 MIPS). The complex is capable of conducting modeling and simulation and performing planning efforts at the force and unit levels in support of development and test and evaluation efforts.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

The lab is currently connected in a secure point to point environment with Austin, TX, Fairfax, VA, NAWCWPNS China Lake, the Precision Strike Lab, the EA-6B Lab, and the NAWCWPNS Battle Management Interoperability Center (BMIC) supplying requested Intel information required for local T&E efforts. In addition, IWS personnel are working with range personnel to provide a networked modeling and simulation capability in support of future T&E efforts. This capability will create a "virtual" range with the flexibility to seamlessly integrate real and simulated exercises over the national Defense Simulation Internet.

TYPE OF TEST SUPPORTED:

The IWS Lab Complex is capable of supporting a variety of modeling and simulation efforts in support of range test and Evaluation efforts. Significant effort is currently expended in the integration and test of Mission Planning Modules designed to interface with the core TAMPS program in support of unique platforms.

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FACILITY/CAPABILITY TITLE: Information Warfare Systems Lab Complex

SUMMARY OF TECHNICAL CAPABILITIES:

The IWS Lab Complex is equipped with state-of-the-art equipment in support of Science and Technology innovations in the information warfare technology and image exploitation areas. The complex is a networked Sun workstation environment, including several SPARC Center 2000 and 690 Servers and 38 SPARC workstations. Equipped with an HP 9000 computer, two Silicon Graphics workstations, and one three dimensional digitizer, the complex has image exploitation capabilities with on-line access to the National Imagery Resource Library.

KEYWORDS:

TAMPS, TERPES, IAS, Mission Planning, Collaborative Planning, Intel, EOB, Post Flight Analysis, Data Fusion

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Information Warfare Systems Lab Complex

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor	22000	22000	22000	66000	66500	70000	70000	70000
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Information Warfare Systems Lab Complex

ANNUAL HOURS OF DOWNTIME (1) 240

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 0.66

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 23.34

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Dev test	3	6	18	606.8
Integration	2	4	8	ANNUAL UNCONSTRAINED CAPACITY
				(9) 221,496

"Typical" 3

TOTAL 26

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO.

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Information Warfare Systems Lab Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	2	2	2	2	2	2
Enlisted	5	5	5	5	5	5	5
Civilian	26	33	33	38	38	38	38
Contractor	102	106	113	111	111	111	111
Total	134	146	153	156	156	156	156

Total Square Footage: 11,000

Test Area Square Footage: 5,300

Tonnage of Equipment: 68.5

Annual Maintenance Cost: 90,000

Office Space Square Footage: 5,700

Volume of Equipment: 33,000

Estimated Moving Cost: \$150,000

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Information Warfare Systems Lab Complex

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
100,000	695,000	300,000	200,000	300,000	300,000	300,000
1,293,410	2,605,030	1,328,720	1,250,000	1,250,000	1,250,000	1,250,000

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Information Warfare Systems Lab Complex

AGE: 5 Yrs.

REPLACEMENT VALUE: \$5,400,000 + Inflation

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 02/01/94

NATURE OF LAST UPGRADE: Acquisition of Sun SPARC workstations, Silicon Graphics workstations, and rewiring of laboratory flooring to support installation.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Special Compartmented Information Facility

TOTAL PROGRAMMED AMOUNT: \$400K

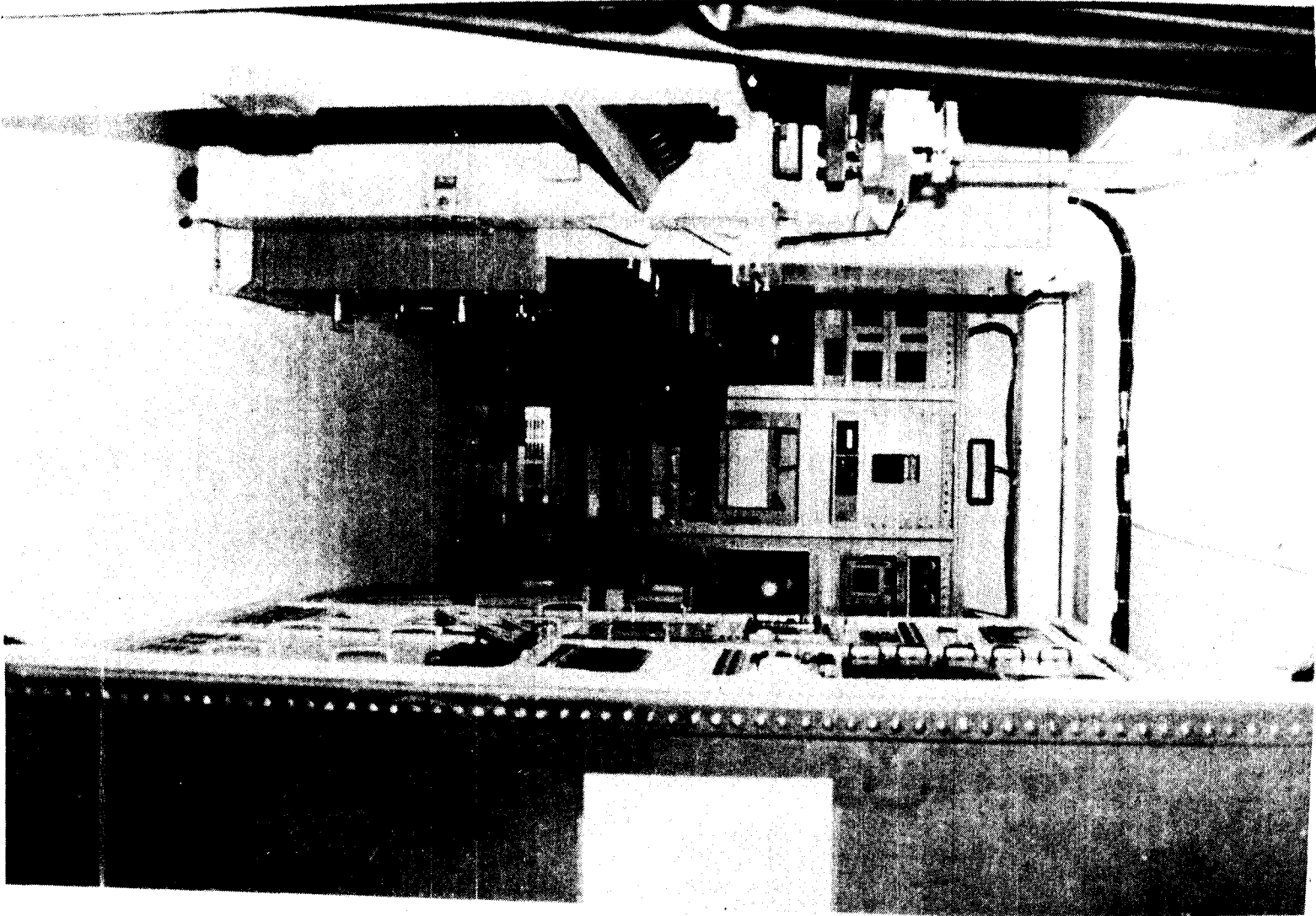
SUMMARY DESCRIPTION: Define, acquire, and install communications and computer equipment required to support operations at the SCI level in the existing Special Compartment Information Facility (SCIF).

2. UPGRADE TITLE: Raised Computer Flooring

TOTAL PROGRAMMED AMOUNT: \$225K

SUMMARY DESCRIPTION: Upgrade the IWS Lab Complex electrical and communications wiring enclosed within the computer flooring. Achieve full secure interconnectivity between the individual laboratories contained within the complex. Upgrade communications capabilities between our complex and external facilities and networks.

TERPES Integration Lab Facility



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Tab 16: Intercept Weapons Evaluation Facility

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

Origin Date 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>	
T&E FUNCTIONAL AREA: <u>Armaments/Weapons</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY	<u>IL (primarily)</u>					
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Armament/Weapons	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
EC	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Other	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total in Breakout Must Equal "Percentage Use" On First Line						

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

Origin Date 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>	
T&E FUNCTIONAL AREA: <u>Armaments/Weapons</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY	<u>DMS & IL</u>					
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Armament/Weapons	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
EC	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Other	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The IWEC facility is part of the Air Intercept Systems Department's Missile System Evaluation Laboratory (MSEL) and consists of seven laboratories that provide evaluation-centric test and evaluation planning, test execution, data analysis, and reporting of intercept weapon systems performance. Data gathered from live missile flights, captive flights, 6-DOF) flyout simulations, and HWIL operations are used to assess the combined performance of both tactical missiles and their interfaces with the launch platform. The laboratories' capabilities include data reduction, merging, manipulation, analysis, and customized data displays. IWEC's suite of data processing systems provide the capabilities for analyzing missile wideband video data, PAM and PCM telemetry data, and flight test data archiving. The laboratories process telemetry data for missile/aircraft performance assessments and TSPI radar data for flight trajectory analysis. With over 30 years experience in flight test planning, execution, and post-flight analysis in the IWEC, NAWCWPNS has a history of demonstrated expertise in developing and using data analysis tools to effectively and efficiently evaluate integrated missile/platform system performances.

The IWEC also supports software Operational Flight Program code testing in conjunction with simulation of hardware inputs. The missile software source code is tested and evaluated to determine proper implementation, compliance with specifications, proper event sequence, I/O requirements, module interfaces, logic flow, and algorithm implementation. The laboratories also conduct software documentation reviews to evaluate the requirement, design, test, and planning documents to ensure they are complete and accurately describe the software. Unique software tools are developed and operated in-house to accomplish this effort.

(NOTE: "Replacement Cost" Includes Equipment)

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility**INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:**

The IWEC is collocated with missile HWILs, the Simulation and Effectiveness Center, and the Bistatic Radar Reflectivity Laboratory in NAWCWPNS Missile Systems Evaluation Laboratory (MSEL). The MSEL's communications infrastructure internet facilitates the sharing of data and information transfer between the IWEC and the other MSEL laboratories. This interconnectivity is via a state-of-the-art communications network consisting of secure fiber-optics cable and a 10-base-T cable. This connection permits transfer of data between the HITL laboratories conducting real-time guidance simulations with the data reduction and lethality laboratories that perform missile telemetry analysis and endgame analysis. The data are also available and interchangeable over the network to the flight test data analysis laboratory for comparison and validation with actual flight test telemetry data. The MSEL has dedicated secure and nonsecure T1 lines to the Sea Test Range and is in the process of installing a Wide Area Network (WAN) link. The WAN allows dedicated, secure on-line data communication to the other facilities at Point Mugu and throughout the nation.

TYPE OF TEST SUPPORTED:

Flight Testing, Missile Performance Evaluations, Data Reduction, Data Display, Data Merging, Missile Software Verification and Validation

SUMMARY OF TECHNICAL CAPABILITIES:

Computers: VAX workstations, Sun workstations, HP workstations, PC's, MacIntosh, DECOMs (ITAS and ADS), tape decks, spectrum analyzers, spectrographs, video, strip-chart recorders, data storage-disk drives, optical, tape-secure and nonsecure ethernet, SAR and Top Secret lab spaces.

KEYWORDS:

Data reduction, data display, missile evaluation, flight test, software verification and validation

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	11788 1	13372 7	10448 5	11228 9	12720 0	97590	89638	90338
	Test Hours	10504	11916	9311	10006	8696	6678	7988	8050
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

ANNUAL HOURS OF DOWNTIME (1) 1472
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 4
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 20

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Sal	4	1	4	380
Flt Data	4	1	4	
				ANNUAL UNCONSTRAINED CAPACITY
				(9)
TDAS	3	1	3	138,700 test hrs
Data AN	4	1	4	
AM V&V	4	1	4	
			TOTAL 19	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain: N/A

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	3	3	2	2	2	2	2
Enlisted	0	0	0	0	0	0	0
Civilian	59.5	48	48	48	48	48	48
Contractor	10	10	9	8	8	8	8
Total	72.5	61	59	58	58	58	58

Total Square Footage: 33,829Test Area Square Footage: 22,047Tonnage of Equipment: 20Annual Maintenance Cost: \$105,000Office Space Square Footage: 11,793Volume of Equipment: 11,000Estimated Moving Cost: \$687,000

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	3	3	2	2	2	2	2
Enlisted	0	0	0	0	0	0	0
Civilian	59.5	48	48	48	48	48	48
Contractor	10	10	9	8	8	8	8
Total	72.5	61	59	58	58	58	58

Total Square Footage: 33,829

Test Area Square Footage: 22,047

Tonnage of Equipment: 20

Annual Maintenance Cost: \$105,000

Office Space Square Footage: 12,793

Volume of Equipment: 11,000

Estimated Moving Cost: \$687,000

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	0	0	0	0	0	0
224	233	245	220	226	217	224

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	80	75	75	75	800	200
13,040	80	220	450	270	500	200

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Intercept Weapons Evaluation Facility

AGE: 2 Yrs.

REPLACEMENT VALUE: \$13,070,000

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 1/15/94

NATURE OF LAST UPGRADE: Various equipment upgrades (computers etc.)

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Equip EO/IR seeker/guidance test lab.

TOTAL PROGRAMMED AMOUNT: 60,000

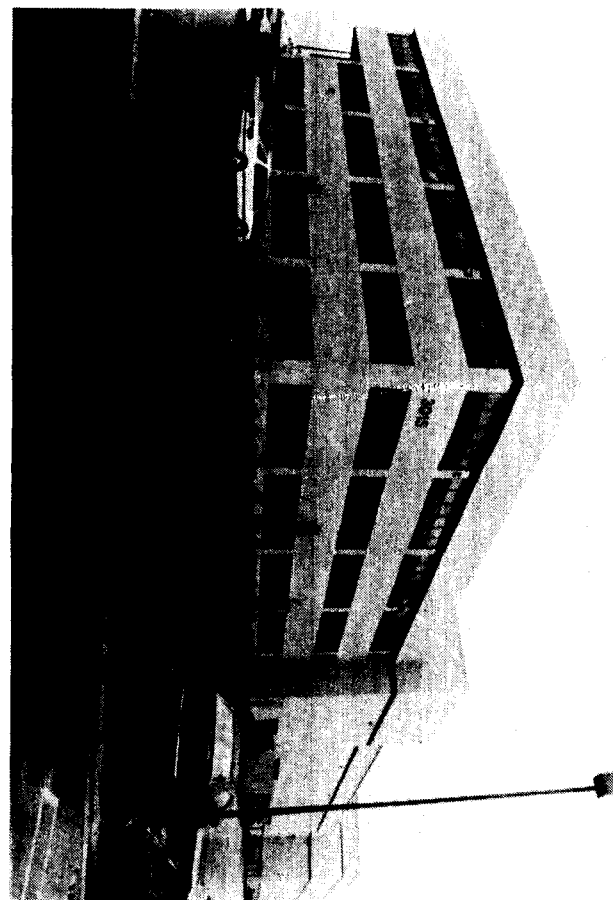
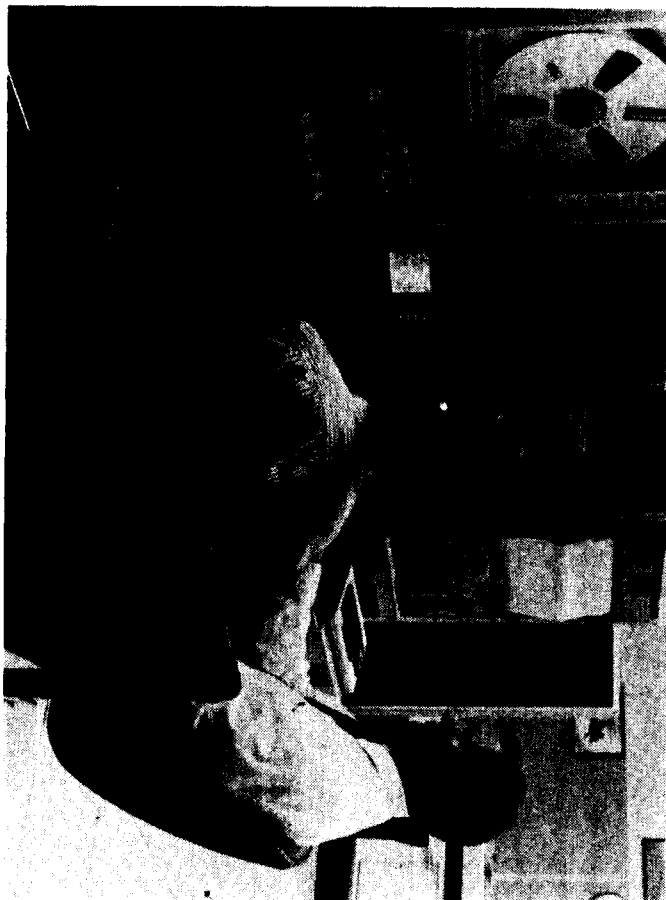
SUMMARY DESCRIPTION: Install basic eo/ir lab test equipment to be obtained from various sources.

2. UPGRADE TITLE: Equipment Upgrades

TOTAL PROGRAMMED AMOUNT: \$1,590,000

SUMMARY DESCRIPTION: Continuing upgrade of computing and lab equipment, primarily driven by project reimbursable sources, approx. \$1,590K thru 1999

Intercept Weapons Evaluation Facility



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ACTIVITY UIC: 63126

Tab 17: Laser and Stabilized Optics

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Laser and Stabilized Optics

Origin Date: 04/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>	
T&E FUNCTIONAL AREA: <u>Electronic Combat</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Integration Laboratory</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>5</u>	<u>95</u>				
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons						
EC						
Other	<u>5</u>	<u>95</u>				
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Laser and Stabilized Optics

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT: Provide mission support capabilities to the Fleet in the area of laser guided weapons training, imaging weapons training, multispectral training, and long focal-length imaging and intelligence collection. Support this within the other DOD components to facilitate integrated planning and operations. Provide support to other government agencies on a "noninterference" basis, allowing them to benefit from the DOD's investment in technology and experience.
INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY: Capable of interconnection by standard video, common Novel configurations, and custom T1 type data paths.
TYPE OF TEST SUPPORTED: Design, development, fabrication, test, and life cycle support of electro-optical systems for land, sea, and airborne applications.
SUMMARY OF TECHNICAL CAPABILITIES: The Laser and Stabilized Optics facility/capability is tasked with providing two technologically related support capabilities to customers. The Advanced Training capability provides direct Fleet support for training in the delivery of laser guided and imaging weapons systems. This includes the design, fabrication test, installation, and life-cycle support of hardware and software installed at Navy Tactical Training Ranges and deployed battle groups worldwide. The Stabilized Optics capability provides direct Fleet support for acquiring high-resolution imagery from moving platforms. This includes the design, fabrication, test, installation, and life-cycle support of hardware and software operating as platform-integrated optical data collection systems. This facility provides computer aided hardware design, software design, electronic and optical test (Class IV laser), configuration management, depot-level electro-optical repair, and deployable support.
KEYWORDS: Electro-optical, laser, training, imaging, intelligence, sensors, virtual reality, design.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Laser and Stabilized Optics

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor	35,000	35,000	35,000	33,250	31,500	26,250	26,250	24,500
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Laser and Stabilized Optics

ANNUAL HOURS OF DOWNTIME (1) 365
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 1
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 23

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL) (8) 230
(4)	(5)	(6)	(7)	
Devel	2	1	2	ANNUAL UNCONSTRAINED CAPACITY 9 83950
Design	2	1	2	
Fab	2	2	4	
Repair	2	1	2	
"Typical"				
			TOTAL	10

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO.

If yes, explain: Limited by physical space and special equipment availability.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Laser and Stabilized Optics

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer							
Enlisted							
Civilian	10	8	9	9	9	9	9
Contractor	5	6	7	7	7	7	7
Total	15	14	16	16	16	16	16

Total Square Footage: 8,590

Test Area Square Footage: 6,600

Tonnage of Equipment: 10

Annual Maintenance Cost: \$30,000

Office Space Square Footage: 1,990

Volume of Equipment: 15,000

Estimated Moving Cost: \$50,000

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Laser and Stabilized Optics

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	200	200	100	100	100	100

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FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Laser and Stabilized Optics

AGE: 15 Yrs.

REPLACEMENT VALUE: \$7,665,000

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 1993

NATURE OF LAST UPGRADE: Upgrade color video camera in CASTEYES for enhanced resolution. Upgrade large-scale target sensor system communication from fiber optics to radio for portability, open ocean capability, and compatibility between all systems.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Customs Airborne Stabilized Optics System upgrade

TOTAL PROGRAMMED AMOUNT: \$75K, FY95

SUMMARY DESCRIPTION: Add a systems computer and video data inserter to interface with the inertial navigation system for the Customs Service stabilized optics program

2. UPGRADE TITLE: Imaging Weapons Training System Development

TOTAL PROGRAMMED AMOUNT: \$1.3M, FY96

SUMMARY DESCRIPTION: Provide a system to support pilot-controlled imaging weapon systems training.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Warning and Surveillance Systems Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	90000	95000	110000	130000	150000	170000	160500	138300
	Test Hours	5000	5000	5000	6100	8300	8500	6500	6250
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

I

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Warning and Surveillance Systems Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	90000	95000	110000	130000	150000	170000	160500	138300
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Warning and Surveillance Systems Capability

ANNUAL HOURS OF DOWNTIME (1) 176

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) .5

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 23.5

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Open Loop	2	2	4	329
Close Loop	2	3	6	ANNUAL UNCONSTRAINED CAPACITY
Laser/EO/IR	1	4	4	(9) 120,085
"Typical"			TOTAL 14	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? No

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Warning and Surveillance Systems Capability

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	1	1	1	1	1	1
Enlisted	0	0	0	0	0	0	0
Civilian	74	62	59	57	55	52	52
Contractor	22	31	28	17	32	25	25
Total	97	94	88	75	88	78	78

Total Square Footage: 5630Test Area Square Footage: 480Office Space Square Footage: 5150Tonnage of Equipment: 18.5Volume of Equipment: 5800Annual Maintenance Cost: \$250,000Estimated Moving Cost: \$80,000

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	35	50	75	100	100	100

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Warning and Surveillance Systems Capability

AGE: 2 Yrs.

REPLACEMENT VALUE: \$5,465,000

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE:

NATURE OF LAST UPGRADE:

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: None

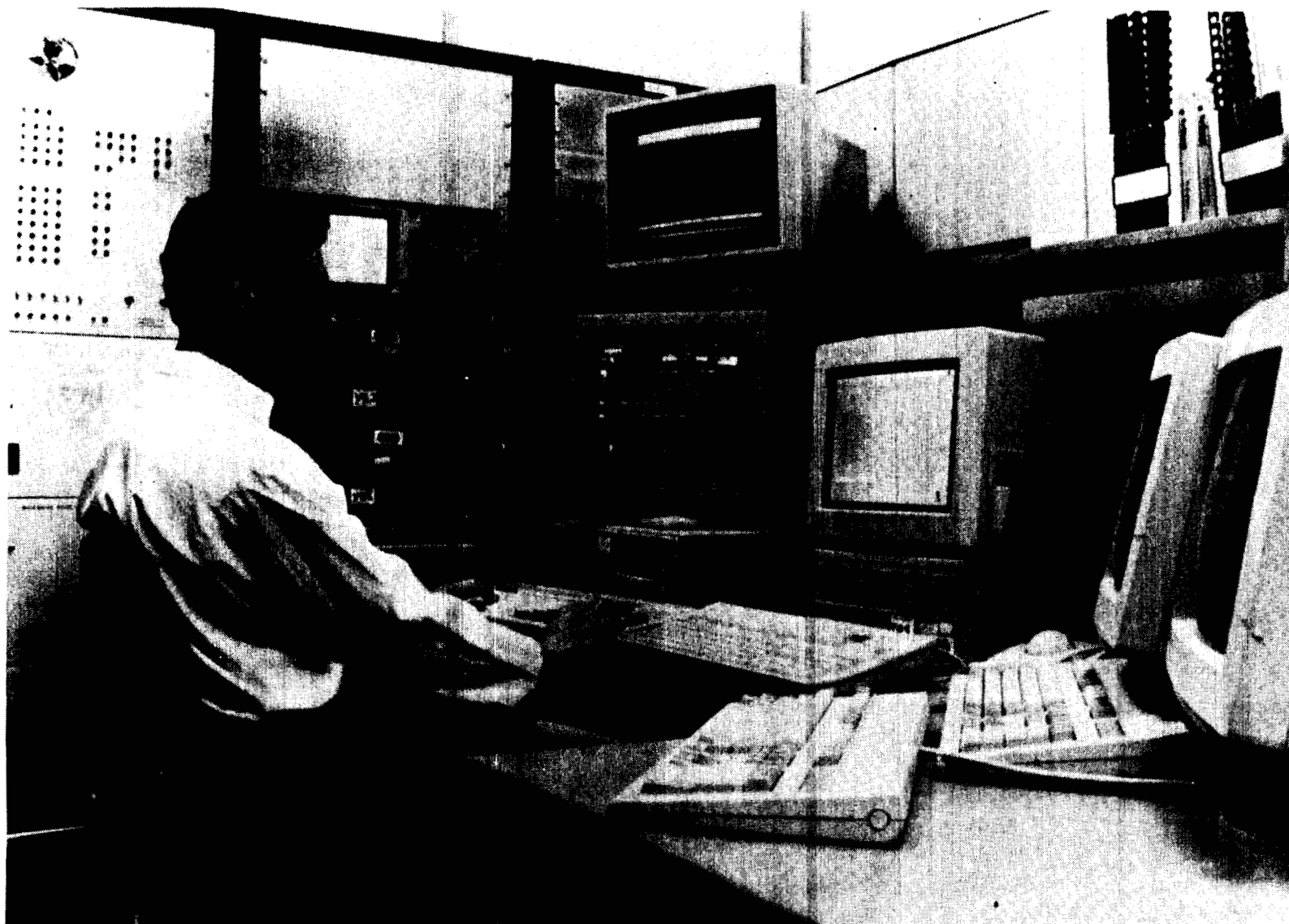
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



ALR-67 Software Development Laboratory

Tab 19: Weapon Systems Support Activity (WSSA), F-14

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Weapon System Support Activity (WSSA), F-14

Origin Date: 4/25/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>				
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Integration Laboratory</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>15</u>			<u>85</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	<u>15</u>			<u>85</u>		
EC						
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Weapon Systems Support Activity (WSSA), F-14

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The facility is composed of ten highly instrumented F-14 aircraft, their support infrastructure, and numerous system and subsystem laboratories. The major laboratories are large HWIL laboratories housing full mock-ups of the F-14A, F-14A/B, and F-14D forward modules embedded in aerodynamic/kinematics simulations that drive the complex radar microwave target simulations and inertial navigation (INS) sensor bus emulations. The F-14 mock-ups house the full avionics suites. The physical and environmental accommodations necessary to contain and operate the HWIL computers, special support equipment and mock-ups require elaborate air conditioning, avionics cooling fluids, electrical power (both 60 and 400 Hz), secure computer networks, cabling and unique oceanfront siting. The oceanfront location (60 feet above the water) enables the mock-ups to "roll-out" and conduct interoperable test scenarios with the Point Mugu Sea Test Range, for example, performing live target tracking of real targets for combined video, infrared, and radar system stimulation.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

Multiple high-speed encrypted links are available from 9600 to 10 Mb/sec to other sites, with the capability to rapidly bring other sites up to receive encrypted data using data compression on STU-IIIs. Currently, software development transfers occur between two F-14 prime contractor facilities and the WSSA for Operational Flight Software development using this method. Permanent land lines exist for T-1 access to this facility and are currently being used for JTIDS testing, along with STU-IIIs for voice communications with NRAD, San Diego. The ability to utilize encrypted DIS (Distributed Interactive Simulations) protocols at 10 Mb/sec on the DSI (Defense Simulations Internet) was developed for use in the HYDY project and is being made available for the Joint Advanced Distributed Simulation (JADS) project for its interoperability demonstrations.

FACILITY/CAPABILITY TITLE: Weapon Systems Support Activity (WSSA), F-14**TYPE OF TEST SUPPORTED:**

The primary type of F-14 WSSA laboratory test supported are tests that either demonstrate the functionality of F-14 tactical software or evaluate the systems level performance of the associated embedded operating system. Secondary tests include demonstrating/evaluating communications protocols for JTIDS, demonstrating, defining, and evaluating internetting of local and distant facilities/laboratories; evaluating communication protocols for DIS to define/demonstrate bandwidth and data latency requirements and limitations. Open range tests supported by the F-14 WSSA include the determination of F-14 weapon system capabilities for radar system performance, weapons integration, selection and release characteristics, and engagement communications. Tests of Fleet-reported problems are verified, investigated, and resolved in both laboratory and open range testing.

SUMMARY OF TECHNICAL CAPABILITIES:

The F-14 WSSA has highly instrumented F-14 aircraft that provide telemetry data and recorded analog and digital data. The data are sufficient to fully determine all system performance and data-flow characteristics of the F-14 avionics systems. Test capabilities include, but are not limited to, air-to-air weapons integration tests, smart weapons stores separation tests, and cockpit controls and displays symbology tests. The F-14 WSSA laboratories have numerous target generators ranging from simple digital bus traffic simulations to complex microwave simulations that generate up to 32 dynamic targets, including the use of four Fleet ECM jammers integrated with and dynamically controlled by the test scenario kinematics. The laboratories employ multiple bus avionics data collection, recording, and analysis systems using high-speed high-density recording devices, parallel computers, and advanced workstation display systems. The laboratories use commercial CASE tools and system-specific CASE tools to enhance tactical software development.

KEYWORDS:

Hardware-in-the-loop (HWIL) simulations. radar target simulation, computer-aided software engineering (CASE).

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ACTIVITY UIC: 63126

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Weapon Systems Support Activity (WSSA), F-14

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	-					333.9	290.5	295.4
	Test Hours	3880	4070	3910	3696	4056	3973	5574	5345
	Missions	440	443	628	790	717	723	825	776
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Weapon Systems Support Activity (WSSA), F-14

ANNUAL HOURS OF DOWNTIME (1) 771

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 2.1

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 21.9

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Sys Test	3	8	24	854 lab hrs/2 flt tests
Sub Sys	5	3	15	ANNUAL UNCONSTRAINED CAPACITY
Flt Test	1	.5	.5	(9) 311,764 lab hrs/1460 flts

"Typical"

TOTAL 39.5

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? YES

If yes, explain: The laboratory test hours are facility limited (i.e. lab work spaces), the flight tests are limited to two operations per day because of aircraft availability, pilot availability, and aircraft required maintenance.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Weapon Systems Support Activity (WSSA), F-14

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	15	16	16.0	16.0	16.0	15.0	15.0
Enlisted	0	0	0	0	0	0	0
Civilian	259	256	270	270	270	270	270
Contractor	364	460	530	600	530	460	460
Total	638	732	816	886	816	745.4	745.4

Total Square Footage: 235,440Test Area Square Footage: 130,440Tonnage of Equipment: 107.4Annual Maintenance Cost: \$4,750KOffice Space Square Footage: 105,000Volume of Equipment: 10,750Estimated Moving Cost: \$51.7M

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Weapon Systems Support Activity (WSSA), F-14

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
850	1380	425	495	363	363	363
5600	4200	9200	3300	1300	900	500

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Weapon Systems Support Activity (WSSA), F-14

AGE: 21.2 Yrs.

REPLACEMENT VALUE: \$185.6 M

MAINTENANCE AND REPAIR BACKLOG: \$838,407

DATE OF LAST UPGRADE: 6/1/93

NATURE OF LAST UPGRADE: F-14 WSSA facility was upgraded to install a AN/APG-71 radar subsystem software workstation.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: F-14 Block 1 System level test mock-up

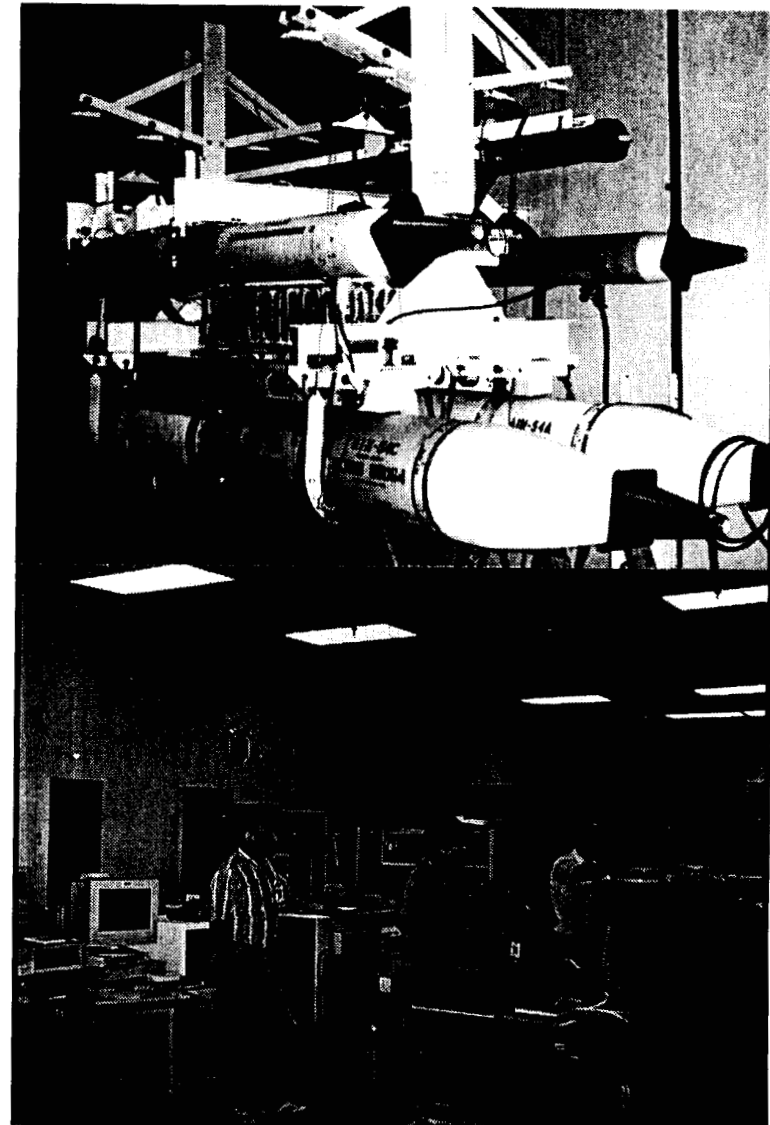
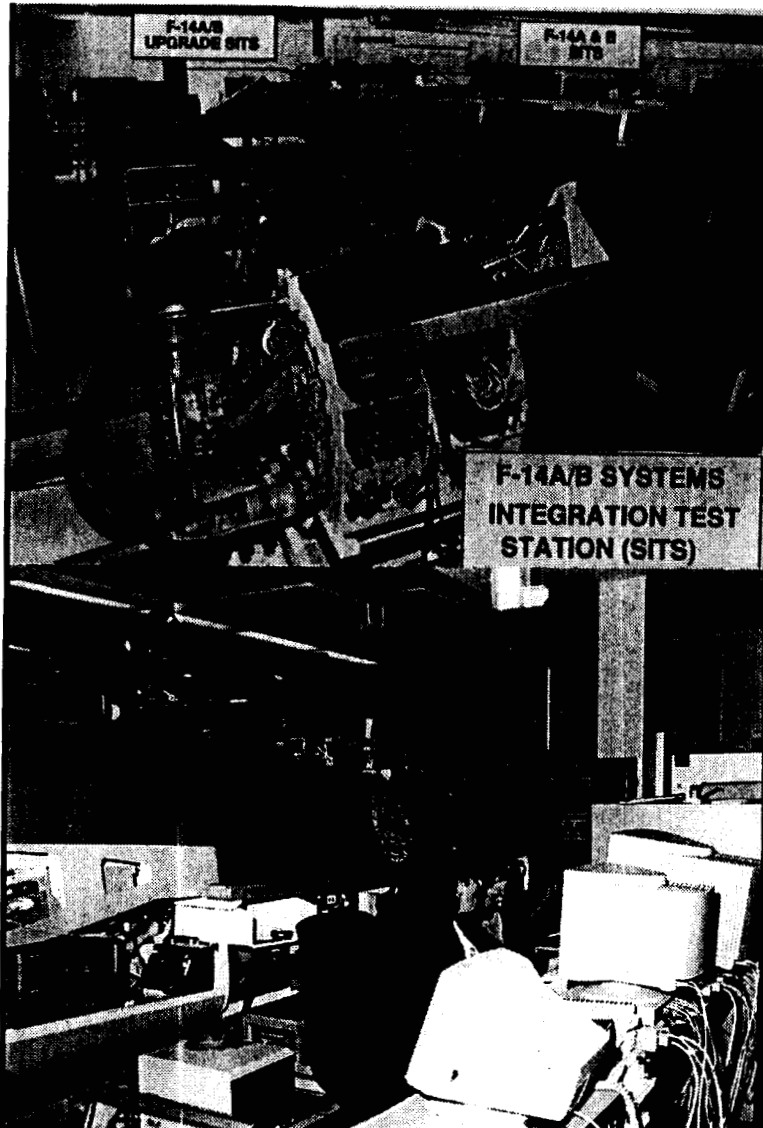
TOTAL PROGRAMMED AMOUNT: \$5.3M

SUMMARY DESCRIPTION: Another full F-14D avionics mock-up will be constructed in order to provide test capacity for the F-14 Block 1 software development.

2. UPGRADE TITLE: F-14 Trainers Software Laboratory, Resite

TOTAL PROGRAMMED AMOUNT: \$1.0 M

SUMMARY DESCRIPTION: The F-14A/B Trainers software laboratory is being re-sited at NAWCWPNS Point Mugu in order to allow for laboratory expansion and a more efficient work environment.

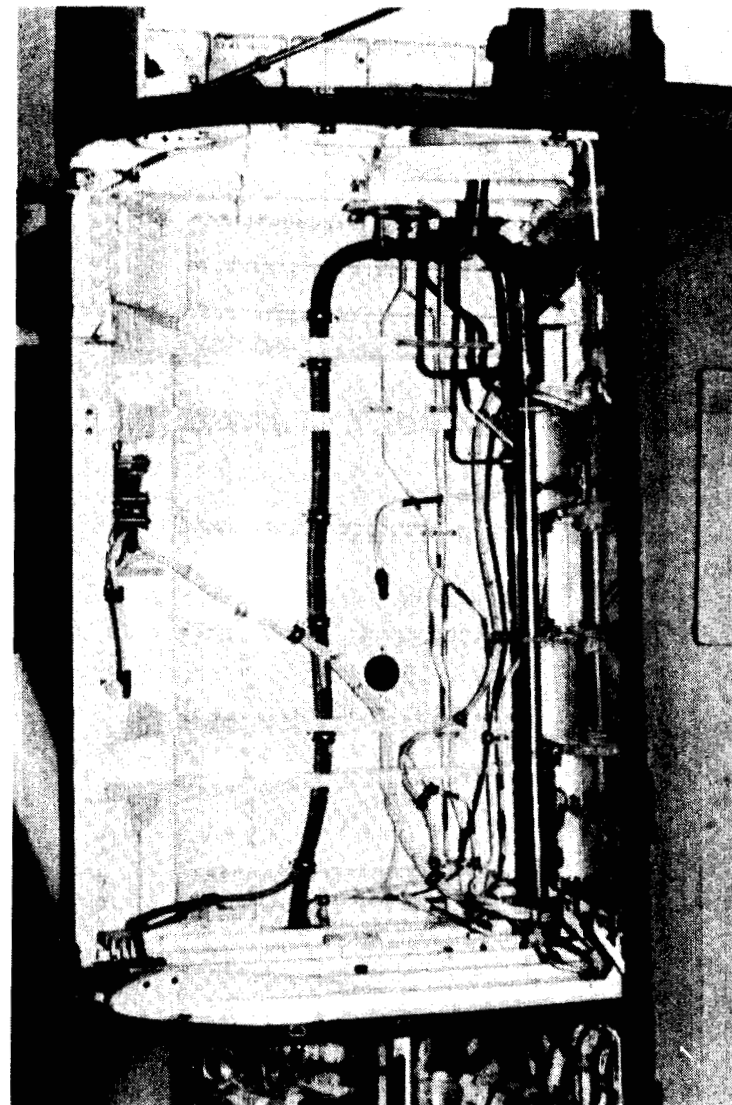
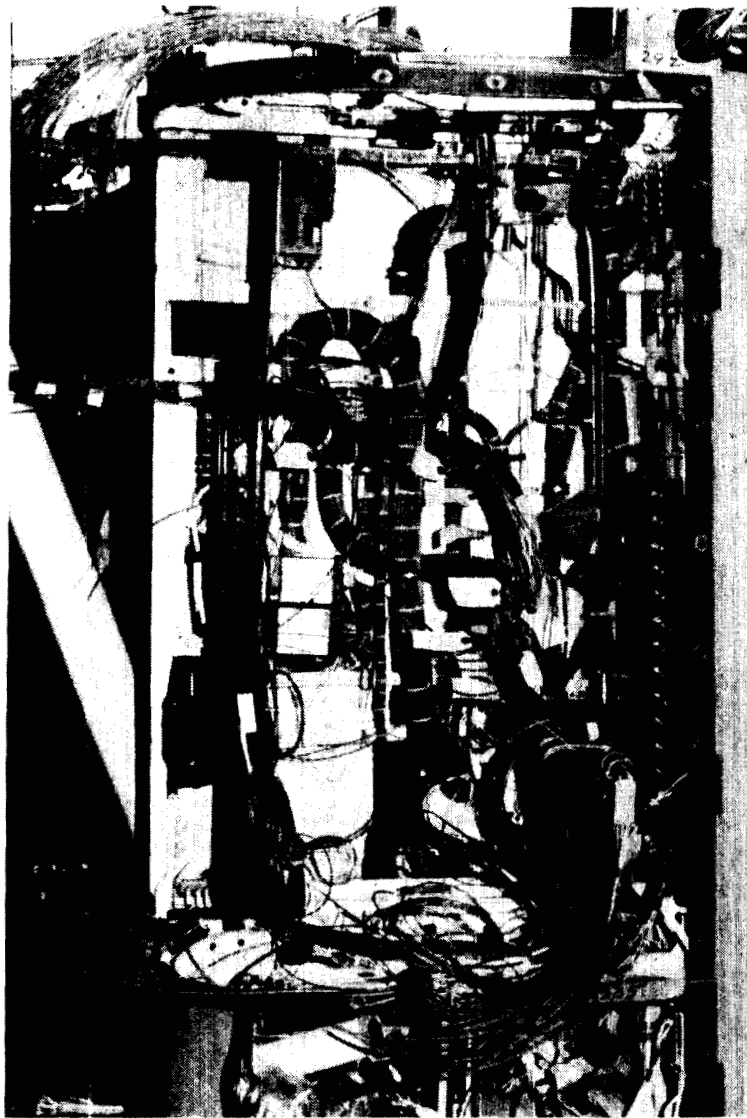


F-14 Weapons Systems Support Activity—F-14A/B Laboratories



F-14 Weapons Systems Support Activity.

