DEFENSE CLOSURE AND REALIGNMENT COMMISSION

SUMMARY SHEET

NAVAL WARFARE ASSESSMENT DIVISION
CORONA, CA

INSTALLATION MISSION

NWAD Corona conducts several diverse missions which can be divided into four general functional areas. These are:

- **Measure Science Work Centers**

General Description: This is the "Weights and Standards" section of the Navy. It sets the references from which systems are evaluated and measured.

- **Performance Assessment Work Centers**

General Description: This section performs engineering analysis of both weapons system components and overall, multi-platform exercises. They reconstruct live air and sea-borne exercises for analysis and assessment.

- **Quality Assessment Work Centers**

General Description: This section analyzes data to assess and predict Reliability, Maintainability and Availability (R, M & A) statistics and create Trouble Failure Reports (TFRs).

- **System Engineering Work Centers**

General Description: This section provides information resources and technical support to all programs at NWAD. This includes computer graphics, modeling and simulation, computer interconnectivity and telecommunications support.

DOD RECOMMENDATION

- None.

COMMISSION ALTERNATIVE

- Commission added Naval Warfare Assessment Division, Corona, CA for consideration for closure.

JUSTIFICATION

- The Secretary of the Navy removed NWAD Corona from the list of bases to be closed due an undefined reason of cumulative economic impact. To ensure fairness across the services and throughout the Navy the Commission added this base to the list for consideration of closures.

STAFF COMMENTS

Close NWAD Corona, CA. and relocate the functional areas as follows:

- Performance Assessment moves to Naval Postgraduate School, Monterey, CA.
- Quality Assessment moves to Naval Postgraduate School, Monterey, CA.
- Test Systems Certification moves to Naval Air Warfare Center, Weapons Division (NAWC-CD), China Lake, CA.
- Range Systems Engineering and Tactical Air Combat Training (TACT) move to NAWC-CD, China Lake, CA.
- Metrology Science moves to Naval Surface Warfare Center, Crane Division, (NSWC-CD) Crane, IN.
- Gage Engineering and Certification move to NSWC-CD, Crane IN.

COST CONSIDERATIONS DEVELOPED BY DOD

• One-Time Cost:	$76 million
• Net Cost During Implementation:	$31.7 million
• Annual Recurring Savings:	$22.9 million
• Break Even Year:	2003 (3 years)
• Net Present Value Over 20 Years:	$-178.3 million

MANPOWER CONSIDERATIONS

	Eliminated	Realigned
Military	1	9
Civilian	165	636

ENVIRONMENTAL CONSIDERATIONS

- NWAD Corona has both wetlands and "riparian" woodlands on its property. The "riparian" woodlands are woodlands which exist along a body of water of which the body of water is not wetlands. According to the data call $150,000 per year is spent on maintaining these two areas and this expense would have to be maintained even if the Navy leaves the site. This is being investigated by both counsel and our EPA representative.

REPRESENTATION

Governor:	Pete Wilson
Senators:	Dianne Feinstein
	Barbara Boxer
Representative:	Ken Calvert

MILITARY ISSUES

- This closure will reduce infrastructure, increase synergy at both the Naval Air Warfare Center -Weapons Division (NAWC-WD) China Lake and the Naval Post-Graduate School (NPGS), Monterey, provide more direct fleet input to NPGS, Monterey and consolidate functionality at NSWC-CD, Crane IN.

ECONOMIC IMPACT

- There will be 166 billets eliminated (1 mil/ 165 civ) and 644 billets realigned out (8 mil/636 civ) of the San Bernardino/Riverside MSA for a direct job loss of 810 billets and an indirect job loss of 1682 billets. This represents 0.3% of the MSA and the cumulative is 1.3%. (These figures are Commission staff developed.)

COMMUNITY CONCERNS/ISSUES

- None at this time.

ITEMS OF SPECIAL INTEREST

- NWAD Corona, CA. was originally recommended to be closed by the Base Structure Evaluation Committee (BSEC) to the Secretary of the Navy but was then removed by SECNAV due to cumulative economic impact reasons.

- NWAD Corona was recommended for closure under both the primary and secondary scenario model runs conducted by the Base Structure Analysis Team (BSAT).

- The Navy considered four different scenarios before submitting the closure to the Secretary of the Navy. These all involved closing NWAD Corona and moving the functions to various locations. Specifics are listed in the installation review attachment. The final scenario was evaluated as the best alternative due to two factors. First it took advantage of synergies and consolidations at other locations which already did similar work to what was being sent from NWAD Corona. Second, this scenario also had the greatest Net Present Value.

Eric Lindenbaum/Navy/05/17/95 10:28 AM

REGIONAL HEARING ISSUE SUMMARY

NAVAL WARFARE ASSESSMENT DIVISION (NWAD) CORONA, CA

SAN FRANCISCO, CA/MAY 25, 1995

- The Secretary of the Navy was correct when he removed Naval Warfare Assessment Division (NWAD) Corona from the list of possible closures due to cumulative economic impact.
- If NWAD was divided up the synergy that exists between the functional areas would be lost.
- If NWAD was collocated with any facility or command it might have to assess, it would lose its ability to conduct an independent assessment.
- If NWAD was closed the quick response time back to the fleet of the assessments would be lost.
- The calculated return on investment time period listed in the Navy's fourth scenario run of three years is incorrect. According to community calculations it should be 15 years.
- According to community representatives the figures used for personnel costs and savings are incorrect and are at least 139 billets short.
- The square foot estimates of the required space at the Naval Surface Warfare Center -Crane Division (NSWC-CD) Crane, IN do not correspond with the present square footage at NWAD.

Eric Lindenbaum/Navy/05/31/95 2:00 PM

BASE VISIT REPORT

NAVAL WARFARE ASSESSMENT DIVISION
NORCO, CALIFORNIA

23 MAY 1995

Lead Commissioner:

Commissioner Benjamin F. Montoya

Accompanying Commissioner:

Commissioner Rebecca G. Cox

Commission Staff:

Mr. Eric Lindenbaum, Senior Analyst
Mr. Alexander Yellin, Navy Team Leader

List of Attendees:

Captain Edward Schwier, USN, Commander, Naval Warfare Assessment Division, Norco, CA
Commander David Leslie, USN, Executive Officer, NWAD, Norco, CA
Dr. Wayne Meeks, Technical Director, NWAD, Norco, CA
Mr. Richard Williamson, Public Affairs Officer, NWAD, Norco, CA
Mr. John Fishell, Measurement Science Directorate Head, NWAD
Mr. Larry Vidano, Quality Assessment Directorate Head, NWAD
Mr. Robert Eatinger, Systems Engineering Directorate Head, NWAD
Mr. Larry Archbold, Performance Assessment Directorate Head, NWAD
Congressman Ken Calvert, 43rd Congressional District, Corona/Riverside, CA
Assemblyman Ted Weggeland, 64th California State Assembly District
Ms. Sue Miller, District Representative, Office of Congressman Ken Calvert, Riverside, CA
Mr. Brian Oulman, Economic Development Coordinator, City of Norco, CA
Mr. Sidney Ploeckelmann,
Mr. Del Caldwell, Caldwell Consulting Group, Claremont, CA
Mr. Joe Terry, Former Technical Director
Mr. Everett (Bill) Churchman, Retired NWAD Civilian Employee, Riverside, CA
Mr. Donald Galleano, President, Galleano Winery, Mira Loma, CA
Mr. Gary Cherms, Executive Director Norco Chamber of Commerce, Norco, CA
Mr. George Guayaute, City of Corona, CA
Mr. Mike Martin, Region Manager, Southern California Edison, Corona, CA
Mr. Jim King, District Manager, The Gas Company (of Southern California), and the Greater Riverside Chambers of Commerce, Riverside, CA
Ms. Barbara Carmichael, Mayor Pro-Tem, City of Norco, CA

Mr. Vic Jensen, President, Norco Chamber of Commerce, Norco, CA
Mr. Roy Rike, Sr., Roy's Sharpening, Norco, CA
Ms. Eileen Dalton, Riverside County Economic Development Agency
Mr. Bill Garrett, City Manager, City of Corona, CA
Mr. Larry Cusimano, Councilmember, City of Norco, CA
Ms. Dianna Higdon, City Clerk, City of Norco, CA
Ms. Belinda McLaughlin, County of Riverside, Economic Development Agency, Riverside, CA
Mr. Dick Brabec, President Norco Division, DynCorp, Norco, CA
Mr. Bill Schwabb, Director of Technical Support, DynCorp, Norco, CA
Mr. John Holmes, City Manager, City of Riverside, CA
Mr. Dave Bolick, Corona Chamber of Commerce, Corona, CA
Mr. Bill Laird, SAIC AMSEC (Science Applications International Corp.--American Systems Engineering Corp), Corona, CA
Mr. John Husing, ECAP (economic and political analysis), Highland, CA
Mr. Raphael de la Cruz, Office of Supervisor John Tavaglione, Riverside County Board of Supervisors, Riverside, CA
Ms. Jolena Voohis, Executive Assistant to the Director of the Governor's Office of Military Base Retention.
Mr. Darren Kettle, Southern California Association of Governments (staff), Los Angeles
Mr. Fernando del Rio, Southern California Association of Governments (staff), Los Angeles
Mr. Bob Bartlet, Mayor of Monrovia, co-chair of SCAG Military Base Closure Sub-Committee
Mr. David Thompson, Office of U.S. Senator Boxer, El Segundo, CA
Ms. Mary Ann Reyes, Office of U.S. Senator Feinstein, Los Angeles, CA
Mr. Russel Bogh, Office of Assemblyman Ted Weggeland, 64th Assembly District
Ms. Linda Valter, Office of Congressman Bono, 44th Congressional District, Moreno Valley, CA
Mr. Jeff Green, Office of California State Senator Ray Haynes, 36th Senate District
Mr. Gary Underwood, Inland Action Inc.,
Mr. Wesley McDonald, Admiral USN, (Ret.), Spectrum Group,
Mr. Carl Smith, Spectrum Group
Mr. Robert Gill, Executive Assistant to the Chancellor, University of California at Riverside.
Mr Steve Albright, March Joint Powers Commission, Riverside, CA
Mr. Dave Stahovich, Office of Supervisor Bob Buster, Riverside County Board of Supervisors, Riverside, CA (SCAG)
Mr. Dennis Casebier, Former Department Head, NWAD
Mr. William Sturman, USN, Ret., President, Inland Empire Chapter The Retired Officers Association (TROA)
Mr. Neil Stone, Lead Engineer - Weapons Impact Scoring Facility, Measurement Science Directorate, NWAD
Mr. Dwight Peterson, Instrumentation Systems Division Manager, Performance Assessment Directorate, NWAD
Mr. Jeff Walden, Branch Head Metrology Research & Development Branch, NWAD
Mr. Pete Strucker, Division Head, Measurement Science Lab, NWAD

Present Base Mission:

- To serve the Navy as its independent assessment agent.
- Assist the Navy in prioritizing problems for asset apportionment across competing interests of design, engineering, production, support, etc.
- To gauge the war-fighting capacity of ships and aircraft from the unit to the battlegroup level.
- To assess the suitability of design, the performance of equipment and weapons, and the adequacy of training.

Engineering capabilities, products, and services are provided in the following nine areas:

1) Information Systems Engineering
2) Weapons Test Engineering
3) Metrology Systems Engineering
4) Test Systems Availability Assessment
5) Reliability Maintainability and Availability Assessment
6) Quality Engineering
7) Tactical Training Range Engineering
8) Fleet Exercise Assessment
9) Weapons and Combat Systems Performance Assessment

Base History:

The Naval Warfare Assessment Division occupies 250 acres of the former 700-acre resort built in 1928. Property sold to the Navy for a hospital December 8, 1941. Post World War II developments include Missile Development Division located at site and worked on Terrier missile firing telemetry data in early 1950s, Naval Ordnance Laboratory Corona assigned responsibility to evaluate each new Navy missile in 1954, Fleet Missile System Analysis and Evaluation Group established in 1964 and renamed Fleet Analysis Center in 1976. Interservice Data Exchange Program known as GIDEP established, Naval Warfare Assessment Center designated in 1990 and renamed as a Division in 1993, a $10 Million Naval Warfare Assessment Lab put into service in 1994 increases efficiency and ability to adapt to future mission requirements.

Defense Department Recommendation:

The base was not recommended for closure by the Secretary of the Navy due to cumulative economic impact.

Main Facilities Reviewed:

Naval Warfare Assessment Laboratory
Secure Compartmentalized Information Facility (SCIF)
Metrology Electro Optics (Laser) Laboratory
Satellite Communications Lab
(Corona Satellite Telemetry) Ground Station
Measurement Science Directorate Research & Development Lab
Performance Assessment Directorate
Weapons Impact Scoring Testing Facility
Weapons Impact Scoring Equipment Production Facility
Lake Norconian Conference Center
Naval Air Warfare Center China Lake Encounter Simulation Lab Facility

Key Issues Identified:

- NWAD, as a DBOF activity, has raised over 80 million dollars over budgeted estimates for clients. Their work load, while client driven, has been and is projected to remain, at or near capacity for all functional areas except metrology which is decreasing in direct proportion to the downsizing of the Navy.
- The excess mentioned above has also caused the number of personnel on the base to increase by over 100 people from the estimate used in the COBRA run.
- The independent assessment capability could be compromised by a collocation with an activity that might have to be assessed.
- Cost and savings may not reflect current numbers and workload.

Community Concerns Raised:

- Concern was expressed the independent assessment capability would be compromised if the functional areas were moved to any location where they would be collocated with an activity they might have to assess.
- Concern was raised that the moves might not be available in an appropriate time frame to reproduce the recently completed Naval Warfare Assessment Laboratory and communications network which is considered crucial to providing real time assessments.
- Concern was raised over the exact nature of the costs and savings claimed by the Navy. It was felt the payback period would be much longer than the three years reflected in the model. (Eight years was the time length they felt was correct.) (Community changed the time length to 15 years at the regional conference.)
- Concern was raised over the possible loss of synergy that would occur if the functional areas were broken up and sent to other locations.
- Concern was expressed over the loss of "national treasure" personnel who would retire rather than move if their billet was transferred.

- Cumulative economic impact on the area has been severe and if NWAD is closed, the community might not be able to recover. Past and present BRAC actions within 50 miles include closing George AFB (Victorville), Norton AFB (San Bernardino), Tustin MCAS (Tustin), El Toro MCAS (Lake Forest), Naval Station Long Beach, Naval Shipyard Long Beach; major realignment of March AFB (Riverside/Moreno Valley/Perris), and Hughes Corporation transfer of STANDARD missile production from Naval Industrial Reserve Ordnance Plant Pomona to Air Force Plant Tucson, Arizona.

Requests for Staff as a Result of Visit:

- Investigate what synergies would be created by the proposed move of the functional areas to Naval Postgraduate School Monterey, NWAC-WD, China Lake and NSWC-CD, Crane.
- Validate the cost and savings estimates in the COBRA run.
- Investigate what conflicts might be created by the proposed move of functional areas to the Naval Postgraduate School, Monterey, NAWC-WD, China Lake and NSWC-CD Crane IN. And if conflicts exist, would they jeopardize the independence of the assessment.

Eric Lindenbaum/Navy/05/31/95 2:39 PM

Document Separator

NWAD

HAZMAT

MATERIAL

LIST

NOAD HAZMAT INVENTORY LIST

3-Aug-94

HAZARDOUS MATERIAL INVENTORY

t_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
01	CLINE BUCKNER	C	PURGE III INSECT KILLER	209	20206	6	NS		
01	EASTMAN KODAK CO.	C	DEVELOPER, EXITAPRINT	209	20304	3	TS		
0133	NASHUA	C	NASHUA KT-1 TONER	209	21120	7	TS	6850	010373032
014	3M CO.	C	DYNAMARK CLEAR	515	20107	4	NS		
014	3M CO.	C	PHOTOSENSITIVE	515	20104B	4	TS		
014	3M CO.	C	PROTECTIVE COATING	547	20103	4	CN		
014	3M CO.	C	SPRA-MENT	547	20106	6	CN		
014	BLAIR ART PRODUCTS	C	BLAIR SPRAY FIX	515	20158	6	CN		
014	EASTMAN KODAK CO.	C	ACETIC ACID, GLACIAL	515	20970A	16	GL	6750	001416558
014	EASTMAN KODAK CO.	C	ACETIC ACID, GLACIAL	515	20970B	16	GL	6750	001416558
014	EASTMAN KODAK CO.	C	BLEACH C-41	515	20977	19	GL	6750	010228410
014	EASTMAN KODAK CO.	C	DEVELOPER & REPLENISHER	547	20305	25	GL		
014	EASTMAN KODAK CO.	C	DEVELOPER, C-41	515	20984	23	GL	6750	010507789
014	EASTMAN KODAK CO.	C	DEVELOPER, D-26 (POWDER)	515	20971B	15	GL	6750	001538911
014	EASTMAN KODAK CO.	C	DEVELOPER, EKTAFLO TYPE 1	515	20968B	24	LS	6750	000514977
014	EASTMAN KODAK CO.	C	DEVELOPER, MICRODOL-X	515	20974B	5	GL	6750	008171364
014	EASTMAN KODAK CO.	C	DEVELOPER, RAPID ACCESS	515	20987	25	GL	6750	010685788
014	EASTMAN KODAK CO.	C	E-6 BLEACH	515	20979	8	GL	6750	010418681
014	EASTMAN KODAK CO.	C	E-6 COLOR DEVELOPER	515	20980	3	GL	6750	010418684
014	EASTMAN KODAK CO.	C	E-6 FIXER	515	20983	9	GL	6750	010429252
014	EASTMAN KODAK CO.	C	E-6 PROCESSING KIT	515	20981	18	GL	6750	010420872
014	EASTMAN KODAK CO.	C	E-6 REVERSAL	515	20982	3	GL	6750	010426390
014	EASTMAN KODAK CO.	C	EKTAPRINT 2 KIT	515	20986	6	LI	6750	010680727
014	EASTMAN KODAK CO.	C	FIXER 3001 OR 22 FIXER	515	20991	30	GL	6750	LLL920104
014	EASTMAN KODAK CO.	C	FIXER C-41	515	20978	115	LS	6750	010371034
	EASTMAN KODAK CO.	C	FIXER, EDTAFLO	515	20988	3	GL	6750	010843207

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
	EASTMAN KODAK CO.	C	KODAK 24 FIXER	547	20989	30	GL	6750	LL0000001
014	EASTMAN KODAK CO.	C	KODAK PAGISET 63 RC	515	21132	20	GL	6850	LL0000001
014	EASTMAN KODAK CO.	C	STABILIZER C-41	515	20969	55	GL	6750	001035918
014	LA ROCHE INDUSTRIES	C	AMMONIA, ANHYDROUS	515	20488	2	CY		
014	LETRASET	C	I.N.T. DEVELOPER	515	20495B	4	QT		
014	LETRASET	C	I.N.T. DEVELOPER	547	20495A	4	QT		
014	UNION RUBBER INC.	C	BESTINE	515	20840A	6	QT		
014	UNION RUBBER INC.	C	BESTINE	547	20840B	8	QT		
014	VISUAL GRAPHICS CORP.	C	POS 1 B&W DEVELOPER	515	20876A	12	LI		
014	VISUAL GRAPHICS CORP.	C	POS 1 B&W DEVELOPER	547	20876B	12	LI		
014	VISUAL GRAPHICS CORP.	C	POS 1 B&W FIXER	515	20877B	12	LI		
014	VISUAL GRAPHICS CORP.	C	POS 1 B&W FIXER	547	20877A	12	LI		
014	VISUAL GRAPHICS CORP.	C	POS 1 COLOR BLEACH	515	20874A	12	LI		
014	VISUAL GRAPHICS CORP.	C	POS 1 COLOR BLEACH	547	20874B	12	LI		
014	VISUAL GRAPHICS CORP.	C	POS 1 COLOR DEVELOPER	515	20875B	12	LI		
014	VISUAL GRAPHICS CORP.	C	POS 1 COLOR DEVELOPER	547	20875A	12	LI		
014	VISUAL GRAPHICS CORP.	C	POS 1 COLOR FIXER	515	20881	12	LI		
014	VISUAL GRAPHICS CORP.	C	POS 1 NEUTRALIZER POWDER	515	20878A	30	OZ		
014	VISUAL GRAPHICS CORP.	C	POS 1 NEUTRALIZER POWDER	547	20878B	30	OZ		
014	VISUAL GRAPHICS CORP.	C	POS 1 RINSE ADDITIVE	547	20880	72	OZ		
045		C	LACQUER, AEROSOL BLACK	26		6	CN	8010	002906984
045		C	LINSEED OIL, BOILED	26		2	GL	8010	001523245
[illegible]	CSD INC.	C	THINNER, DOPE & LACQUER	26	21281H	1	GL	8010	001605787

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
	GROWCO INC.	C	PRIMER, ZINC CHROMATE	26	21606D	4	CN	8010	008998825
05	UNISYS	C	TONER KIT, MODEL 37	210	20990C	1	KT	6750	LLL005332
053		C	TONER	210		2	EA	6550	012616064
053	3M CO.	C	LASERJET 2D DATA CTG	210	21136	9	CT	7045	012404951
053	HEWLETT PACKARD	C	TONER	210	21135	2	EA	7025	013075359
053	OMNILASER 2018	C	TONER KITS	210	21118	4	KT	6850	00LAA8265
054	SAVIN CORP.	C	FUSER OIL	210	21126	16	CN	6850	012075547
054	SAVIN CORP.	C	TONER	210	20758	3	EA		
096	DAVLIN PAINT CO.	C	LATEX WHITE	219	20240	1	AL		
103	MULTIGRAPHICS	C	BLANKROLA II SOLVENT	210	20594	0	CN		
103	PENGUIN INDUSTRIES	C	HOPPE'S POWDER SOLVENT	210	21034A	64	OZ		
103	SIRCHIE LABORATORIES	C	QUICK KLEEN SLAB/ROLLER	210	20781	64	OZ		
MS00	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	510/3	21216P	2	BT	7930	009265280
)	SPEER PRODUCTS	C	INSECTICIDE	510/3	21041C	2	BT	6840	000672137
MS00	UNISYS	C	TONER	510/1	20844B	7	KT		
MS01		C	COMPOUND SEALING	B/C2F		4	OC	8010	001450383
MS01		C	OIL, TEMP BATH	B/C2F		1	OG		
MS01	PACIFIC AEROSOL INC.	C	LACQUER,GRAY	B/C2F	20832	1	CN	8010	001412958
MS01	SPEER PRODUCTS	C	INSECTICIDE	522/3	21041F	1	CN	6840	010672137
MS01	WD-40 COMPANY	C	LUBRICANT,WD-40	B/C2F	20885G	2	OC		
MS02		C	TONER KIT	522/4		1	KT	2141	000813629
MS02	HEWLETT PACKARD	C	TONER, CARTRIDGE	522/7	20438A	8	KT		
MS02	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	522/4	21216Z	1	BT	7930	009265280
MS02	NATIONAL SANITARY SUPPLY CO.	C	SUD-N-KLEEN	522/4	20607G	1	CN		
MS04	AIROSOL CO., INC.	C	INSECTICIDE	510/9	21043J	4	BT	6840	010676674
MS04	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	510/9	21216S	5	CN	7930	009265280

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
6	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	510/6	21216O	1	CN	7930	009265280
MS06	WD-40 COMPANY	C	LUBRICANT,WD-40	510/6	20885D	1	CN		
MS10	HOMELINE	C	INSECTICIDE	522/9	21038D	2	BT	6840	010672137
MS10	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	522/9	21216Z	2	BT	7930	009265280
MS11	HOMELINE	C	INSECTICIDE	510/2	21038C	1	CN	6840	010672137
MS11	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	510/2	21216Q	2	CN	7930	009265280
MS11	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	510/2	21216Z	2	CN	7930	009265280
MS11	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	510/2	21225	1	CN	6830	009265280
MS11	SPEER PRODUCTS	C	INSECTICIDE	510/2	21041A	1	CN	6840	010672137
MS11	WHITMIRE RESEARCH LAB	C	INSECTICIDE, FOGGER	510/2	21037D	1	CN	6840	008237849
MS11	WHITMIRE RESEARCH LAB	C	INSECTICIDE, FOGGER	510/9	21037G	1	CN	6840	008237849
MS11	WHITMIRE RESEARCH LAB	C	INSECTICIDE, FOGGER	515/2	21037A	12	CN	6840	008237849
MS12	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	510/1	21216R	1	CN	7930	009265280
MS13		C	CLEANER FOR GLASS	510/1		1	BT		
MS13	AIROSOL CO., INC.	C	INSECTICIDE	510/2	21043I	1	CN	6840	010676674
MS13	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	510/2	21216G	1	CN	7930	009265280
MS13	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	510/2	21216Z	1	CN	7930	009265280
MS13	SPEER PRODUCTS	C	INSECTICIDE	510/1	21041B	1	CN	6840	010672137
MS13	WHITMIRE RESEARCH LAB	C	INSECTICIDE, FOGGER	510/2	21037B	1	CN	6840	008237849
MS15	AIROSOL CO., INC.	C	INSECTICIDE	522/9	21043K	1	CN	6840	010676674
MS15	CARTRIDGE HEWLETT PACKARD	C	TONER	522	20438	4	KT		
MS15	HEWLETT PACKARD	C	TONER CARTRIDGE	522	20438	1	KT		
MS15	HOMELINE	C	INSECTICIDE, D-TRANS	522/3	21038	2	CN	6840	010672137

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
3	LHB IND.	C	LACQUER (AERSOL)	522/3	21484	2	BT	8010	005843150
MS15	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	522/3	21216T	1	BT	7930	009265280
MS15	NATIONAL SANITARY SUPPLY CO.	C	SUD-N-KLEEN	522/3	20607A	1	CN		
MS15	SPEER PRODUCTS	C	INSECTICIDE	522	21041E	1	CN	6840	000672137
MS15	SPEER PRODUCTS	C	INSECTICIDE	522/3	21041A	1	BT	6840	000672137
MS15	SPEER PRODUCTS	C	INSECTICIDE	522/3	21041C	2	CN	6840	010672137
MS15	SPEER PRODUCTS	C	INSECTICIDE	522/3	21041D	2	BT	6840	000672137
MS15	WD-40 COMPANY	C	LUBRICANT,WD-40	522/3	20885E	1	CN		
MS15	WD-40 COMPANY	C	LUBRICANT,WD-40	522/3	20885F	1	CN		
MS20	HEWLETT PACKARD	C	TONER	519/9	20438	5	KT		
MS20	HOMELINE	C	INSECTICIDE	519/5	21038A	1	CN	6840	010672137
MS20	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	519/5	21216V	9	BT	7930	009265280
MS20	UNISYS	C	TONER	519/4	20844C	1	KT		
MS21	HOMELINE	C	INSECTICIDE	519/9	21038B	2	BT	6840	010672137
MS21	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	519/9	21216W	4	BT	7930	009265280
MS23	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	519/9	21216X	4	BT	7930	009265280
MS24	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	519/8	21225	4	BT	7930	009365280
MS25	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	519/8	21216C	16	OZ	7930	009265280
MS25	UNISYS	C	TONER KIT	519/8	20841	4	KT		
MS26	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	519/8	21216U	1	BT	7930	009265280
MS30	SPEER PRODUCTS	C	INSECTICIDE	T1/3	21041D	1	CN	6840	010672137
MS31		C	ALCOHOL	517/1		1	BT		
MS31		C	ALCOHOL	517/1		2	BT		
MS31		C	ALCOHOL, ISOPROPYL	517/1		1	BT		
		C	REMOVER,RUST	517/1		1	BT		

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
1	NATIONAL SANITARY SUPPLY CO.	C	SUD-N-KLEEN	517/1	20607F	1	CN		
MS32		C	ALCOHOL	541FL		1	JR		
MS32		C	COMPOUND, INSULATION ELECT	BC/FL		1	JR	5970	010138611
MS32		C	CYLINDER,UNMARKED	BC/1		1	CY		
MS32		C	FREON 112	515/1		1	BT		
MS32		C	FREON 112	541/1		1	GL		
MS32		C	GYPTAL	541FL		1	BT		
MS32		C	MIXED MARI	541/1		1	JR		
MS32		C	NITROGEN	BC/2		2	CY		
MS32		C	NITROGEN,CYLINDERS,EMP -TY	BC/2		9	CY		
MS32		C	PAINT	541/1		2	JR		
MS32		C	POLISH,PLASTIC,TYPE 1	BC/FL		9	PT	7930	009353794
MS32		C	SAFETY CAN,UNMARKED	BC/1		2	GL		
MS32		C	SMALL CYLINDER UNMARKED	541FL		1	CY		
MS32	3M	C	ELECTRICAL COATING	BC/FL	20111	2	CN		
MS32	3M	C	LUBRICANT,ELECTRICAL 4 WAY	BC/FL	20100A	2	CN		
MS32	3M	C	LUBRICANT,ELECTRICAL 4 WAY	BC/FL	20100B	4	CN		
MS32	AIRCO	C	NITROGEN	541/1	20128	5	CY	6830	002442740
MS32	AIRCO	C	NITROGEN	BC/1	20128	2	CY	6830	002442741
MS32	BULK CHEMICAL DISTRIBUTERS INC	C	COMPOUND, LUBRICATING	BC/FL	22016	5	CN	9150	008237860
MS32	CAIG LABORATORIES	C	CRAMALIN R-5	515/1	20218	1	CN		
MS32	CONTINENTAL CHEMICAL CORP	C	POLISH,METAL	BC/FL	21228	1	PT	7930	002667136
MS32	CRAMOLIN	C	LUBRICANT,R-5 SPRAY	BC/FL	20219A	1	JR		
MS32	CRAMOLIN	C	LUBRICANT,R-5 SPRAY	BC/FL	20219B	22	CN		
?	DOW CORNING	C	200 FLUID	BC/1	20943B	4	BX	5970	002694451

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
2	DOW CORNING	C	200 FLUID	BC/FL	20943C	2	JR	5970	002694451
MS32	DOW CORNING	C	COMPOUND, 111	515/1	20274	1	BT		
MS32	GC ELECTRONICS	C	COMPOUND, SILICONE,TYPE-25	BC/FL	20387	1	TB		
MS32	HYSAN CORP.	C	POLISH, METAL	BC/FL	21223C	4	CN	7930	009265171
MS32	LEYBOLD-HERAEOUS VACUUM PRODUCTS	C	OIL,VACUUM PUMP HE-175	BC/FL	20852	11	BT		
MS32	LEYBOLD-HERAEOUS VACUUM PRODUCTS	C	OIL,VACUUM PUMP HE-200	541/1	20497B	1	BT		
MS32	LEYBOLD-HERAEOUS VACUUM PRODUCTS	C	OIL,VACUUM PUMP HE-200	BC/FL	20497A	7	BT		
MS32	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	515/1	21216Z	1	BT	7930	009265280
MS32	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	519/9	21216	1	BT	7930	009265780
MS32	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	541/1	21216Z	1	BT	7930	009265280
MS32	NATIONAL SANITARY SUPPLY CO.	C	SUD-N-KLEEN	541/1	20607B	1	CN		
MS32	PHILIPS ECG INC	C	TUNER RESTORER & LUBRICANT	541/1	20659B	1	CN		
MS32	PHILIPS ECG INC	C	TUNER RESTORER & LUBRICANT	BC/FL	20659A	33	CN		
MS32	PHILIPS ECG INC.	C	TUNER RESTORER & LUBRICANT	BC/FL	20659A	1	CN		
MS32	PHIPPS PROD. CORP.	C	SOLEVENT, DRY CLEANING	515/1	21095	1	JR	6850	006645685
MS32	PLAZE INC.	C	TRICHLOROETHANE,TECH,1 -1-1	BC/FL	21022	3	CN	6810	009306311
MS32	RUSKA INSTRUMENT CORP.	C	OIL,PISTON GAGE HYDRAULIC	BC/FL	2071	5	GL		
MS32	SEYMOUR OF SYCAMORE INC	C	TYPE CLEANER,TYPE III	BC/FL	21175	1	CN	7510	006169588
MS32	WD-40 COMPANY	C	LUBRICANT,WD-40	BC/FL	20885C	3	CN		
MS33		C	HELIUM,REFRIDGERATED LIQUID	517/7		2	CY		
MS33		C	OIL,MINERAL #9	517/5		3	GL		
[illegible]3		C	THINNER,LACQUER	517/7		1	BT		

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
3	CRAMOLIN	C	LUBRICANT,R-5	517/7	20219	1	CN		
MS33	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	T5/2	21216Z	1	BT	7930	009265280
MS33	PHILIPS ECG INC.	C	TUNER RESTORER & LUBRICANT	517/5	20659B	1	CN		
MS33	SPEER PRODUCTS	C	INSECTICIDE	T3/1	21041E	1	CN	6840	010672137
MS34	LHB IND.	C	LACQUER	T2	20502	3	CN		
MS34	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	T1/1	21216Z	1	BT	7930	009265280
MS34	NATIONAL SANITARY SUPPLY CO.	C	SUD-N-KLEEN	517/1	20607C	3	CN		
MS34	SPEER PRODUCTS INC.	C	INSECTICIDE	517/1	21041C	1	CN	6840	010672137
MS40		C	51 HYDRA HLP 10 OIL	4/FLO		1	CN		
MS40		C	BORAX CLEANER	4/H90		1	BT		
MS40		C	DETE LIGHT OIL	4/H90		1	GL		
MS40		C	H.O.-1 OIL	4/FLO		1	BT		
MS40		C	PAINT THINNER	4/FLO		2	QT	8010	002094097
MS40		C	SOLVENT	4/FLO		2	CN		
MS40		C	THINNER,PAINT,MINERAL SPIRT	34/00		9.	QT	8010	002904079
MS40		C	UNKNOWN	4/FLO		2	BT		
MS40		C	WAY LUBE OIL	4/FLO		1	BT		
MS40	3M CO	C	ADHESIVE, SCOTCH GRIP #74	27/00	21839	6	CN	8040	001817761
MS40	AAPER ALCOHOL & CHEMICAL	C	ALCOHOL, DENATURED	4/FLO	21007A	10	GL	6810	005437415
MS40	AERVOIE PACIFIC INC	C	PAINT, RED SPRAY	27/00	20832	12	CN	8010	001412952
MS40	BARRETT CHEMICAL CO	C	POLISH FURNITURE	27/00	20716	1	BT	0793	009856893
MS40	CAMBRIA PRODUCTS	C	POLISH, METAL	27/00	21205E	14	QT	7930	002667136
MS40	CONONADO PAINT CO	C	VARNISH, SPAR	34/00	21305	2	GL	8010	001688810
3	CRAMOLIN	C	LUBRICANT,R-5 SPRAY	34/00	20219D	1	CN		

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
0	CRC CHEMICALS	C	CRC -36 #3005 SURFACE PROT	27/00	20224	1	CN		
MS40	CSD INC	C	THINNER, DOPE & LACQUER	27/00	21282A	3	GL	8010	001605788
MS40	CSD INC	C	THINNER, DOPE & LACQUER	27/00	21282B	5	GL	8010	001605788
MS40	CSD INC	C	THINNER, DOPE & LACQUER	34/00	21281	1	GL	8010	001605787
MS40	DAP. INC	C	PUTTY,WOOD DOUGH	34/00	21357	2	CN	8010	006647088
MS40	DEFT CHEMICAL COATINGS	C	FINISH,CLEAR WOOD	34/00	20247	1	QT		
MS40	DOW CORNING	C	SILICONE COMPOUND LUBE, 111	27/00	20274	1	TB		
MS40	ELLIS PAINT CO	C	ACETONE, 70	34/00	20315	1	GL		
MS40	EVERSEAL MFG CO., INC	C	PAINT, ENAMEL GRAY	34/00	21475	1	GL	8010	005843077
MS40	GC ELECTRONICS	C	ELECT CONTACT CLNR #8666-16	27/00	20391	1	CN		
0	GSA	C	THINNER, PAINT	34/00	21454	35	LB	8010	005587026
MS40	GUARDSMAN PRODUCTS, INC	C	PAINT, ENAMEL GRAY	34/00	20417	1	GL		
MS40	HOLT LLOYD CORP.	C	COMPOUND, CORROSION PREVENTATIVE	34/00	21758A	1.	GL	8030	005468637
MS40	HYSAN CORP.	C	POLISH, METAL	4/FLO	21223	3	CN	7930	009265171
MS40	HYSAN CORP.	C	POLISH, METAL	27/00	21223A	8	CN	7930	009265171
MS40	HYSAN CORP.	C	POLISH, METAL	4/FLO	21223B	8	CN	7930	009265171
MS40	KALCOR COATING CO	C	STAIN, MAHOGANY	34/00	21301	1	CO	8010	001658627
MS40	LHB IND.	C	LACQUER, CLEAR	27/00	21433J	50	CN	8010	005152487
MS40	LHB IND.	C	LACQUER, CLEAR	34/00	21433K	5	CN	8010	005152487
MS40	LHB IND.	C	LACQUER, FLAT BLACK	34/00	21471	1	CN	8010	005825382
MS40	LHB IND.	C	LACQUER, FLAT WHITE #37875	27/00	21484	1	CN	8010	005843150
MS40	LHB IND.	C	LACQUER, GLOSS WHITE #17875	27/00	21368	3	CN	8010	002906983
0	LHB IND.	C	LACQUER, GRAY #36440	27/00	21640	4	CN	8010	009357085

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
J	LHB IND.	C	OBLITERATING COATING, TAN	27/00	21466B	2	CN	8010	005824743
MS40	LHB IND.	C	OBLITERATING COATING, TAN	4 S/R	21466A	1	CN	8010	005824743
MS40	LHB IND.	C	PAINT LACQUER, BLACK	4/FLO	21471	2	CN	8010	005825382
MS40	LHB IND.	C	PAINT LACQUER, CLEAR	4/FLO	21433A	1	CN	8010	005152487
MS40	LHB IND.	C	PAINT LACQUER, CLEAR	4/FLO	21433B	1	CN	8010	005152487
MS40	LHB IND.	C	PAINT LACQUER, RED	4/FLO	21116	3	CN	8010	007219743
MS40	LHB IND.	C	PAINT LACQUER, WHITE	4/FLO	21484	4	CN	8010	005843150
MS40	LHB IND.	C	PAINT, ENAMEL GLOSS BLACK	27/00	21252	10	CN	8010	000793752
MS40	LHB IND.	C	PAINT,ENAMEL, GRAY	4/FLO	21562	16	CN	8010	007219749
MS40	LHB IND.	C	PAINT,ENAMEL,GLOSS BLACK	4/FLO	21252	1	CN	8010	000793752
MS40	LHB IND.	C	PRIMER COATING, ZINC CHROM	27/00	21329	5	CN	8010	002970593
MS40	LHB IND.	C	PRIMER, ZINC CHROMATE	34/00	21329	1	CN	8010	002970593
MS40	LIFE PAINT CO	C	PAINT, 600 GLOSS WHITE ENAMAL	27/00	20509	2	QT		
MS40	LIFE PAINT CO	C	PAINT, 610 OSHA RED ENAMEL	27/00	20511	3	GL		
MS40	LIFE PAINT CO	C	PAINT, 633 OSHA YELLOW ENAMEL	27/00	20513	1	GL		
MS40	LOCTITE CORP.	C	ADHESIVE CYANOACRYLATE	4/FLO	21883	1	BT	8040	008263535
MS40	LPS RESEARCH LABORATORIES	C	LPS 1 GREASELESS LUBRICANT	34/00	20529A	1	CN		
MS40	LPS RESEARCH LABORATORIES	C	LPS DEGREASER	34/00	20530	1	CN		
MS40	LPS RESEARCH LABORATORIES	C	SILICON SPRAY LUBRICANT	34/00	20532A	1	CN		
MS40	MARVEL OIL CO.	C	MARVEL MYSTERY OIL	34/00	20560B	1	CN		
MS40	MARVEL OIL CO.	C	MARVEL MYSTERY OIL	4/FLO	20560C	1	GL		
MS40	NATIONAL SANITARY SUPPLY CO.	C	SUD-N-KLEEN	4 S/R	20607E	2	CN		
[illegible]	PENNZOIL COMPANY	C	GEAR LUBRICANT, 4140	27/00	20650	1	QT		

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
J	PHILLIPS	C	TUNER RESTORER	4/FLO	20659	3	CN		
MS40	RED DEVIL PAINT INC	C	STAIN, SPANISH WALNUT	34/00	20701	1	QT		
MS40	SEARS ROEBUCK & CO	C	HIDE GLUE #9 80623	34/00	20768	1	BT		
MS40	SEARS, ROEBUCK & CO	C	HIDE GLUDE #9 80623	27/00	20768	1	BT		
MS40	SEYMOUR CO.	C	CHROMATE	4/FLO	21329	15	CN	8010	002970593
MS40	SEYMOUR OF SYCAMORE	C	TYPE CLEANER, TYPE III	27/00	21175	1	CN	7510	006169588
MS40	SEYMOUR PAINT CO.	C	TYPE CLEANER	4/FLO	21175	7	CN	7510	006169588
MS40	SINNETT-ELPACO	C	INK, MARKING STENCIL, BLACK	27/00	21172	7	CN	7510	004697910
MS40	SOLDER SEAL PRODUCTS	C	LIQUID WRENCH	4/FLO	20782	2	PT		
MS40	SPRAYON PRODUCTS INC.	C	COMPOUND, CORROSION PREVENTATIVE	27/00	21794	15	CN	8030	009331947
MS40	SPRAYON PRODUCTS INC.	C	COMPOUND, CORROSION PREVENTATIVE	4/FLO	21794	16	CN	7919	009381947
MS40	SPRAYON PRODUCTS INC.	C	LACQUER, GLOSS WHITE	34/00	21368	1	CN	8010	002906983
MS40	STARETTE GRANITE SURFACE	C	LAYOUT DYE L.S.	4/FLO	20805	2	CN		
MS40	STEVEN INDUSTRIES	C	COMPOUND, CORROSION PREVENTATIVE	27/00	21762	4	GL	8030	002441298
MS40	STEVEN INDUSTRIES	C	COMPOUND, CORROSION PREVENTATIVE	4 S/R	21762	1	CN	8030	005468637
MS40	STEVEN INDUSTRIES	C	FILLER, WOOD, PLASTIC	34/00	21328	1	LB	8010	002629172
MS40	STEVENSON BROS.	C	NEATSFOOT OIL	27/00	20925	1	GL	3030	002441033
MS40	TEXACO INC	C	TEXACO HOME LUBRICANT	27/00	20823	1	CN		
MS40	TEXACO INC.	C	HOME LUBRICANT	27/00	20823	1	CN		
MS40	WD-40 COMPANY	C	LUBRICANT,WD-40	34/00	20885B	1	CN		
MS43		C	MOBIL VELOCITE #6	SHOP/		1	GL		
MS43		C	SOLVENT CLEANER	SHOP/		4	GL		
MS43	3M BLDG SERVICE & CLEANING PR	C	CLEANER, TROUBLE-SHOOTER	4/FLO	20110	5	CN		

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
3	AAPER ALCOHOL & CHEMICAL	C	ALCOHOL, DENATURED	4/FLO	21007B	3	GL	6810	005437415
MS43	BIRCHWOOD-CASEY	C	RUST PREVENTIVE (SHEATH)	4/FLO	20219	3	CN		
MS43	BULK CHEMICALS DIST. INC	C	LUBRICATING COMPOUND	4/FLO	22016	5	CN	9150	008237860
MS43	CRAMOLIN	C	LUBRICANT,R-5 SPRAY	4/FLO	20219C	2	CN		
MS43	DO ALL	C	GAGE BLOCK CLEANER	4/FLO	2026	52	CN		
MS43	DO ALL	C	GAGE BLOCK PRESERVATIVE	4/FLO	2026	16	CN		
MS43	DOWN CORNING	C	SILICONE FLUID	4/FLO	20387	1	CN		
MS43	ELECTRICAL PRODUCTS DIVISION	C	CABLE CLEANER	4/FLO	20109	2	BT		
MS43	GLUES INCORPORATED	C	WHITE GLUE	4/FLO	20885	2	BT		
MS43	HOLT LLOYD CORP.	C	COMPOUND, CORROSION PREVENTATIVE	4/FLO	21758B	1	CN	8030	005468637
MS43	LPS RESEARCH LABORATORIES	C	SILICON SPRAY LUBRICANT	4/FLO	20532B	2	CN		
MS43	MARVEL OIL CO.	C	MARVEL MYSTERY OIL	4/FLO	20560A	21	BT		
MS43	MILLER-STEPHENSON CHEMICAL CO	C	AERO DUSTER	4/FLO	20570	2	BT		
MS43	MILLER-STEPHENSON CHEMICAL CO	C	FREON TF SOLVENT	4/FLO	20572B	2	CN		
MS43	NATIONAL SANITARY SUPPLY CO.	C	SUD'N KLEEN	4/FLO	20607	21	CN		
MS43	PLAZE INC.	C	TRICHLORCETHANE	4/FLO	21022	5	CN	6810	009306311
MS43	SEYMOUR PAINT	C	TYPE CLEANER, TP3	4/FLO	21175	2	CN	7510	006169588
MS43	SPRAYON PRODUCTS INC.	C	LUBRICANT, 711	4/FLO	20796	12	OZ		
MS43	STARETTE GRANITE SURFACE	C	M1 ALL PURPOSE LUBRICANT	4/FLO	20804	13	GL		
MS43	STEVEN INDUSTRIES	C	COMPOUND, CORROSION PREVENTATIVE	4/FLO	21795	1	CN	8030	009381947
MS43	THREE BOND OF AMERICA	C	ADHESIVE CYANOACRYLATE	4/FLO	21831	1	BX	8040	001429193
3	WD-40 COMPANY	C	LUBRICANT,WD-40	4/FLO	20885A	3	CN		

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
MS44		C	CUTTING OIL	SHOP/		2	GL		
MS44		C	FLOOR STRIPPER	SHOP/		1	GL		
MS44		C	GENERAL LUBRICATING OIL	SHOP/		1	GL		
MS44		C	LACQUER THINNER	SHOP/		1	GL	8010	001605787
MS44		C	LAYOUT DYE	SHOP/		2	CN	6850	009856227
MS44		C	MICRONOIC ELECTRICAL LUBE	SHOP/		2	BT		
MS44		C	POLISH, PLASTIC, TYPE	SHOP/		1	CN	7930	009353794
MS44		C	SEALING COMPOUND	SHOP/		1	BT		
MS44		C	STEEL CUTTING OIL	SHOP/		2	GL		
MS44	AAPER ALCOHOL & CHE	C	ALCOHOL, DENATURED -	SHOP/	21007A	5	GL	6810	005437415
MS44	ADHESIVE COATING AND SEALER /3M	C	ADHESIVE SUPER 74	SHOP/	21839	1	CN	8040	001817761
MS44	ASBURY GRAPHITE MILLS	C	FLAKE GRAPHITE	SHOP/	20146	1	CO		
MS44	DEVCON CORP.	C	CLEANER, CONDITIONER 19500	SHOP/	20252	1	QT		
MS44	DEVCON CORP.	C	DEVCON, ALUMINUM	SHOP/	20251	0	LB		
MS44	LHB IND.	C	LACQUER,GRAY 16187	SHOP/	21562	1	CN	8010	007219749
MS44	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	SHOP/	21216A	1	GL	7930	005308067
MS44	LOCTITE CORP.	C	LOCQUER PRIMER T	SHOP/	20524	9	OZ		
MS44	MARVEL OIL CO.	C	MARVEL MYSTERY OIL	SHOP/	20560D	1	QT		
MS44	MILLER-STEPHENSON CHEMICAL CO	C	FREON TF SOLVENT	SHOP/	20572A	1	CN		
MS44	MOBIL OIL CO.	C	OIL, GENERAL	SHOP/	20582	2	GL		
MS44	MOBIL OIL CO.	C	OIL, MOBIL VACTRA #2	SHOP/	20589	2	GL		
MS44	NATIONAL SANITARY SUPPLY CO.	C	SUD-N-KLEEN	SHOP/	20607D	1	CN		
MS44	SEYMOUR OF SYCAMORE INC	C	YELLOW PRIMER	SHOP/	21332	1	CN	8010	002770593
	SPRAY -O- MATIC	C	PAINT, ENAMEL SILVER	SHOP/	21251	1	CN	8010	000793751