F-14 Weapons Systems Support Activity. Gun bay with gun removed for instrumentation wiring (above); gun bay after installation complete (below).



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ACTIVITY UIC: 63126

Tab 20: Weapons Systems Support Laboratory (WSSL), EA-6B

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Weapons Systems Support Laboratory (WSSL), EA-6B

Origin Date: 06/26/73

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>	
T&E FUNCTIONAL AREA: <u>Electronic Combat</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Integration Laboratory</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>5</u>		<u>55</u>	<u>40</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons						
EC	<u>5</u>		<u>55</u>	<u>40</u>		
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Weapons Systems Support Laboratory (WSSL), EA-6B

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The mission of the EA-6B Systems Facility is to act as a systems engineering center for the development and Fleet support for assigned Navy and Marine Corps EW and intelligence support systems. This facility is responsible for utilizing advanced technologies and techniques to provide these engineering services and has been assigned by COMNAVAIRSYSCOM as the Weapon Systems Support Activity (WSSA) for the EA-6B Tactical Jamming System. The facility is responsible for providing engineering services for these systems in specific areas, including the definition and specification of new and improved systems in response to user and sponsor requirements or intelligence updates; the development of both hardware and software systems for support jamming, mission planning, mission analysis and support, and intelligence support; and the production support, testing, quality assurance, and in-service engineering for these systems.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

The EA-6B Weapons System Support Laboratory (WSSL) is currently connected in a secure point-to-point environment with the Information Warfare Systems (IWS) laboratory complex at NAWCWPNS Point Mugu. Intelligence data, as well as ESM data collected during EA-6B laboratory simulated flights, are transmitted in real time to IWS data fusion terminals. This capability is required to support T&E efforts for Marine Corps specific configurations. The Electronic Warfare Data Support (EWDS), which has the ability to receive and utilize intelligence data from DMA, NID, MIIDS/IDB, EWIR/Kilting, and EPL, shares this engineered and nonengineered electronic data with the Electronic Countermeasure Systems and RWR/ESM Systems facilities.

TYPE OF TEST SUPPORTED:

The EA-6B WSSA facility serves as the primary technical agent and field activity in support of PEO(T)'s acquisition and support of the Navy's only tactical support jamming aircraft. The WSSA provides the capability to perform software verification and validation, developmental test on new avionics, evaluation of jamming techniques, and development of EA-6B threat parametric libraries.

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Weapons Systems Support Laboratory (WSSL), EA-6B

SUMMARY OF TECHNICAL CAPABILITIES:

The EA-6B Systems facility contains mock-ups of the EA-6B aircraft to support simultaneous users of multiple EA-6B configurations (Block 82/86 and a subset configuration known as the Software Development Station). A real-time, computer-simulated, authentic environment provides the capability to use five EA-6B jamming pods, fire a simulated HARM, fly the plane, and detect emitters within a dense signal environment. Multiple computer environments within the facility are clustered together, allowing shared resources and parallel processing.

KEYWORDS:

EA-6B Weapon Systems Support Activity (WSSA)

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Weapons Systems Support Laboratory (WSSL), EA-6B

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	92750	12600 0	20300 0	30100 0	32200 0	33075 0	23800 0	18900 0
	Test Hours	800	850	859	1263	1965	1852	1838	1808
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Weapons Systems Support Laboratory (WSSL), EA-6B

ANNUAL HOURS OF DOWNTIME (1) 600
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 1.64
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 22.36

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Dev test	2	6	12	536.6
Integration	2	6	12	536.6
				ANNUAL UNCONSTRAINED CAPACITY
				(9) 195,873
"Typical"	2			
			TOTAL	24

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Weapons Systems Support Laboratory (WSSL), EA-6B

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	4	3	2	2	2	2	2
Enlisted	1	1	1	1	1	1	1
Civilian	98	75	65	70	70	70	70
Contractor	70	48	49	53	53	53	53
Total	173	127	117	126	126	126	126

Total Square Footage: 23,047

Test Area Square Footage: 8,594

Tonnage of Equipment: 59.02

Annual Maintenance Cost: \$130,000

Office Space Square Footage: 14,453

Volume of Equipment: 6,421

Estimated Moving Cost: \$60M

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Weapons Systems Support Laboratory (WSSL), EA-6B

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	135	100K	100	100	100.0	100
1,246.7	1,363.8	3,000	3,000	1,500	1,500	1,500

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Weapons Systems Support Laboratory (WSSL), EA-6B

AGE: 7 Yrs.

REPLACEMENT VALUE: \$63,000,000

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 03/15/94

NATURE OF LAST UPGRADE: Upgrade host VAX computers with faster processors, increased memory, and decreased power requirements. Add capability to monitor avionics computer internal registers and busses, multiple MIL-STD-1553 busses, and analyze emitter signals.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Block 89A

TOTAL PROGRAMMED AMOUNT: \$3.0M

SUMMARY DESCRIPTION: Provide engineering workstation and AN/ALQ-99 avionics to support development of the EA-6B Block 89A upgrade to the Tactical Jamming System configuration.

2. UPGRADE TITLE: Pod-Based AN/ALO-99 Avionics System

TOTAL PROGRAMMED AMOUNT: \$3.0M

SUMMARY DESCRIPTION: Provide engineering workstation and AN/ALQ-99 avionics to support development of pod-based AN/ALQ-99 Tactical Jamming System configuration.



EA-6B Weapons System Support Laboratory (WSSL)

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Hardware-in-the-Loop

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ACTIVITY UIC: 63126

Tab 21: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

Origin Date: 04/20/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>PT MUGU</u>	
T&E FUNCTIONAL AREA: <u>Electronic Combat</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Hardware-in-the-Loop</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>10</u>	<u>5</u>	<u>30</u>	<u>55</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons						
EC	<u>10</u>	<u>5</u>	<u>30</u>	<u>55</u>		
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The ECSEL is the Department of the Navy's principal laboratory complex for research and development and in-service engineering support of naval airborne electronic warfare equipment. A modern secure laboratory facility, the ECSEL develops, operates, and maintains simulations that replicate the functional characteristics and performance of threat weapon systems. The ECSEL's Advanced Multiple Environment Simulator family of open-loop simulations provides a dense electromagnetic environment of land-based, naval, and airborne threat weapon systems. Frequency coverage is from 100 kHz to 96 GzZ. Specific closed-loop simulators include a modern threat surface-to-air missile system, the Radar Equipment Simulator, the Semiactive Test System, and the Early Warning/Acquisition system. EW systems workstations provide prime power, avionics, computer, and simulator interfaces for naval aircraft radar warning receivers and jammers. Research and development testing of developmental EW equipment, software support for systems currently in the Fleet, integration support, and techniques development and optimization are routinely performed in the ECSEL.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

The high fidelity closed loop simulations are indoor versions of the Naval threat simulators located at the NAWCWPNS China Lake Electronic Combat Range. These simulators have been, in most cases, developed jointly to ensure compatibility between sites. Although real-time data links do not presently exist, data sharing is possible between the HITL at Point Mugu and the OAR at China Lake. The ECSEL facility includes support stations for U.S. Navy TACAIR and ESM suites. This provides short turnaround test times needed for in-service engineering during crisis situations. Support stations also exist for some U.S. Army EW suites and the CARAPACE RWR for F-16 aircraft sold to foreign countries.

FACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

<p>TYPE OF TEST SUPPORTED:</p> <ul style="list-style-type: none">• EW Receiver test (RWR, ESM, DECM Front Ends, etc.)• End-to-end test of EW components and systems• EW embedded software test and validation• ECM/DECM technique development and optimization• DF system test (amplitude and phase)
<p>SUMMARY OF TECHNICAL CAPABILITIES:</p> <p>The ECSEL is a multipurpose threat simulation facility combining versatile open-loop RF signal environments and closed-loop Naval anti-aircraft terminal threat systems in a secure enclosure. The key features of the ECSEL are:</p> <ul style="list-style-type: none">• Actual threat frequencies and power levels• Real-time execution of all simulation components• Dynamic scenarios• Threat radar operation "man-in-the-loop"• Dense RF signal backgrounds• Multiple user (up to 5) configurations of open-loop simulation• A/C Mission Computer Simulation dynamically linked to scenario• RF interfaces for amplitude and phase interferometer DF systems
<p>KEYWORDS:</p> <p>Threat, RF, real-time, RWR, DECM, software, SAM, early, density, scenario</p>

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ACTIVITY UIC: 63126

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	38,500	40,250	42,000	40,250	36,750	38,500	40,250	40,250
	Test Hours	1,900	1,900	2,000	2,500	3,900	4,200	3,100	3,100
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

R

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	38,500	40,250	42,000	40,250	36,750	38,500	40,250	40,250
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor								
	Test Hours								
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

ANNUAL HOURS OF DOWNTIME (1) 696

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 1.91

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 22

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) OL	(5) 7	(6) 2	(7) 14	(8) 638
CL	5	3	15	ANNUAL UNCONSTRAINED CAPACITY (9) 232,870

"Typical"

TOTAL 29

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? No

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	1	1	1	1	1	1
Enlisted							
Civilian	33	29	29	29	31	31	31
Contractor	11	12	12	12	14	13	13
Total	45	42	42	42	46	45	45

Total Square Footage: 14,000Test Area Square Footage: 10,000Office Space Square Footage: 4,000Tonnage of Equipment: 16Volume of Equipment: 1,500Annual Maintenance Cost: 700KEstimated Moving Cost: 10 MilFACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
800	250					
1,100	1,750	1,860	2,100	1,930	3,650	3,830

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

AGE: 7 Yrs.

REPLACEMENT VALUE: \$62,000,000

MAINTENANCE AND REPAIR BACKLOG: Routine maintenance and calibration is performed on all open and closed loop radar simulators. All computer assets have hardware and software maintenance contracts.

DATE OF LAST UPGRADE: 03/01/94

NATURE OF LAST UPGRADE: The Semiactive Test System (SATS) underwent a major upgrade during FY94. The receiver simulation processing hardware and software was replaced to increase throughput and more accurately represent the threat. The display consoles were also replaced to allow three trackers access to the system.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: J Band Advanced Technology Simulator (JBATS) (FY94-97)

TOTAL PROGRAMMED AMOUNT: 2 M

SUMMARY DESCRIPTION: A reprogrammable radar simulator is being designed around a "core module" concept that will allow reprogramming of "core items" and only build up unique sub systems. This closed loop radar simulator will represent state-of-the-art naval threat radars and be used to test EW systems during development and while in service.

2. UPGRADE TITLE: Advanced Multiple Environment Simulator (AMES) (FY95-98)

TOTAL PROGRAMMED AMOUNT: 2 M

SUMMARY DESCRIPTION: An advanced open loop simulator system developed to simulate complex waveforms of advanced modern radars. The high-fidelity simulator will generate spread spectrum, low probability of intercept, and frequency modulations on pulse waveforms of different type grades from very low frequencies to millimeter wave bands. Density and direction of arrival fidelity will also be increased.



Electronic Combat Simulation Evaluation Laboratory (ECSEL)

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ACTIVITY UIC: 63126

Tab 22: Missile Hardware-in-the-Loop Facility

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

Origin Date: 4/30/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>	
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>HITL</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>90</u>	<u>0</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>0</u>
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Armament/Weapons	<u>90</u>	<u>0</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>0</u>
EC		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Other	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The Missile Hardware-in-the-Loop Facility is part of the Air Intercept Systems Department's Missile Systems Evaluation Laboratory (MSEL) and consists of four missile HWIL laboratories that provide missile system performance evaluation from launch to intercept against single or multiple targets in clear, clutter, or electronic countermeasure environments through open- and closed-loop T&E testing. The missile performance is assessed against maneuvering or nonmaneuvering targets with glint and scintillation RF signatures. Dual -pectrum (i.e., RF and infrared) testing is performed in one of the facility's test laboratories. The facility supports weapon system acquisition milestone decisions and is used to conduct technical baseline performance evaluation of tactical missile software. Preflight and postflight simulations are conducted for air-to-air and surface-to-air missile development and operational tests. Aircraft to missile interfaces are tested for various air-to-air missile systems. An approved MILCON (P-199) will provide enhanced millimeter-wave (W-Band) and dual-mode HITL capability for the most advanced missile systems.

Note: Replacement cost includes equipment.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

The HITL Facility, as part of the Missile Systems Evaluation Laboratory (MSEL) with its state-of-the-art communications center, can be networked to any other facility in the United States. The system consists of digital and analog telephone lines, high bandwidth nonsecure ethernet, and high-bandwidth fiber-optic secure ethernet. The laboratories that make up the facility are all interconnected on a secure network and additionally are interconnected with the Intercept Evaluation Facility laboratories that are also part of the MSEL. This interconnectivity permits transfer of data between the HITL laboratories conducting real-time guidance simulations with the data reduction and lethality laboratories that perform missile telemetry analysis and end game analysis. The data ARE also available and interchangeable over the network to the flight test data analysis laboratory for comparison and validation with actual flight test telemetry data.

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

TYPE OF TEST SUPPORTED:

Missile performance evaluation (Launch to Intercept). ECM/ECCM performance of the missile or jammer. Closed loop and open loop missile simulation testing of actual or flight representative hardware and software. Predict miss distance statics. Evaluate missile performance from actual telemetry signals that would be received in flight. Aircraft to missile interfaces are tested.

SUMMARY OF TECHNICAL CAPABILITIES:

The facility contains the following: Four anechoic chambers (40'X 50'X 38'), Three axis flight tables, dual-polarized hornArray, target signal generators, computers (ADI AD-100s, ADI RTS systems, DEC workstations, Sun workstations, Silicon Graphics workstations, Pentium-based workstations, Power PC-based workstations), interfaces (VME interfaces, ethernet), lab equipment (multiple banks of digital strip-chart recorders, telemetry decomutators, RF test and calibration equipment).

KEYWORDS:

Hardware-in-the-loop simulation, HWIL, HITL, missile simulation, 6-DOF, 5-DOF, ECCM testing, missile testing, missile performance evaluation

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor*	116938	132657	103649	111391	96810	74339	88921	89615
	Test Hours*	4610	4610	4889	5168	5447	5272	5031	4922
	Missions	24,500	26,000	30,000	30,340	39,500	39,500	27,920	22,000
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

* To calculate the % of T&\$ hours only, use the % of T&E shown the General Information form on page 213.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	11693 8	13265 7	10364 9	11139 1	96810	74339	88921	89615
	Test Hours	4610	4610	4889	5168	5447	5272	5031	4922
	Missions	24,500	26,000	30,000	30,340	39,500	39,500	27,920	22,000
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

ANNUAL HOURS OF DOWNTIME (1) 1728
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 4.73
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 19.27

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
AMRAAM Sparrow	1	5.00 intcpt 6.22 intcpt	5.00 intcpt 6.22 intcpt	339 intcpts ANNUAL UNCONSTRAINED CAPACITY
SM/PM	1	16.39 intcpt	6.39 intcpt	(9) 123,833 intcpts
"Typical"			TOTAL 17.61	

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? No

If yes, explain: N/A

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	2	2	2	2	2	2
Enlisted	0	0	0	0	0	0	0
Civilian	61	53	50	48	48	48	48
Contractor	5	5	4.75	4.5	4.5	4.5	4.5
Total	67	60	56.75	54.5	54.5	54.5	54.5

Total Square Footage: 43,222Test Area Square Footage: 31,577Tonnage of Equipment: 137Annual Maintenance Cost: \$325,000Office Space Square Footage: 11,645Volume of Equipment: 27,700Estimated Moving Cost: \$15,360,000

R

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	1	2	2	2	2	2	2
Enlisted	0	0	0	0	0	0	0
Civilian	58	53	50	48	48	48	48
Contractor	5	5	4.75	4.5	4.5	4.5	4.5
Total	64	60	56.75	54.5	54.5	54.5	54.5

Total Square Footage: 43,222

Test Area Square Footage: 31,577

Tonnage of Equipment: 137

Annual Maintenance Cost: \$325,000

Office Space Square Footage: 11,645

Volume of Equipment: 27,700

Estimated Moving Cost: \$15,368,000

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	80	75	75	75	800	200
13,040	80	120	150	150	500	200

R

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
0	80	75	75	75	800	200
13,040	80	220	450	270	500	200

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Missile Hardware-in-the-Loop Facility

AGE: 2 Yrs.

REPLACEMENT VALUE: \$51,825,000

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 4/1/93

NATURE OF LAST UPGRADE: Real time simulation computer upgrades.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: AMRAAM HWIL Upgrade

TOTAL PROGRAMMED AMOUNT: \$13,000,000

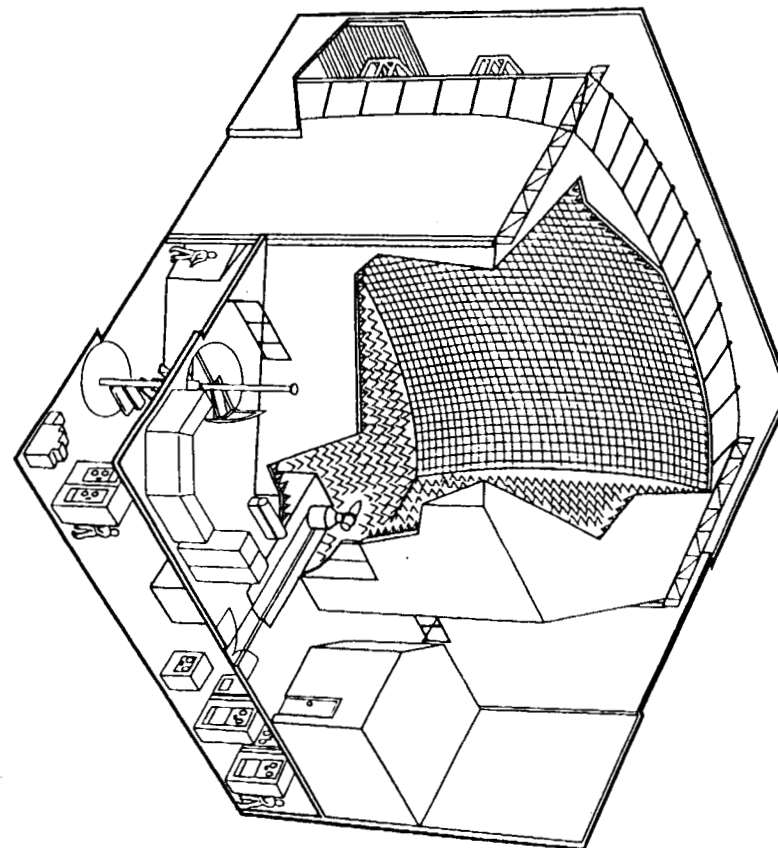
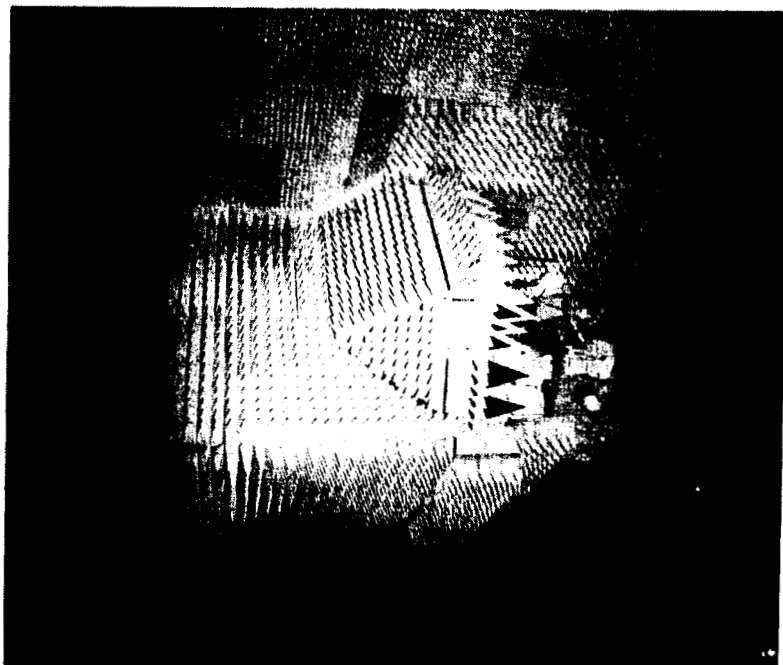
SUMMARY DESCRIPTION: Upgrade AMRAAM HWIL laboratory to be compatible with Block II missile.

2. UPGRADE TITLE: Sparrow HITL Phase Array Upgrade

TOTAL PROGRAMMED AMOUNT: \$520,000

SUMMARY DESCRIPTION: Increase number of complex targets available in the simulation.

Missile Hardware in the Loop



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ACTIVITY UIC: 63126

Tab 23: Strike Weapons Evaluation Facility

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

Origin Date: 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>
T&E FUNCTIONAL AREA: <u>Armament/ Weapons</u>	UIC = <u>N63126</u>	
T&E TEST FACILITY CATEGORY: <u>Hardware-in-the-loop</u>		
	<u>T&E</u>	<u>S&T</u>
	<u>D&E</u>	<u>IE</u>
	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE: <u>100</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)		
Air Vehicles	<u>15</u>	
Armament/Weapons	<u>85</u>	
EC		
Other		
Total in Breakout Must Equal "Percentage Use" On First Line		

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The Strike Weapons Evaluation capability at NAWCWPNS Point Mugu consists of the fully integrated resources of several unique laboratories focused on hardware subsystem test and evaluation of radar seekers, weapon data-link pods, and missile flight computers combined with specialized modeling, simulation, and computational capabilities and a civilian and military workforce with product and mission unique knowledge.

The Seeker Evaluation Laboratory is located on the second deck of Building 761 directly overlooking the Pacific Ocean and the inner sea test range. The laboratory has 2400 square feet of floor space and allows for seeker operation at an altitude 27 feet above sea level. This location permits a seeker under test to be presented with real targets and countermeasures in the presence of a sea environment. This laboratory provides a unique facility to the Navy that is not duplicated at any other activity.

An adjunct to this facility is a mobile seeker evaluation laboratory that is completely self contained within a two and one-half ton truck. This mobile capability permits a seeker under test to be exposed to a variety of targets, backgrounds, and environmental conditions unavailable at a fixed-site location.

Additionally, a remote facility on Santa Cruz Island, approximately 20 miles from Point Mugu, has 320 square feet of floor area and is located 150 feet above sea level overlooking the inner sea test range and the Santa Cruz Acoustic Range. The proximity of this site to the Santa Cruz Radar Imaging Facility (SCRIF) provides cost effective access to targets being tested at the SCRIF.

The Weapon Data Link Laboratory provides for the laboratory evaluation and preflight checkout of weapon data links and pods used with strike weapons.

Evaluation of missile flight computers takes place in a limited HWIL facility. This facility primarily evaluates the hardware associated with Antiship Tomahawk and the Harpoon/SLAM family of missiles.

The computational capability includes multiprocessing services for up to 48 interactive terminal users simultaneously. Interactive users may be running any mix of simulation, flight test analysis, database management, or program development applications. Each user may also have as many as eight simultaneous interactive terminal sessions in progress and an unlimited number of batch jobs running concurrently in the background. This, for example, allows one Harpoon engineer on one terminal to interactively examine

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

plans for four future flight tests. Another engineer could be engaged in exactly the same process on another system, such as SLAM, rather than Harpoon.

and compare the data from four different flight tests while interactively using the simulation to generate scenario Colocation of project computational resources provides an analyst with nearly every tool required to support test and evaluation. For example, an engineer supporting SLAM has at his finger tips: (1) a TAMPS, GPS receiver hardware, and a Zenith-based MIU to plan and generate missions; (2) a high-fidelity six-degree-of-freedom SLAM simulation to carry out planned missions; (3) all the interactive graphics and analysis software necessary to immediately examine the results of a simulation run or flight test; and (4) for comparison purposes, immediate on-line access to all the data from every previous SLAM flight test as well as data from previously archived simulation runs.

Similar capabilities exist to support a lesser number of users in a completely TEMPEST shielded secure environment for projects requiring up to TOP SECRET Special Access levels of security.

The workforce consists of a balanced mix of civil service, military, and contractor personnel with varying educational disciplines who perform the engineering management, planning, test, and analysis for the projects supported. Included in this resource are those support personnel required to execute the administrative needs of the technical workforce. Experience level ranges from a low of 5 years to a high of 25 years associated with Strike Weapons Systems. The average experience is about 12 years.

Major skills of this group are: Technical management of T&E projects, product specific engineering knowledge, simulation development, software evaluation including IV&V, performance analysis and evaluation, test planning and execution, currency in tactical NAVAL aircraft, data reduction and analysis.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

Data products from these laboratories are combined and used to evaluate overall weapon system performance. Physical interconnectivity of the laboratories is generally restricted to low-bandwidth data and communications circuits. A direct link between the SWEF and the NSWCPHD's Harpoon Engineering Test Facility allows direct downloading of surface-launch platform missile initialization data into the Harpoon Digital Simulation and allows evaluation of the complete weapon system. The Santa Cruz Lab, located 150 feet above sea level overlooking the inner sea test range and the Santa Cruz Acoustic Range, allows joint usage of targets being tested at the Santa Cruz Radar Imaging Facility .

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

TYPE OF TEST SUPPORTED:

Radar seeker performance evaluation in clear and countermeasures environments; weapon data link performance in clear and countermeasure environments; missile flight software functional evaluation; missile software IV&V. Evaluation of missile flight computers takes place in a limited HWIL facility. This facility primarily evaluates the hardware associated with Antiship family of missiles.

SUMMARY OF TECHNICAL CAPABILITIES:

The hardware labs are sited to permit a seeker under test to be operated at an operationally realistic altitude and presented with real targets and countermeasures in the presence of a sea environment. The Weapon Data Link Lab provides for the evaluation and preflight checkout of weapon data links and pods used with strike weapons. Evaluation assets consist of a secure network of clustered computers with a central core VAX 8350 medium-scale computer system, a Micro VAX II eight-user system, TAMPS, GPS receiver hardware, a Zenith-based MIU to plan and generate missions, and all the interactive graphics and analysis software necessary to immediately examine the results of a simulation run or flight test.

KEYWORDS:

Radar seekers, weapon data link, countermeasure testing, software IV&V, weapon performance evaluation.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor	9928	11639	26087	31057	28621	32725	30082	26564
	Test Hours			26	30	28	32	30	26
	Missions			13	15	14	16	15	13
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	56261	65957	147828	175991	162189	185443	170465	150533
	Test Hours			15000	27000	25000	42000	50000	50000
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

NOTE: Modified 23 August 1994 to incorporate test hours and missions for air vehicle testing. Rationale used: Based on historical data, approximately 1,000 hours of labor is expended planning and preparing for each hour of actual test data. Approximately 2 hours of test data are gathered per mission.

NO OTHER DATA ALTERED.

Revised JS

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor	9928	11639	26087	31057	28621	32725	30082	26564
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	56261	65957	14782 8	17599 1	16218 9	18544 3	17046 5	15053 3
	Test Hours			15000	27000	25000	42000	50000	50000
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

ANNUAL HOURS OF DOWNTIME (1) 2555
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 7
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 17

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) Sim	(5) 20	(6) 1	(7) 20	(8) 1394
Lab	4	3	12	ANNUAL UNCONSTRAINED CAPACITY
Field	5	10	50	(9) 508,810

"Typical"

TOTAL 82

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? Yes

If yes, explain: Limited by physical constraints and amount of equipment to support tests.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	7.5	4.5	4.5	4.5	4.5	4.5	4.5
Enlisted							
Civilian	112.5	120	120	120	120	120	120
Contractor	14.5	12	10	10	10	10	10
Total	134.5	136.5	134.5	134.5	134.5	134.5	134.5

Total Square Footage: 76245

Test Area Square Footage: 20300

Tonnage of Equipment: 170

Annual Maintenance Cost: _____

Office Space Square Footage: 22637

Volume of Equipment: 20300

Estimated Moving Cost: \$2,870K

Revised page

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ACTIVITY UIC: 63126

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
NONE	NONE	NONE	NONE	NONE	NONE	NONE
NONE	NONE	NONE	NONE	NONE	NONE	NONE

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NAWCHQ
CHANGE 1, 6/6/94

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Strike Weapons Evaluation Facility

AGE: 10 Yrs.

REPLACEMENT VALUE: \$5M

MAINTENANCE AND REPAIR BACKLOG: No major maintenance and repair backlog exists for this facility. The annual equipment maintenance covers typical hardware repair on an item-by-item basis. Annual average maintenance costs for equipment only = \$250K per year

DATE OF LAST UPGRADE: 4/1/1994

NATURE OF LAST UPGRADE: Facility continues to upgrade network capability; currently completing installation and expansion of video teleconferencing capability

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE:

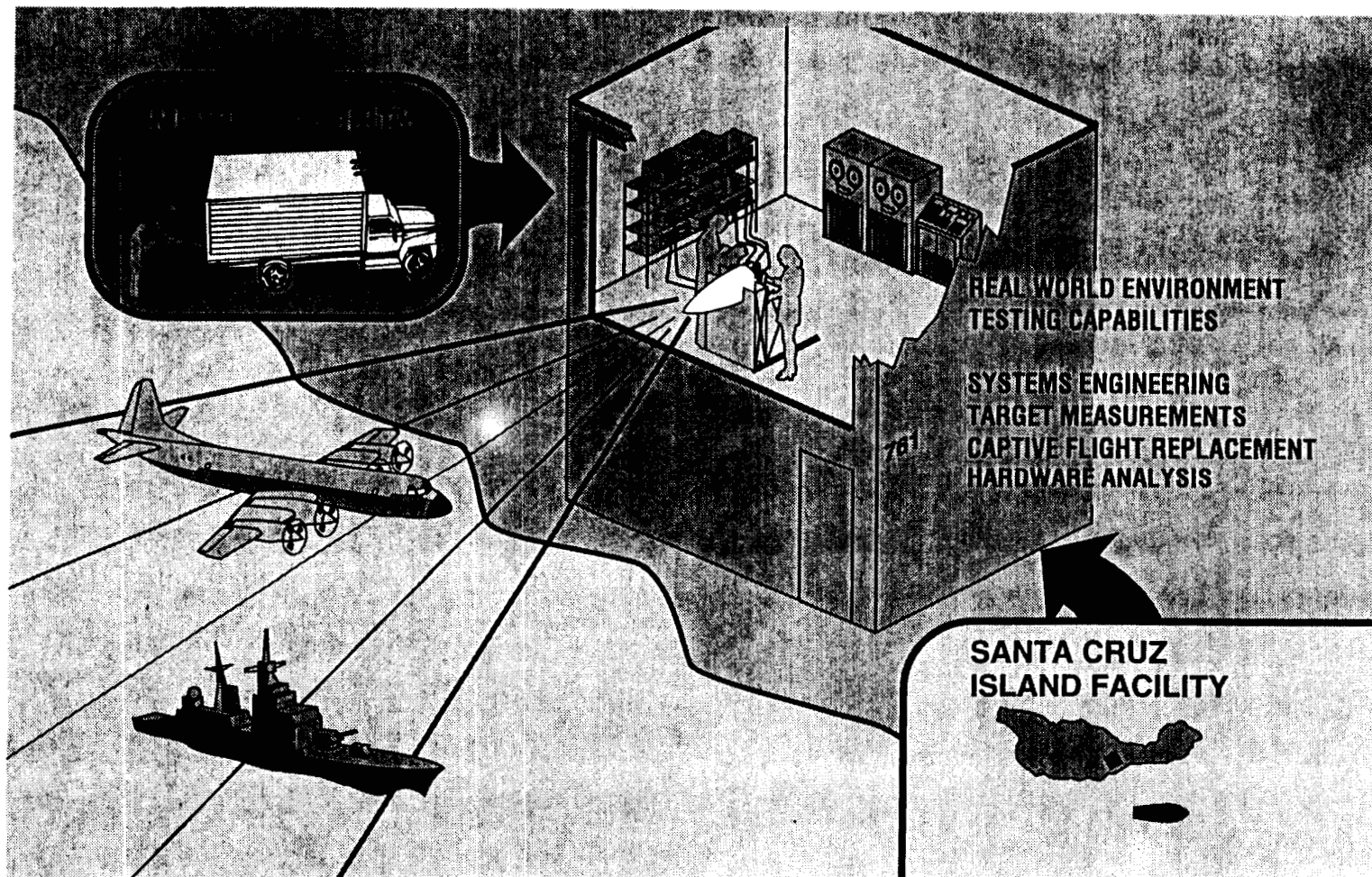
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:



Strike Weapons Evaluation Facility

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ACTIVITY UIC: 63126

Open Air

233

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ACTIVITY UIC: 63126

Tab 24: Aerial Targets Complex

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

Origin Date: 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>		
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63126</u>						
T&E TEST FACILITY CATEGORY: <u>OAR/DMS/ME/IL/MR</u>							
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>	
PERCENTAGE USE:	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
BREAKOUT BY T&E FUNCTIONAL AREA (%)							
Air Vehicles	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
Armament/Weapons	<u>41</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
EC	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
Other	<u>57</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
Total in Breakout Must Equal "Percentage Use" On First Line							

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The Aerial Targets Complex is a unique one-of-a-kind facility/capability that exists nowhere else in the world. It is a one-stop shopping center for aerial targets. It provides for the tri-service needs in development, acquisition, and production of all missile and subscale targets, and for life-cycle support management of all target systems within the Navy. Operational services are provided locally and deployed worldwide. The inventory of targets, both in number and type, is unmatched anywhere and includes full-scale, subscale, missile, target control systems, and, when matched with the Surface Targets Complex, seaborne and land target. The facility is unique in that it has the personnel resources, geography, airspace, and open ocean available to operate any target contained within its inventory on-site. It has deep-water harbor facilities for seaborne targets at Port Hueneme, 125,000 square miles of instrumented sea range and airspace to conduct test and evaluation, and aircraft runway facilities both at Point Mugu and San Nicolas Island, as well as target ground- and air-launch facilities.

The air- and ground-launch capabilities of subscale targets are unique to Point Mugu. The complex has DC-130 aircraft that provide subscale target air-launch capability for BQM-74, BQM-34, and AQM-34L/M targets. This capability ensures target services are available for open-ocean exercises in the Pacific and Atlantic arenas, for deployed services to remote desert and other land sites, and provides an additional launch capability when multiple target scenarios require more targets than are available with existing ground-launch facilities. Additionally, the capability provides extended range use because the target launch point is selectable (i.e., can be launched at any point within the DC-130 flight range). The DC-130 aircraft can carry four targets of a single type or can mix the type of targets carried. The DC-130 also provides a means of moving logistic equipment and personnel during deployed operations.

The air-launch capability also includes the F-4/QF-4N aircraft, which are the only aircraft in the world with the capability of supersonic launch of the AQM-37 target. Supersonic launch of the AQM-37 is necessary for the target to reach the upper limits (Mach 4 at 100,000 feet) of its performance envelope. The Aerial Targets Complex is unique in the world in that it can provide both manned and unmanned (QF-4) launch capability for the AQM-37 target.

The ground-launch capability for subscale targets provides launch of multiple targets of variable types at two sites, Point Mugu and San Nicolas Island. This dual-site combination provides a capability unique in the world for a range complex. It allows multiple site launch for simulating realistic threat scenarios, provides launch capability in minimum weather conditions (fogged in with zero ceiling and visibility), and provides multiple target launch capability. To date that capability has provided 10 targets in the air for a single

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

mission. The Aerial Target Complex also provides mobile ground-launch capability that is used for deployed operations for land sites and for shipboard operations.

Deployed operations with full-scale and subscale targets are provided on a worldwide basis from the Aerial Targets Complex .The deployed operations are available at range complexes where instrumentation and command control facilities are in place, such as the White Sands Missile Range; the Pacific Missile Range, Hawaii; the Atlantic Fleet Weapons Training Facility, Puerto Rico; and the China Lake Land Range; at remote sites where no facilities exist; and onboard ship. The deployed capability includes command control, tracking, and telemetry provisions for subscale targets at sites that do not have these provisions in place.

Sea recovery of subscale targets is provided via aircraft and boats. The air recovery is provided using helicopter retrieval that affords quick and long-range recovery of targets, thus reducing seawater damage and enabling quick turnaround of the target for further use. Recovery boats from both the Surface Target Complex and the Sea Range Complex provide retrieval capability of subscale targets and afford the capability to recover in minimum weather conditions and provide multiple target recoveries not available with the air retrieval capability.

The Aerial Targets Complex consists of 257 technical, professional, and administrative personnel with 18 buildings providing 445,306 square feet of administrative, operational, and covered storage space and 10,650 square feet of outside storage space. These are located at Point Mugu and San Nicolas Island. The core mission of the Aerial Targets Complex is managing the life-cycle support of target systems and subsystems; providing systems engineering for development, test, and evaluation; in-service engineering of targets and related systems; and operating, maintaining, and providing aerial target services.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

Targets are remote controlled using ITCS, VEGA and UHF systems that provide command control, telemetry, and tracking capability. These systems are interconnected to Point Mugu, the Channel Islands, San Nicolas Island, and Laguna Peak through microwave and fiber optics, thus extending range, control, and data collection capabilities. The ITCS capability is unique in the target-control world in that it provides a 250-nautical-mile range for control of targets from any of these sites without use of relay facilities. These resources are also available at China Lake, Puerto Rico, Pacific Missile Range, Hawaii, and Wallops Island, providing a common interconnect for target services. Radar tracking, telemetry, navigation, and communications linkages between Point Mugu, Vandenberg Air Force Base, Edwards Air Force Base, China Lake, the Channel Islands, Laguna Peak, and San Nicolas Island are used via fiber optics and microwave for real time position display and post-operation data reduction.

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BRAC 95 DATA CALL #13

ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

A physical/electronic interconnect for target systems engineering is provided to the weapons HWIL laboratories (AMRAAM, Phoenix, Sparrow) for developing target modeling simulations and models; to the Radar Reflectivity Laboratory for radar cross-section measurement critical to the target/threat validation process; and between the ITCS Laboratory, Target System Development Laboratory, Software Validation/Verification facility, and Operator Training Simulator facility for target and target system design, development, test and evaluation, and training.

Electronic data interconnect for target logistics management between Point Mugu and Field Service Representatives at Norfolk, Va.; Radar Bomb Scoring Unit, Spokane Wa.; Naval Air Facility, Kadina, Okinawa; Naval Air Station, Sigonella, Italy; and NAB Little Creek, Va. Additionally, documentation and support services are linked to China Lake, Calif.; Dugway Proving Grounds, Utah; Aberdeen, Md.; Eglin, Fla.; White Sand, N. Mex.; Wallops Island, Va.; Pacific Range Missile Facility, Hawaii; Atlantic Fleet Training Facility, Puerto Rico; and Yuma, Ariz.

The Aerial Target and Surface Target Complexes, Target Control Systems Capability, Target Augmentation Systems Capability, and Target Systems Modeling and Simulation Capability are all interconnected via electronic capabilities and physical (location) interconnect. The synergism of physical location as well as the electronic interconnect provide a capability unmatched anywhere in the world for providing the tri-service needs in development, acquisition, and production of all missile and subscale targets, and for life-cycle support management of all target systems within the Navy. This target capability is unique in that it has the personnel resources, geography, airspace, and open ocean available to provide full-spectrum engineering service. It has deep-water harbor facilities for seaborne targets at Port Hueneme, 125,000 square miles of instrumented sea range and airspace to conduct test and evaluation, aircraft runway and instrumentation facilities at both Point Mugu and San Nicolas Island, as well as target ground- and air-launch facilities that, when combined, provide a one-of-a-kind facility unique in the world.

Type of Test Supported:

T&E for air-to-air, air-to-surface, and surface-to-surface weapon systems. Targets are used for radar acquisition tests, electronic countermeasures (jamming) evaluation, infrared measurement/test, radar cross-section evaluation, decoy effectiveness, maneuver analysis, electronic warfare, warhead effectiveness and evaluation of Fleet tactics, Fleet readiness, and Fleet effectiveness. Target-specific testing involves target development and T&E; Target Auxiliary and Augmentation System development and T&E; and Target Control System development and T&E. Additionally, targets are used as test beds for electronic warfare and as launch vehicles for testing weapons that have not been carried on manned aircraft, such as the recent launch of the AIM-9M BOA missile from an unmanned QF-4N target. The test precluded expensive and time-consuming wind tunnel and separation tests and afforded critical

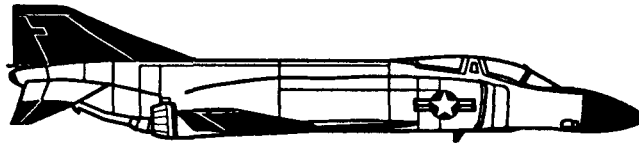
FACILITY/CAPABILITY TITLE: Aerial Targets Complex

SUMMARY OF TECHNICAL CAPABILITIES:

video and camera coverage of actual launch conditions from an aircraft without endangering aircrews. This type of testing is invaluable to the development process of weapon systems and provides a means of cost reduction.