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
[illegible]	STARETTE GRANITE SURFACE	C	GRANITE SURFACE CLEANER	SHOP/	20607	2	GL		
MS44	SYMOUR OF SYCAMORE	C	CLEANER, TYPE III	SHOP/	21175	5	CN	7510	006169588
MS51	HEWLETT PACKARD	C	TONER, CARTRDIGE	521/2	20438	2	KT		
MS51	HEWLETT PACKARD	C	TONER, CARTRIDGE	521/2	20438I	4	KT		
MS51	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	521/2	21216A	1	BT	7930	009265280
MS51	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	521/6	21216Z	1	BT	7930	009265280
MS51	SPEER PRODUCTS INC	C	DETERGENT, GENERAL PURPOSE	521/2	21216	2	BT	7930	019265280
MS51	SPEER PRODUCTS INC	C	INSECTICIDE	521/2	21041	1	BT	7930	009265280
MS51	SPEER PRODUCTS INC	C	INSECTICIDE	521/2	21041A	1	CN	6840	010672137
MS51	SPEER PRODUCTS INC	C	INSECTICIDE	521/2	21041B	1	BT	6840	010672137
MS51	SPEER PRODUCTS INC	C	INSECTICIDE	521/2	21041D	3	CN	6840	010672137
MS51	SPEER PRODUCTS INC	C	INSECTICIDE	522/2	21041C	1	BT	6840	010672137
[illegible]	HEWLETT PACKARD	C	TONER, CARTRIDGE	521/1	20438H	1	KT		
MS52	HEWLETT PACKARD	C	TONER,CARTRIDGE	521/4	20438	1	KT		
MS52	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	521/1	21216Z	1	BT	7930	009265280
MS52	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	521/6	21216Z	1	BT	7930	009265280
MS52	SPEER PRODUCTS	C	INSECTICIDE	521/1	21041C	1	CN	6840	001062137
MS52	SPEER PRODUCTS	C	INSECTICIDE	521/4	21041D	2	CN	6840	001062137
MS52	WHITMIRE RESEARCH LAB	C	INSECTICIDE, FOGGER	521/1	21037C	1	CN	6840	008237849
MS53	HEWLETT PACKARD	C	TONER, CARTRIDGE	521/2	20438E	2	KT		
MS53	HEWLETT PACKARD	C	TONER, CARTRIDGE	521/4	20438F	2	KT		
MS53	HEWLETT PACKARD	C	TONER, CARTRIDGE	521/6	20438G	2	KT		
MS53	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	521/1	21216J	1	BT	7930	009265280
MS53	SPEER PRODUCTS	C	INSECTICIDE	521/1	21041B	1	CN	6840	001062137
[illegible]		C	DRY INK	806/2		1	CO		

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
[illegible]	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	806/1	21216D	1	BT	7930	009265280
MS61	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	806/9	21216Z	1	BT	7930	009265280
MS61	SPEER PRODUCTS	C	INSECTICIDE	806/1	21041G	1	BT	6840	000672137
MS61	SPEER PRODUCTS	C	INSECTICIDE	806/2	21041F	1	BT	6840	000672137
MS63	CANNON MICROGRAPHICS	C	TONER, CARTRIDGE	807/6	20180	1	KT		
MS63	HEWLETT PACKARD	C	TONER, CARTRIDGE	807/1	20438D	1	KT		
MS63	HEWLETT PACKARD	C	TONER, CARTRIDGE	807/6	20438B	3	KT		
MS63	HEWLETT PACKARD	C	TONER, CARTRIDGE	807/9	20438C	1	KT		
MS63	SPEER PRODUCTS	C	INSECTICIDE	807/1	21041A	1	BT	6840	001062137
MS64	AMERICAN WRITING INK CO	C	RUBBER CEMENT	804/1	21861	1	CN	8040	002918625
MS64	HEWLETT PACKARD	C	TONER, LASER JET	804/1	20438D	2	KT		
MS64	HEWLETT PACKARD	C	TONER, LASER JET	804/3	20438A	1	KT		
[illegible]	HEWLETT PACKARD	C	TONER, LASER JET	804/5	20438B	1	KT		
MS64	HEWLETT PACKARD	C	TONER, LASER JET	804/7	20438C	1	KT		
MS64	KONICA BUSINESS MACHINES	C	TONER, CARTRIDGE	804/3	20438	3	KT		
MS64	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	804/1	21216Z	1	BT	7930	009265280
MS64	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	804/3	21216Z	1	KT	7930	009265280
MS64	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	804/6	21216Z	1	BT	7930	009265280
MS64	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	804/8	21216Z	3	BT	7930	009265280
MS64	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	804/9	21216Z	1	BT	7930	009265280
MS64	MINNESOTA VALLEY ENGINEERING	C	TONER, CARTRIDGE	804/1	20180	2	KT		
MS64	SPEER PRODUCTS	C	INSECTICIDE	804/6	21041B	1	BT	6840	000672137
MS64	SPEER PRODUCTS INC	C	INSECTICIDE	804/1	21041E	1	BT	6840	010672137
MS64	SPEER PRODUCTS INC	C	INSECTICIDE	804/1	21041F	1	BT	6840	010672137

HAZARDOUS MATERIAL INVENTORY

Dept_code	Manufactu	Site	Trade_name	USE loc	Invent #	Invent Qty	Unit	Fsc	Niin
[illegible]4	STEVEN INDUSTRIES	C	ADHESIVE, RUBBER	804/1	21862C	1	CO	8040	002918605
MS64	UNISYS	C	TONER,	804/1	20841	3	KT		
QA	BOYLE-MIDWAY HOUSEHOLD PRODUCTS	C	OLD ENGLISH FURNITURE POLISH	514	20162	1	BT		
QA	IDEAL STENCIL MACHINE & TAPE CO.	C	INK, STENCIL BLACK	513	21170B	2	BT	7510	004697910
QA	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	513	21216Z	3	BT	7930	009265280
QA	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	514	21216Z	12	BT	7930	009265280
QA	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	516	21216Z	4	BT	7930	009265280
QA	LIGHTHOUSE FOR THE BLIND	C	DETERGENT, GENERAL PURPOSE	543	21216Z	3	BT	7930	009265280
QA	S.C. JOHNSON & SON, INC.	C	PLEDGE FURNITURE POLISH	514	20753	1	BT		
QA	SPEER PRODUCTS INC.	C	INSECTICIDE	514	21041A	4	BT	6840	010672137
	SPEER PRODUCTS INC.	C	INSECTICIDE	543	21041B	4	BT	6840	010672137
QA	WD-40 COMPANY	C	LUBRICANT,WD-40	514	20885I	1	BT		
SE		C	ALCOHOL, DENATURED TYPE III	509		1	GL		
SE	UNISYS	C	TONER	509	20844A	12	OZ		

BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

CDR DAVID LESLIE
NAME (Please type or print)

Signature

EXECUTIVE OFFICER
Title

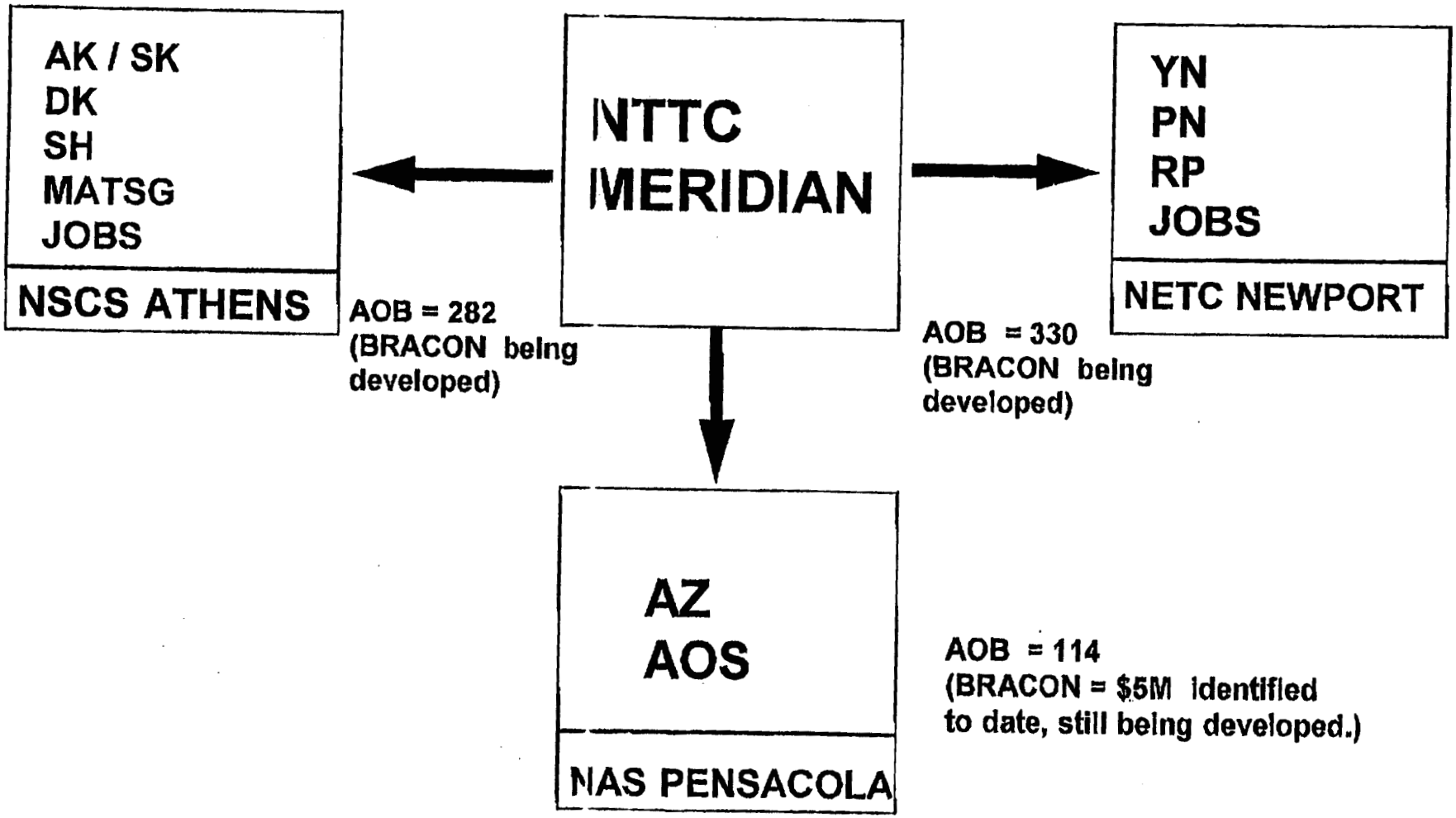
1 DEC 94
Date

Division

COMMAND STAFF
Department

NAVAL WARFARE ASSESSMENT CENTER, CORONA, CA
Activity

NTTC MERIDIAN TRAINING MIGRATIONS



THE DEFENSE BASE CLOSURE AND REALIGNMENT COMMISSION
1700 NORTH MOORE STREET SUITE 1425
ARLINGTON, VA 22209
703-696-0504

ALAN J. DIXON, CHAIRMAN

COMMISSIONERS:
AL CORNELLA
REBECCA COX
GEN J. B. DAVIS, USAF (RET)
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RADM BENJAMIN F. MONTOYA, USN (RET)
MG JOSUE ROBLES, JR., USA (RET)
WENDI LOUISE STEELE

MEMORANDUM

TO: R&A Staff

FROM: Ben Borden

DATE: 15 May, 1995

RE: Week's outlook

1) Below are the dates and times for the team meetings in Ben's office this week. Please make a note of the time as they are not uniform for each team.

15 - May	3:00 p.m. - 4:00 p.m.	Interagency Issues Team
16 - May	12:30 p.m. - 2:30 p.m.	Cross Service Team
17 - May	9:00 a.m. - 11:00 a.m.	Army Team
18 - May	9:00 a.m. - 11:00 a.m.	Air Force Team
19- May	9:00 a.m. - 11:00 a.m.	Navy Team

2) Base visit packages for the following installations are due by COB **Tuesday** (5/16).

a) McClellan AFB, CA
b) San Bruno EFAW, CA
c) SUPSHIP, CA
d) FISC, CA
e) NWAD Corona, CA
f) Hill AFB, UT
g) Grand Forks, ND

3) Summary sheets, base visit reports, and a minimum of two (more difficult) questions for the following installations are due by COB **Wednesday** (5/17). The installations below will be given time at the San Francisco Regional Hearing.

a) McClellan AFB & DDD, CA
b) San Bruno EFAW, CA
c) SUPSHIP, CA
d) FISC, CA
e) NWAD Corona, CA
f) Hill AFB & DDD, UT
g) Oakland Army Terminal
h) Pt. Mugu, CA
I) Public Works Center, Guam

4) Please submit your pink travel requests (for all travel) to Rob after receiving your Team Leader's approval. Rob will then submit your travel request to Shelley Kestner. All travel requests for dates up to (and including) the Boston Regional Hearing (6/3), are due to Rob by COB **Tuesday** (~~4~~5/16).

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Document Separator

REVISED PG

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.10 Weapons Data Links
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.00_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____125.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.11 Weapons Fuzing
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.29_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____35.2___

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.11 Weapons Fuzing
Life Cycle Work Area	18. SIMULATION, MODELING AND ANALYSIS

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.95_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____114.4____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.1 Subsurface
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____4.00_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____400.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.
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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.1 Subsurface
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.00_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____200.6____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___348.5____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___1226.7____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TAB A
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UIC____64267_____

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.1 Subsurface
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____94.5____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TAB A
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UIC____64267_____

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.2 Air
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.40_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____41.1____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___405.5____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.
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private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.2 Air
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.42_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____45.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___35.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.3 Surface
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVLOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____3.80_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____450.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.3 Surface
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____9.80_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____980.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.3 Surface
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.60_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____60.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.3 Surface
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.80_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___80.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.3 Surface
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____31.60_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___3752.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__1358.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.3 Surface
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.84_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___329.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__50.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.3 Surface
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____3.30_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___400.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

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private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.3 Surface
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___50.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.3 Surface
Life Cycle Work Area	15.0 PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____17.90_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___2460.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEMS INTEGRATION 3.4 Mulitplatform
Life Cycle Work Area	3. ADVANCED DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___50.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.4 Mulitplatform
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___210.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	3. COMBAT SYSTEM INTEGRATION 3.4 Multiplatform
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.70_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___84.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	4. SPECIAL OPERATIONS SUPPORT 4.1 Landing Force Equipment & Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the

organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	4. SPECIAL OPERATIONS SUPPORT 4.2 Coastal/ Special Warfare Support
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.80_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___77.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___653.6_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	4. SPECIAL OPERATIONS SUPPORT 4.2 Coastal/ Special Warfare Support
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.1 Sonar Systems
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___55.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__150.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILANCE SYSTEMS 5.1 Sonar Systems
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___259.4_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__60.5_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___1010.2_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

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private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.1 Sonar Systems
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___48.7_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__11.4_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___189.5_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.1 Sonar Systems
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___165.7_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__11.4_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___189.5_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.1 Sonar Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__50.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.1 Sonar Systems
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.70_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___195.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__51.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.1 Sonar Systems
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.20_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___25.0_____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.1 Sonar Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___121.7_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__158.4_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___189.5_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___55.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	5. RDT&E MANAGEMENT SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.49_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___54.9_____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)__9.4_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	6. OPERATIONAL SYSTEMS DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.49_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___54.9_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)_____9.4___

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.46_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___155.0_____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___98.5_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.59_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___61.3_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___14.9_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.06_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___233.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___24.2_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___50.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____5.67_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___715.1_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___195.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___120.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.33_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___265.7_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.94_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___342.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____176.9____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.2 Radar Systems
Life Cycle Work Area	18. SIMULATION, MODELING & ANALYSIS

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.97_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___341.6_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___58.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.3 Special Sensors
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___275.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___820.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.3 Special Sensors
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSEMS 5.3 Special Sensors
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.23_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___25.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___25.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.3 Special Sensors
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.00_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.4 Space Sensor/ Surveillance Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. _____0.64____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	5. SENSORS & SURVEILLANCE SYSTEMS 5.5 Ocean Surveillance
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.1 Submarine Navigation Systems
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.40_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___44.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.1 Submarine Navigation Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.2 Aircraft Navigation Systems
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.03_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___3.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___3.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.3 Surface Ship Navigation Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.3 Surface Ship Navigation Systems
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.53_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___58.4_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___20.4_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.3 Surface Ship Navigation Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.18_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___19.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___6.8_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.4 Weapons Navigation Systems
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. _____0.80____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___81.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___15.4_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___256.3_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.4 Weapons Navigation Systems
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___15.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___2.9_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___48.1_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.4 Weapons Navigation Systems
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___15.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___2.9_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___48.1_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.4 Weapons Navigation Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___50.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	6. NAVIGATION 6.4 Weapons Navigation Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___15.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___2.9_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___48.1_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATIONS & INTELLIGENCE (C^3I) 7.1 Submarine
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.40_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___38.7_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____9.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___150.8_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATIONS & INTELLIGENCE (C^3I)
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___7.3_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___1.7_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___28.3_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATIONS & INTELLIGENCE (C_3I) 7.1 Submarine
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___7.3_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___1.7_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___28.3_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATIONS & INTELLIGENCE (C^3I) 7.1 Submarine
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATIONS & INTELLIGENCE (C_3I) 7.1 Submarine
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.26____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___29.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___10.2_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATIONS & INTELLIGENCE (C_3I) 7.1 Submarine
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.19_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___17.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___5.1_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___28.3_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C_3I) 7.2 Airborne
Life Cycle Work Area	14. IN-SERIVE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. _____0.16____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___17.9_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____17.9____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATIONS & INTELLIGENCE (C_3I) 7.3 Shipboard
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___165.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___490.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C_3I) 7.3 Shipboard
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.3 Shipboard
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.58_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___175.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____61.3____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the

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organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C_3I) 7.3 Shipboard
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work

(customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.4 Land-Based
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)_____0.0___

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C_3I) 7.5 Space Communication Systems
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.20_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___220.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C_3I) 7.5 Space Communications Systems
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. _____0.40____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___50.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C_3I) 7.5 Space Communication Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.5 Space Communication Systems
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.60_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___79.0_____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)____10.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.5 Space Communication Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. _____0.30____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___40.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____38.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.6 Non-Tactical Data Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work

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(customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.6 Non-Tactical Data Systems
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.13_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___14.6_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____5.1____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work

(customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.6 Non-Tactical Data Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. _____0.04____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___4.9_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____1.7____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.7 Air Traffic Control Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___94.5_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work

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(customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.7 Air Traffic Control Systems
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.54_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___58.8_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____30.3____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work

(customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.7 Air Traffic Control Systems
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.33_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___36.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____10.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.7 Air Traffic Control Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.13_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___14.6_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____5.1____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.8 Intelligence Information Systems
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.60_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___160.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work

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(customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.8 Intelligence Information Systems
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.26_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___29.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____10.2____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE (C^3I) 7.7 Air Traffic Control Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.13_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___14.6_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____5.1____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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(customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	7. COMMAND, CONTROL, COMMUNICATION, & INTELLIGENCE (C^3I) 7.8 Intelligence Information Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.09_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____9.7____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___3.4_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	8. DEFENSE SYSTEMS 8.1 Ballistic Missile Defense
Life Cycle Work Area	5. RDT&E MANAGEMENT SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.70_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____80.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___20.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work

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(customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

Document Separator

PREFACE TO TAB A

NWAD maintains nine distinct engineering capabilities for the Navy in the execution of its mission. The nine engineering capabilities are:

1. **WEAPONS AND COMBAT SYSTEMS PERFORMANCE ASSESSMENT**
2. **FLEET EXERCISE ASSESSMENT**
3. **TACTICAL TRAINING RANGE ENGINEERING**
4. **QUALITY ENGINEERING**
5. **RM&A ASSESSMENT**
6. **TEST SYSTEMS AVAILABILITY ASSESSMENT**
7. **METROLOGY SYSTEMS ENGINEERING**
8. **WEAPONS TEST ENGINEERING**
9. **INFORMATION SYSTEMS ENGINEERING**

These engineering capabilities are located at NWAD because they are inherently governmental functions which require and share a distinct assessment engineering expertise and focus to be performed properly. Historically, omission of the use of these capabilities have resulted in detrimental impacts on platforms/weapons and Fleet readiness when combined with other prime system acquisition or support functions. These capabilities are applied Navy-wide across numerous platforms, weapons/combat systems and programs in support of the full life cycle from R&D through acquisition, in-service, and retirement. Therefore, in complying with the call of this question, our nine capabilities which have 50-150 workyears funded each have resulted in over 300 commodity/life cycle intersections. Our comment and recommendation in NWAD letter Ser T/013 of 1 Apr 94 to BSAT concerning this data call applies.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ___0.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___55.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ___0.20_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___42.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___22.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____21.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___11.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ___0.20_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___36.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___11.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the

organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ___0.43_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___63.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.80_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____280.0__

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____110.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	12. REPAIR

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ___0.20_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___52.0___

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____22.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.66____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____106.1____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___32.2_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.81_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____229.1____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___22.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.09____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____9.7____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___3.4_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	17. TRAINING/ OPERATIONAL SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.30____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____30.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.1 Undersea
Life Cycle Work Area	18. SIMULATION, MODELING AND ANALYSIS

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.40____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____31.5____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.2 Aircraft
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.28_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____248.6____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____137.7____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.2 Aircraft
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____4.20_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____557.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___26.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.2 Aircraft
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ___0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___31.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____13.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.2 Aircraft
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.13_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____26.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___13.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.2 Aircraft
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____3.70_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___510.0_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___130.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.2 Aircraft
Life Cycle Work Area	12. REPAIR

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.20_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____62.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____26.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.2 Aircraft
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____19.49_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____2156.5____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___1051.6_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.2 Aircraft
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____20.74_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____2333.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___1531.2_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___333.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.2 Aircraft
Life Cycle Work Area	18. SIMULATION, MODELING AND ANALYSIS

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.00_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____78.7___

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____165.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___250.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0_____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

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Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.40_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____82.0____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___34.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.00_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____256.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___92.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.20_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____36.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___17.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.43_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____63.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___50.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____4.93_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____663.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___220.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	12. REPAIR

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.30_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____72.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___34.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.62_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____332.9____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___85.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____4.90_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____627.0____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___34.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.54_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____56.5____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___17.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.3 Surface Ship
Life Cycle Work Area	18. SIMULATION, MODELING AND ANALYSIS

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.60_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___125.9____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.5 Ground Vehicles
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____10.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___4.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.5 Ground Vehicles
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____10.0____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___2.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.5 Ground Vehicles
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____10.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____2.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.5 Ground Vehicles
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.40_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____51.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___22.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.5 Ground Vehicles
Life Cycle Work Area	12. REPAIR

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____10.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___4.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.5 Ground Vehicles
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____10.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___4.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	1. PLATFORMS 1.5 Ground Vehicles
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____10.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___4.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.1 Gun Systems
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.16_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____122.3____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___98.5____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.1 Gun Systems
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____11.77_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___1308.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___20.5_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.1 Gun Systems
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.06_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___6.6_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___0.0_____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.1 Gun Systems
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.09_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____117.4____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)____5.5____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the

organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.1 Gun Systems
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____3.80_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____433.6____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.1 Gun Systems
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____4.26_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____486.8____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)___40.8____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.1 Gun Systems
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.00_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____120.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.1 Gun Systems
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.85_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____97.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding. $(K)____197.0___

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)____0.0____

Note:

In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	2. EXPLORATORY DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.17_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____137.4____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___29.1____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	3. ADVANCED DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____3.51_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)___412.2_____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___87.2____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the

organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.00_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____220.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___100.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	5. RDT&E MANAGEMENT SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.87_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____225.3____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___42.7____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	6. OPERATIONAL SYSTEMS DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.87_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____225.3____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___42.7____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____9.00_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____926.7____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___98.5____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____66.62_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____7741.7____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___433.2____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___50.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____113.8____

b. **Out-of-House Expenditures.** Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____7.86____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____952.2____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___181.2____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____10.33_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____1135.3____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	12. REPAIR

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.40_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____42.2___

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0___

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____99.39___WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____11967.5__

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___2612.9__

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___60.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____13.55_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____1804.4____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___295.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____21.81_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____2581.2____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___480.3____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	17. TRAINING/ OPERATIONAL SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.20_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____19.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.2 Guided Missiles
Life Cycle Work Area	18. SIMULATION, MODELING AND ANALYSIS

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____8.30_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____990.1____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___172.1____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	5. RDT&E MANAGEMENT SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.93_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____153.9____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	6. OPERATIONAL SYSTEMS DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.47_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____77.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.39_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____221.4____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____4.60_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____673.6____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___259.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

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organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____5.44_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____882.1____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___176.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.69_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____393.9____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___181.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.09_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____235.2____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	12. REPAIR

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.27_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____39.4____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	16. RETIREMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.03_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____5.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.3 Free Fall Weapons and Rockets
Life Cycle Work Area	18. SIMULATION, MODELING AND ANALYSIS

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.93_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____282.1____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.4 Torpedoes
Life Cycle Work Area	4. ENGINEERING & MANUFACTURING DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____55.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___150.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.4 Torpedoes
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.05_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____5.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.4 Torpedoes
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.08_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____8.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.5 Mines
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____10.8____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.5 Mines
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.30_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____35.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.5 Mines
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.75_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____88.5____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.8 Launchers
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.75_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____312.5____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.8 Launchers
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____58.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.8 Launchers
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.15_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____16.1___

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

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TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.8 Launchers
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____294.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___56.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.8 Launchers
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____307.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.8 Launchers
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.50_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____270.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___148.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

TAB A
page _____of_____
UIC____64267_____

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.9 Fire Control
Life Cycle Work Area	5. RDT&E MANAGEMENT SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.67_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____79.2____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___13.5____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.9 Fire Control
Life Cycle Work Area	6. OPERATIONAL SYSTEMS DEVELOPMENT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.67_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____79.2____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___13.5____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.9 Fire Control
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.66_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____178.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___104.5____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___90.5____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.9 Fire Control
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.77_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____90.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___20.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___17.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.9 Fire Control
Life Cycle Work Area	10. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ___2.34___WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____274.1____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___31.4____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___17.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.9 Fire Control
Life Cycle Work Area	11. MAINTENANCE

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.64_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____94.5____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.9 Fire Control
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____10.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____1184.6____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___271.8____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.9 Fire Control
Life Cycle Work Area	14. IN-SERVICE ENGINEERING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____1.33_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____157.2____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___21.5____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.9 Fire Control
Life Cycle Work Area	18. SIMULATION, MODELING AND ANALYSIS

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____3.71_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____438.5____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___74.8____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.10 Weapons Data Links
Life Cycle Work Area	13. TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.53_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____58.4____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___20.1____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.10 Weapons Data Links
Life Cycle Work Area	15. PROGRAM SUPPORT

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____2.10_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____130.0____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___136.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.11 Weapons Fuzing
Life Cycle Work Area	7. PRODUCTION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.07_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____8.8____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions and

private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.11 Weapons Fuzing
Life Cycle Work Area	8. ACCEPTANCE TESTING

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.72_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____84.1____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

TECHNICAL FUNCTIONS
FUNCTIONAL SUPPORT AREA/LIFE CYCLE WORK AREA FORM

Technical Center Site	NWAD
Functional Support Area	2. WEAPONS SYSTEMS 2.11 Weapons Fuzing
Life Cycle Work Area	9. MODERNIZATION

Note: An example of a functional support area - life cycle work area is "1. Platform, 1.1 Undersea, - 10. Program Support".

1. **In-House Work Years.** Provide the number of in-house government employee (civilian and military) work years for FY1993 that were performed in this functional support area - life cycle work area. Workyears are to be consistent with those used in the preparation of inputs to the President's budget. ____0.07_____WYs

2. **Expenditures.**

a. **In-House Expenditures.** Provide the total in-house cost in FY1993 for this functional support area - life cycle work area. $(K)____8.8____

b. **Out-of-House Expenditures**. Provide the total funds expended during FY1993 for this functional support area - life cycle work area. **Do not** include direct cite funding.
$(K)___0.0____

c. **Direct Cites.** Provide total direct cite funds expended on contract during FY1993 for this functional support area - life cycle work area. $(K)___0.0____

Note:
In-House Expenditures - Is comprised of the total obligation authority for direct labor, direct material, direct travel, direct equipment, direct computer support, other direct support services and all overhead.

Out-of-House Expenditures - Is comprised of total obligational authority for direct work (customer funded, mission oriented) performed or to be performed by other than the organizational entity. Out-of-house performers may include other departmental or DoD

organizational entities, industrial firms, educational institutions, not-for-profit institutions and private individuals.

Document Separator

TAB C

RANGE RESOURCES

RANGE CAPABILITY FORM

PREFACE:

a. Naval Warfare Assessment Division (NWAD) operates and maintains a wide variety of electronic instrumentation systems, telemetry and data transmission/communication systems for a number of military test ranges.

NWAD operates telemetry field sections at:

Naval Station Roosevelt Roads, Puerto Rico
Naval Air Station, Oceana, VA
NATO Allied Missile Firing Installation, Crete, Greece

These field stations are used for the collection, processing, and distribution of weapons exercise data from live firings.

b. NWAD operates Satellite Earth Stations located at Roosevelt Roads, Puerto Rico and NWAD Corona, CA. These stations include telecommunications hardware required to relay telemetry, weapon/combat system, range, target and command/ control communication data. Future linkage of other ranges, as well as open ocean/open area exercise data/ information, is planned for providing the Navy and DOD a "global exercise" capability with range exercise data from a number of locations and participants being transmitted to our single site Warfare Assessment Laboratory (completed FY 94) for processing and retransmission of results back to the Fleet and other participating activities.

c. NWAD develops, acquires, installs, logistically supports, operates, and maintains Naval Tactical Training Range (NTTR) instrumentation systems at the following TACTS/EW (Tactical Air Crew Training System/Electronic Warfare) Ranges:

MAIN SITES
NAS Fallon, NV
MCAS Yuma, AZ
NAS Oceana, VA
MCAS Beaufort, SC
MCAS Cherry Pt, NC
NAS Key West, FL

REMOTE DEBRIEFING SITES
NAF El Centro, CA NAS Miramar, CA MCAS El Toro, CA NAS Cecil Field, FL

d. Weapon Impact Scoring System (WISS)/Strafe System Test Range is operated and maintained at the NWAD Corona, CA main site. This range is used for development, test and evaluation of unique range instrumentation systems as well as calibration of WISS that are fielded at all NTTRs.

2.0 TACTICAL AIRCREW COMBAT TRAINING SYSTEM (TACTS)

2.1 General

The TACTS provides real time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance deliveries, simulated mine laying, simulated anti-radiation missile employment and electronic warfare systems employment. The training capacity of the TACTS has been increased from the original capability to support four aircraft to the current capability to handle 36 high dynamic aircraft simultaneously.

Six Navy TACTS are currently in operation as shown below. Data generated by the TACTS can be transmitted to local and remote DDSs simultaneously.

TACTS	REMOTES
NAS Oceana, VA	Langley AFB, VA
NAS Key West, FL	No remotes
MCAS Cherry Point, NC	No remotes
MCAS Beaufort, SC	NAS Cecil Field, FL
	Georgia Air National Guard, Savannah, GA
	Florida Air National Guard, Jacksonville, Fl
NAS Fallon, NV	NAS Lemoore, CA
MCAS Yuma, AZ	NAF El Centro, CA,
	NAS Miramar, CA,
	MCAS El Toro, CA

The Air Force and Air National Guard (ANG) version of the TACTS is called Air Combat Training System (ACTS). These systems may be available for use by special arrangements. Location and points of contact are shown in Table A.2-1.

TABLE A.2-1. AIR COMBAT TRAINING SYSTEM

LOCATION	REMOTES
Eielson AFB, AK	Elmendorf AFB, AK
Elmendorf AFB, AK	Eielson AFB, AK
Ft. Irwin, CA	Nellis AFB, NV
Nellis AFB, NV	
Luke AFB, NV	
Hill AFB, UT*	
Volk Field ANG, WI	
Gulfport ANG, MS	
Homestead AFB, FL	
Tyndall AFB, FL	

* 8 AIRCRAFT ACTS

2.2 Typical Operation

Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on a TACTS range continuously provide information to the Control and Computation Subsystem (CCS) for computation, i.e., State Vector Tracking (SVT). This is accomplished by two-way microwave data links, which interface the CCS, Tracking Instrumentation Subsystems (TIS), and AIS into a closed loop system. The Display Debriefing

Subsystem (DDS) provides a capability for real time monitoring of these data on large screen displays and smaller displays at the controllers' consoles, and maintains UHF voice communication with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefings. Figure A.2-1 shows a typical TACTS range.

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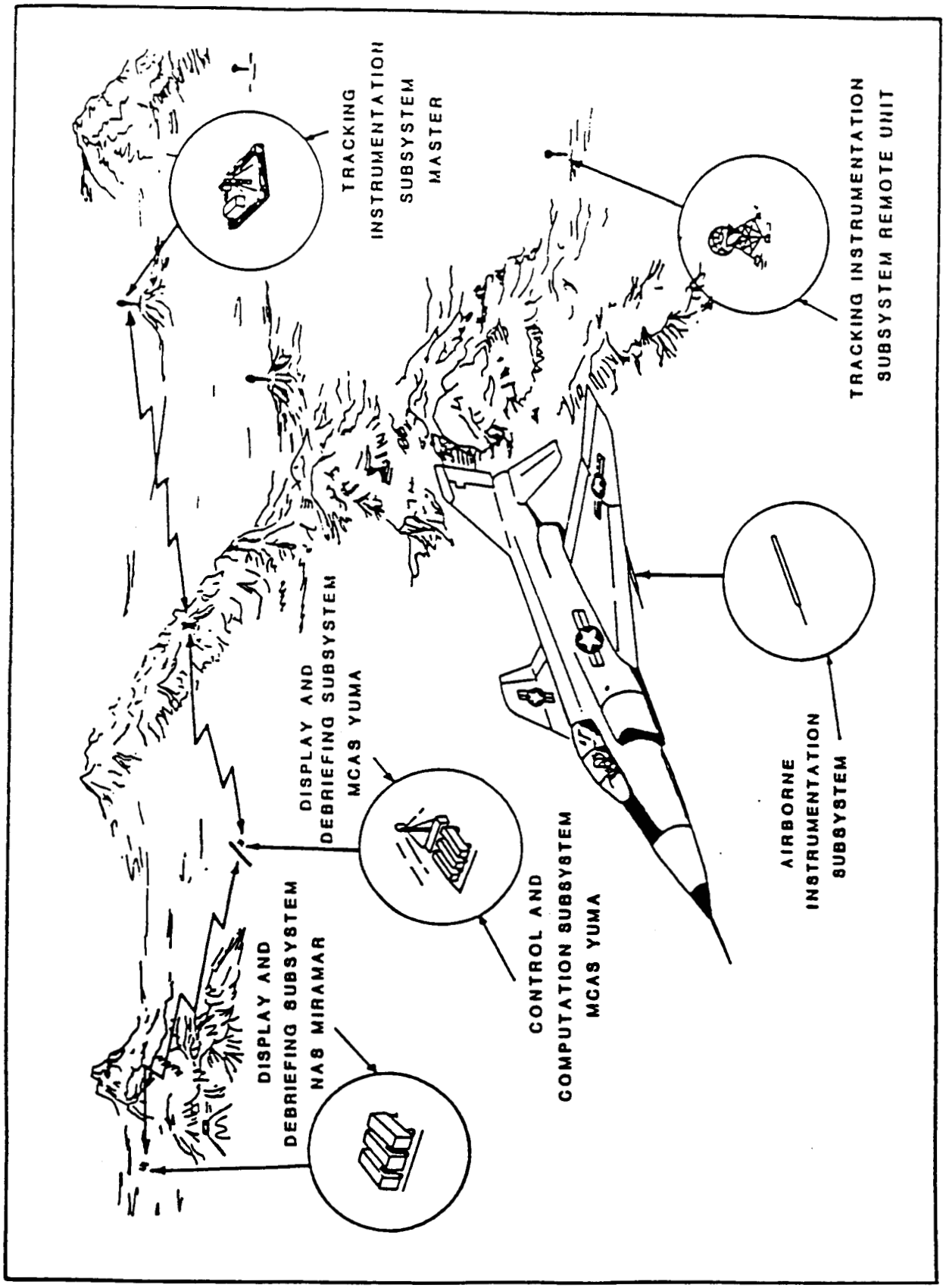


FIGURE A.2-1 OPERATIONAL TACTS

2.3 Technical Description of Equipment

2.3.1 Aircraft Instrumentation Subsystem (AIS). The AIS consists of a self-contained 5-inch diameter pod (similar to a Sidewinder missile) which contains the transponder, the digital interface unit, inertial reference unit, and antenna-air data sensor. An AIS pod is shown in Figure A.2-2. The transponder provides distance measuring and data link capability. The digital interface unit interfaces with the aircraft weapons system and digitize data for transmission to the ground. The inertial reference unit has three axis gyros (yaw, pitch, and roll) and corresponding rate acceleration gyros to measure aircraft dynamics. The antenna-air data sensor provides air-to-ground and ground-to-air communications capabilities, and senses impact, static, and differential air pressures.

Presently, two versions of the AIS pod are available: the P4 and P4A. The P4 has a word capacity of 30 words and, therefore, a capability for utilizing weapon system signals. The P4A pod incorporates a radar for enhanced air-to-ground training capability. The AIS operates from standard aircraft power available from the LAU-7 or AERO-3B launcher to which it is attached. Newer aircraft (e.g., F/A-18) will have certain AIS components mounted internally, with the TACTS utilizing the aircraft's Inertial Navigation System (INS) for inertial data. This subsystem, designated the Aircraft Instrumentation Subsystem Internal (AISI), has practically the same capabilities as the P4A.

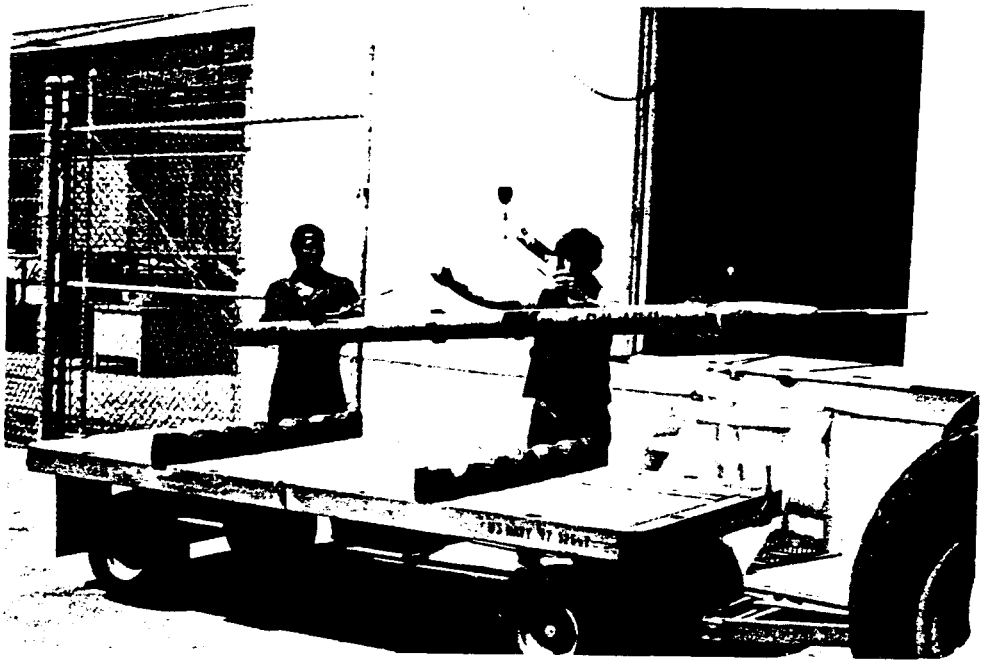
Each ground-to-air and air-to-ground transmission consists of a digital data message and ranging tone. The AIS receives uplink messages from one of the TIS ground stations designated as the interrogator and returns a downlink message to the ground stations. The downlink message contains aircraft performance, barometric, and aircraft weapons systems data.

Attitude and velocity component corrections are derived in the CCS real time filter and are based on the tracking data from the TIS combined with attitude, velocity, and barometric components downlinked by the AIS. These corrections are used to update the Inertial Reference Unit (IRU) platform, thereby forming a closed loop between the AIS, TIS, and CCS.

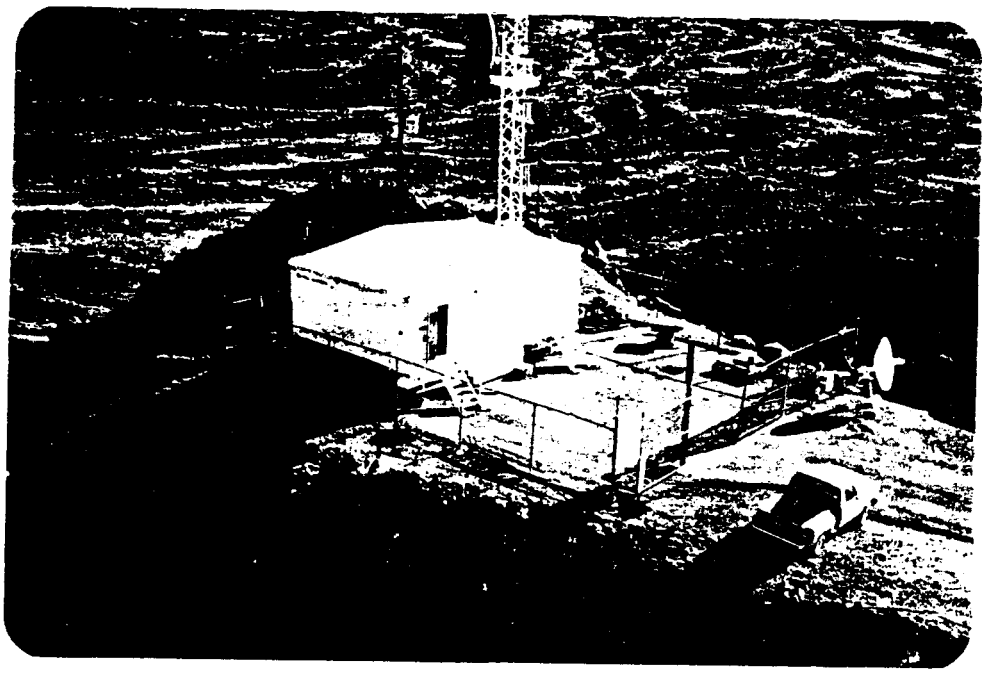
2.3.2 Tracking Instrumentation Subsystem (TIS). The TIS consists of a master station and remote/receiver ground stations which form a phase-locked-loop ranging system and a two-way data link. A ground-based calibration transponder serves as a substitute AIS and enables the entire TACTS to be operated, calibrated, and performance-verified without AIS-equipped aircraft on the range.

The master station consists of a controller-processor computer for ranging functions, data link equipment for microwave communications with the CCS and AIS, and a precise time-of-day clock.

Each remote interrogator/receiver consists of an electronic package containing receiving and transmitting circuitry for ground-to-ground and air-to-ground signal transmissions, a directional antenna for the ground-to-air link, a parabolic reflector fed by a dipole for line-of-sight communications with the master site, and a power supply. Batteries and a solar cell battery-charging



AIS SUBSYSTEM



TIS SUBSYSTEM

Figure A.2-2 TACTS AIS/TIS Subsystems (Yuma)

module are used for providing unattended service where commercial power is unavailable.

The remote TIS stations are laid out in a pattern which satisfies the desired airspace instrumentation requirements. A 30 NMI diameter range typically requires seven ground stations. Figure A.2-3 shows a typical TACTS remote TIS station. Figure A.2-4 shows Oceana TACTS remote TIS station installed on an ocean tower.

2.3.3 Control and Computation Subsystem (CCS). The CCS contains six tandem Perkin-Elmer 8/32D computers, associated peripheral equipment, modems, and microwave data link equipment for communicating with the DDS vans and the TIS master station.

The CCS computes aircraft position, velocity, acceleration, altitude, and attitude rates by filtering the range observations from the TIS and the inertial data downlinked from the AIS. It computes time, space, position information (TSPI) for escort aircraft using range observations only. Utilizing the state vector tracking data for each participating aircraft and the weapons data monitored by the AIS, the CCS computes inter-aircraft parameters which provide weapons envelope recognition, aircrew switchology training, and missile simulations to allow total reconstruction of the training missions flown. This data is transmitted to the DDS vans for real time display and recording for debrief by the aircrews.

Data are also provided to a sub-program for flight safety predictions. Aircraft are monitored to detect unsafe flight conditions and for proximity to the range boundary. If either of these conditions exist, an alarm is transmitted to the Range Training Officer (RTO) located in the DDS.

2.3.4 Display and Debriefing Subsystem (DDS). The DDS is the primary man-machine interface which translates TACTS-derived information into computer and alphanumeric symbology in a standard and easily understood format. The DDS also serves as the operations center for all TACTS activities, including range communication with participating aircraft.

All DDSs have identical capabilities and configurations. The DDS contains dual RTO consoles which present three-dimensional (3-D) situation and two-dimensional (2-D) alphanumeric information for real time and post-mission analysis.

The DDS can be used in a stand-alone mode without requiring the CCS or any other subsystem to be operational for playback and debriefing. The DDS records all data received from the CCS during the exercise on magnetic tape for replay during post-mission debriefing.

An Advanced DDS (ADDS) is being procured to replace the existing DDSs in late 1994. Two transportable ADDS (TADDS) for shipboard use are expected to be operational in 3rd qtr. 1994.

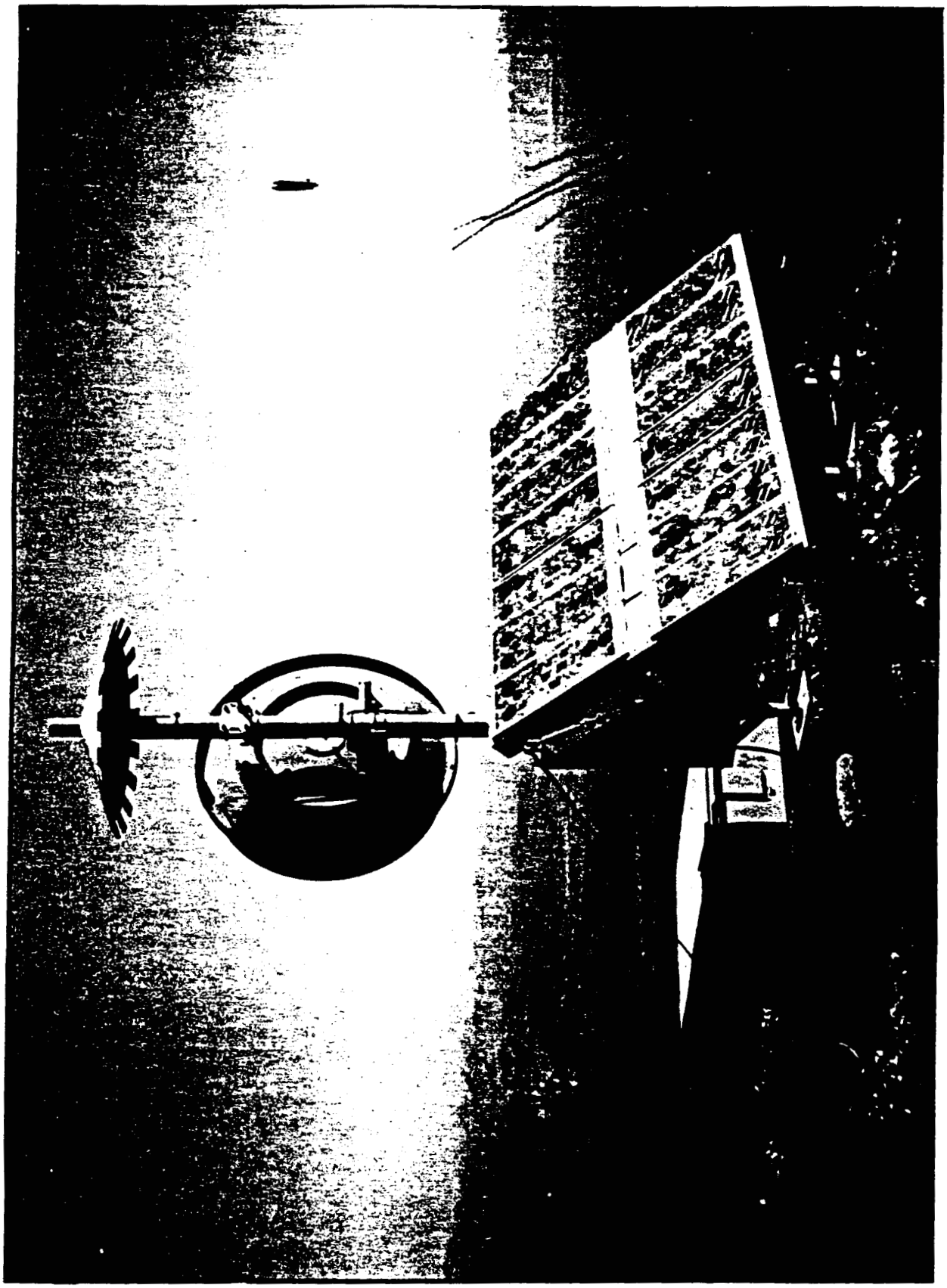


Figure A.2-3 TACTS Remote TIS

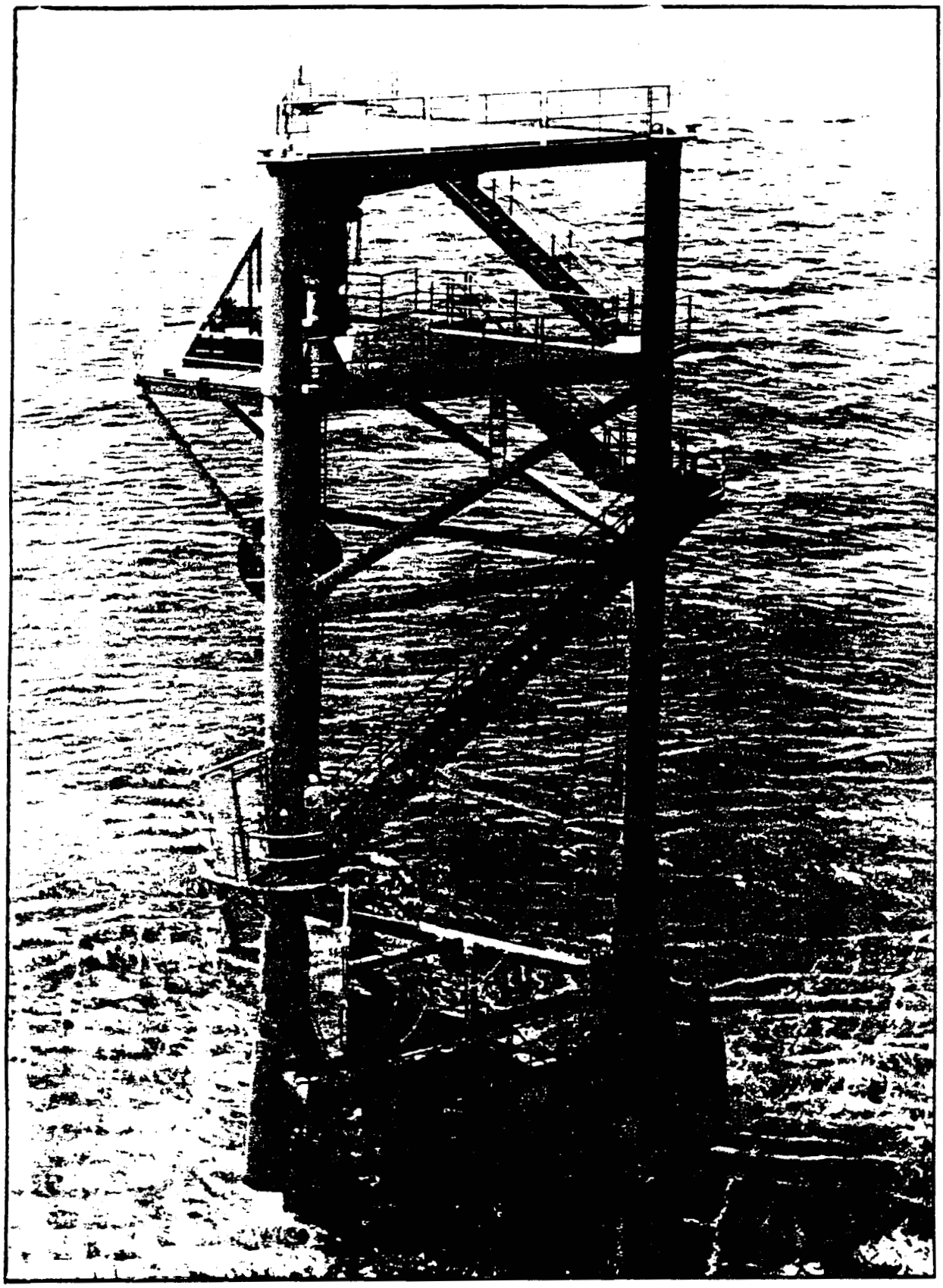


Figure A.2-4 TACTS OCEAN TOWER TIS

7.0 ELECTRONIC WARFARE RANGES (EWR)

7.1 General

The EWR information provided in this section covers Electronic Warfare (EW) assets under the Aircrew Electronic Warfare Training Range (AEWTR) program, NAS Whidbey Island, and Pacific Missile Range Facility (PMRF). The AEWTR program provides EW assets for NAS Fallon, MCAS Cherry Point, NAS Cecil Field (Pinecastle), and MCAS Yuma. Limited EW training capability exists at NAS Whidbey Island and PMRF. Additional EW capability exist under the REWS program (refer to REWS, Section 3.0). Major Range Test Facility Base (MRTFB) ranges at China Lake and Patuxent River support EW development and testing and these EW assets are not addressed in this document.

The AEWTR program provides the majority of the EW assets in the training ranges. The AEWTR assets provide aircrews training against hostile threat environment. AEWTR assets include acquisition, target track and AAA/missile guidance radars, radar jammers, communications jammers and infrared missile simulators. The EW assets at the sites are being integrated with the Tactical Aircrew Combat Training System (TACTS). The integrated EW/TACTS will allow aircrew debriefing capability for both TACTS and EW operations.

7.2 Typical Operation

The aircrews flying the AEWTR ranges can train against single and/or multiple threat systems, dependent upon their training mission requirements. The EW assets allow the aircrews to train against detection (low altitude flying/terrain masking), for signal recognition (target track radars), deceptive jamming and evasive actions (missile guidance radars), and communication and navigational radar jamming. The AEWTR ranges can accommodate multiple aircrafts for tactic/scenario training.

7.3 Technical Description of the EWR System (AEWTR)

The equipment descriptions that follow cover the major EWR systems. Figure A.7-1 depicts the EW assets at the AEWTR/TACTS ranges; Fallon EW Range (FEWR), Mid-Atlantic EW Range (MAEWR), Pinecastle EW Range (PEWR), MCAS Yuma, and NAWCWPNS China Lake (residual AEWTR assets).

7.3.1 AN/VPQ-T4 Tactical Radar Threat Generator (TRTG). The TRTG is a manned mobile threat emitter that simulates an Anti-Aircraft Artillery (AAA) and Surface-to-Air Missile (SAM). The TRTG includes a J-Band pulsed ground-to-air search and range tracking radar that provides target search, detection and acquisition, and range and angle tracking. The emitter includes a truck mounted S250 shelter (with electronics) and a pedestal mounted on top of the shelter, and is powered by a towed 60 Hz/400Hz generator.

7.3.2 AN/MSQ-T43 Modular Threat Emitter (MTE). The MTE is a manned SAM threat emitter simulator. The MTE can be physically configured to simulate two J-Band SAM tracking, missile interrogate/command and target illumination threats; only one threat system at a time can be simulated. The simulator includes a transportable operations shelter and a pedestal group assembley.

System/Site	FEWR	MAEWR	PEWR	Yuma	NAWCWPNS
AN/VPQ-1 TRTG		1		2	
AN/MSQ-T43 MTE	2 V1,V4	1 V4		1	
TWSS	1	1			
AN/GPQ-T8	2	2			
AN/MPQ-47	1				
TWS I-Band	1	1			
AN/SPS-28 Acq Radar	1				
AN/MPS-T9 GCI Radar	1				
AN/MPS-38 Acq Radar	2				
AN/FPS-127 Heightfinder	2				
AN/TPT-4 UMTE	5				
AN/GPQ-11 (V)1 TRES	9	4		(3)	
AN/GPQ-11 (V)2	(4)	(5)		(2)	
AN/GPQ-11 (V)2-2	(1)	(1)			
AN/GPQ-11 (V)3	(1)				
AN/GPQ-11 (V)7	(2)	(1)	(4)	6	
AN/GPQ-11 (V)9		(2)			
AN/USQ-103 RF Monitor	2	1			1
AN/USQ-113(V)1 Comm Jammer	1 (1)	1			
PADS/IR Simulator	2	2		(2)	
AN/MLQ-T2	1	1			
Orange Command & Control	1 W/4 Remotes				
Multi-Band SAM	1	1			
AN/MPS-19	1				
AN/UPX-27 IFF		1			

Figures in parentheses indicate future installations.

Figure A.7-1. EW Assets at the AEWTR/TACTS Ranges

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office Fallon, NV (Host UIC 60495)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance deliveries, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debriefing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Northwest Nevada

c. Distance from the range to the activity's headquarters facility (main site).

600 miles

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

N/A

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot-view display.

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY 1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

SECTION III.C

WESTERN CONTINENTAL UNITED STATES

I. FALLON COMPLEX

A. Operating Area Manual

Information contained herein is based upon the FACSFAC San Diego Instruction 3120.1 OPAREA Manual, NAS Fallon Instruction 3752.1. Further detailed information may be found in these instructions and NAS Fallon Range Manual (FRC-1).

B. General Description

The Fallon complex is located in western Nevada approximately 50 NMI east of Reno NV. The complex provides an electronic warfare range, a wide variety of air-to-ground targets, and extensive airspace, all contributing significantly to Fleet air training operations. See Figure III.C-1. Telemetry support is available for the Tactical Aircrew Combat Training Systems (TACTS). Radar support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The Fallon complex is composed of the following target areas and ranges:

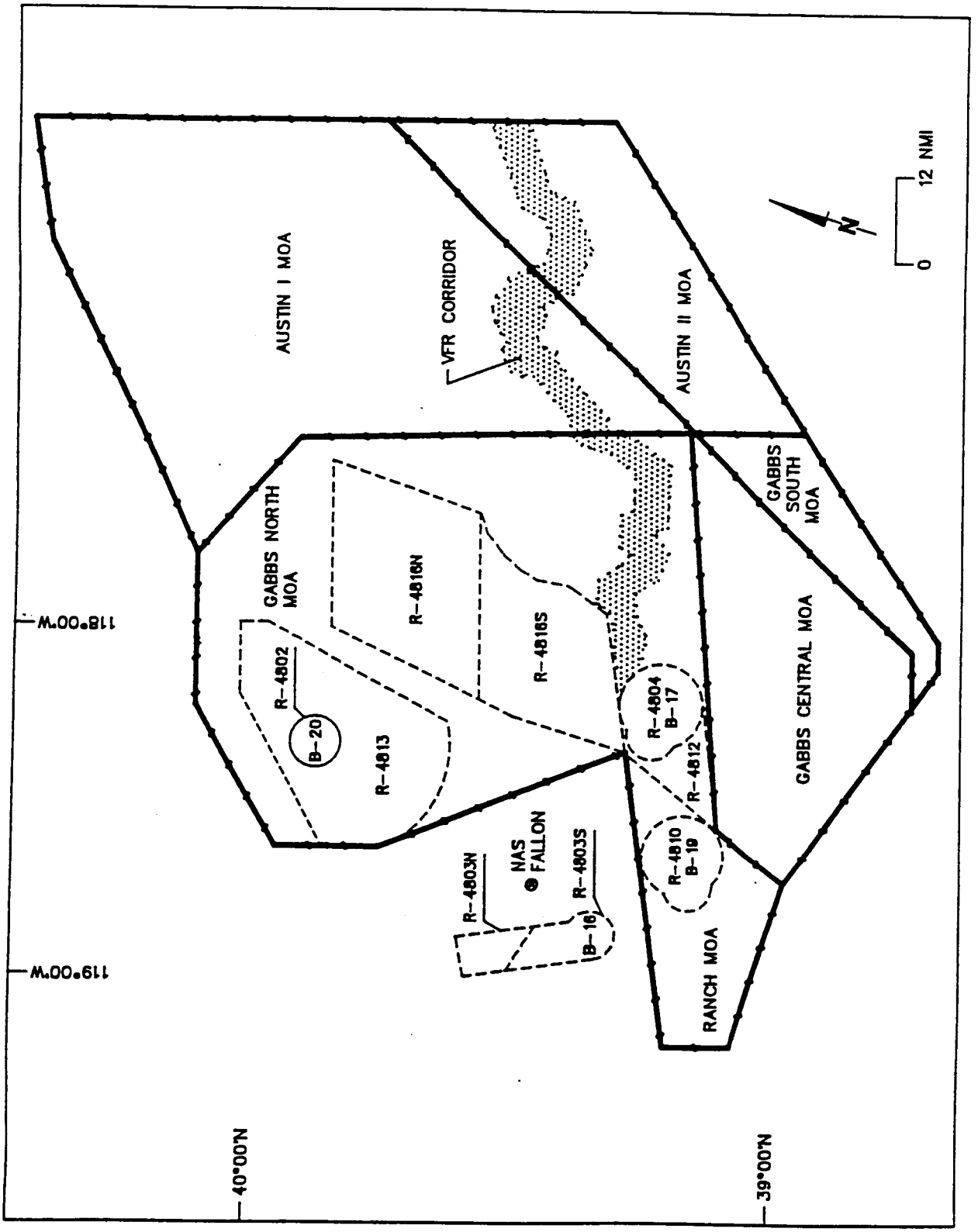
1. Bravo 16 (R-4803)
2. Bravo 17 (R-4804)
3. Bravo 19 (R-4810)
4. Bravo 20 (R-4802/R-4813)
5. Sand Springs (R-4812)
6. Fallon Electronic Warfare Range (Includes R-4816)
7. Fallon Tactical Aircrew Combat Training System (TACTS)
8. Austin Military Operating Area (MOA)
9. Gabbs Military Operating Area (MOA)
10. Ranch Military Operating Area (MOA)

C. Command Structure

1. Scheduling Authority: Commanding Officer
NAS Fallon
Fallon, NV 89496-5000
DSN: 830-2411/2805
COMM: (702) 426-2411/2805

2. Scheduling Activity: NAS Fallon
DSN 830-2416/2418
COMM: (702) 426-2416/2418

3. Resource Manager: NAS Fallon
DSN: 830-2103/2101



(Change 2 - Deleted Carson MOA.)

FIGURE III.C-1 FALLON COMPLEX

D. Geography and Characteristics of Range/Target Areas

1. Bravo 16 (R-4803)

a. Range/Area Boundaries/Access

Bravo 16 (R-4803) is located approximately 9 NMI southwest of the NAS Fallon TACAN, Channel 82, bearing 217°. The main target complex is located within the 6 NMI diameter circular portion of R-4803 with a 5 NMI wide corridor extending 15 NMI north-northwest. The air- space extends from the surface up to 8000 feet MSL in the northern airspace corridor and up to FL180 in the southern airspace. Access to Bravo 16 is by air or surface roads. Roads within the target complex are unpaved. See Figure III.C-2.

b. Exercises/Ordnance

Bravo 16 has two bull's-eyes for air-to-ground weapon exercises using conventional and special-weapons deliveries. Ordnance is limited to light inert ordnance.

c. Targets

Two targets are available which are scored by a Weapons Impact Scoring Set (WISS). Video data are microwaved to a remote WISS console located in Building 800 at NAS Fallon where scoring is accomplished.

(1) Conventional Bull's-eye. This is a target with a bull's-eye surrounded by three concentric rings of 100-, 200-, and 300-foot radii. The run-in line to the bull is 12,000 feet in length and has distance-to-go markers along its path. The target has illumination for night operations. Ordnance is limited to MK 76/BDU-33, MK 106, BDU-48, and inert 2.75" FFARS.

(2) Special-Weapons Bull's-eye. This is a target with a bull's-eye surrounded by three concentric rings of 100-, 500-, and 1000-foot radii. The run-in line to the bull is 45,847 feet in length and has distance-to-go markers along its path. This is a day target only. Ordnance is limited to MK 76/BDU-33, MK 106, BDU-48, and all BDUs (parachute related) and 2.75" FFARS.

d. Range Availability

Bravo 16 is available daily from 0715 to 2330. Scoring is available Monday through Friday 0715 to 2230 and Saturday from 0745 to 1800. No scoring is available on Sundays or holidays. Schedule by 1100 the day preceding desired usage.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 5/79

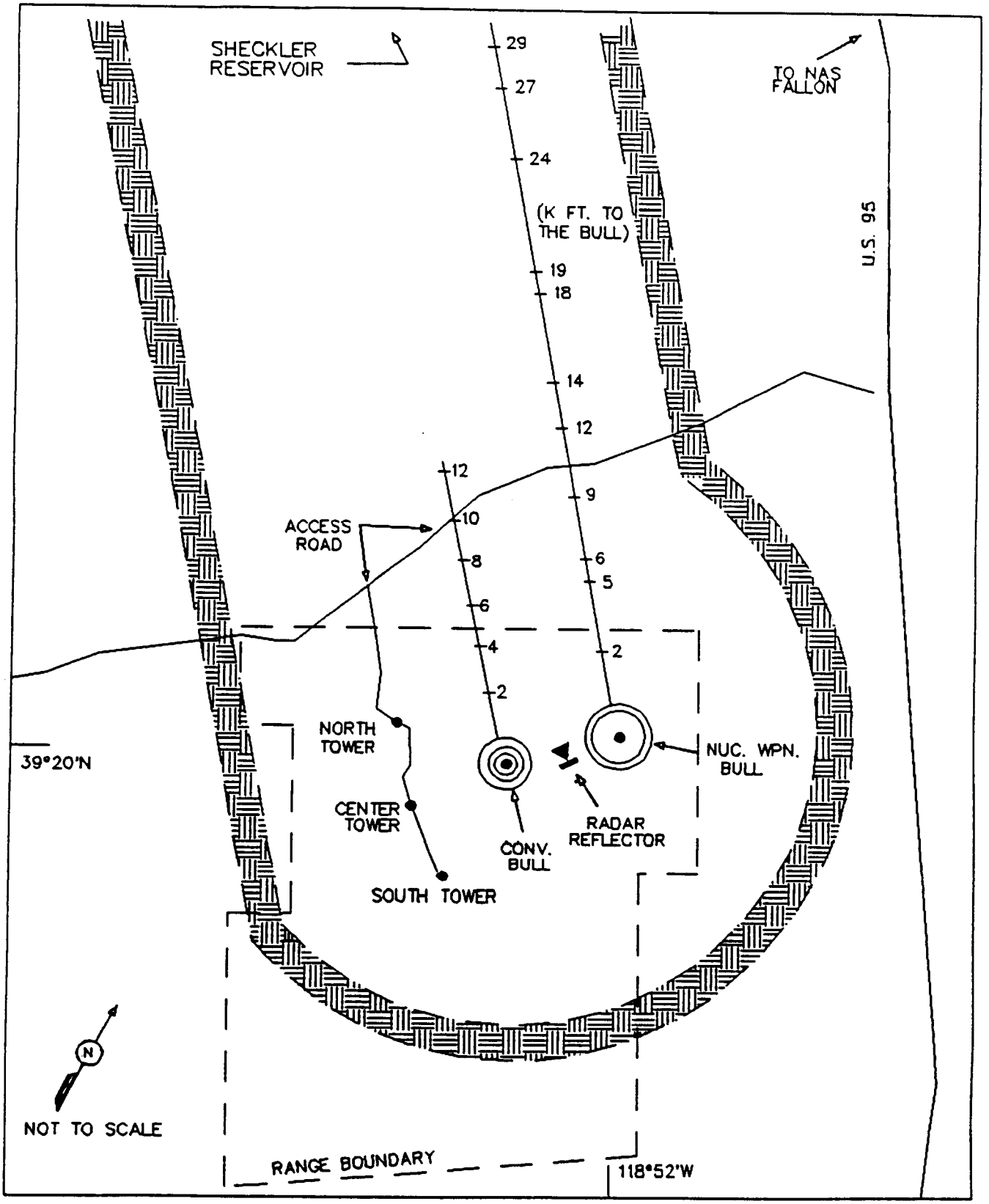


FIGURE III.C-2 Bravo-16 (R-4803)

Operation is performed by on-site contractor personnel. Maintenance is accomplished by contractor personnel.

The WISS scoring at B-16 is remotely operated from Building 800, NAS Fallon.

(2) Communications

2 ea.	AN/GRT-22	UHF Transmitter
2 ea.	AN/GRR-24	UHF Receiver
1 ea.	AN/FRC-70	FM Radio Transceiver
1 ea.	COMCO 908	Intercom System

Operation is performed by on-site contractor personnel. Maintenance is accomplished by contractor personnel.

(3) Facilities. The range has three metal and concrete rake towers, with the middle tower housing the range communications and microwave equipment. The north and south towers each house a WISS video camera, and a safety surveillance camera is located on the middle tower.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used. A 60 KVA diesel motor generator is available for backup power.

2. Bravo 17 (R-4804)

a. Range/Area Boundaries/Access

Bravo 17 (R-4804) is located approximately 23 NMI east of the NAS Fallon TACAN, Channel 82, bearing 099°. The target complex is divided and designated B-17E and B-17W. The two areas operate independently. B-17E is made up of light inert, heavy inert, and high impact areas. B-17W is a no-drop-bomb-scoring (NDBS) area. No ordnance of any type is allowed on B-17W. The access road from U.S. Highway 50 to the target basically divides the target complex. The R-4804 restricted airspace is a circular area approximately 5 NMI in radius extending from the surface up to, but not including, FL180 and is adjacent to R-4812 and R-4816. Access to Bravo 17 is by air or surface roads. See Figure III.C-3.

b. Exercises/Ordnance

The Bravo 17 complex has multiple targets against which air-to-ground bombing, rocket, and strafing exercises with live and inert ordnance may be conducted. Special-weapon tactics and low-level lay-down are not permitted due to airspace restrictions.

c. Targets (NOTE: No High Explosive Incendiary (HEI) strafing authorized)

(1) Conventional Bull's-eye (B-17E). This is a target with a bull's-eye surrounded by three concentric rings of 100-, 200-, and 300-foot radii. The B-17E bull is scored remotely by WISS

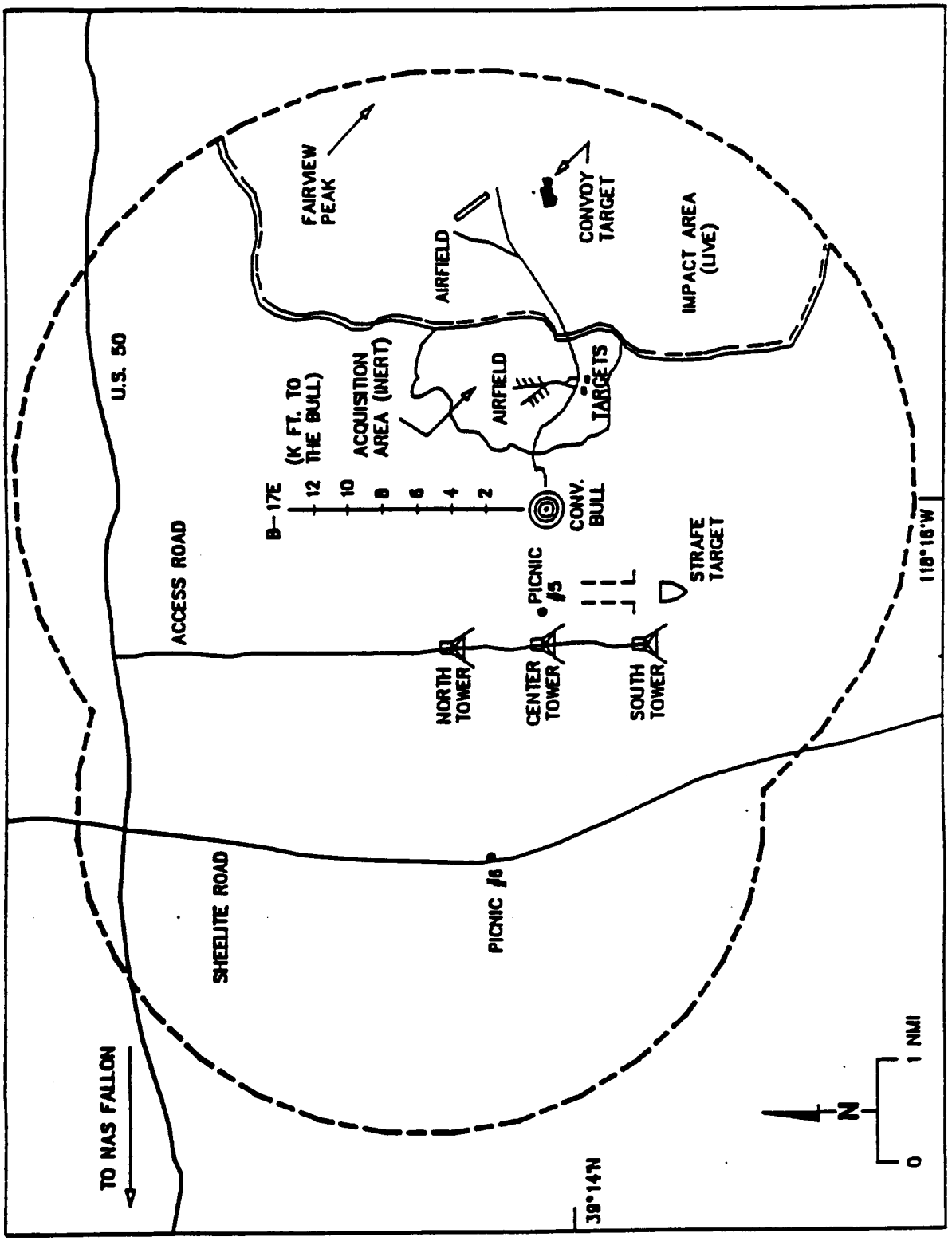


FIGURE III.C-3 B-17 (R-4804)

and/or TACTS. Scoring data is transmitted to WISS consoles located in Building 800 and TACTS consoles in Bldg 465, NAS Fallon. Ordnance is limited to practice bombs (Mk 76, BDU-33, MK 106, BDU-48) and inert 2.75" FFARs. The B-17E bull target has illumination available for night operations.

(2) Strafing Targets (B-17E). The strafing target is a stack of tires with a 2000-foot run-in line. Scoring is accomplished by a DA-3H Acousti-score system with the data transmitted to Building 800, NAS Fallon. Only 20MM is authorized.

(3) No Drop Weapon Scoring (NDWS) Area (B-17W). This area is located west of the towers and the access road. No ordnance whatsoever is allowed in the NDWS area (B-17W). It consists of four tactical targets, an Army compound, staging area, Petroleum Oil and Lubricants (POL) site and a portable bridge.

(4) Light Inert Area (B-17 E). This area lies in the middle of the B-17 Complex. Its western boundary is the tower access road; its eastern boundary is a series of red and white striped missile tubes. It consists of the following targets: Conventional Bull, Strafe Target, Airfield Complex with aircraft, two Surface-to-Air Missile (SAM) Sites, POL/Power Plant/Headquarters facilities. Ordnance is limited to MK 76/106, BDU-33/48, and LGTR.

(5) Heavy Inert Areas (B-17E). This area is located in the northeast section of B-17. It consists of three targets: an Industrial Site, SAM Site and a Missile Assembly Site. Ordnance allowed is MK 76/106, BDU 33/48, and MK 80 series, inert only, including LGB and BDU 45.

(6) B-17E Laser Target. The target consists of a group of small containers with a laser sensor located in the center. Continuous automatic scoring is available on frequency 267.4 MHz. Inert Laser Guided Bomb (LGBs) up to MK 84, BDU 45, and MK 76 are allowed to be dropped on this target.

(7) Impact Area (B-17E). The Impact Area is located in the southeast portion of the B-17 complex south of the heavy inert area. Targets consist of numerous tank vehicles (HE hard targets). Ordnance allowed:

(a) MK 76/106
(b) Inert MK 81 thru MK 84 (including LGB and LGTR) 2.75 FFAR, 5.0 Zuni
(c) Mk 77 (Napalm)
(d) Live MK 81 thru MK 83 (including LGB and LGTR), 2.75 FFAR, 5.0 Zuni
(e) Decoy Flares (Mk 46), BDU 45 Paraflares 20mm TP, 25mm TP, 7.62mm, 50 CAL TP

Weapons not allowed:

(a) Fuel air explosive (FAE)
(b) High explosive incendiaries (HEI) tracers
(c) CBU 55 or 72

(8) B-17W Laser Targets. This target configuration consists of three 20 feet X 10 feet X 8 feet white connex containers stacked vertically with painted black crosshair. This target is located approximately 3,800 feet NW of the center tower. The target crosshair is facing north for a north to south run-in line. A laser sensor is positioned at the center of the crosshair. Continuous automatic scoring is available on frequency 267.4 MHz. This target is for no drop LGB training.

B-17W Large Area Target (LAT). This target configuration consists of multiple targets or buildings over a large area as representative of the combat village. The LAT (combat village) is located approximately 6,200 feet SW of the Center Tower. The run-in line is from north to south. The Large Scale Target Sensor System (LSTSS) provides the capability to monitor this large target area for simulated delivery of laser guided ordnance. The LAT is for no drop LGB training.

d. Range Availability

Bravo 17 is available daily from 0715 to 2330. Scoring is available Monday through Friday from 0715 to 2230 and Saturday from 0745 to 1800 except holidays. Schedule prior to 1100 Wednesday of week preceding desired usage.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 3/79

1 ea. DA-3H Acoustiscore
IOC: 4/81

Operation is performed by remote-based contractor personnel. Maintenance is accomplished by contractor personnel.

The WISS and strafe scoring at B-17 is remotely operated from Building 800, NAS Fallon.

2 ea. AN/UEQ-T1 Laser Evaluator System (LES)
IOC: 02/90

1 ea. AN/FXH-T1 Laser Spot Video Recording System (LSVRS)
IOC: 04/92

1 ea. AN/GAQ-T1 Laser Designator/Simulator System (LDSS)
IOC: 12/91

1 ea. AN/FAQ-1 Large Scale Target Sensor System (LSTSS)
IOC: 09/91

Intermediate and Depot Level Maintenance performed by NAWCWPNS, Point Mugu, CA.

Operation of the Laser Training Systems (LTS) equipment is performed by contractor personnel.

See Appendix A under LTS for equipment description and operational capabilities.

(2) Communications

4 ea. AN/GRT-22 UHF Transmitter
4 ea. AN/GRR-24 UHF Receiver
1 ea. AN/FRC-70 FM Radio Transceiver
1 ea. COMCO 908 Intercom system

(3) Facilities. The range has three metal and concrete rake towers, with the middle tower housing the range communications, microwave equipment, and a safety surveillance camera. The north and south towers each house two WISS video cameras.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used. A 60 KVA diesel motor generator is available for backup power.

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3. Bravo 19 (R-4810)

a. Range/Area Boundaries/Access

Bravo 19 is located approximately 16 NMI southeast of the NAS Fallon TACAN, Channel 82, bearing 164°. The R-4810 airspace is a 5 NMI radius circle extending from the surface up to, but not including, FL170. Access to Bravo 19 is by air or surface roads. Roads within the target complex are unpaved. See Figure III.C-4.

b. Exercises/Ordnance

The Bravo 19 complex has multiple targets against which air-to-ground bombing, rocket, strafing, and laser system exercises may be conducted with live and inert ordnance.

c. Targets (NOTE: NO HEI Strafing Allowed)

(1) Conventional Bull's-eye. This is a target with a bull's-eye surrounded by three concentric rings of 100-, 200-, and 300-foot radii. The target is scored remotely by a WISS with scoring data microwaved to Building 800, NAS Fallon. The target has illumination available for night operations. Ordnance is limited to practice ordnance (Mk 76, BDU 33, MK 106, BDU 48, inert 2.75" FFARs and LGTR's).

(2) Strafing Target. The strafing target is a stack of tires with a 2000-foot run-in line. Scoring is accomplished by a DA-3H Acoustiscore system, with the data transmitted to Building 800, NAS Fallon. Only 22mm training practice (TP) is authorized.

(3) Impact Area. HE Hard tank targets are in this area. Ordnance permitted includes practice bombs and rockets up to 5" Zuni rockets, napalm, live bombs up to 1000 pounds (MK 83), live 2.75" FFARs, TP strafing, and LGTR's.

(4) Laser Targets. The B-19 conventional bull's-eye and the LGB high-impact tank targets are certified for laser operations. No MK 80 series LGBs are allowed on the bull's-eye. Live ordnance up to MK 83 LGBs are allowed on the LGB high-impact target only. Ground-based laser systems are authorized for use on close air support tank targets on B-19. See NASFINST 3752.1 for further information.

d. Range Availability

Bravo 19 is available daily from 0715 to 2330. Scoring is available Monday through Friday from 0715 to 2230 and Saturday from 0745 to 1800. No scoring is available on Sundays or holidays. Schedule prior to 1100 the day preceding the desired usage.

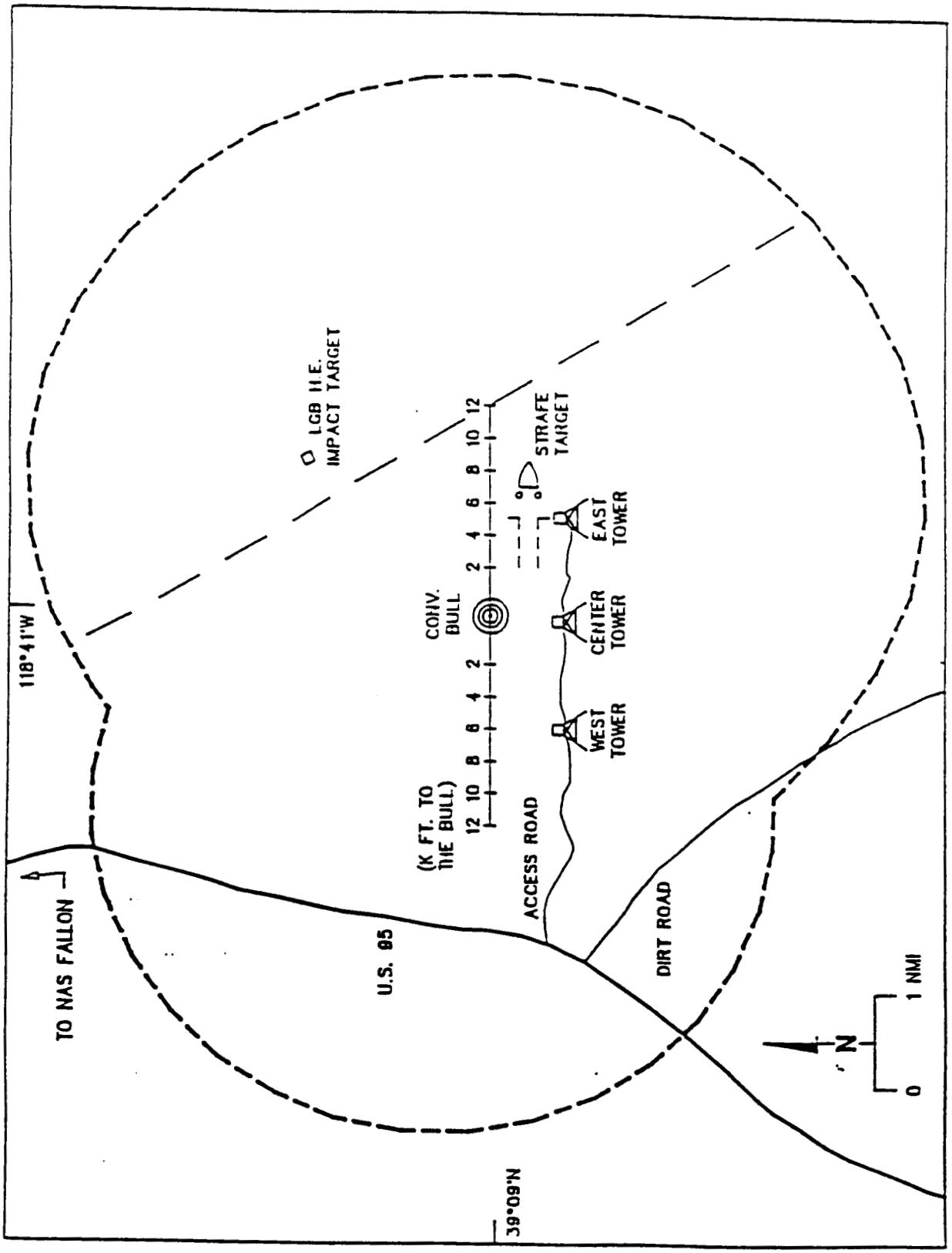

FIGURE III.C-4 B-19 (R-4810)

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 3/79

Operation is performed by on-site contractor personnel. Maintenance is accomplished by contractor personnel.

The WISS scoring at B-19 is remotely operated from Building 800, NAS Fallon.

1 ea. DA-3H Acoustiscore
IOC: 4/81

Operation is performed by on-site contractor personnel. Maintenance is accomplished by contractor personnel.

B-19 strafe scoring is remotely operated and scored from Building 800, NAS Fallon.

(2) Communications

1 ea. AN/GRT-22 UHF Transmitter
1 ea. AN/GRR-24 UHF Receiver
1 ea. AN/FRC-70 FM Radio Transceiver
1 ea. COMCO 908 Intercom System

Operation is performed by on-site contractor personnel. Maintenance is accomplished by contractor personnel.

(3) Facilities. The B-19 target has three metal and concrete rake towers with the middle tower housing the range communication microwave equipment, and a safety surveillance camera. The east and west towers each house a WISS video camera.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used. A 60 KVA diesel motor generator is available for backup power.

4. Bravo 20 (R-4802)

a. Range/Area Boundaries/Access

Bravo 20 is located approximately 31 NMI northeast of the NAS Fallon TACAN, Channel 82, bearing 013°. The R-4802 airspace is a 3 NMI radius circle extending from the surface up to 8000 feet MSL. R-4813, which encompasses R-4802, extends from the surface up to, but not including, FL180. Access to B-20 is by air (helo) or surface roads. See Figure III.C-5.

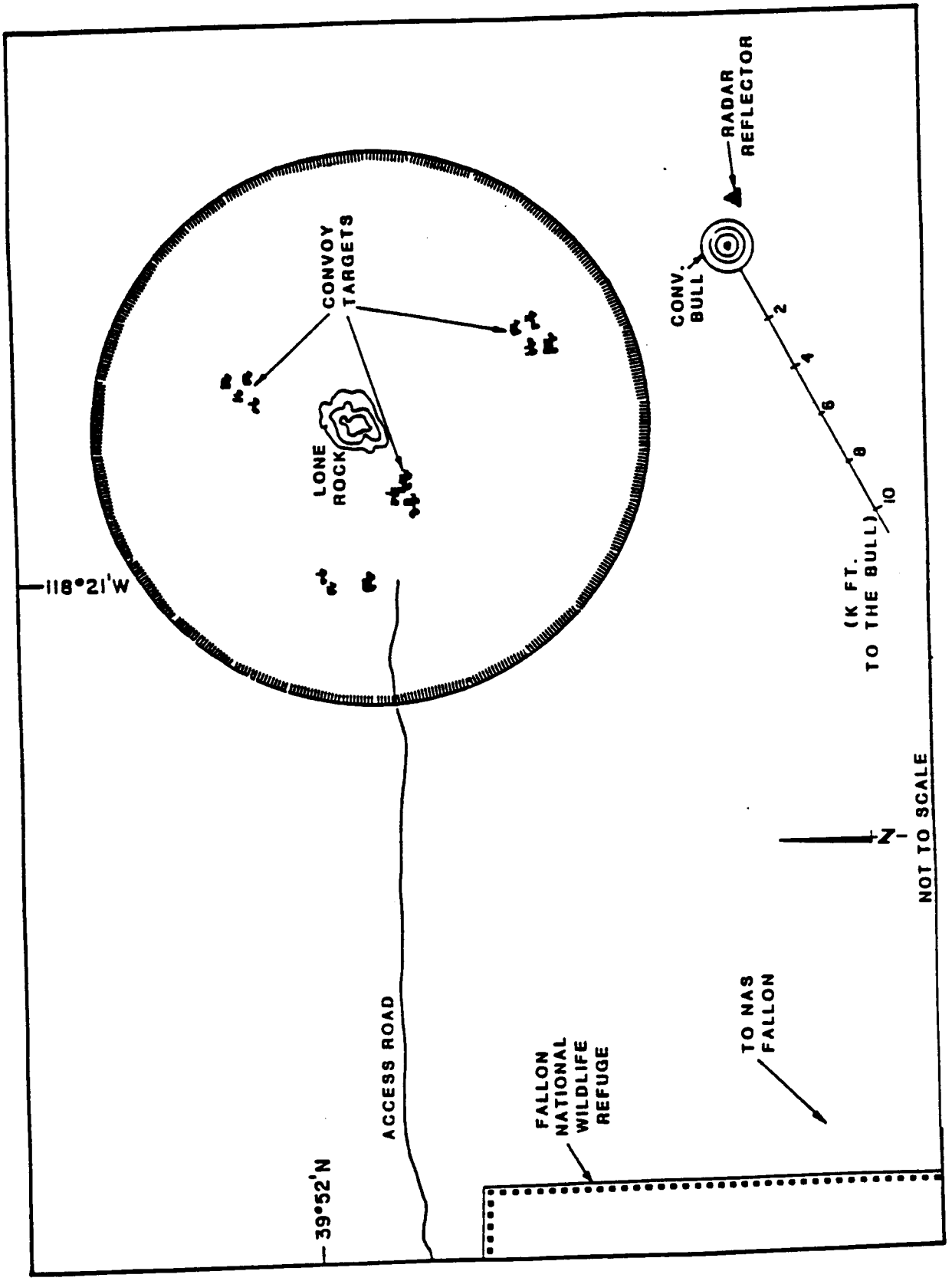

FIGURE III.C-5 B-20 (R-4802)

b. Exercises/Ordnance

The Bravo 20 target area is used for air-to-ground bombing, rocket, and strafing exercises using all conventional ordnance with the exception of missiles and CBUs. Ordnance on the conventional bull's-eye is restricted to MK 76, BDU 33, MK 106, BDU 48 practice bombs, and inert 2.75" FFARs.

c. Targets (NOTE: No High Explosive Incendiary (HEI) Strafing Authorized)

(1) Conventional Bull's-eye North and South. These targets consist of a bull's-eye surrounded by concentric rings of 100 feet, 200 feet, and 250 feet with east to west run-in lines. The targets are scored and night lighting is available.

(2) Strafe Targets North and South. The strafe targets consist of berms 8 feet wide and 28 inches high between two poles 77 feet apart, 25 feet in front of the 20-foot diameter target. Run-in heading is 253°, with the last 1000 feet outlined with black tires. Only 7.62mm, and 20mm TP are allowed. No tracers are allowed.

(3) LGB Target. This target is in the center of concentric circles 100, 200 and 300 feet in diameter. The laser-approved run-in heading is 068/248°. Only inert MK 82 is allowed.

(4) Live Ordnance Impact Area Lone Rock. Lone Rock is a volcanic rock formation that is used for live ordnance drops. It is the primary ordnance dump area. Fuel Air Explosive (FAE), HEI, tracers, Cluster Bomb Unit (CBU) 55/72 are not allowed.

(5) Laser Target. This target is located approximately 1,200 feet East of the North Bull. The run-in line is from East to West. A laser sensor is mounted on the 10 feet floodlight. Continuous automatic scoring is available on frequency 321.85. This target provides no drop LGB training.

d. Range Availability

Bravo-20 is available daily from 0715 to 2330. Scoring is available Monday through Friday from 0715 to 2330, and Saturday from 0745 to 1800. No scoring is available on Sundays or holidays. Bravo-20 (R-4802) is normally available continuously as a hung ordnance release area. Schedule prior to 1100 Wednesday in week preceding desired usage.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/UEQ-T1 Laser Evaluator System (LES)
IOC: 03/93

Intermediate and Depot Level Maintenance performed by NAWCWPNS, Point Mugu, CA.

See Appendix A under Laser Training Systems (LTS) for equipment description and operational capabilities.

5. Sand Springs (R-4812)

a. Range/Area Boundaries/Access

Sand Springs (R-4812) is restricted airspace 10 NMI wide bounded on the east by R-4804 and on the west by R-4810. It is located approximately 18 NMI southeast of the NAS Fallon TACAN, Channel 82, bearing 120°. The airspace extends from the surface up to, but not including FL180, excluding a portion from 2000 feet AGL to, but not including, 4000 feet AGL one NMI north of U.S. Highway 50 between 118°25'30"W and 118°09'50"W. Access is by air. See Figure III.C-1.

b. Exercises/Ordnance

R-4812 is restricted airspace used for Combat Search and Rescue/Survival Evasion, Resistance Escape (SAR/SERE) training and mountain area landings for helicopters. No pyrotechnics or ordnance is authorized.

c. Targets

R-4812 includes no targets.

d. Range Availability

R-4812 is available daily from 0730 to 2330. Schedule prior to 1100 the day preceding desired usage.

6. Fallon Electronic Warfare Range (R-4816)

a. Range/Area Boundaries/Access

The Fallon Electronic Warfare Range (EWR) has sites throughout the range complex starting approximately 23 NMI east of the NAS Fallon TACAN. The range is composed of a main complex called the Centroid and several remote sites called Picnics. R-4816N extends from 1500 feet AGL up to, but not including, FL180, and R-4816S extends from 500 feet AGL up to, but not including, FL180. Access is by air or surface roads when scheduled through the Fallon Range Department. See Figure III.C-6.

b. Exercises/Ordnance

The Fallon EWR is intended to represent Electronic Warfare threats against which Naval air operations may be directed. Electronic Support Measures (ESM), Electronic Counter Measures (ECM), and Defensive Electronic Counter Measures (DECM) exercises are authorized. The tactics employed by the aircrew are scored by TACTS computer in realtime for debriefing and evaluation purposes. In addition, EWR sites can be used as NDBS targets on TACTS. Users are required to release appropriate ECM request message (See NASFINST 3752-1).

c. Targets

The EWR includes no targets.

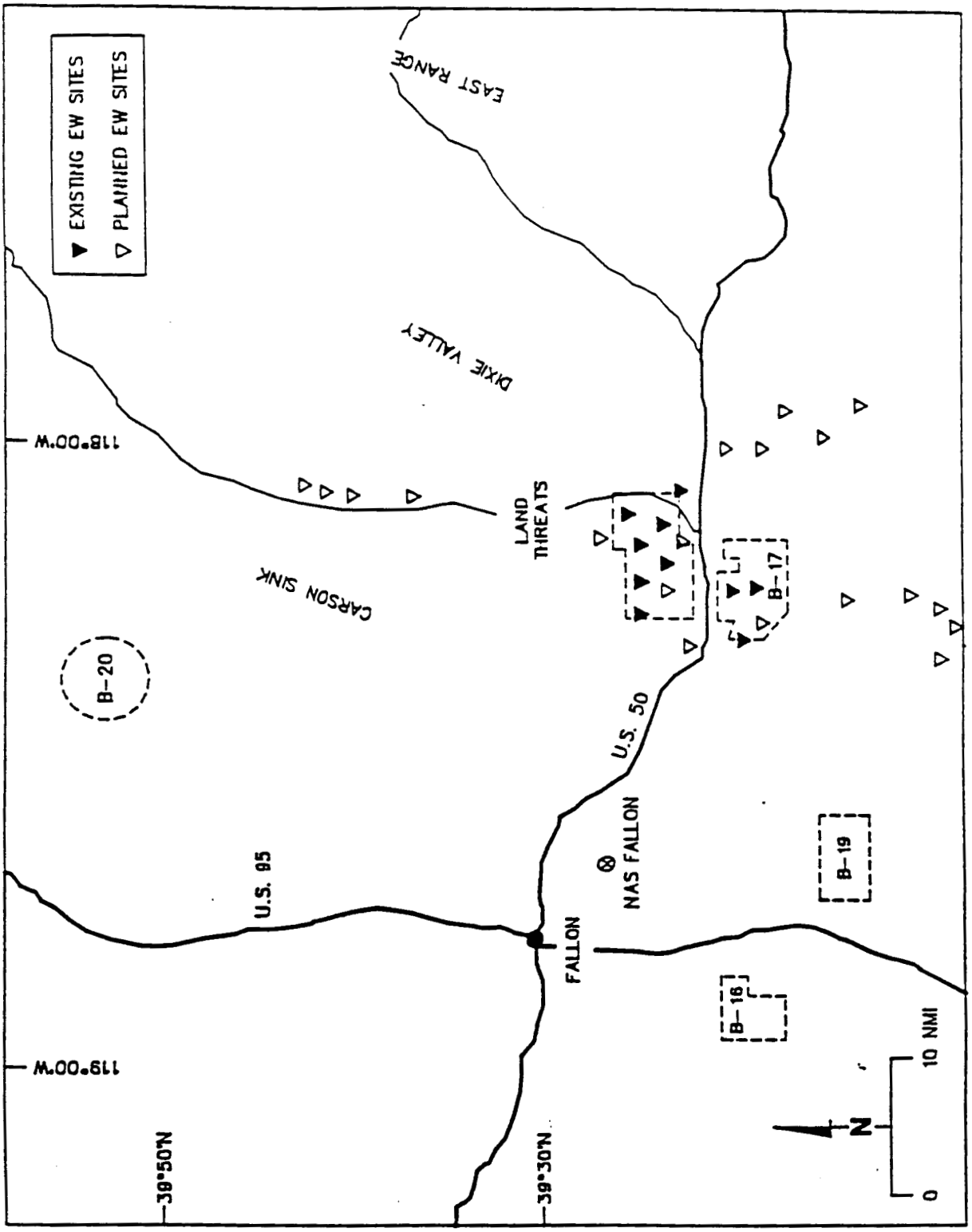

FIGURE III.C-6 FALLON EW RANGE

d. Range Availability

The Fallon EWR is normally available Monday through Friday from 0830 to 1200 and from 1230 to 1615. Weekend and night operations may be conducted upon range department approval. Airspace is available from 0730 to 2330. Scheduled by 1100 the day prior to usage.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. Fallon Electronic Warfare Range
IOC: 6/67

Operation and Maintenance is accomplished by on-site contractor personnel.

(2) Communications

3 ea. AN/GRC-171 UHF Transceivers Data/Voice landline to remote sites

Operation and maintenance is accomplished by on-site contractor personnel.

(3) Facilities. The Fallon EWR is a centroid complex which consists of the administrative, maintenance, supply and range control, and computer facilities. Nine remote sites consisting of radar, AAA, and SAM emitters provide data to the centroid.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used. Diesel motor generators are available for backup power and are utilized as a primary power source at some remote sites.

See Appendix A.7 for detailed description of the EWR.

7. Fallon Tactical Aircrew Combat Training System (TACTS)

a. Range/Area Boundaries/Access

The Fallon TACTS is located approximately 20 NMI east of the NAS Fallon TACAN channel 82. It consists of portions of Gabbs North, Central, and South MOAs, R-4816 North and South, and R-4804. R-4813 airspace is excluded from the TACTS. Access to the TACTS sites is by surface road.

b. Exercises/Ordnance

There are no-drop weapon scoring targets associated with Fallon TACTS. Adversary aircraft are arranged and/or supplied by the user.

c. Range Availability

The TACTS range is available Monday through Friday from 0800 to 1600.

d. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/USQ T(V) Tactical Aircrew Combat Training System (TACTS) with Display and Debrief Systems (DDS) available at NAS Le Moore. A Personal Computer Based Debriefing Subsystem (PCDS) is available at the Nevada Air National Guard in Reno, NV.