Full-Scale Aerial Targets

Full-Scale Aerial Targets include the QF-4N aircraft target and the MQM-8G Vandal target. The QF-4N is flown both manned and unmanned with mission profiles, including altitudes from 50 to 60,000 feet and speeds in both the subsonic and supersonic regimes. The manned missions include launching subscale targets, such as the AQM-37C, towed target services, electronic countermeasurement services, chaff dispensing, target test and evaluation, missile and target chase services, airborne infrared measurement service, and manned target missions for simulated weapons firing scenarios.



QF-4N

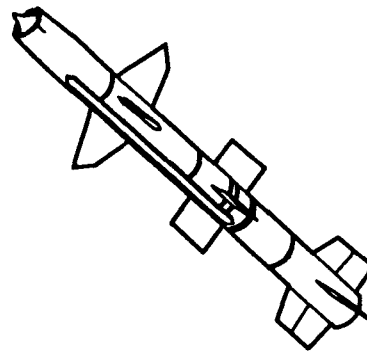
The unmanned QF-4N target is a recoverable target launched and recovered from a standard aircraft runway. The target performance capability is the same as the standard F-4. The QF-4N target is a supersonic high-altitude, remote-controlled version of the Navy F-4 Phantom aircraft. The aircraft is an all-altitude target capable of speeds to Mach 2.0 and altitudes of 57,000 feet. The aircraft is two-place tandem seated and employs a low-mounted, swept-back wing. The target is 58 feet 3 inches long and has a wing span of 38 feet 5 inches. It has external stores capability, including provisions for carrying external fuel tanks and special equipment pods. The QF-4 can be remotely controlled using the ITCS, and employs a nose-mounted television system for remote takeoff/landing. The remote-control pilot flies the aircraft from a UCC that closely duplicates the aircraft cockpit with control stick, rudder pedals/brakes, throttle control, and instrumentation. A television display is used for takeoff/landings and the ITCS display for range tracking. The ITCS target control console can also be employed for remote control. The aircraft retains its manned configuration and is, in fact, flown much of the time with flight crew onboard for remote-pilot training and other manned missions.

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

The unmanned configurations include ECM equipment (external stores or internal equipment provisions), chaff dispensing provisions, towed target provisions, infrared countermeasures, miss-distance measurement provisions, subcale target launch, radar tracking provisions, and a test bed for airborne missile and target stores-separation testing. The QF-4N can be flown as a single target or in multiple target formations with up to six targets.

The remote San Nicholas Island facilities are linked to Point Mugu for launch of the QF-4N and MQM-8G targets and for recovery of the QF-4N. These facilities include ITCS, UHF command control, radar tracking, communications, navigation aids, and telemetry provisions. NAWCWPNS Point Mugu is the Navy's single-site activity for QF-4N services and, as such, provides manned and unmanned services at Point Mugu, China Lake, and Roosevelt Roads, Puerto Rico. Additionally, manned target services are provided at White Sands Missile Range, the Pacific Missile Range Facility, Hawaii, and other facilities as requested. The MQM-8G services are provided at Point Mugu, White Sands Missile Range, Wallops Island, and the Pacific Missile Range Facility, Hawaii.

The MQM-8G Vandal target is the Navy's supersonic sea-skimming target with flight profiles, including altitudes from 50 to 1500 feet at supersonic speeds. It is the only target in DOD with this capability. The MQM-8G/VANDAL target is one of a family of VANDAL targets (MQM-8G/ER, MQM-8G, and MQM-8X) that was developed from the obsolete Talos RIM-8G/J Fleet missile. They were designed to provide a realistic threat of the midcourse and terminal phase of an attacking anticruise missile.



MQM-8G

The MQM-8G differs from the other family members by its capability of a very low altitude of 30 feet and its extended fuselage to accommodate additional fuel for extended range at low altitudes. The MQM-8G has a speed of Mach 2.125 at 30 feet with a range of

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

approximately 37 nmi from launch. The target contains a command guidance system that receives its information from a Command Guidance Computer (CGC) utilizing real-time radar tracking information that is transmitted to the MQM-8G by UHF for azimuth control. Altitude for the low-flying target is controlled by an on-board radar altimeter. The MQM-8G also has a heading-hold gyro that controls azimuth when the target flight path takes it over the horizon from the UHF transmitter. The MQM-8G has on-board telemetry and can accommodate the AN/DPT-1 radar transmitter, AN/DSQ-37 Miss Distance Indicator, DPN-90(V)1.

Subscale Aerial Targets

Subscale Aerial Targets include the AQM-37C, BQM-74C/E, BQM-34S, AQM-34L/M, QH-50, and ballistic aerial targets.

The AQM-37C missile target is an air-launched, preprogrammed, nonrecoverable target, powered by a liquid bipropellant engine that is ignited approximately 2 seconds after launch. The target incorporates a UHF receiver/decoder for command control and a telemetry transmitter for target performance data.

The AQM-37C performance envelope is to Mach 3.0 at 80,000 feet and has the capability for course-correcting turns, dive angles of 15 to 65 degrees, and dive pullout. Profiles above 70,000 feet at Mach 2.0 generally require supersonic launch from an F-4 aircraft, which is not available at all operating sites. Profiles below 70,000 feet at Mach 2.0 generally require supersonic launch from A-4 aircraft, which are not available at all operating sites. Profiles below 70,000 feet and Mach 2.0 can be provided with a launch from an A-4 or A-6 aircraft. The AQM-37C has provisions for active augmentation, scoring, and tracking beacons. An extended performance kit increases the performance envelope from Mach 3.0 to Mach 4.0 at altitudes between 80,000 and 100,000 feet and requires launch from an F-4/QF-4 aircraft.

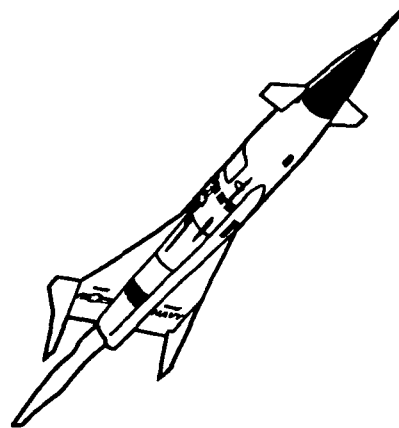
The BQM-74C/E missile target is a recoverable, remote-controlled, subsonic target capable of speeds up to Mach 0.85 and altitudes from 30 to 35,000/40,000 feet. The BQM-74C is propelled during flight by a single YJ400-WR-403 turbojet engine that produces 190 pounds of thrust at full throttle at sea level. The BQM-74E is propelled during flight by a single J400-WR-404 turbojet engine that produces 240 pounds of thrust at full throttle at sea level. The target is designed to be launched from a zero-length ground launcher utilizing dual JATO bottles. When equipped with an air-launch kit, the target can be air launched from a DC-130, A-6E, or TA-4J aircraft.

The target is controllable through normal flight maneuvers with the capability of performing 75-degree bank-angle turns. When the target is utilized for a Mobile Sea Range (MSR) scenario, the target control system is preprogrammed for one of eight different mission profiles. In the MSR configuration, the azimuth and range information is provided to the autopilot from a Tactical Air Navigation (TACAN) unit. The target is normally controlled via the AN/DKW-3A ITCS transponder or AN/DKW-4(V) portable

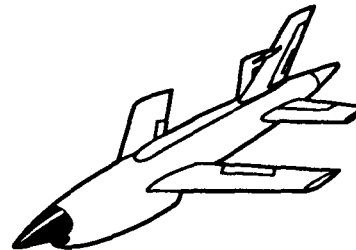
FACILITY/CAPABILITY TITLE: Aerial Targets Complex

transponder. Target recovery is executed by parachute and can be accomplished either on land or at sea. The BQM-74C/E target can be equipped with a variety of Target Auxiliary/Augmentation Systems (TA/AS), including radar and infrared augmentation, threat emitters, scoring, location and navigation, and visual augmentation.

The BQM-34S and AQM-34L/M missile targets are recoverable, remote-controlled supersonic targets capable of speeds up to Mach 0.9 and altitudes from 10 to 50,000 feet. It is propelled during flight by a single J-69 turbojet engine that produces 1,920 pounds of



AQM-37



BQM-34

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

thrust at full throttle at sea level. The target is designed to be launched from short-rail or zero-length ground launchers utilizing a single JATO bottle and from a DC-130 aircraft.

The target is controllable through normal flight maneuvers with capabilities of performing up to 5G turns. When the target is utilized for an MSR scenario, the target control system can be preprogrammed from climbs, altitude, and dives and levels off with azimuth being controlled by an AN/DRN-118 TACAN set. The BQM-34S utilizes a AN/DKW-2A ITCS Transponder. The ITCS transmits target telemetry on the tracking downlink signal.

Target recovery is executed by deploying a two-stage parachute. Recovery can be accomplished on land or at sea. When recovery is made at sea, the target can be retrieved by boat or helicopter. The BQM-34S can accommodate a variety of TA/AS that include radar and infrared augmentation, threat emitters, countermeasures, scoring, location and navigation, and visual augmentation. The AQM-34L/M target is an air launched version of the BQM-34S with extended range capability, and is launched from the DC-130 aircraft.

The QH-50 is a recoverable, remote-controlled helicopter. The target is a variant of the DASH helicopter program and is capable of speeds to 80 knots and altitudes to 1,000 feet. Target configurations include infrared provisions (towed), electronic countermeasures, radar tracking provisions, and visual augmentation.

The Ballistic Aerial Target is a low-cost, nonrecoverable, surface-launched, ballistic target capable of altitudes to 2500 feet and speeds to 300 knots. The target has infrared augmentation and a radar cross-section augmentor.

Primary remote control for these targets is the ITCS; however, the targets may be configured with VEGA systems and flown at sites that do not have ITCS by using the portable VEGA control van. NAWCWPNS Point Mugu deploys on a worldwide basis for operation of these targets.

Aerial Tow Targets

The TDU-34A/A is primarily used for air-to-air and surface-to-air missiles and gunnery training. It is a passive radar target with corner reflectors located in the nose and tail that can be augmented with a visual augmentation sleeve, jet engine exhaust simulator, transmitter/encoder, receiver/decoder, scoring set, and a radar transmitter. The target can be towed by an A-4, A-6 or F-4 aircraft utilizing an RMK-19/A47U-3, RMK-31/A47U-4, or the RMK-34/A47U-4A towing and launching reel. The TDU-34A/A can be towed at altitudes up to 35,000 feet and speeds up to Mach 0.9.

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

The RMK-34/A47U-4A reeling machine launcher is compatible with the changes and additions of the TDU-34A/A aerial tow target. The RMK-34/A47U-4A is a modified RMK-31/A47U-4 reeling machine launcher that is an airborne weapon training system used to launch (reel out), tow, and recover (reel in) aerial tow targets for surface-to-air and air-to-air gunnery and missile firing exercises. The RMK-34/A47U-4A contains the necessary controls for the operation of the TDU-34A/A visual augmentation sleeve, jet engine exhaust simulator, receiver/decoder, scoring set, and a radar transmitter. The reeling machine is controlled manually from the cockpit of the tow aircraft using the PEK-115/A47U-4A control unit.

Land Target

The QLT-1C land target is a remote-controlled, multiuse, moving target platform that simulates several types of land vehicles. The primary use is to train aircrews in air-to-surface weapons delivery techniques. The lightweight tubular frame, with its Volkswagen engine, modified running gear, and automatic transmission/transaxle, make the QLT-1C a highly maneuverable target. Electromechanical actuators control the gear-shifting proportional steering, accelerating, and braking functions. These functions are activated through UHF signals received by an AN/DRW-29 receiver/decoder. The target has a top speed of 55 MPH, an average fuel consumption of 30 MPG, and a 10 gallon fuel tank. A typical QLT-1C range is comprised of a central control tower where the remote control operator observes the full length of the operating track. The track runs on a line perpendicular to the control tower at a distance of 2,500 to 4,000 feet. The length of the track is typically 3,000 to 6,000 feet and the width is 300 to 500 feet. The target contains two rotating beacon lights, a white one for informing the remote control operator that the engine is running, and a red one to warn the attacking aircrew that the target is not ready for an attack. The QLT-1C can be augmented with locally manufactured radar reflectors and/or silhouettes to enhance the simulation and tracking capability for aircrew and ground personnel.

Target Support Aircraft

The DC-130 aircraft provides an air-launch and remote-control capability for subscale targets, air logistics support for deployed missions, and a jump platform for the parachute community. The aircraft can carry up to four subscale targets, including the BQM-34, the BQM-74, and the AQM-34. The targets are carried on the inboard and outboard wing stations with the capability for a mix or match of two per wing. The DC-130 can remain on station for up to 8 hours, thus providing maximum operational flexibility. The DC-130 fills the need as a cargo and personnel transport aircraft for target deployments and for airlift support to and from San Nicolas Island for MQM-8G target and equipment.

The QF-4N support aircraft missions include launching subscale targets, such as the AQM-37C, towed target services, electronic countermeasure services, chaff dispensing, target test and evaluation, missile and target chase service, photo chase service,

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

airborne infrared measurement service, and manned target missions for simulated weapons firing scenarios. The ability to fly in both the subsonic and supersonic flight regimes and to carry a two-man crew makes the QF-4 a flexible support aircraft.

The Bell Jet Ranger helicopter is used to recover subscale targets from water and land environments. The helicopter provides a retrieval service that enables recovery from saltwater conditions in an expeditious manner thus subjecting the target to shorter periods of immersion in the corrosive salt water environment. The helicopter also provides flexibility for locating targets not dropped in designated recovery areas due to mission damage or mission conduct.

The helicopter is used for recovery in remote land areas where land vehicles are prohibited or cannot access due to terrain configuration, and additionally provides an airborne search vehicle for targets that cannot be located. The helicopter is also used for transport of equipment and personnel to and from target ships, San Nicolas Island, the Channel Islands, and other sites where conduct of target services are provided.

KEYWORDS:

Aerial targets, targets, aircraft targets, full-scale aircraft targets, full-scale aerial targets, FSAT, FSATs, QF-4N, QF-4, drone, universal control cockpit, universal control console, UCC, target control console, TCC, Integrated Target Control System, ITCS, target auxiliary/augmentation systems, TA/AS, Target Augmentation Systems, TAS, recoverable, sea test range, VANDAL, TALOS, MQM-8G, sea skimmer, subscale targets, missile targets, Chukar, BQM-74, Firebee, Dash, QH-50, Challenger, AQM-37, AQM-34L/M, VEGA, TDU-34, RMK-34, tow target, tow, scoring, miss distance, engineering, systems engineering, interface, software, modeling, seaborne powered target, Target Logistics Support, Support Equipment, in-service engineering, Configuration Management, Data Management, Material Management, Field Service.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	4290	4935	6320	5145	5530	5460	5250	4515
	Test Hours	*	*	*	*	*	*	*	*
	Missions	25	27	25	19	28	29	24	22
Armament/Weapons	Direct Labor	237,210	241,815	260,680	252,105	270,970	267,540	257,250	221,235
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	1,216	1,344	1,234	950	1,377	1,410	1,160	1,060
Other T&E	Direct Labor	115,500	71,750	141,750	147,000	57,750	183,750	45,500	28,000
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	63	41	81	73	28	116	14	11
Other	Direct Labor								
	Test Hours								
	Missions								

* Test hours are not tracked for targets and are not specific (applicable) to workload in the area of targets. The number of hours required to prepare to present a target are dependent on the user and their parameters for that test: target performance, configuration, location, number of runs, time of day, number of targets, configuration, and readiness of the user equipment. A target test may include one or multiple types of targets. The indication of workload for targets and target systems is the number of target presentations identified by the number of missions.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	241,500	246,750	266,000	257,250	276,500	273,000	262,500	225,750
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	1,241	1,371	1,259	969	1,405	1,439	1,184	1,082
Other T&E	Direct Labor	115,500	71,750	141,750	147,000	57,750	183,750	45,500	28,000
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	63	41	81	73	28	116	14	11
Other	Direct Labor								
	Test Hours								
	Missions								

* Test hours are not tracked for targets and are not specific (applicable) to workload in the area of targets. The number of hours required to prepare to present a target are dependent on the user and their parameters for that test target performance, configuration, location, number of runs, time of day, number of targets, configuration, and readiness of the user equipment. A target test may include one or multiple types of targets. The indication of workload for targets and target systems is the number of target presentations identified by the number of missions.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

ANNUAL HOURS OF DOWNTIME

(1) 0

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365)

(2) N/A

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2)

(3) N/A

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) <u>N/A</u> Surf-Air	(5) <u>N/A</u>	(6) <u>N/A</u>	(7) <u>N/A</u>	(8) <u>N/A</u> ANNUAL UNCONSTRAINED CAPACITY
Air-Surf				(9) <u>N/A</u>
Surf-Srf				
"Typical"				
			TOTAL	0

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? **No.** The Aerial Targets capability is not limited by the same constraints of typical T&E facilities (maintenance, weather, darkness, holidays, safety or health considerations, commercial utility availability, etc.). Targets are operated around the clock because of the mild local climate uninterrupted throughout the four seasons. Because of the built-in flexibility of Point Mugu target facilities (e.g., mainland surface launch, San Nicolas Island surface launch, seaborne launch, and airborne launch), infrequent locally severe weather is not a limiting factor. Point Mugu targets facility has demonstrated its surge capability through routine deployments to China Lake, Calif., Pacific Missile Range Facility, Hi., Atlantic Fleet Weapons Training Facility, P.R., White Sands Missile Range, N. Mex., and the Gulf of Maine operating area.

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	5	4	4	4	4	4	4
Enlisted	0	0	0	0	0	0	0
Civilian	184	192	196	199	202	205	208
Contractor	64	61	62	62	62	62	62
Total	253	257	262	265	268	271	274

Total Square Footage: 445,306Test Area Square Footage: 442,908Tonnage of Equipment: 214.4Annual Maintenance Cost: \$343,421Office Space Square Footage: 2,398Volume of Equipment: 434,000Estimated Moving Cost: \$2,465,441

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FACILITY/CAPABILITY TITLE: Aerial Targets Complex

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
223	126	472	456	713	702	702
196	231	349	353	339	343	346

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FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Aerial Targets Complex

AGE: 5-41 Yrs.

REPLACEMENT VALUE: \$34,791,453

MAINTENANCE AND REPAIR BACKLOG: Seismic upgrades, replace doors and roof, install additional fire sprinklers, paint buildings.

DATE OF LAST UPGRADE: 3/30/94

NATURE OF LAST UPGRADE:

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Rehabilitate laboratory spaces.

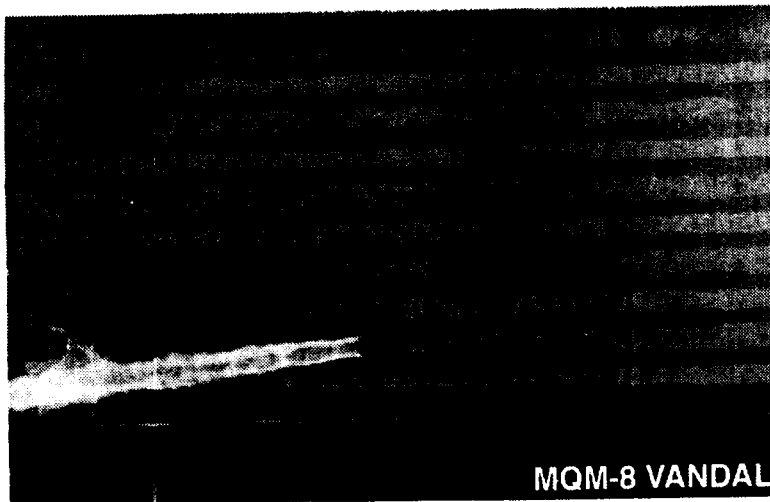
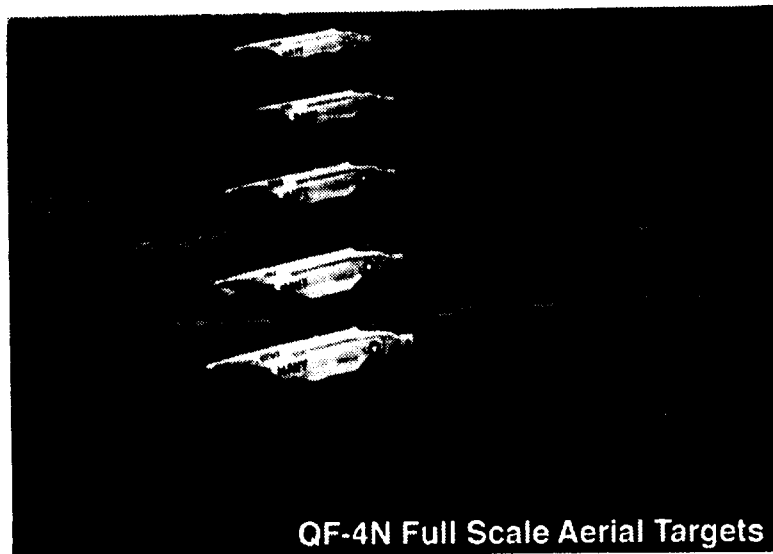
TOTAL PROGRAMMED AMOUNT: \$30,000

SUMMARY DESCRIPTION: Replace lighting and ceilings.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

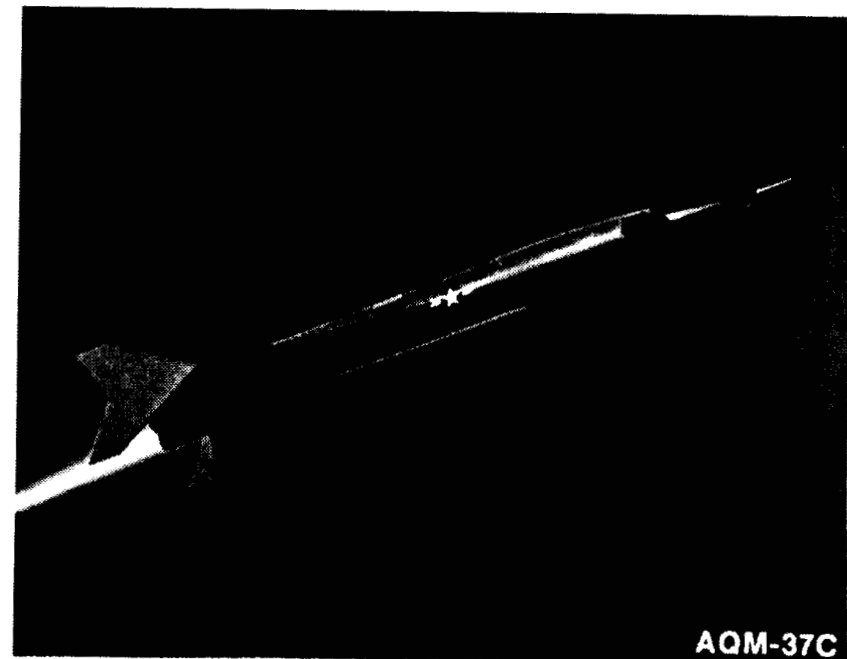
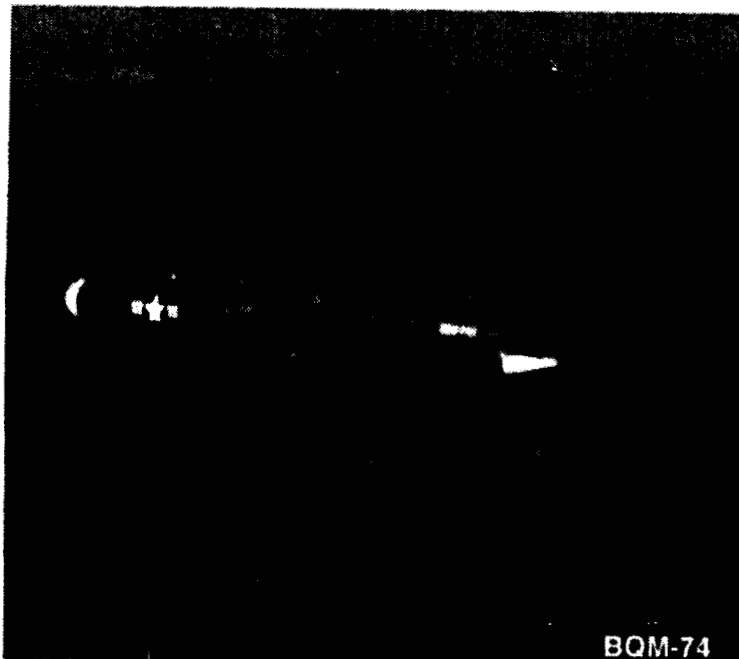
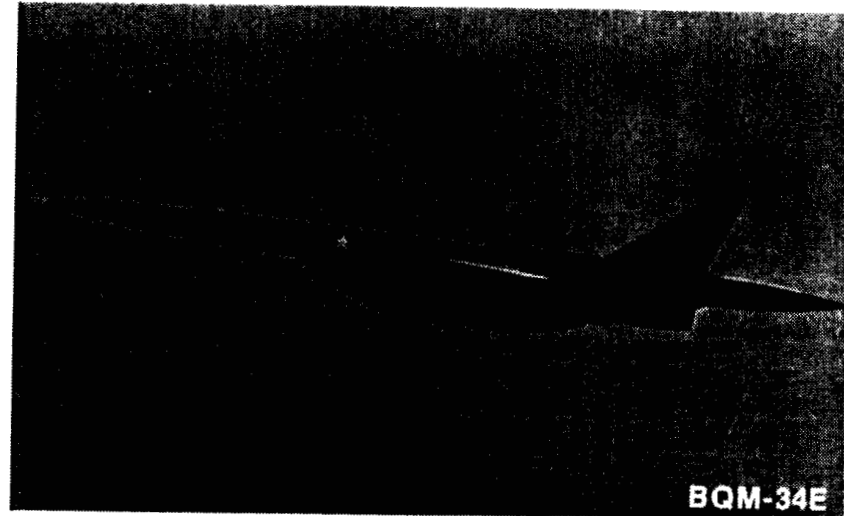
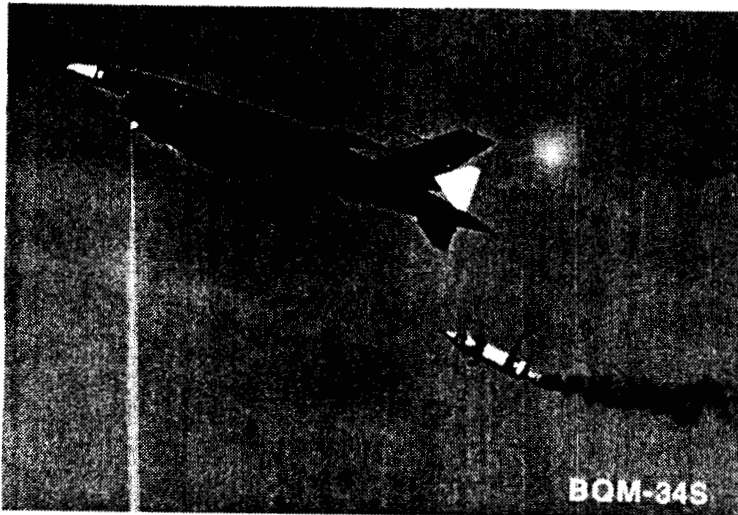


Full Scale Aerial Targets

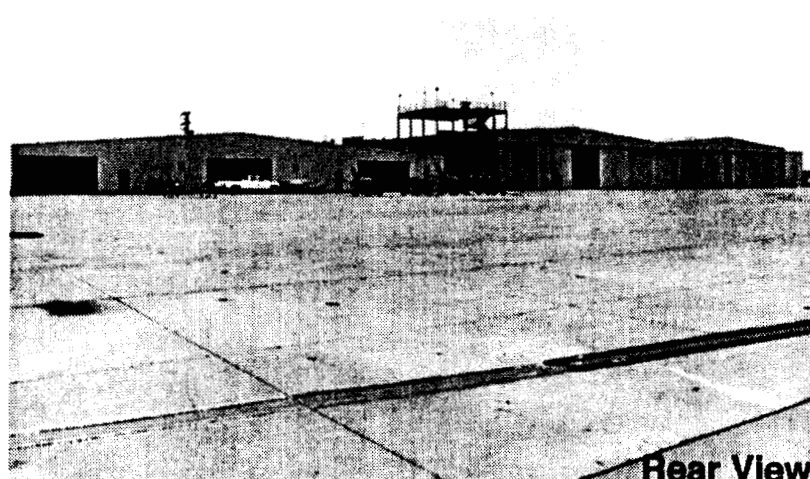
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Subscale Aerial Targets
252
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Rear View



Subscale Target Hangar



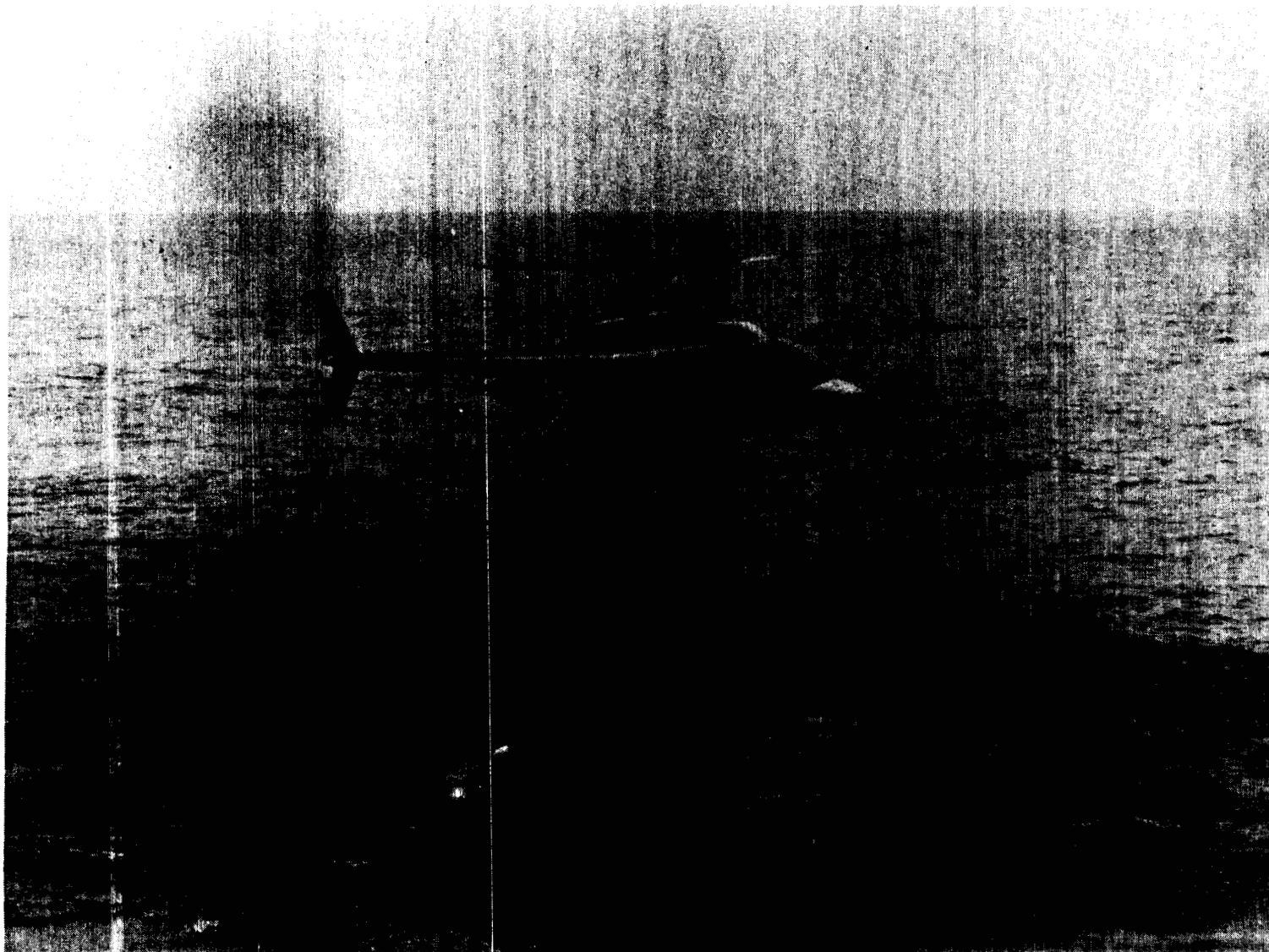
Full Scale Target Ramp

Target Systems Department Headquarters

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Bell 206B Recovering BQM-74 After Operations

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Tab 25: Aircraft Operations and Maintenance Capability

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Aircraft Operations and Maintenance Capability

Origin Date: 4/25/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>				LOCATION: <u>Point Mugu, California</u>	
T&E FUNCTIONAL AREA: <u>OAR</u>	UIC = <u>0429A</u>					
T&E TEST FACILITY CATEGORY: <u>Open Air Ranges</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>83</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>14</u>
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Armament/Weapons	<u>16</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
EC	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Other	<u>70</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>14</u>
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Aircraft Operations and Maintenance Capability

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

Airport, NAVAIDS, support, aircraft maintenance, training. Air operations provides wide-range support to pilots/aircrew in aircraft servicing, flight planning/following, all-weather air traffic control services, crash and fire response, and flight scheduling. Responsible for aircraft maintenance functions performed in support of using organizations. Responsibilities include planning, directing, and supervising intermediate-level maintenance support of NAWCWPNS and transient aircraft; providing "Off Equipment" repair or replacement; repair or replacement of damaged or unserviceable aircraft parts, components, or assemblies; and emergency manufacture of nonavailable parts; providing technical assistance, when required, to locally supported units; and performing all duties and responsibilities as set forth in applicable portions of the U.S. Regs and the Naval Aviation Maintenance Program.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

Direct voice link with pilots, aircrew, and range control (op conductor) personnel in support of all facets of RDT&E operations. Automated hand-off capability with FAA.

TYPE OF TEST SUPPORTED:

Support for all aircraft and weapon systems test and evaluation and Fleet training operations.

SUMMARY OF TECHNICAL CAPABILITIES:

All air traffic communications voice transmissions are recorded, as are all aircraft (equipped with IFF) movements. Provide high-quality aircraft maintenance.

KEYWORDS:

Safety, support, customer service oriented/professional.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Aircraft Operations and Maintenance Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	28,562	27,120	27,307	23,720	25,332	22,123	18,312	16,545
	Test Hours	59,693	58,573	60,210	54,097	60,509	60,471	76,684	76,322
	Missions				33,977	35,379	28,638	28,086	26,599
Other T&E	Direct Labor	140,580	154,263	155,661	166,285	166,361	120,825	59,468	92,163
	Test Hours								
	Missions								
Other	Direct Labor	30,942	29,379	29,582	25,694	27,442	23,966	19,838	17,922
	Test Hours	64,666	63,464	65,227	58,604	65,552	65,511	83,074	82,682
	Missions				36,808	38,326	30,373	30,425	28,815

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Aircraft Operations and Maintenance Capability

ANNUAL HOURS OF DOWNTIME (1) 0
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) .5
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 23.501

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
				80
				ANNUAL UNCONSTRAINED CAPACITY
				(9)
				29,200

"Typical"

TOTAL

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? YES

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Aircraft Operations and Maintenance Capability

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	20	18	18	18	18	18	18
Enlisted	377	371	316	272	271	271	271
Civilian	256	251	246	244	242	240	238
Contractor	116	116	116	116	116	116	101
Total	769	756	696	650	647	645	628

Total Square Footage: 327,078Test Area Square Footage: 281,144Office Space Square Footage: 10,284Tonnage of Equipment: 280Volume of Equipment: N/AAnnual Maintenance Cost: 899,000Estimated Moving Cost: N/A

Revised page

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ACTIVITY UIC: 63126

CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94
FACILITY/CAPABILITY TITLE: Aircraft Operations and Maintenance Capability

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
NONE	NONE	NONE	NONE	NONE	NONE	NONE
NONE	NONE	NONE	NONE	NONE	NONE	NONE

R

261R

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CHANGE 1, 6/6/94

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FACILITY/CAPABILITY TITLE: Aircraft Operations and Maintenance Capability

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Aircraft Operations and Maintenance Capability

AGE: REPLACEMENT VALUE:

MAINTENANCE AND REPAIR BACKLOG: Estimated 10,000/one-month backlog.

DATE OF LAST UPGRADE: 9/30/93

NATURE OF LAST UPGRADE: MV7800 computer upgrade in support of air traffic control IFF system capability.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: 15G33

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION: Replacing air traffic target simulator training device.

2. UPGRADE TITLE:

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

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ACTIVITY UIC: 63126

Tab 26: Sea Test Range

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Sea Test Range

Origin Date: 4/25/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>				
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Open Air Ranges</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>82.4</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>17.6</u>	<u>0</u>
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles	<u>16.4</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0.2</u>	<u>0</u>
Armament/Weapons	<u>33.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>8.8</u>	<u>0</u>
EC	<u>0.8</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Other	<u>32.2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>8.6</u>	<u>0</u>
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Sea Test Range

FACILITY DESCRIPTION: INCLUDING MISSION STATEMENT:

Mission: NAWCWPNS conducts research, design, development, test and evaluation, and in-service engineering of

- Air weapons and associated aircraft systems for strike, antisurface warfare (ASUW), and anti-air warfare (AAW) aircraft
- Tactical missiles for any naval platform
- Aerial and surface targets
- Electronic combat systems and electronic devices for airborne electronic warfare
- Range instrumentation systems for test and training ranges.

NAWCWPNS is a truly integrated structure. Many organizational entities are spread across multiple sites. For example, the aircraft weapon systems programs at China Lake and Point Mugu sites have been consolidated into a single organization, as well as the engineering and in-service engineering, targets, and threat simulations and most base support functions. Additionally, this integration has resulted in the Naval Western Test Range Complex, which is composed of the Point Mugu sea range, threat systems, and test facilities combined with the land ranges, threat systems, and test facilities at China Lake and White Sands. The complex provides complementary, full-spectrum test capability for weapon systems and aircraft. Organizational benefits and manpower and cost savings of the NAWCWPNS integration will continue to evolve for years to come.

NAWCWPNS Point Mugu is the Navy's primary source of scientific and technical knowledge and testing capability for air warfare systems, guided missiles, and EW. As one of NAWCWPNS's two primary sites, Point Mugu provides DOD's largest and most completely instrumented sea test range. Existence at Point Mugu of several weapons laboratories in immediate proximity to the sea test range has repeatedly been shown to be of great significance in furthering the air weapons development function. NAWCWPNS Point Mugu has played a major role in the T&E of nearly all the Navy's air weapons, tactical guided missiles, and electronic combat systems over the past 47 years, and has similarly made substantial contributions to many Air Force and Army systems. NAWCWPNS Point Mugu's role as the Navy's primary weapons T&E site and air weapons in-service engineering support site complements the NAWCWPNS China Lake R&D role. China Lake's 1.1 million acres of land area and 17,000 square miles of military restricted-use (R-2508) airspace complement Point Mugu's 125,000 square miles of instrumented sea test range with overlying airspace (36,000

FACILITY/CAPABILITY TITLE: Sea Test Range

square miles of controlled airspace), the neighboring deep draft port facilities at Port Hueneme, and the offshore airfield and range instrumentation at San Nicolas Island.

NAWCWPNS Point Mugu Mission:

As one of two primary sites of NAWCWPNS, Point Mugu performs research, development, test, and evaluation (RDT&E), and in-service engineering for

- Weapon systems development
- Weapon systems in-service engineering and logistics support
- Fighter aircraft systems/weapons integration and software support
- Range operations, including air-to-air, air-to-surface, surface-to-air, submarine, ballistic/strategic, mines/bombs/gunnery, electronic warfare
- Test and evaluation and Fleet training operations
- Range systems development and support for both test and training ranges
- Threat simulator (targets and EW simulators) test and evaluation, development, systems/design engineering, logistics support, and operations
- Airfield operations/base support for RDT&E efforts and tenant commands
- Tactical air mission planning system
- Quick reaction to Fleet requirements (engineering technical services located throughout the world)

Additionally, NAWCWPNS Point Mugu

- Operates, maintains, and improves DOD's Major Range Test Facilities Base (MRTFB) as the air/sea range part of the Naval Western Test Range Complex (NWTRC) for weapons and weapon systems testing, evaluation, and training.
- Provides production improvement support for air weapon systems and tactical missiles for all Services
- Conducts independent developmental test and evaluation
- Provides support for operational test and evaluation
- Provides launch facilities for land-based testing of surface-launched missiles

NAWCWPNS Point Mugu is a recognized center of technical excellence for

- Missile/missile subsystems T&E and in-service engineering
- Missile signature, active and passive

FACILITY/CAPABILITY TITLE: Sea Test Range

- Free-fall/unguided weapons T&E and in-service engineering
- Weapons modeling and analysis
- Airborne weapons T&E
- Weapon systems integration
- Air/sea range systems development and operation
- Aircraft armament systems/equipment
- Targets and simulators for air-launched systems
- Aerial target/threat simulator development and operation
- Aircraft electronic warfare R&D and in-service engineering
- Advanced telemetry microsystems
- Complex test and training operations planning and execution

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

NAWCWPNS Point Mugu is extensively internetted with nearly 100 dedicated voice and data networks to leverage its key location and functions with other DOD ranges and facilities, as well as other government agencies in the area. Use of these networks varies from real-time command control of interranging operations (such as Tomahawk) to exchange of range data between various ranges, exchange of air surveillance and coordination with the Federal Aviation Administration, and exchange of weather information with the National Weather Service, as well as local government agencies. As a major range, the Sea Range also nets with other major ranges throughout the United States in support of Space Shuttle and various satellite programs.

The most noteworthy of these networks is the microwave network with the Western Space and Missile Center, Vandenberg AFB (with further connections to the Flight Test Center at Edwards AFB, China Lake, and the Utah Test and Training Range), the link with the Southern California Offshore Range, the Defense Simulation Internet, and various Navy tactical data links, i.e., links 4A, 11, 16.

Our extensive knowledge and experience with internetting has led OSD's DDR&E to designate Point Mugu as the primary West Coast site for high-data-rate internetting systems for test and evaluation.