Operation and maintenance is accomplished by on-site military, civil service, and contractor personnel.

See Appendix A for detailed description of the TACTS.

(2) Communications

8 ea. AN/GRC UHF Transceivers

Operation and maintenance is accomplished by on-site contractor personnel.

(3) Facilities

1 ea. Command and Control Subsystem located at the AIB, Bldg 465, NAS Fallon.

1 ea. Display and Debriefing Subsystem located at the AIB, Bldg 465, NAS Fallon.

1 ea. Tracking Instrumentation Master Site located at Fairview Peak, with 23 remote sites arrayed throughout the TACTS range.

Operation and maintenance is accomplished by on-site contractor personnel.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used by the TACTS. Remote sites are powered by solar array and batteries.

8. Austin Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Austin MOA is special-use airspace located approximately 70 NMI east of the NAS Fallon TACAN, Channel 82. The MOA is divided into two areas, Austin 1 and Austin 2. Both extend from 200 feet AGL up to,

but not including FL180. See Figure III.C-1.

b. Exercises/Ordnance

The MOA is used for Air Combat Maneuvering (ACM) and other military exercises. No ordnance is authorized.

c. Targets

The MOA includes no targets.

d. Range Availability

Austin MOA is available daily. Schedule by 1400 on the working day prior to usage.

9. Gabbs Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Gabbs MOA is special-use airspace located approximately 20 NMI east of the NAS Fallon TACAN, Channel 82. The MOA is divided into three areas, Gabbs North, Central, and South. Gabbs North, Central, and South airspace extends from 100 feet AGL to FL180 with overlying ATCAA from FL180 to FL600 in Gabbs North and Central and from FL180 to FL280 in Gabbs South. Gabbs MOA encompasses part of R-4812, and all of R-4802, R-4804, R-4816 and R-4813. See Figure III.C-1.

b. Exercises/Ordnance

The MOA is used for ACM and other military exercises. No ordnance is authorized.

c. Targets

B-20 and B-17 target ranges are within this MOA.

d. Range Availability

Gabbs MOA is available daily. Schedule by 1400 the working day prior to usage.

10. Ranch Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Ranch MOA is special-use airspace located approximately 20 NMI south of the NAS Fallon TACAN, Channel 82. The airspace extends from 500 feet AGL up to 9000 feet AGL. See Figure III.C-1.

b. Exercises/Ordnance

The MOA is used for normal military flight exercises. No ordnance is authorized.

c. Targets

B-19 target range, is within this MOA.

d. Range Availability

Ranch MOA is normally scheduled in conjunction with B-19.

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office Yuma, AZ (Host UIC 62974)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance deliveries, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debriefing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Southwest Arizona

c. Distance from the range to the activity's headquarters facility (main site).

250 miles

TAB C
Page ___ of ___
UIC: 64267

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

N/A

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot view display.

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY 1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

SECTION III.F

WESTERN CONTINENTAL UNITED STATES

I. YUMA COMPLEX

A. Operating Area Manual

Information contained herein is based upon the FACSFAC, San Diego Instruction 3120.1 (series) OPAREA Manual and Marine Corps Air Station, Yuma Station Orders 3710.6 and 3700.4. Further details may be found in these instructions.

B. General Description

The Yuma complex is located in the southeastern California and southwestern Arizona deserts approximately 130 NMI east of San Diego, California. See Figure III.F-1. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The complex is composed of the following areas and ranges:

1. Moving Sand (R-2301W)
2. Cactus West (R-2301W)
3. Yuma Tactical Aircrew Combat Training System (YUMA TACTS) (R-2301W)
4. Yuma Gunnery Range (R-2301W)
5. Chocolate Mountain Impact Area (R-2507N)
6. Chocolate Mountain Air-to-Air Gunnery Range (R-2507)
7. Chocolate Mountain Air-to-Air DART Gunnery Range (R-2507S Low)
8. Abel Military Operating Area (MOA)
9. Dome Military Operating Area (MOA)
10. Quail Military Operating Area (MOA)
11. Turtle Military Operating area (MOA)

C. Command Structure

Scheduling Authority:

Commanding Officer
Fleet Area Control and Surveillance Facility
Naval Air Station, North Island
San Diego, CA 92135
(FACSFAC, San Diego)
DSN: 951-5719
COMM: (619) 545-1756/1758

Scheduling Activity:

R-2301W, R-2507, Abel, Quail, Turtle MOAs	Commanding Officer (Range Scheduling) Marine Corps Air Station Yuma, AZ 85369 DSN: 951-2215 COMM: (602) 341-2215

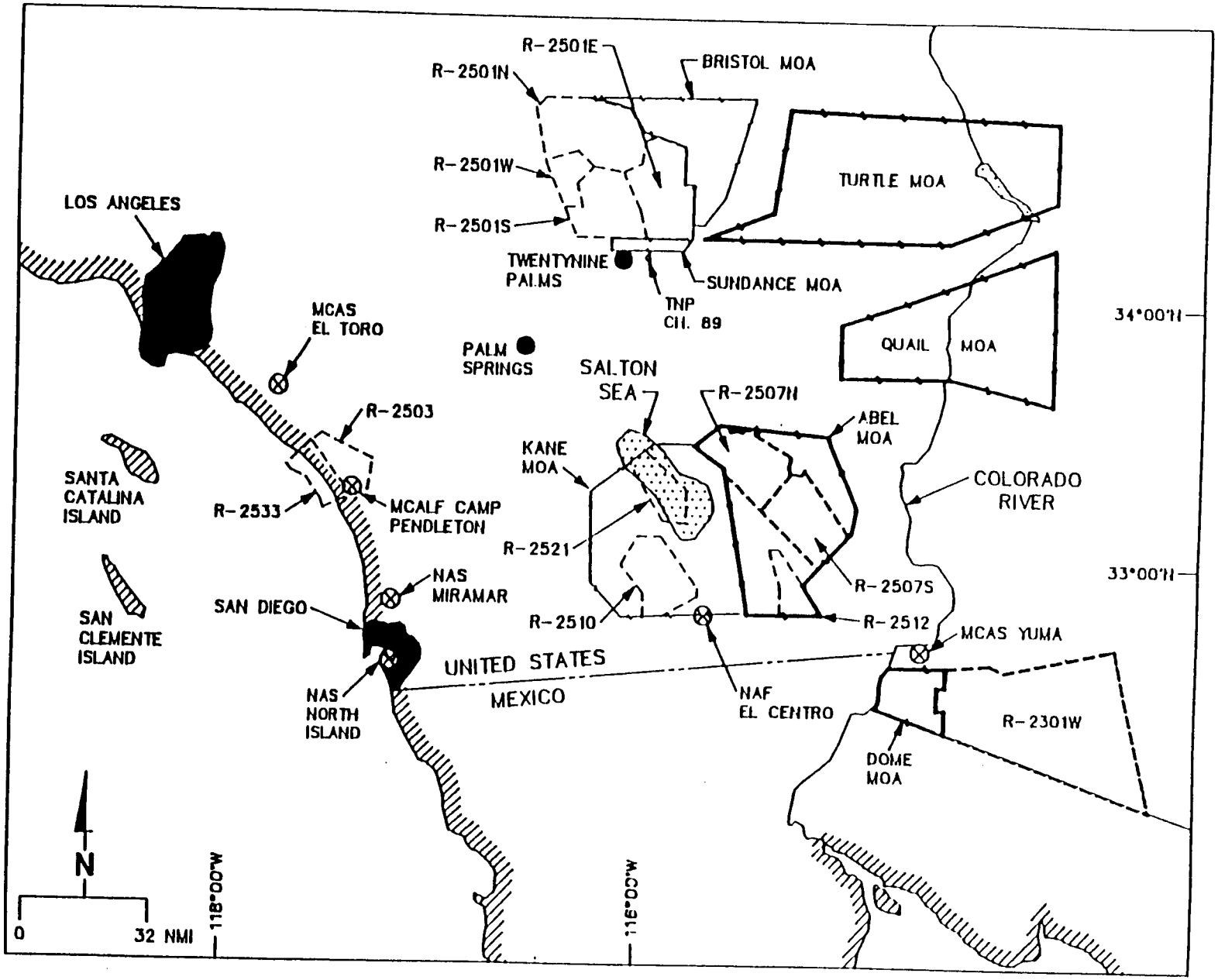

FIGURE III.F-1 SOCAL (YUMA COMPLEX)

YUMA TACTS (R-2301W)	Commander Fighter Airborne Early Warning Wing, U.S. Pacific Fleet Naval Air Station, Miramar San Diego, CA 92145-5600 (COMFITAEWWINGPAC) DSN: 959-3640/2596 COMM: (619) 537-6116

Resource Manager:

R-2507, R-2301W (Manpower and Equipment)	Commanding Officer Marine Corps Air Station Yuma, AZ 85369 DSN: 951-3401 COMM: (602) 341-3401
R-2301W (Real Estate)	Commanding General Luke AFB Glendale, AZ 85309 DSN: 853-2202

C. Geography and Characteristics of Range/Target Areas

1. Moving Sand (R-2301W)

a. Range/Area Boundaries/Access

Moving Sand is located in R-2301W 32° 26' 16" N / 114° 19' 15" W, approximately 15 NMI southeast of MCAS Yuma. The Moving Sand target airspace extends from the surface to 15,000 feet MSL. Access to Moving Sand target is by air or surface roads. See Figure III.F-2.

b. Exercises/Ordnance

Moving Sand provides for air-to-ground special weapons and conventional bomb, rocket, and strafing exercises with inert ordnance. The target has a left hand traffic pattern with a run-in line of 140°. Target scoring services are available on a frequency of 290.1 MHz. Moving Sand is certified safe for A-6E Target Recognition Attack Multi-sensor (TRAM) and OV-10D Night Observation System (NOS) laser system operations. No BDUs or ordnance requiring immediate disposal are authorized.

c. Targets

(1) Special Weapons/ Conventional Target. This 3000-foot wide target consists of a 40-foot bull's-eye with concentric rings of 75-, 150-, and 300-foot radius. The target is scored remotely by a Weapons Impact Scoring Set (WISS) with the data transmitted by microwave relay back to MCAS Yuma. Ordnance is limited to conventional inert ordnance up to 1,000 lbs, and inert 2.75 inch and 5 inch rockets. The target is lighted for night ordnance delivery. It is augmented with a radar reflector located 2700

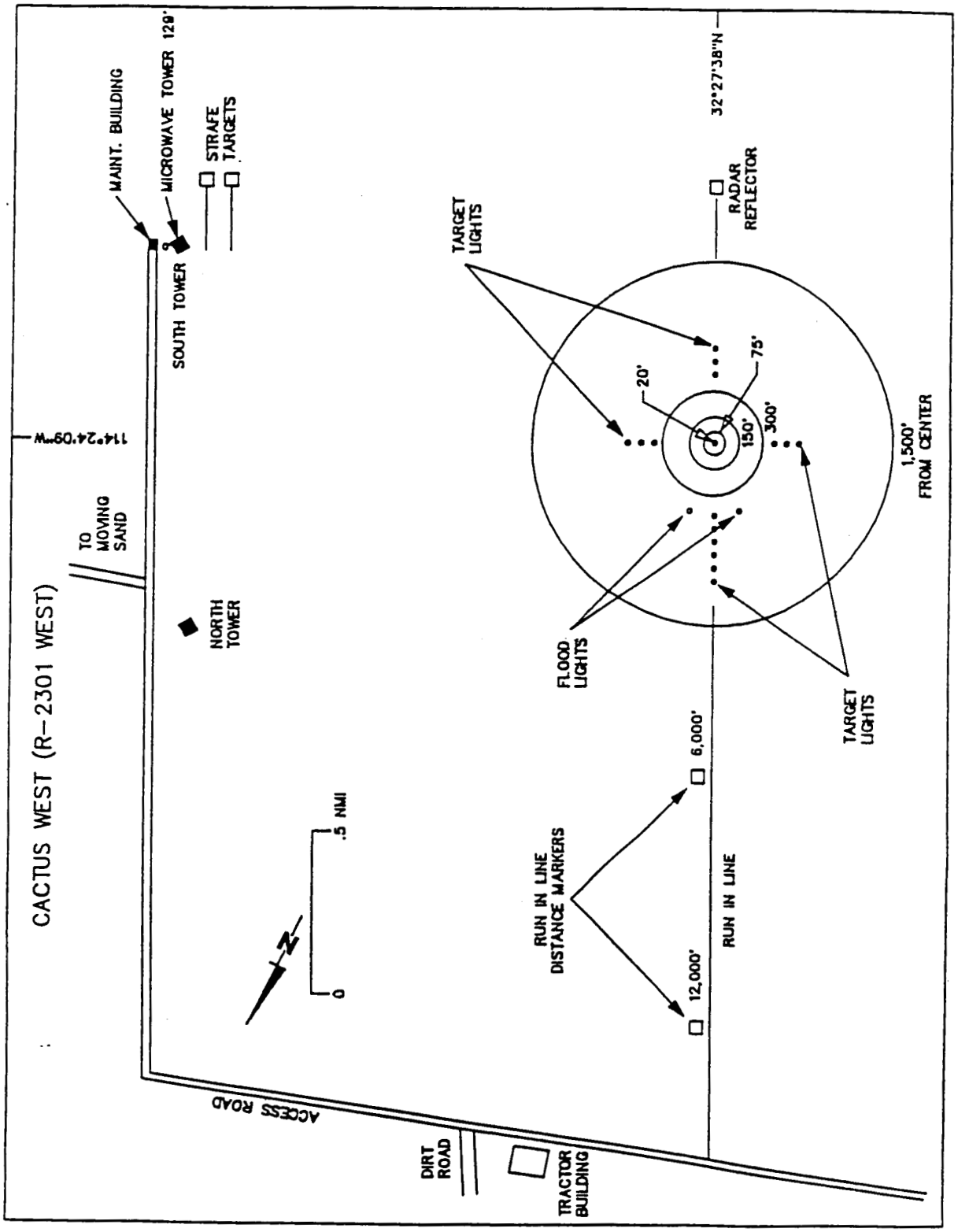

Figure III.F-2 Moving Sand (R-2301W)

feet beyond the bulls-eye at the 12 o'clock position. Target elevation is 572 feet MSL.

(2) Strafing Targets. Moving Sand has two strafing targets each of which consist of a ring of tires lying on a dirt berm. They are scored acoustically and are located 1000 feet west of the south tower. Only inert ammunition is authorized.

(3) Mobile Land Target. This is a remote controlled, highly maneuverable dune buggy pulling a target. The vehicle operates on a 2000-foot track located between the bulls-eye and the south tower. The MLT is not scored. Ordnance is limited to MK 76 practice bombs and inert 2.75 inch rockets. 48 hour notice is required for use.

(4) Laser Target. This target consists of a 15 feet X 8 feet X 8 feet white metal container with a black cross on the north side. This target is approximately 50 feet from the North Tower. The run-in line is NE to SE. In the center of the crosshair, a laser sensor is installed. Continuous automatic scoring is available on frequency 290.1 MHz. This target provides no drop LGB training.

d. Range Availability

Moving Sand is available during VFR conditions 24 hours a day, 7 days a week. Scoring is available Monday through Friday from 0600 to 2200 hours local. Scoring is available at other times upon request with 24 hours notice.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)

Operation and maintenance is accomplished by on-site military and contract personnel.

See Appendix A.1 for a description of WISS

1 ea. AN/URW-19 Command Target Control Set

Operation and maintenance is accomplished by on-site contract personnel.

1 ea. AN/UEQ-T1 Laser Evaluator System (LES)
IOC: 06/90

1 ea. AN/GAQ-T1 Laser Designator/Simulator System (LDSS)
IOC: 09/92

Intermediate and Depot Level Maintenance performed by NAWCWPNS, Point Mugu, CA.

Operation of the Laser Training Systems (LTS) equipment is performed by contractor personnel.

See Appendix A under LTS for equipment description and operational capabilities.

(2) Communications

1 MSR-2000
4 ea. AN/GRT-22 UHF Transmitter
4 ea. AN/GRR-24 UHF Receiver

Operation and maintenance is accomplished by on-site military and contract personnel. The radios are centrally located in Bldg 1520 aboard MCAS Yuma, and are used for remote communications at Moving Sand.

(3) Facilities. Moving Sand has two towers constructed of wood with metal support legs. The north and south towers each house two WISS video cameras. The WISS microwave relays are located

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in the south tower.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used.

2. Cactus West (R-2301W)

a. Range/Area Boundaries/Access

Cactus West is located in R-2301W at 32° 27' 34" N / 114° 24' 05" W, approximately 17 NMI southeast of MCAS Yuma. Cactus West target airspace extends from the surface up to 15,000 feet MSL. Access to the Cactus West targets is by air or surface roads. See Figure III.F-3.

b. Exercises/Ordnance

Cactus West provides for air-to-ground special weapons/conventional bomb, rocket, and strafing exercises with inert ordnance. The target has a right hand traffic pattern with a run-in line of 140°. Target scoring services are available on a frequency of 358.6 MHz. Cactus West is certified safe for A-6E Target Recognition Attack Multi-sensor (TRAM) and OV-10D Night Observation System (NOS) laser system operations. No BDUs or live ordnance requiring immediate disposal are authorized.

c. Targets

(1) Special Weapons/ Conventional Target. This 3000-foot wide target consists of a 40-foot bull's-eye with concentric rings of 75-, 150-, and 300-foot radius. The target is scored remotely by a Weapons Impact Scoring Set (WISS) with the data transmitted by microwave relay back to MCAS Yuma. Ordnance is limited to conventional inert ordnance up to 1,000 lbs, and inert 2.75 inch and 5 inch rockets. The target is lighted for night ordnance delivered. It is augmented with a radar reflector located 2700 feet beyond the bulls-eye at the 12 o'clock position. Target elevation is 400 feet MSL.

(2) Strafing Targets. Cactus West has two strafing targets each of which consist of a ring of tires lying on a dirt berm. They are scored acoustically and are located 1000 feet west of the south tower. Only inert ammunition is authorized.

d. Range Availability

Cactus West is available during VFR conditions 24 hours a day, 7 days a week. Scoring is available Monday through Friday from 0600 to 2200. Scoring is available at other times upon request with 24 hours notice.

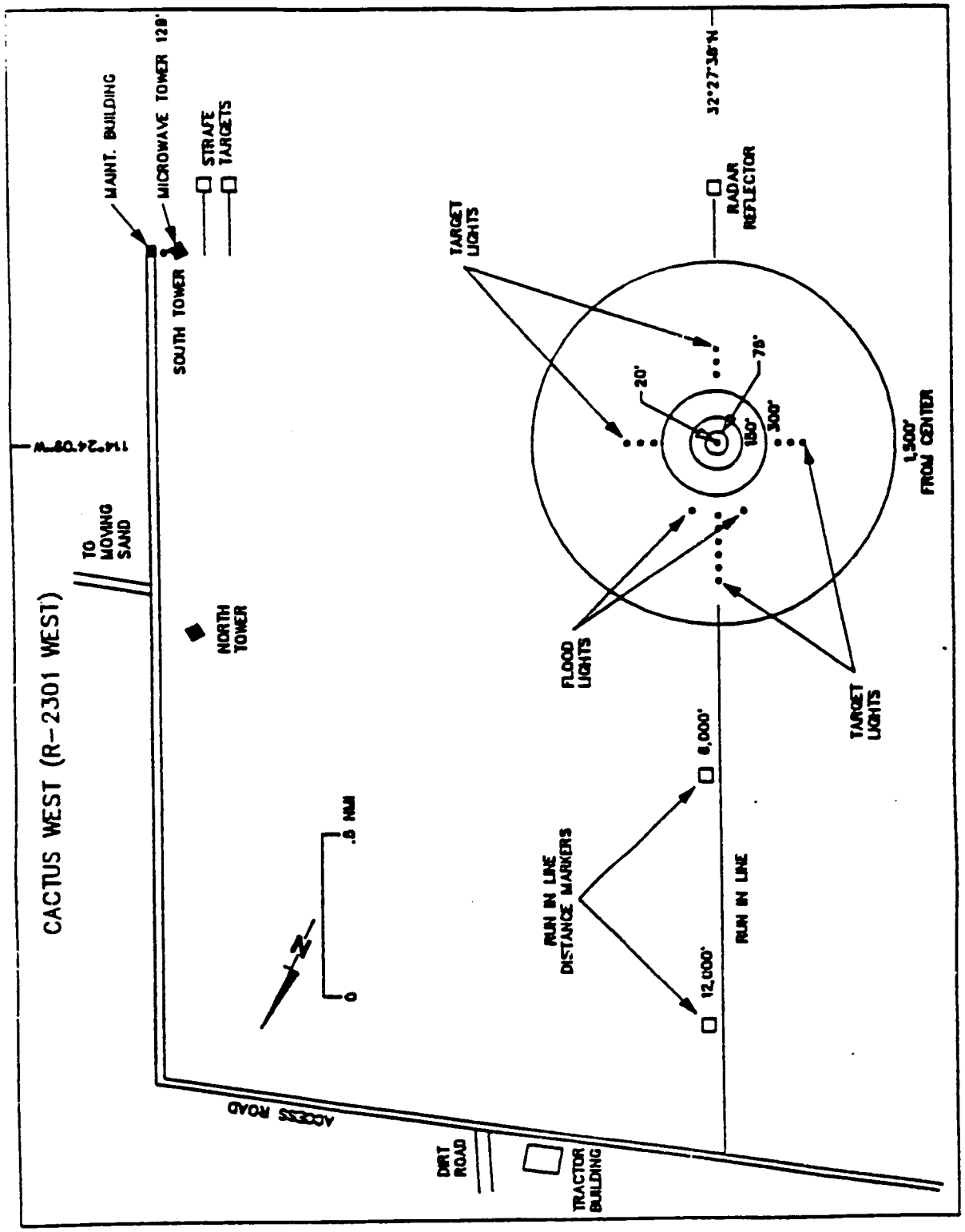

FIGURE III.F-3 CACTUS WEST (R-2301W)

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)

Operation and maintenance is accomplished by on-site military and contract personnel.

1 ea. AN/URW-19 Command Target Control Set

Operation and maintenance is accomplished by on-site contract personnel.

(2) Communications

1 MSR-2000
4 ea. AN/GRT-22 UHF Transmitter
4 ea. AN/GRR-24 UHF Receiver

Operation and maintenance is accomplished by on-site military and contract personnel. The radios are centrally located in Bldg 1520 aboard MCAS Yuma, and are used for remote communications at Cactus West.

(3) Facilities. Cactus West has two towers constructed of wood with metal support legs. The north and south towers each house two WISS video cameras. The WISS microwave relays are located in the south tower.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used.

3. Yuma Tactical Aircrew Combat Training System (Yuma TACTS)

a. Range/Area Boundaries/Access

The Yuma TACTS is located in restricted airspace R-2301W approximately 25 NMI east of the MCAS Yuma TACAN, Channel 84, bearing 090°. The TACTS range airspace within R-2301W extends from 5000 feet MSL up to FL800. Access to the TACTS range is by air or surface roads. See Figures III.F-1 and III.F-4. Clearance into the area (when previously scheduled to use TACTS, see para. d below) is authorized by request through the local MCAS Yuma Air Traffic Control Facility via UHF radio contact on 274.0 MHz.

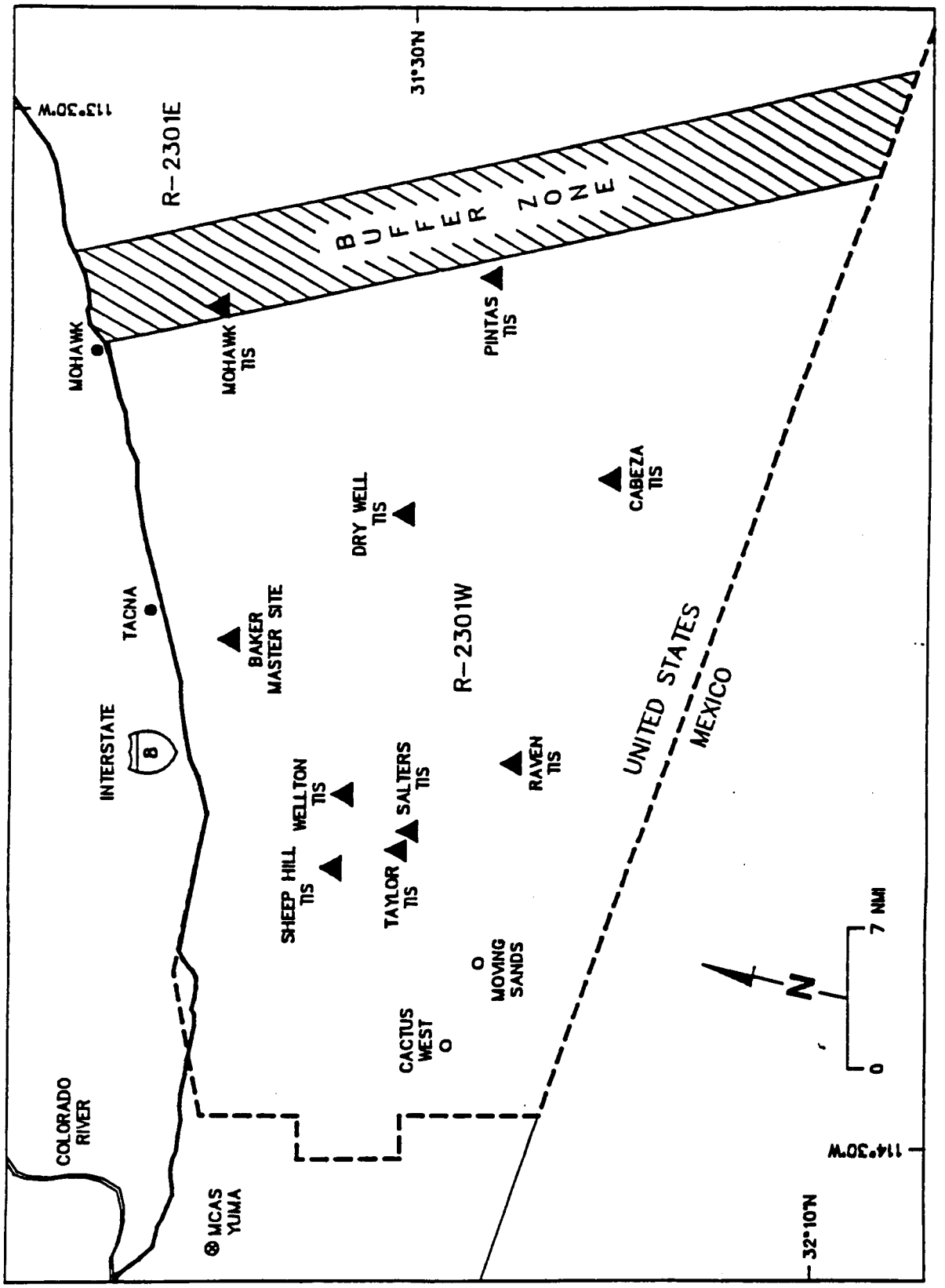

FIGURE III.F-4 YUMA TACTS

b. Exercises/Ordnance

The TACTS provides aircrew training and performance evaluation in air-to-air combat, air-to-surface combat, electronic warfare (EW) and No-Drop-Weapons-Scoring (NDWS). The TACTS training system supports simultaneous, fully integrated training by dissimilar aircraft engaged in all aspects of tactical air warfare. No ordnance deliveries are used with TACTS, all weapons scoring is generated through validated computer simulations as an integral part the TACTS software. (Detailed information may be found in Navy Document AE-185YA-590-000 available through Commanding Officer, Naval AIR Technical Services Facility, 700 Robbins Ave., Philadelphia, PA, 19111.)

c. Targets

The TACTS range supports portable RF emitters. These emitters are scheduled to be integrated into the TACTS over the next one to two years. A number of visual target areas are integrated into the TACTS such as those depicted in Figure III.F-4. Adversary aircraft utilized in Fleet training are arranged and/or provided by the user.

d. Range Availability

The TACTS range is available Monday through Friday between 0800 and 1600.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/USQ-T2(V) Tactical Aircrew Combat Training System (TACTS) with display and debrief systems (DDS) available at NAF El Centro, NAS Miramar and MCAS El Toro (8 A/C System)

Operation and maintenance is accomplished by on-site military, civil service, and contract personnel.

1 ea. AN/USQ-T25 Tactical Aircrew Combat Training System (TACTS) with display system is available at MCAS Yuma and NAF El Centro (36 A/C System).
IOC: 1st Qtr FY91.

(2) Communications

6 ea. AN/URC-101 UHF Transceivers

Operation and maintenance is accomplished by on-site military, civil service, and contract personnel.

(3) Facilities

8-A/C TACTS (AN/USQ-T(V))

1 ea. Computation and Control Subsystem (CCS) MCAS Yuma
2 ea. Display and Debriefing Subsystem (DDS) MCAS Yuma
1 ea. Display and Debriefing Subsystem (DDS) NAS El Centro
2 ea. Display and Debriefing Subsystem (DDS) NAS Miramar
1 ea. Display and Debriefing Subsystem (DDS) NAS El Toro
1 ea. Tracking Instrumentation Master Site located at Baker Peak, Arizona with eight remote interrogators arrayed throughout R-2301W. Figure III.F-5

Operation and maintenance is accomplished by on-site military, civil service, and contract personnel.

36-A/C TACTS (AN/USQ-T25)

1 ea. Computation and Control Subsystem (CCS) MCAS Yuma
3 ea. Display and Debriefing Subsystem (DDS) MCAS Yuma
1 ea. Display and Debriefing Subsystem (DDS) NAS El Centro The 8-A/C and the 36-A/C share the Tracking Instrumentation System as described above.
1 ea. Tracking Instrumentation Master Site located at Baker Peak, Arizona with eight remote interrogators arrayed throughout R-2301W.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used by the TACTS. Remote sites are powered by solar charged batteries and commercial power.

4. Yuma Gunnery Range (R-2301W)

a. Range/Area Boundaries/Access

The Yuma Gunnery Range is an unattended/non-instrumented range located approximately 40 NMI east of the MCAS Yuma TACAN, Channel 84, bearing 090°. The R-2301W airspace associated with this range extends from 200 feet AGL (surface upon request) to FL800. Access to the range is by air. See Figure III.F-1. (NOTE: Until further notice, this range is closed. Only the airspace is active.)

b. Exercises/Ordnance

R-2301W airspace is used for air combat maneuvering, instrument training, and other military flight exercises. No ordnance is authorized.

c. Targets

R-2301W includes no targets.

d. Range Availability

The range is available continuously.

5. Chocolate Mountain Impact Area (R-2507N)

a. Range/Area Boundaries/Access

The Chocolate Mountain Impact Area is an unattended/non-instrumented ordnance range located approximately 60 NMI northwest of the MCAS Yuma TACAN, Channel 84, bearing 330°. The R-2507N airspace associated with this impact area extends from the surface up to 15,000 feet MSL. Access to the Chocolate Mountains is by air or surface roads. See Figures III.F-1 and III.F-5.

b. Exercises/Ordnance

The Chocolate Mountain Impact Area provides a large land and airspace area for air tactics, laser system operations, and air-to-ground bombing, rocket, and strafing exercises. All types of live and inert conventional ordnance up to 2000 pounds GP, including MK 20 (Rockeye) and Cluster Bomb Units (CBUs), may be delivered. All live ordnance must be delivered in the designated live impact area under the positive control of a Tactical Air Control Party (TACP) or a Tactical Air Controller (Airborne) (TACA).

c. Targets

The Chocolate Mountain Impact Area has three target complexes and numerous individual targets including vehicle hulks, convoys, two surface-to-air missile sites, and three simulated airfields. See COMTHIRDFLTINST 3120.1 and MCAS Yuma 3710.6 for target location details and for laser system operations within the impact area.

d. Range Availability

The Chocolate Mountain Impact Area is available from 0700-2100 during VFR conditions. The area is closed approximately 9 days each quarter for EOD sweeps and range maintenance.

6. Chocolate Mountain Air-to-Air Gunnery Range (R-2507)

a. Range/Area Boundaries/Access

The Chocolate Mountain Air-to-Air Gunnery Range is an unattended/non-instrumented range located approximately 50 NMI northwest of

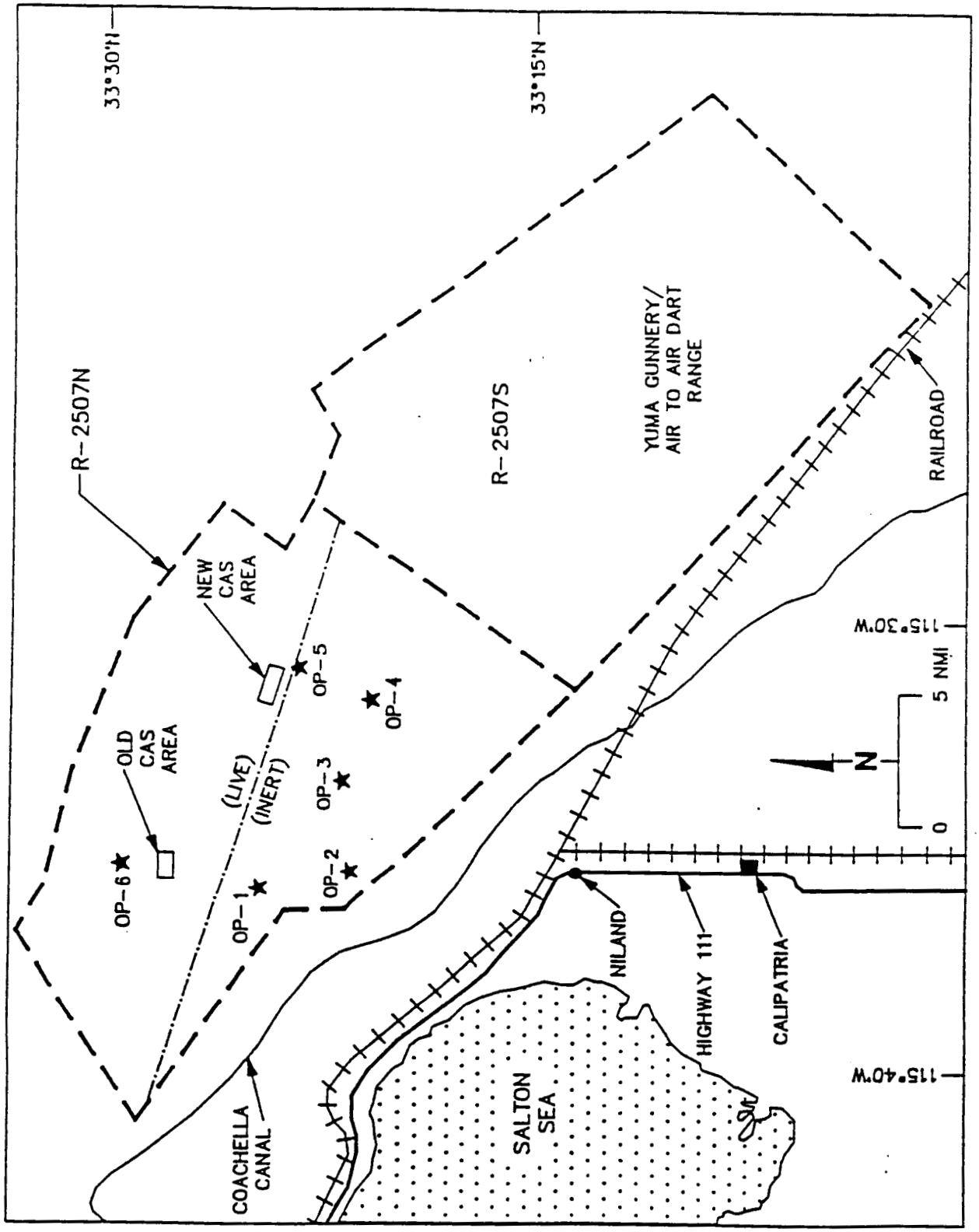

FIGURE III.F-5 CHOCOLATE MOUNTAINS (R-2507)

the MCAS Yuma TACAN, Channel 84, bearing 330°. The R-2507 airspace associated with this range extends from the surface up to FL400. Access is by air. See Figure III.F-5.

b. Exercises/Ordnance

The range provides for air-to-air gunnery exercises using 20mm ammunition and inert 2.75" FFARs. The tow aircraft acts as the Tactical Air Controller (Airborne) (TACA) to ensure that firing remains within the range.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

The range is available continuously during VFR conditions.

7. Chocolate Mountain Air-to-Air DART Gunnery Range (R-2507S Low)

a. Range/Area Boundaries/Access

The Chocolate Mountain Air-to-Air DART Gunnery Range is an unattended/non-instrumented range located approximately 40 NMI northwest of the MCAS Yuma TACAN, Channel 84, bearing 330°. The R-2507 airspace associated with this range extends from the surface up to 15,000 MSL. Access to the range is by air. See Figure III.F-5.

b. Exercises/Ordnance

The range provides for air-to-air gunnery exercises using 20mm ammunition. The tow aircraft will act as the TACA to ensure live firing remains within the range.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

The range is available continuously during VFR conditions.

8. Abel Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Abel MOA is special-use airspace encompassing restricted areas R-2507 and R-2512, approximately 40 NMI northwest of the MCAS Yuma TACAN, Channel 84, bearing 300°. The airspace extends from 7000 feet MSL up to 40,000 feet MSL excluding the airspace within R-2507 and R-2512. See Figure III.F-1.

b. Exercises/Ordnance

The MOA is used for air combat maneuvering, instrument training, and other military flight exercises. No ordnance is authorized.

c. Targets

The MOA includes no targets.

d. Range Availability

Abel MOA is available Monday through Friday from 0500 to 2400 hours local. Other times are published by NOTAM.

9. Dome Military Operating Area Air Traffic Control Assigned Airspace (MOA/ATCAA)

a. Range/Area Boundaries/Access

The Dome MOA/ATCAA is special-use airspace located approximately 10 NMI South of the MCAS Yuma TACAN, Channel 84, bearing 180°. See Figure III.F-1. The airspace extends from FL180 to FL800.

b. Exercises/Ordnance

The MOA/ATCAA is used for air combat maneuvering and air refueling. No ordnance is authorized.

c. Targets

The MOA/ATCAA includes no targets.

d. Range Availability

Dome MOA/ATCAA is available continuously.

10. Quail Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Quail MOA is special-use airspace located approximately 70 NMI north of the MCAS Yuma TACAN, Channel 84, bearing 350°. See Figure III.F-1. The airspace extends from 10,000 feet MSL up to FL220.

b. Exercises/Ordnance

The MOA is used for air combat maneuvering, instrument training, and other military flight exercises. No ordnance is authorized.

c. Targets

The MOA includes no targets.

d. Range Availability

Quail MOA is available Monday through Friday from 0500 to 2200. Other times are published by NOTAM.

11. Turtle Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Turtle MOA is special-use airspace located approximately 115 NMI north of the MCAS Yuma TACAN, Channel 84, bearing 350°. See Figure III.F-1. The airspace extends from FL110 up to FL220.

b. Exercises/Ordnance

The MOA is used for air combat maneuvering, instrument training, and other military flight operations. No ordnance is authorized.

c. Targets

The MOA includes no targets.

d. Range Availability

Turtle MOA is available Monday through Friday from 0500 to 1000. Other times are published by NOTAM.

SECTION III.E

WESTERN CONTINENTAL UNITED STATES

I. EL CENTRO COMPLEX

A. Operating Area Manual

Information contained herein is based upon the FACSFAC San Diego Instruction 3120.1 OPAREA Manual. Further detailed information may be found in that instruction.

B. General Description

The El Centro complex is located in Southern California's Imperial Valley near the Salton Sea, approximately 65 NMI east of San Diego, California. See Figure III.E-1. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The complex is considered part of the Southern California (SOCAL) (Inland) complex and is composed of the following target areas:

1. Target 68 "Inkey Barley" (R-2512)
2. Target 95 "Kitty Baggage" (R-2512)
3. Target 101 "Shade Tree" (R-2510)
4. Target 103 "Loom Lobby" (R-2510)
5. Salton Sea Restricted Area (R-2521)
6. Kane Military Operating Area (MOA)

C. Command Structure

1. Scheduling Authority: Commanding Officer
   Fleet Area Control and Surveillance Facility
   Naval Air Station, North Island
   San Diego, CA 92135
   (FACSFAC, San Diego)
   DSN: 735-1756
   COMM: (619)545-1756

2. Scheduling Activity: Commanding Officer
   (Fleet Liaison)
   Marine Corps Air Station
   Yuma, AZ 85369
   DSN: 951-2214
   COMM: (602)726-2214

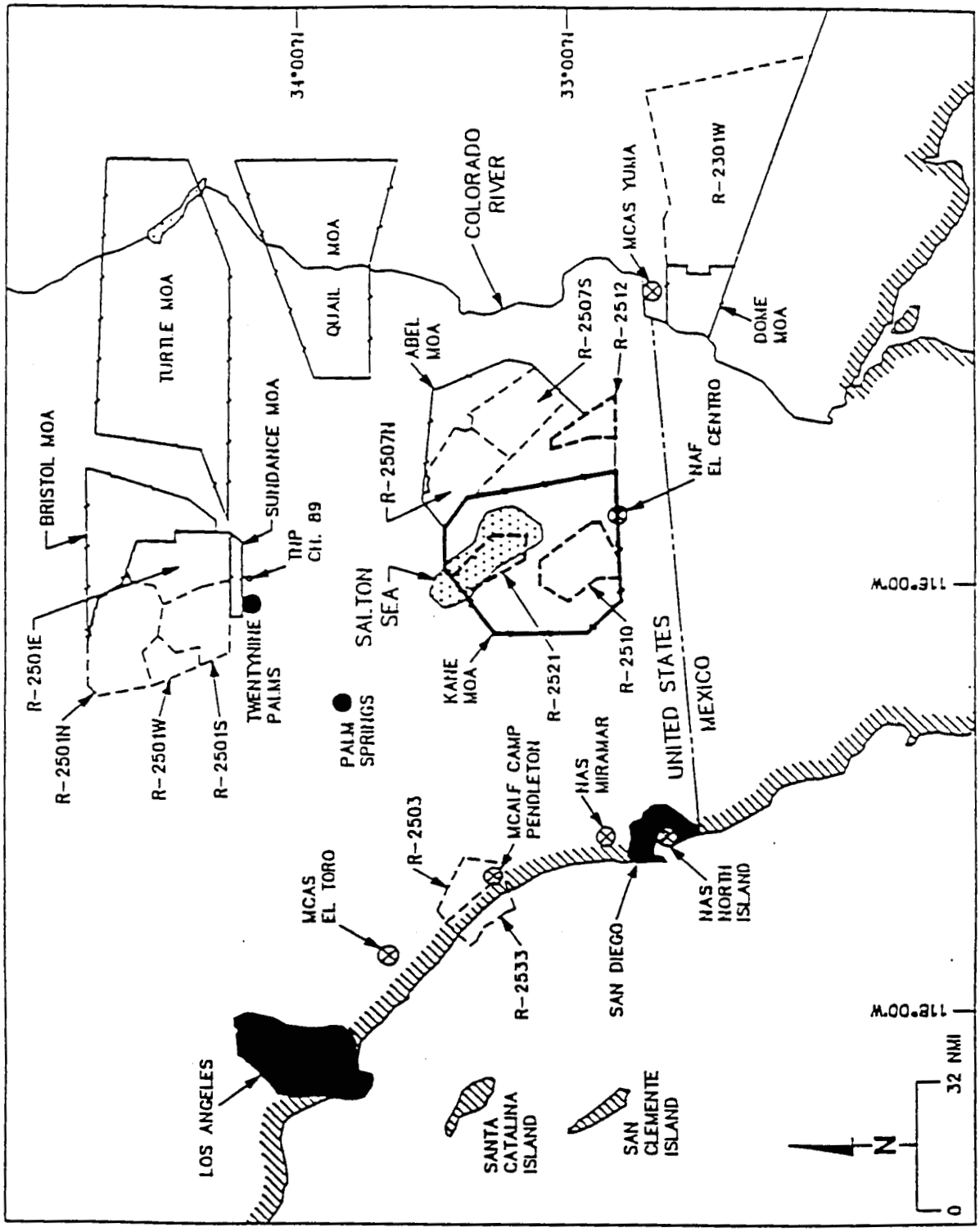

FIGURE III.E-1 SOCAL (EL CENTRO COMPLEX)

3. Resource Manager: Commanding Officer
Naval Air Facility
El Centro, CA 92243
DSN: 958-8401

NOTE: The Resource Manager for the real estate (Salton Sea Test Range) underlying R-2521 is Commander, Naval Air Warfare Center, Weapons Division, China Lake, CA 93555-6001
DSN: 437-6800, COMM: (619) 939-6800

D. Geography and Characteristics of Range/Target Areas

1. Target 68 "Inkey Barley" (R-2512)

a. Range/Area Boundaries/Access

Target 68 "Inkey Barley" is an unattended, non-instrumented target located approximately 22 NMI northeast of NAF El Centro and 17 NMI from the Imperial VORTAC, Channel 106, bearing 035°. It is contained within the R-2512 airspace, which extends from the surface up to FL230. Access to Target 68 is by air or surface roads. See Figure III.E-2.

a. Exercises/Ordnance

Target 68 provides for air-to-ground bombing, rocket, and strafing exercises with inert conventional ordnance.

c. Targets

Target 68 consists of a 20-foot diameter bull's-eye with three concentric rings of 75-, 150- and 300-foot radii, and a strafe target directly north of the bull's-eye, adjacent to the outer ring.

d. Range Availability

Target 68 is available continuously.

2. Target 95 "Kitty Baggage" (R-2512)

a. Range/Area Boundaries/Access

Target 95 "Kitty Baggage" is an unattended/non-instrumented target located approximately 30 NMI northeast of NAF El Centro and 22 NMI from the Imperial VORTAC, Channel 106, bearing 020°. It is contained within R-2512 airspace, which extends from the surface up to FL230. Access to Target 95 is by air or surface roads. See Figure III.E-2.

b. Exercises/Ordnance

Target 95 provides for air-to-ground bombing and rocket exercises with inert conventional ordnance.

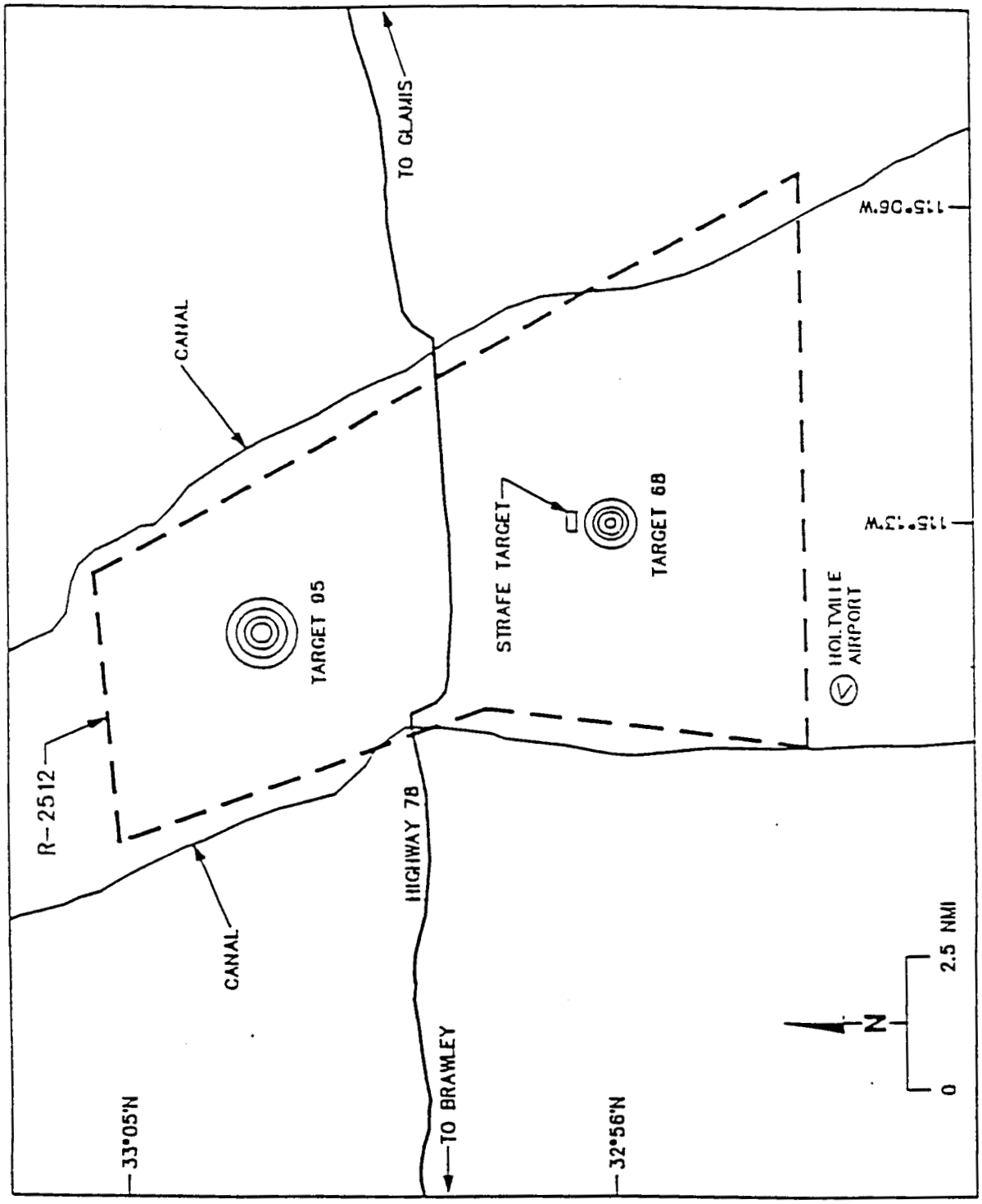

FIGURE III.E-2 TARGET 68, 95

c. Targets

Target 95 consists of a 20-foot diameter bull's-eye with three concentric rings of 75-, 150-, and 300-foot radii.

d. Range Availability

Target 95 is available continuously.

3. Target 101 "Shade Tree" (R-2510)

a. Range/Area Boundaries/Access

Target 101 "Shade Tree" is located approximately 8 NMI northwest of NAF El Centro and 20 NMI from the Imperial VORTAC, Channel 106, bearing 300°. It is contained within the eastern portion of the R-2510 airspace, which extends from the surface up to FL500 during the day and FL200 during the night. Access to Target 101 is by air or surface roads. See Figure III.E-3.

b. Exercises/Ordnance

Target 101 has three targets used in air-to-ground bombing, rocket, and strafing exercises. Ordnance is limited to inert MK 76 and MK 106 practice bombs and inert 2.75" FFARs; BDU deliveries are authorized within the Target 101 area, but not on the primary target areas.

c. Targets

(1) Special-Weapons Bull's-eye. This is a 40-foot target with four concentric rings of 75-, 100-, 300-, and 2000-foot radii. Ordnance impacts are scored remotely by a Weapons Impact Scoring Set (WISS) whose operator is located in Master Control (Building 5000).

(2) Strafing Target. The strafing target is a dirt mound located east of the special-weapons bull's-eye adjacent to the mobile land target (MLT) track. Scoring is accomplished by a DA-3H Acousti-score system whose operator is located in Master Control. Only inert ordnance is authorized.

(3) Parachute Drop Target. This is a circular area used for personnel/cargo parachute drops. It is located east of the special-weapons bull's-eye. Live ordnance is not permitted on this target.

d. Range Availability

Target 101 is available Monday-Saturday from 0700 to 2300.

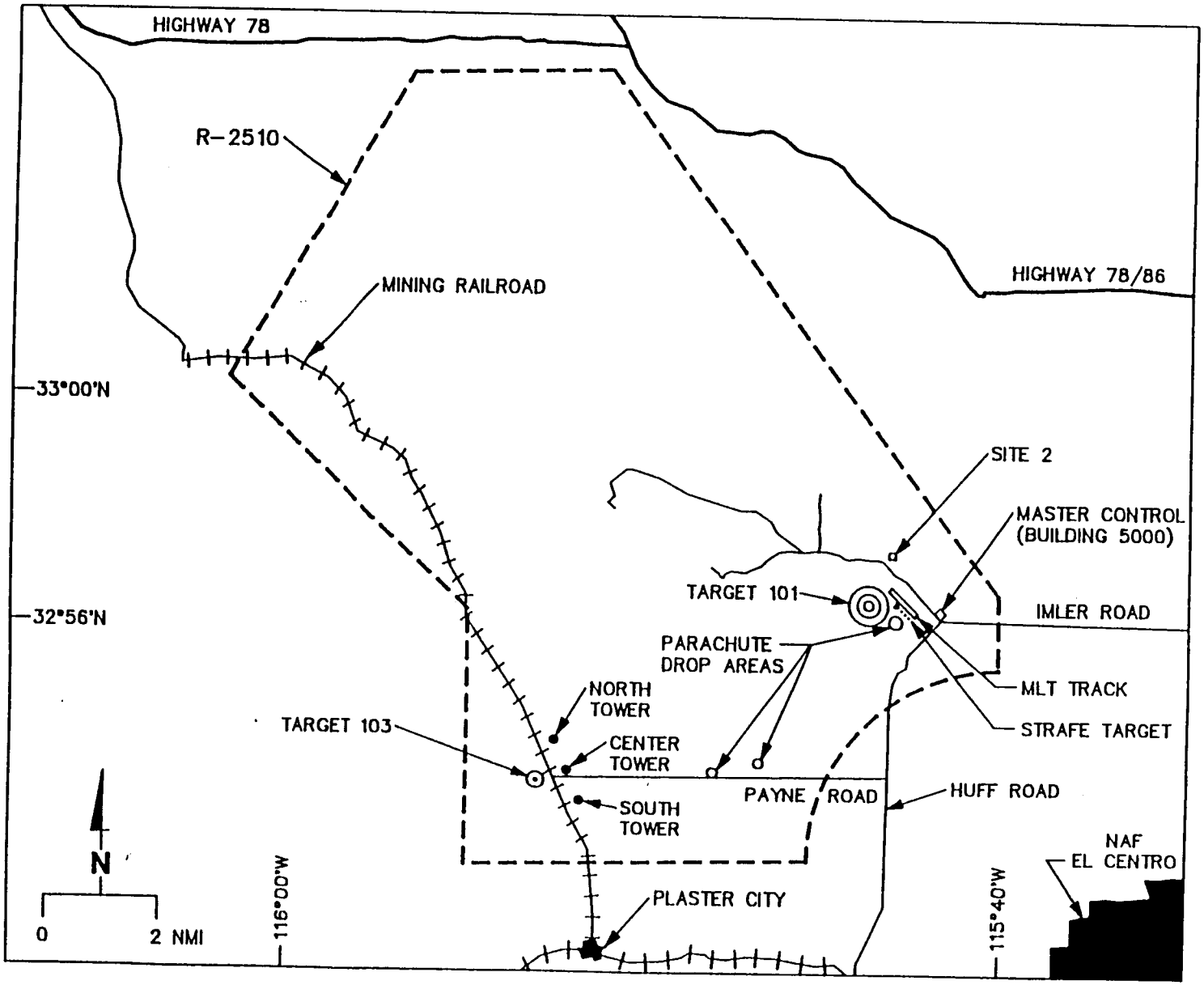

FIGURE III.E-3 TARGET 101 AND 103

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 6/80

Operation and maintenance is accomplished by contract personnel.

1 ea. DA-3H Acoustiscore
IOC: 5/81

Operation and maintenance is accomplished by contract personnel.

1 ea. AN/URW-14A Command Target Control Set
IOC: 6/80

Operation and maintenance is accomplished by on-site contractor personnel.

(2) Communications

3 ea. AN/GRT-22 UHF Transmitter
3 ea. AN/GRR-24 UHF Receiver
2 ea. AN/GRC-171 UHF Transceiver

Operation and Maintenance is accomplished by on-site contract personnel.

Communications are centrally located in Master Control (Building 5000), and used for both Targets 101 and 103.

(3) Facilities. Target 101 is two, two-story cement block buildings that house the target-scoring equipment. Site #1 is the Master Control building (Building 5000), and contains: two WISS scoring consoles, a WISS video camera, the DA-3H Acousti-score equipment, MLT vehicle maintenance and storage, and administrative space. Site #2 houses one WISS video camera.

(4) Electrical Power Commercial shore 116/208 volt, 60 Hz, three-phase power issued.

4. Target 103 "Loom Lobby" (R-2510)

a. Range/Area Boundaries/Access

Target 103 "Loom Lobby" is located approximately 12 NMI northwest of NAF El Centro and 20 NMI from the Imperial VORTAC, Channel 106, bearing 280°. It is contained within the western portion of the R-2510 airspace, which extends from the surface up to FL500 during the day and FL200 during the night. Access to Target 103 is by air or surface roads. See Figure III.E-3.

b. Exercises/Ordnance

Target 103 provides for air-to-ground bombing, rocket and strafing exercises with inert MK 76 and MK 106 practice bombs, inert 2.75" FFARs, and ball ammunition. No BDUs or ordnance requiring immediate recovery is authorized.

c. Targets

(1) Target 103 is a 40-foot diameter bull's-eye with three concentric rings of 75- 150-, and 300-foot radii. Weapon impacts are scored remotely by a Weapons Impact Scoring Set (WISS). Scoring data are transmitted to the WISS console located in Master Control (Building 5000) at Target 101. The target can be illuminated by flare pots for night operations. A scored strafe target is located northwest of the bull's-eye.

(2) Laser Target. This target configuration consists of a laser sensor positioned on the North Tower, Loom Lobby, Target 103. The run-in line is from NW to SE. Continuous automatic scoring is available on frequency 305.0. This target provides no drop LGB training.

d. Range Availability

Target 103 is available Monday-Saturday from 0700 to 2300.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 10/80

1 ea. AN/UEQ-T1 Laser Evaluator System (LES)
IOC: 04/90

1 ea. AN/UEQ-T1 Laser Designator/Simulator System (LDSS)
IOC: 09/92

Intermediate and Depot Level Maintenance performed by NAWCWPNS, Point Mugu, CA.

Operation of the Laser Training Systems (LTS) equipment is performed by civilian personnel.

See Appendix A under LTS for equipment description and operational capabilities.

Operation and maintenance is accomplished by on-site contract personnel.

(2) Communications

3 ea. AN/GRT-22 UHF Transmitter
3 ea. AN/GRR-24 UHF Receiver
2 ea. AN/GRC-171 UHF Transceiver

Operation and maintenance is accomplished by on-site contract personnel.

Communications are centrally located in Master Control (Building 5000), and used for both Targets 101 and 103.

(3) Facilities. Target 103 has three metal towers adjacent to the target. The north and south towers each house one WISS video camera. A microwave tower is located next to the south tower.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three phase power is used.

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5. Salton Sea Restricted Area (R-2521)

a. Range/Area Boundaries/Access

R-2521 is restricted airspace overlying a portion of the Salton Sea, located approximately 28 NMI northwest of NAF El Centro and 35 NMI from the Imperial VORTAC, Channel 106, bearing 300°. R-2521 extends from the surface up to FL400 from sunrise to sunset, and up to 4000 feet MSL from sunset to sunrise. Access to R-2521 is by air. See Figure III.E-1.

b. Exercises/Ordnance

R-2521 provides for searchlight, radar, and parachute drop exercises. No ordnance is authorized.

c. Targets

Radar reflective targets are in the area.

d. Range Availability

R-2521 is available continuously.

6. Kane Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Kane MOA is special-use airspace located in the El Centro complex encompassing restricted areas R-2510 and R-2521, located approximately 30 NMI west of the Imperial VORTAC, Channel 106, bearing 300°. The Kane MOA is divided into two areas. Kane West airspace extends from 10,000 feet MSL to 15,000 feet MSL, Kane East airspace extends from 10,000 feet MSL to 40,000 feet MSL. See Figure III.E-1.

b. Exercises/Ordnance

The MOA is used for air combat maneuvering, all-weather flight training, and tactical air exercises. No ordnance is authorized.

c. Targets

The MOA includes no targets.

d. Range Availability

Kane MOA is available daily from 0500 to 2100 hours local. Other times are published by NOTAM.

RANGE RESOURSES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office MCAS El Toro, CA (Host UIC 60050)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance delivies, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debreifing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Southern California

c. Distance from the range to the activity's headquarters facility (main site).

50 miles

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UIC: 64267

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot view display.

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

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m. What were the actual hours that this range was utilized in FY1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office NAS Miramar, CA (Host UIC 60259)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance delivies, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debreifing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Southern California

c. Distance from the range to the activity's headquarters facility (main site).

100 miles

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d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot view display.

Reported by host Command

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office NAF El Centro, CA (Host UIC 60042)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance delivies, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debreifing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Southern California

c. Distance from the range to the activity's headquarters facility (main site).

180 miles

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UIC: 64267

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot view display.

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

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m. What were the actual hours that this range was utilized in FY1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office Oceana, VA (Host UIC 60191)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance deliveries, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debriefing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Eastern Virginia

c. Distance from the range to the activity's headquarters facility (main site).

2,200 miles

TAB C
Page ___ of ___
UIC: 64267

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Report by host Command

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot view display.

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY 1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

SECTION VI.E

EASTERN CONTINENTAL UNITED STATES

I. VIRGINIA CAPES COMPLEX

A. Operating Area Manual

Information contained herein is based upon the Commander in Chief, U.S. Atlantic Fleet Instruction 3120.26 and the Fleet Area Control and Surveillance Facility, Virginia Capes Instruction 3120.1. Further detailed information may be found in these instructions.

B. General Description

The Virginia Capes complex is located in the states of Maryland, Virginia, and North Carolina and their adjacent coastal waters. See Figures VI.E-1 and VI.E-1A. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The complex consists of the following targets/areas:

1. Palmetto Point Range (R-5302) Harvey Point
2. Stumpy Point Range (R-5313) Long Shoal Point
3. Navy Dare County Range (R-5314)
4. Dam Neck Range (R-6606)
5. Tangier Island Range (R-6609)
6. Warning Area 50 (W-50)
7. Warning Area 72 (W-72)
8. Warning Area 110 (W-110)
9. Oceana Tactical Aircrew Combat Training System (Oceana TACTS) Warning Area 72 (W-72)
10. Warning Area 386 (W-386)
11. Warning Area 387 (W-387)
12. Hatteras Military Operating Area (MOA)
13. Pamlico Military Operating Area (MOA)

C. Command Structure

1. Scheduling Authority: Commanding Officer
   Fleet Area Control and Surveillance Facility,
   Virginia Capes
   Naval Air Station, Oceana
   Virginia Beach, VA 23460
   (FACSFAC VACAPES)
   AUTOVON: 433-1218/1219

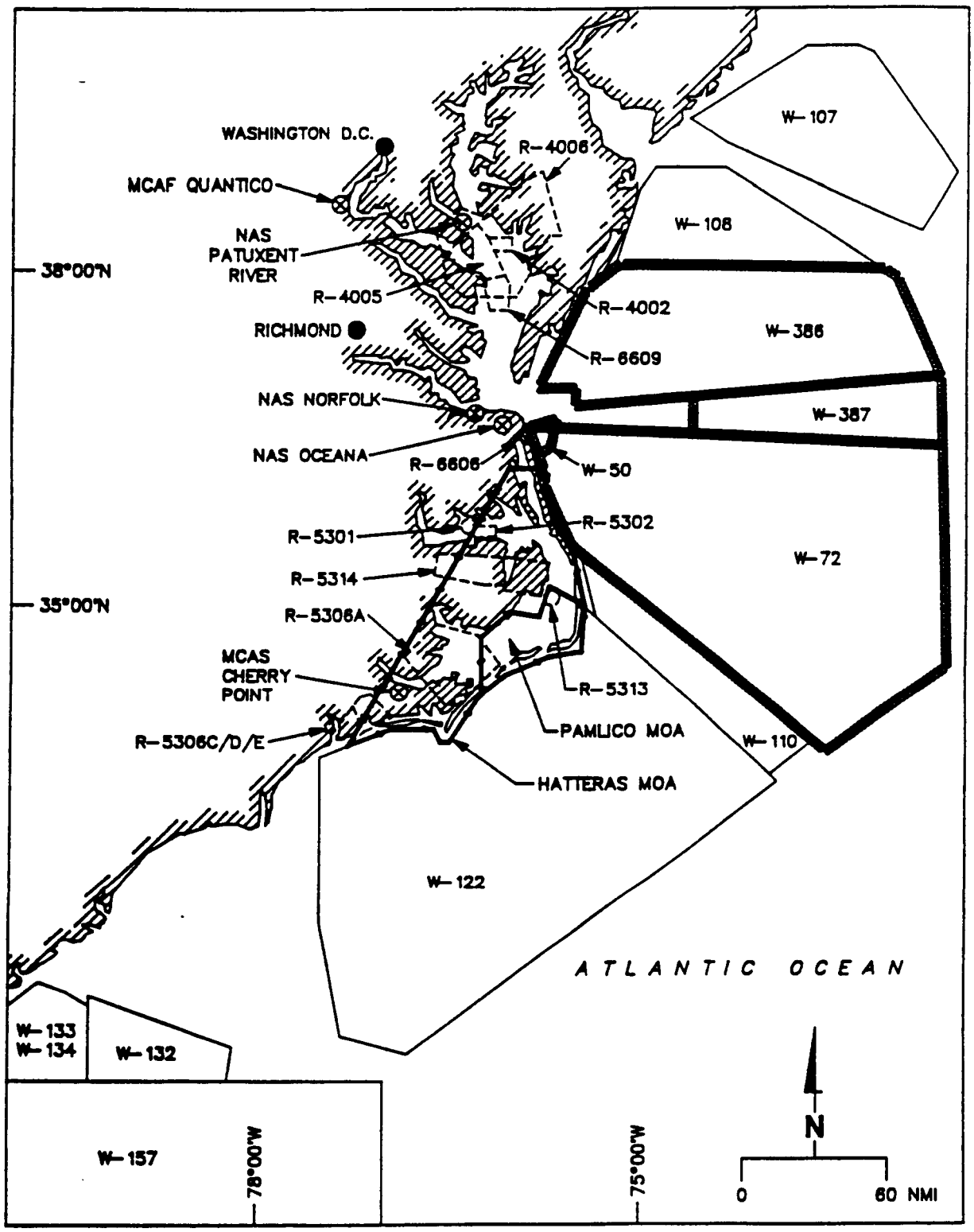

FIGURE VI.E-1 VIRGINIA CAPES COMPLEX

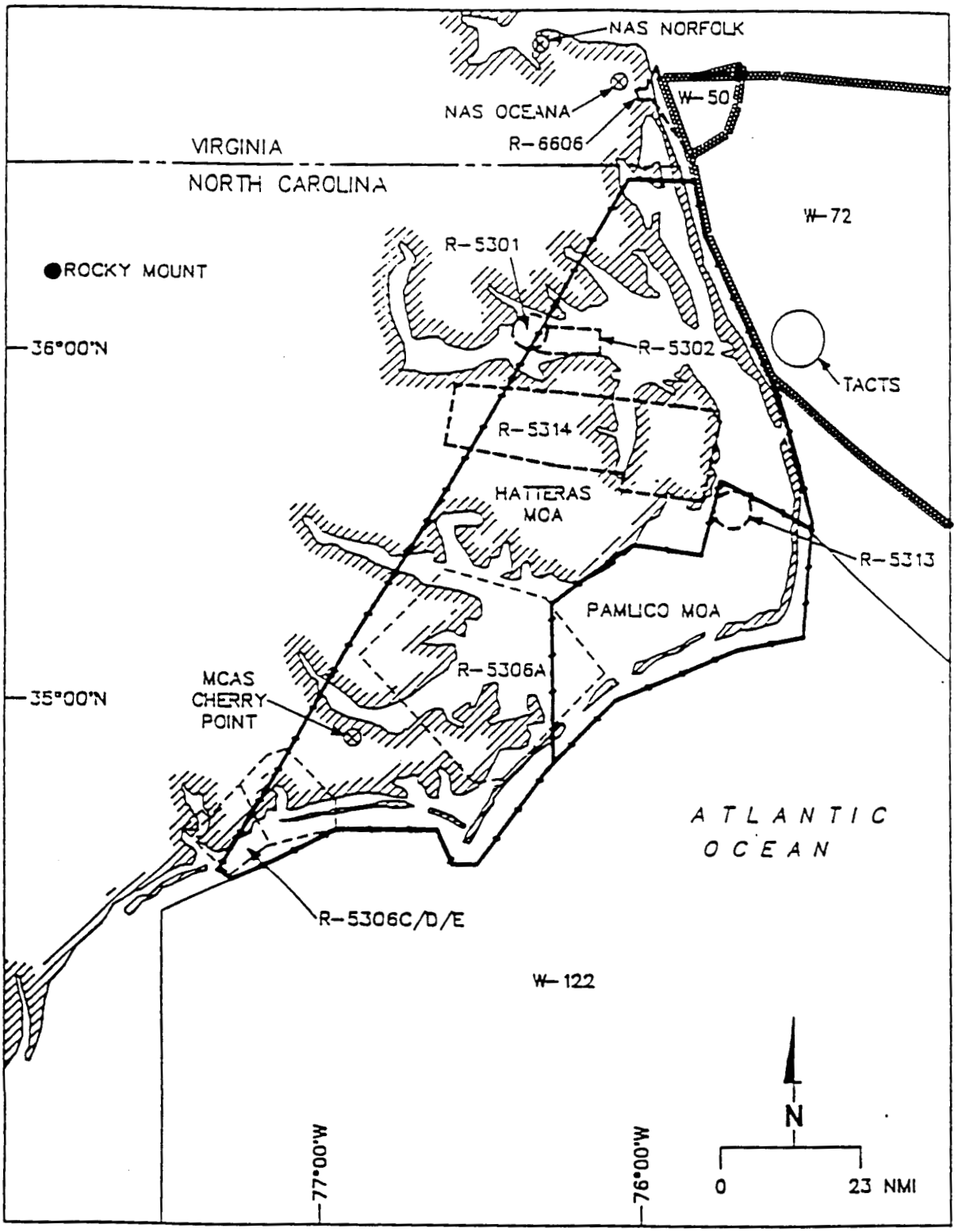

FIGURE VI.E-1A VIRGINIA CAPES COMPLEX (TACTS)

2. Scheduling Activity:

All areas/ranges unless otherwise noted	FACSFAC VACAPES AUTOVON: 433-1218/1219
Oceana TACTS	Commander Fighter Wing 1 Naval Air Station, Oceana Virginia Beach, VA 23460 (COMFITWINGONE) AUTOVON: 433-5241

3. Resource Manager:

R-5302/R-5313 R-5314/R-6609	Commanding Officer Naval Air Station, Oceana Virginia Beach, VA 23460-5120 AUTOVON: 433-2636
R-5301A	Project Manager Harvey Point Defense Testing Activity Route 5, Box 175 Hertford, NC 27944 AUTOVON: 935-3491

D. Geography and Characteristics of Range/Target Areas

1. Palmetto Point Range (R-5302) Harvey Point.

a. Range/Area Boundaries/Access

Palmetto Point Range is an instrumented range located in Albemarle Sound approximately 48 NMI south of the NAS Oceana TACAN, Channel 113, bearing 199°. See Figure VI.E-1. R-5302 extends from the surface up to FL140. Access is by surface road or surface vessel.

b. Exercises/Ordnance

Air-to-ground exercises using inert ordnance up to and including 100-pound inert bombs and 5" Zuni rockets with inert or smoke heads are authorized. No strafing is authorized.

c. Targets

The target consists of an aim point made up of a steel barge (132 feet long, 32 feet wide, 20 feet high) painted in a black and white checkerboard fashion. This target is scored by a Weapons Impact Scoring Set (WISS). Palmetto Point has been certified "safe" for laser system operations.

d. Range Availability

R-5302 is available continuously.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC 4/85

The WISS is a manned video scoring set which scores the impact point of air-to-ground ordnance within a 4000 foot radius of a defined land or water target under day or night conditions. The impact results are passed to the aircrews by VHF communications and/or recorded on a computer printout.

(2) Communications

1 ea. AN/GRT-22 UHF Transmitter
1 ea. AN/GRR-24 UHF Receiver

Operation and maintenance is accomplished by on-site military personnel. Intermediate-level maintenance is performed by NAS Oceana, Virginia.

(3) Facilities

2 ea. 50-foot rake towers located on the southern shore of Albemarle Sound.

Operation and maintenance is accomplished by on-site military personnel. Intermediate-level maintenance is provided by NAS Oceana, Virginia.

(4) Electrical Power. Commercial 115/208 volt, 60 Hz, three-phase power is used.

2. Stumpy Point Range (R-5313) Long Shoal Point.

a. Range/Area Boundaries/Access

Stumpy Point Range is an unattended/non-instrumented range located in Pamlico Sound approximately 75 NMI northeast of the MCAS Cherry Point TACAN, Channel 75, bearing 052°. R-5313 extends from the surface up to FL180. See Figure VI.E-1.

b. Exercises/Ordnance

Air-to-ground exercises using inert ordnance including water/sand-filled bombs, practice bombs, flares, photo-flash, phosphorous, and training rockets up to and including 5" Zuni smoke rockets are authorized. Strafing is not permitted.

c. Targets

The target consists of a 315-foot by 50-foot sunken Landing Ship Tank (LST). Stumpy Point has been certified "safe" for laser systems operations.

d. Range Availability

R-5313 is available continuously.

3. Navy Dare County Range (R-5314)

a. Range/Area Boundaries/Access

Navy Dare County Range (R-5314) is an instrumented all-weather range located near Manteo, North Carolina, approximately 70 NMI south of the NAS Oceana TACAN, Channel 113, bearing 167°. See Figure VI.E-I. Within the range area, R-5314 altitudes vary. Flight Information Publication (FLIP) lists the various sections. Access to the range is by surfaced highway. Access to the targets is by dirt road.

b. Exercises/Ordnance

Air-to-ground exercises, including loft deliveries, are authorized. Due to a fire hazard, ordnance is restricted to inert ordnance and ordnance which uses marking charges only. Strafing is restricted to ball ammunition.

c. Targets

Six separate targets are available. See Figure VI.E-2.

(1) Navy Loft. This target consists of a pile of scrap metal surrounded by two concentric rings of 500- and 1500-foot radii. The target is augmented by radar reflectors and is scored by a Weapons Impact Scoring Set (WISS), or a WANG Model 500 calculator for manual rake scoring. This target is used for practice special-weapons deliveries. The target has distance-to-go markers every 6000 feet from 30,000 feet to 6000 feet on the run-in line.

(2) Short Bull. This target is a 40-foot by 12-foot armored personnel carrier. The Short Bull is scored by the WISS or the WANG model 500 calculator.

(3) Navy East Conventional Bull. This target consists of an armored personnel carrier shell centered in a circle of 250-footradius. This target is augmented with lights for night bombing/rocket exercises. The Navy East Conventional Bull is scored by the WISS or the WANG model 500 calculator.

(4) Minimum Altitude/Lay-down Target. This target consists of metal lockers and tires in the shape of a horseshoe which are painted international orange. The Minimum Altitude/Lay-down Target is visually scored using distance markers located every 5 meters.

(5) Strafing Target. This target consists of three strafing panels which are scored by a DA-3H Strafe Scoring System.

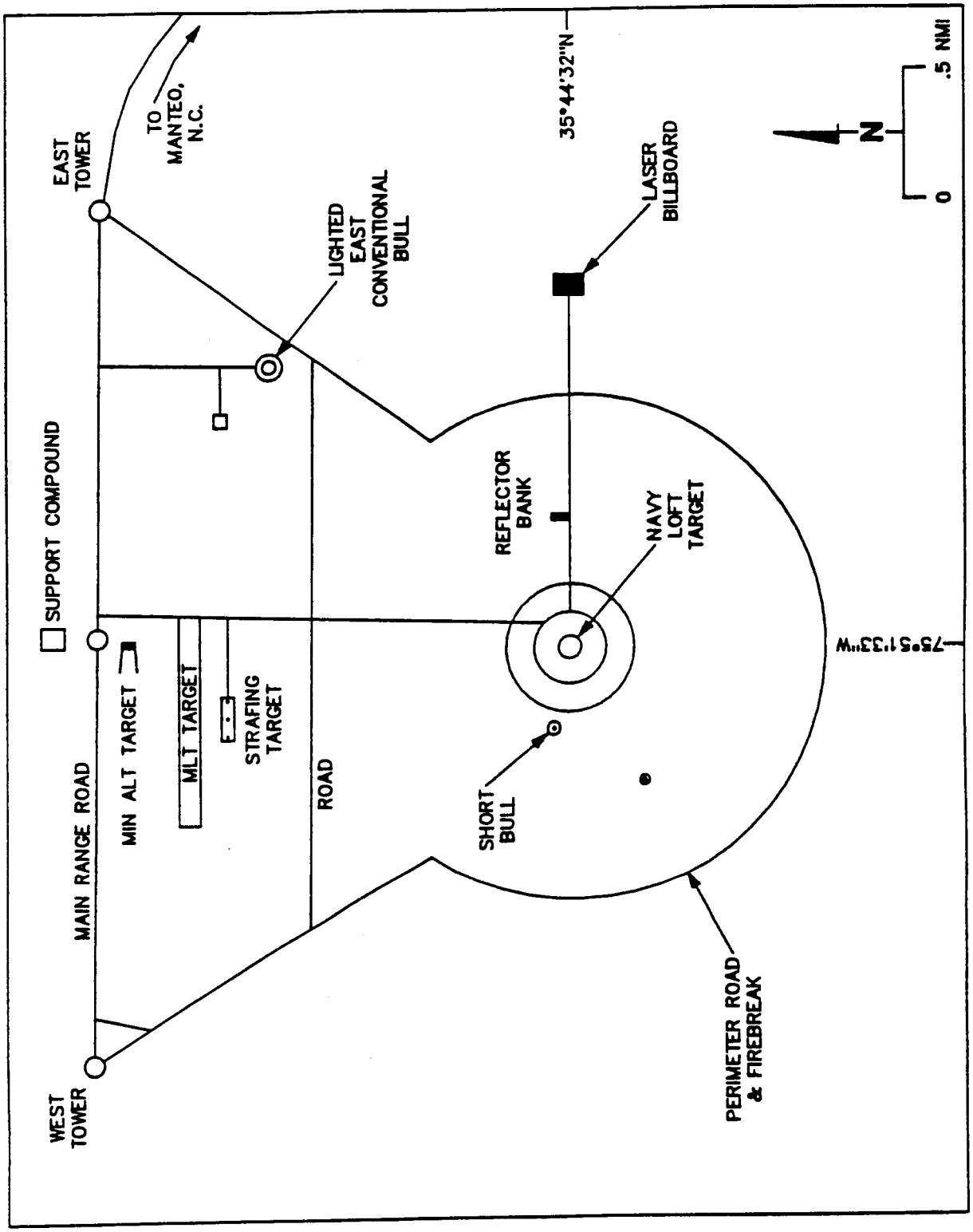

FIGURE VI.E-2 NAVY DARE COUNTY

(6) Laser Billboard No-Drop Target. Continuous automatic scoring is available on frequency 359.5. Cassette tape scoring results are available with a 15 minute advance notice.

(7) Laser Targets. The Short Bull and the East Conventional Bull are certified "safe" for laser system operations.

d. Range Availability

R-5314 is available intermittently 1100 - 0500Z, Mon-Fri; 1200 - 2300Z, Sat-Sun; or by NOTAM 6 hours in advance. The range is manned Monday through Thursday from 0800 to 2300 hours local and Friday from 0800 to 1600 hours local. No ordnance may be released unless the range is manned.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 11/80

Operation and maintenance is accomplished by on-site contract and civil service personnel.

1 ea. DA-3H Strafe Scoring System
IOC: 5/81

Operation and maintenance is performed by on-site contract and civil service personnel.

See Appendix A for a detailed description of the Strafe Scoring System.

(2) Communications

4 ea. AN/GRT-22 UHF Transmitters
4 ea. AN/GRR-24 UHF Receivers
1 ea. AN/GRC-171 UHF Transceiver

Operation and maintenance is accomplished by on-site civil service and Air Force personnel. Intermediate-level maintenance is provided by the Air Force.

(3) Facilities

3 ea. Spotting towers of steel construction, each approximately 30 feet high. The center tower serves as the control center with communications, MLT controls, WISS, and strafe scoring equipment located therein. Ancillary equipment for these systems is located in two sheds underneath the center tower.
IOC: 1965

Operation and maintenance is accomplished by on-site contract and civil service personnel.

4 ea. Service/support buildings of metal construction which are used for administration, maintenance, supply, and support spaces. One building houses the generators which supply power to the facility.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz power is used.

2 ea. 100 kW motor generator (backup)

Operation and maintenance is accomplished by on-site civil service personnel.

4. Dam Neck Range (R-6606)

a. Range/Area Boundaries/Access

R-6606 is special surface and airspace extending from inland Eastward to the 3 NMI territorial limit, located approximately 5 NMI east of the NAS Oceana TACAN, Channel 113, bearing 110°. See Figure VI.E-1. R-6606 extends from the surface up to FL510.

b. Exercises/Ordnance

Air-to-air exercises using live ordnance and air-to-surface exercises using MK 76 or MK 106 practice bombs and inert 2.75" FFARs are authorized.

c. Targets

Air targets are BQM/MQM-74C powered drones. Seaborne targets are QST 33/35 Seaborne powered Targets (SEPTARS). Targets are arranged through Fleet Composite Squadron Six, NAS Oceana, Virginia Beach, Virginia.

d. Range Availability

R-6606 is available Monday through Friday 1300 -2200 or by NOTAM 48 hours in advance.

e. Range Instrumentation/Resources

The BQM/MQM-74C powered drones are remotely controlled subsonic air-to-air targets. The drones may be surface or air launched and are used as targets for air-to-air missile firings. Remote control of these drones is accomplished by either Vega, Portable Radar Tracking and Control System (PRTCS), AN/TSW-10(V) or Integrated Target Control System (ITCS).

The QST-33/35 are highly maneuverable, remote controlled, fiberglass boats used as moving targets for inert rocket and/or bomb practice. The QST-33 SEPTAR is 18 feet long, and the QST-35 SEPTAR is 55 feet

long. Remote control of the SEPTAR is accomplished by either a Vega, PRTCS, Control Target Transmitter System (CTTS) or ITCS. Scoring is done by the participating aircrews.

5. Tangier Island Range (R-6609)

a. Range/Area Boundaries/Access

R-6609 is an unattended/non-instrumented range located in Chesapeake Bay approximately 27 NMI southeast of the NAS Patuxent River VORTAC, Channel 123, bearing 164°. See Figure VI.E-1. R-6609 extends from the surface up to FL200.

b. Exercises/Ordnance

Air-to-ground exercises, including loft delivery, using MK 76 or MK 106 practice bombs, water/sand-filled bombs, practice bombs, and 2.75" FFARs with inert heads are authorized. Strafing is not authorized.

c. Targets

The target consists of a 415-foot by 65-foot sunken cargo ship.

d. Range Availability

R-6609 is available continuously.

6. Warning Area 50 (W-50)

a. Range/Area Boundaries/Access

W-50 is special-use surface and airspace in the open ocean which borders R-6609 to the East and is located approximately 8 NMI east of the NAS Oceana TACAN Channel 113, bearing 110°. See Figure VI.E-1. W-50 extends from the surface up to FL750 and is subdivided into 3 areas: W-50A, W-50B, and W-50C.

b. Exercises/Ordnance

Air-to-surface and surface-to-surface SEPTAR exercises using inert ordnance are authorized.

c. Targets

Targets are arranged through VC-6, Naval Air Station, Norfolk, Virginia 23511, AUTOVON: 690-4575.

d. Range Availability

W-50 is available intermittently by NOTAM. VFR conditions must exist when firing at SEPTARS.

7. Warning Area 72 (W-72)

a. Range/Area Boundaries/Access

W-72 is special-use air, surface, and subsurface space in the open-ocean adjacent to the coasts of Virginia and North Carolina and is located approximately 20 NMI Southeast of the NAS Oceana TACAN, Channel 113, bearing 120°. See Figure VI.E-1. W-72 extends from the surface to unlimited altitude, except that portion of the warning area west of 75° 30'W which is surface to, but not including, 2000 feet MSL and above FL600 to unlimited altitude. W72 is subdivided into W-72A and W-72B.

b. Exercises/Ordnance

Air-to-air, air-to-surface, and surface-to-surface missile, guns, cannons, and bomb exercises using conventional ordnance are authorized. ASW exercises and air tactics training are also conducted in W-72.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

W-72 is available intermittently as scheduled.

e. Range Instrumentation

1 ea. Ground Telemetry (TLM) Complex
IOC: 1972

Operation and maintenance is accomplished by on-site civil service personnel.

See Appendix A.6 for description of Telemetry Complex.

8. Warning Area 110 (W-110)

a. Range/Area Boundaries/Access

Warning Area 110 is special-use air, surface, and subsurface space in the open-ocean off the coast of North Carolina and is located approximately 75 NMI southeast of NAS Oceana TACAN, Channel 113, bearing 160°. See Figure VI.E-I. W-110 extends from the surface to FL230.

b. Exercises/Ordnance

W-110 is used primarily for air tactics and instrument training.

c. Targets

No targets are used in W-110.

d. Range Availability

W-110 is available intermittently as scheduled. However, airspace is subject to recall by Washington Air Route Traffic Control Center (ARTCC) on a 30-minute notice.

9. Oceana Tactical Aircrew Combat Training System (Oceana TACTS)

a. Range/Area Boundaries/Access

The Oceana TACTS is located in W-72 airspace centered approximately 60 NMI from the NAS Oceana TACAN, Channel 113, bearing 150°. See Figure VI.E-1A. The Oceana TACTS airspace extends from 5000 to unlimited.

b. Exercises/Ordnance

The Oceana TACTS provides aircrew training and performance evaluation in air combat maneuvering, air tactics, and no-drop bomb scoring exercises. Ordnance deliveries using MK76 bombs can be used in conjunction with TACTS.

c. Targets

There are nine (9) no-drop targets associated with the Oceana TACTS in Dare County. Adversary aircraft are arranged and/or supplied by the user.

d. Range Availability

The Oceana TACTS is available Monday through Friday from 0730 to sunset or 1800, whichever is earlier.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/USQ-T4 Tactical Aircrew Combat Training System (TACTS) with display and debrief systems (DDS) available at Langley Air Force Base, Langley, VA.

Operation and maintenance is accomplished civil service, and contract personnel.

(2) Communications

6 ea. Motorola URC-101 UHF/VHF Transceivers

Operation and maintenance is accomplished by civil service and contract personnel.

(3) Facilities

1 ea. Control and Computation subsystem. Located at NAS Oceana, Bldg 310.
3 ea Display and Debriefing subsystem. Located at NAS Oceana, Bldg 310 and Langley AFB.
1 ea. Tracking Instrumentation Master Site. Located at Bodie Island, North Carolina, with remote sites arrayed throughout W-72. Four remote sites are located in the ocean and one each at Bodie Island, Pea Island, Kill Devil Hills, and 3 sites located in Dare County, NC.

Operation and maintenance is accomplished by civil service, and contract personnel.

(4) Electrical Power. Commercial 115/208 volt, 60 Hz, three-phase power is used at the NAS Oceana TACTS facility and 6 remote land sites. The remote ocean sites are powered by a solar panel/battery system.

10. Warning Area 386 (W-386)

a. Range/Area Boundaries/Access

W-386 is special-use air, surface, and subsurface space in the open-ocean off the coast of Maryland located approximately 60 NMI east of the NAS Patuxent River VORTAC, Channel 123, bearing 110°. See Figure VI.E-1. W-386 extends from the surface to unlimited altitude, except that portion of the area west of 75° 30'W which is surface to, but not including, 2000 feet MSL and above FL600 to unlimited altitude.

b. Exercises/ordnance

Air-to-air, air-to-surface, surface-to-air, and surface-to-surface missile, gunnery, and rocket exercises using conventional ordnance are authorized. ASW and ASROC exercises are also authorized.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

W-386 is available intermittently as scheduled.

11. Warning Area 387 (W-387)

a. Range/Area Boundaries/Access

W-387 is open-ocean airspace off the coast of Virginia located approximately 75 NMI east of the NAS Oceana TACAN, Channel 113, bearing 090°. See Figure VI.E-1. W-387 is divided into 2 subareas; W-387A extends from the surface up to but not including FL240 and W-387B from FL240 to unlimited.

b. Exercises/Ordnance

W-387 is used primarily for air tactics and instrument training. No ordnance is authorized.

c. Targets

No targets are used in W-387.

d. Range Availability

W-387 is available as published by NOTAM.

12. Hatteras Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Hatteras MOA is special-use airspace located over eastern North Carolina extending from MCAS Cherry Point, North Carolina, to north of the Albemarle Sound. See Figure VI.E-1A. The airspace extends from FL240 to FL600.

b. Exercises/Ordnance

The MOA is used for air combat maneuvering (ACM), instrument training, and other military flight operations. No ordnance is authorized.

c. Targets

The MOA includes no targets.

d. Range Availability

The Hatteras MOA is available continuously.

13. Pamlico Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Pamlico MOA is special-use airspace located over eastern North Carolina approximately 70 NMI northeast of the MCAS Cherry Point TACAN, Channel 75, bearing 055°. See Figure VI.E-1. The airspace extends from 8000 feet up to, but not including, FL180.

b. Exercises/Ordnance

The MOA is used for air combat maneuvering (ACM), instrument training, and other military flight operations. No ordnance is authorized.

c. Targets

The MOA includes no targets.

d. Range Availability

The Pamlico MOA is available continuously.

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office Cherry Point, NC (Host UIC 00146)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance delivies, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debreifing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Eastern North Carolina

c. Distance from the range to the activity's headquarters facility (main site).

2,200 miles

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d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot view display.

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

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m. What were the actual hours that this range was utilized in FY1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

SECTION VI.F

EASTERN CONTINENTAL UNITED STATES

I. CHERRY POINT COMPLEX

A. Operating Area Manual

Information contained herein is based upon the Commander in Chief, U.S. Atlantic Fleet Instruction 3120.26; Fleet Area Control and Surveillance Facility, Virginia Capes Instruction C3120.1; Commanding General, Marine Corps Air Station Cherry Point Order 3570.2; Commanding General, Marine Corps Base Camp Lejeune Order PIII02.1; and Cherry Point Mid-Atlantic Electronic Warfare Range (MAEWR) Range Users Manual. Townsend Range instructions are contained in Savannah Combat Readiness Training Center document CRTCR 50-46, Air Bases Order 3572.1 part I. Further detailed information may be found in these instructions.

B. General Description

The Cherry Point complex is located in eastern North Carolina and the adjacent inland and coastal waters. See Figure VI.F-1. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The complex consists of the following targets/areas:

1. BT-3 Browns Island/N-1 Impact Area (R-5306D)
2. G-10 Impact Area (R-5306D)
3. K-2 Impact Area (R-5306D/E)
4. BT-9 Brant Shoals Target (R-5306A)
5. BT-11 Piney Island Range (R-5306A)
6. Townsend Range (R-3007)
7. Warning Area 122 (W-122)
8. Cherry Point TACTS

C. Command Structure

1. Scheduling Authority:

R-5306A/C	Commanding General Marine Corps Air Station Cherry Point, NC 28533 DSN: 582-3141
R-5306D/E	Commanding General Marine Corps Base Camp Lejeune, NC 28542 DSN: 484-5803
W-122	Commanding Officer Fleet Area Control and Surveillance Facility, Virginia Capes (FACSFAC VACAPES) Naval Air Station, Oceana Virginia Beach, VA 23460-5120 DSN: 433-1219

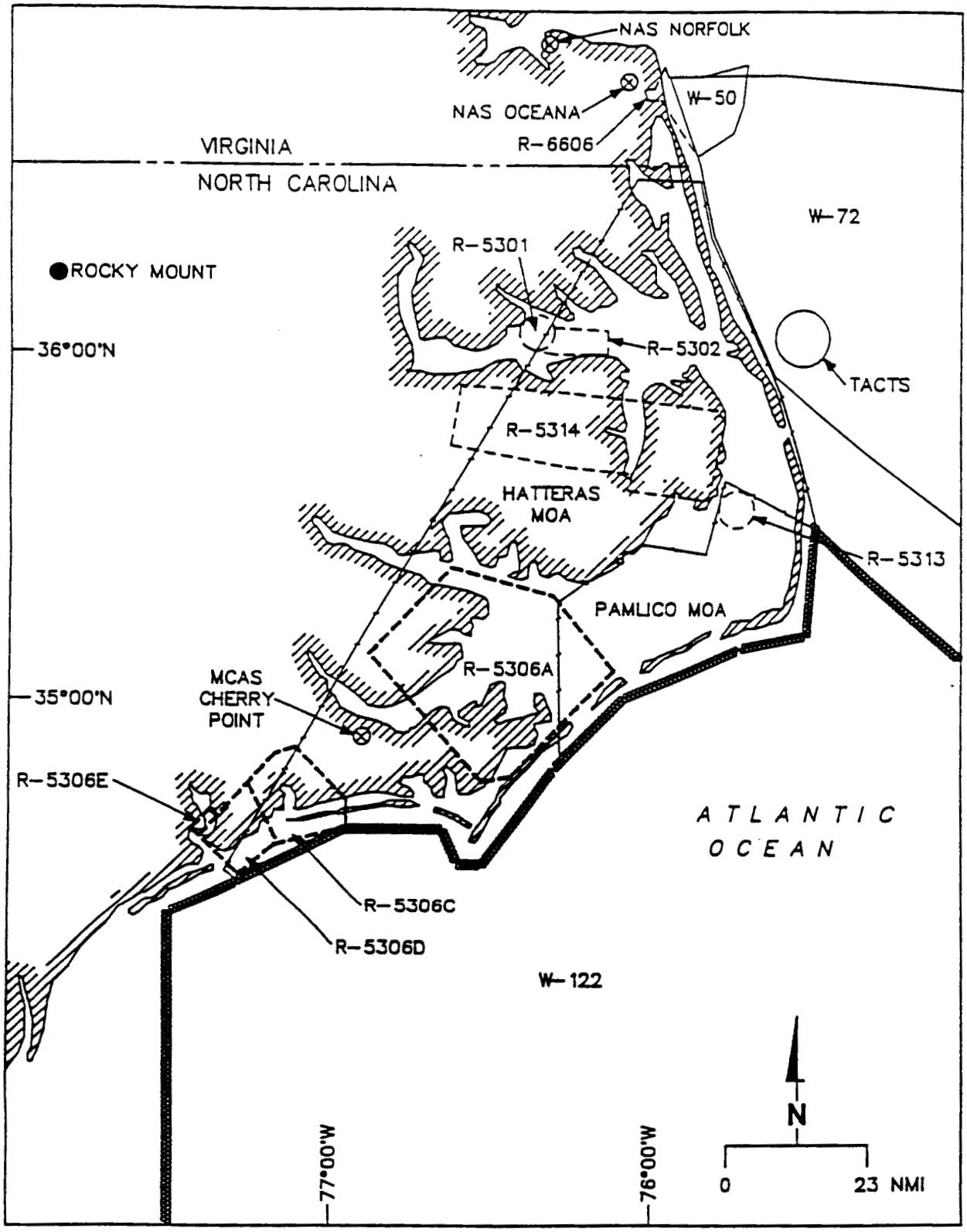

FIGURE VI.F-1 CHERRY POINT COMPLEX

2. Scheduling Activity:

BT-3 (N-1)/G-10/K-2 (R-5306D/E)	MCB, Camp Lejeune, NC 28542 DSN: 484-5803
BT-9/BT-11 (R-5306A/C) Cherry Pt. TACTS	Central Scheduling Center DSN: 582-4040/4041
W-122	FACSFAC VACAPES DSN: 433-1219
R-3007	Georgia Air National Guard Savannah Municipal Airport Garden City, Georgia 31418 DSN: 860-8127/8432 COMM: (912) 832-5074

3. Resource Manager:

BT-3 (N-1)/G-10 K-2	MCB, Camp Lejeune, NC 28542 DSN: 484-5803
BT-9/BT-11	MCAS Cherry Point, NC 28533 DSN: 582-3141

C. Geography and Characteristics of Range/Target Areas

1. BT-3 Browns Island/N-1 Impact Area (R-5306D)

a. Range/Area Boundaries/Access

BT-3 (N-1) Impact Area is a non-instrumented range on the eastern shore of Camp Lejeune Reservation, located approximately 25 NMI southwest of the MCAS Cherry Point TACAN, Channel 75, bearing 225°. See Figure VI.F-1. R-5306D extends from the surface up to, but not including FL180. Scoring is accomplished by either a Tactical Air Control Party (TACP), Tactical Air Controller (Airborne) (TACA), or an artillery forward observer (FO). Scoring services are available locally upon request. Access to BT-3 is by surface vessel or helicopter.

b. Exercises/Ordnance

Live artillery and air-to-ground Close Air Support (CAS) exercises using conventional ordnance are authorized. Only MK 76 series practice and MK 80 series bombs are authorized. MK 81 and 82 series bombs are not authorized. Fixed wing aircraft are also authorized 2.75" rockets, (HE and practice) 20mm, 25mm, 30mm at 20° or greater dive angle. Helicopters are also authorized 2.75"/5" rockets (HE and practice) as well as 20mm/25mm at 20° or greater dive angle. Offset bombing using Radar Beacon, Forward Air Control (RABFAC) beacon is authorized. BT-3 (N-1) is a certified "safe" laser designated target for A-6E Target Recognition Attack Multisensory (TRAM), OV-10D Night Observation System (NOS), Modular Universal

Laser Equipment (MULE), Light Weight Laser Target Designator (LLTD), Ground Laser Locator Designator (GLLD), and AN/GVS-S hand-held Laser Range Finder.

c. Targets

Targets include tanks, motor vehicles, and improvised targets. Night lighting of the targets by means of MK 24/MK 45 air-delivered flares or artillery/mortar illumination is authorized.

d. Range Availability

BT-3 (N-1) is available as scheduled by the Commanding General, Marine Corps Base, Camp Lejeune, North Carolina.