Specific Networks:

Joint Interrange Microwave System (JMS): The Joint Interrange Microwave System is used for the major joint interranging trunking of operational data and voice communications for linking Point Mugu, Vandenberg AFB, Edwards AFB, China Lake, and the Utah Test and Training Range. This network is used continuously to pass air surveillance data between the Sea Range and Vandenberg. In

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FACILITY/CAPABILITY TITLE: Sea Test Range

In addition, metric radar and telemetry data are passed from the Sea Range to Vandenberg for all satellite and ICBM launches and command destruct commands are passed from Vandenberg to the Sea Range. Further, for operations involving aircraft from Edwards, the data link passes the Sea Range data to Edwards. Cruise missile operations such as Tomahawk use the entire network to pass data up and down the network of ranges supporting the specific scenario. (Typically Tomahawks are launched within the Sea Range and fly to China Lake.) Potential for single-node failure is less than 1%, based on historical data.

Extended Area Test System (EATS): The EATS is linked to the Southern California Offshore Range (SCORE) Complex located at North Island. This network is used to pass metric tracks of air and surface vehicles on the SCORE from the Sea Range to North Island to combine with underwater tracks to provide the complete tactical "picture" of the critical ASW operations occurring at SCORE. Potential for single-node failure is less than 1%, based on historical data.

Defense Simulation Internet (DSI): The DSI, intended to be a worldwide network, is sponsored by the Advanced Research Projects Agency (ARPA) and is used for distributed high-speed simulation and wargaming at simulation sites among the joint uniformed services. As an experimental network, 67 DSI nodes were implemented (one of which is at Point Mugu) in phases during 1989-1991, with expansion plans for the network to grow to as many as 86 nodes. DSI is the largest and most disbursed operational network. It is also the only network with sites outside CONUS. The DSI is compliant with Distributed Interactive Simulation protocols, which are based on IEEE 1278 standards and currently are being implemented as the DOD-wide standard. Potential for single-node failure is less than 1%.

Tactical Data Links A and J (Links 11 and 16, respectively): The Sea Range supports tactical data-link operations with other ranges and tactical units as follows:

- Tactical Data Link 11 connectivity with San Diego and China Lake, as well as all Navy Fleet ships and aircraft and Air Force Link 11-equipped aircraft.
- Tactical Data Link 16 connectivity with Naval Research and Development (NRaD) Center System Integration Facility (SIF) in San Diego. This data link is currently under development and operational testing. As it matures, this link will expand to various operational units, as well as other facilities.

Potential for single-node failure is minimal since connectivity is via RF, which can be very susceptible to atmospheric, thus, frequency shifts to facilitate more robust connectivity are routine.

Internettted Range Interactive Simulation (IRIS): The IRIS project is funded by the Defense Modeling and Simulation Office for FY93/94. The project will internet the Sea Range's Battle Management Interoperability Center (BMIC), and China Lake's Weapons

FACILITY/CAPABILITY TITLE: Sea Test Range

Tactics Analysis Center (WEPTAC) and F/A-18 Weapon System Support Facility (WSSF). IRIS is using DIS protocols and will be compatible with and exploit the DSI. IRIS is an experimental internet that shows great promise in supporting complex test and training operations being conducted on the Sea Range and elsewhere. This capability will be unique among DOD's test ranges.

TYPE OF TESTS SUPPORTED:

The Sea Test Range routinely supports the test and evaluation of airborne weapon systems, including weapon/platform integration, for NAVAIRSYSCOM. Classes of weapons tested include antiair, antisurface, and air-launched antisubmarine weapons, as well as, Cruise missiles. Weapons currently under test or recently tested include Sidewinder, Sparrow, Phoenix, AMRAAM, SLAM, Harpoon, Tomahawk, and HARM, as well as conventional munitions.

Aircraft and weapon/platform integration testing for both the Navy and Air Force has been performed for the F-14, F-15, F-16, F/A-18, F-22, A-6, EA-6B, B-1B, B-2, and B-52 aircraft.

The Sea Test Range supports the development of surface-launched weapon systems and combat systems testing for NAVSEASYSYSCOM. Weapon and combat systems currently under test or recently tested include Seasparrow, AEGIS, Standard Missile, CIWS, RAM, Harpoon, SLAM and Tomahawk.

The Sea Test Range supports development and follow-on tests for the Navy, Air Force, and NASA strategic ballistic missile, space, and satellite operations. Test support has been provided for Polaris, Trident, Scout, Peacekeeper, Titan, Minuteman, Delta, Thor, Atlas, and Space Shuttle, as well as other programs. Sea Test Range instrumentation is a mandatory support resource for all ballistic missile and satellite launch operations from Vandenberg Air Force Base.

The Sea Test Range has supported Theater Missile Defense (TMD) operations for the Navy and Air Force.

The Sea Test Range supports numerous special access programs. Because of its remote location and security provisions, San Nicolas Island is particularly well suited to support of such activities.

The Sea Test Range provides significant support for Fleet Training operations including air-to-air, air-to-surface, surface-to-air, and surface-to-surface missile operations. All Fleet live fire weapons operations in the Southern California area are performed on the Sea Test Range.

FACILITY/CAPABILITY TITLE: Sea Test Range

The Sea Test Range has been utilized for support of tests for several allied governments, including Japan (JDF SSM-1), Norway (NASAM), Germany (F-4F ICE), and Israel (UAV), as well as Britain, Spain, and Canada.

The Navy has successfully prosecuted some of its most challenging flight test programs at Point Mugu, including:

- Tomahawk Land Attack Missile with its over 800 mile range requiring the interconnection of up to seven DOD ranges (San Clemente, Point Mugu, Vandenberg, Edwards, China Lake, Tonapah, and Utah Test and Training Range connected by Inland Route (R-200) (1977 to present). This series has included eight coordinated Tomahawk air strikes into China Lake and Fallon with Fleet aircraft.

- Tomahawk Antiship Missile with its over 200 mile range over water and extensive search patterns (1976 to present). (Point Mugu and Vandenberg).

- F-14/Phoenix weapons integration testing, including multitarget scenarios of up to six targets (1972 to present) (Point Mugu and Vandenberg).

- F/A-18/AMRAAM weapons integration testing, including multitarget scenarios of up to four targets (1986 to present) (Point Mugu and Vandenberg).

- AEGIS Combat System testing, including a manned raid of over 40 aircraft and multimissile scenario against nine targets in a heavy ECM environment (1988) (Point Mugu and Vandenberg).

- Trident tactical-launch OT scenarios of up to four missiles rippling two at a time (1982 to 1993) (Point Mugu, Vandenberg, and Southern California Fleet Training Range).

- The Japanese Self-Defense Force has sited their DT, OT, and training flight tests at Point Mugu for their Army surface-launched antiship cruise missile.

- The Germans chose Point Mugu as the test site for their F-4F Improved Combat Effectiveness (ICE) that included an aircraft avionics upgrade along with AMRAAM weapons integration.

- The Norwegians selected San Nicolas Island for the NASAM's flight test program that included extensive combat systems and AMRAAM missile (a surface-to-air variant) testing against low incoming targets.

FACILITY/CAPABILITY TITLE: Sea Test Range

- The Air Force chose Point Mugu for SRAM LEAP flights because no other range could provide the required instrumentation test volume.

- The Sea Range has worked closely with operational units throughout the western United States to coordinate more complex training scenarios under a concept called BITE - Battle Management Interoperability Test and Evaluation/Training Exercises. The 27 exercises conducted since June of 1991 have included Navy, Marine, and Air Force elements testing and exercising a number of aspects of warfare, including command and control, reconnaissance, engagement, and battle damage assessment. Up to six major combatants and 40 aircraft have participated. Some recent scenarios involve joint force projection components to China Lake. In addition, our participation in Tandem Thrust 92 (conducted to evaluate solutions to joint service command and control interoperability lessons learned during Desert Storm), demonstrated the use of the Sea Range's Battle Management Interoperability Center as an alternate Strike Planning Center ashore under the Navy's Copernicus architecture.

SUMMARY OF TECHNICAL CAPABILITIES:

Instrumentation Capability. Point Mugu's Sea Test Range is DOD's largest and most heavily instrumented sea/air range and can support tests over 125,000 square miles. Instrumentation is located on the coastline from as far south as San Diego to Tassajera Peak to the north and on several offshore islands including San Nicolas, Santa Cruz, Santa Rosa, San Miguel, and San Clemente. Specific data is provided below:

- (7) FPS-16 Metric Tracking Radars - four at Point Mugu and three at San Nicolas Island.
 - Two radars have 3 megawatt transmitters and five have 1 megawatt transmitters
 - All-weather tracking capability
 - G-band beacon and skin track capability
 - Two radars have a 32,000 mile range, and five have a 4,000 mile range
 - Two have Doppler range tracking capability
 - All radars have antenna-mounted TV systems with VHS recording capabilities
 - Five microsecond pulse width permits enhanced long-range tracking capability
 - Five radars have automatic transmit time-phasing for Vandenberg support

Extended Area Test System (EATS)

- Time, space, tracking position, velocity, direction, and target control relay
- Over-the-horizon tracking up to 250 nmi from San Nicolas Island
- Tracking capability of up to 28 participants

FACILITY/CAPABILITY TITLE: Sea Test Range

Datalink for RAJPO GPS data
One Master Operations Control Station (MOCS)
Two dual-redundant Ground Interrogation Stations (GIS)
Over 300 mobile sea range/EATS participant instrumentation packages

Global Positioning System (GPS)

Provides high-accuracy real-time differential GPS data
Position accuracy: 6-ft horizontal, 10-ft vertical
Velocity accuracy: 1.6 ft/sec, 2.6 ft/sec
Data rate: 10 samples/sec
Dynamics: Up to 10Gs
Two data links available to support GPS: EATS (141 MHz), 150-nmi range;
Range applications joint program office data-link system (1350-1400, 1427-1435 MHz)

Telemetry Ground Station at Point Mugu

- (8) Antennas
 - (4) 32' GKR-11 (L- and S-band)
 - (2) 8' GKR-9A (One L- and S-band, one P-band)
 - (2) 20' GKR—13 located on Laguna Peak (L- and S-band)
 - (1) Mobile 8' antenna on trailer (L-, S- and high S-band)
- (4) General purpose receiver stations
- (1) Special purpose receiver station
- (4) General purpose recording stations
- (1) Special purpose recording station

FACILITY/CAPABILITY TITLE: Sea Test Range

Telemetry Collection Facility at San Nicolas Island

(7) Antennas

(2) 30' GKR-8A (L- and S-band)

(1) 30' GKR-12 (L- and S-band)

(1) 8' GKR-9A (L- and S-band)

(1) 7' GKR-9 (L-, and S-, P-band)

(2) 20' SKR-1 (L- and S-band)

(4) Receiver stations

(3) General purpose recording stations

(1) Special purpose recording station

(1) Telemetry van

(1) 7' GKR-9A antenna (L- and S-band)

(2) Analog instrumentation tape recorders

(1) PCM decommutator

(2) PDM/PAM demultiplexers

Airborne Telemetry System

(2) P-3A aircraft equipped with:

5-beam phased-array antenna (high and low S-band)

On-board record, separation, and display

Cinetheodolites

Twelve fixed stations

Measures target motion in the x, y, and z axis' with two or more stations

Standard of comparison for other metric instrumentation

Attitude data such a pitch, yaw, and roll

Cinesextants

Six mobile systems

Support system for mounting of camera used in target tracking and data acquisition.

Four platform mounting surfaces capable of carrying up to 250 lbs. each.

Picture taking rate up to 400 picture/second

Film sizes of 16mm, 36mm, and 70mm

FACILITY/CAPABILITY TITLE: Sea Test Range

Surveillance

Overlapping air/surface surveillance of inner and outer sea test range areas.

(3) AN/FPS-114 surface surveillance radars (San Nicolas Island, Santa Cruz Island, and Laguna Peak)

(1) AN/SPS-10 surface surveillance radar (Point Mugu)

(1) AN/ARSR-1 air surveillance radar (San Nicolas Island)

(1) Automated Range Surveillance System (ARSS)

Integrates data from multiple on- and off-range radars

Accepts surveillance radar data from VAFB, FACSFAC San Diego

and other inputs to surveillance radar grid

NTDS precision and surveillance radar displays

Up to 256 tracks (1,000 ft nominal accuracy)

Composite real-time display of all detected participants/intruders

Communications

HF, VHF, UHF, microwave, fiber optics

Secure/nonsecure

Voice/data transmission

Target Control

(6) Integrated Target Control System (ITCS) air/surface targets

(2) ITCS Universal Control Console (UCC) air targets

(2) EATS air/surface targets

(14) Preprogrammed targets (includes 2 VANDAL targets)

Note: The Sea Test Range is scheduled to be the first DOD range to receive the Next Generation Target Control System (NGTCS), a joint-service development.

Airborne capabilities include:

(5) Instrumentation P-3A aircraft

Area Clearance, Extended Area Test System (EATS) tracking, telemetry reception and retransmission, UHF communications relay, command control, cast glance and streak photography, sonobuoy launch, air-launched deep ocean transponder, sonobuoy missile impact location system scoring, Harpoon launch, Harpoon flight termination, and flare drop.

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FACILITY/CAPABILITY TITLE: Sea Test Range

Supporting Instrumentation/Services

- Range Scheduling Office
- Range Safety Office (Service provided to multiple MRTFB/training ranges)
- Three operations control rooms (secure/nonsecure)
- Battle Management Interoperability Center (BMIC)
- Range Timing Centers
- Western Area Frequency Coordinator (for all DOD agencies in Southern California area)
- Frequency monitoring and control
- Geophysical measurements
- Ground weapon/target launch complexes (Point Mugu and San Nicolas Island)
- Three airborne target launch platforms
- Surface target presentations (fully augmented)
- Surface craft
 - Boundary boat operations
 - Weapon/target launch and recovery
- Ordnance handling and storage
- Photographic services

KEYWORDS:

Sea Test Range (STR); Battle Management Interoperability Center (BMIC); Extended Area Test Systems (EATS)
Global Positioning System (GPS); Master Operations Control Station (MOCS); Ground Interrogation Station (GIS);
San Nicolas Island (SNI); Santa Cruz Island (SCI); antisurface warfare (ASUW); antiair warfare (AAW);
Joint Interrange Microwave System (JMS); Internetted Range Interactive Simulation (IRIS); Southern California Offshore Range
(SOAR) ; test and evaluation (T&E); antisubmarine warfare (ASW), Integrated Target Control System (ITCS); Universal Control
Console (UCC).

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Sea Test Range

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor*							232,575	184,100
	Test Hours*	4,403	4,787	3,543	3,505	3,128	2,624	2,488	2,177
	Missions	1,048	977	895	916	789	657	614	529
EC	Direct Labor*							6,475	9,100
	Test Hours*	167	181	134	133	118	99	70	105
	Missions	39	36	33	34	29	24	17	25
Armament/Weapons	Direct Labor*							584,304	499,321
	Test Hours*	10,677	11,609	8,593	8,500	7,586	6,363	5,817	5,483
	Missions	2,544	2,371	2,171	2,223	1,914	1,593	1,437	1,332
Other T&E	Direct Labor*							523,775	451,850
	Test Hours*	10,356	11,260	8,335	8,244	7,358	6,171	5,607	5,351
	Missions	2,465	2,298	2,104	2,144	1,855	1,544	1,384	1,299
Other	Direct Labor								
	Test Hours								
	Missions								

* To calculate the % of T&E labor and test hours, use the same values as shown on this chart. The hours shown above do not contain any T&D.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Sea Test Range

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor							232,575	184,100
	Test Hours	4,403	4,787	3,543	3,505	3,128	2,624	2,488	2,177
	Missions	1,048	977	895	916	789	657	614	529
EC	Direct Labor							6,475	9,100
	Test Hours	167	181	134	133	118	99	70	105
	Missions	39	36	33	34	29	24	17	25
Armament/Weapons	Direct Labor							584,304	499,321
	Test Hours	10,677	11,609	8,593	8,500	7,586	6,363	5,817	5,483
	Missions	2,544	2,371	2,171	2,223	1,914	1,593	1,437	1,332
Other T&E	Direct Labor							523,775	451,850
	Test Hours	10,356	11,260	8,335	8,244	7,358	6,171	5,607	5,351
	Missions	2,465	2,298	2,104	2,144	1,855	1,544	1,384	1,299
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Sea Test Range

ANNUAL HOURS OF DOWNTIME (1) 936
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) 2.6
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) 21.4

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4)	(5)	(6)	(7)	(8)
Air-Air	4 IS HIST AVERAGE	1,796	1,796	38,434
Surf-Air				
Air-Surf				
Surf-Srf				
				ANNUAL UNCONSTRAINED CAPACITY (9) 14,028,556

"Typical"

TOTAL 1796

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? YES

If yes, explain: Safety - safety hazard patterns can limit the number of simultaneous tests that can be executed. For example, Tomahawk, due to its range precludes other tests from occurring.

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Sea Test Range

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	21	22	21	22	22	23	23
Enlisted	100	60	55	51	50	50	50
Civilian	769	742	716	689	662	635	633
Contractor	162	162	151	150	149	149	149
Total	1052	995	943	912	884	858	856

Total Square Footage: 746.721Test Area Square Footage: 587.648Office Space Square Footage: 159.073Tonnage of Equipment: 823Volume of Equipment: 524.981Annual Maintenance Cost: \$3.03MEstimated Moving Cost: \$787.960.000

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FACILITY/CAPABILITY TITLE: Sea Test Range

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
5.10M	8.66M	7.02M	7.24M	10.90M	10.10M	6.17M
14.26M	12.25M	12.93M	16.51M	1.37M	0.0M	0.0M

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FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Sea Test Range

AGE: 20 Yrs.

REPLACEMENT VALUE: B&SE* \$685.1M includes equipment.

MAINTENANCE AND REPAIR BACKLOG: No serious deficiencies exist. Sea Range buildings and mechanical equipment (power, air conditioning, etc.) that support Range instrumentation: \$6.0M. Repair and condition of Sea Range instrumentation and equipment is good—maintenance and repair backlog is minimal at about \$6.0M. (*Note: In “Replacement Value” B&SE means buildings and support equipment. *Equip means Range instrumentation, processing, and display equipment.

DATE OF LAST UPGRADE: 4/21/94

NATURE OF LAST UPGRADE: Above date refers to FY94. Upgrades are funded and implemented yearly. Range instrumentation systems (telemetry, radar tracking, data processing, control, and display and communications systems) were upgraded to modernize instrumentation and to reduce operating and maintenance costs. Range facilities (buildings and support equipment) underwent power and air conditioning upgrades.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: Sea Range Improvement And Modernization

TOTAL PROGRAMMED AMOUNT: \$7.0M

SUMMARY DESCRIPTION: Sea Range instrumentation systems (telemetry, radar tracking, control, display, data processing, and communication systems, and related systems) will be upgraded and modernized to improve maintainability and reduce cost of operation. Generally improves ability to meet customer weapon systems test requirements.

2. UPGRADE TITLE: Sea Range Facilities Upgrade

TOTAL PROGRAMMED AMOUNT: \$2.0M

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FACILITY/CAPABILITY TITLE: Sea Test Range

3. UPGRADE TITLE: Replacement Of Magazine Door

TOTAL PROGRAMMED AMOUNT: \$578K

4. UPGRADE TITLE: Replacement Of Ordnance Assembly Building Roll-Up And Personnel Doors

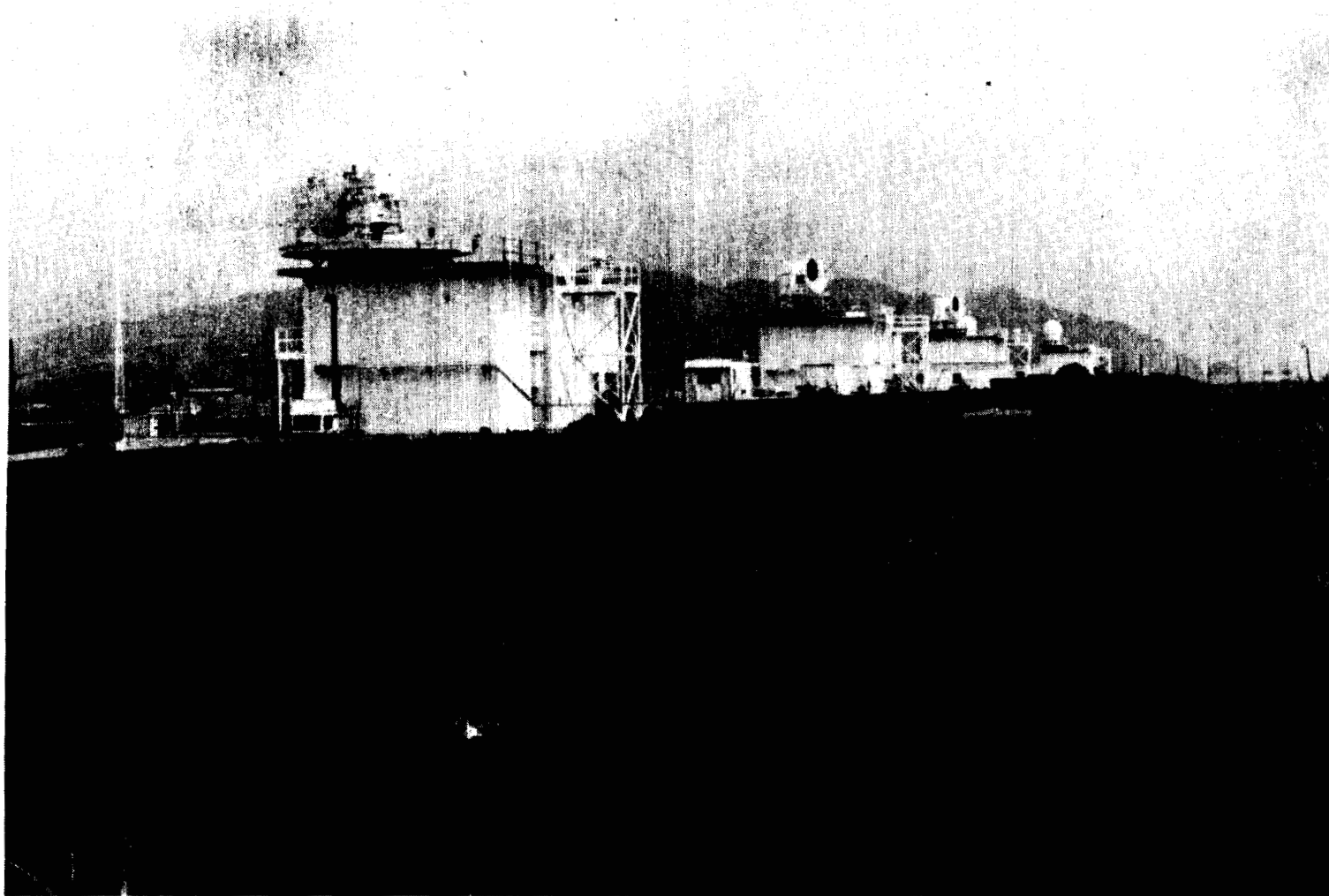
TOTAL PROGRAMMED AMOUNT: \$200K

SUMMARY DESCRIPTION: Sea Range facilities consist of the buildings, structures, and mechanical support equipment necessary to operate the instrumentation, processing, and control and display equipment. This funding covers various repairs and improvements to buildings, structures, and instrumentation support equipment.

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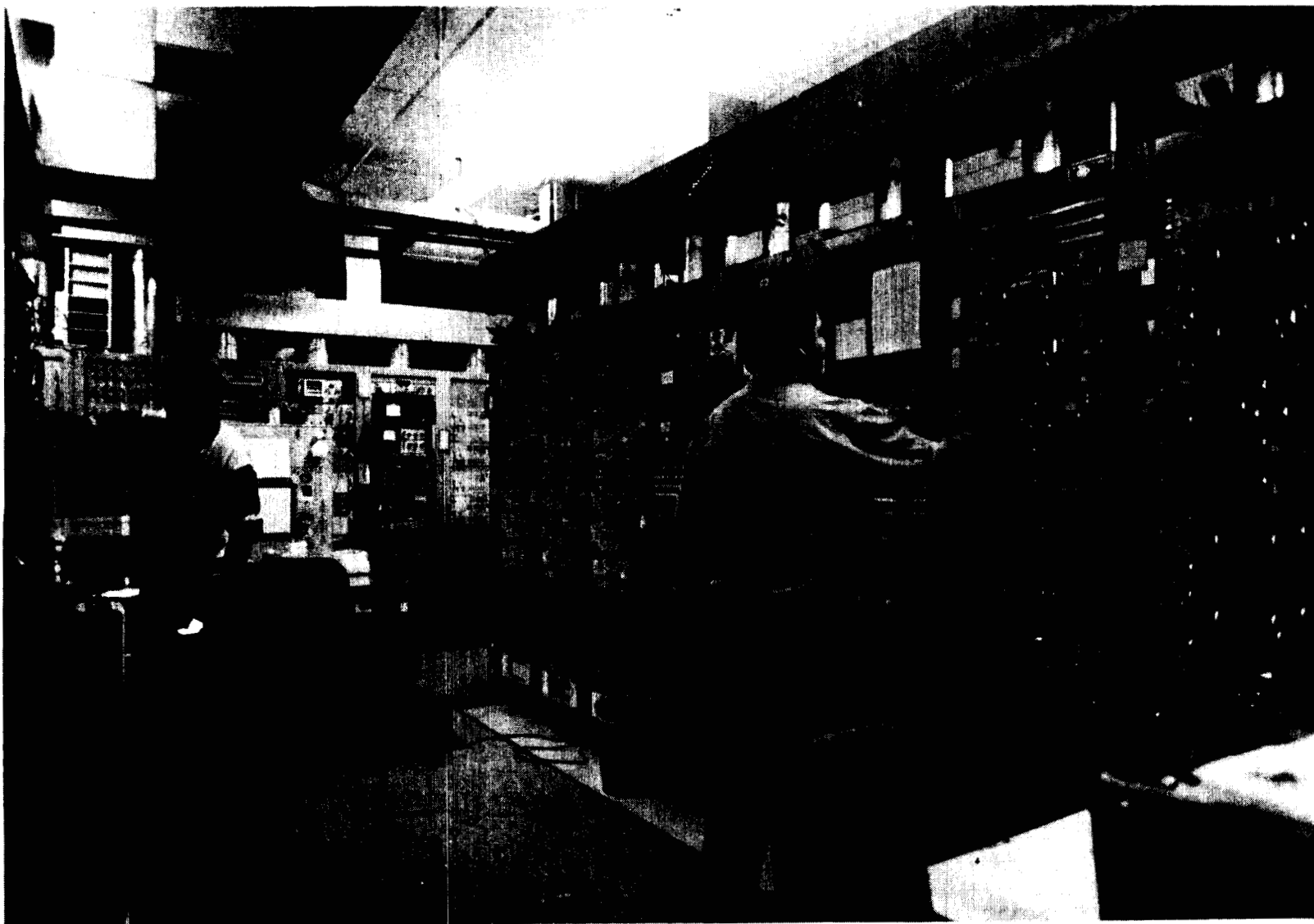
ACTIVITY UIC: 63126



AN/FPS-16 Metric Tracking Radars



Area Frequency Management Control Center

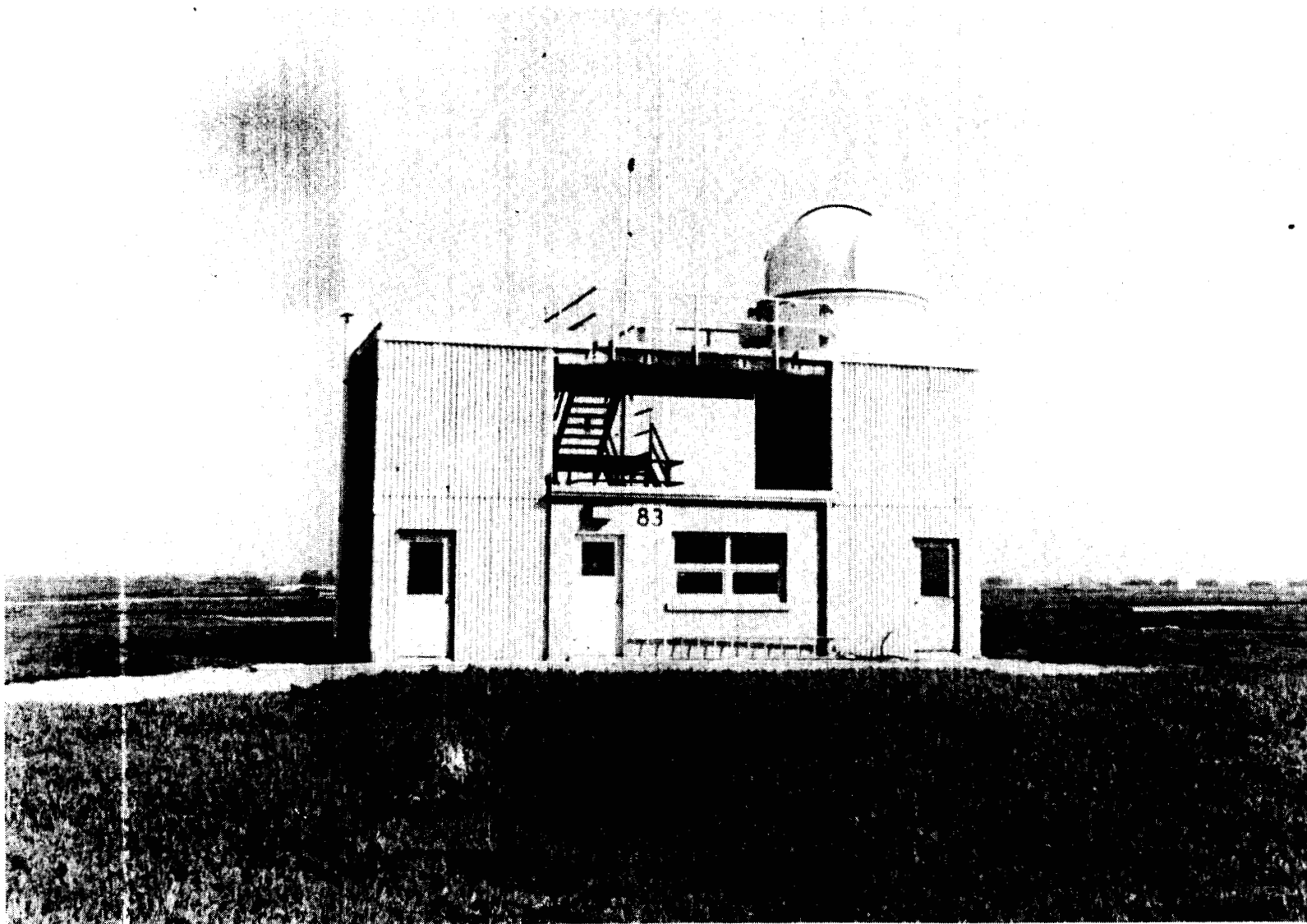


Telemetry Data Collection Facility

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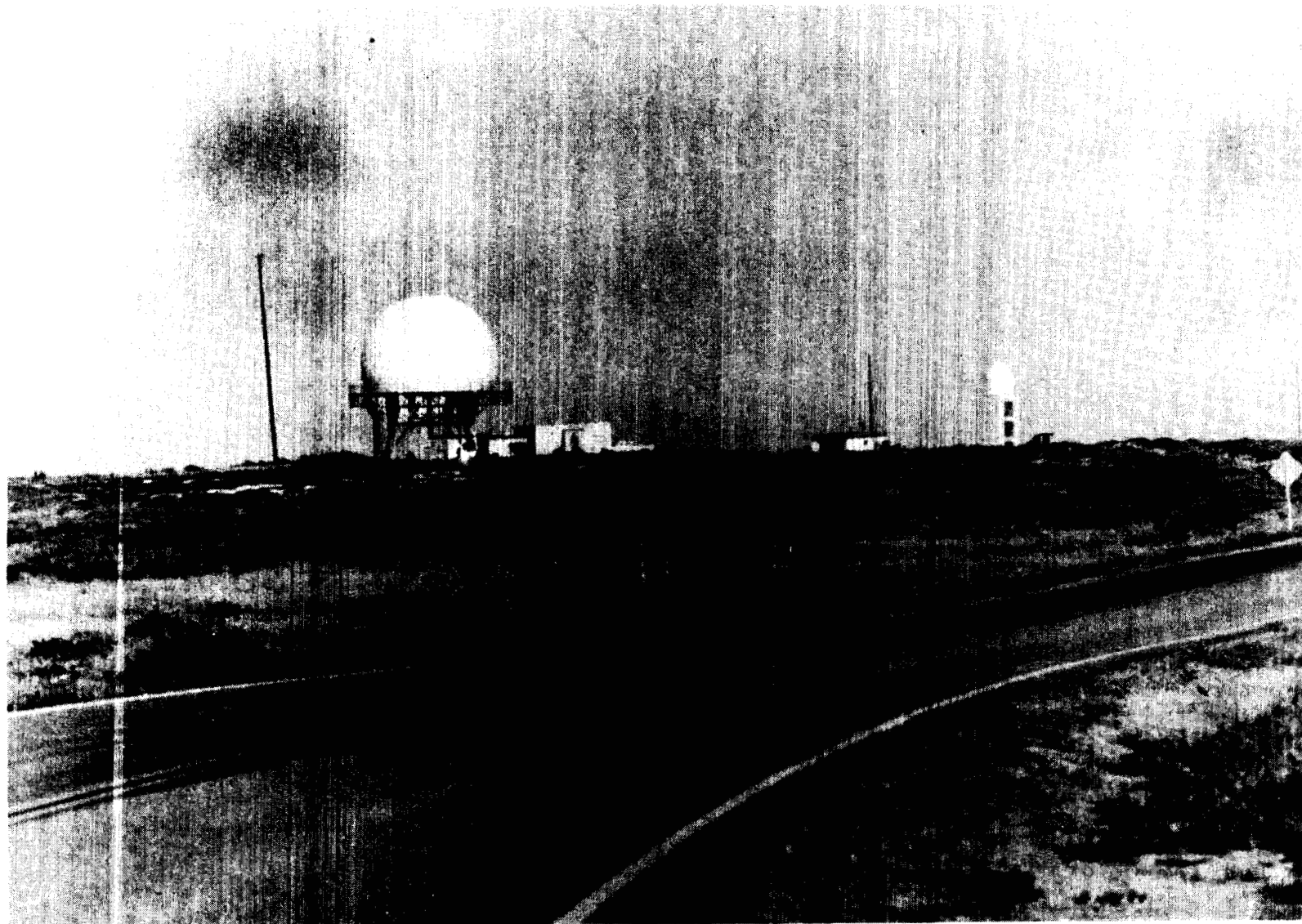
ACTIVITY UIC: 63126



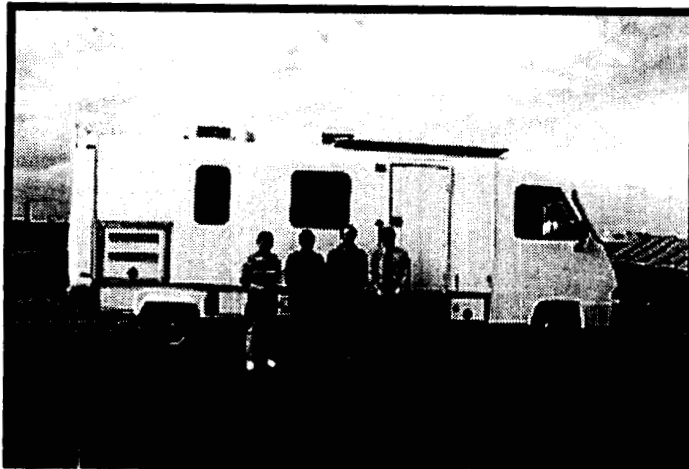
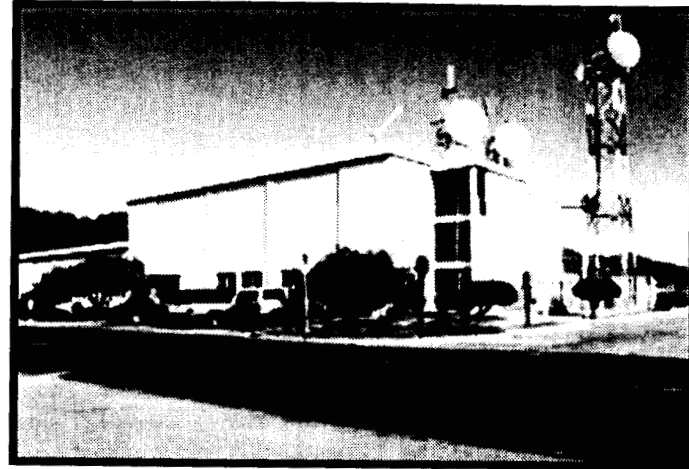
Photographic Instrumentation

285

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Surveillance Radars (Building 176)

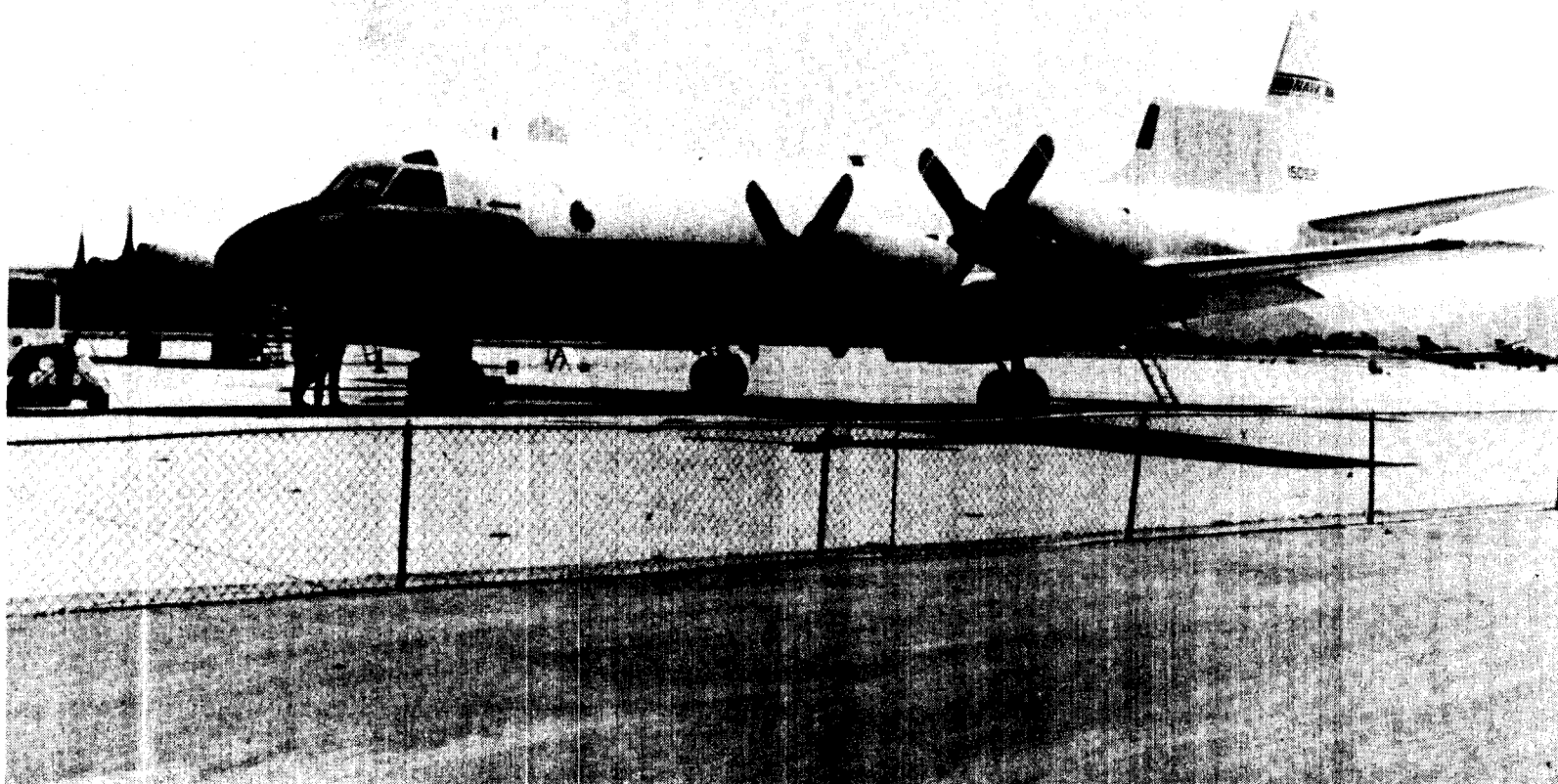


Communications

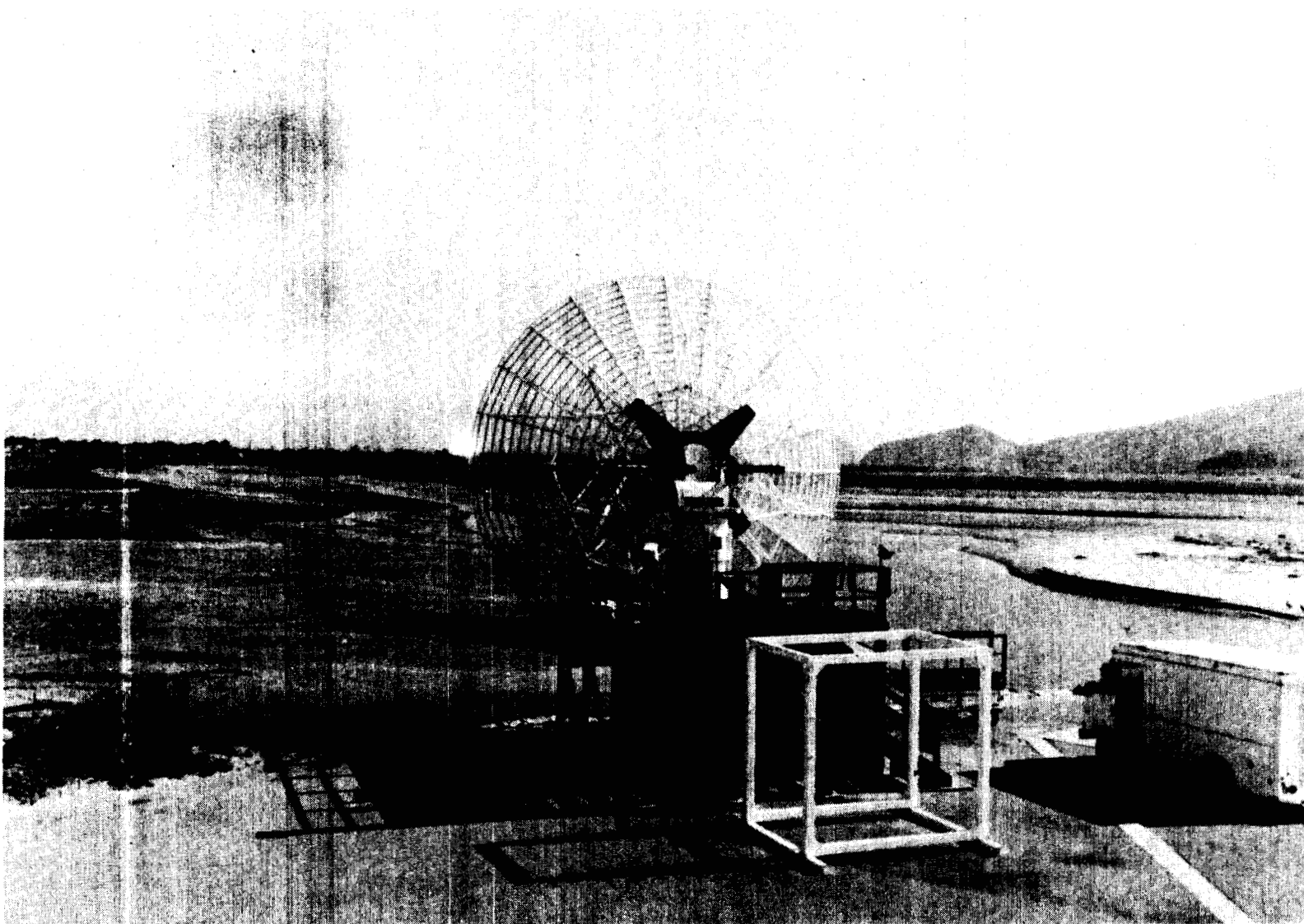
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P-3 Airborne Instrumentation Stations



Antenna Test Range

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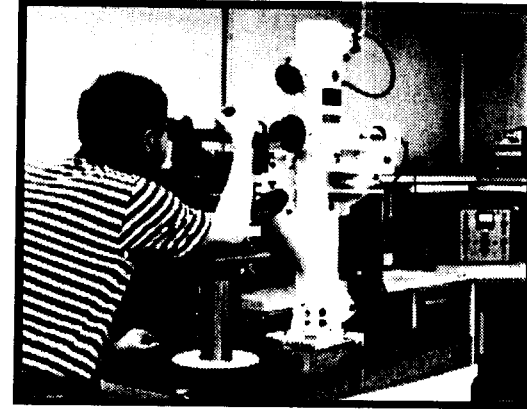
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Tab 27: Surface Targets Complex

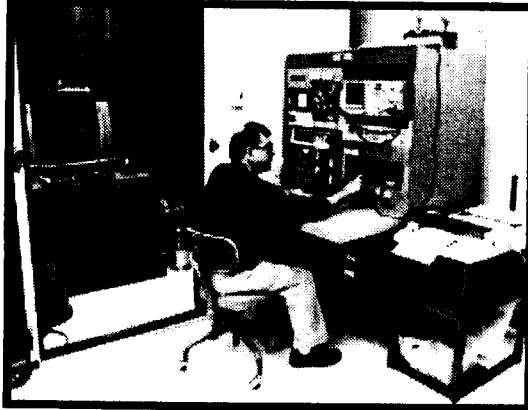
INDUCTION CENTER



OPTICAL CALIBRATION



PHYSICAL DIMENSIONAL



ELECTRICAL CALIBRATION



Calibration Laboratories

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Surface Targets Complex

Origin Date: 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63126</u>	
T&E TEST FACILITY CATEGORY: <u>OAR/DMS/IL</u>		
	<u>T&E</u>	<u>S&T</u>
	<u>D&E</u>	<u>IE</u>
	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE: <u>100</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)		
Air Vehicles		
Armament/Weapons	<u>60</u>	
EC	<u>5</u>	
Other	<u>35</u>	
Total in Breakout Must Equal "Percentage Use" On First Line		

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Surface Targets Complex

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The Surface Targets Systems Complex is a component of NAWCWPNS that resides as a tenant at NCBC, Port Hueneme, Calif. Mission includes all surface targets but primary focus is on seaborne targets. Provides Navy lead for full life-cycle support of seaborne target systems. Functions include development, T&E, operations, maintenance, in-service engineering, and logistics support. Provides unique threat-representative target systems tailored to needs of weapon systems test requirements. Cognizant Navy lead for Seaborne Powered Targets (SEPTARS), target ships, towed targets, and augmentation systems. Designated Reliance lead for seaborne target systems. Also life-cycle lead for seaborne target augmentation systems, including command control, radar and infrared signature enhancement, radar and countermeasures simulators, plus scoring systems. Includes deep-water harbor facility, Seaborne Targets Development Lab, electronic and mechanical prototype fabrication capability, and indoor and outside areas for maintenance and storage.