2. G-10 Impact Area (R-5306D)

a. Range/Area Boundaries/Access

The G-10 Impact Area is a non-instrumented range within the Camp Lejeune Reservation located approximately 30 NMI southwest of the MCAS Cherry Point TACAN, Channel 75, bearing 230°. See Figure VI.F-1. R-5306D extends from the surface up to, but not including, FL180. Scoring is accomplished by either a Tactical Air Control Party (TACP), Tactical Air Controller (Airborne) (TACA), or an artillery Forward Observer (FO). Scoring services are available locally upon request. Access to G-10 is by four wheel drive vehicle or helicopter.

b. Exercises/Ordnance

Live artillery and air-to-ground Close Air Support (CAS) exercises using conventional ordnance are authorized. Only MK 76 series practice and MK 80 series inert bombs are authorized for air exercises. MK 81 and 82 series bombs not authorized. Fixed wing aircraft are also authorized 2.75" rockets, (HE and practice) 20MM at 20° or greater dive angle. Helicopters are also authorized 7.62 aerial gunnery as well as 2.75" rockets (HE and practice) and 20MM at 20° or greater dive angle. Offset bombing using the Radar Beacon, Forward Air Control (RABFAC) beacon is authorized. G-10 is a certified safe laser-designation target for A-6E Target Recognition Attack Multi-sensor (TRAM), OV-10D Night Observation System (NOS), Modular Universal Laser Equipment (MULE), Lightweight Laser Target Device (LLTD), Ground Laser Locator Designator (GLLD), and AN/GVS-S handheld Laser Range Finder.

c. Targets

Targets consist of truck bodies, tanks, and improvised targets. Night lighting by means of MK 24 or MK 45 air delivered flares or artillery/mortar illumination is authorized.

d. Range Availability

The G-10 Impact Area is available as scheduled by the Commanding General, Marine Corps Base, Camp Lejeune, North Carolina.

e. Range Instrumentation/Resources

(1) Instrumentation. There is no instrumentation within the G-10 Impact Area; scoring is accomplished manually.

(2) Communications

1 ea. General Electric Master Local Controller FM Transceiver VHF/FM
1 ea. Collins UHF Transceiver AN/GRC-171A(V)2,

(AN/PRC-77 portable battery powered tactical radios are used as backup.)

Operation and maintenance is accomplished by on-site military personnel. Intermediate level maintenance is provided by the Marine Corps Base, Camp Lejeune, North Carolina.

(3) Facilities

2 ea. 60-foot by 90-foot concrete block bunkers used as Range Control (OP-2)
2 ea. Steel observation towers (OP-1 and -3)
2 ea. Wood observation towers (OP-2 and -5)

Operation and maintenance is accomplished by on-site military personnel. Intermediate level maintenance is provided by Marine Corps Base, Camp Lejeune, North Carolina.

(4) Electrical Power

1 ea. 60 kW, three-phase, 60 Hz motor generator

Operation and maintenance is accomplished by on-site military personnel. Intermediate level maintenance is provided by the Marine Corps Base, Camp Lejeune, North Carolina.

3. K-2 Impact Area (R-5306D/E)

a. Range/Area Boundaries/Access

The K-2 Impact Area is a non-instrumented range within the Camp Lejeune Reservation located approximately 35 NMI southwest of the MCAS Cherry Point TACAN, Channel 76, bearing 235°. See Figure VI.F-1. R-5306D/E extends from the surface up to, but not including, FL180. Scoring is accomplished by either a Tactical Air Control Party (TACP), Tactical Air Controller (Airborne) (TACA), or an artillery Forward Observer (FO). Scoring services are available locally upon request. Access to K-2 is by four wheel drive vehicle or helicopter or surface vessel.

b. Exercises/Ordnance

Live artillery and air-to-ground Close Air Support (CAS) exercises using conventional ordnance are authorized. All Aircraft must contact Range Control Duty Officer, call sign "BLACKBURN" 325.0 MHz, for brief and permission to enter restricted airspace. Contact BLACKBURN, when exiting airspace. Only MK 76 series practice and MK 80 series inert bombs are authorized for air exercises. MK 81 and 82 series bombs are not authorized. Helicopters are authorized 7.62 aerial gunnery. Offset bombing using the Radar Beacon, Forward Air Control (RABFAC) beacon is authorized. K-2 is a certified safe laser-designation target for Modular Universal Laser Equipment (MULE), Lightweight Laser Target Device (LLTD), Ground Laser Locator Designator (GLLD), and AN/GVS-S handheld Laser Range Finder.

c. Targets

Targets include vehicle hulls, and improvised targets. Night lighting of targets by means of MK 24/Mk 45 air delivered flares or artillery/mortar illumination is authorized.

d. Range Availability

K-2 Impact Area is available as scheduled by the Commanding General, Marine Corps Base, Camp Lejeune, North Carolina.

4. BT-9 Brant Shoals Target (R-5306A)

a. Range/Area Boundaries/Access

BT-9 is an unattended/non-instrumented target located in Pamlico Sound at coordinates 35°12'30"N and 76°26'40"W approximately 28.5 NMI from the MCAS Cherry Point TACAN, Channel 75, bearing 053°. See Figure VI.F-1. R-5306A extends from the surface up to 17,999 feet MSL.

b. Exercises/Ordnance

Air-to-ground exercises using conventional ordnance not to exceed 100 pounds TNT equivalent and 5" Zuni rockets are authorized. Strafing is authorized. BT-9 is a certified "safe" laser-designation target for the OV-10D Night Observation System (NOS), A-6E Target Recognition Attack Multi-sensor (TRAM), and Air Force PAVE TACK and PAVE SPIKE systems.

c. Target

The target consists of a sunken freighter hulk and two sea-going tug boat hulks. Night lighting by means of MK 24 or MK 25 air-delivered flares is authorized.

d. Range Availability

BT-9 is available continuously. Aircrews shall contact Cherry Point Approach Control for clearance prior to entering R-5306A.

5. BT-11 Piney Island Range (R-5306A)

a. Range/Area Boundaries/Access

BT-11 is a multipurpose target complex designed to provide training in the delivery of conventional and special weapons. BT-11 is located in Pamlico Sound at coordinates 34°59'N and 76°27'W approximately 22 NMI from the MCAS Cherry Point TACAN, Channel 75, bearing 074°. See Figure VI.F-1. R-5306A extends from the surface up to 17,999 feet MSL. Access to the range is by helicopter or surface vessel. Access to the targets is by dirt road or boat.

b. Exercises/Ordnance

Air-to-ground deliveries including loft, self-contained, Moving Target Indicator (MTI), Radar Beacon, Forward Air Control (RABFAC) and radar (TPQ) exercises with conventional inert ordnance up to 500-pound MK 82 bombs are authorized on designated targets. All targets are restricted to inert ordnance. Several targets are certified safe for OV-10D (NOS), A-6E (TRAM), and Air Force PAVE TACK and PAVE SPIKE laser systems operations. See the following paragraphs for details. Night lighting by means of MK 24 or MK 25 air-delivered flares is authorized, but may be restricted when the potential for ground fires is high.

c. Targets

BT-11 is a 12,500-acre island on which numerous targets are available for air-to-ground delivery and loft training. See Figure VI.F-2. Targets are restricted as noted. See Table VI.F-1.

(1) North Guns Target. This target consists of vans, trailers, and scrap metal assembled in such a manner as to simulate artillery pieces. The target is not scored. Practice ordnance up to and including 500-pound MK 82 bombs is authorized on this target.

(2) Inert, Tube Launched, Optically-Tracked, Wire-Command (TOW) Target Convoy. This target is not scored.

(3) Convoy Target. This target consists of a convoy of salvaged trucks and jeeps with attendant-defensive, simulated, portable SAM carriers, running 340°, on line. The target is not scored.

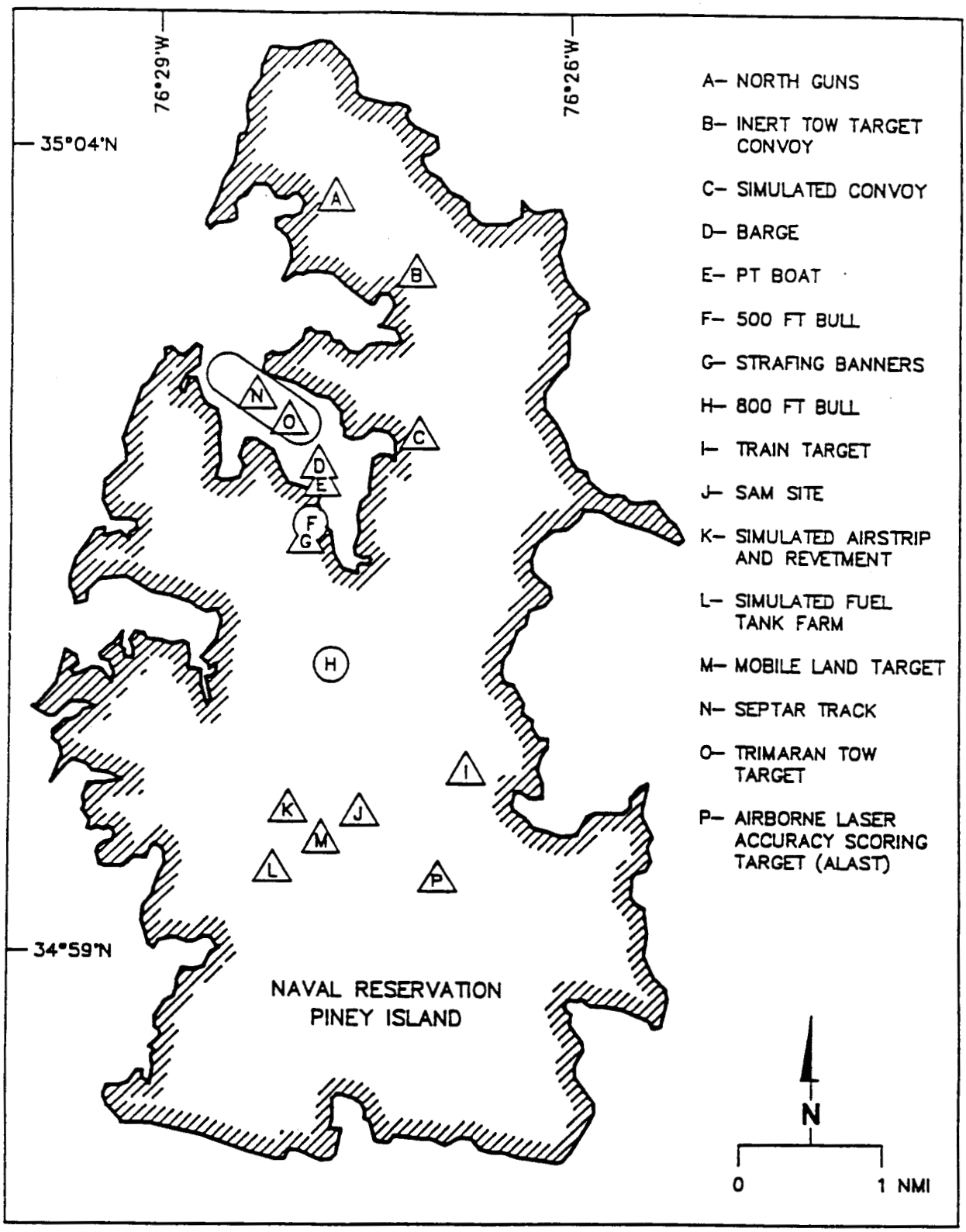

FIGURE VI.F-2 PINEY ISLAND RANGE (BT-11)

TABLE VI.F-1 BT-11 TARGETS

TARGETS	APPLICABLE NOTES
NORTH GUNS	1, 2, 4, 5, 8, 9, 13, 16, 20a, 22, 23
INERT TOW CONVOY	1, 2, 4, 5, 9, 13, 16, 18, 20B, 22, 23
SIMULATED CONVOY	1, 2, 4, 9, 13, 16, 17, 22, 23
BARGE	1, 2, 3, 6, 9, 11, 19, 20c/d, 21/b
PT BOAT	1, 12 21a/b
500-FOOT BULL'S-EYE	1, 2, 3, 12, 20c/d, 21a/b
STRAFING BANNER	5, 9, 14, 20c
800-FOOT BULL'S-EYE	1, 2, 3, 11, 15, 20c/d, 21a/b
SIMULATED TRAIN	1, 2, 4, 13, 16, 20e
SAM SITE	1, 2, 3, 4, 8, 13, 16, 17
SIMULATED AIRSTRIP	1, 3, 13, 16
SIMULATED FUEL FARM	1, 2, 4, 7, 9, 13, 16, 20f
MOBILE LAND TARGET	1, 2, 3, 12, 209, 21c/d
SEPTAR	1, 2, 12, 16, 20h, 21e
TRIMARAN TOW TARGET	1, 2, 7, 12, 16, 20h, 21e
AIRBORNE LASER ACCURACY SCORING TARGET (ALAST)	3, 10

NOTES

1. MK 76 or MK 106 practice bombs or equivalent are authorized.
2. 2.75" rockets are authorized.
3. Laser operations are authorized.
4. White phosphorous marking ordnance is authorized.
5. Strafing up to 30 MM authorized when the range is controlled.
6. Strafing up to 30 MM is authorized at all times.
7. Strafing up to 25 MM is authorized when the range is controlled.
8. Inert MK 81 or MK 82 are authorized.
9. Helicopter door gunnery is authorized.
10. Ordnance deliveries are not authorized on this target. Run-in heading 270°
11. WISS scored.
12. Visual estimate scored.
13. Not scored.
14. Acoustically scored.
15. Night lighting.
16. Unrestricted run-in heading for free-fall ordnance.
17. Unrestricted run-in heading for forward firing ordnance.
18. Run-in restricted to 330° for TOW firing.
19. Loft deliveries are authorized on a run-in of 275° only.
20. Forward firing ordnance delivery run-in headings. Read first heading clockwise to second heading.
    a. 140°-250° b. 140°-350'
    c. 275° d. 095°
    e. 140°-020° f. 330°-090°
    g. 340°-090° h. 010°-110°

TABLE VI.F-1 BT-11 TARGETS (Continued)

TARGETS	APPLICABLE NOTES	NOTES
		21. Free-fall ordnance delivery run-in headings. Read first heading clockwise to second heading. a. 275° b. 095° c. 180°-300° d. 340°-090° e. 010°-310°
		22. Rocket loft deliveries are authorized on forward firing headings.
		23. 5" rockets are authorized.

(4) Barge Target. This radar significant target, located in Rattan Bay, is a yard freighter class ship, 110 feet long and 32 feet wide. The target is used for conventional, loft, radar (TPQ), and RABFAC deliveries of practice ordnance. The Barge Target is certified "safe" as a laser designated target. The target is scored by a AN/FXQ-3(V) Weapons Impact Scoring Set (WISS) located in Tower No. 6. Nautical mile markers are located 1, 3, 4, and 5 nautical miles from target center on a 275° run-in heading.

(5) PT Boat Target. This target consists of a salvaged PT boat placed beside the Barge Target. The target is scored manually from Tower No. 6.

(6) 500-Foot Bull. This target consists of a 45-passenger bus bull's-eye surrounded by two concentric rings of 75- and 150-foot radii. The 500-foot bull is a certified "safe" laser-designated target. The target is scored manually from Tower No. 6.

(7) Strafing Banner. This target consists of a 12-foot circular acoustically scored panel using the DA-3H Strafe Scoring system. The DA-3H is operated and scored from Tower No. 6.

(8) 800-Foot Bull. This target consists of a 45-passenger bus bull's-eye surrounded by three concentric rings of 75-, 150-, and 300-foot radii. The 800-foot bull is a certified safe laser-designated target. The target is scored by the WISS located in Tower No. 6. A night lighting system, consisting of six run-in lights, three run-out lights, three wing lights on either side, and three spot lights located at the 7/6/5 o'clock position on a 275° run-in heading, is available for night operations.

(9) Train Target. This target consists of salvaged truck, canisters and 55 gallon drums simulating a fuel train. The target is scored manually from Tower No. 6.

(10) Simulated SAM Site. This target consists of vans and scrap metal simulating a Surface-to-Air Missile (SAM) site. The target is scored manually from either Tower No. 3 or Tower No. 6.

(11) Simulated Air Strip. This target is a land fill area approximately 4000 by 150 feet. Multiple salvaged aircraft serve as targets. The target is scored manually from Tower No. 6.

(12) Simulated Fuel Farm. This target consists of barrels and scrap metal simulating a fuel farm. The target is scored manually from Tower No. 6.

(13) Mobile Land Target (MLT)(QLT-1C). This is a remotely controlled vehicle augmented with radar reflectors that operates on

the 4000-foot simulated runway. The vehicle is equipped with lights for night deliveries. The target is controlled and manually scored from Tower No. 3.

(14) Sea-borne Powered Target (SEPTAR). The SEPTAR range is located in Rattan Bay northwest of the Barge Target. The QST-33 SEPTAR is a highly maneuverable, 18-foot, remotely controlled boat. The target is controlled and manually scored from Tower No. 7.

(15) Trimaran Tow Target. This target is a 14-foot, tri-hulled, towed boat with a 4-foot square sail/banner aim point attached. The Trimaran is towed behind the SEPTAR to provide a moving strafe/rocket target. Scoring is provided by a manual estimate from long range.

(16) Laser Target. This target is a 48-foot wide by 46-foot high plywood billboard it is divided into four quadrants by two three-foot wide black lines, one vertical, one horizontal. The billboard faces east and is oriented on a 45° angle to the horizon. The target is used for laser tracking practice. Range Control will provide laser spot information upon request. Ordnance deliveries are prohibited on the ALAST.

d. Range Availability

BT-11 is available continuously; however, it is only manned Monday through Thursday from 0800 to 2240 and Friday from 0800 to 1440. When unmanned, the Barge target is the only target authorized for ordnance deliveries.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 9/85

Operation and maintenance is accomplished by on-site civil ervice personnel.

Towers No. 5 and No. 7 each house two video cameras. The WISS is operated and scored from Tower No. 6.

1 ea. AN/URW-14A Command Target Control Set
IOC: Unknown

Operation and maintenance is accomplished by on-site civil service personnel.

The AN/URW-14A Command Target Control Set is used to control the QLT-1C Mobile Land Target (MLT).

1 ea. AN/ARW-80 Target Control Set
IOC: Unknown

Operation and maintenance is performed by on-site civilian personnel.

The AN/ARW-80 Target Control Set is used to control the QST-33 SEPTARS.

1 ea. DA-3H Strafe Scoring System
IOC: 6/81

Operation and maintenance is accomplished by on-site civilian service personnel.

The BT-11 Strafe Scoring System is remotely operated and scored from Tower No. 6. Additional information on the Strafe Scoring System is contained in Appendix A.

1 ea. AN/UEQ-T1 Laser Evaluator System (LES)
IOC: 09/88

1 ea. AN/FXH-T1 Laser Spot Video Recording System (LSVRS)
IOC: 09/88

1 ea. AN/GAQ-T1 Laser Designator/Simulator System (LDSS)
IOC: 09/92

1 ea. MX-11485/U Laser Evaluator System - Mobile (LES-M)
IOC: 11/93

Intermediate and Depot Level Maintenance performed by NAWCWPNS, Point Mugu, CA.

Operation of the LTS equipment is performed by civilian personnel.

See Appendix A under Laser Training Systems (LTS) for equipment description and operational capabilities.

(2) Communications

2 ea. AN/GRT-21 VHF Transmitters
2 ea. AN/GRR-23 VHF Receivers
6 ea. AN/GRT-22 UHF Transmitters
6 ea. AN/GRR-24 UHF Receivers

Operation and maintenance is accomplished by on-site civilian service personnel. Intermediate level maintenance is provided by MCAS Cherry Point.

(3) Facilities

1 ea. 120-foot by 40-foot maintenance building of metal construction
IOC: 1972

6 ea. 35-foot spotting towers of wooden construction mounted on metal frames. Tower No. 6 serves as the range control center and houses the communication and instrumentation systems.
IOC: Unknown

Operation and maintenance is accomplished by on-site civil service personnel.

(4) Electrical Power

3 ea. 60 kW, three-phase, 60 Hz motor generators
8 ea. 30 kW, three-phase, 60 Hz motor generators

6. Townsend Range (R-3007)

a. Range/Area Boundaries/Access

Townsend Range is an instrumented range located 44 NMI southwest of Savannah TACAN, Channel 74, bearing 215°. This range is located in area R-3007. R-3007 is divided into 5 areas with altitude restrictions as follows: A, from 1500 feet AGL to 5000 feet MSL; B, from 500 feet AGL to 5000 feet MSL; C, from 100 feet AGL to 13,000 feet MSL; D, from 1200 feet AGL to 13,000 feet MSL; and E, from surface to 13,000 feet MSL.

b. Exercises/Ordnance

Townsend Range is used for air-to-ground bombing, rocket, and strafing exercises. Ordnance is limited to MK 76 and BDU 33, MK 106, inert 2.75" FFARs, and ball ammunition. The SAM site and bus targets are considered safe for laser operations. Additional training aids are available from the scheduling activity. These include Anti-aircraft Artillery (AAA) and Suface-to-Air Missile (SAM) threat simulators, Smokey Sam and Smokey Flak simulators. Chaff is authorized. See CRTCR 50-46 for details.

c. Targets

Townsend Range consists of a conventional bull's-eye with concentric circles of 23 meters and 46 meters; SAM site; command post; heavy weight targets and moving targets, these are scored by a WISS. Three strafe targets are scored by an acoustical scorer. See Figure VI.F-3. Other "No Drop" targets such as Infrared (IR) convoys, Electro-Optical (EO) convoy and moving targets are available.

d. Range Availability

Townsend Range is available Monday and Friday 0820 to 1520; Tuesday, Wednesday and Thursday 0820 to 1620 (EST). All other times by NOTAM with at least 24-hour notice.

e. Range Instrumentation

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 3/86

Operation is accomplished by military personnel. Maintenance is accomplished by contractor personnel.

1 ea. DA-3H Strafe Scoring System
IOC: Unknown

Operation and maintenance is accomplished by on-site military personnel.

7. Warning Area 122 (W-122)

a. Range/Area Boundaries/Access

W-122 is special-use surface and airspace of North Carolina and is located approximately 30 NMI southeast of the MCAS Cherry Point TACAN, Channel 75, bearing 130°. See Figure VI.F-1. W-122 extends from surface to unlimited altitude.

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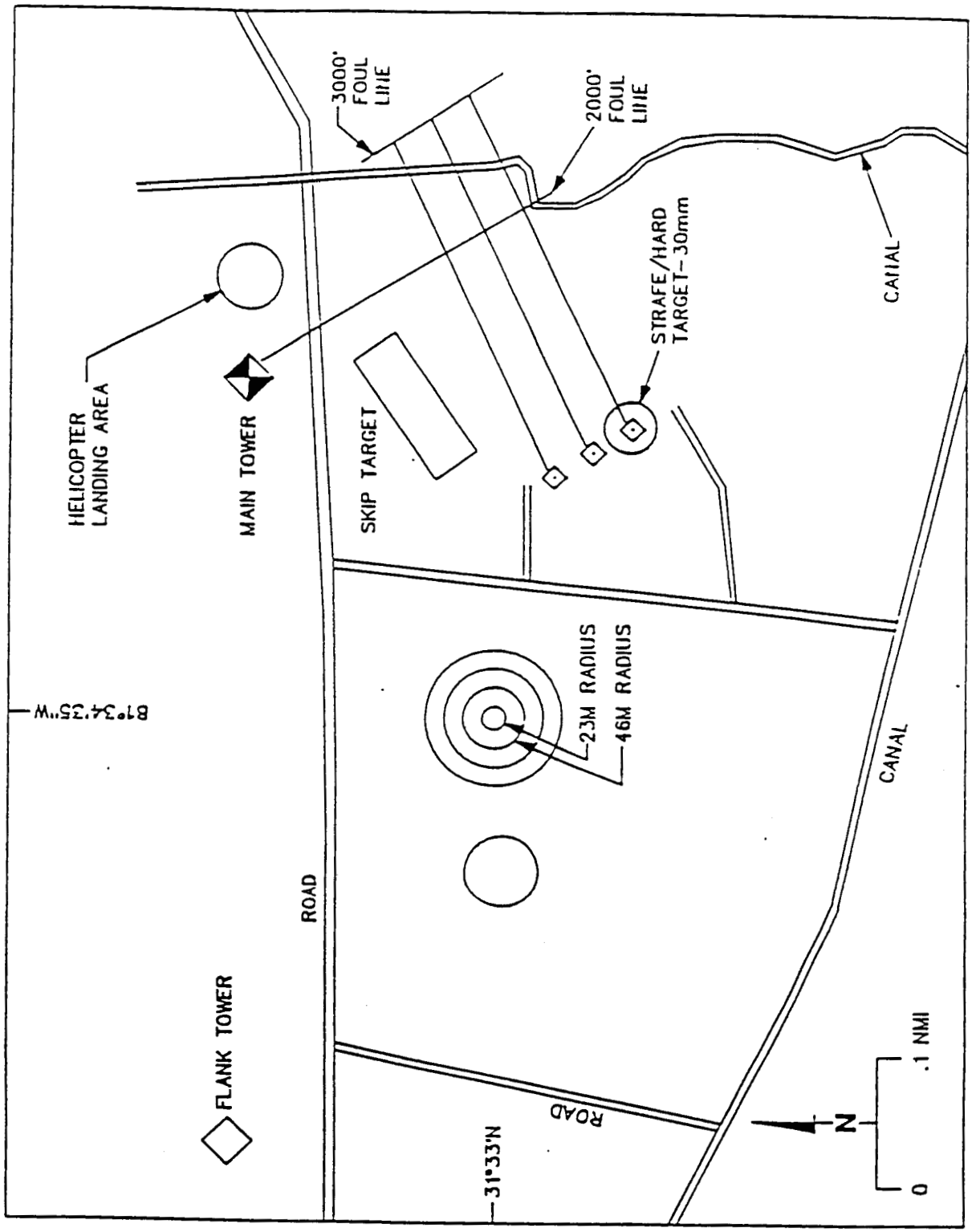

FIGURE VI.F-3 TOWNSEND RANGE

b. Exercises/Ordnance

W-122 is used for air-to-air gunnery and missiles, air combat maneuvering, supersonic training, and surface-to-air gunnery and missile exercises. Conventional ordnance is authorized.

c. Targets

Targets are arranged and/or supplied by user.

d. Range Availability

W-122 is available intermittently as scheduled.

8. Cherry Point TACTS

a. Range/Area Boundaries/Access.

The Cherry Point TACTS basic operating area is within restricted area R-5306A. Limited tracking capability exists in the W-122 area offshore for aerial combat maneuvering (ACM). the TACTS Debrief Facility (Building 4280) is located at MCAS Cherry Point.

b. Exercises/Ordnance

The Cherry Point TACTS provides aircrew training and performance evaluation in ACM, air-to-ground weapons delivery (No Drop Weapons Scoring-NDWS), and electronic warfare (EW), including anti-radiation missile (ARM) training. The Mid-Atlantic Electronic Warfare Range (MAEWR), collocated with TACTS, provides a mix of manned and unmanned EW threat emitters (AAA and SAM) and shoulder-fired infrared (IR) threats. EW threat sites are located at BT-11 (Piney Island) and MCOLF Atlantic, both within R-5306A. Additional information on TACTS and MAEWR is continued in appendix A.

c. Targets

The BT-11 complex provides a wide variety of targets that are TACTS-scoreable. BT-9, just north of BT-11, provides water-based targets which are also TACTS scoreable. The BT-11 complex also offers laser certified targets, moving land and sea targets, and Weapons Impact Scoring Set (WISS) scoring for conventional (inert only) weapons delivery (BT-9 also).

d. Range Availability/Resources

(1) Instrumentation

1 ea. AN/USQ-T(V) Tactical Aircrew Combat Training System with 3 Display and Debriefing Subsystems (DDS). Two DDS's have Large Screen Displays (LSD) in a theater setting. Three additional DDS's are being procured and the Cherry Point and Oceana TACTS ranges are scheduled to be linked into a single TACTS range with seamless tracking from the Oceana to the Cherry Point

TACTS operating area, ultimately to include coverage of operating areas at MCB Camp Lejeune. Cherry Point will also be the site of a Large Area Tracking Range (LATR), which will provide tracking capability for surface ships and aircraft over a 500 nm radius. LATR displays will be incorporated into TACTS in the near future.

Operation and maintenance of TACTS, EW, and supporting range assets is accomplished on-site by a mix of contractor, civil service, and military personnel. The Naval Warfare Assessment Center Detachment (NWAC DET) DSN 582-4295/comm (919) 466-4295, can provide detailed briefs and mission planning assistance.

(2) Communications

TACTS and EW data are transmitted from remote sites back to the TACTS Debrief Facility at MCAS Cherry Point by a complex fiber optic and microwave data link system. Ground-to-air communication is accomplished by 5 VHF/UHF radios located at BT-11 and remoted back to the DDS consoles.

(3) Facilities

TACTS Debrief Facility (houses CCS and DDS)
MCAS Cherry Point Pod Shop
MCOLF Atlantic Maintenance Facility
BT-11 Maintenance Facility
Threat Sites
- MCOLF Atlantic
  - SA-2BF/CE (manned)
  - SA-3 (manned)
  - SA-6 (manned)
  - COMM Jammer (manned)
- BT-11
  - AAA (manned)
  - SA-2CE (manned)
  - J-Band Jammer (manned)
  - SA-8 (manned)
  - AAA/SA-8 (manned)
  - 4-AAA/SA-8/SA-N-4 Threat Radar Emitter Simulators (TRES) (unmanned, TACTS integrated)

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office Beaufort, SC (Host UIC 60169)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance delivies, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debreifing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Eastern South Carolina

c. Distance from the range to the activity's headquarters facility (main site).

2,200 miles

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot view display.

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office Beaufort, SC (Host UIC 60169)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance delivies, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debreifing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Eastern South Carolina

c. Distance from the range to the activity's headquarters facility (main site).

2,200 miles

TAB C
Page ___ of ___
UIC: 64267

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot view display.

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Field Office Cecil Field, FL (Host UIC 30504)
Range Nomenclature or Title	Tactical Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat maneuvering, simulated air-to-ground ordnance delivies, simulated mine-laying, simulated anti-radiation missile employment and Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This is accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentation Subsystems (TIS), and the AIS into a closed-loop system. The Display Debreifing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

North Florida

c. Distance from the range to the activity's headquarters facility (main site).

2,000 miles

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d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Time, space, and event instrumentation

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot view display.

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

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m. What were the actual hours that this range was utilized in FY1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

SECTION VI.H

EASTERN CONTINENTAL UNITED STATES

I. JACKSONVILLE COMPLEX

A. Area Operating Manual

Information contained herein is based upon the Commander in Chief, U.S. Atlantic Fleet Instruction 3120.26 and the Fleet Area Control and Surveillance Facility, Jacksonville Instruction 3000.1. Further detailed information may be found in these instructions.

B. General Description

The Jacksonville complex is located in the coastal waters adjacent to the Georgia and Florida coast and the central Florida peninsula. See Figures VI.H-1 and VI.H-1A. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The complex is composed of the following ranges/areas:

1. Rodman Target (R-2906)
2. Lake George Complex Targets (R-2907A/B)
3. Pinecastle Complex Targets (R-2910)
4. Warning Area 157 (W-157)
5. Warning Area 158 (W-158)
6. Warning Area 159 (W-159)
7. Gator Low Military Operating Area (MOA)
8. Live Oak Military Operating Area (MOA)
9. Palatka Military Operating Areas (MOAS) One and Two
10. Beaufort TACTS (W-157A)

C. Command Structure

1. Scheduling Authority:	Commanding Officer Fleet Area Control and Surveillance Facility P.O. Box 40, Naval Air Station Jacksonville, FL 32212-0400 (FACSFAC, Jacksonville) AUTOVON: 942-2551
2. Scheduling Activity:	Same as Scheduling Authority
3. Resource Manager: Range/Target Areas	Officer in Charge Naval Air Station, Cecil Field, Detachment Astor P.O. Box 84 Astor, FL 32102-0084 AUTOVON: 860-5456/5457

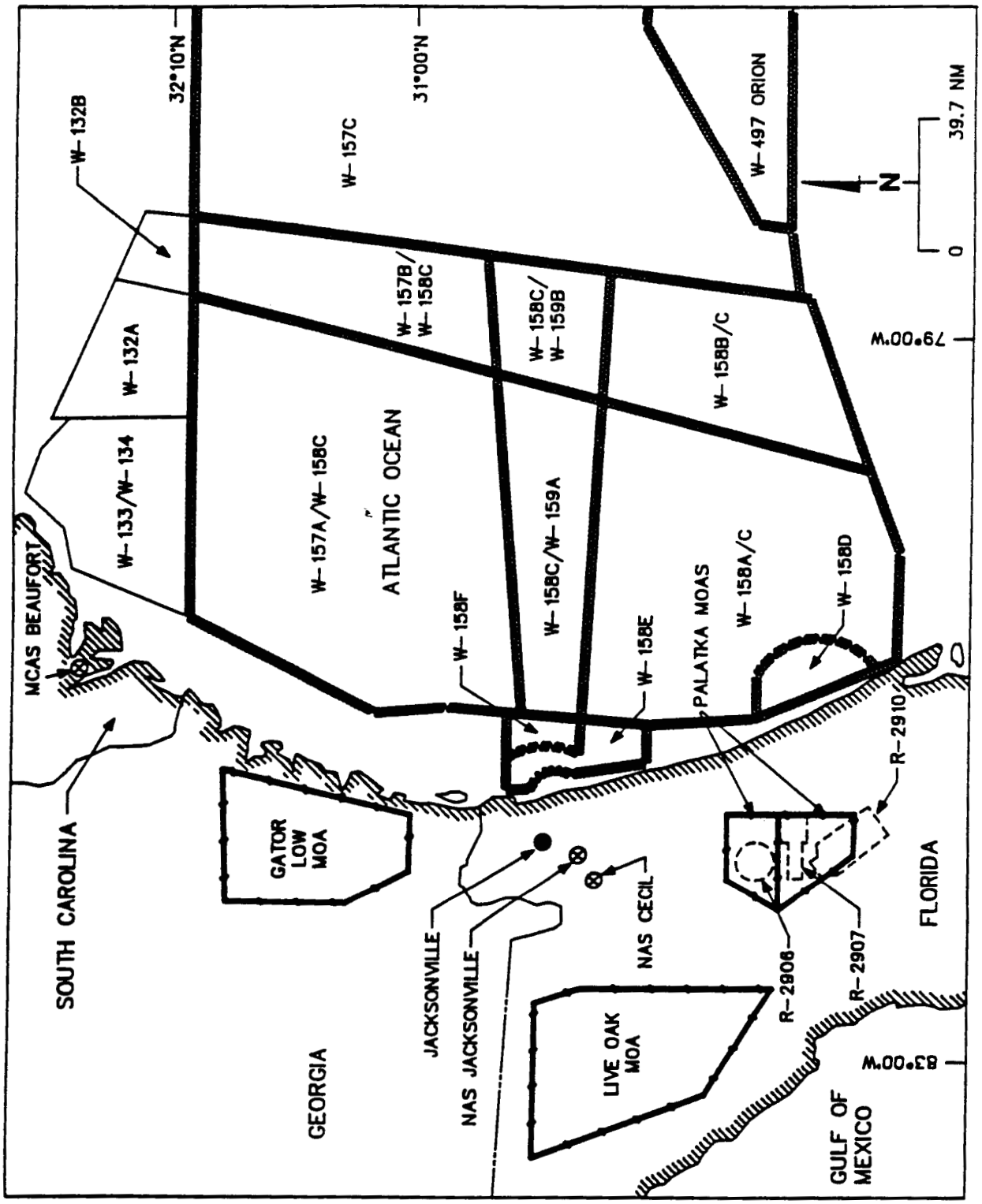

FIGURE VI.H-1 JACKSONVILLE COMPLEX

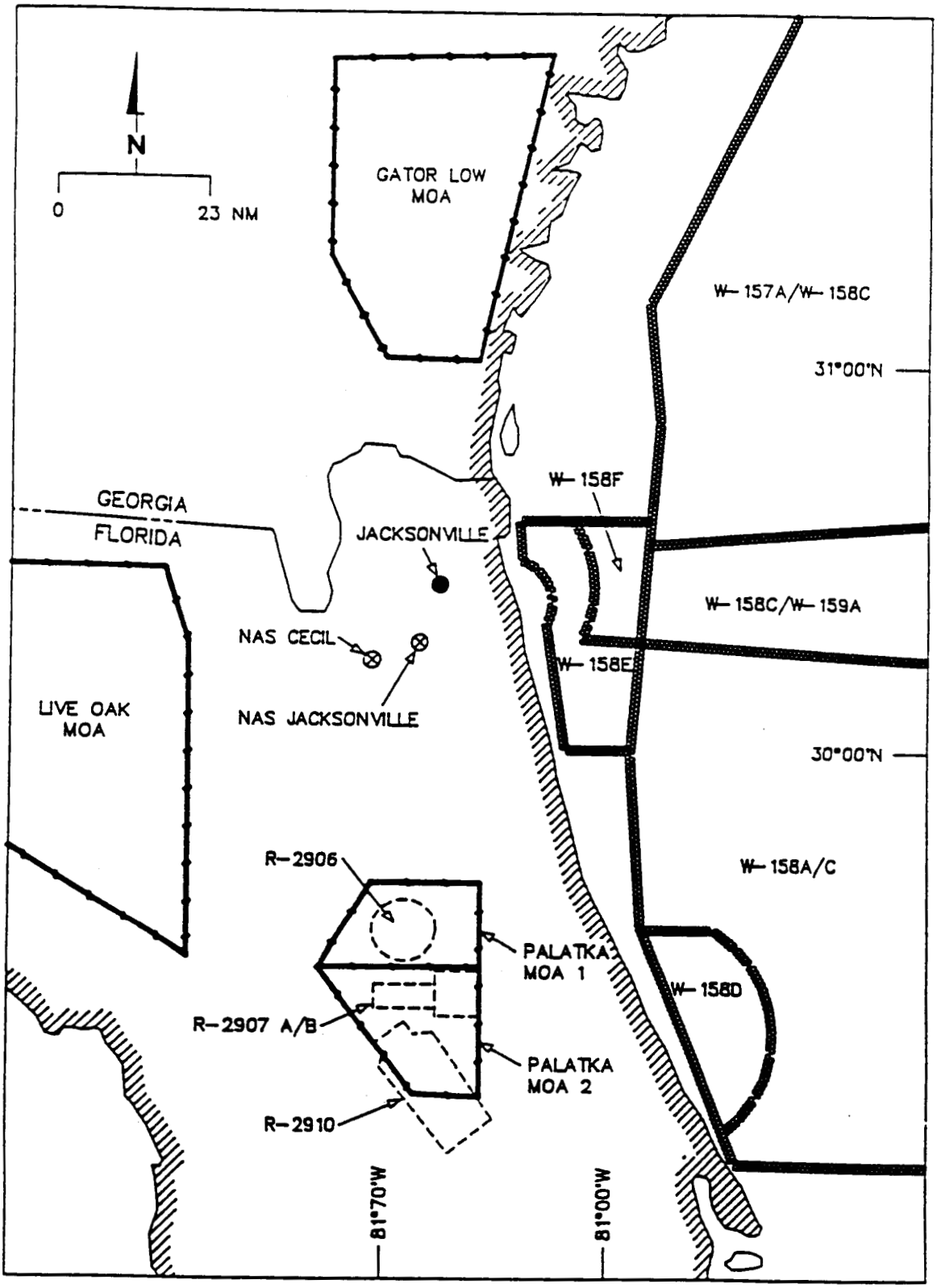

FIGURE VI.H-1A CENTRAL JACKSONVILLE COMPLEX

TACTS Range (North)	Commander Marine Air Group Three One (MA-G-31) MCAS Beaufort, SC. 29902 AUTOVON: 832-7129
TACTS Range (South)	Commander Strike Fighter Wings Atlantic (CSFWL) NAS Cecil Field, FL 32215 AUTOVON: 860-6571

D. Geography and Characteristics of Range/Target Areas

1. Rodman Target (R-2906)

a. Range/Area Boundaries/Access

Rodman Target (R-2906) is a day/night rocket/practice and day strafing target located 45 NMI south of the NAS Cecil Field TACAN, Channel 88, bearing 170°. R-2906 extends from the-surface up to FL140. Access to the range is by surfaced road. Access to the targets is by dirt road. See Figure VI.H-2.

b. Exercises/Ordnance

Air-to-ground exercises using inert ordnance are authorized. Only MK 76/106 practice bombs, 2.75" FFARs with inert heads, and ball ammunition are permitted. See FACSFACJAXINST 3000.1 for details.

c. Targets

(1) Conventional Bull. The target consists of a bull's-eye made up of surplus military equipment surrounded by two concentric rings of 50- and 100 feet radii. The target is scored by a WISS. Practice bombs and 2.75" inert rockets are authorized.

(2) Strafe Target. One 12-foot by 18-foot strafing banner is located next to the Conventional Bull. The Strafe Target is scored by an SSS-101 Strafe Scoring System. Ball ammo up to 30MM is authorized.

d. Range Availability

Rodman Target is available Monday through Saturday from 0800 to 2300.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 6/85

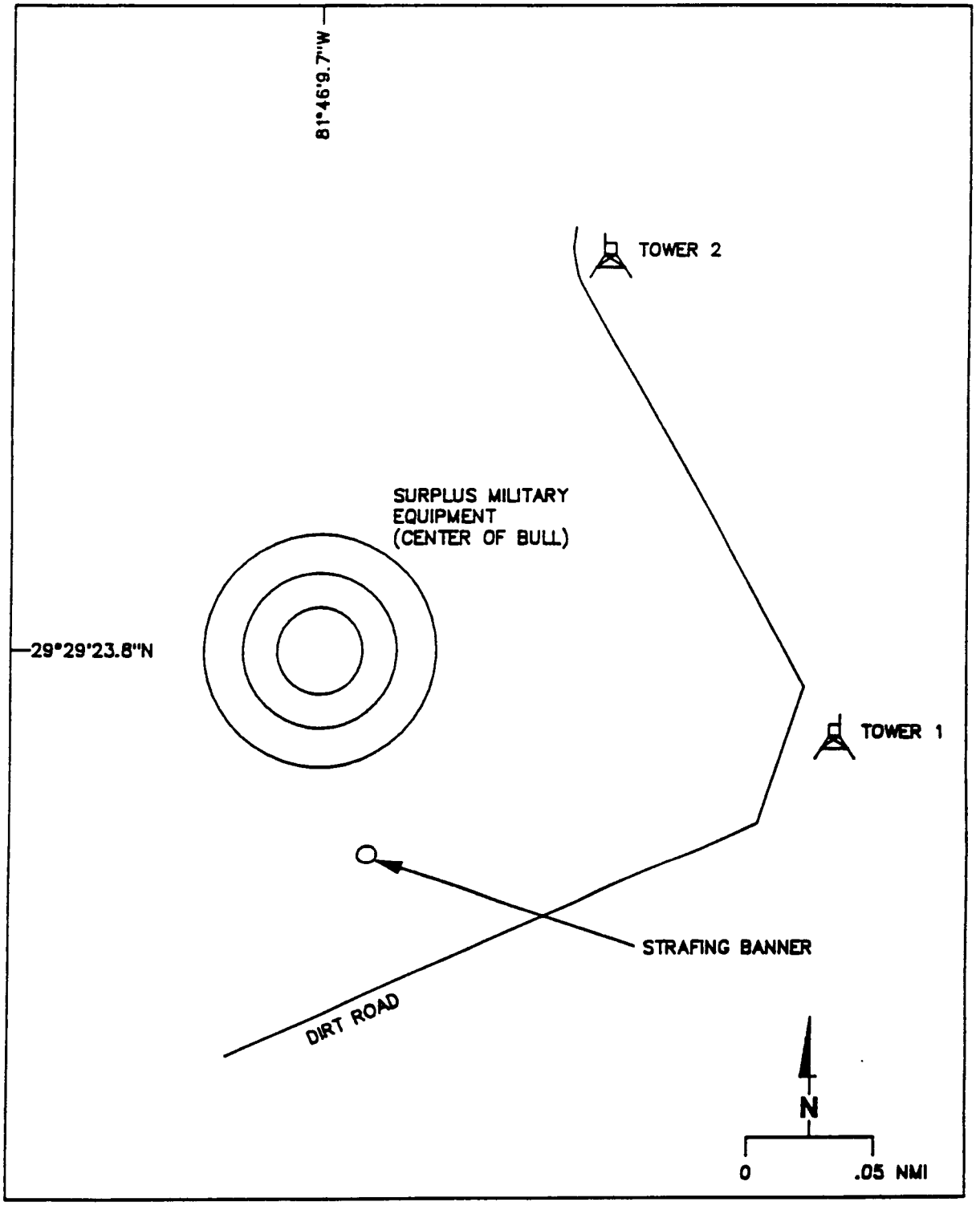

FIGURE VI.H-2 RODMAN TARGET

Operation is accomplished by military personnel. Maintenance is accomplished by contractor personnel.

The WISS scoring is accomplished remotely at ROC. Additional information on the WISS is contained in Appendix A.

1 ea. SSS-101 Strafe Scoring System
IOC: FY88

Operation is accomplished by military personnel. Maintenance is accomplished by contractor personnel.

Strafe scoring is accomplished at Tower No. 1. Additional information of the Strafe Scoring System is contained in Appendix A.

(2) Communications

1 ea. AN/GRC-171 UHF Transceiver

Operation is accomplished by military personnel. Maintenance is accomplished by contractor personnel.

(3) Facilities

2 ea. 33-foot spotting towers of metal construction.
1 ea. 25-foot by 40-foot Butler building used for maintenance and supply spaces.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used at Rodman Target.

2. Lake George Target (R-2907A/B)

a. Range/Area Boundaries/Access

Lake George Target (R-2907A/B) consists of a roughly rectangular water surface area approximately 2 NMI wide by 7 NMI long. Within its boundaries are three established target areas and a Minex area. The target is located approximately 55 NMI southeast of the NAS Cecil Field TACAN, Channel 88, bearing 165°. R-2907A/B extends from the surface up to FL230 (Normally scheduled to 13,000 feet MSL unless otherwise requested). Access to the range is by a surfaced road. Access to the targets is by boat. See Figure VI.H-3.

b. Exercises/Ordnance

Day and night air-to-ground exercises using inert ordnance, flares, searchlights, and photoflash are authorized. Live ordnance is prohibited. See FACSFACJAXINST 3000.1 for details.

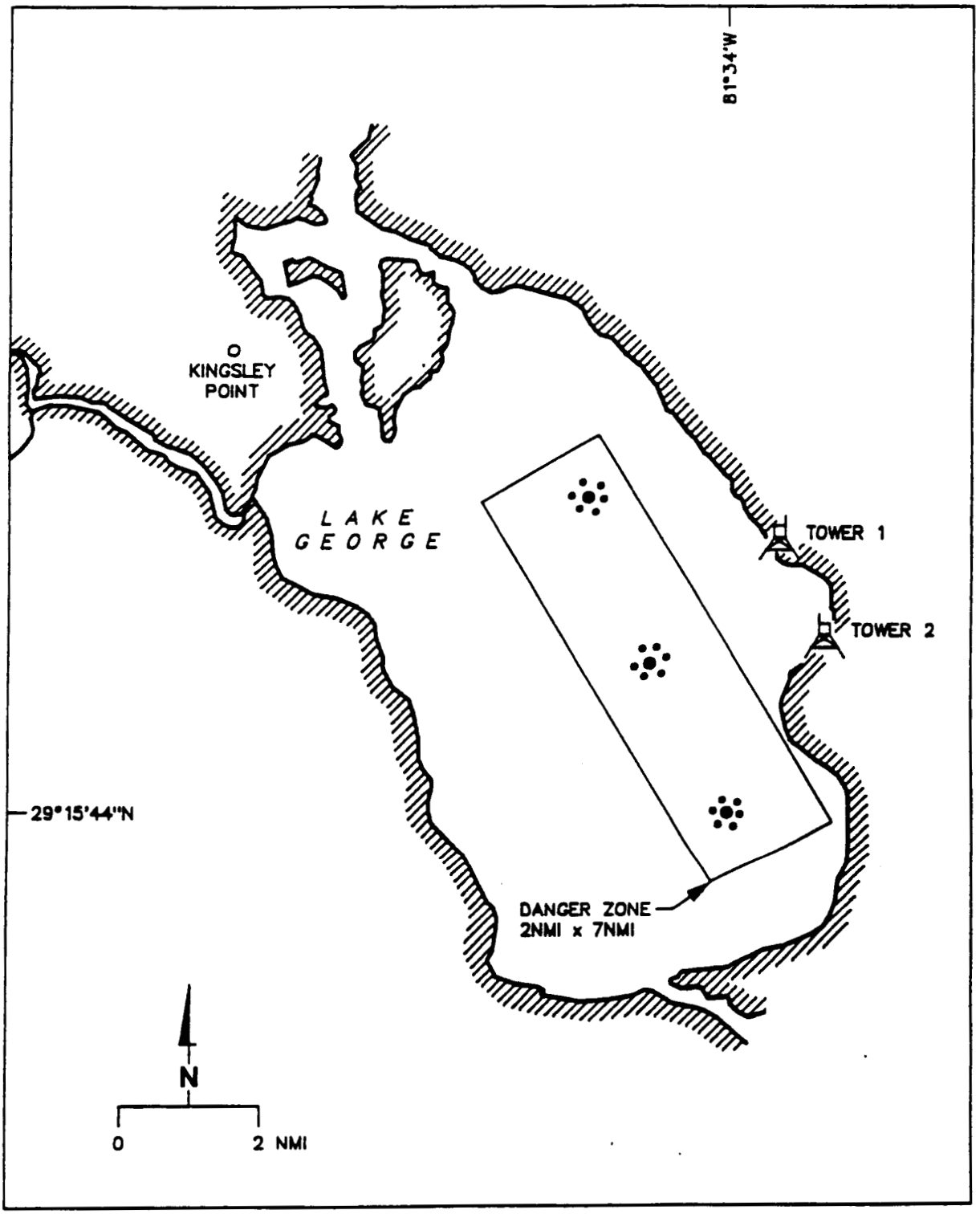

FIGURE VI.H-3 LAKE GEORGE TARGET (R-2907 A&B)

c. Targets

Three targets and a practice mine laying range are located at Lake George. SEPTAR boats are available by prior request to Commanding Officer, Fleet Composite Squadron, Six, (FLECOMPRON SIX, VC-6) (see sub-paragraph (5) below).

(1) Northern Target. The Northern Target consists of pilings in a 24-foot square with nine corner radar reflectors to be used for low-altitude radar bombing and searchlight illumination practice. The target is surrounded by one concentric ring of pilings with a 900-foot radius. Scoring is not available on this target. Practice bombs and inert MK 80 series are authorized.

(2) Center Target. The Center Target consists of a sled constructed of surplus drop tanks with a platform-mounted radar reflector surrounded by three concentric rings of 250-, 500-, and 1000-foot radii. This target is remotely scored by WISS. (See Figure VI.H-3). Practice bombs, inert MK 80 series inert rockets up to 5", and paraflares are authorized.

(3) Southern Target. The Southern Target consists of a rectangular area (approximately 30 by 60 feet) outlined by six pilings surrounded by three concentric rings of 250-, 500-, and 1000-foot radii. Scoring is not available on this target. Practice bombs and inert MK 80 series are authorized.

(4) MINEX Range. Consists of four pre-planned splash points on a 130° bearing from Kingsley Point. MINEX is scored by WISS. Practice bombs and inert MK 80 Series bombs are authorized.

(5) Sea-borne Powered Targets (SEPTARs). SEPTARs are available as arranged through (VC-6), Naval Air Station, Norfolk, Virginia, AUTOVON: 690-4575. Targets are QST-33/35 SEPTARs, which are employed within the 2 NMI by 7 NMI surface danger area.

The QST-33 SEPTARs are highly maneuverable, remotely controlled, self-propelled fiberglass boats used as moving targets for inert rocket and bombing practice. The QST-33 SEPTAR is 18 feet long, and the QST-35 SEPTAR is 55 feet long. The QST-35's maneuverability closely resembles that of the "KOMAR" class missile boats.

Control of the SEPTARs is accomplished from the spotting tower by means of the AN/ARW-80 Target Control Set.

d. Range Availability

Lake George is available Monday through Saturday from 0800 to 1700 and daily from 0700 to 2300 for night training with searchlight or flare-drops.

e. Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 6/85

Operation is accomplished by on-site military personnel. Maintenance is accomplished by contractor personnel.

WISS scoring is accomplished remotely at the ROC. Additional information on WISS is contained in Appendix A.

(2) Communications

1 ea. AN/GRC-171 UHF Transceiver

Operation is accomplished by military personnel. Maintenance is accomplished by contractor personnel.

(3) Facilities

2 ea. Spotting towers of metal construction located on the eastern shore of Lake George. (See Figure VI.H-3).

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz, three-phase power is used at the Lake George target.

3. Pinecastle Complex Targets (R-2910)

a. Range/Area Boundaries/Access

The Pinecastle Complex is a day-night, live and inert ordnance delivery area located approximately 80 NMI south of the NAS Cecil Field TACAN, Channel 88, bearing 170°. R-2910 extends from the surface up to FL230. Access to the range is by surfaced road or helicopter. Access to the targets is by dirt road. See Figure VI.H-4.

b. Exercises/Ordnance

All air-to-ground exercises using conventional ordnance up to and including 500-pound MK 82 bombs and 5" Zuni rockets are authorized. Napalm and High Explosive Incendiary (HEI) are prohibited. Live ordnance is restricted to the Live Ordnance Impact Area; inert ordnance is used on all other targets. Pinecastle targets have been certified for laser operations. See FACSFACJAXINST 3000.1 for details.

c. Targets

There are 9 targets within the Pinecastle Complex.

(1) Live Ordnance Impact Area. Targets in impact area consist of vehicle bulks, forming a "T". The live impact area is scored by WISS. It must be scheduled a minimum of

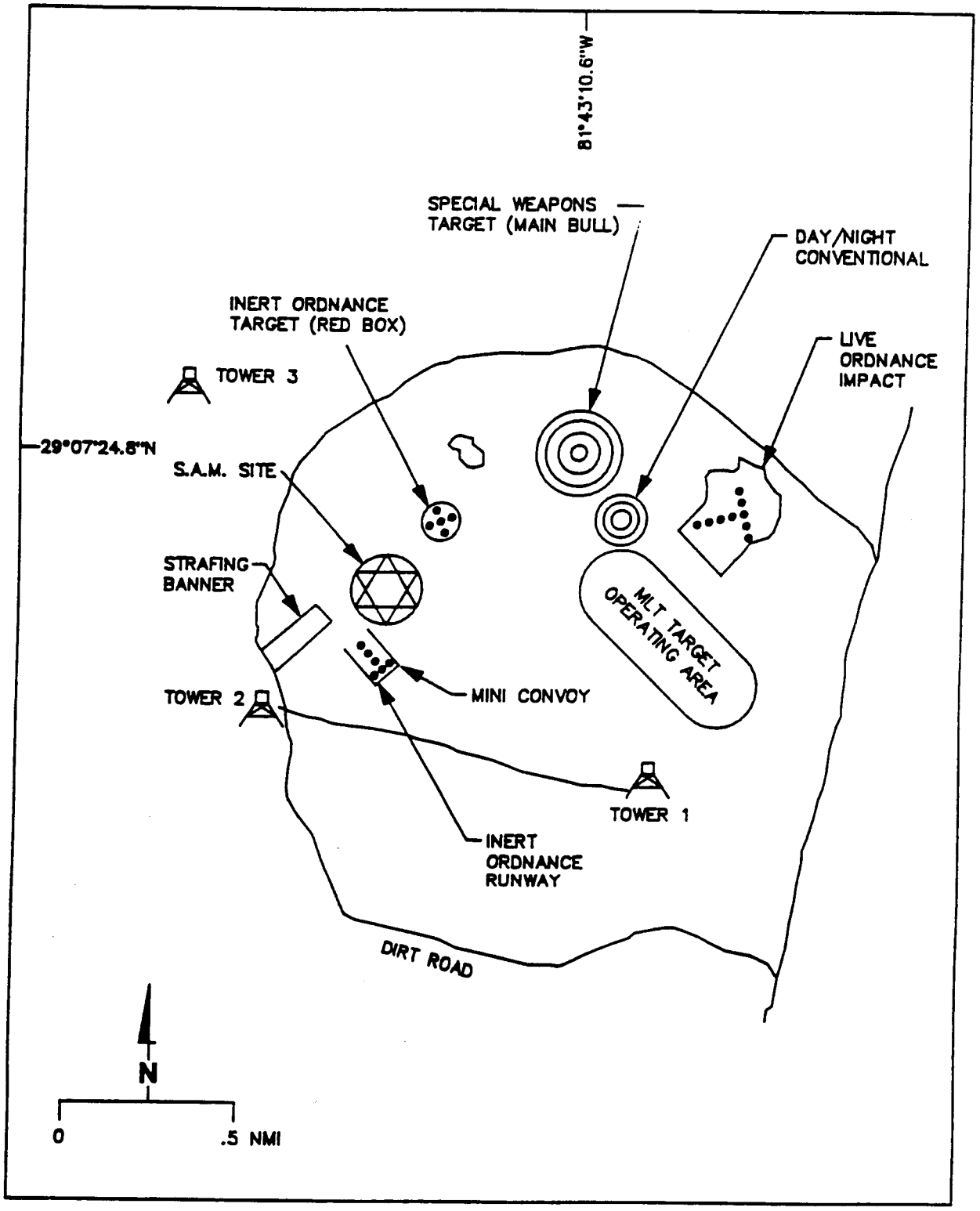

FIGURE VI.H-4 PINECASTLE TARGET COMPLEX (R-2910)

three working days prior to desired time. Maximum 500 pound general purpose or explosive equivalent, ball ammo up to 30MM, rockets up to 5", and practice bombs are authorized.

(2) Main Bull (Special Weapons Bombing Target). The Main Bull consists of four concentric circles of 300-, 600-, 900-, and 1200 feet radii, encompassing a bull's-eye constructed of two 75-foot poles and two 90-foot poles with two radar reflectors and top mounted banners. The center of the bull's-eye is clear of vegetation out to 450 feet from the center pole with two rings of tires at 50- and 200 feet radii from the center pole. Additional radar reflectors are located on the 317° run-in-line, 6000 feet short of and 3800 feet beyond bull's-eye. Elevated black and white Initial Point (IP) markers situated on the 317° run-in line at 6000-foot intervals from 36,000 feet short to 6000 feet beyond target center. The Main Bull is remotely scored by WISS. Practice bombs and Bomb Dummy Unit/Operational Readiness Test/Operational Suitability Test (BDU/ORT/OST) weapons are authorized. No ordnance is allowed when recoverable BDU's are on target.

(3) Day Conventional Dive Bomb/Rocket Target. The target consists of a surplus military vehicle bull's-eye and four concentric tire rings of 50-, 100-, 200- and 300 feet radii. This target is equipped with an integral lighting system for night bombing exercises. Twelve radar reflectors are placed in clock positions at 400 feet. Only practice bombs are authorized on this target.

(4) SAM Site Target. This target resembles a Star of David with a circular service road encompassing the reverted radar and surrounding missile launcher pads. This target is not scored. Practice bombs, inert MK 80 series bombs, and inert rockets up to 5" are authorized.

(5) Strafing Target. The strafing target consists of tow banner material suspended on the face of a berm and is remotely scored by SSS-101 Strafe Scoring System located at the ROC. Ball ammo up to 30MM is authorized.

(6) Inert Ordnance Runway. This target consists of a mock runway (13-31) situated 040° from Tower No. 2, and 3,600 feet 205° from the Main Bull. This target is not scored. Practice bombs, inert MK 80 series bombs, and inert rockets up to 5" are authorized.

(7) Red Box Target. This target consists of four red tanks positioned to form a square with a radar unit in the center. The target is located 1700/233° from the Main Bull. The square of tanks is within a 200-foot radius circle. The target is remotely scored by WISS. Practice bombs, inert MK 80 series bombs, and inert rockets up to 5" are authorized.

(8) Mini Convoy. This target consists of various small vehicles situated approximately 800 meters 150° from the Main Bull, 750 meters 020° from spotting Tower No. 1. The target is not scored.

(9) Laser Target. This target is a 50 feet X 50 feet billboard with a painted black crosshair. This target is located 3,000 feet north of Tower 1. A laser sensor is positioned in the center of the crosshair. Continuous automatic scoring is available on frequency 359.4. Cassette tape scoring results are available with a 15-minute advanced notice. This target provides no drop LGB training.

d. Range Availability

The Pinecastle Complex is available daily from 0800 to 2300.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 6/85

Operation is accomplished by military personnel. Maintenance is performed by contractor personnel.

WISS scoring is accomplished remotely at the ROC. The WISS cameras are located at Towers No. 1 and No. 2. Additional information on WISS is contained in Appendix A.

1 ea. SSS-101 Strafe Scoring System
IOC: FY86

Operation is accomplished by military personnel. Maintenance is accomplished by contractor personnel.

The SSS-101 Strafe Scoring System provides the capability to score gun projectile impacts in a predetermined scorable area and display the results at the ROC. The scoring results are passed to aircrews by UHF communications. Additional information on the SSS-101 is contained in Appendix A.

1 ea. AN/UEQ-T1 Laser Evaluator System (LES)
IOC: 07/89

1 ea. AN/FXH-T1 Laser Spot Video Recording System (LSVRS)
IOC: 07/89

1 ea. AN/GAQ-T1 Laser Designator/Simulator System (LDSS)
IOC: 05/92

Intermediate and Depot Level Maintenance performed by NAWCWPNS, Point Mugu, CA.

Operation of the Laser Training Systems (LTS) equipment is performed by range contractor personnel.

See Appendix A under LTS for equipment description and operational capabilities.

(2) Communications

4 ea. AN/GRT-22 UHF Transmitters
4 ea. AN/GRT-24 UHF Receivers
1 ea. G.E. Master II DC-56 RCS 56A VHF Transceiver

Operation and maintenance is accomplished by military personnel.

(3) Facilities

2 ea. Spotting towers of metal construction housing WISS cameras, Strafe Scoring System, and UHF communications equipment.

(4) Electrical Power. Commercial Shore 115/208 volt, 60 Hz, three-phase power is used.

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4. Warning Area 157 (W-157)

a. Range/Area Boundaries/Access

W-157 is special-use air, surface, and subsurface space in the open ocean located approximately 50 NMI northeast of the NAS Jacksonville TACAN, Channel 48, bearing 070°. See Figure VI.H-1. Warning Area 157A extends from the surface up to FL430; W-157B, from the surface up to FL240; and W-157C, from the surface up to 5000 feet MSL.

b. Exercises/Ordnance

All air and surface gunnery and missile exercises using conventional ordnance are authorized. Antisubmarine, ASROC, TACTS and torpedo exercises are also conducted.

c. Targets

Targets are requested and/or supplied by the user.

d. Range Availability

W-157A/B/C are available upon request.

5. Warning Area 158 (W-158)

a. Range/Area Boundaries/Access

W-158 is special-use air, surface, and subsurface space in the open ocean located approximately 50 NMI southeast of the NAS Jacksonville TACAN, Channel 48, bearing 080°. See Figure VI.H-1. W-158A extends from the surface up to FL430; W-158B, from the surface up to FL240; W-158C, from FL430 up to unlimited altitude; W-158D, from 1200 feet MSL up to FL120; W-158E, from the surface up to 1200 feet MSL; and W-158F, from 1200 feet MSL up to 1700 feet MSL. W-158C overlies W-157A/B, W-158A/B, and W-159A/B.

b. Exercises/Ordnance

All air and surface gunnery and missile exercises using conventional ordnance are authorized. Antisubmarine, ASROC, and torpedo exercises are also conducted. Air and surface exercises using ordnance are not normally authorized in the W-158E and W-158F areas.

c. Targets

Targets are requested and/or supplied by the user.

d. Range Availability

W-158A/B/C/D/E/F are available upon request.

6. Warning Area 159 (W-159)

a. Range/Area Boundaries/Access

W-159 is special-use air, surface, and subsurface space in the open ocean located approximately 35 NMI east of the NAS Jacksonville TACAN, Channel 48, bearing 070°. See Figure VI.H-1. W-159A extends from the surface up to FL430, and W-159B extends from the surface up to FL240.

b. Exercises/Ordnance

Air and surface exercises using ordnance are not normally authorized in W-159A/B.

c. Targets

If ordnance is authorized, targets are requested and/or supplied by the user.

d. Range Availability

W-159A/B are available upon request.

7. Gator Low Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Gator Low MOA is special-use airspace located over southeastern Georgia approximately 70 NMI north of the NAS Cecil Field TACAN, Channel 88, bearing 360°. See Figure VI.H-1. The Gator Low MOA extends from 1400 - 18,000 feet MSL.

b. Exercises/Ordnance

The MOA is used for air combat maneuvering, instrument training, and other military flight exercises. No ordnance is authorized.

c. Targets

There are no targets in the MOA.

d. Range Availability

The Gator Low MOA is available continuously.

8. Live Oak Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Live Oak MOA is special-use airspace located over central Florida approximately 40 NMI southwest of the NAS Cecil Field TACAN, Channel 88, bearing 240°. See Figure VI.H-1. The Live Oak MOA extends from 8000 feet MSL to 18,000 feet MSL.

b. Exercises/Ordnance

The MOA is used for ACM, instrument training, and other military flight operations. No ordnance is authorized.

c. Targets

There are no targets in the Live Oak MOA.

d. Range Availability

The Live Oak MOA is available continuously.

9. Palatka Military Operating Areas (MOAs) One and Two

a. Range/Area Boundaries/Access

The Palatka MOAs are special-use airspaces located in central and northeast Florida. See Figure VI.H-IA. The Palatka 1 and 2 MOAs extend from 3000 feet above the ground up to, but not including, FL180, and they encompass the Pinecastle, Lake George, and Rodman Target complexes.

b. Exercises/Ordnance

The Palatka 1 and 2 MOAs are available to increase the volume of usable airspace associated with the Pinecastle, Lake George, and Rodman Targets.

c. Availability

The Palatka 1 and 2 MOAs must be scheduled in advance with FACSFAC, Jacksonville.

10. Beaufort Tactical Aircrew Combat Training System (TACTS)

a. Range/Area Boundaries/Access

The TACTS is a 36-aircraft, advanced aircrew training facility developed to enhance aircrew proficiency and evaluate aircrew effectiveness in a tactical ACM environment. TACTS consists of two master tracking towers and six remote towers located in W-157A. The TACTS range is located within Special Operating Areas (SOAs) 3X and 4X in W-157A. The range is divided into two distinct operating areas, the north range in SOA 3X and the south range in SOA 4X. The two ranges have the capability of being combined for large operations. The TACTS range is normally scheduled from 50 feet to FL430. Additionally, W-158C overlies W-157A and is available from FL430-unlimited.

b. Exercises/Ordnance

The TACTS range is normally used to enhance aircrew proficiency and evaluate aircrew effectiveness during ACM. SOAs 3X and 4X

are also available for non-TACTS ACM. Ordnance is not normally expended in SOAs 3X and 4X.

c. Targets

Targets are not normally required on the TACTS range.

d. Range Availability

SOAs 3X and 4X are available from FACSFACJAX upon request.

Each range will be available for forty-minute periods, seven days a week, from 0740 until 1620 during the months of November through February and 0740 until 1900 during the months of March through October. Debriefing periods are normally held one hour following completion of each live exercise.

e. Range Instrumentation/Resources

(1) Instrumentation. The TACTS CCS is located at MCAS Beaufort. A DDS is located at NAS Cecil Field. Appendix A contains additional information on TACTS.
IOC 1989

(2) Communications.

10 ea. AN/URC 101 Transceivers
IOC 1990

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Oceana, VA
Range Nomenclature or Title	TLM Station

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

Fleet Training and Operational Test Exercises

b. Geographic location of the range.

Virginia Capes Operating Area, Naval Air Station, Oceana, VA

c. Distance from the range to the activity's headquarters facility (main site).

2,351 miles

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host, Naval Air Station, Oceana, VA

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

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Reported by host Command

h. Instrumentation capability.

Full telemetry capability (missiles), and data links

i. Accuracy of tracking.

Reported by host Command

j. Data collection/replay capability.

Full telemetric parameter replay/display for all missiles and links

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY 1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

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To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

OCEANA TELEMETRY FIELD OFFICE DESCRIPTION AND CAPABILITIES

April 1994

Prepared By:
Naval Warfare Assessment Division
Performance Assessment Directorate
P.O. Box 5000
Corona, CA 91718-5000

NWAD

Naval Warfare Assessment Division

1.0 EXECUTIVE SUMMARY

1.1 Purpose

This document is intended to provide information concerning the capabilities and site characteristics of the Naval Warfare Assessment Division (NWAD) Telemetry Field Office located at Naval Air Station (NAS) Oceana, Virginia.

1.2 Field Office Mission

The NWAD Telemetry Field Office in Oceana is one of three currently active Field Offices which provide missile telemetry services to Fleet elements for both developmental programs and Fleet training exercises. The Field Office operates in concert with the Virginia Capes (VACAPES) Operating Area Coordinator for on-range exercises. The Field Office mission is to acquire, process, and display missile telemetry data from all telemetered missiles fired at VACAPES firing range.

1.3 Facility Description

The facility is located on the Naval Air Station where the Telemetry Field Office is a tenant activity housed in Building 210. Telemetry data acquisition is provided by two 10' UHF autotrack antennas and one VHF antenna located on a 40' tower near Building 210. Figure 1.1 shows the Oceana facility.

1.4 Operations and Instrumentation

Because the antennas at Oceana are at an elevation of only 50' above sea level, the radio horizon is approximatly 10 nm. This limits acquisition of pre-launch data from shipboard launchers to approximately that range. However, complete coverage of air-launched missiles or surface-launched missiles after launch is possible provided they maintain sufficient altitide to remain above the radio horizon. In practice, for every 10 nm increase in range from the Field Office to the missile being tracked, the missile altitude must increase 2,000' (e.g., 50 nm range, 5,000' altitude; 60 nm range, 7,000' altitude; 70 nm range, 9,000' altitude; etc.) (see Figure 1.2 which shows the VACAPES range). Although these altitudes considerably exceed those determined using standard earth curvature nomographs (or range equations), experience has shown that line-of-sight obstructions (trees, etc.) and certain radio wave propagation anomalies require more conservative altitude restrictions to assure reception of telemetry signals under almost allconditions. Fleet exercises require telemetry station instrumentation to support both air launched and surface launched missile firings. The telemetry station supports all telemetered missile firings by receiving telemetry signals from both missiles and targets (if required) in flight, recording telemetered data for future playback, and displaying data in real time to provide "quick look" analysis feedback to the Fleet or development activities as appropriate. Figure 1.3 illustrates the Field Office operations.

2.0 BACKGROUND

2.1 History

In July, 1969, the Naval Air Systems Command tasked and funded NWAD (then Fleet Missile Systems Analysis and Evaluation Group (FMSAEG)) to provide a telemetry station to support Navy missile firings in the Virginia Capes Operating Area. In April, 1971, an interim VHF telemetry station was installed at NAS Oceana. This system was utilized until completion of a new VHF system in February, 1972. In June, 1972, a UHF capability was added to the station. Continuing system modifications have been accomplished over the years to accommodate ever changing missile telemeter designs, which have required new systems development and implementation. This includes the transition from analog to digital systems. Currently, plans are underway to replace the current Field Office equipment with a new system developed under the Fleet Telemetry Station Development and Replacement Program (FTSDRP) (see reference a). The new system should be installed and operational by the end of FY 95.

2.2 Operational Commitment

The Oceana Telemetry Field Office is authorized by directives (see references b,c,d and e) and is directed and funded by NAVAIRSYSCOM (PMA 248) to provide telemetry support of Fleet missile firing exercises conducted on the VACAPES range. Telemetry data acquisition and processing operations must be capable of collecting the maximum amount of weapon system data while imposing minimum constraints on Fleet operations. Data results must be available to analysts both real time and near real time at the Field Office. After analysis, analytical results must be available to the Fleet commands in the shortest possible time.

3.0 FACILITIES AND INSTRUMENTATION DESCRIPTION

3.1 Facilities

The telemetry station at NAS Oceana is located in the northwest corner of Building 210, approximately 50 feet from the aircraft parking apron. Figure 1.1 is a photograph of the exterior of this facility showing the two 10-foot-diameter UHF autotrack antennas and the VHF antenna which is used to receive signals from any missiles which continue to use VHF telemetry. Figure 3.1 is a photograph of the interior of the facility. Facilities support is provided by NAS Oceana under a renewable Inter/Intra-Service Support Agreement (ISA), which is funded by NWAD.

3.2 Instrumentation Requirements and Specifications

3.2.1 Requirements

Telemetered missile firing exercises conducted on the VACAPES range require data acquisition, processing, and display instrumentation to support both air launched and surface launched missiles. The Field Office facilities and instrumentation can: (1) dynamically track both missiles and targets in flight, (2) record telemetered data for future playback, and (3) display data in real time to provide "quick look" analysis feedback to the Fleet in support of the exercises and programs conducted on the VACAPES range (see Table 1).

Table 1 - Exercises and Programs Supported by the Oceana Telemetry Field Office

Air-launched weapons systems verification

Annual Fleet training (air and surface)
- **Refresher training**
- **Fleet exercises**
- **Ship pre-deployment exercises**

RDT&E (backup only)
- **Contractor tests and evaluations**
- **Development Tests (DT)**
- **Technical Evaluations (TE)**
- **Operational Evaluations (OT)**
- **Follow-on Tests and Evaluations (FOT&E)**

Ship Qualifications (backup only)
- **Sea trials**
- **Combat System Ship Qualification Tests (CSSQT)**

Foreign Military Sales (backup only)
- **Evaluation acceptance rounds**

3.2.2 Specifications

Tables 2 and 3 describe the system specifications and capabilities.

Table 2 - Input Capabilities

Number of telemetry autotrack antennas		2
Radio horizon coverage (nm)		10
Frequency coverage (MHz)		
VHF		220-260
S-band		2200 - 2290
L-band		1760 - 1850
MDI-band		1435 - 1535
Data Quality (S/N)		15 db
Maximum telemeter data rates		
PCM		5 MBits/Sec
PAM		100 KCh/Sec
Number of PCM channels		1
Number of PAM channels	Limited to any combination	
Number of FM/FM channels	---------- 2	
Number of Doppler channels	of two (only two data buses)	
Range timing		IRIG-B/H

Table 3 - Output Capabilities

Analog recorders		
Number		2
Record characteristics		
Direct record bandwidth		
Lower limit		400 Hz
Upper limit		2 MHz
Number of tracks		14
Oscillograph Displays		
Number		2
Functions per display		
Analog	(Combined total)	
Discrete		16
Maximum chart speed		40 Inches/Sec
Pen Recorder Displays		
Number		8
Functions per display		
Analog		8
Discrete		8
Maximum chart speed		250 mm/Sec
Doppler Displays		
Number of flight Doppler systems		2
Number of intercept Doppler systems		1

3.3 Instrumentation Detailed Descriptions

3.3.1 Physical Layout

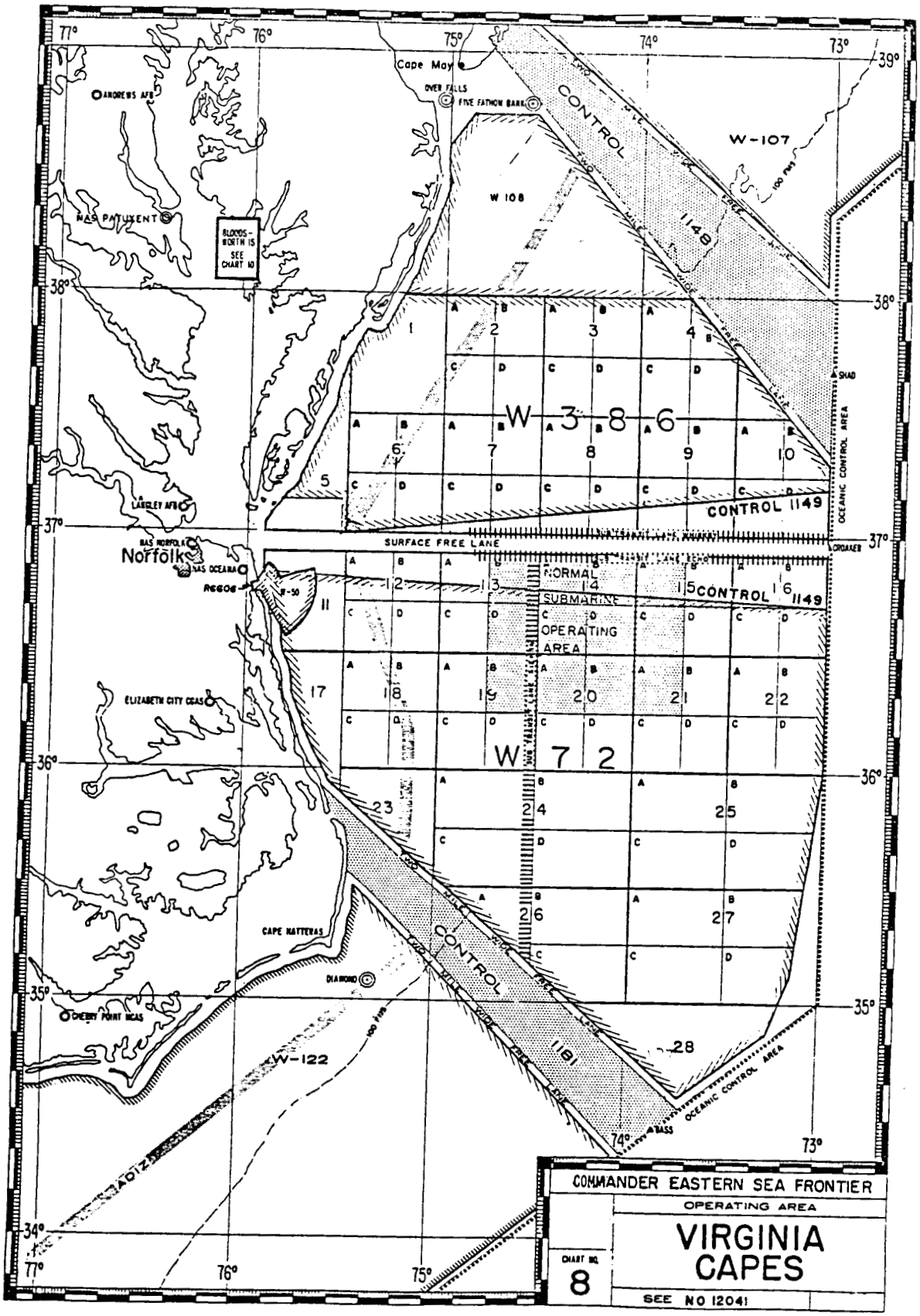
Figure 3.2 shows the floor plan of building 210, with rooms occupied by the Telemetry Field Office identified. Layout of the current telemetry equipment in Room 101 is also shown.

3.3.2 Subsystem Details

Figure 3.3 is a block diagram of the equipment.

3.3.2.1 Antenna Subsystem

There are two 10' autotrack UHF subsystems and one VHF antenna subsystem located at Oceana. Each subsystem performs the function of detecting the missile telemetry signal, tracking the signal throughout the flight to missile-target intercept, and providing the signal to the receiver subsystem. Signals can be received in the VHF telemetry band, and in the UHF frequency bands of 1435-1535 MHz (L), 1760-1850 MHz (MDI),and 2200-2290 MHz (Low-S). The UHF antenna beam width is approximately 3.0 degrees across the band. Signals are down-converted at the UHF antennas to minimize transmission losses. The antennas are based on a dual axis design to allow for tracking in both azimuth and elevation. Both Right Hand Circular (RHC) and Left Hand Circular (LHC) polarization


COMMANDER EASTERN SEA FRONTIER
OPERATING AREA
VIRGINIA CAPES
CHART NO. 8
SEE NO 12041
Cape May
OVER FALLS
FIVE FATHOM BANK
ANDREWS AFB
NAS PATUXENT
BLOODS-NORTH IS SEE CHART 10
W-107
W 108
CONTROL 1148
W-386
CONTROL 1149
SURFACE FREE LANE
OCEANIC CONTROL AREA
SHAD
CROAKER
LANGLEY AFB
NAS NORFOLK
Norfolk
NAS OCEANA
REGOS
NORMAL SUBMARINE OPERATING AREA
ELIZABETH CITY CGAS
W-72
CAPE HATTERAS
DIAMOND
CHERRY POINT MCAS
W-122
CONTROL 1181
BASS
AOTZ
77°
76°
75°
74°
73°
39°
38°
37°
36°
35°
34°

SECTION VI.E

EASTERN CONTINENTAL UNITED STATES

I. VIRGINIA CAPES COMPLEX

A. Operating Area Manual

Information contained herein is based upon the Commander in Chief, U.S. Atlantic Fleet Instruction 3120.26 and the Fleet Area Control and Surveillance Facility, Virginia Capes Instruction 3120.1. Further detailed information may be found in these instructions.

B. General Description

The Virginia Capes complex is located in the states of Maryland, Virginia, and North Carolina and their adjacent coastal waters. See Figures VI.E-1 and VI.E-1A. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The complex consists of the following targets/areas:

1. Palmetto Point Range (R-5302) Harvey Point
2. Stumpy Point Range (R-5313) Long Shoal Point
3. Navy Dare County Range (R-5314)
4. Dam Neck Range (R-6606)
5. Tangier Island Range (R-6609)
6. Warning Area 50 (W-50)
7. Warning Area 72 (W-72)
8. Warning Area 110 (W-110)
9. Oceana Tactical Aircrew Combat Training System (Oceana TACTS) Warning Area 72 (W-72)
10. Warning Area 386 (W-386)
11. Warning Area 387 (W-387)
12. Hatteras Military Operating Area (MOA)
13. Pamlico Military Operating Area (MOA)

C. Command Structure

1. Scheduling Authority: Commanding Officer
Fleet Area Control and Surveillance Facility,
Virginia Capes
Naval Air Station, Oceana
Virginia Beach, VA 23460
(FACSFAC VACAPES)
AUTOVON: 433-1218/1219

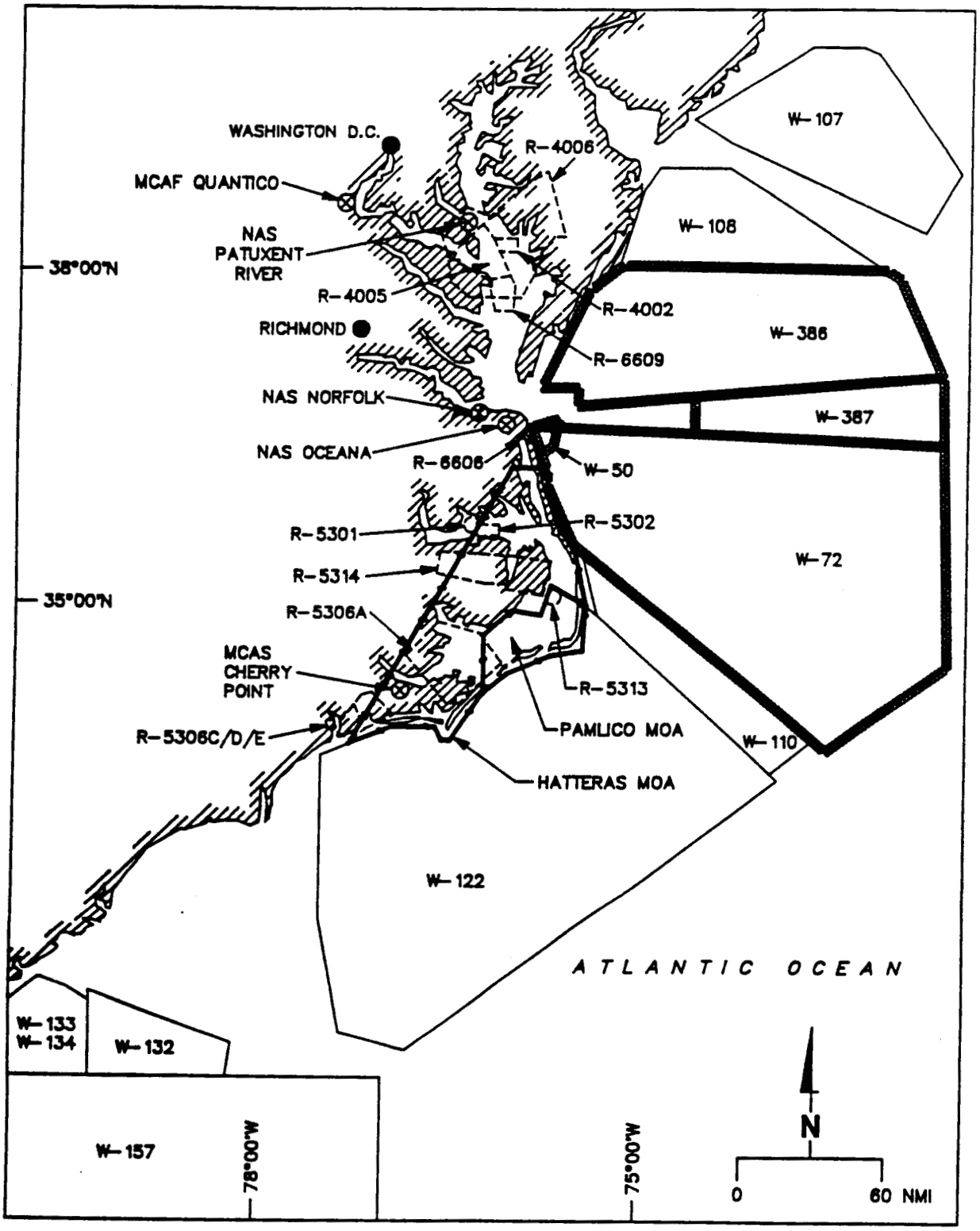


FIGURE VI.E-1 VIRGINIA CAPES COMPLEX

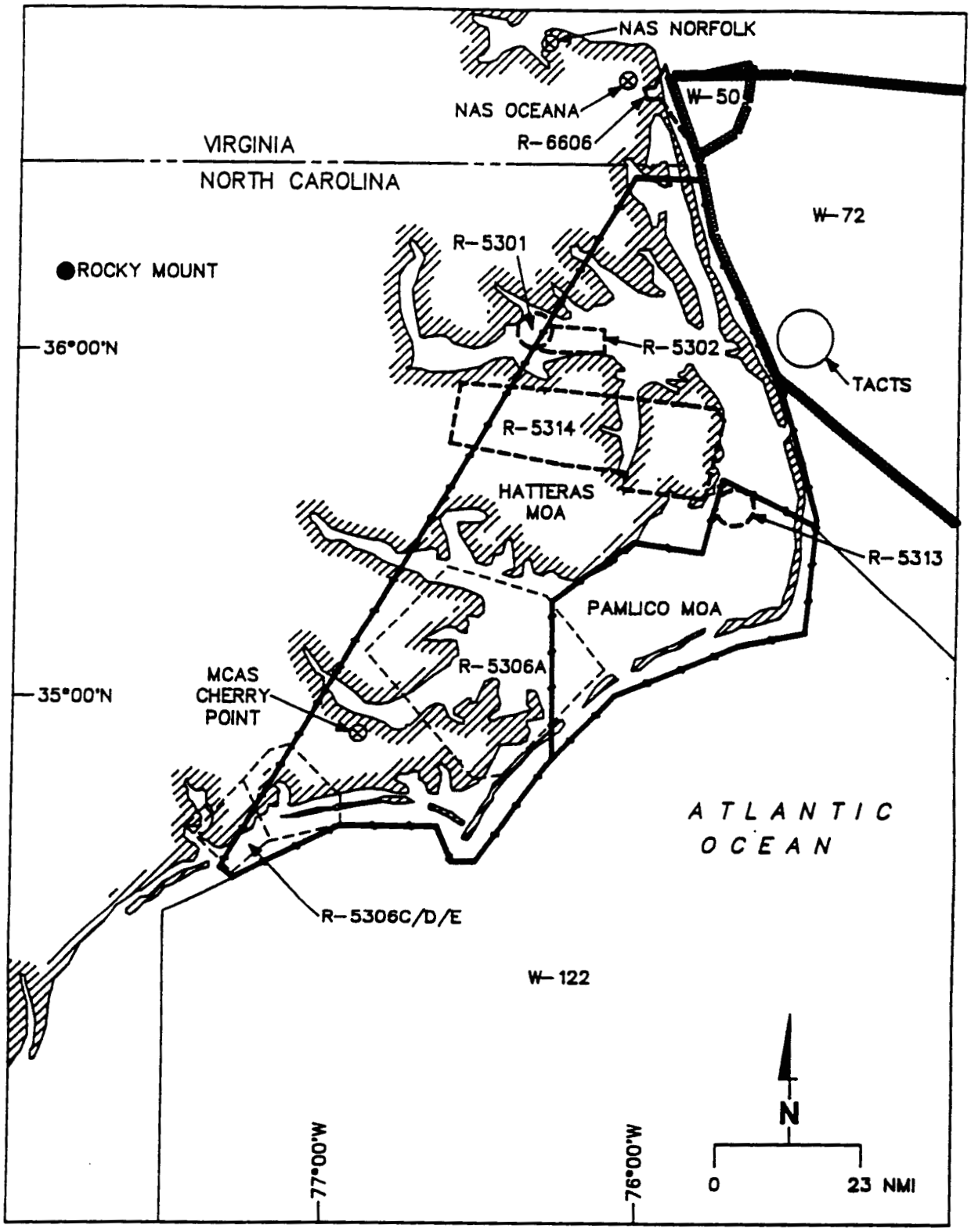


FIGURE VI.E-1A VIRGINIA CAPES COMPLEX (TACTS)

2. Scheduling Activity:

All areas/ranges unless otherwise noted	FACSFAC VACAPES AUTOVON: 433-1218/1219
Oceana TACTS	Commander Fighter Wing 1 Naval Air Station, Oceana Virginia Beach, VA 23460 (COMFITWINGONE) AUTOVON: 433-5241

3. Resource Manager:

R-5302/R-5313 R-5314/R-6609	Commanding Officer Naval Air Station, Oceana Virginia Beach, VA 23460-5120 AUTOVON: 433-2636
R-5301A	Project Manager Harvey Point Defense Testing Activity Route 5, Box 175 Hertford, NC 27944 AUTOVON: 935-3491

D. Geography and Characteristics of Range/Target Areas

1. Palmetto Point Range (R-5302) Harvey Point.

a. Range/Area Boundaries/Access

Palmetto Point Range is an instrumented range located in Albemarle Sound approximately 48 NMI south of the NAS Oceana TACAN, Channel 113, bearing 199°. See Figure VI.E-1. R-5302 extends from the surface up to FL140. Access is by surface road or surface vessel.

b. Exercises/Ordnance

Air-to-ground exercises using inert ordnance up to and including 100-pound inert bombs and 5" Zuni rockets with inert or smoke heads are authorized. No strafing is authorized.

c. Targets

The target consists of an aim point made up of a steel barge (132 feet long, 32 feet wide, 20 feet high) painted in a black and white checkerboard fashion. This target is scored by a Weapons Impact Scoring Set (WISS). Palmetto Point has been certified "safe" for laser system operations.

d. Range Availability

R-5302 is available daily from 1300 to 0400.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC 4/85

The WISS is a manned video scoring set which scores the impact point of air-to-ground ordnance within a 4000 foot radius of a defined land or water target under day or night conditions. The impact results are passed to the aircrews by VHF communications and/or recorded on a computer printout.

(2) Communications

1 ea. AN/GRT-22 UHF Transmitter
1 ea. AN/GRR-24 UHF Receiver

Operation and maintenance is accomplished by on-site military personnel. Intermediate-level maintenance is performed by NAS Oceana, Virginia.

(3) Facilities

2 ea. 50-foot rake towers located on the southern shore of Albemarle Sound.

Operation and maintenance is accomplished by on-site military personnel. Intermediate-level maintenance is provided by NAS Oceana, Virginia.

(4) Electrical Power. Commercial 115/208 volt, 60 Hz, three-phase power is used.

2. Stumpy Point Range (R-5313) Long Shoal Point.

a. Range/Area Boundaries/Access

Stumpy Point Range is an unattended/non-instrumented range located in Pamlico Sound approximately 75 NMI northeast of the MCAS Cherry Point TACAN, Channel 75, bearing 052°. R-5313 extends from the surface up to FL180. See Figure VI.E-1.

b. Exercises/Ordnance

Air-to-ground exercises using inert ordnance including water/sand-filled bombs, practice bombs, flares, photo-flash, phosphorous, and training rockets up to and including 5" Zuni smoke rockets are authorized. Strafing is not permitted.

c. Targets

The target consists of a 315-foot by 50-foot sunken Landing Ship Tank (LST). Stumpy Point has been certified "safe" for laser systems operations.

d. Range Availability

R-5313 is available continuously.

3. Navy Dare County Range (R-5314)

a. Range/Area Boundaries/Access

Navy Dare County Range (R-5314) is an instrumented all-weather range located near Manteo, North Carolina, approximately 70 NMI south of the NAS Oceana TACAN, Channel 113, bearing 167°. See Figure VI.E-I. Within the range area, R-5314 altitudes vary. Flight Information Publication (FLIP) lists the various sections. Access to the range is by surfaced highway. Access to the targets is by dirt road.

b. Exercises/Ordnance

Air-to-ground exercises, including loft deliveries, are authorized. Due to a fire hazard, ordnance is restricted to inert ordnance and ordnance which uses marking charges only. Strafing is restricted to ball ammunition.

c. Targets

Six separate targets are available. See Figure VI.E-2.

(1) Navy Loft. This target consists of a pile of scrap metal surrounded by two concentric rings of 500- and 1500-foot radii. The target is augmented by radar reflectors and is scored by a Weapons Impact Scoring Set (WISS), or a WANG Model 500 calculator for manual rake scoring. This target is used for practice special-weapons deliveries. The target has distance-to-go markers every 6000 feet from 30,000 feet to 6000 feet on the run-in line.

(2) Short Bull. This target is a 40-foot by 12-foot armored personnel carrier. The Short Bull is scored by the WISS or the WANG model 500 calculator.

(3) Navy East Conventional Bull. This target consists of an armored personnel carrier shell centered in a circle of 250-footradius. This target is augmented with lights for night bombing/rocket exercises. The Navy East Conventional Bull is scored by the WISS or the WANG model 500 calculator.

(4) Minimum Altitude/Lay-down Target. This target consists of metal lockers and tires in the shape of a horseshoe which are painted international orange. The Minimum Altitude/Lay-down Target is visually scored using distance markers located every 5 meters.

(5) Strafing Target. This target consists of three strafing panels which are scored by a DA-3H Strafe Scoring System.

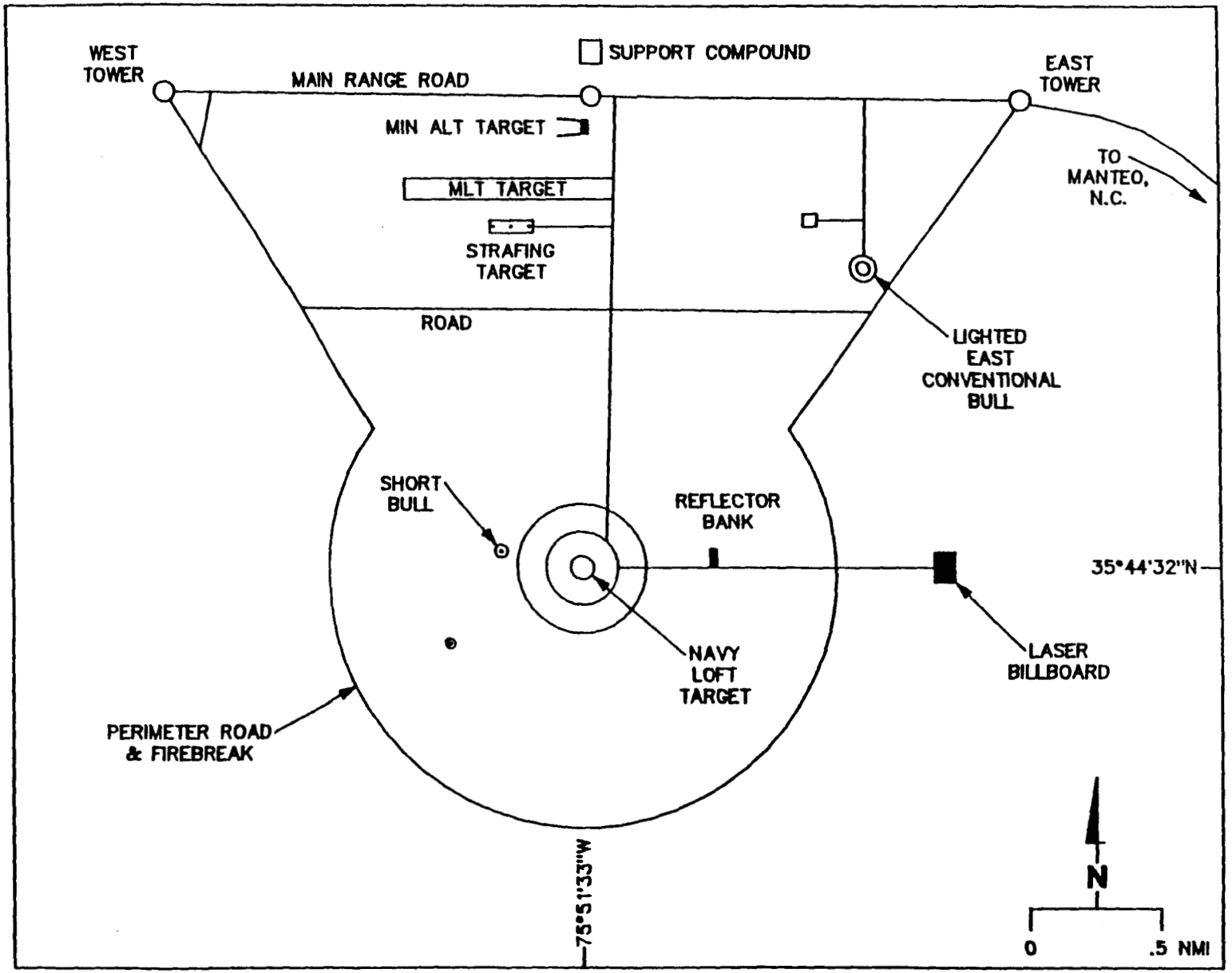


FIGURE VI.E-2 NAVY DARE COUNTY

(6) Laser Billboard No-Drop Target. Continuous automatic scoring is available on frequency 359.5. Cassette tape scoring results are available with a 15 minute advance notice.