Mission functions include:

- Develop surface targets, target systems, target control, and augmentation devices
- Operate and maintain surface targets, subsystems, target controls, and augmentation devices on the NAWCWPNS Sea Test Range
- Serves as cognizant field activity to the Naval Sea Systems Command (NAVSEA) for seaborne targets worldwide
- Provides seaborne target services at other ranges and operating sites as requested
- Maintains a capability for depot-level repair of seaborne targets
- Provides the procurement/fabrication of assigned seaborne targets, modification kits, and augmentation systems
- Provides reliability, quality assurance, and configuration and data management in ensuring compatibility and conformity for surface targets, subsystems, target control systems, and augmentation devices.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

Targets are remote controlled using the ITCS, VEGA and UHF systems that provide command control, telemetry, and tracking capability. These systems are interconnected to Point Mugu, the Channel Islands, San Nicolas Island, and Laguna Peak through

FACILITY/CAPABILITY TITLE: Surface Targets Complex

microwave and fiber optics, thus extending range, control, and data collection capabilities. These resources are also available at China Lake, Puerto Rico, Pacific Missile Range Facility, Hawaii, and Wallops Island, providing a common interconnect for target services. Radar tracking, telemetry, navigation, and communications linkages between Point Mugu, Vandenberg Air Force Base, Edwards Air Force Base, China Lake, the Channel Islands, Laguna Peak, and San Nicolas Island are used via fiber optics and microwave for real-time position display and post-operation data reduction .

The Port Hueneme harbor facilities provide a physical interconnect to the Sea Test Range at Point Mugu for seaborne targets and with the Port Hueneme Division Naval Surface Warfare Center for development, test, and operation of the Self-Defense Test Ship (SDTS) facilities, which are unique to the NAWCWPNS Sea Test Range. This linkage is vital to the proposed BMDO use of seaborne targets.

A physical/electronic interconnect for target systems engineering is provided to the Weapons HWIL Laboratories (Harpoon, Tomahawk, SLAM) for developing target modeling simulations and models; to the Radar Reflectivity Laboratory for radar cross-section measurement critical to the target/threat validation process; and between the ITCS Laboratory, Target System Development Laboratory, Software Validation/Verification facility, and Operator Training Simulator facility for target and target system design, development, test and evaluation, and training.

Electronic data interconnect for target logistics management between Point Mugu and Field Service Representatives at Norfolk, Va.; Radar Bomb Scoring Unit, Spokane Wash.; Naval Air Facility, Kadina, Okinawa; Naval Air Station, Sigonella, Italy; and NAB Little Creek, Va. Additionally, documentation and support services are linked to China Lake, Calif.; Dugway Proving Grounds, Utah; Aberdeen, Md.; Eglin Air Force Base, Fla.; White Sands, N. Mex.; Wallops Island, Va.; Pacific Range Missile Facility, Hawaii; Atlantic Fleet Training Facility, Puerto Rico; and Yuma, Ariz.

Harbor facilities at Port Hueneme provide ready access to NAWCWPNS Sea Test Range at Point Mugu and links with NAWCWPNS China Lake for ARM target resources. Working with Port Hueneme Division NSWC to develop, support, and operate the SDTS. SDTS, as a remotely controlled ship to test shipboard weapon systems, is a unique test asset located here for access to the NAWCWPNS Sea Test Range. Proposed as lead activity for seaborne launch of targets to evaluate BMDO systems.

TYPE OF TEST SUPPORTED:

EC, armament/weapons

FACILITY/CAPABILITY TITLE: Surface Targets Complex

SUMMARY OF TECHNICAL CAPABILITIES:

Navy lead field activity for life-cycle support of seaborne targets. Operational inventory includes two classes of SEPTARS (18 foot and 56 foot). Twelve are in active inventory, and 32 inactive in reserve for use here or at other Navy activities worldwide. Targets ships include both powered (MST) and nonpowered vessels. Five are in active inventory, with six inactive. One of these, the MST, was developed locally under CTEIP funding as the only target ship designed from scratch to be a target. It is also the only known self-propelled target ship. All others are converted combatants. MST is also the only self-propelled target ship capable of 13+ knots and the ability to be outfitted with various configurations of threat-representative superstructure. Another 38 target vessels are available, including towed targets and specially developed barges. Augmentation is available to enhance radar and infrared signatures, provide unique command control, measure weapon intercepts, and enhance realism of the electromagnetic environment through radar and countermeasures threat simulators.

Instrumentation/Assets: The following section describes the fundamental capabilities of the seaborne target systems available at NAWCWPNS Point Mugu.

QST-35/35A Capabilities. The QST-35/35A SEPTAR is a multipurpose seaborne powered target designed to provide a remotely controlled target that can be augmented to represent various threat scenarios. It can operate at approximately 30 knots in sea state 1 and can also perform its mission in sea state 3 at approximately 15 knots. The QST-35 is currently operational; the QST-35A will gradually be introduced as a replacement as the QST-35s are expended.

Characteristic	Metric Measurement	English Equivalent
Length	17m	56 ft
Beam	4m	14 ft
Freeboard	1m	3 ft
Draft	74cm	29 in
Power Plant	4 Mercury Marine: V8 (330hp)	
Maximum Speed	30 kts	

FACILITY/CAPABILITY TITLE: Surface Targets Complex

The QST-35/35A is 17 meters (56 ft) long and has a beam of 4 meters (14 ft) and, through the use of various target augmentation systems provided by NAWCWPNS, can be enhanced to represent numerous surface craft of substantially larger sizes. Additionally, through the use of other types of augmentation, the QST-35/35A can simulate ECM and RF emissions, enhance radar cross section and IR signatures, and record miss distance information.

The QST-35 also supports tow-target operational requirements with the Improved Surface Tow Target (ISTT). Due to the multi-function capability of the QST-35, it is considered the "workhorse" of the Seaborne Target community.

The QST-35A is functionally equivalent to the QST-35 with the same performance features and augmentation capability.

QST-35 Target Augmentation Systems (TAS) are devices used with, in, or on a target to enhance threat realism. Systems change with time depending on weapon systems inventory and usage. New systems evolve and are developed based on RDT&E and training requirements.

The augmentation available for use or under evaluation for use on the QST-35/35A is listed in this section.

- Radar Cross-Section Enhancement (RTAS)
- Active Emitter Simulation (AETAS)
 - ISTE
 - STEK
 - IHARM
 - ARME
 - HF Beacons
- Electronic Countermeasures Simulation (ECMTAS)
 - AN/ULQ-21 (V)
 - RBOC/SRBOC Chaff Launcher

FACILITY/CAPABILITY TITLE: Surface Targets Complex

IR Signature Enhancement/Countermeasure Simulation (IR/IRCMTAS)

- Modified/Customized Space Heaters. These devices are commercial-type space heaters that are customized and installed to create an IR signature.
- Infrared Flares. These devices can be used to simulate missile launches.

Miss Distance Information (STAS)

- AN/DSQ-50 (Noncooperative Scalar). Used to measure the distance by which a missile or projectile misses the targets. Under evaluation for use.
- AN/DRO-4 (Cooperative Scalar). Used to measure the distance by which a missile or projectile misses the target.
- High-Speed Camera. Capable of recording actual weapon approach and reaction to the target.

QST-35/35A Applications. The QST-35/35A is also used to support requirements associated with the following weapons and/or weapon systems.

- HARM
- Shrike
- Standard Missile
- Mk-86 GFCS
- Aegis*
- Fleet Surface Gunnery Exercises

** Used in both maneuvering target mode and as a stand-off jammer.*

The QST-35 is also used to tow the ISTT, to conserve QST-35s, allowing live-fire application to the ISTT. The QST-35 shown in this Guide is equipped with a navigation radar and communications capability not normally used in target operations.

FACILITY/CAPABILITY TITLE: Surface Targets Complex

The QST-35 currently supports operations at the following sites:

NAWCWPNS	Point Mugu, Calif.
PMRF	Barking Sands, Hi.
NAWCAD	Patuxent River, Md.
AFWTF	Roosevelt Roads, P.R.
MCAS	Cherry Point, N.C.
VC-6	Norfolk, Va.
VC-6	Mayport, Fla.
COMFLEACT	Okinawa, Japan (FY94)
NAMFI	Crete

Target Ship Capabilities: Historically, the tri-services have utilized decommissioned Navy vessels in a nonpropelled mode to present ship-sized targets for weapon systems test and evaluation. A number of these hulks are currently being utilized for special projects and testing. These platforms vary in size and are limited only by the availability within the inactive Fleet. Due to their size and original mission as warships, they have nearly infinite flexibility to support payloads and often carry sophisticated, high-powered radar and countermeasures threat simulators. They are also virtually unlimited in the amount of time they can stay at sea for test support.

Mobile Ship Target: Traditional target ships still fill a valid role. However, current environmental concerns, as well as a requirement for more realistic threat presentations, have resulted in the development of an environmentally clean, self-propelled 80-meter MST. The MST is environmentally clean, capable of speeds in excess of 12 knots in the open ocean, has enhanced survivability, fulfills RDT&E requirements for a mobile ship-sized target, and is more economical than nonmobile hulks.

The prototype MST was developed, engineered, and tested at NAWCWPNS. Variants of this platform are currently under design at NAWCWPNS. They include a 40 meter version to replicate newer threats recognized as higher priority with the emphasis on littoral warfare. The newly emphasized arena of littoral warfare places greater emphasis on smaller craft available within third-world countries operating in coastal waters out to approximately 100 nautical miles.

Another configuration of the MST under development at NAWCWPNS is a launch platform for aerial targets. This will enable far more realistic scenarios as the launch platform can be unmanned to allow engagements with weapons firing platforms, with the target launch platform in the weapons hazard pattern.

FACILITY/CAPABILITY TITLE: Surface Targets Complex

Target Ship Augmentation: Similar to the target boats described earlier, target ships can be configured with a virtually unlimited array of augmentation systems for either radar or infrared signature enhancement, addition of radar or countermeasures threat simulators, or any number of systems to capture vital information on weapon systems approach and intercept. In addition to the traditional electronic scoring systems, target ships are ideally suited to accommodate film and video camera arrays to record events leading up to intercept, as well as intercept and impact itself. Often significant discoveries are made from studying the events immediately after impact as well.

Target Ship Applications. Target ships are also used to support requirements associated with the following weapons and/or weapon systems.

- Tomahawk
- Harpoon
- SLAM
- HARM
- Maverick
- Walleye
- Shrike
- Standard Missile
 - MK-86 GFCS
 - Aegis

QST-33 Capabilities: The QST-33 SEPTAR provides a medium- to high-speed surface target with a high degree of maneuverability via remote control. The QST-33 is 5.5 meters (18 ft) in length with an approximate weight of 1650 kg (3650 lbs), and is capable of operating between 20 and 40 knots for a duration of 4 to 6 hours before refueling, if necessary. The QST-33 can accommodate various augmentations, including radar cross-section enhancement (RTAS). The small, lightweight attributes of the QST-33 lend themselves to operations where a high-speed surface craft simulation is required. The QST-33 can safely operate in sea state 1 at approximately 40 knots, and in sea state 3 at approximately 10 knots.

FACILITY/CAPABILITY TITLE: Surface Targets Complex

Characteristic	Metric Measurement	English Equivalent
Length	5.5m	18 ft
Beam	2.2m	7 ft 4 in
Freeboard	46cm	1 ft 6 in
Draft	31cm	1 ft
Power Plant	1 Mercury Marine: V8 (330hp)	
Maximum Speed	40 kts	

QST-33 Augmentation: Target Augmentation Systems (TAS) are devices used with, in, or on a target to enhance threat realism. The TAS available for use on the QST-33 are defined in this section.

- Radar Cross-Section Enhancement (RTAS)
 - Corner Reflector. Hemispherical 20-element passive radar augmentation, mast mounted
 - Corner Reflector. 8-element passive radar augmentation
 - Corner Reflector. 8-element passive radar augmentation

The QST-33 is equipped with the 36 cm corner reflector.

QST-33 Application: The QST-33 has been used to support requirements associated with the following weapons and/or weapon systems:

- MK-76 GFCS
- Surface guns
- Bombs
- Small arms
- Harpoon

FACILITY/CAPABILITY TITLE: Surface Targets Complex

The QST-33 currently supports operations at the following sites through NAWCWPNS Point Mugu technical and logistics support:

NAWCWPNS	Point Mugu, Calif.
MCAS	Cherry Point, N.C.
PMRF	Barking Sands, Hi.
VC-6	Norfolk, Va.
NAWCAD	Patuxent River, Md.

Improved Surface Tow Target (ISTT) Capabilities: The ISTT was designed to provide the user with a tow target, more economical than the QST-35, capable of simulating various threat scenarios. It is an 8.5 meter (28 ft) fiberglass-constructed target capable of supporting operations while being towed behind a QST-35/35A up to 25 knots in a sea state 1; and 10 knots in a sea state 3. The ISTT allows the user to conduct direct fire and/or bomb drop operations. Additionally, the ISTT can presently be configured to accomplish radar cross section and infrared signature enhancements. The ISTT is currently being considered to support various other augmentation, such as RF emissions and miss distance information.

ISTT Augmentation: The augmentation available for use on the ISTT is outlined in this section.

- Radar Cross-Section Enhancement (RTAS)
 - Corner Reflector. Hemispherical 20-element passive radar augmentation, mast mounted
 - Corner Reflector. 8-element passive radar augmentation
 - Corner Reflector. 8-element passive radar augmentation
- Apparent Size/Shape Enhancement (EOTAS)
 - Visual Recognition Banners. Provides a visual means by which the ISTT can be more easily identified.
 - Customized Augmentation (based on users' requirements). Various types of prototype EOTAS have been designed and successfully used.

FACILITY/CAPABILITY TITLE: Surface Targets Complex

The ISTT has the potential for supporting the following augmentation areas.

- Active Emitter Simulation (AETAS)
- IR signature enhancement/countermeasures simulation (IRTAS/IRCMTAS). No standard IRTAS exists for the ISTT at this time. However, systems have been (and can be) tailored to unique user requirements.

ISTT Application: The ISTT has been used to support requirements associated with the following weapons and/or weapon systems:

- MK-76 FCS
- Rockets
- Fleet surface gunnery exercises
- IR Maverick missile system

It is also technically feasible to use the ISTT to conduct Shrike missile system operations.

The ISTT currently supports operations at the following sites through NAWCWPNS Point Mugu technical and logistics support:

NAWCWPNS	Poin Mugu, Calif.
PMRF	Barking Sands, Hi.
NAWCAD	Patuxent River, Md.
AFWTF	Roosevelt Roads, P.R.
MCAS	Cherry Point, N.C.
VC6	Norfolk, Va.

The ISTT has multiple capabilities beyond what has been presented within this brochure. We are prepared to design, develop, install, and test various augmentation devices aboard the ISTT.

Trimaran Capabilities The Trimaran surface tow target is designed for surface and aerial gunnery training and visual/radar acquisition training. The Trimaran is a lightweight target, 4 meyers long with a 2-meter beam, which can be towed on relatively calm seas at speeds up to 30 knots.

FACILITY/CAPABILITY TITLE: Surface Targets Complex

Characteristic	Metric Measurement	English Equivalent
Length	4m	14 ft
Beam	2.4m	7 ft 10 in
Freeboard	31cm	1 ft
Draft	15cm	6 in
Power Plant	None	
Maximum Speed		30 kts

Trimaran towing speeds vary from ship to ship, as well as with sea states and chop. The following are maximum towing speeds for sea state with 3- to 4-foot swells:

- No chop 30 knots
- With sea state 20 to 30 knots
- Against sea state 15 to 18 knots
- Across sea state 18 to 24 knots

General usage of the Trimaran has been as a high-speed tow for gunnery practice.

Trimaran Augmentation Target Augmentation Systems (TAS) are suites of devices used with, in, or on a target to enhance threat realism.

- Radar Cross-Section Enhancement
 - Corner Reflector. Hemispherical 20-element passive radar augmentation
 - Corner Reflector. 8-element passive radar augmentation
 - Corner Reflector. 8-element passive radar augmentation

FACILITY/CAPABILITY TITLE: Surface Targets Complex

Trimaran Application The Trimaran has been used to support requirements associated with the following weapons.

- Fleet Surface Gunnery Exercises

The Trimaran currently supports operations at the following sites:

AFWTF	Roosevelt Roads, P.R.
PACMISRANFAC	Barking Sands, Hi.
NAWCWPNS	Point Mugu, Calif.
MCAS	Cherry Point, N.C.
NAWCAD	PATUXENT RIVER, Md.
VC-6	Norfolk, Va.

Williams Sled Capabilities The Williams sled is designed exclusively for surface gunnery training. Its tubular framework is first mounted on two pontoons, after which wire fabric screens are mounted to the upper quarter to provide radar augmentation. During gunnery training the Williams sled is towed at 10 ktnos by a seagoing tug. The tow line is approximately 1,524 meters (5,000 ft) in length, of 1-1/2" double-braided nylon line.

Characteristic	Metric Measurement	English Equivalent
Length	8.5m	27 ft 9 in
Beam	4m	up to 14 ft
Freeboard	5m	16 ft
Draft	36cm	14 in
Weight	409kg	900 lbs

Radar signature is dependent on the passive radar augmentation installed on the target. No typical signature data are available.

Williams Sled Augmentation TAS are suites or devices used with, in, or on a target to enhance threat realism. Systems change with time depending on weapon systems inventory and usage. New systems evolve and are developed based on RDT&E and training requirements.

FACILITY/CAPABILITY TITLE: Surface Targets Complex

The TAS available for use on the Williams sled are defined in this section.

- Available TAS include:
 - Radar Cross Section Enhancement
36 cm Corner Reflector — Hemispherical 20-element passive radar augmentation
 - Emitter (STEK)
Certain emitters have been employed on the Williams sled, but there is no established portable power source.
There is a plan for developing a power source that can be used with both the Williams sled and the ISTT.

Williams Sled Application The Williams sled has been used to support requirements associated with the following weapons.

- Fleet Surface Gunnery Exercises

The Williams sled currently supports operations at the following sites through NAWCWPNS Point Mugu technical and logistics support:

AFWTF
NAWCAD
NAWCWPNS

Roosevelt Roads, P.R.
Patuxent River, Md.
Point Mugu, Calif.

Floating At-Sea Target (FAST) Capabilities: The FAST is a polygon (icosahedron) shape of 20 equilateral triangular side panels. Approximate size is 165 cm (65 in) high by 165 cm (65 in) wide; the effect is equal to a 2 meter (6 ft) diameter. Each of the 20 panels has nine integral corner reflectors that are coated with conductive paint to provide a radar-reflective characteristic simulating the size of a destroyer or frigate-type vessel. The hull of the FAST consists of reflector panels that act as corner reflectors for radar signature augmentation and floatation panels.

FACILITY/CAPABILITY TITLE: Surface Targets Complex

Characteristic	Metric Measurement	English Equivalent
Height	165cm	65 in
Width	165cm	65 in
Weight	64kg	140 lbs
Volume	3130cc	191 cu ft
Draft	15cm	6 in

FAST Application The FAST, with the combination of the radar-reflective panels, produces a cross-section measurement of approximately 2,000 square meters at 16 to 18 GHz. The FAST is a reusable shipboard-assembled target, deployable and recoverable from any Navy ship in seas up to sea state 3. Once deployed, the FAST can be used as a target in seas of sea state 4 to 5, when overflown by attack aircraft. The FAST can also be used as a floating target for surface-to-surface gunnery training. In calm seas, the target is visible at a horizontal range of 3.5 nautical miles.

Weapons/Targets Application Matrix Each seaborne target system platform provides a "signature" to the weapon or sensor system that is enhanced by installation of TAS. The following table relates specific items of TAS to platforms for presentation to weapons and is based on experience, except where indicated as "under development" or "under evaluation".

TAS includes both active (emitting in the electromagnetic spectrum) and passive (reflective) systems. TAS applications are directly tied to seaborne target platforms, so this table principally provides options for augmentation.

FACILITY/CAPABILITY TITLE: Surface Targets Complex

SEABORNE TARGETS PLATFORMS						
WEAPONS	QST-35/35A	QST-33	ISTT	TRIMARAN	WILLIAMS SLED	SHIP TARGET
HARPOON	ISTE, 41cm ² CR					ISTE or MBE
Tomahawk						ISTE or MBE
HARM	ARME		41cm CR		41cm CR	ARME
SHRIKE	ARME or STEK		41cm CR, STEK ¹		ARME 41cm CR	ARME or STEK
LASER MAVERICK	Adaptable	36cm ² CR	Adaptable	Adaptable	Adaptable	Adaptable
IR MAVERICK	IR SOURCE	36cm CR, IR SOURCE	41cm CR, IR SOURCE	Adaptable	Adaptable	IR SOURCE
MK-76 FCS	Adaptable	36cm CR	41cm CR	Adaptable	Adaptable	
GUNS	Adaptable	36cm CR	41cm CR	Adaptable	Adaptable	
ROCKETS	Adaptable	36cm CR	41cm CR	Adaptable	Adaptable	
TOW	Adaptable	36cm CR	41cm CR	Adaptable	Adaptable	

Notes: ¹Under development. The ISTT requires a weather enclosure and a reliable electrical power source for active emitters, to be used only for (nonfiring operations) passive targeting requiring no antenna stabilization.

²Chart shows Corner Reflectors in metric sizes only. 36 cm is the preferred designation for the 14" CR; 41 cm identifies the 16" CR.

³Shaded areas denote nonfeasible usage.

KEYWORDS:

Anechoic chamber, radar cross section (RCS)).

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Surface Targets Complex

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor	3588	3675	3937	3762	4117	4112	4112	3500
	Test Hours	*	*	*	*	*	*	*	*
	Missions	**	**	**	**	**	**	**	**
Armament/Weapons	Direct Labor	68,162	69,825	74,813	71,488	78,233	78,138	78,138	66,500
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	196	190	183	156	291	179	190	261
Other T&E	Direct Labor	152,250	182,000	145,250	136,500	253,750	120,750	262,500	280,000
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	84	83	79	67	125	77	82	111
Other	Direct Labor								
	Test Hours								
	Missions								

* Test hours re not tracked for targets and are not specific (applicable) to workload in the area of targets. The number of hours required to prepare and present a target are dependent on the user and their parameters for that test—target performance, configuration, location, number of runs, time of day, number of targets, configuration, and readiness of the user equipment. A target test may include one or multiple types of targets. The indication of workload for targets and target systems is the number of target presentations identified by the number of missions.

** EC workload is normally performed as a subset of armament/weapons missions.



HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Surface Targets Complex

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	71,750	73,500	78,750	75,250	82,350	82,250	82,250	70,000
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	196	190	183	156	291	179	190	261
Other T&E	Direct Labor	152,250	182,000	145,250	136,500	253,750	120,750	262,500	280,000
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	84	83	79	67	125	77	82	111
Other	Direct Labor								
	Test Hours								
	Missions								

* Test hours are not tracked for targets and are not specific (applicable) to workload in the area of targets. The number of hours required to prepare and present a target are dependent on the user and their parameters for that test—target performance, configuration, location, number of runs, time of day, number of targets, configuration, and readiness of the user equipment. A target test may include one or multiple types of targets. The indication of workload for targets and target systems is the number of target presentations identified by the number of missions.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Surface Targets ComplexANNUAL HOURS OF DOWNTIME (1) 0AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) N/AAVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) N/A

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) N/A	(5) N/A	(6) N/A	(7) N/A	(8) N/A
				ANNUAL UNCONSTRAINED CAPACITY
				(9) N/A

"Typical"

TOTAL 0

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO. Targets capability is not limited by the same constraints as typical T&E facilities (maintenance, weather, darkness, holidays, safety or health considerations, commercial utility availability, etc.). Targets are operated around the clock and, due to the mildness of the local climate, throughout the four seasons without interruption. Due to the built-in flexibility of Point Mugu target facilities (e.g. mainland surface launch, San Nicolas Island surface launch, seaborne launch and airborne launch), infrequent locally severe weather is not a limiting factor. Although limited by the same time constraints as every other T&E facility (only 24 hours per day), the Point Mugu targets facility alone has demonstrated its surge capability through routine deployments to China Lake, Ca., Pacific Missile Range Facility, Hi., Atlantic Fleet Weapons Training Facility, P.R., White Sands Missile Range, N. Mex.. and the Gulf of Maine operating area.

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Surface Targets Complex

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0	0	0	0	0	0	0
Enlisted	0	0	0	0	0	0	0
Civilian	58	57	59	61	63	65	67
Contractor	19	20	20	21	21	22	22
Total	77	77	79	82	84	87	89

Total Square Footage: 54,900Test Area Square Footage: 52,375Tonnage of Equipment: 65.7Annual Maintenance Cost: \$105,242Office Space Square Footage: 2,525Volume of Equipment: 133,000Estimated Moving Cost: \$755,538

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T&E

ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Surface Targets Complex

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
371	541	1278	383	219	230	230
61	71	96	108	104	112	113

BRAC 95 DATA CALL #13

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T&E

ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Surface Targets Complex

AGE: 6 - 51 Yrs.

REPLACEMENT VALUE: \$1,506,203

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 10/30/92

NATURE OF LAST UPGRADE: Rehabilitated Work Spaces

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: P061 MILCON

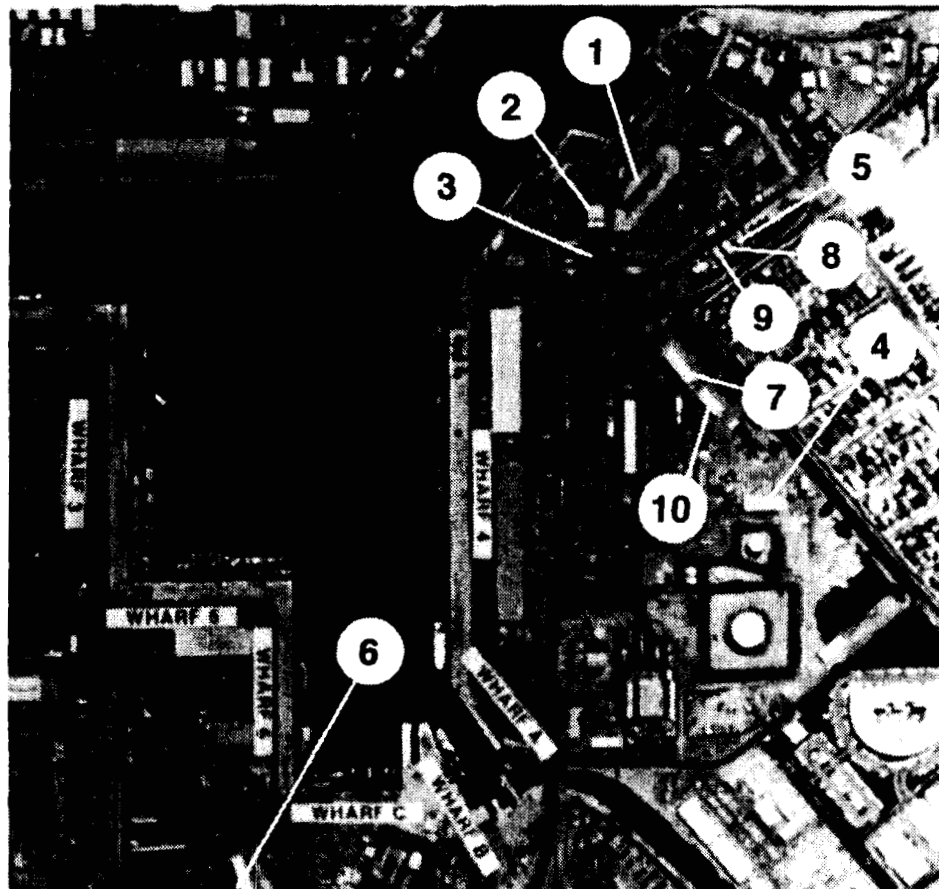
TOTAL PROGRAMMED AMOUNT: \$3.5M

SUMMARY DESCRIPTION: Construct New Surface Targets Laboratory

2. UPGRADE TITLE: Conversion of Building 1396

TOTAL PROGRAMMED AMOUNT: \$215,000

SUMMARY DESCRIPTION: Convert Building 1396 into RF Laboratory



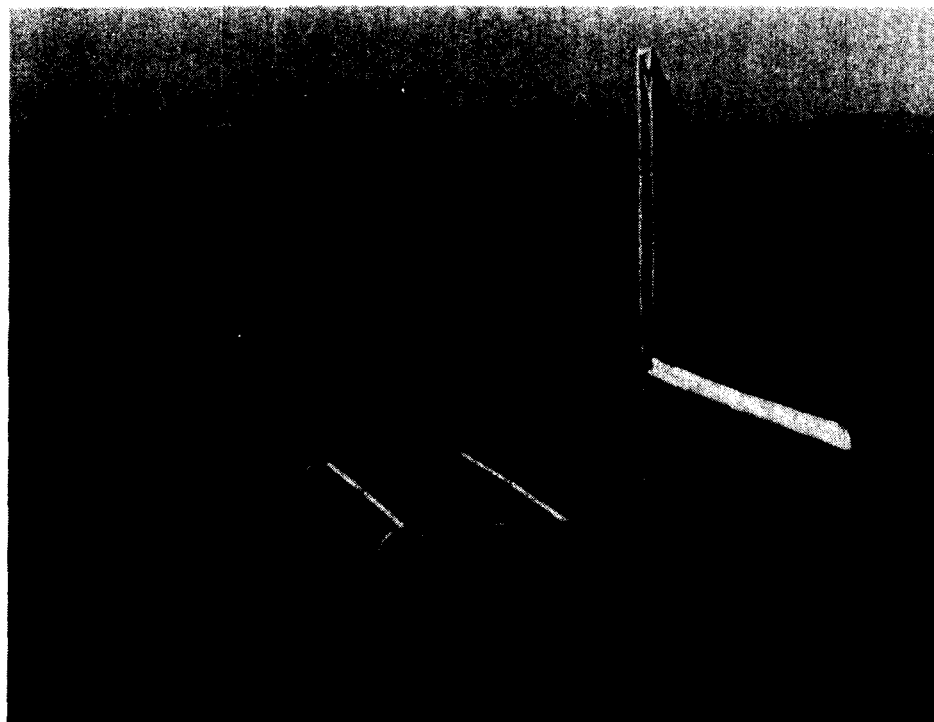
- | | | | |
|-----------|--|------------|-------------------|
| 1. B-465 | Surface Targets Operations/Maintenance | 6. B-517 | Targets Warehouse |
| 2. B-465A | Surface Targets Engineering Lab | 7. B-1396 | Targets Warehouse |
| 3. B-465B | Surface Targets Engineering Lab | 8. B-1403 | Targets Warehouse |
| 4. B-457 | Targets Radar Lab | 9. B-1404 | Targets Warehouse |
| 5. B-462 | Targets Radio/Comm Lab | 10. B-1405 | Targets Warehouse |

Target Facilities, Port Hueneme

BRAC 95 DATA CALL #13

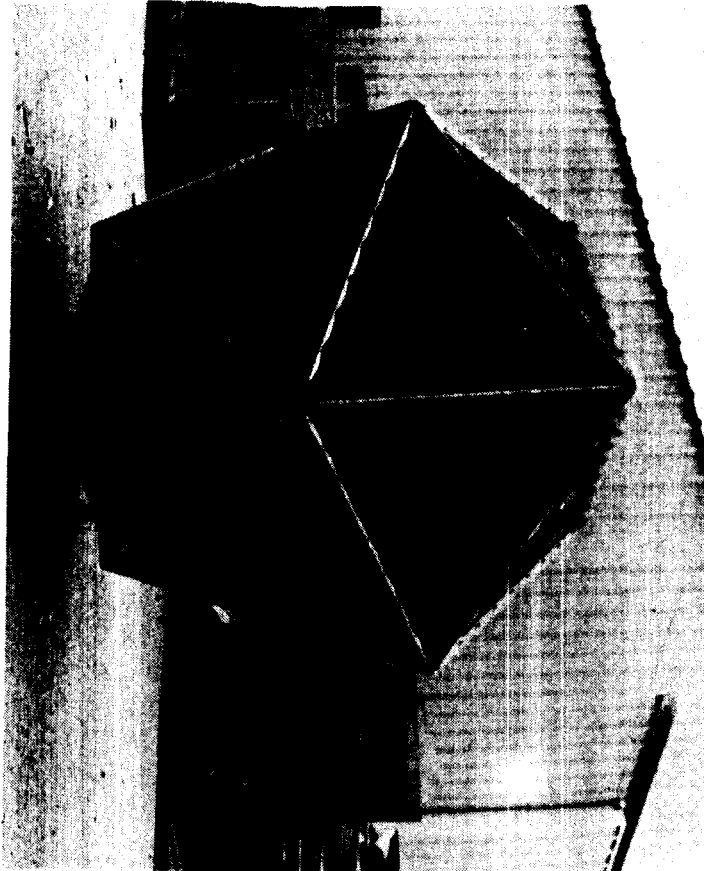
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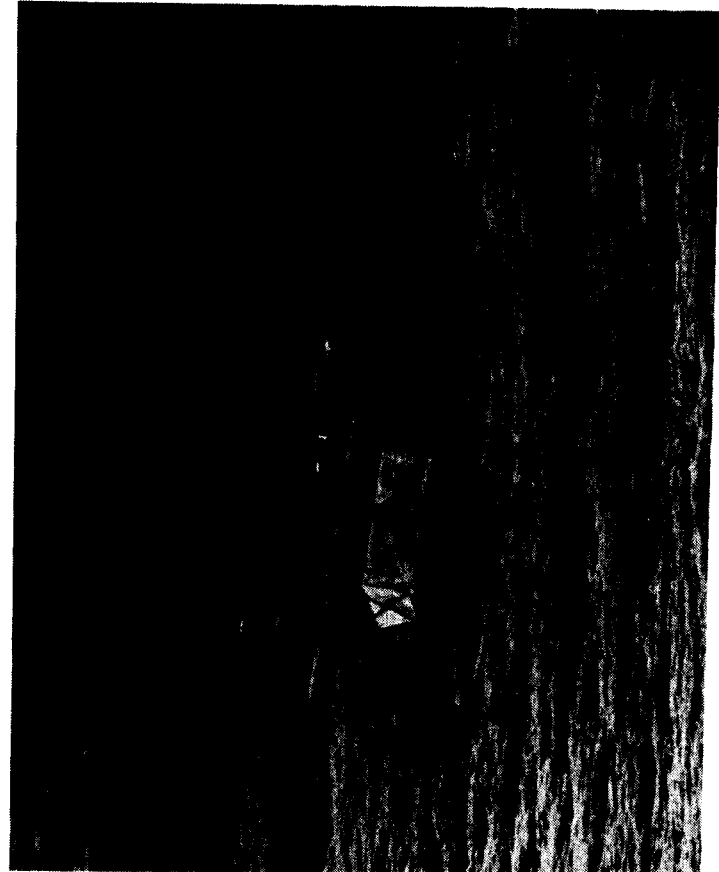


Trimaran Surface Tow Target

Floating Al-SeaTarget (FAST)



Williams Sled



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QST-35 Surface Targets

316
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Tab 28: Target Augmentation Systems Capability

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

Origin Date: 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63125</u>	
T&E TEST FACILITY CATEGORY: <u>OAR/DMS/IL</u>		
	<u>T&E</u>	<u>S&T</u>
	<u>D&E</u>	<u>IE</u>
	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE: <u>100</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)		
Air Vehicles		
Armament/Weapons	<u>50</u>	
EC		
Other	<u>50</u>	
Total in Breakout Must Equal "Percentage Use" On First Line		

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

Target Auxiliary Systems (TAS) are sponsored by each PMA 208 Deputy Project Manager.

Common Target Auxiliary Systems (CTAS) are items that are common to more than one target application. TAS items allow each target to be uniquely configured for specific mission profiles. These items include command and control transponders, scoring systems, location and navigation, active emitters, and electronic countermeasures. TAS/CTAS encompass the power and RF cable assemblies, augmentation amplifiers, flares, actuators, antennas, adapter plates, and mounting hardware necessary for the complete installation of the TAS/CTAS item into intended targets. In addition to their use locally at Point Mugu, TAS/CTAS items are employed at all Navy target operating sites, including the Atlantic Fleet Weapons Training Facility (AFWTF), Roosevelt Roads, Puerto Rico; the Naval Weapons Assessment Center, Namfi, Crete; the Naval Air Warfare Center Weapons Division (NAWCWPNS), China Lake, Calif.; Kadena, Okinawa, Japan; the Pacific Missile Range Facility (PMRF), Barking Sands, Hawaii; the Naval Air Station Weapons Department (VC-1), Barbers Point, Hawaii; the Fleet Composite Squadron Six (VC-6), Norfolk, Va.; the National Aeronautics and Space Administration (NASA) (for VANDAL Targets), Wallops Island, Va.; White Sands Missile Range (WSMR), White Sands, N. Mex.; and the Mobile Sea Range (MSR). The TAS/CTAS items consist of the following:

Command and Control Systems:

AN/DKT-59(V) Telemetric Data Transmitting Set is used specifically with aerial targets for the MSR, when the standard range operational telemetry is not included in the command control link or with aerial targets when an additional telemetry link is required.

The AN/DKT-59(V) is used to support UHF command control and test and evaluation missions when required. The CTAS unit costs \$5,000, has no peculiar support equipment requirement, and is used in both the BQM-34S and BQM-74E subscale aerial targets.

AN/DKW-2A is an ITCS command/telemetry transponder for the BQM-34S. This transponder is an electronic device installed into target vehicles that allows command signals between the airborne target and the ground station. Target operations on the fixed ranges are generally controlled by the ITCS. Currently, the AN/DKW-2A is the only target command and control unit capable of remote-control BQM-34S operations with ITCS. These units cost \$30,000 and require peculiar support/test equipment consisting of the AN/USM-416, AN/USM-418, and AN/USM-635. The BQM-34S is the only application of this TAS unit.

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

AN/DKW-3A/B is an ITCS command and control system for the BQM-74E subscale aerial target and the QF-4 full-scale aircraft target. The AN/DKW-3A/B includes a receiver-decoder capable of decoding digital, discrete, and proportional commands on an FM uplink and passing information to the target through a standard target interface with both serial and parallel output. It also includes an encoder-transmitter for telemetry downlink. RF is transmitted and received from a remotely located control set. Of the current Navy targets, all require the AN/DKW-3A/B transponder to operate with the ITCS on fixed ranges. All Navy targets will continue to operate under the current ITCS until the NGTCS is developed. Units cost \$15,000 and require support/test equipment consisting of the AN/USM-418, and the AN/USM-417 or AN/USM-635. This CTAS is applicable to the BQM-74E subscale aerial target, as well as the QF-4 full-scale aerial target, and the QST-33 and QST-35 seaborne surface targets.

AN/DKW-4 is also a target command and control transponder that includes a C-band receiver-decoder for uplink, an encoder-transmitter for telemetry, and has the same standard form, fit, and parallel target interface as the AN/DKW-3A/B. The AN/DKW-4 is used by the BQM-74E for remote portable target operations. The Vega tracking and control system is used for a majority of Navy target operations requiring a portable controller. The AN/DKW-4 is the target command and control unit designed for that controller. Unit cost is \$19,000 and requires the support of the AN/USM-614 Test Set.

AN/DRW-29 Radio Receiver Set is used in remote controlled targets to receive and decode signals transmitted from a control transmitter to maneuver and control functions on the target. The AN/DRW-29A includes an R2216/ARW receiver internally mounted. The AN/DRW-29 is used when UHF command and control is required and also during MSR operations. The unit costs \$10,000 and has no peculiar support equipment requirement. Its applications are the BQM-34S subscale aerial target, the QST-33 and QST-35 seaborne surface target boats, and full scale seaborne surface target ships.

R2449(V)/DRW and R2540(V)/DRW Flight Termination Receiver/Decoder are designed to respond to coded audio IRIG tones initiating flight termination to meet missile range safety requirements on programs with stringent environmental and reliability requirements and to provide command and control for maneuverability. These CTAS units have application on the QF-4 full-scale aircraft target, the MQM-8 full-scale missile target, and the AQM-37C subscale aerial target.

Location and Identification Systems:

AN/DPN-88 Radar Transponder is an L-band identification friend or foe (IFF) that provides automatic radar identification in pilotless airborne vehicles. Local or remote (prelaunch) code programming can be selected. Positive identification of targets is imperative during firing operations. The Navy IFF set provides that positive identification. The units cost \$3,700, and require the support of the AN/DPM-25 Test Set, and AN/UMP-137, or the VEGA 683L-1 ATC. This CTAS item has application on the AQM-37C, BQM-34S, and BQM-74E subscale aerial targets. It also has application for certain Air Force subscale targets.

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

AN/DPN-90 is a radar beacon that comes in two versions, G-band and I-band, and is used with range tracking radars. These radar tracking beacons are used in all Navy targets for range tracking enhancement. Range ground control facilities require radar transponder beacons for tracking targets. The AN/DPN-90 is the standard beacon used to fill this requirement for Navy operations. The unit costs \$4,800 and requires support of the AN/DPM-26 Test Set. The CTAS applications are on the AQM-37C, BQM-34S, BQM-74E subscale aerial targets, MQM-8G/X/ER full-scale missile targets, QF-4 full-scale aircraft target, and the QST-33 and QST-35 seaborne surface target boats.

T-1438/D is a tone-modulated continuous wave RF transmitter used as a locator device for recovering aerial targets after operations. This on-board device, for aid in the location of targets, is required during recovery phase. The T-1438/D is the on-board beacon for all recoverable subscale aerial targets. Another version, the HF beacon, is also used to provide target tracking and location but for OTH operations. The unit cost is \$225 and requires support equipment consisting of the L-Tronix LH-60 hand-held automatic direction finder (ADF). This CTAS application is on the BQM-34S, and BQM-74E subscale aerial targets.

Navigation Systems:

AN/APN-194 is a high-resolution precision-pulse radar altimeter. The output of the AN/APN-194 is fed into the autopilot of the target to control the altitude of low-flying targets. The analog and digital versions are used in the BQM-34S subscale aerial target and the MQM-8G/ER (VANDAL) full-scale missile target. Radar altimeters are required for positive altitude control during low-altitude target operations. The units cost \$9,700, and require support of the UPM-153 Test Set.

AN/DRN-13 is a multichannel transmitter/receiver that operates on all TACAN frequencies and provides relative bearing, slant range, range rate, and time-to-station data. The output of this TACAN is fed directly to the target autopilot for automatic homing and autonomous target control. For MSR exercises, a terminal guidance approach is used, requiring bearing, range, and range rate parameters to the targeted ship. The AN/DRN-13 provides the necessary information to accommodate this requirement. The units cost \$12,000 and require the support of the KRT-707 Test Panel, the AN/ARM-155, AN/ARM-156, or AN/ARM-162 Test Sets. Currently, this TAS is used on the BQM-74E subscale aerial target only.

RT-1378/Z Radar Altimeter Receiver-Transmitter is a high-resolution precision-pulse radar device that measures the time (analogous of distance) required for a pulse of electromagnetic energy to travel from the aircraft to the ground and back to the aircraft. This is utilized to automatically control the altitude of the low-flying targets. Radar altimeters are required for positive altitude control during low-altitude target operations. The units cost \$5,400 and require the support of the UPM-153 Test Set. This TAS is also used on the BQM-74E subscale aerial target only.

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

Scoring Systems:

AN/DRQ-4B is a scalar scorer that relies on cooperative RF signals from the scored missiles. It consists of a target-mounted transponder and uses a companion ground tracking and scoring station. Signals received from the missile are transmitted by the target transponder to the ground where they are processed, using Doppler frequency shifts, to calculate miss distance. For Fleet training with surface-to-air and air-to-air missiles, the Navy requires a low-cost expendable MDI. The AN/DRQ-4B provides that capability. The units cost \$4,000 and require the support of the AN/DRM-29A MDI Test Set. This TAS is compatible with the AQM-37C, BQM-34S, and BQM-74E subscale aerial targets, the MQM-8G/ER VANDAL full-scale missile target, the QF-4 full-scale aircraft target, QST-33 and QST-35 seaborne surface target boats, and seaborne surface target ships.

AN/DSQ-37 is a scalar scorer used for T&E exercises only. It consists of a noncooperative sensor (an RF pulse transmitter and receiver), a telemetry downlink transmitter, and associated antennas. The sensor RF signal is reflected off the scored projectile. The Doppler shift in the returned sensor signal is detected and telemetered to a ground station where the raw Doppler data are recorded (plotted). Manual analysis of the recorded data then provides the estimated scalar miss distance. The Navy requires a noncooperative scalar scoring system used exclusively for T&E applications in evaluating weapon performance. The AN/DSQ-37 will continue to provide this capability until the USQ-104 Automatic Scaler Scoring System is in service. This unit costs \$14,000 and requires support from the Doppler simulator, TECTRONICS 429P portable spectrum analyzer, and a portable checkout/receiver station.

AN/DSQ-40 is a radar Doppler scorer that detects and counts projectiles passing by the target and telemeters the Doppler data to a receiving station. Alternatively the Doppler can be transmitted by an external transmitter via a subcarrier output on the unit. Currently, this TAS system is configured with the TDU-34A/A Tow Target only.

AN/DSQ-50 Miss-Distance Indicator, is a noncooperative scoring device. It is used to measure the distance by which a missile or projectile misses the target. The reflected signal is detected and relayed to a ground station via the scorer telemetry system. Due to the Doppler effect, the amplitude of the detected signal varies with the distance of the missile or projectile from the target. The miss distance is determined by the Automatic Miss-Distance Analyzer (AN/GSQ-228) real time. Systems can be utilized in a multiple target scenario (up to 6) and is encryption capable. This CTAS will greatly expand all Navy target systems vector scoring.

AN/DBM-11 and KS-161A Firing Error Indicator (FEI) Pod is a noncooperative photographic system used to determine miss distance, missile attitude, and trajectory of a missile being fired at a target. The FEI system consists of two pods and a control unit. Each pod contains two 16mm movie cameras with wide-angle lenses. The cameras are located so as to provide redundant coverage of both upper and lower hemispheres about the target. Each camera contains a light-emitting diode (LED) to imprint IRIG-B timing on the movie film. Application of this TAS item is available to the BQM-34S subscale aerial target, the QF-4 full-scale aircraft target, the QST-35 seaborne surface target boat, and to full-scale seaborne surface target ships.

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

Radar Augmentation Systems: Radar augmentation is used to enhance a target vehicle's capability to operate over a wide range of frequencies to satisfy the requirements of multiple radars. There are two basic types of radar augmentation devices: (1) Active augmentation devices consist of antennas and amplifiers used to increase radar reflectivity by drawing upon power sources on-board the target, and (2) Passive augmentation consisting of lenses and corner reflectors used to increase radar reflectivity without drawing energy from the target.

The Traveling Wave Tube (TWT) is used to increase radar reflectivity of a target. The augmented target provides a more realistic target for a missile system. The TWT system receives radar pulses from a missile or radar system. The system amplifies and simultaneously transmits the pulses as true skin radar echoes. Directional couplers are used to combine the input signals to the TWT and to distribute the output signals to the transmit antennas. The system provides 360-degree azimuth radiation patterns. TWTs are in D, E, F, G, I, and J bands. The TWT, as TAS, can be installed on the BQM-34S subscale aerial target, or the QF-4 full-scale aircraft target.

The Solid-State Amplifier is used to increase radar reflectivity of a target and provide a more realistic target for missile systems. The amplifier receives radar pulses from a missile or radar system and simultaneously transmits them as true skin radar. Directional couplers are used for 360-degree coverage. The amplifier is used in E, F, G, I, and J radar bands. This TAS item has been designed for use with BQM-34S, BQM-74E, and AQM-37C subscale aerial targets, MQM-8 (VANDAL) full-scale missile targets, QF-4 full-scale aircraft targets, and the TDU-34A/A aerial tow targets.

The Luneburg Lens is a passive radar augmentation device. It is used to increase the radar reflectivity of a target without the use of additional energy. The lens reflector is a sphere, usually composed of concentric dielectric shells. By the proper selection of dielectric constants for each shell, radar energy incident on one face of the lens is focused at a point on the rear surface of the lens. The rear conductive surface reflects radar energy back to the source. Lenses usually have a reflecting angle of 90 to 120 degrees. However, angles can be obtained up to 360 degrees. The larger the diameter of the lens, the higher the reflected power. The physical characteristics of the lenses vary according to their application. The top lens is designed for use on the BQM-74E. The bottom lens comes with a mounting bracket on the rear in several diameters and can be mounted on any flat surface. Target applications for this CTAS include the BQM-34S and BQM-74E subscale aerial targets.

The Corner Reflector is a passive radar augmentation device used to increase the radar reflectivity of a target without use of additional energy. The most commonly used corner reflector is the trihedral, which has three mutually perpendicular surfaces. The corner reflector's physical characteristics vary and are dependent upon the reflection and frequency desired. Application of this TAS unit is on the TDU-34A/A Tow Target, the QST-33 and QST-35 seaborne surface target boats, the FAST seaborne surface target boat, the

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

Trimaran seaborne surface tow target, the Williams seaborne surface tow target, the Improved Surface Tow Target (ISST), and full-scale seaborne surface target ships.

Electronic Countermeasure Systems (ECM): (The performance of weapon systems can be degraded with hostile ECM. ECCM are then incorporated into the weapon systems to defeat the hostile ECM threat. To evaluate the performance of these weapon systems and their ECCM features, the threat ECM environment must be simulated in a realistic environment.)

AN/DLO-3C(V) ECM Set is used as a noise and deception jamming system. This unit simulates a realistic environment for T&E of a weapon system and for training. The AN/DLO-3C(V) operates at frequencies between 1 and 18 GHz and generates 14 ECM techniques including seven noise and seven deception techniques. The unit consists of four major components. The RF oscillator provides all the command circuitry, all the noise techniques, the circuitry for all the amplitude modulation techniques, and the dwell walk and narrow-band repeater noise circuits used as input to the modulator. The modulator generates a signal used to shift the RF output signal. The RF preamplifier amplifies the noise signals generated by the RF oscillator and combines the modulator's output signal with a received signal to shift the RF output signal during some of the deception techniques. Additionally, an RF preamplifier drives the 100W TWTA to amplify the input from the RF preamplifier to a level for transmission. This CTAS item is available for installation on the BQM-34S subscale aerial target, the QF-4 full-scale aircraft target, the QST-33 and QST-35 seaborne surface target boats, and the full-scale seaborne surface target ships.

AN/ULO-21 is a set of 14 affordable modules used to produce threat ECM environments. The modules listed below are combined into configurations based on mission requirements:

Waveform Controller Oscillator	Velocity Deception Amplifier
Waveform Generator	Radar Receiver/Radar Transmitter
Memory Modulator	Polarization Modulator
Multiple Technique Deception Amplifier	RF Amplifier
Frequency Translator	Command Interface Unit
Noise Generator	Medium Power Amplifier
2-Watt Amplifier	Special Transmit Antennas

The waveform-controller oscillator produces amplitude modulation and all noise techniques, detects incoming RF pulses, and retransmits a pulse of noise (false target). The velocity deception amplifier provides all the preamplification and generates velocity and amplitude modulation techniques. The radar receiver generates automatic set on noise by analyzing the frequency and PRI of an incoming signal, and then setting the RF synthesizer on the same frequency to jam it. The memory modulator provides a coherently

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

retransmitted signal generating velocity, range, and coordinated velocity/range gate stealing techniques. The waveform generator provides synchronous blinking between two targets. The polarization modulator provides nonadaptive swept cross-polarization jamming techniques. The solid-state amplifier provides the necessary gain and RF power to the VDA output when used in small target configurations. The special transmit antenna is used to generate surface bounce technique.

The cost of this TAS item will range from \$25,000 to \$265,000, depending on the breadth of the configuration. Specific configurations of this CTAS can be installed on the BQM-34S and BQM-74E subscale aerial targets, the MQM-8G/ER (VANDAL) full-scale missile target, the QF-4 full-scale aircraft target, the QST-33 and QST-35 seaborne surface target boats, and the full-scale seaborne surface target ships.

AN/DLQ-8 is a small pod designed to carry selected components from either the AN/DLQ-3C(V) or the AN/ULQ-21(V) countermeasures sets. ECM components are selected as needed to support weapon systems T&E or personnel training. The pod is suspended on the full-scale target aircraft bomb rack. The AN/DLQ-8 may be used with any RF weapon system within its range. It is designed to be effective against pulse, pulse Doppler, and continuous-wave systems. Currently, this TAS component is used solely on the QF-4 full-scale aircraft target.

AN/ALE-29 Countermeasures Dispenser Set is used on full-scale aircraft targets to dispense radar-reflective chaff (foil cut for RF bands) or infrared flares to create false targets. This TAS is an internal system with no external features visible on the QF-4 aircraft, the sole target application.

AN/ALE-44 Countermeasures Dispenser Set is used on full-scale (QF-4) and/or subscale (BQM-34S) aerial targets to dispense radar-reflective chaff or infrared flares to create false targets that confuse radar detection. The AN/ALE-44 consists of two countermeasures dispensing set pods and a control unit. The pod may be used with speeds up to Mach 1.2. The cost of this TAS item is \$25,600 and is supported by the AN/ALM-253 Test Set.

AN/LAU-10 Chaff Dispenser is an airborne rocket launcher that enables firing radar-reflective chaff material forward of the target aircraft to confuse radar detection and tracking. Each full-scale aircraft target (QF-4) is capable of carrying two LAU-10 rocket launchers for a total of eight 5" rockets. Each rocket carries a payload of chaff. This TAS is only used in the QF-4 full-scale aircraft target.

Emitter Systems:

AN/DPT-1 Radar Transmitting Set (RTS) is a pulse-modulated radar simulator that is usable in land, air, and sea environments. A complete simulator system includes the RTS, one of three possible frequency-band magnetrons, and a frequency-compatible antenna

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

and waveguide kit. An optional programmable PRF generator can be included to provide operational scenarios and complex PRF formats. The AN/DPT-1 is used as a recoverable/expendable RF emitter payload in aerial and surface targets. The unit cost can be as low as \$14,000 or as high as \$26,500, depending on the frequency options. This CTAS item is supported by the AN/USM-641, and OF87/U Test Sets. CTAS applications are the BQM-34S subscale aerial target, the MQM-8 (VANDAL) full-scale missile target, the QF-4 full-scale aircraft target, and the QST-35 seaborne surface target boat.

AN/DPT-2B Radar Transmitting Set (RTS) is a pulse-modulated radar simulator that is usable in land, air, and sea environments. A complete simulator system includes the RTS, one of three possible frequency-band magnetrons, and a frequency-compatible antenna and waveguide kit. An optional programmable PRF/PW generator can be included to provide operational scenarios and complex PRF formats. The AN/DPT-2B is used as a recoverable/expendable RF emitter payload in aerial and tow targets. This unit cost can be as low as \$12,500 or as high as \$17,500, depending on the magnetron type and external PRF/PW generator option. This TAS item is supported by the AN/USM-641 and OF87/U Test Sets. CTAS applications are both the AWM-37C and BQM-74E subscale aerial targets, and the TDU-34A/A aerial tow target.

AN/UPT-2A Radar Transmitting Set (RTS) is a pulse-modulated radar simulator that is usable in land, air, and sea environments. A complete simulator system includes the RTS, one of ten possible frequency/power magnetrons, and a frequency-compatible antenna and waveguide kit. The RTS consists of two units, a power supply and a pressure sealed pulse modulator. An optional programmable PRF/PW generator can be included to provide operational scenarios and complex PRF formats. The UPT-2A is used as a recoverable/expendable RF emitter payload in aerial and surface targets. The units cost from \$17,000 to \$25,000, depending on the magnetron type and external PRF/PW generator option. TAS applications for this include the BQM-34S subscale aerial target, the MQM-8 (VANDAL) full-scale missile target, the QF-4 full-scale aircraft target, and the QST-35 seaborne surface target boat.

The Improved Surface Threat Emitter is a rotating antenna and transmitter that simulates a surface radar. This TAS is available on the QST-35 seaborne surface target boats only.

The Surface Target Emitter Kit (STEK) is a completely self-contained radar emitter using either the AN/DPT-1 or the AN/UPT-2 transmitter for Fleet training exercises. The system is designed to be installed on QST-35 seaborne surface target boats. An optional power kit is available for platforms that cannot provide the required power. The STEK comes preassembled in a self-contained watertight enclosure. The transmitter operates on an RF frequency of 8.5 to 9.6 GHz. The antenna is a horizontally polarized reflector type, nonrotating. This CTAS item is available on the QST-35 seaborne surface target boat, the Williams tow target, the ISST, and full-scale seaborne surface target ships.

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

The Interim HARM Emitter (IHARM) threat emitter consists of a fixed antenna, transmitter, portable generator, and fuel system. Its parameters are specifically set for Fleet HARM missile firings. It is the only threat emitter currently certified for Fleet HARM missile exercises. (HARM operational characteristics are classified). Due to the nature of the mission of this TAS, it is available only on the full-scale seaborne surface target ships.

The Antiradiation Missile Emitter (ARME) is used on seaborne surface targets to provide the RF signal required by an antiradiation missile in a training firing exercise. The RF signal provided by the emitter is used as a target for the missile guidance system. This TAS is designed to allow installation on a QST-35 seaborne surface target boat, as well as the full-scale seaborne surface target ships. The ARME subsystems include a stabilized mast-mounted antenna and pedestal, a waveguide subsystem, and two cabin-mounted electronic equipment boxes for the transmitter and control unit. The system operates on bands S through J.

Infrared Augmentation Systems:

The Thermic Pot is an infrared source that is used when a long-duration clean signal is desired. The thermic pot burns as an exothermic chemical reaction within a graphite shell. This CTAS item is used on the BQM-34S and BQM-74E subscale aerial targets.

The Mk 28 Mod 3 Target Flare is used to provide an infrared source on the BQM-74E subscale aerial target and the QF-4 full-scale aircraft target. The minimum burn time is 48 seconds at altitudes from sea level to 35,000 feet.

The Mk 37 Mod 0 Target Flare is used to provide an infrared source on missile targets to enhance survivability of the target during missile firings. Minimum burn time is 5 minutes at 70,000 feet at Mach 2, or 8 minutes at 70,000 feet at Mach 1.5. The BQM-34S subscale aerial target is the only target vehicle currently using this CTAS item.

The MJU-28/B Target Flare is used to provide an infrared source on missile targets to enhance survivability of the target during missile firings. Average burn time is 3.2 minutes at 35,000 feet and is designed for use on the BQM-34S subscale aerial target only.

The SMU-114/A Engine Exhaust Simulator is used to simulate the infrared signature of a combat aircraft. The SMU-114/A is a zero thrust ramjet. It burns pressurized JP-4 or JP-5 to produce an infrared signature equivalent to that of a small single-engine fixed-wing aircraft. It produces a plume approximately 6.5 to 9 feet long, depending on the altitude and airspeed. This TAS item's current application is to configure the TDU-34A/A Tow Target.

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

Visual Augmentation Systems:

The Smoke System is used in a drone target to provide a continuous or interrupted trail of smoke. The trail of smoke is positive identification of aircraft interception and for location and observation of targets in flight. On command, fluid is released to the exhaust of the target engine, producing a trail of white smoke. Two types of smoke fluids are used. For flights above 20,000 feet, use JP fuel at a rate of 6 gallons per minute. For flights below 20,000 feet, a separate oil tank is used with 1010 oil (MIL-L-6081). Amount of oil carried varies with different targets. Currently, this CTAS item is available on the BQM-34S and BQM-74E subscale aerial targets.

The Strobe Light is used to visually track targets during periods of low visibility and facilitate night recovery. All variations of lights in the Navy system operate the same. The light used on the BQM-34S subscale aerial target contains a gas filled tube, power supply, and flashing circuit. When activated, the light will flash at a rate of approximately 50 times per minute with a peak flash intensity of 1,000,000 lumens.

TDU-38/B is a fabric sleeve towed behind the TDU-34A/A Tow Target to increase its visual signature. The TDU-38/B is mounted on the TDU-34A/A stowed in a container secured to the end of the target fuselage. TDU-38/B deployment and jettison is controlled by the MXU-743/A Launcher Jettison unit mounted on the aft end of the TDU-34A/A.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

Targets are remote controlled using TAS/CTAS ITCS, VEGA, and UHF systems that provide command control, telemetry, and tracking capability. The TAS/CTAS installed in every target provides that target with this needed capability. These systems are interconnected to Point Mugu, the Channel Islands, San Nicolas Island, and Laguna Peak through microwave and fiber optics, thus extending range, control and data collection capabilities. These resources are also available at China Lake, Puerto Rico, Pacific Missile Range, Hawaii, and Wallops Island, providing a common interconnect for target services. TAS/CTAS radar tracking, telemetry, navigation, and communications linkages between Point Mugu, Vandenberg Air Force Base, Edwards Air Force Base, China Lake, the Channel Islands, Laguna Peak, and San Nicolas Island are used via fiber optics and microwave for real-time position display and post-operation data reduction. Electronic data interconnect for TAS/CTAS logistics management between Point Mugu and Field Service Representatives at Norfolk, Va.; Radar Bomb Scoring Unit, Spokane Wash.; Naval Air Facility, Kadina, Okinawa; Naval Air Station Sigonella, Italy; and NAB Little Creek, Va. Additionally documentation and support services are linked to China Lake, Calif.; Dugway Proving Grounds, Utah; Aberdeen, Md.; Eglin, Fla.; White Sand, N. Mex.; Wallops Island, Va.; Pacific Range Missile Facility, Hawaii; Atlantic Fleet Training Facility, Puerto Rico; and Yuma, Ariz.

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

TYPE OF TEST SUPPORTED:

T&E for air-to-air, air-to-surface and surface-to-surface weapons systems. TAS/CTAS configured targets are used for radar acquisition test, electronic countermeasures (jamming) evaluation, infrared measurement/test, radar cross evaluation, decoy effectiveness, maneuver analysis, electronic warfare, warhead effectiveness and evaluation of Fleet tactics, Fleet readiness, and Fleet effectiveness. TAS/CTAS specific testing involves target development and T&E, and target control systems development and T&E.

SUMMARY OF TECHNICAL CAPABILITIES:

See Facility Description for information.

KEYWORDS:

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	29,900	31,700	33,400	31,700	35,200	35,200	35,200	29,900
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	1096	1290	1242	1056	1496	1418	1174	1113
Other T&E	Direct Labor								
	Test Hours								
	Missions*								
Other	Direct Labor								
	Test Hours								
	Missions								

* Test hours re not tracked for targets and are not specific (applicable) to workload in the area of targets. The number of hours required to prepare and present a target are dependent on the user and their parameters for that test—target performance, configuration, location, number of runs, time of day, number of targets, configuration, and readiness of the user equipment. A target test may include one or multiple types of targets. The indication of workload for targets and target systems is the number of target presentations identified by the number of missions.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

ANNUAL HOURS OF DOWNTIME (1) 0
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) N/A
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) N/A

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) N/A	(5) N/A	(6) N/A	(7) N/A	(8) N/A
				ANNUAL UNCONSTRAINED CAPACITY (9) N/A

"Typical"

TOTAL 0

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO. Targets capability is not limited by the same constraints as typical T&E facilities (maintenance, weather, darkness, holidays, safety or health considerations, commercial utility availability, etc.). Targets are operated around the clock and, due to the mildness of the local climate, throughout the four seasons without interruption. Due to the built-in flexibility of Point Mugu target facilities (e.g. mainland surface launch, San Nicolas Island surface launch, seaborne launch and airborne launch), infrequent locally severe weather is not a limiting factor. Although limited by the same time constraints as every other T&E facility, the Point Mugu targets facility alone has demonstrated its surge capability through routine deployments to China Lake, Ca., Pacific Missile Range Facility, Hi., Atlantic Fleet Weapons Training Facility, P.R., White Sands Missile Range, N. Mex.. and the Gulf of Maine operating area.

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Target Augmentation Systems 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	25	26	27	27	28	28	29
Contractor	8	8	8	8	8	8	8
Total	33	34	35	35	36	36	37

Total Square Footage: 22,362

Test Area Square Footage: 22,052

Tonnage of Equipment: 27.6

Annual Maintenance Cost: \$44,312

Office Space Square Footage: 309

Volume of Equipment: 56,000

Estimated Moving Cost: \$318,121

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
29	16	132	77	92	92	104
26	30	40	46	43	45	51

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Target Augmentation Systems Capability

AGE: 34 - 41 Yrs.

REPLACEMENT VALUE: \$2,117,597

MAINTENANCE AND REPAIR BACKLOG: None

DATE OF LAST UPGRADE: 10/30/92

NATURE OF LAST UPGRADE: Rehabilitation of Work Spaces

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: None

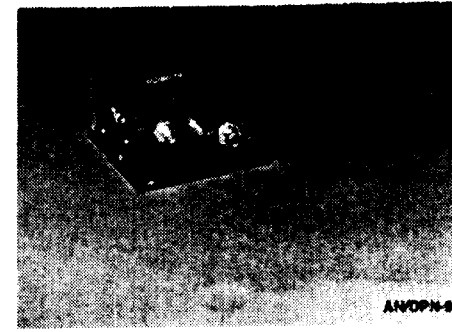
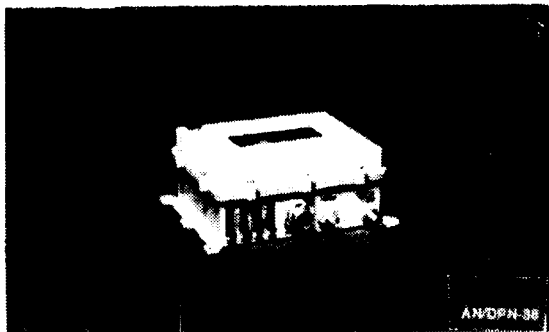
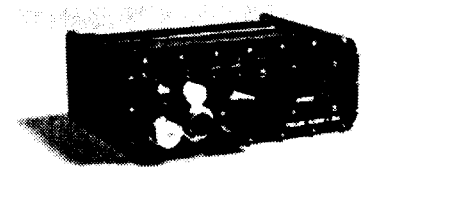
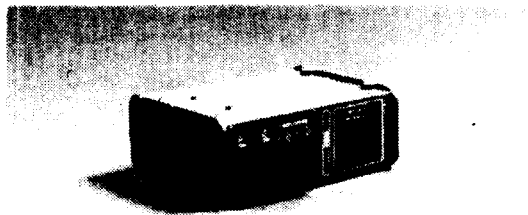
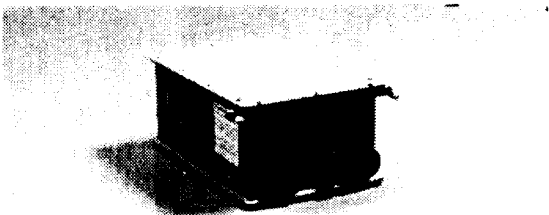
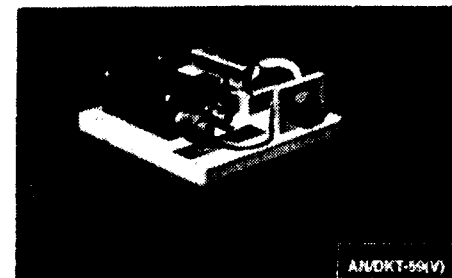
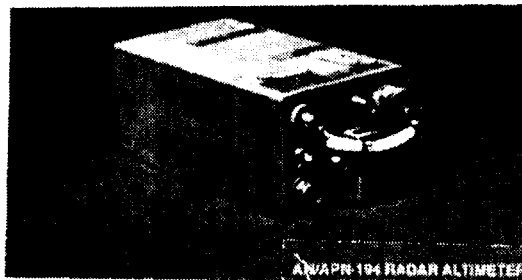
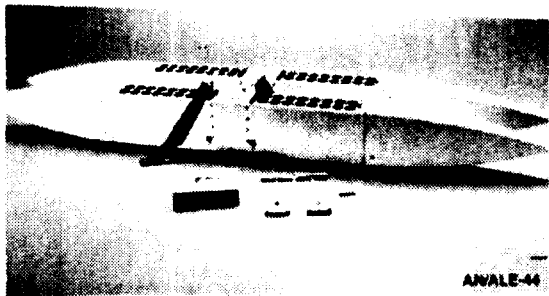
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION: None

2. UPGRADE TITLE:

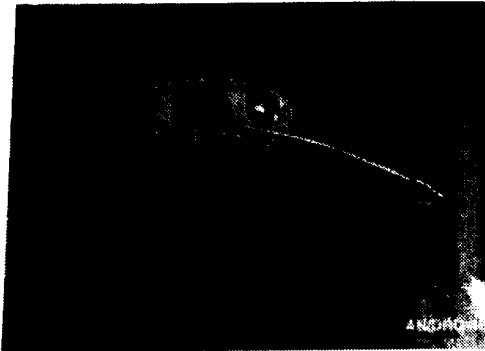
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION:

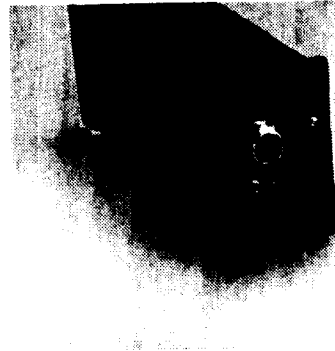


Target Auxiliary Equipment

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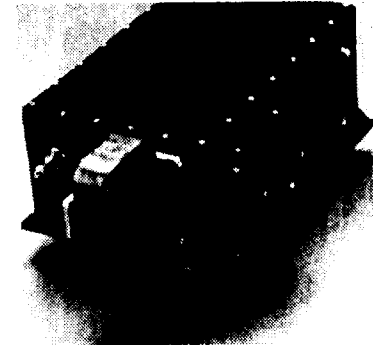


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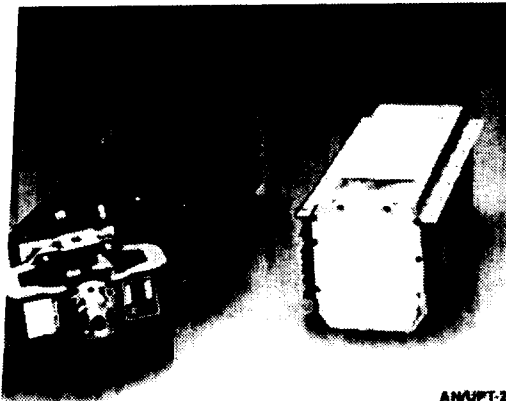


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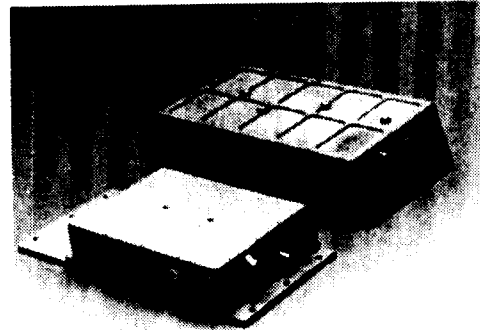
ACTIVITY UIC: 63126



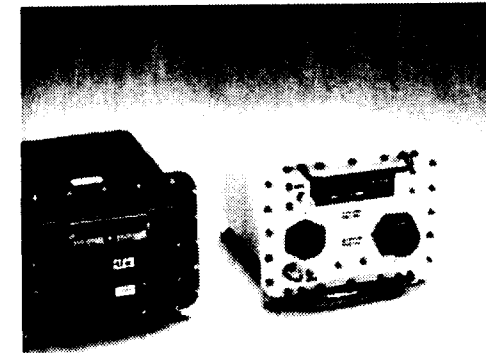
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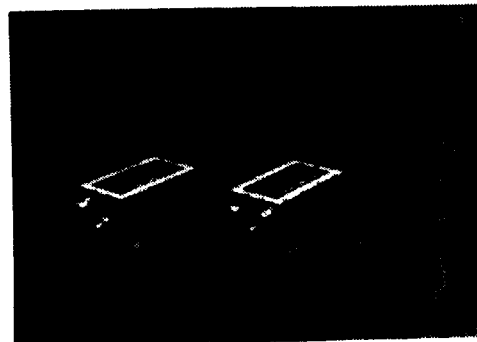
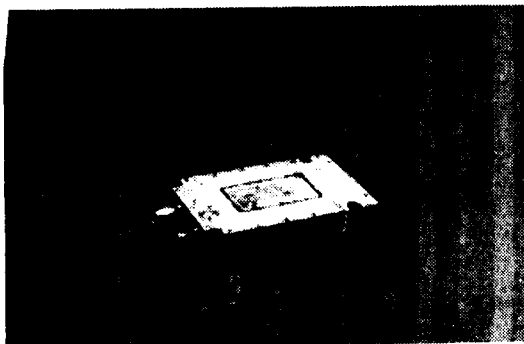
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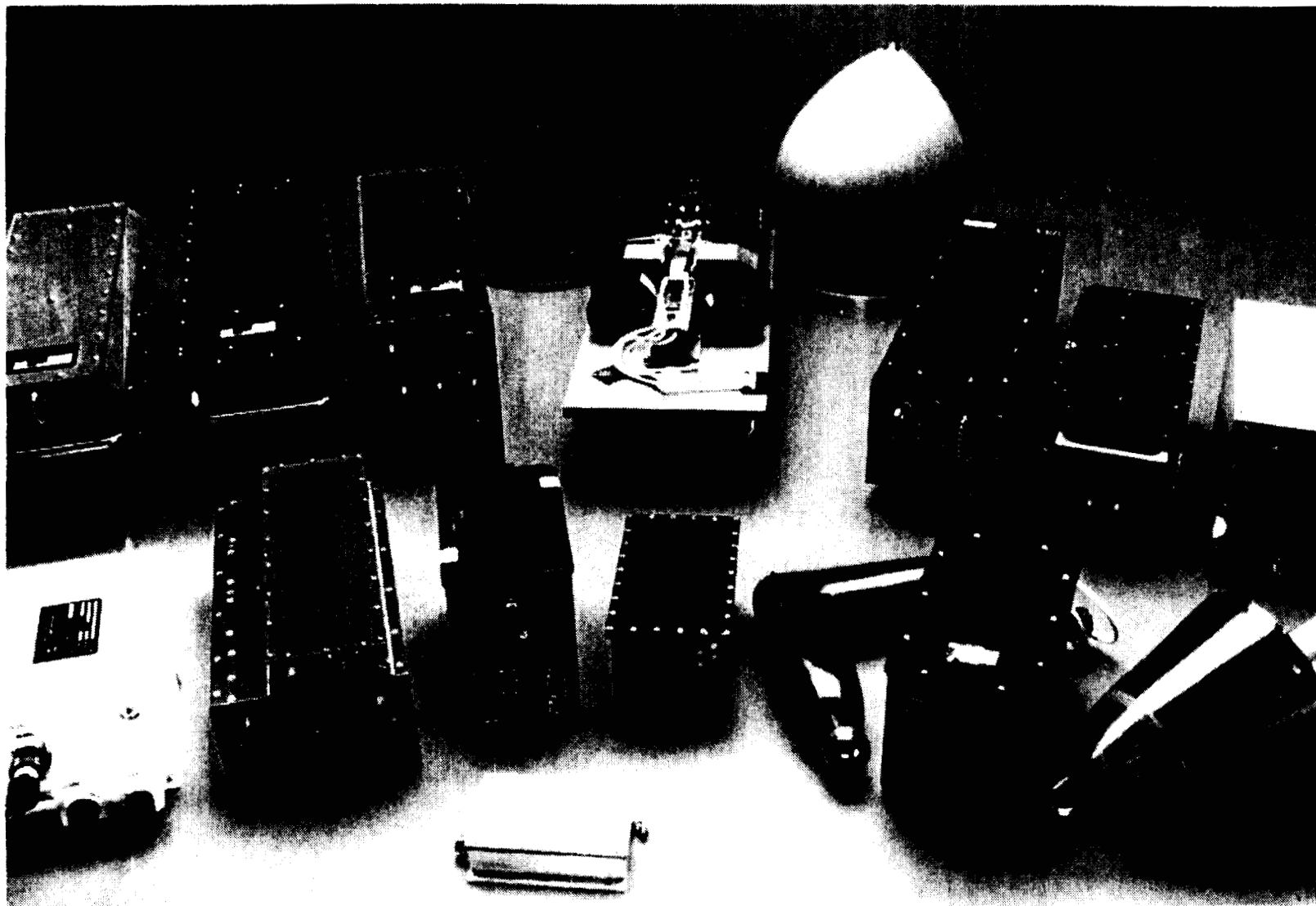
ANDSO-37/37A



ANDRW-29/29A



Target Auxiliary Equipment
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336



Target Auxiliary Equipment

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

Tab 29: Target Control Systems Capability

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Target Control Systems Capability

Origin Date: 4/21/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>
T&E FUNCTIONAL AREA: <u>ARMAMENT/WEAPONS</u>	UIC = <u>N63126</u>	
T&E TEST FACILITY CATEGORY: <u>DMS/ME/IL</u>		
	<u>T&E</u>	<u>S&T</u>
	<u>D&E</u>	<u>IE</u>
	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE: <u>100</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)		
Air Vehicles		
Armament/Weapons	<u>60</u>	
EC		
Other	<u>40</u>	
Total in Breakout Must Equal "Percentage Use" On First Line		

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Target Control Systems Capability**Facility Description; Including mission statement:**

The Target Control Systems capability is a part of the NAWCWPNS Target Systems Department. This is a unique one-of-a-kind facility/capability that exists nowhere else in the world. It is a one-stop shopping center for targets. It provides for the tri-service needs in development, acquisition, and production of all missile, subscale and surface/seaborne targets, and for life-cycle support management of all target systems within the Navy. Operational services are provided locally and deployed worldwide. The inventory of targets, both in number and types, is unmatched anywhere and includes full-scale, subscale, missile, seaborne, and land targets, as well as target control systems. The facility is unique in that it has the personnel resources, geography, airspace and open ocean available to operate any target contained within its inventory on site. It has deep-water harbor facilities for its seaborne targets at Port Hueneme, 125,000 square miles of instrumented sea range and airspace to conduct test and evaluation, and aircraft runway facilities both at Point Mugu and San Nicolas Island, as well as target ground and air launch facilities.

The Department consists of 400 technical, professional, and administrative personnel with 30 buildings providing 279,525 square feet of administrative, operational and covered storage space and 10,650 square feet of outside storage space. These are located at Point Mugu, Port Hueneme, and San Nicolas Island. The core mission of the Target Systems Department is managing the life-cycle support of target systems and subsystems; providing systems engineering for development, test, and evaluation; in-service engineering of targets and related systems; and operating, maintaining, and providing airborne and surface/seaborne target services.

Interconnectivity/Multi-Use of T&E Facility:

Targets are remote controlled using the ITCS, VEGA, and UHF systems that provide command control, telemetry, and tracking capability. These systems are interconnected to Point Mugu, the Channel Islands, San Nicolas Island, and Laguna Peak through microwave and fiber optics, thus extending range, control, and data collection capabilities. These resources are also available at China Lake, Puerto Rico, Pacific Missile Range, Hawaii, and Wallops Island, providing a common interconnect for target services. Radar tracking, telemetry, navigation, and communications linkages between Point Mugu, Vandenberg Air Force Base, Edwards Air Force Base, China Lake, the Channel Islands, Laguna Peak, and San Nicolas Island are used via fiber optics and microwave for real-time position display and post-operation data reduction.

FACILITY/CAPABILITY TITLE: Target Control Systems Capability

The Port Hueneme harbor facilities provide a physical interconnect to the Sea Test Range at Point Mugu for seaborne targets and with the Port Hueneme Division Naval Surface Warfare Center for development, test, and operation of the Self-Defense Test Ship facilities, which are unique to the NAWCWPNS Sea Test Range. This linkage is vital to the proposed BMDO use of seaborne targets.

A physical/electronic interconnect for target systems engineering is provided to the weapons HWIL laboratories (AMRAAM, Phoenix, Sparrow) for developing target modeling simulations and models; to the Radar Reflectivity Laboratory for radar cross-section measurement critical to the target/threat validation process; and between the ITCS Laboratory, Target System Development Laboratory, Software Validation/Verification facility, and Operator Training Simulator facility for target and target system design, development, test and evaluation, and training.

Electronic data interconnect for target logistics management between Point Mugu and Field Service Representatives at Norfolk, Va.; Radar Bomb Scoring Unit, Spokane Wash.; Naval Air Facility, Kadina, Okinawa; Naval Air Station Sigonella, Italy; and NAB Little Creek, Va. Additionally, documentation and support services are linked to China Lake, Calif.; Dugway Proving Grounds, Utah; Aberdeen, Md.; Eglin, Fla.; White Sand, N. Mex.; Wallops Island, Va.; Pacific Range Missile Facility, Hawaii; Atlantic Fleet Training Facility, Puerto Rico; and Yuma, Ariz.

Type of Test Supported:

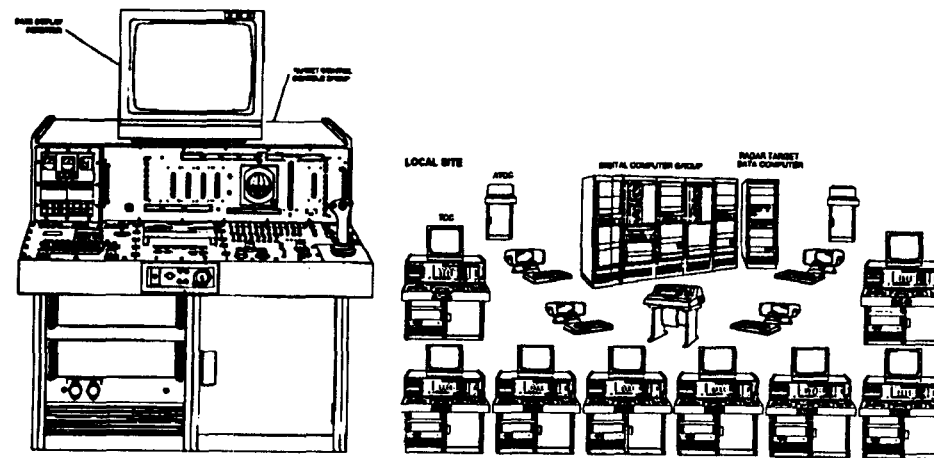
T&E for air-to-air, air-to-surface, and surface-to-surface weapons systems. Targets are used for radar acquisition test, electronic countermeasures (jamming) evaluation, infrared measurement/test, radar cross evaluation, decoy effectiveness, maneuver analysis, electronic warfare, warhead effectiveness, and evaluation of Fleet tactics, Fleet readiness, and Fleet effectiveness. Target-specific testing involves target development and T&E; target auxiliary and augmentation system development and T&E; and target control system development and T&E.

Summary of Technical Capabilities:

Target control systems are used in presentations to weapon systems and sensors. Equipment on-board the targets provides information via a radio frequency link to remotely located equipment used by an operator to monitor target location, dynamics, and status. This information can then be used to either directly control functions on the target or to command the initiation of functional sequences to achieve the objectives of the presentation.

FACILITY/CAPABILITY TITLE: Target Control Systems Capability

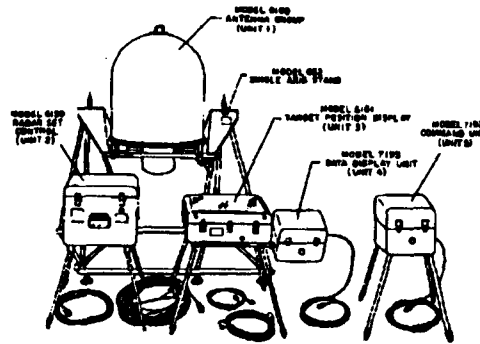
Integrated Target Control System (ITCS):



The ITCS was designed and developed in the early 1970s to meet Navy requirements for a target control system that could be located at multiple range sites. The ITCS consists of

- Ground Station
 - Local site
 - Remote sites
 - Communications system between local and remote sites
- Target Drone Transponders
- Support Equipment for maintenance, operations preparations and calibration.

As a time-multiplexed system, each target assigned to the mission is assigned a 11-msec time slot during which the ITCS hardware transmits a drone command message and receives a telemetry message in reply. These drone time slots are assigned as a result of system operator inputs at the system data terminal. The allowable data rates are 5, 10, 15, 30, and 45 command messages per second. The data rate selected for a specific drone determines the number and sequence of time slots assigned to that drone out of the 90 slots (frames) available in a 1-second period.

FACILITY/CAPABILITY TITLE: Target Control Systems Capability**VEGA - Portable Radar Tracking and Control System (PRTCS)**

The PRTCS provides global flexibility for target drone control operations. The PRTCS can operate from shipboard or land sites, becoming operational one hour after unpacking. This unit provides the user with 100 nmi slant-range low-angle tracking (-10 to +85 degrees) and quick acquisition/re-acquisition of a target. This system contains a modular group of compatible systems that are designed to provide control of air and sea target vehicles. Capabilities include range and angle tracking, reception and display of individual target telemetry data, and target control hand over between PRTCS stations.

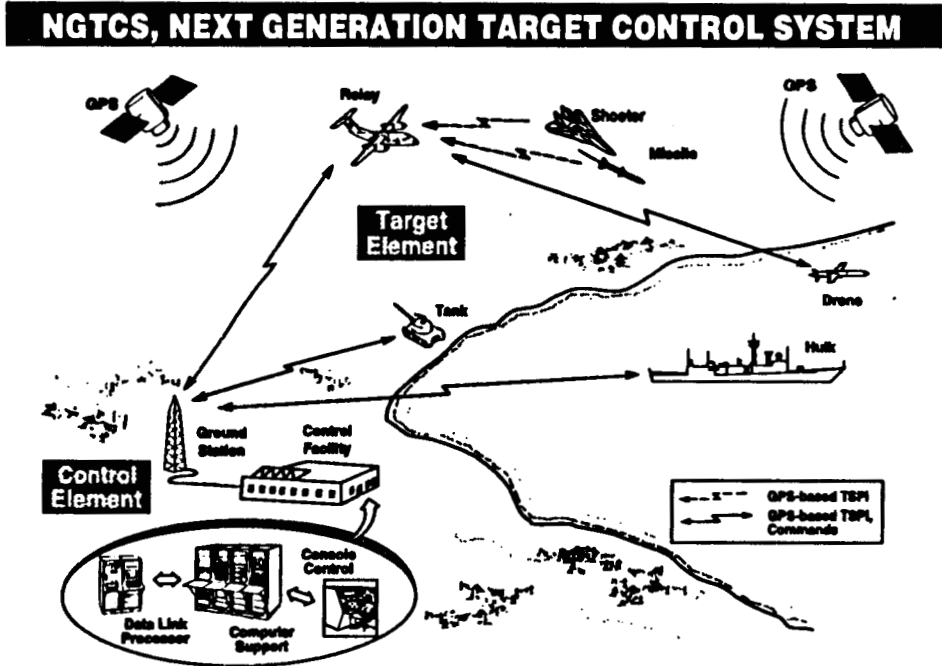
New Generation Target Control System (NGTCS):

The NGTCS will provide the range users with the capability to control and track multiple aerial targets from the surface to target altitude limits and surface targets up to 100 feet above surface and over long ranges, up to 350 nmi with one relay to a NGTCS transponder. Target control OTH will be possible with relay, thereby allowing the Navy and Air Force to meet its worldwide open-ocean test scenario requirements. An auto-takeoff/land capability will be integrated into the ground control system to control full-scale aerial targets. Single target and formation presentations and target maneuvers will be supported, as well as combinations of full-scale and subscale targets. NGTCS will utilize GPS time-space-position information (TSPI) to improve accuracy and eliminate the operation and maintenance expense associated with current multilateration and radar-based systems. The initial fixed-site NGTCS will be installed at NAWCWPNS Point Mugu. Additional systems will be installed at White Sands Missile Range (WSMR), N. Mex., and Tyndall AFB, Fla..

FACILITY/CAPABILITY TITLE: Target Control Systems Capability

The NGTCS shall consist of a control element, consisting of a computer/GPS-based central system, a data link terminal, display/console controls, and a target element consisting of a transponder/GPS receiver.

The control element shall be fully developed and tested in a fixed-site, mobile, and transportable configuration. Design-only option will be available for ship deployable configuration.



Multiple Over The Horizon Relay (MOTHR)

Multiple Aircraft GPS Integrated Command and Control (MAGIC²)

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FACILITY/CAPABILITY TITLE: Target Control Systems Capability

Large Area Tracking Range (LATR):

The LATR system includes aircraft, ship and target instrumentation for conduct of Fleet training at the Southern California Offshore Range (SCOR), Cherry Point, North Carolina; Atlantic Fleet Weapons Training Facility (AFWTF), Puerto Rico; and the Pacific Missile Range Facility, Hawaii.

Keywords:

Aerial targets, targets, aircraft targets, full-scale aircraft targets, full-scale aerial targets, FSAT, FSATs, QF-4N, QF-4, drone, universal control cockpit, universal control console, UCC, target control console, TCC, Integrated Target Control System, ITCS, target auxiliary/augmentation systems, TA/AS, Target Augmentation Systems, TAS, recoverable, sea test range, VANDAL, TALOS, MQM-8G, sea skimmer, sub scale targets, missile targets, Chukar, BQM-74, Firebee, Dash, QH-50, Challenger, AQM-37, AQM-34L/M, VEGA, TDU-34, RMK-34, tow target, tow, scoring, miss distance, engineering, systems engineering, interface, software, modeling, seaborne powered target, SEPTAR, Mobile Ship Target, MST, Target Ship, SEPTAR, Target Logistics Support, Support Equipment, In Service engineering, Configuration Management, Data Management, Material Management, Field Service.

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Target Control Systems Capability

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	26,400	26,400	28,160	28,160	29,900	29,900	29,900	26,400
	Test Hours	*	*	*	*	*	*	*	*
	Missions*	1096	1290	1242	1056	1496	1418	1174	1113
Other T&E	Direct Labor								
	Test Hours								
	Missions*								
Other	Direct Labor								
	Test Hours								
	Missions								

*Test hours are not tracked for target and are not specific (applicable) to workload in the area of targets. The number of hours required to prepare and present a target are dependent on the user and their parameters for that test—target performance, configuration, location, number of runs, time of day, number of targets, configuration, and readiness of the user equipment. A target test may include one or multiple types of targets. The indication of workload for targets and target systems is the number of target presentations identified by the number of missions.

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Target Control Systems Capability

ANNUAL HOURS OF DOWNTIME (1) 0

AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) N/A

AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) N/A

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) N/A	(5) N/A	(6) N/A	(7) N/A	(8) N/A
				ANNUAL UNCONSTRAINED CAPACITY
				(9) N/A

"Typical"

TOTAL 0

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? NO. Targets capability is not limited by the same constraints as typical T&E facilities (maintenance, weather, darkness, holidays, safety or health considerations, commercial utility availability, etc.). Targets are operated around the clock and, due to the mildness of the local climate, throughout the four seasons without interruption. Due to the built-in flexibility of Point Mugu target facilities (e.g. mainland surface launch, San Nicolas Island surface launch, seaborne launch and airborne launch), infrequent locally severe weather is not a limiting factor. Although limited by the same time constraints as every other T&E facility (only 24 hours per day), the Point Mugu targets facility alone has demonstrated its surge capability through routine deployments to China Lake, Ca., Pacific Missile Range Facility, Hi., Atlantic Fleet Weapons Training Facility, P.R., White Sands Missile Range, N. Mex.. and the Gulf of Maine operating area.

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Target Control Systems 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	22	22	22	22	22	22	22
Contractor	8	7	7	7	7	7	7
Total	30	29	29	29	29	29	29

Total Square Footage: 19,569

Test Area Square Footage: 19,296

Tonnage of Equipment: 24.2

Annual Maintenance Cost: \$38,773

Office Space Square Footage: 271

Volume of Equipment: 49,000

Estimated Moving Cost: \$1,024,356

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FACILITY/CAPABILITY TITLE: Target Control Systems Capability

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
26	14	116	76	81	81	69
23	26	35	40	38	39	34

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FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Target Control Systems Capability

AGE: 3-34

REPLACEMENT VALUE: \$1,452,078

MAINTENANCE AND REPAIR BACKLOG: Roof Repair

DATE OF LAST UPGRADE: 10/30/92

NATURE OF LAST UPGRADE: Rehabilitation of Work Spaces

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: None

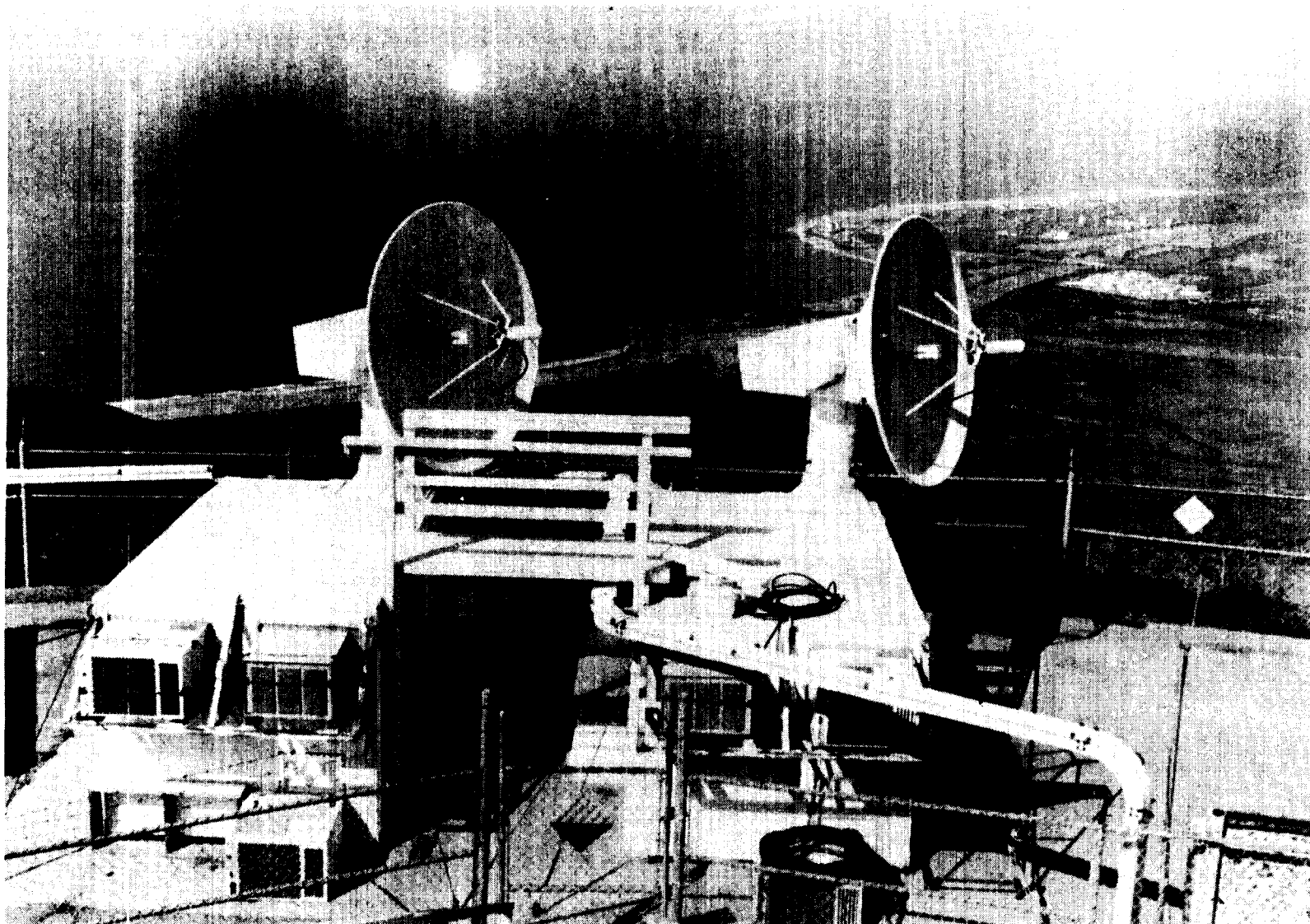
TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION: None

2. UPGRADE TITLE: None

TOTAL PROGRAMMED AMOUNT:

SUMMARY DESCRIPTION: None



Integrated Target Control System Remote Site Equipment

Tab 30: Threat Electronic Countermeasures Simulators

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

Origin Date: 4/30/94

SERVICE: <u>NAVY</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63126</u>	
T&E TEST FACILITY CATEGORY: <u>Open Air Ranges</u>		
	<u>T&E</u>	<u>S&T</u>
	<u>D&E</u>	<u>IE</u>
	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE: <u>100</u>		
BREAKOUT BY T&E FUNCTIONAL AREA (%)		
Air Vehicles		
/Weapons	<u>100</u>	
EC		
Other		
Total in Breakout Must Equal "Percentage Use" On First Line		

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The electronic countermeasures (ECM) jammer simulators developed and operated by the Vulnerability Assessment Division (VAD) at Point Mugu are recognized worldwide as the premier airborne threat ECM simulators. We are the tri-service leaders in the development of these simulators as well as providing the simulators to all three services. Our simulators are used by the three services throughout the world as the primary system for weapons T&E and operator training. They are used by weapon systems for both field and laboratory testing; to provide tactical contingency employment; and to conduct development, test, and evaluation of missile guidance and radar systems pertaining to susceptibility. Additionally, using these ECM simulators, the VAD technical personnel perform threat analysis and future threat projections for weapon systems; and are instrumental in developing counter-countermeasures applications, principles, techniques, and devices for weapon systems.

The development of these simulators is driven by the requirements in threat documents, weapon systems TEMPS and information gained from exploitations in which we participate. The ECM simulators are then developed within VAD to simulate or replicate the real threat. The simulators are used in multiple applications, including in/on manned aircraft, in/on unmanned aerial targets, on surface targets, on land ranges, in laboratories, and on training ranges.

The VAD is the developer and system integrator of the ULQ-21 simulators. The individual modules that make up the system are procured from industry but the integration of these modules, along with the operating parameters that make the system work are the responsibility of the VAD. Because of the many unique applications and platforms, this acquisition strategy has proven to be a tremendous success in keeping the overall system cost down and has allowed us to expeditiously provide the most current threat jammers documented in intelligence data today.

The Threat ECM simulator program is a \$25 million-per-year program that has many customers/sponsors. The customers include the Fleet air Wings and aircraft carriers; Washington customers, such as PMA-208 for targets, PMA-248 for training ranges, PMA-272 for DT&E of the electronic warfare (EW) threat simulators; PEO for Theater Air Defense (TAD), PMS-422, (Standard Missile) and PMS-400 for AEGIS ship EW support; SEA-91W for New Threat Upgrade, Destroyer, Frigate, Carrier, LHA, AOE, etc., ship DT&E and training EW support. We also support various NAVAIR weapons programs, such as F-14, F-18, AMRAAM, HARM, Sidarm, Tomahawk, etc. We are also the Tri-Service leader for development, procurement, operational support, and logistics for most of our electronic assets. Additionally, we are the depot facility for all of the assets that we develop and deploy and we receive funding

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

from the Aviation Supply Office to accomplish this. Finally, we are involved in private party and FMS projects and receive private and foreign funding for these efforts.

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

The threat ECM simulators are used worldwide by all three services in laboratories, land-based in/on manned aircraft, and in/on unmanned targets. The VAD not only provides and installs the ECM simulators at these various locations, but also provides technical expertise to the users. This expertise covers the use of the simulators, but also the most effective way for the user to improve his weapon systems through techniques or tactics to overcome the ECM environment.

The VAD has installed ECM simulators in many laboratories for all three services and examples of these are the following:

F-14 System Integrated Test Site	NAWCWPNS, Pt. Mugu, Calif.
AIM-54 Hardware-in-the-loop Lab	NAWCWPNS, Pt. Mugu, Calif.
AIM-120 Hardware-in-the-loop Lab	NAWCWPNS, Pt. Mugu, CA
F-18 Weapon System Lab	NAWCWPNS, China Lake, Calif.
AIM-120 Hardware-in-the-Loop Lab	Eglin AFB, Fla.
F-15/F-16 Radar Test Facility	Tyndall AFB, Fla.
F-15 Radar System Lab	Edwards AFB, Calif.
F-16 Radar System Lab	Hill AFB, Utah
F-15 Radar System Lab	Warner Robbins AFB, Ga.
Survivability/Lethality Lab	White Sands Missile Range, N. Mex.
Radar Frequency System Simulator	Redstone Arsenal, Ala.
Air Combat Environment T&E Facility	NAWCAD, Pax River, Md.

We provide ALQ-167 pods, install ULQ-21's in targets and provide technical consultants to support weapons systems test and evaluation throughout the world. We currently are supporting testing of the following weapons at these locations:

F-15/AMRAAM	Tyndall AFB, Fla.
F-15/AMRAAM	Eglin AFB, Fla.
F-15/AMRAAM	Holloman AFB, N. Mex.
F-16/AMRAAM	Tyndall AFB, Fla.
F-16/AMRAAM	Eglin AFB, Fla.

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

F-16/AMRAAM
F-18/AMRAAM
F-18/AMRAAM
F-18 Radar Upgrade
F-15 Radar Follow On
F-16 Radar Follow On

Holloman AFB, N. Mex.
NAWCWPNS, Pt. Mugu, Calif.
NAWCWPNS, China Lake, Calif.
NAWCWPNS, China Lake, Calif.
Edwards AFB, Calif.
Hill AFB, Utah

An example of this support is AMRAAM, which is managed by the Air Force during development. The Air Force has tasked the VAD to provide all of the ECM simulations required for the development of this system. This effort includes laboratory simulators, captive flight simulators, and simulators used in actual launches. This is not an isolated case, but is representative of the type of support provided to DOD weapons test and evaluation programs. We have recently been contacted by the Air Force concerning providing similar support for their F-22.

With the VAD's knowledge of both the threat simulation system and the weapon system under test, we are capable of providing the most coherent and complete threat environment support. This expertise is widely acknowledged throughout the DOD and is utilized by virtually all DOD weapon systems. For example, we are a "trusted agent" of OPTEVFOR during the OPEVAL of various weapon systems. As part of the OPTEVFOR charter, results of OPEVAL testing are to be guarded and remain separate from those done during a system technical evaluation until such time as the OPEVAL final report is complete. The VAD has been requested to assist the OPEVAL test director in structuring the testing to be completed, provide a threat representative environment in which to complete these tests, and assist in the reduction of data in which a test conclusion is made. The VAD is aware of the test results well before they are published. If this capability were not unique, then OPTEVFOR could seek it anywhere else it desired. The VAD has performed this effort dating back to the original SM-1 and AIM-7F missile development efforts and has contributed to almost every major system development and test since.

Our simulators are also widely used to provide a realistic ECM environment for training operators. We are the primary provider of threat ECM simulators to the Navy's Fleet Tactical Readiness Group (FTRG) who provides the majority of the ECM training to the Navy. Additionally, we were instrumental in providing ECM modules and technical expertise to the Air Force for their development of the AN/ALQ-188 pod. This pod is used as the primary asset to provide ECM training within the Air Force. We were also the provider and integrator of the ECM simulators for the AN/ALQ-195 that is installed in the F-5 and used by the Fighter Weapons School for their air-to-air training syllabus.

We have been instrumental in supporting the tactical version of the ALQ-167 pod. Due to the classification this, Quick Reaction Capability has limited visibility. A team of engineers and technicians are "on call with passports" and are maintained in a readiness

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

status for deployment of systems and personnel as required by the Fleet. The systems they support are modular and provide for geographical reconfiguration to the specific threats encountered in the specific theater of interest when needed during Fleet mobilization efforts. These teams have provided on-site Quick Reaction support efforts dating back to the 1980s, including the Iranian hostage crisis, and Lebanon and Libyan efforts. Some of these threats can only be accommodated by a threat-specific configuration of the ALQ-167.

During Desert Storm, VAD teams were sent to carriers in the Persian Gulf and bases in Saudi Arabia to prepare the ALQ-167 pods for tactical operations. The ALQ-167s were very successful and have been cited in Fleet-after-action reports for saving aircrew lives.

The Air Force tasked the VAD to provide specialized threat countermeasures expertise and products to support the QF-4 target development led by the Air Force. VAD has been an active participant and wrote the classified performance specification for the system. we have provided the Navy ULQ-21 modules to be incorporated into the joint QF-4 ECM system. The VAD will also provide integration, interface, operating characteristics, and operating procedures of these modules in support of the Air Force contractors pod designer.

As the system integrator and primary technical developer and provider of many of our threat ECM systems to DOD, we have expanded our sphere of business to include private companies in the United States and foreign governments. As the expert in the field of ECM, we have knowledges, skills, and products unmatched anywhere in the world. This unique expertise has attracted customers worldwide.

TYPE OF TEST SUPPORTED:

The simulators are utilized to support all phases of weapon systems DT&E from initial DT in the laboratory through OT captive flights and weapon firings.

SUMMARY OF TECHNICAL CAPABILITIES:

The primary Threat Electronic Countermeasures Simulators utilized by the Vulnerability Assessment Division to provide realistic electronic countermeasures environments are described below

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

ULQ-21 ECM SIMULATOR

The AN/ULQ-21(V) (ULQ-21) is a digital, fully computer controlled and programmable ECM system operating in the frequency range of 1 to 18 GHz with special applications in Ka-band (36 GHz). It is the follow-on to the AN/DLQ-3C(V) CM Set designed for multipurpose use in targets, aircraft external stores, aircraft internal installation, laboratory applications, and land-based instrumentation-sites.

The ULQ-21 is capable of generating noise, deception (repeater), transponder, and combination ECM techniques. Its present ECM capability allows manned aircraft and unmanned aerial targets to simulate observed and projected ECM threats through the year 2000.

The ULQ-21 not only provides generic threat simulation capability, but also serves as the baseline for several replica-grade simulators. Most importantly, it provides all the ECM techniques and parameters contained in the Electronic Counter-Countermeasures Requirement and Assessment Manual (ERAM) engagement models. ERAM is the threat document used to describe the current and projected (next 10 years) threat that U.S. weapon systems will face.

The ULQ-21 is used by all three services throughout the world as the primary system for airborne ECM simulation for weapons ECCM T&E, and operator training. It provides a realistic threat environment for both captive flight and live firings tests. Although used primarily on airborne platforms, the versatility of the ULQ-21 allows it to be used in shipboard, land-based, and laboratory environments as well.

For airborne platforms, the ULQ-21 can be installed in AN/ALQ-167(V) and AN/DLQ-8 wing mounted pods; in/on the BQM-34, BQM-74, MQM-87, TDU-34, QF-106 and QF-4 aerial targets; and internally in the F-5E, ERA-3B, T-39, NKC-135A, and EC-24 aircraft.

The AN/ALQ-167(V) (ALQ-167) pod is the most widely used application. It was initially developed as a training system that eventually evolved into a tactical application to provide self-protection ECM against certain specific threats. The ALQ-167 has the capability to simulate a variety of threat environments against microwave oriented weapon systems in the frequency range of 0.4 to 18.0 GHz. The ALQ-167 set is capable of generating 30 ECM modes and innumerable combinations of threat modes. The pod is specially configured with both forward and aft radiating capabilities. The ALQ-167 is identified by variant numbers that identify dedicated frequency bands and configuration. In addition, when the modules are used in the overall system and combined with antenna based techniques, it can result in over 9000 possible mode/technique combinations. Currently, the ALQ-167 has been certified for use on the A-3, A-4, A-6, A-7, F-4, F-14, F-15, F/A-18, F-101, ERA-3B, NKC-135A, EC-24, QF-4, QF-86, QF-100, QF-106, and Lear jet.

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

Once the captive testing has been completed the ULQ-21 is installed in an unmanned target and used during live firing exercises. The ULQ-21 integrated which the target provides a realistic self-screening, escort or stand-off ECM environment in which the ultimate live firing test of the weapon system can be accomplished.

The ULQ-21 is also used in land-based applications. They are permanently installed at the Pacific Missile Range Facility (PMRF) and the Dare County Bombing Range to provide an ECM environment for training operators. At PMRF, even though it is ground-based, the ULQ-21 is used to provide a simulated airborne ECM environment for ships on the range so that the shipboard radar operators can train in a multiaxis ECM environment. At Dare County the ULQ-21 provides a ground threat ECM environment to add realism to the air-to-surface training and bombing exercises missions.

The ULQ-21 is also ideal for providing a realistic threat ECM environment in laboratories. It is used in missile HWIL simulations, weapon system software support activities, and radar development laboratories by all three services. The ULQ-21 has been configured in rack-mounted configurations for this purpose, and these are currently the AN/ULQ-24 and AN/ULQ-26.

KEYWORDS:

UPT-2A, DPT-2, AST-6, UPQ-8, FTRG, OPTEVFOR, MQM-8, BQM-34, BQM-74, TDU-34, AQM-37, ESM, TGTE, PTES, Threat

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	35,000	49,000	62,000	60,000	63,000	76,000	74,000	84,000
	Test Hours	12,000	12,000	11,000	12,000	13,000	13,000	13,000	15,000
	Missions	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

ANNUAL HOURS OF DOWNTIME (1) 0
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) N/A
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) N/A

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) N/A	(5) N/A	(6) N/A	(7) N/A	(8) N/A
				ANNUAL UNCONSTRAINED CAPACITY
				(9) N/A

"Typical"

TOTAL 0

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? We currently provide these Threat Electronic Countermeasures Simulators worldwide on a moments notice. We are not constrained to downtime as described in this data call. We are a 24 hour facility dependent only on workload requirements. With increased personnel and funding, we could support unlimited additional requirements.

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

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	48	49	49	49	49	49	49
Contractor	21	17	15	14	14	14	14
Total	69	66	64	63	63	63	63

Total Square Footage: 35,000Test Area Square Footage: 26,200Office Space Square Footage: 271Tonnage of Equipment: 263Volume of Equipment: 10,200Annual Maintenance Cost: \$310,000Estimated Moving Cost: \$1,170,000

Revised page

BRAC 95 DATA CALL #13
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T&E
CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94
FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

ACTIVITY UIC: 63126

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
NONE	NONE	NONE	NONE	NONE	NONE	NONE
NONE	125	NONE	NONE	NONE	NONE	NONE

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NAWCHQ
CHANGE 1, 6/6/94

BRAC 95 DATA CALL #13

FOR OFFICIAL USE ONLY
T&E

ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
	125					

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Threat Electronic Countermeasures Simulators

AGE: 9 Yrs.

REPLACEMENT VALUE: \$3,528,307

MAINTENANCE AND REPAIR BACKLOG: No maintenance or repair backlog existx.

DATE OF LAST UPGRADE: No upgrades have been made; building was built in 1988.

NATURE OF LAST UPGRADE: No upgrades have been made; building was built in 1988.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: No upgrae title has been assigned as no upgrades have been planned or required.

TOTAL PROGRAMMED AMOUNT: None.

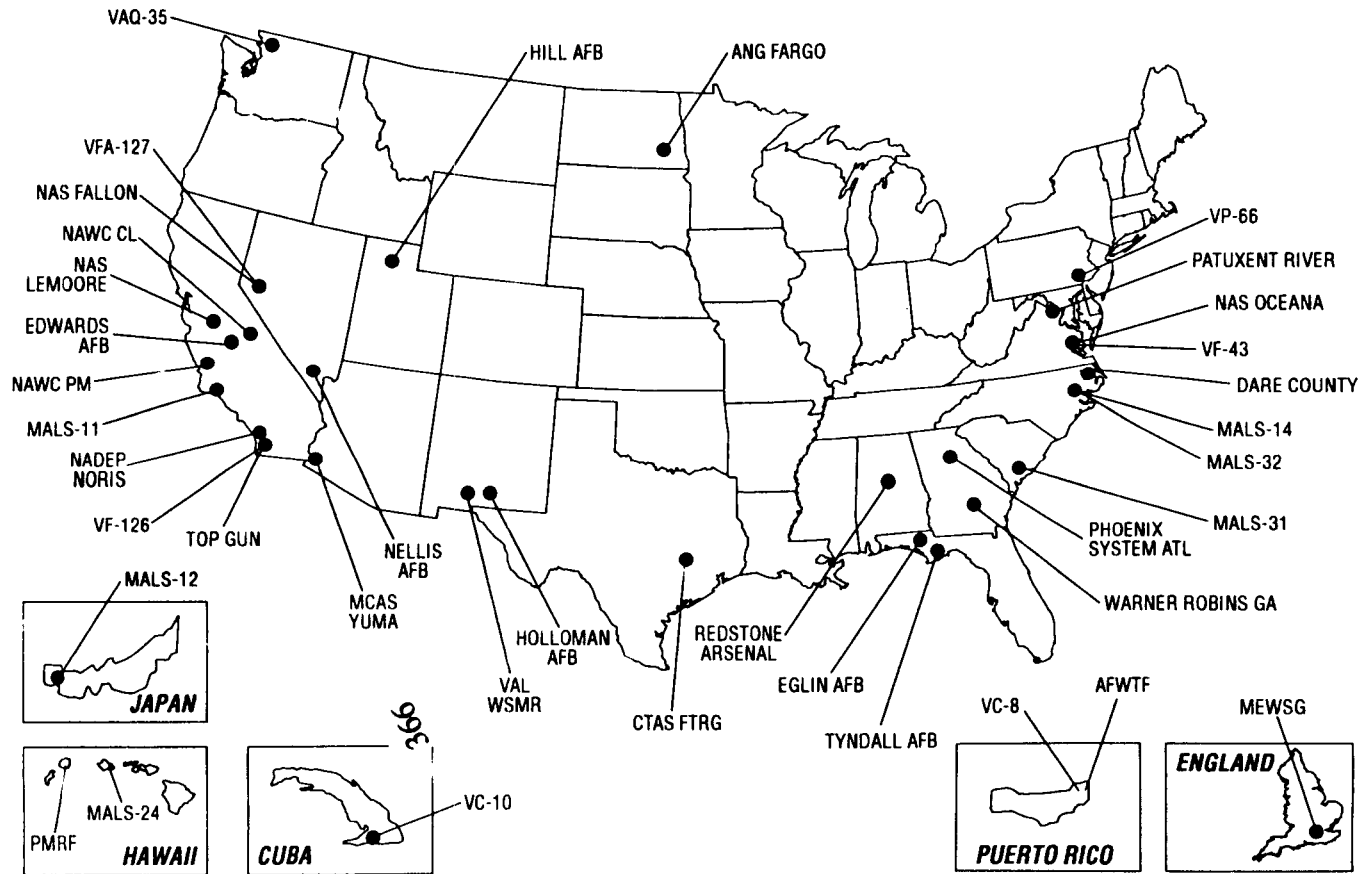
SUMMARY DESCRIPTION: No major upgrades are planned in the near future.

2. UPGRADE TITLE: No upgrade title has been assigned as no upgrades have been planned or required.

TOTAL PROGRAMMED AMOUNT: None.

SUMMARY DESCRIPTION: No major upgrades are planned in the near future.

ACTIVITIES UTILIZING THREAT ELECTRONIC COUNTERMEASURES SIMULATORS

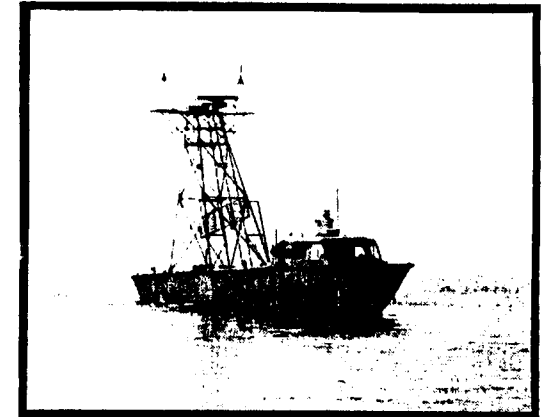




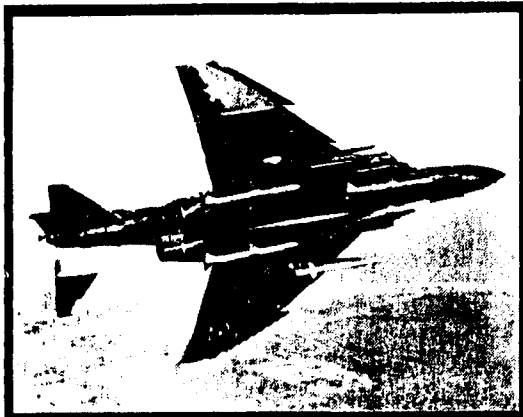
LAND-BASED



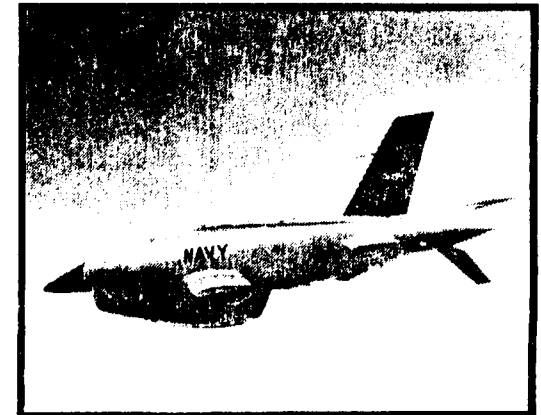
ULQ-21



SHIPBOARD



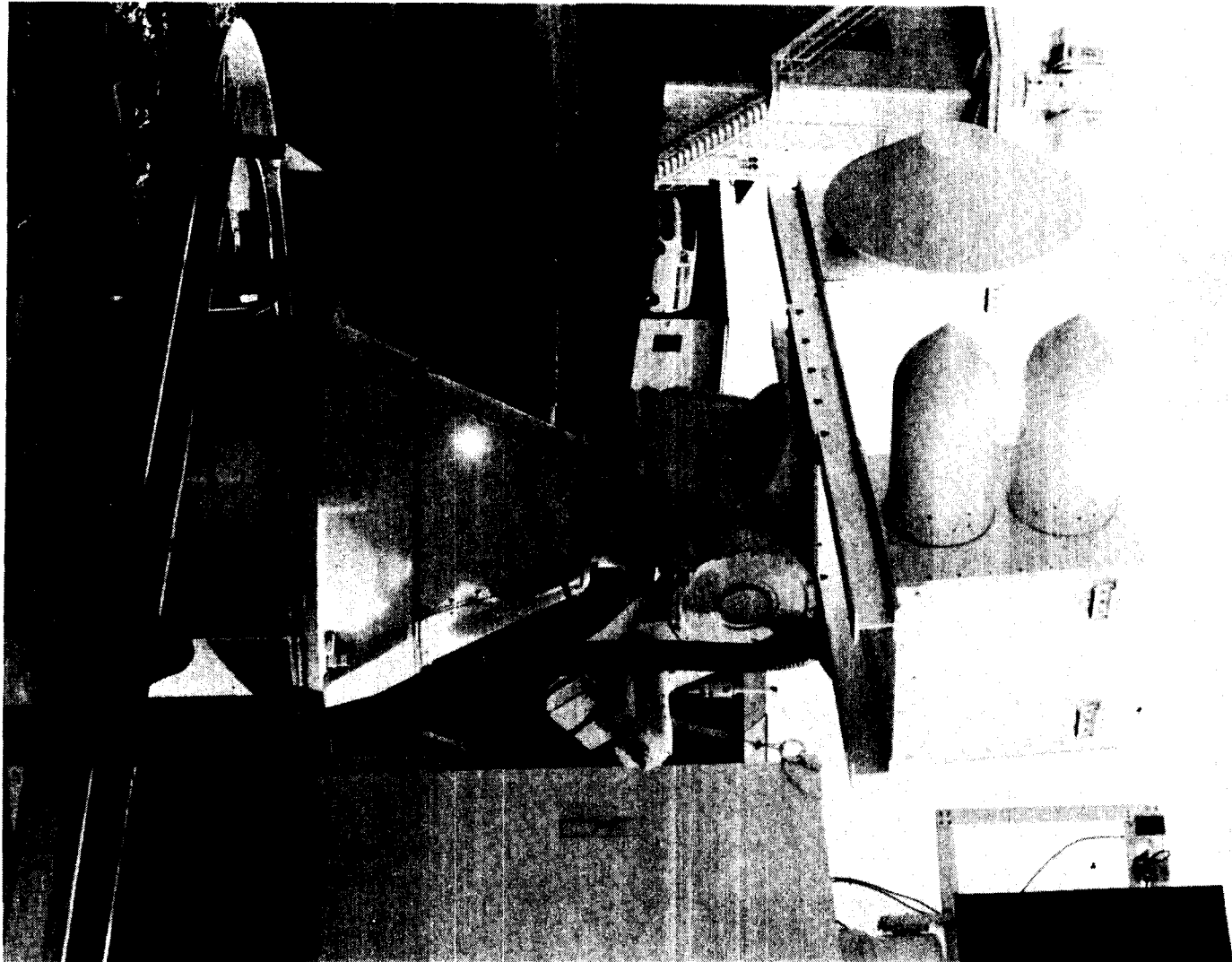
AIRBORNE



TARGET

Threat ECM Simulators

Land-Based ECM Application



Tab 31: Threat Radar Signal Simulators

BRAC 95 DATA CALL #13

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ACTIVITY UIC: 63126

GENERAL INFORMATION

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

Origin Date: 4/30/94

SERVICE: <u>Navy</u>	ORGANIZATION/ACTIVITY: <u>NAWCWPNS</u>	LOCATION: <u>Point Mugu, California</u>				
T&E FUNCTIONAL AREA: <u>Armament/Weapons</u>	UIC = <u>N63126</u>					
T&E TEST FACILITY CATEGORY: <u>Open Air Ranges</u>						
	<u>T&E</u>	<u>S&T</u>	<u>D&E</u>	<u>IE</u>	<u>T&D</u>	<u>OTHER</u>
PERCENTAGE USE:	<u>100</u>					
BREAKOUT BY T&E FUNCTIONAL AREA (%)						
Air Vehicles						
Armament/Weapons	<u>100</u>					
EC						
Other						
Total in Breakout Must Equal "Percentage Use" On First Line						

TECHNICAL INFORMATION

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

FACILITY DESCRIPTION; INCLUDING MISSION STATEMENT:

The radar signal simulators developed and operated by the Vulnerability Assessment Division (VAD) at Point Mugu are recognized worldwide as the premier airborne threat radar signal simulators. They are primarily used to simulate antiship cruise missiles and their associated launch radars. We are the tri-service leaders in the development of these simulators, as well as providing the simulators to all three services. Our simulators are used by the three services throughout the world as the primary system for weapons T&E and operator training. Additionally, using these radar signal simulators, the VAD technical personnel perform threat analysis and future threat projections for weapon systems.

The development of these simulators is driven by the requirements in threat documents, weapon systems TEMPS, and information gained from exploitations in which we participate. The radar signal simulators are then developed within VAD to simulate or replicate the real threat. The simulators are used in multiple applications, including in/on manned aircraft, in/on unmanned aerial targets, on surface targets, on land ranges, in laboratories, and on training ranges.

The VAD is the developer and system integrator of the radar signal simulators. The individual modules that make up the system are procured from industry, but the integration of these modules, along with the operating parameters that make the system work are the responsibility of the VAD. Because of the many unique applications and platforms, this acquisition strategy has proven to be a tremendous success in keeping the overall system cost down and has allowed us to expeditiously provide the most current threat jammers documented in intelligence data today.

The Threat Radar Signal Simulator program is a \$10 million/year program with many customers/sponsors. These customers include Fleet Air Wings and Washington customers such as PMA-208 for targets; PMA-248 for training ranges; and PMA-272 for DT&E of the electronic warfare (EW) threat simulators. We also support various NAVAIR/NAVSEA weapons programs such as HARM, SIDEARM, Tomahawk and RAM. We are the Tri-Service leader for development, procurement, operational support and logistics for most of our electronic assets. Additionally, we are the depot facility for all of the assets that we develop and deploy and we receive funding from the Aviation Supply Office to accomplish this. Finally, we are involved in private party and FMS projects and receive private and foreign funding for these efforts.

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BRAC 95 DATA CALL #13

ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

INTERCONNECTIVITY/MULTI-USE OF T&E FACILITY:

The threat radar signal simulators are used worldwide by all three services in laboratories, land-based in/on manned aircraft and in/on unmanned targets. The VAD not only provides and installs the radar signal simulators at these various locations, but also provides technical expertise to the users. This expertise covers the use of the simulators but also the most effective way for the user to improve his weapon systems through techniques or tactics to counter the radar signal environment.

We provide AST-6 pods, install UPT-2A and DPT-2 simulators in targets, and provide technical consultants to support weapon systems test and evaluation throughout the world. We currently are supporting testing at these locations:

Pacific Missile Range Facility, Hawaii
Atlantic Fleet Weapons Training Facility, Puerto Rico
NAWCWPNS, Point Mugu, Calif.
NAWCWPNS, China Lake, Calif.
Yuma Proving Grounds, Ariz.
Pachino Range, Italy
Nellis Air Force Base, Nev.
Spokane Bombing Range, Wash.
Mid-Atlantic EW Range

With the VAD's knowledge of both the threat simulation system and the weapon system under test, we are capable of providing the most coherent and complete threat environment support. This expertise is widely acknowledged throughout DOD and is utilized by virtually all DOD weapon systems. For example, we are a "trusted agent" of OPTEVFOR during the OPEVAL of various weapon systems. As part of the OPTEVFOR charter, results of OPEVAL testing are to be guarded and remain separate from those done during a system technical evaluation until such time as the OPEVAL final report is complete. The VAD has been requested to assist the OPEVAL test director in structuring the testing to be completed, provide a threat representative environment in which to complete these tests, and assist in the reduction of data in which a test conclusion is made. The VAD is aware of the test results well before they are published. If this capability were not unique, then OPTEVFOR could seek it anywhere else it desired. The VAD has performed this effort dating back to the original SM-1 and AIM-7F missile development efforts and has contributed to almost every major system development and test since.

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

Our simulators are also widely used to provide a realistic radar signal environment for training operators. We are the primary provider of threat radar signal simulators to the Navy's Fleet Tactical Readiness Group (FTRG), which provides the majority of the radar signal training to the Navy.

TYPE OF TEST SUPPORTED:

The simulators are utilized to support all phases of weapon systems DT&E from initial DT in the laboratory through OT captive flights and weapon firings.

SUMMARY OF TECHNICAL CAPABILITIES:

The primary Threat Radar Signal Simulators developed and utilized by the Vulnerability Assessment Division to provide realistic radar signal environments are described below.

AN/UPT-2A Radar Signal Simulator

The AN/UPT-2A (UPT-2A) Radar Signal Simulator (RSS) is a pulse-modulated radar threat simulator usable in land, air, and sea environments as a low-cost threat emitter. It is primarily used to simulate antiship cruise missiles and their associated launch radars, but it can also be used as a target for antiradiation missiles that home on the UPT-2A signal. It is used in the test and evaluation of electromagnetic support measure (ESM) equipment and for operator training. The UPT-2A is the follow-on to the AN/DPT-1 and was developed to have expanded RF, pulse repetition frequency (PRF), and pulse-width (PW) capability, along with increased power. This allows the UPT-2A to simulate all of the presently known former Soviet Union and third-world radar threats. The design and development of the RSS has been accomplished considering size, weight, support equipment, maintainability, and ease of operation. It consists of a water-tight modulator assembly, a power supply, cabling to interconnect the modulator assembly and power supply, and a military or commercial magnetron. The operating frequencies of the RSS are determined by the selection of H-, I-, or J-band magnetrons and related waveguides and flexguides. The PW and PRF are adjustable either locally or by remote control.

The UPT-2A is used by all three services throughout the world as the primary system for airborne radar signal simulation for weapons ESM T&E and operator training. It provides a realistic threat environment for both captive flight and live firing tests. Although used primarily on airborne platforms, the versatility of the UPT-2A allows it to be used in shipboard and land-based environments as well. For airborne platforms, the UPT-2A can be installed in AN/AST-6(V) wing-mounted pods and in the BQM-34 and MQM-8 aerial targets. The AN/AST-6(V) (AST-6) is an active emitter/threat simulation system installed in a pod. The AST-6 is a follow-on to the AN/AST-4. It provides realistic simulation of hostile antiship missiles, aircraft, and search radars. It is used to support weapons

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

RDT&E and Fleet training exercises for air crews and electronic support measures operators. Up to 12 AST-6 pods can be installed on a single subsonic or supersonic aircraft, and controlled through a control indicator (CI) in the cockpit. The CI is connected to the pod by the host aircraft wiring and umbilical cable.

With its expanded capabilities, the AST-6 presents an effective simulation of the newest and most complex missile threats known. Depending upon operational requirements, the AST-6 can be fitted with one of four different magnetrons to provide frequencies in the 7.8 to 17 GHz range.

The AST-6 can be preprogrammed to carry out a variety of operational scenarios. Up to 99 scenarios can be loaded into the AST-6 digital computer. Each individual scenario can include instructions for magnetron type, scan parameters, radio frequency, pulse mode, PRF, PW, time base mode, hold-time, and jump commands. These scenarios can also be programmed to cascade, simulating launch, search, and terminal guidance modes in a time frame that represents an actual antiship cruise missile threat.

Following the captive work-ups using the AST-6 pod, the UPT-2A is then installed in unmanned aerial targets and used to support live firing exercises. The targets with the UPT-2A installed then provide realistic radar signals that simulate the prelaunch and tracking signals of the radar and the terminal launch signatures of the antiship cruise missile. The live firing is the ultimate validation of our ESM and weapon system capabilities.

Despite the fact that the UPT-2A was primarily developed for airborne applications, its versatile generic capability makes it an ideal candidate for simulating land-based radar threats. The UPT-2A is the heart of the AN/UPQ-8 (UPQ-8) land-based radar simulator. The UPQ-8 is designed to emit RF signals that are representative of various threat radars. The system is capable of simulating frequency characteristics of certain hostile missiles and ground radar sites in support of Fleet and aircrew training exercises. Its portability allows the use of multiple threat bearings that can be changed rapidly whether being operated from a land site or from a surface craft. The units utilize computer control to provide a variety of preprogrammed RF signal parameters and have the capability of operating multiple databases. The system can be remotely controlled through compatibility linked information systems. Time-stamped information identifying the signals and events executed during an exercise are recorded and made available to provide timely post-mission feedback to participants. The system computer controlled RF signals are directed through a tripod antenna assembly that features both manual and automatic antenna positioning. Currently, the UPQ-8 versions in use are the Portable Threat Emitter System (PTES) and the Triple Ground Threat Emitter (TGTE).

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators**DPT-2 Radar Signal Simulator**

The AN/DPT-2 (DPT-2) RSS is a pulse-modulated radar threat simulator usable in land, air, and sea environments as a low-cost threat emitter. It is primarily used to simulate antiship cruise missiles and their associated launch radars, but it can also be used as a target for antiradiation missiles that home on the DPT-2 signal. The DPT-2 was originally developed for installation in the smaller BQM-74 target. However, it is now also used in the TDU-34A aerial tow target. Later versions of the DPT-2 incorporate additional operating frequencies and expanded PRF and PW parameters. The latest version is packaged for installation in the AQM-37 target in addition to the current transmitter usage. Because of target size and primary power restrictions, the DPT-2 operates at reduced transmitter power levels compared to the DPT-1/UPT-2. In the future, in an effort to save money during firing exercises, the smaller subscale targets will be increasingly used and the DPT-2 will become the RSS of choice because it is the only simulator that will fit in these small targets.

The DPT-2 is also used in land-based applications to simulate ground threats. For this application it is primarily used as an expendable simulator during antiradiation missile firing exercises. It has proven to be very effective and with its low cost is becoming an extremely desired asset for these firings.

KEYWORDS:

ECM, ECCM, ULQ-21, ULQ-24, ULQ-26, FTRG, QF-4, BQM-34, BQM, 74 TDU-34, OPTEVFOR, threat, ERAM, exploitation

HISTORICAL WORKLOAD

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

T&E FUNCTIONAL AREA		FISCAL YEAR							
		86	87	88	89	90	91	92	93
Air Vehicles	Direct Labor								
	Test Hours								
	Missions								
EC	Direct Labor								
	Test Hours								
	Missions								
Armament/Weapons	Direct Labor	15000	21000	26000	25000	27000	32000	31000	36000
	Test Hours	5000	5000	6000	8000	8000	8000	9000	9000
	Missions								
Other T&E	Direct Labor								
	Test Hours								
	Missions								
Other	Direct Labor								
	Test Hours								
	Missions								

DETERMINATION OF UNCONSTRAINED CAPACITY

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

ANNUAL HOURS OF DOWNTIME (1) 0
 AVERAGE DOWNTIME PER DAY (LINE 1 DIVIDED BY 365) (2) N/A
 AVERAGE HOURS AVAILABLE PER DAY (24 MINUS LINE 2) (3) N/A

TEST TYPES	TESTS AT ONE TIME	WORKLOAD PER TEST PER FACILITY HOUR	WORKLOAD PER FACILITY HOUR	UNCONSTRAINED CAPACITY PER DAY (LINE 3 X TOTAL)
(4) N/A	(5) N/A	(6) N/A	(7) N/A	(8) N/A ANNUAL UNCONSTRAINED CAPACITY (9) N/A

"Typical"

TOTAL 0

Is the unconstrained capacity limited by the physical characteristics of the facility/capability itself, safety or health considerations, commercial utility availability, etc.? No. The laboratory test hours are facility limited (i.e. lab work spaces), the flight tests are limited to two operations per day because of aircraft availability, pilot availability, and aircraft required maintenance. We currently provide these Threat Radar Signal Simulators worldwide on a moments notice. We are not constrained to downtime as described in this data call. We are a 24 hour facility dependent only on workload requirements. With increased personnel and funding, we could support unlimited additional requirements.

If yes, explain:

ADDITIONAL INFORMATION

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

PERSONNEL

	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Officer	0	0	0	0	0	0	0
Enlisted	0	0	0	0	0	0	0
Civilian	25	25	26	26	26	26	226
Contractor	9	8	7	6	6	6	6
Total	34	33	33	32	32	32	32

Total Square Footage: 15,000

Test Area Square Footage: 11,200

Tonnage of Equipment: 28

Annual Maintenance Cost: \$140,000

Office Space Square Footage: 0

Volume of Equipment: 4,300

Estimated Moving Cost: \$510,000

Revised page

BRAC 95 DATA CALL #13
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CHANGES REQUESTED PER NAWC HQ FAX OF 20 MAY 94
FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

ACTIVITY UIC: 63126

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99
NONE	NONE	NONE	NONE	NONE	NONE	NONE
NONE	NONE	NONE	NONE	NONE	NONE	NONE

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CHANGE 1, 6/6/94

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ACTIVITY UIC: 63126

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

CAPITAL EQUIPMENT INVESTMENT (\$K) Top: current IM funds. Bottom: program funds.

FY93	FY94	FY95	FY96	FY97	FY98	FY99

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ACTIVITY UIC: 63126

FACILITY CONDITION

FACILITY/CAPABILITY TITLE: Threat Radar Signal Simulators

AGE: 9 Yrs.

REPLACEMENT VALUE: \$1,694,194

MAINTENANCE AND REPAIR BACKLOG: No maintenance or repair backlog existx.

DATE OF LAST UPGRADE: No upgrades have been made; building was built in 1988.

NATURE OF LAST UPGRADE: No upgrades have been made; building was built in 1988.

MAJOR UPGRADES PROGRAMMED

1. UPGRADE TITLE: No upgrae title has been assigned as no upgrades have been planned or required.

TOTAL PROGRAMMED AMOUNT: None.

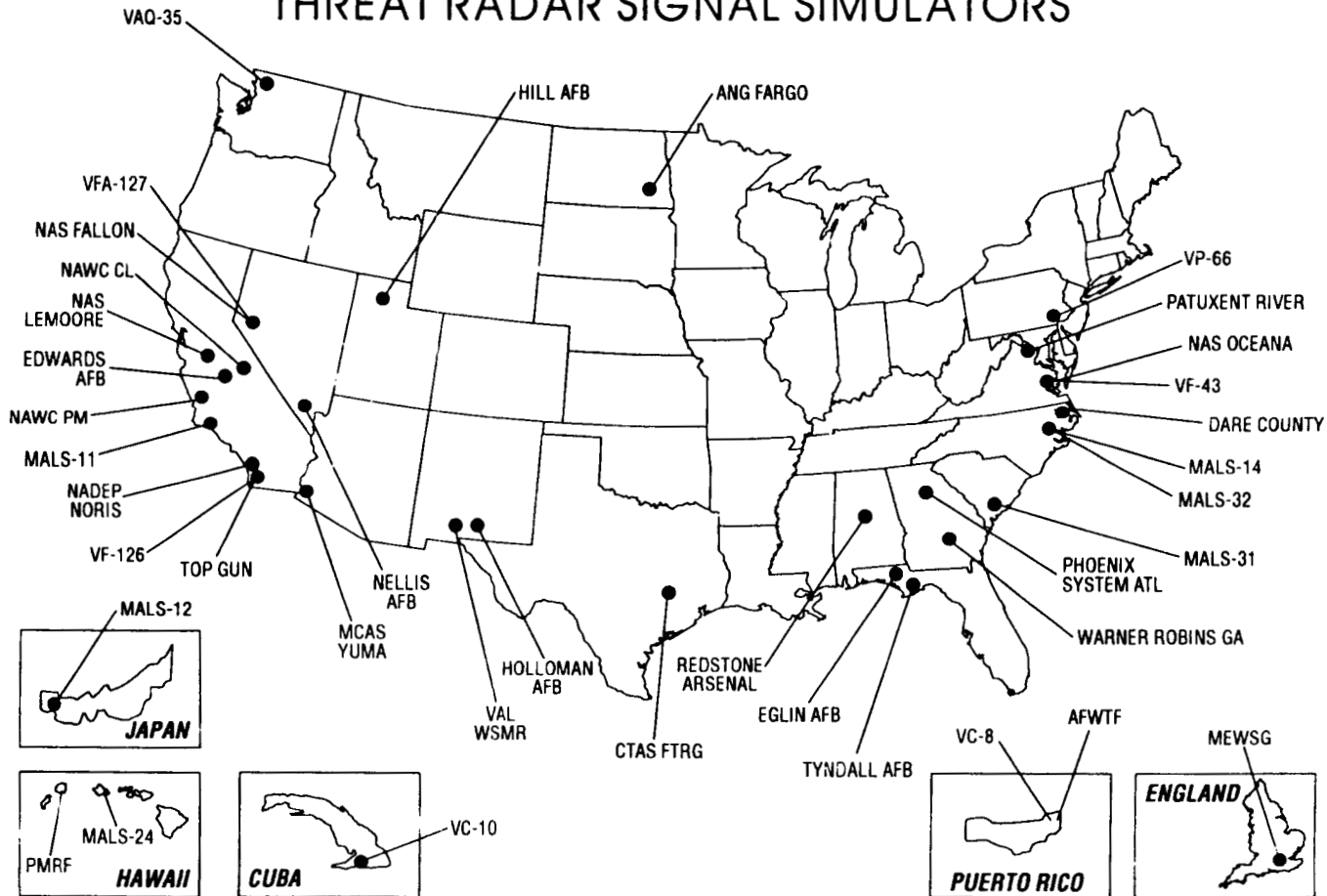
SUMMARY DESCRIPTION: No major upgrades are planned in the near future.

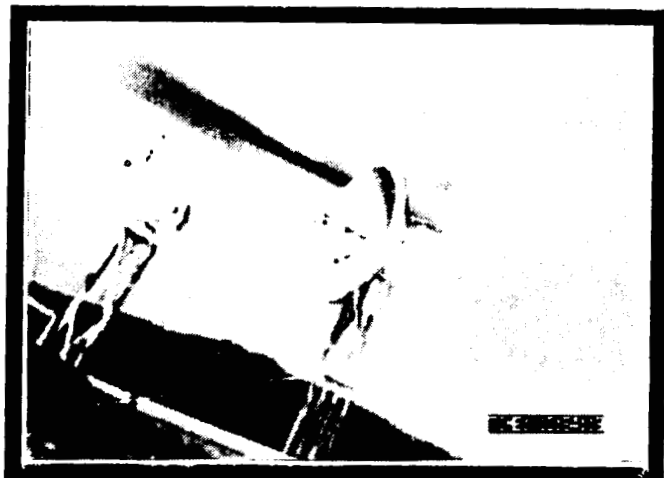
2. UPGRADE TITLE: No upgrade title has been assigned as no upgrades have been planned or required.

TOTAL PROGRAMMED AMOUNT: None.

SUMMARY DESCRIPTION: No major upgrades are planned in the near future.

ACTIVITIES UTILIZING THREAT RADAR SIGNAL SIMULATORS

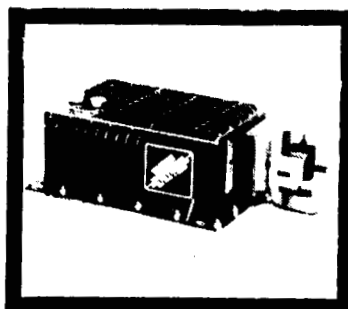




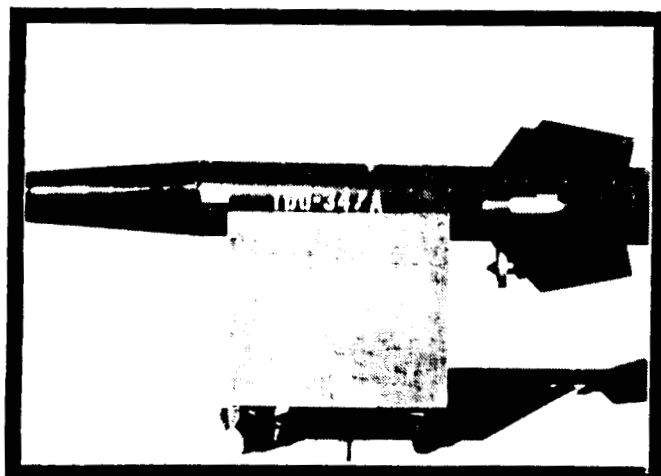
SIDEARM



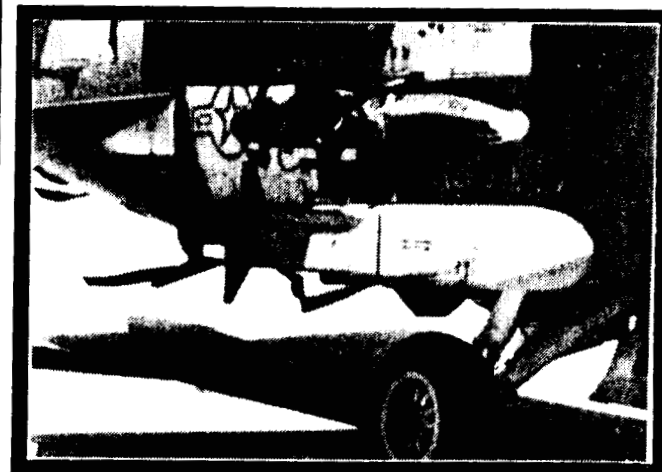
BQM-74



AN/DPT-2

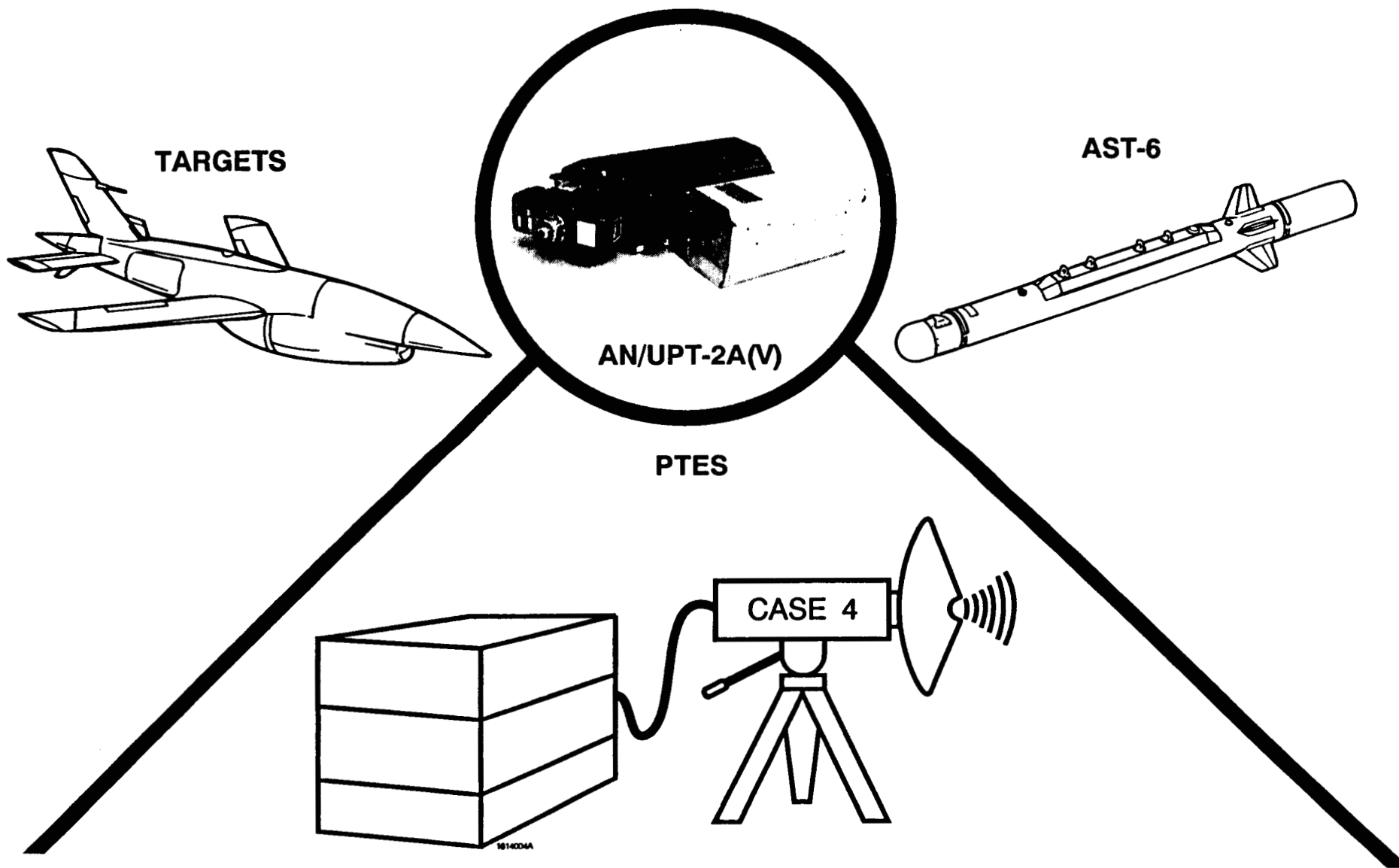


TDU-34

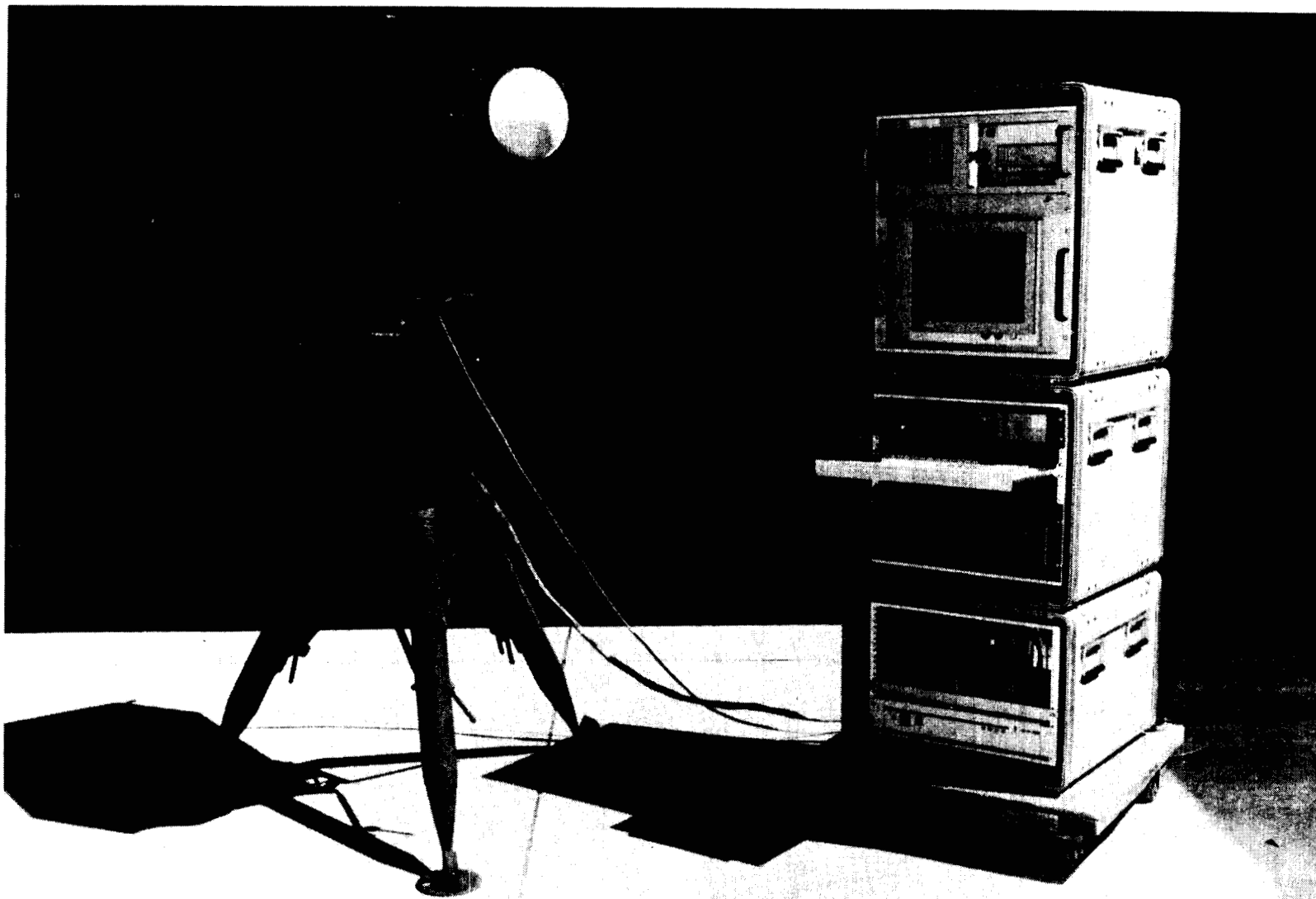


TALD

AN/DPT-2 Series Applications



AN/UPT-2A(V) Emitter Applications



Portable Threat Emitter System (PTES)

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Airborne Infrared Measurements Capability

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)		√
Electro-Optical (EO)	√	
Infrared (IR)	√	
Millimeter Wave (MMW)	√	
Ultra Violet (UV)	√	
Laser	√	

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Airborne Infrared Measurements Capability

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

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	√	
Safety T&E	√	
Warhead Performance T&E		√
Fuze T&E		√
Seeker, sensor and guidance/control performance and target/background signature characterization	√	
Propulsion Performance T&E	√	
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes	√	
Gun Performance T&E		√
Electromagnetic Environmental Effects		√
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)

Activity Title: NAWCWPNS--Point Mugu UIC: 63126

Facility/Capability Title: Bistatic Radar Reflectivity Laboratory

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

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		√
Safety T&E		√
Warhead Performance T&E		√
Fuze T&E		√
Seeker, sensor and guidance/control performance and target/background signature characterization	√	
Propulsion Performance T&E		√
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes		√
Gun Performance T&E		√
Electromagnetic Environmental Effects		√
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No (both TS and Special Access)

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: E³ Facility

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)	√	
Electro-Optical (EO)		√
Infrared (IR)	√	
Millimeter Wave (MMW)	√	
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes ___ No √

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**T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)**

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: E³ Facility

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

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		√
Safety T&E	√	
Warhead Performance T&E		√
Fuze T&E		√
Seeker, sensor and guidance/control performance and target/background signature characterization	√	
Propulsion Performance T&E		√
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes		√
Gun Performance T&E		√
Electromagnetic Environmental Effects	√	
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes ___ No √

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Environmental Test Facility

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)		√
Electro-Optical (EO)		√
Infrared (IR)		√
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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**T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)**

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Environmental Test Facility

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

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	√	
Safety T&E		√
Warhead Performance T&E		√
Fuze T&E		√
Seeker, sensor and guidance/control performance and target/background signature characterization		√
Propulsion Performance T&E		√
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes	√	
Gun Performance T&E		√
Electromagnetic Environmental Effects		√
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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**T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)**

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Monostatic Radar Reflectivity Laboratory

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

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		√
Safety T&E		√
Warhead Performance T&E		√
Fuze T&E		√
Seeker, sensor and guidance/control performance and target/background signature characterization	√	
Propulsion Performance T&E		√
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes		√
Gun Performance T&E		√
Electromagnetic Environmental Effects		√
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No (both TS and Special Access)

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R

T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Ready Missile Test Facility

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)		√
Electro-Optical (EO)		√
Infrared (IR)		√
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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**T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)**

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Ready Missile Test Facility

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

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	√	
Safety T&E		√
Warhead Performance T&E		√
Fuze T&E		√
Seeker, sensor and guidance/control performance and target/background signature characterization	√	
Propulsion Performance T&E		√
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes	√	
Gun Performance T&E		√
Electromagnetic Environmental Effects		√
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Reliability Test Facility

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)		√
Electro-Optical (EO)		√
Infrared (IR)		√
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes ___ No √

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Sea Level Climatic Chamber

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)		√
Electro-Optical (EO)		√
Infrared (IR)		√
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes ___ No √

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**T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)**

Activity Title: NAWCWPNS–Point Mugu UIC: 63126

Facility/Capability Title: Reliability Test Facility

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

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	√	
Safety T&E		√
Warhead Performance T&E		√
Fuze T&E		√
Seeker, sensor and guidance/control performance and target/background signature characterization	√	
Propulsion Performance T&E		√
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes	√	
Gun Performance T&E		√
Electromagnetic Environmental Effects		√
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes ___ No √

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**T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)**

R

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Sea Level Climatic Chamber

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

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	√	
Safety T&E	√	
Warhead Performance T&E		√
Fuze T&E		√
Seeker, sensor and guidance/control performance and target/background signature characterization		√
Propulsion Performance T&E	√	
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes	√	
Gun Performance T&E		√
Electromagnetic Environmental Effects	√	
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Support Equipment Engineering and Test Complex

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)	√	
Electro-Optical (EO)	√	
Infrared (IR)	√	
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Support Equipment Engineering and Test Complex

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

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		√
Safety T&E	√	
Warhead Performance T&E		√
Fuze T&E		√
Seeker, sensor and guidance/control performance and target/background signature characterization	√	
Propulsion Performance T&E		√
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes		√
Gun Performance T&E		√
Electromagnetic Environmental Effects		√
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Telemetry/Test Article Instrumentation

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)	√	
Electro-Optical (EO)	√	
Infrared (IR)	√	
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #3
Armament/Weapons (MF)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Telemetry/Test Article Instrumentation

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

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		√
Safety T&E		√
Warhead Performance T&E	√	
Fuze T&E	√	
Seeker, sensor and guidance/control performance and target/background signature characterization	√	
Propulsion Performance T&E		√
Airframe/aerodynamic/aerothermal performance T&E across subsonic, transonic, and hypersonic regimes		√
Gun Performance T&E		√
Electromagnetic Environmental Effects	√	
Directed Energy		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

T&E Test Facility Category: HITL
(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)	√	
Electro-Optical (EO)		√
Infrared (IR)		√
Millimeter Wave (MMW)	√	
Ultra Violet (UV)	√	
Laser	√	

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #2
Armament/Weapons (HITL, & ISTF)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Electronic Combat Simulation and Evaluation Laboratory (ECSEL)

T&E Test Facility Category: HITL
(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)	√*	
Electro-Optical (EO)		√
Infrared (IR)		√
Millimeter Wave (MMW)	√	
Ultra Violet (UV)		√
Laser		√
Midcourse Inertial/GPS (HITL only)		√

*HARM/AGM-88 Seeker Test Capability

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #2
Armament/Weapons (HITL, & ISTF)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Missile Hardware-in-the-Loop Facility

T&E Test Facility Category: HITL
(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)	√	
Electro-Optical (EO)		√
Infrared (IR)	√	
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√
Midcourse Inertial/GPS (HITL only)	√	

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No Both TS and Special Access

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T&E JCSG CLARIFICATION - FORM #2
Armament/Weapons (HITL, & ISTF)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Strike Weapons Evaluation Facility

T&E Test Facility Category: HITL
(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)	√	
Electro-Optical (EO)		√
Infrared (IR)		√
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√
Midcourse Inertial/GPS (HITL only)	√	

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No (both TS and Special Access)

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Aerial Targets Complex

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)	√	
Electro-Optical (EO)	√	
Infrared (IR)	√	
Millimeter Wave (MMW)	√	
Ultra Violet (UV)		√
Laser	√	

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Sea Test Range

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)	√	
Electro-Optical (EO)	√	
Infrared (IR)	√	
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Surface Targets Complex

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)	√	
Electro-Optical (EO)	√	
Infrared (IR)	√	
Millimeter Wave (MMW)	√	
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Target Augmentation Systems Capability

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)	√	
Electro-Optical (EO)	√	
Infrared (IR)	√	
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Target Control Systems Capability

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)	√*	
Electro-Optical (EO)	√	
Infrared (IR)	√	
Millimeter Wave (MMW)	√	
Ultra Violet (UV)	√	
Laser	√	

*The target control system capability will operate under all of the spectra listed. By itself this capability provides for operating targets—not for presentation of the various spectra. The target systems and Target Auxiliary/Augmentation Systems (TA/AS) separately reported provide spectra for testing.

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, Uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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 you 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 the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

D. B. McKinney, RADM, USN
Name (Please type or print)


Signature

Commander
Title

8/25/94
Date

Naval Air Warfare Center Weapons Division Point Mugu Site
Activity

Data Call #13 Revision of 25 August 1994

Pg 63, 64 + 227

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)
COMMANDER
Title
NAVAL AIR WARFARE CENTER
Activity

W E Newman
Signature
8/31/94
Date

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Title

Activity

Signature

Date

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)
COMMANDER
Title
NAVAL AIR SYSTEMS COMMAND
Activity

W C Bowes
Signature
2 Sep 94
Date

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)

Title

W A Earner
Signature
9/6/94
Date

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

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I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

D. B. McKinney, RADM, USN
Name (Please type or print)


Signature

Commander
Title

8/11/94
Date

Naval Air Warfare Center Weapons Division Point Mugu Site
Activity

Data Call #13 Revision of 11 August 1994

pg 3

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, Uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

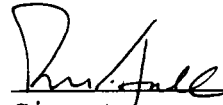
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I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Roger K. Hull, CAPT, USN
Name (Please type or print)


Signature

Acting Commander
Title

16 Sept 94
Date

Naval Air Warfare Center Weapons Division Point Mugu Site
Activity

Data Call #13 Revision of 12 September 1994

168

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)
COMMANDER
Title
NAVAL AIR WARFARE CENTER
Activity

W E Newman
Signature
10/3/94
Date

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)
Title
Activity

Signature
Date

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)
COMMANDER
Title
NAVAL AIR SYSTEMS COMMAND
Activity

W C Bowes
Signature
9 Oct 94
Date

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)
Title

W Eamer
Signature
10/6/94
Date

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, Uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

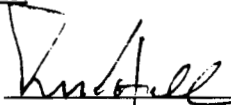
The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

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I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Roger K. Hull, CAPT, USN
Name (Please type or print)


Signature

Acting Commander
Title

28 Sept 94
Date

Naval Air Warfare Center Weapons Division Point Mugu Site
Activity

Data Call #13 Revision of 28 September 1994

R

T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Threat Electronic/Countermeasures Simulators

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)	√	
Electro-Optical (EO)		√
Infrared (IR)		√
Millimeter Wave (MMW)	√	
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

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T&E JCSG CLARIFICATION - FORM #1
Electronic Combat (MF, HITL, ISTF & OAR)

Activity Title: NAWCWPNS-Point Mugu UIC: 63126

Facility/Capability Title: Threat Radar Signal Simulators

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)	√	
Electro-Optical (EO)		√
Infrared (IR)		√
Millimeter Wave (MMW)		√
Ultra Violet (UV)		√
Laser		√

Is this Facility/Capability equipped to support Top Secret or Special Access required work?
Yes √ No

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, Uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

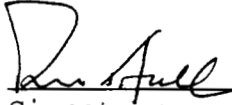
The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in you 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 the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Roger K. Hull, CAPT, USN
Name (Please type or print)


Signature

Acting Commander
Title

16 Sept '94
Date


Naval Air Warfare Center Weapons Division Point Mugu Site
Activity

Data Call #13 Revision of 13 September 1994

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

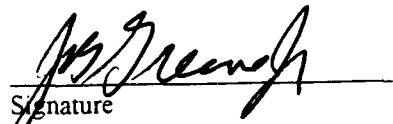
16 May 94
Date

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

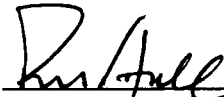
27 May 1994
Date

of this mission. A single support organization serves both sites, resulting in the most cost effective infrastructure. Although BRAC '95 Data Call #12 and #13 are provided separately for China Lake and Point Mugu as requested, the capabilities of both NAWCWPNS sites must be considered as an integrated whole; and the commonality and synergy of the research and development with test and evaluation facilities and people had to be artificially split in order to respond to the separate data calls.

I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Roger K. Hull, CAPT, USN
NAME (Please type or print)



Signature

Acting Commander
Title
Naval Air Warfare Center,
Weapons Division
Activity

13 May 1994

Date

BRAC 95
DATA CALL 13
CHANGE 1 NAWCHQ

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

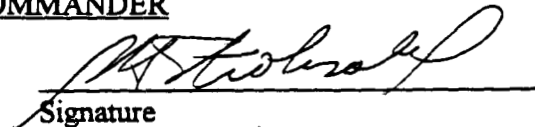
The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

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)

W. E. NEWMAN, RADM, USN
NAME (Please type or print)
COMMANDER
Title
NAVAL AIR WARFARE CENTER
Activity

WE Newman
Signature
8/31/94
Date

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Title

Activity

Signature

Date

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)
COMMANDER
Title
NAVAL AIR SYSTEMS COMMAND
Activity

W. C. Bowes
Signature
2 Sep 94
Date

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)

Title

W. A. Earner
Signature
9/6/94
Date