(7) Laser Targets. The Short Bull and the East Conventional Bull are certified "safe" for laser system operations.

d. Range Availability

R-5314 is available intermittently 1100 - 0500Z, Mon-Fri; 1200 - 2300Z, Sat-Sun; or by NOTAM 6 hours in advance. The range is manned Monday through Thursday from 0800 to 2300 hours local and Friday from 0800 to 1600 hours local. No ordnance may be released unless the range is manned.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FXQ-3(V) Weapons Impact Scoring Set (WISS)
IOC: 11/80

Operation and maintenance is accomplished by on-site contract and civil service personnel.

1 ea. DA-3H Strafe Scoring System
IOC: 5/81

Operation and maintenance is performed by on-site contract and civil service personnel.

See Appendix A for a detailed description of the Strafe Scoring System.

(2) Communications

4 ea. AN/GRT-22 UHF Transmitters
4 ea. AN/GRR-24 UHF Receivers
1 ea. AN/GRC-171 UHF Transceiver

Operation and maintenance is accomplished by on-site civil service and Air Force personnel. Intermediate-level maintenance is provided by the Air Force.

(3) Facilities

3 ea. Spotting towers of steel construction, each approximately 30 feet high. The center tower serves as the control center with communications, MLT controls, WISS, and strafe scoring equipment located therein. Ancillary equipment for these systems is located in two sheds underneath the center tower.
IOC: 1965

Operation and maintenance is accomplished by on-site contract and civil service personnel.

4 ea. Service/support buildings of metal construction which are used for administration, maintenance, supply, and support spaces. One building houses the generators which supply power to the facility.

(4) Electrical Power. Commercial shore 115/208 volt, 60 Hz power is used.

2 ea. 100 kW motor generator (backup)

Operation and maintenance is accomplished by on-site civil service personnel.

4. Dam Neck Range (R-6606)

a. Range/Area Boundaries/Access

R-6606 is special surface and airspace extending from inland Eastward to the 3 NMI territorial limit, located approximately 5 NMI east of the NAS Oceana TACAN, Channel 113, bearing 110°. See Figure VI.E-1. R-6606 extends from the surface up to FL510.

b. Exercises/Ordnance

Air-to-air exercises using live ordnance and air-to-surface exercises using MK 76 or MK 106 practice bombs and inert 2.75" FFARs are authorized.

c. Targets

Air targets are BQM/MQM-74C powered drones. Seaborne targets are QST 33/35 Seaborne powered Targets (SEPTARS). Targets are arranged through Fleet Composite Squadron Six, NAS Oceana, Virginia Beach, Virginia.

d. Range Availability

R-6606 is available Monday through Friday 1300 -2200 or by NOTAM 48 hours in advance.

e. Range Instrumentation/Resources

The BQM/MQM-74C powered drones are remotely controlled subsonic air-to-air targets. The drones may be surface or air launched and are used as targets for air-to-air missile firings. Remote control of these drones is accomplished by either Vega, Portable Radar Tracking and Control System (PRTCS), AN/TSW-10(V) or Integrated Target Control System (ITCS).

The QST-33/35 are highly maneuverable, remote controlled, fiberglass boats used as moving targets for inert rocket and/or bomb practice. The QST-33 SEPTAR is 18 feet long, and the QST-35 SEPTAR is 55 feet

long. Remote control of the SEPTAR is accomplished by either a Vega, PRTCS, Control Target Transmitter System (CTTS) or ITCS. Scoring is done by the participating aircrews.

5. Tangier Island Range (R-6609)

a. Range/Area Boundaries/Access

R-6609 is an unattended/non-instrumented range located in Chesapeake Bay approximately 27 NMI southeast of the NAS Patuxent River VORTAC, Channel 123, bearing 164°. See Figure VI.E-1. R-6609 extends from the surface up to FL200.

b. Exercises/Ordnance

Air-to-ground exercises, including loft delivery, using MK 76 or MK 106 practice bombs, water/sand-filled bombs, practice bombs, and 2.75" FFARs with inert heads are authorized. Strafing is not authorized.

c. Targets

The target consists of a 415-foot by 65-foot sunken cargo ship.

d. Range Availability

R-6609 is available continuously.

6. Warning Area 50 (W-50)

a. Range/Area Boundaries/Access

W-50 is special-use surface and airspace in the open ocean which borders R-6609 to the East and is located approximately 8 NMI east of the NAS Oceana TACAN Channel 113, bearing 110°. See Figure VI.E-1. W-50 extends from the surface up to FL750 and is subdivided into 3 areas: W-50A, W-50B, and W-50C.

b. Exercises/Ordnance

Air-to-surface and surface-to-surface SEPTAR exercises using inert ordnance are authorized.

c. Targets

Targets are arranged through VC-6, Naval Air Station, Norfolk, Virginia 23511, AUTOVON: 690-4575.

d. Range Availability

W-50 is available intermittently by NOTAM. VFR conditions must exist when firing at SEPTARS.

7. Warning Area 72 (W-72)

a. Range/Area Boundaries/Access

W-72 is special-use air, surface, and subsurface space in the open ocean adjacent to the coasts of Virginia and North Carolina and is located approximately 20 NMI Southeast of the NAS Oceana TACAN, Channel 113, bearing 120°. See Figure VI.E-1. W-72 extends from the surface to unlimited altitude, except that portion of the warning area west of 75° 30'W which is surface to, but not including, 2000 feet MSL and above FL600 to unlimited altitude. W72 is subdivided into W-72A and W-72B.

b. Exercises/Ordnance

Air-to-air, air-to-surface, and surface-to-surface missile, guns, cannons, and bomb exercises using conventional ordnance are authorized. ASW exercises and air tactics training are also conducted in W-72.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

W-72 is available intermittently as scheduled.

e. Range Instrumentation

1 ea. Ground Telemetry (TLM) Complex
IOC: 1972

Operation and maintenance is accomplished by on-site civil service personnel.

See Appendix A.6 for description of Telemetry Complex.

8. Warning Area 110 (W-110)

a. Range/Area Boundaries/Access

Warning Area 110 is special-use air, surface, and subsurface space in the open ocean off the coast of North Carolina and is located approximately 75 NMI southeast of NAS Oceana TACAN, Channel 113, bearing 160°. See Figure VI.E-I. W-110 extends from the surface to FL230.

b. Exercises/Ordnance

W-110 is used primarily for air tactics and instrument training.

c. Targets

No targets are used in W-110.

d. Range Availability

W-110 is available intermittently as scheduled. However, airspace is subject to recall by Washington Air Route Traffic Control Center (ARTCC) on a 30-minute notice.

9. Oceana Tactical Aircrew Combat Training System (Oceana TACTS)

a. Range/Area Boundaries/Access

The Oceana TACTS is located in W-72 airspace centered approximately 60 NMI from the NAS Oceana TACAN, Channel 113, bearing 150°. See Figure VI.E-1A. The Oceana TACTS airspace extends from 5000 to FL800.

b. Exercises/Ordnance

The Oceana TACTS provides aircrew training and performance evaluation in air combat maneuvering, air tactics, and no-drop bomb and mine scoring exercises. No ordnance deliveries are used with TACTS.

c. Targets

There are no targets associated with the Oceana TACTS. Adversary aircraft are arranged and/or supplied by the user.

d. Range Availability

The Oceana TACTS is available Monday through Friday from sunrise to sunset or 1800, whichever is earlier.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/USQ-T4 Tactical Aircrew Combat Training System (TACTS) with display and debrief systems (DDS) available at Langley Air Force Base, Langley, VA.

Operation and maintenance is accomplished by on-site military, civil service, and contract personnel.

(2) Communications

6 ea. Collins 661F2 UHF Transceivers
IOC: 10/76

Operation and maintenance is accomplished by on-site military, civil service, and contract personnel.

(3) Facilities

1 ea. Control and Computation van. Located at NAS Oceana.
3 ea Display and Debriefing vans. Located at NAS Oceana, MCAS Cherry Point, and Langley AFB.
1 ea. Tracking Instrumentation Master Site. Located at Bodie Island, North Carolina, with remote sites arrayed throughout W-72. Four remote sites are located in the ocean and one each at Bodie Island, Pea Island, and Kill Devil Hills, North Carolina.

Operation and maintenance is accomplished by on-site military, civil service, and contract personnel.

(4) Electrical Power. Commercial 115/208 volt, 60 Hz, three-phase power is used by the TACTS. The remote ocean sites are powered by a solar panel/battery system.

10. Warning Area 386 (W-386)

a. Range/Area Boundaries/Access

W-386 is special-use air, surface, and subsurface space in the open ocean off the coast of Maryland located approximately 60 NMI east of the NAS Patuxent River VORTAC, Channel 123, bearing 110°. See Figure VI.E-1. W-386 extends from the surface to unlimited altitude, except that portion of the area west of 75° 30'W which is surface to, but not including, 2000 feet MSL and above FL600 to unlimited altitude.

b. Exercises/ordnance

Air-to-air, air-to-surface, surface-to-air, and surface-to-surface missile, gunnery, and rocket exercises using conventional ordnance are authorized. ASW and ASROC exercises are also authorized.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

W-386 is available intermittently as scheduled.

11. Warning Area 387 (W-387)

a. Range/Area Boundaries/Access

W-387 is open-ocean airspace off the coast of Virginia located approximately 75 NMI east of the NAS Oceana TACAN, Channel 113, bearing 090°. See Figure VI.E-1. W-387 is divided into 2 subareas; W-387A extends from the surface up to but not including FL240 and W-387B from FL240 to unlimited.

b. Exercises/Ordnance

W-387 is used primarily for air tactics and instrument training. No ordnance is authorized.

c. Targets

No targets are used in W-387.

d. Range Availability

W-387 is available as published by NOTAM.

12. Hatteras Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Hatteras MOA is special-use airspace located over eastern North Carolina extending from MCAS Cherry Point, North Carolina, to north of the Albemarle Sound. See Figure VI.E-1A. The airspace extends from FL240 to FL600.

b. Exercises/Ordnance

The MOA is used for air combat maneuvering (ACM), instrument training, and other military flight operations. No ordnance is authorized.

c. Targets

The MOA includes no targets.

d. Range Availability

The Hatteras MOA is available continuously.

13. Pamlico Military Operating Area (MOA)

a. Range/Area Boundaries/Access

The Pamlico MOA is special-use airspace located over eastern North Carolina approximately 70 NMI northeast of the MCAS Cherry Point TACAN, Channel 75, bearing 055°. See Figure VI.E-1. The airspace extends from 8000 feet up to, but not including, FL180.

b. Exercises/Ordnance

The MOA is used for air combat maneuvering (ACM), instrument training, and other military flight operations. No ordnance is authorized.

c. Targets

The MOA includes no targets.

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD, NAVSTA Roosevelt Roads, Puerto Rico
Range Nomenclature or Title	TLM Station

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

Fleet Training and Operational Test Exercises

b. Geographic location of the range.

Altantic Fleet Weapons Training Facility (AFWTF), Naval Station, Roosevelt Roads, Puerto Rico

c. Distance from the range to the activity's headquarters facility (main site).

3,341 miles

d. Range size in square miles.

Reported by host/AFWTF, Naval Station, Roosevelt Road, Puerto Rico.

e. Scheduling authority.

FASFAC VACAPES (DSN 433-1218/1219) Naval Station, Roosevelt Roads, Puerto Rico

f. Air space available/restrictions.

Reported by host Command

TAB C
Page ___ of ___
UIC: 64267

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Telemetry (missiles), satellite communications, and data links

i. Accuracy of tracking.

Reported by host Command

j. Data collection/replay capability.

Full telemetry replay/display for all functions

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY 1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

PUERTO RICO TELEMETRY FIELD OFFICE DESCRIPTION AND CAPABILITIES

April 1994

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NWAD

Naval Warfare Assessment Division

1.0 EXECUTIVE SUMMARY

1.1 Purpose

This document is intended to provide information concerning the capabilities and site characteristics of the Naval Warfare Assessment Division (NWAD) Telemetry Field Office located at Roosevelt Roads Naval Station, Puerto Rico.

1.2 Field Office Mission

The NWAD Telemetry Field Office in Puerto Rico is one of three currently active Field Offices which provide missile telemetry services to Fleet elements for both developmental programs and Fleet training exercises. The Field Office operates in concert with the Atlantic Fleet Weapons Training Facility (AFWTF) for on-range exercises. The Field Office mission is to acquire, process, display and transmit missile telemetry data from all telemetered missiles fired at AFWTF.

1.3 Facility Description

The main facility is located at Puerca Point and consists of a new concrete reinforced three story building with ancillary trailers, antennas, electronic enclosures, etc., necessary to operations. Also included is a satellite terminal which ties the Field Office through a dedicated circuit to NWAD, Corona. Currently, a temporary structure of interconnected trailers is located next to the permanent building. This structure housed the telemetry instrumentation until the new building was built. Removal of this temporary structure is planned. Figure 1.1 shows the Puerca Point facility. In addition to the Puerca Point facility, an ancillary facility is located on top of Pico del Este. This facility consists of telemetry antennas, an electronics enclosure, and a microwave terminal. The Pico del Este facility is shown in Figure 1.2

1.4 Operations and Instrumentation

The system at Puerca Point (approximately 200' above sea level) has four telemetry autotrack antennas (one currently operational). A second facility having six telemetry autotrack antennas is located on top of Pico del Este at an elevation of approximately 3,500', and is used to acquire, process, record and relay telemetry data to Puerca Point from missiles fired on the AFWTF range, including prelaunch telemetry from surface firings within the radar horizon as seen from Pico del Este (approximately 72 nmi). Fleet exercises and missile system development programs require telemetry station instrumentation to support both air launched and surface launched missile firings. The telemetry station supports all telemetered missile firings by receiving telemetry signals from both missiles and targets in flight, recording telemetered data for future playback, and displaying data in real time to provide "quick look" analysis feedback to the Fleet or development activities as appropriate. All system functions are automated using a host computer at Puerca Point. Puerca Point is interfaced with the AFWTF Range Operations Center (ROC) via microwave link to provide: (1) range tracking information from various sources which is utilized as both antenna positioning information and to provide up-to-date range information; (2) range timing information; and (3) range voice net. The AEGIS Performance Assessment Network (APAN) facility is also interfaced with the Field Office, and thus through the Satellite Data Relay System (SDRS) (see below) to NWAD, Corona,

and other APAN network nodes. Missile telemetry data is made available to analysts both in real time and through playback. Software controlled workstations allow rapid selection of missile functions and data desired, as well as the display desired. Data is recorded for future analysis, and can also be relayed to NWAD Corona for processing and display via the SDRS. Figure 1.3 illustrates the Field Office operations.

1.5 Puerto Rico/Corona Satellite Data Relay System

Missile telemetry data is received real time from missiles and targets in flight. This data is formatted and recorded on magnetic tape in real time. Simultaneously, the data is routed to the telemetry data processing system. If desired, data outputs from the telemetry data processing system may be selected and transmitted via satellite link to the Telemetry Ground Station in Corona, CA. In addition to the missile data, other data may be multiplexed into the data stream including the Range Voice Net, Field Office operations voice coordination, facsimile, file transfer from personal computers, radar, etc. Within the maximum available bandwidth, up to 12 different data inputs may be multiplexed for data transmission. As a general purpose dedicated satellite data link, the system is also used to link the APAN facility at AFWTF to Corona and other APAN nodes. The APAN is described in reference (a). All data is encrypted prior to transmission over the satellite link.

2.0 BACKGROUND

2.1 History

During 1960 and 1961, the Navy recognized its need for a missile flight data reduction and analysis capability at the U.S. Naval Station, Roosevelt Roads, Puerto Rico. In 1962, the Bureau of Naval Weapons requested NWAD (then a department of the Naval Ordnance Laboratory, Corona) to locate a field office at Roosevelt Roads. Personnel assigned initially occupied space in an old Guided Missile Operations Control Unit headquarters building. NWAD then built and installed a Telemetry Field Office to provide the required telemetry reception and processing facilities. In 1963, NWAD conducted tests on the feasibility of an Airborne Data Link (ADL). After these tests proved successful, the Naval Ordnance Systems Command provided funds for an ADL system to provide over-the-horizon telemetry coverage. The ADL system was ultimately discontinued due primarily to aging of aircraft and lack of replacements. In April, 1966, a new telemetry field office was dedicated at Puerca Point on the Naval Station. In 1970, major changes were made in adding a capability for UHF telemetry reception. Continuing system modifications have been accomplished over the years to accommodate ever-changing missile telemeter designs, which have required new systems development and implementation. This includes the transition from analog to digital systems. A MILCON project culminated in a new Field Office building in 1993, which now houses a new operational 35 million dollar system. As part of this system, additional antennas were installed at Pico del Este, along with a new instrumentation system housed in a new electronics enclosure. The current facilities and instrumentation are the culmination of a ten year Fleet Telemetry Station Development and Replacement Program (FTSDRP) (reference b.), and the system design is intended to meet current and forseeable future Fleet requirements.

2.2 Operational Commitment

The Puerto Rico Telemetry Field Office is required by directives (see references c,d,e and f) and is directed and funded by NAVAIRSYSCOM (PMA 248) to provide telemetry support of Fleet missile firing exercises and developmental programs conducted on the AFWTF range. Telemetry data acquisition and processing operations must be capable of collecting the maximum amount of weapon system data while imposing minimum constraints on Fleet operations. Data results must be available to analysts in both real time and near real time at Puerto Rico and in Corona. After analysis, analytical results must be available to the Fleet or developmental commands in the shortest possible time.

3.0 FACILITIES AND INSTRUMENTATION DESCRIPTION

3.1 Facilities

3.1.1 Puerca Point

As previously indicated, the main facility is located at Puerca Point and consists of a permanent reinforced concrete monolithic three story building with ancillary trailers, antennas, electronic enclosures, etc., necessary to operations (refer to figure 1.1). The first floor of the building houses the air conditioner chiller units, electrical distribution system, back-up generators and ancillary equipment, systems battery room, and utility storage facilities. The second level contains the office, conference room and administrative area. The third level houses the secured telemetry operation control center, the laboratory/maintenance area, and the equipment storage area. Also included is a satellite terminal which ties the Field Office through a dedicated circuit to NWAD, Corona.

3.1.2 Pico del Este

In addition to the Puerca Point facility, an ancillary facility is located on top of Pico del Este (refer to figure 1.2). The facility consists of a 20' x 40' electronics enclosure building, six 10' telemetry tracking antennas in radome enclosures, a microwave data relay system, and the electronics system installed in the building. The microwave circuit is used to pass data between Pico del Este and Puerca Point. The telemetry data system installed at Pico del Este is capable of acquiring, processing, recording and relaying prelaunch telemetry from surface launched missiles fired on the AFWTF range within the radar horizon as seen from Pico del Este (approximately 72 nm), and telemetry from surface/air launched missiles and targets above the radar horizon out to detectable ranges. Data is recorded in real time on magnetic tape and/or relayed to the Puerca Point site.

3.2 Instrumentation Requirements and Specifications

Telemetered missile firing exercises conducted on the AFWTF range require data acquisition, processing, display and transmission instrumentation to support both air launched and surface launched missiles. The Field Office facilities and instrumentation can: (1) dynamically track both missiles and targets in flight, (2) record telemetered data for future playback, (3) display data in real time to provide "quick look" analysis feedback to the Fleet and (4) support the exercises and programs identified in Table 1 below.

Table 1 - Exercises and Programs Supported by the Puerto Rico Telemetry Field Office

- Air-launched weapons systems verification
- Annual Fleet training
  - Refresher training
  - Fleet exercises
  - Ship pre-deployment exercises
- RDT&E
  - Contractor tests and evaluations
  - Development Tests (DT)
  - Technical Evaluations (TE)
  - Operational Tests (OT)
  - Operational Evaluations (0PEVALS)
  - Follow on Tests and Evaluations (FOT&E)
- Ship Qualifications
  - Sea trials
  - Combat System Ship Qualification Tests (CSSQT)
- Foreign Military Sales
  - Evaluation acceptance rounds
- Special Projects
  - LEAP
  - SDI
  - APAN

The system incorporates applications software for a host computer system to permit rapid reconfiguration of all station hardware in support of air and surface launched missile firing scenarios, and to provide automated system control and fault detection. Specific system performance is documented in tables 2, 3, and 4.

Table 2 - Software Performance

Air/Surface reconfiguration (minutes)	15
End to end telemetry checks (minutes)	4
Telemetry data digitizing	
Number of independent channels	8
Sustained digitizing rate per channel (Mbyte/sec)	2
Real time Graphics	
Number of independent workstations	4
Number of functions per display	8
Update rate per second	2
Range Interface	
Number of independent tracks	64
Update rate per second	1

Table 3 - Input Capabilities

Number of telemetry autotrack antennas	
Pico del Este	6
Puerca Point	4
Radio horizon coverage (nm)	
Pico del Este	72
Puerca Point	20
Frequency coverage (MHz)	
S-band	2200 - 2395
L-band	1760 - 1850
MDI-band	1435 - 1535
Data Quality (S/N)	15 dB
Maximum telemeter data rates	
PCM	10 MBits/Sec
PAM	100 KCh/Sec
Number of PCM channels	16
Number of PAM channels	8
Number of FM/FM channels	4
Number of Doppler channels	4
Timing	IRIG-A/B/H

Table 4 - Output Capabilities

Analog recorders	
Number	
Pico del Este	7
Puerca Point	6
Record characteristics	
Direct record bandwidth	
Lower limit	400 Hz
Upper limit	2 MHz
Number of tracks	14
High Density Digital Recording	
Number of channels	
Pico del Este	3
Puerca Point	9
Maximum bit rate	9 Mbit/Sec
Oscillograph Displays (Puerca Point only)	
Number	8
Functions per display	
Analog	16
Discrete	16
Maximum chart speed	500 mm/Sec
Pen Recorder Displays (Puerca Point only)	
Number	8
Functions per display	
Analog	32
Discrete	32
Maximum chart speed	250 mm/Sec
Doppler Displays (Puerca Point only)	
Number of flight Doppler systems	4
Number of intercept Doppler systems	4

3.3 Instrumentation Detailed Descriptions

3.3.1 Puerca Point

3.3.1.1 Background

The telemetry site at Puerca Point was established in the 1960s to provide telemetry coverage at AFWTF (see figure 3.1). It consisted of ten 10' X 40' trailers bolted together side-by-side as a "temporary" facility, and contained the telemetry receiving, recording, processing, and display equipment. The system was expanded in 1970 when the frequency allocation for telemetry was shifted from P-band (215-320 MHz) to S-band (2200-2300-MHz). A permanent new building was completed in 1990, and new telemetry systems were installed as part of the FTSDRP.

Due to the low elevation of the Puerca Point site, the radio horizon is only about 25 miles. When the station was first established, Airborne Data Link (ADL) aircraft were used to provide extended range coverage. During the 1970s the aircraft became too old to maintain, and a permanent receiving site was established at Pico del Este. This extended the radio horizon out to approximately 75 miles. This site was also upgraded under the FTSDRP and contains the primary antennas, receivers, and recorders. The data received is then sent to the main site at Puerca Point by way of both a dual microwave link and a L-band down link. A new antenna and receiving system was also installed at Puerca Point, and the site was designed to accommodate three additional systems.

Development and replacement efforts were directed toward accomplishing the following improvements/enhancements:

Increased antenna sensitivity for receipt of data;

Expanded frequency capability to include the new High-S band;

Improved antenna positioning/direction control;

Increased data receiver capabilities;

Expanded data reduction capability, both analog and digital;

Automated pre-mission testing, calibration, and initialization;

Automated station reconfiguration for change in missile type;

Automated selection and control of data paths and scale factors for displaying missile parameters;

Graphics display capability;

Capability to display data in engineering units;

Increased data recording capability;

Increased capability and rate of data manipulation, production, and distribution.

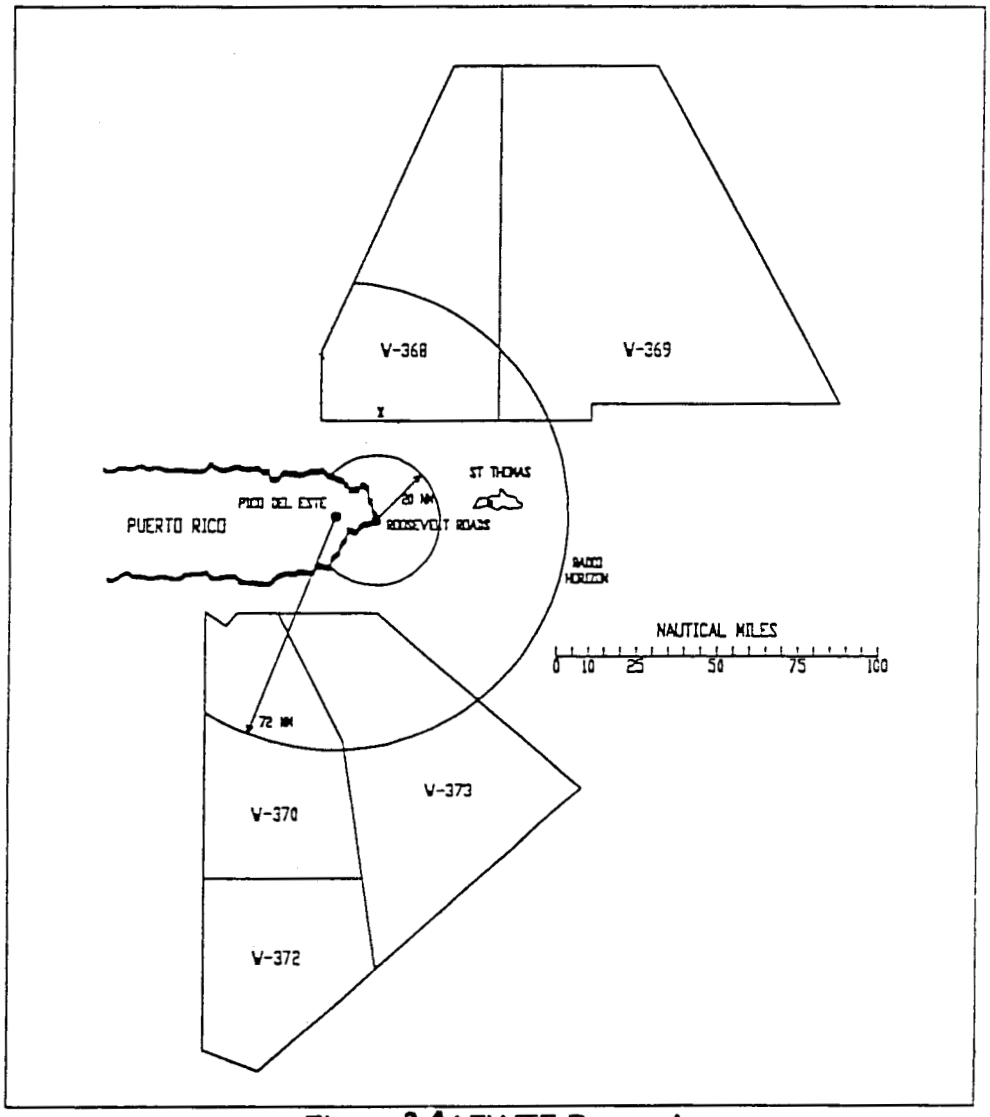

Figure 3-1 AFWTF Range Area

SECTION VII.A

CARIBBEAN AREA

I. ATLANTIC FLEET WEAPONS TRAINING FACILITY

A. Operating Area Manual

Information contained herein is based upon the Commander in Chief, U.S. Atlantic Fleet Instruction 3120.26 and the Atlantic Fleet Weapons Training Facility Instruction 3120.1. Further detailed information may be found in these instructions.

B. General Description

The Atlantic Fleet Weapons Training Facility (AFWTF) consists of numerous sites on the island of Puerto Rico, its adjacent islands, the U.S. Virgin Islands, and the waters adjacent thereto. The ranges allow the simultaneous conduct of gunnery, missile firings, air-to-ground ordnance delivery, electronic warfare, and underwater weapons exercises, all coordinated under positive control with accurate scoring and recording. See Figure VII.A-1. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The Facility consists of the following targets and areas:

1. Inner Range (Vieques Island/R-7104/W-428)
2. Outer Range
   Alpha Range (W-368, W-369, W-429)
   Bravo Range (W-370, W-372, W-373, W-374, W-375, W-376)
3. St. Croix Underwater Range (UTR) (OPAREAS 6 and 11)

C. Command Structure

1. Scheduling Authority: All areas except W-371.	Commander-in-Chief U. S. Atlantic Fleet Norfolk, VA 23511
W-371	Puerto Rico Air National Guard (PRANG) 156TFG Muniz ANGB San Juan, PR 00913 AUTOVON: (809) 791-5450
2. Scheduling Activity: except W-371	Commanding Officer Atlantic Fleet Weapons Training Facility Box 3023, FPO Miami 34051 (Roosevelt Roads, Puerto Rico) (AFWTF) AUTOVON: 831-4194 Commercial (809)865-4194

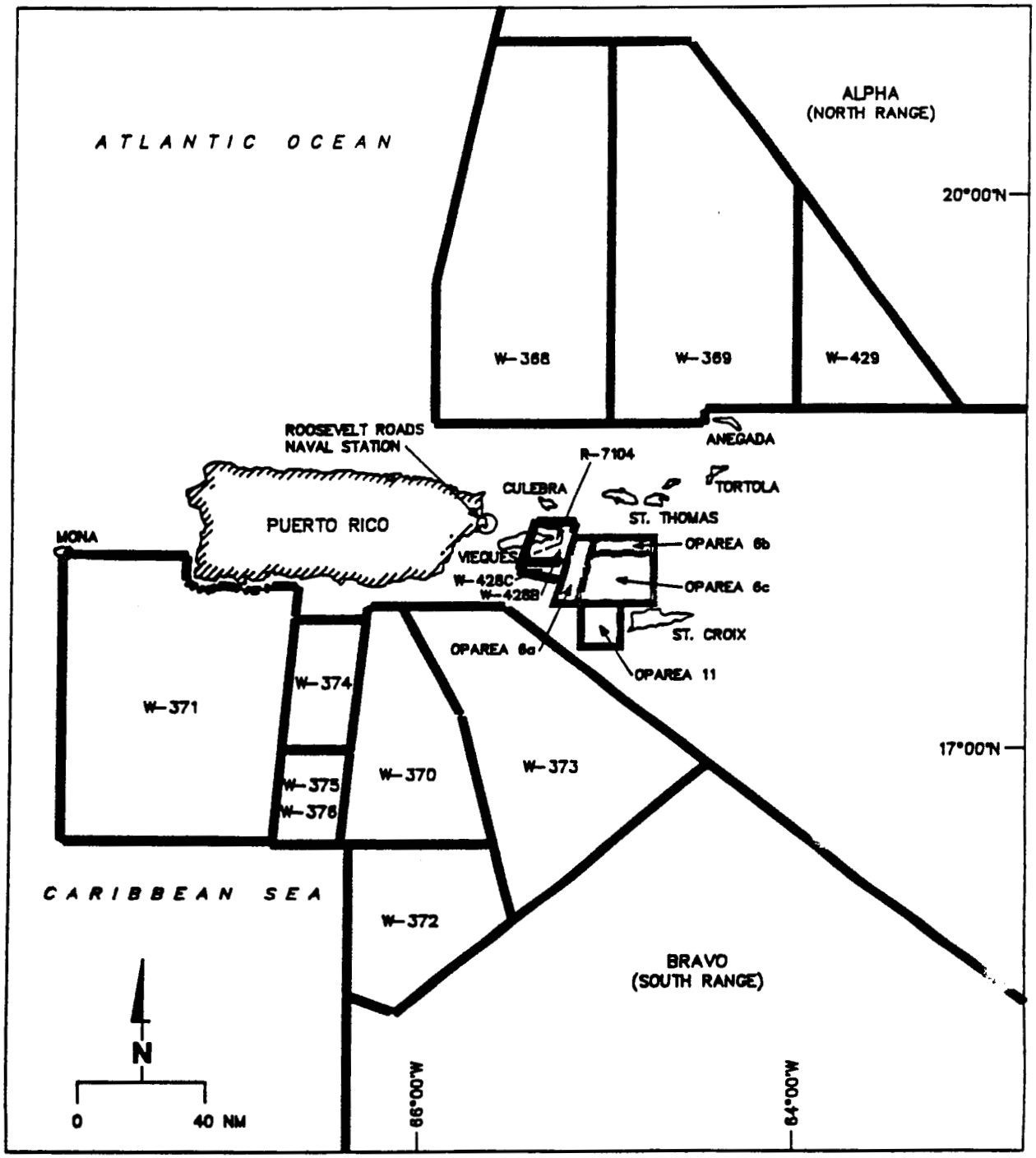

FIGURE VII.A-1 ATLANTIC FLEET WEAPONS TRAINING FACILITY

W-371	PRANG AUTOVON: 434-1860 Commercial: (809) 791-5450
3. Resource Manager:	Commanding Officer U.S. Naval Station FPO Miami 34051 (Roosevelt Roads, Puerto Rico) AUTOVON: 831-4307 Commercial (809)865-4307

D. Geography and Characteristics of Range/Target Areas

1. Inner Range (Vieques Island/R-7104/W-428)

a. Range/Area Boundaries/Access

The Inner Range complex is located east of the Roosevelt Roads, Naval Station (NSRR), approximately 21 NMI from the Roosevelt Roads TACAN, Channel 85, bearing 115°. See Figure VII.A-2. Vieques Island is approximately 18 miles long and 4 miles wide. The western portion of Vieques is a Naval Ammunition Facility for the NSRR. The highest mountain in this region, Mt. Pirata, is used as a microwave relay station and an EW Facility for the AFWTF complex. The eastern part of Vieques consists of landing beaches, maneuver areas, and ranges used for small arms, crew-served, artillery, Naval Gunfire Support (NGFS), and air-to-ground exercises. R-7104 and W-428 extend from the surface up to FL500. Operations are controlled from the Observation Post (OP) at Cerro Matias. Access to the island can be either by commercial or Navy surface vessels, commercial aircraft, or Navy helicopter. Access to the targets and the OP within the range complex is by dirt road.

b. Exercises/Ordnance

Air-to-ground, NGFS, artillery, and tank exercises using conventional ordnance are authorized. Vieques is certified "safe" for laser system operations, practice mine fields and amphibious operations. Due to hazardous patterns, SKIPPER II, MAVERICK, and SHRIKE are not authorized; floating targets can be provided in the outer range for these weapons.

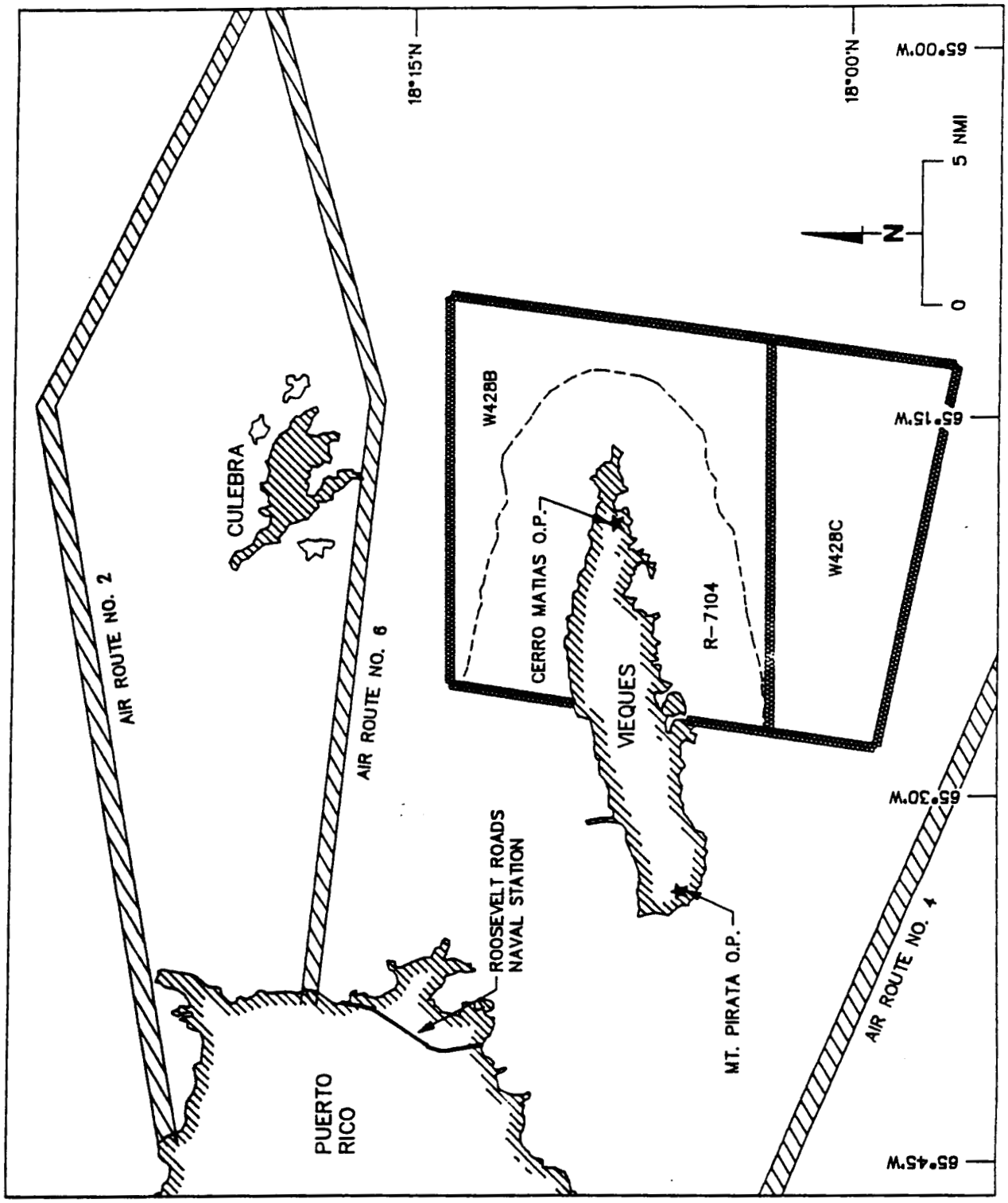

FIGURE VII.A-2 INNER RANGE

c. Targets (See Figure VII.A-3)

(1) Naval Gunfire Support/Direct Fire Targets. Seven targets located within the surface impact area are used specifically for NGFS and artillery/tank targets. The targets consist of armored personnel carriers, tanks, large yellow vehicles, white painted rocks, and 8-inch howitzers. Air-to-ground ordnance is prohibited on all NGFS targets.

(2) Target One. This target consists of a bull's-eye surrounded by four concentric rings of 50-, 100-, 150-, and 200-foot radii. This target is limited to MK 76/106 practice bombs and inert 2.75" FFARs. The target is scored by the WISS Bomb Scoring System.

(3) Target Two. This target consists of a bull's-eye surrounded by three concentric rings of 50-, 100-, and 150-foot radii. This target is limited to MK 76/106 practice bombs and inert 2.75" FFARs. The target is scored by the WISS Bomb Scoring System.

(4) Strafing Target. This strafing target consists of a port and starboard banner scored by the SSS-101 strafe scoring system.

(5) Close Air Support (CAS) Range. The CAS range consists of realistic mockups of an airstrip, fuel farm, motor pool, ammo dump, surface-to-air missile (SAM) sites, and numerous smaller targets of opportunity. See Figure VII.A-4. All conventional ordnance is authorized except on the targets on the runway and immediately adjacent to the runway, which are limited to MK 76/106 practice bombs and inert 2.75" FFARs. Scatter-type weapons and napalm are authorized only on the SAM East target.

(6) Mobile Land Target (MLT) (QLT-1C). This is a remotely controlled vehicle augmented with radar reflectors that operates on the 3700-foot runway in the CAS impact area.

d. Range Availability

The Inner Range/Vieques Island range complex is available daily (except holidays) from 0700 to 2300.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. SSS-101 Strafe Scoring System

Operation and maintenance is accomplished by on-site contract personnel.

Appendix A contains information on the SSS-101.

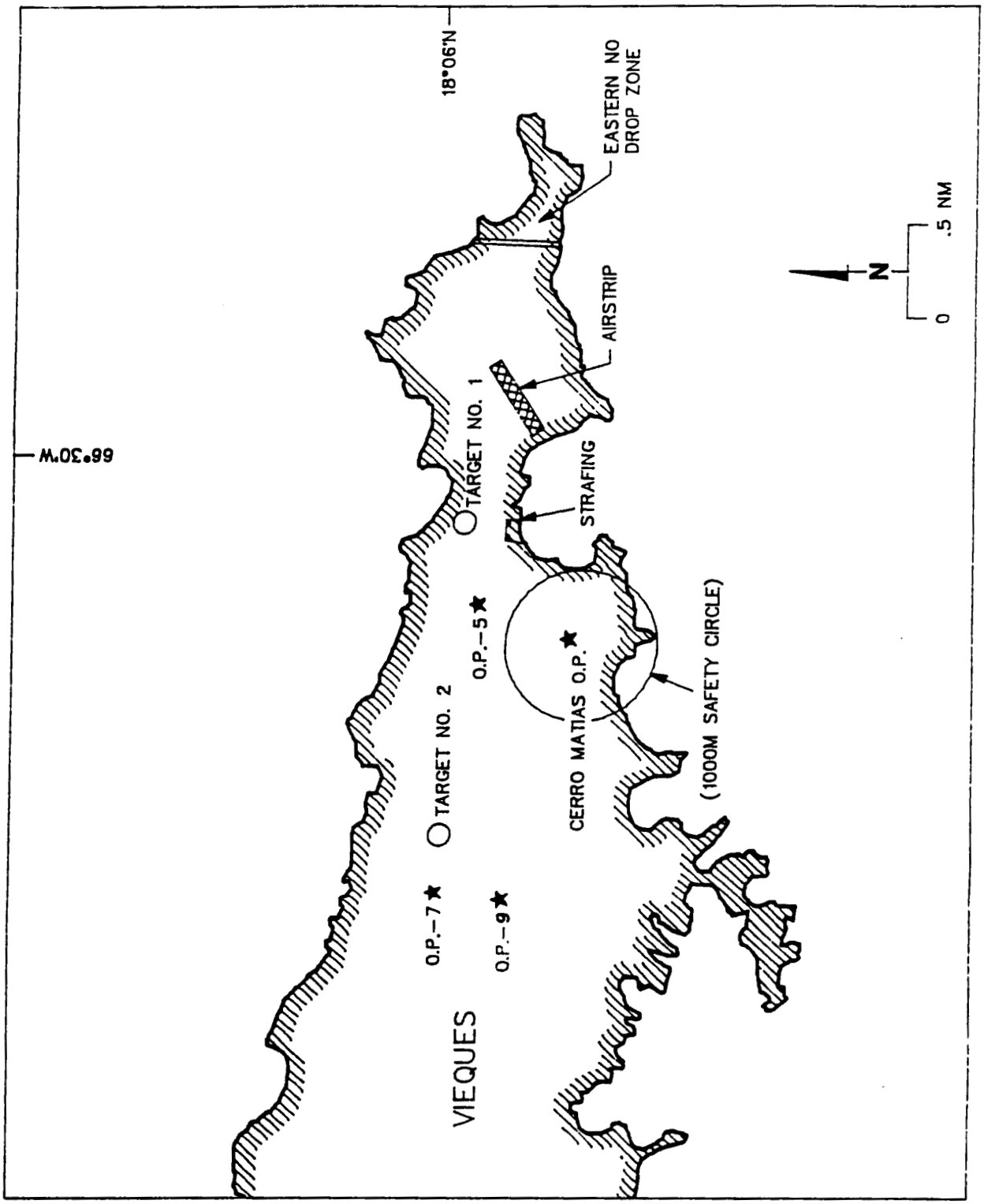

FIGURE VII.A-3 INNER RANGE AIR-TO-GROUND TARGET COMPLEX

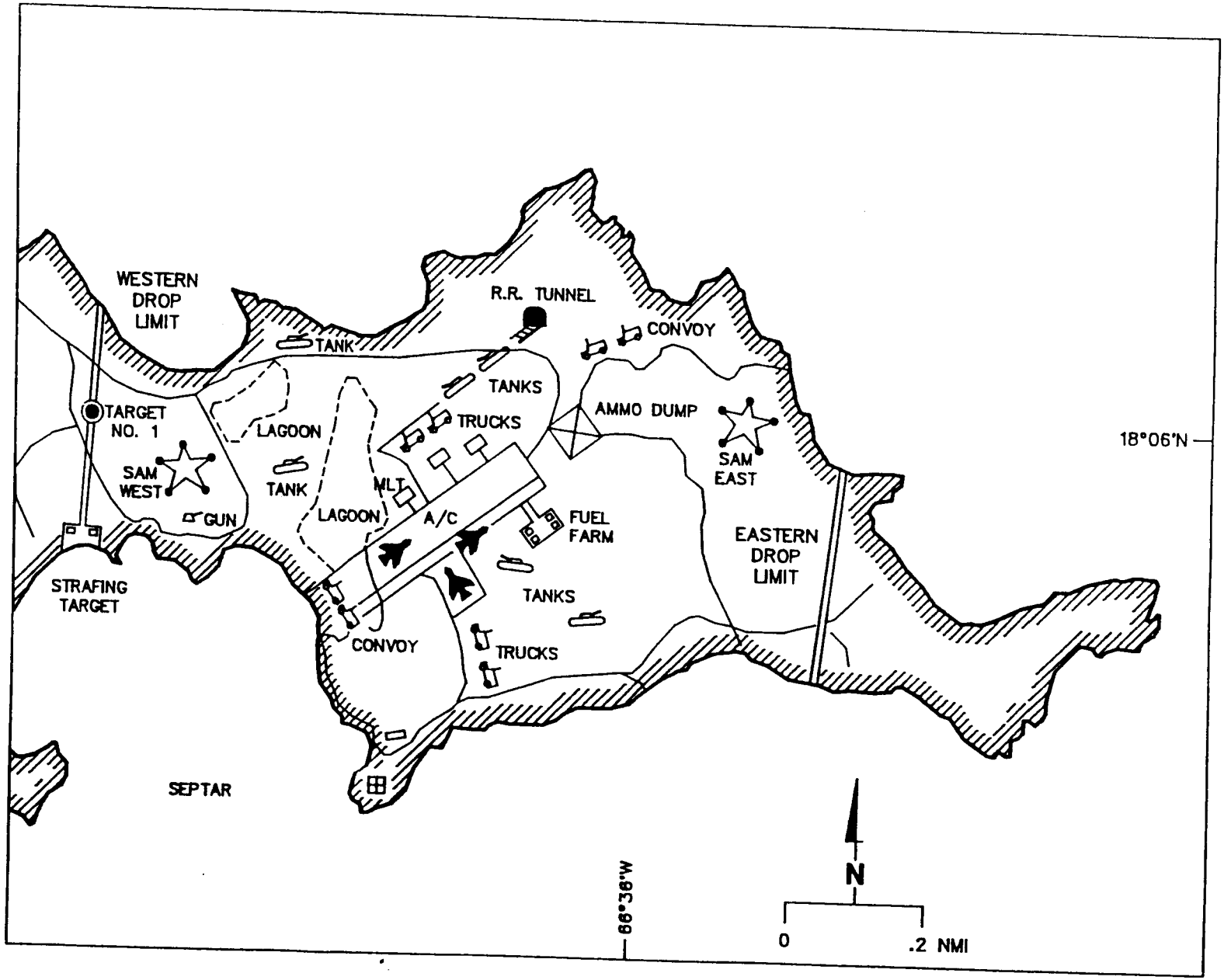

FIGURE VII.A-4 VIEQUES CLOSE AIR SUPPORT RANGE

1 ea. AN/URW-14 Command Target Control Set
2 ea. AN/URW-14A Command Target Control Set
IOC: 1960

Operation and maintenance is accomplished by on-site contract personnel.

The AN/URW-14/14A Command Target Control Set is used to control the QLT-1C Mobile Land Target (MLT).

1 ea. Weapon Impact Scoring System (WISS)
IOC: 7/86

Operation and maintenance is accomplished by on-site contract personnel.

Information on the WISS is contained in Appendix A.

1 ea. NIKE-HERCULES Radar
IOC: 1977

Operation and maintenance is accomplished by on-site contract personnel.

The NIKE-HERCULES Radar at Vieques consists of a monopulse X-band Instrumentation Radar. This radar provides tracking services.

1 ea. Sperry Marine Radar
IOC: 1990

Operation and maintenance is accomplished by on-site contract personnel.

The Sperry Marine Radar is a small marine-type radar used as a surveillance radar for range safety purposes.

(2) Communications. UHF and microwave communications for voice communications and data transmission are available. Secure voice communications are also available. The existing microwave equipment is an analog-type Lenkurt microwave system. A wide variety of base stations and portable radios are used within the range complex.

(3) Facilities. Inner Range facilities are concentrated at Cerro Matias, the highest hill in the eastern region of Vieques Island. Instrumentation systems are installed in a 4-story reinforced concrete building. A mess hall and berthing facilities are available for range personnel only.

(4) Electrical Power. Diesel motor generators provide power for the Inner Range complex. No commercial power is available.

2. Outer Range (Alpha Range/Bravo Range)

a. Range/Area Boundaries/Access

The Outer Range consists of two Fleet training areas located over open ocean in the waters adjacent to Puerto Rico and the U.S. Virgin Islands. See Figure VII.A-I. The Outer Range includes more operational area than that shown in Figure VII.A-1; however, full radar coverage is not available. Alpha/North Range encompasses W-368, W-369, and W-429, each extending from ocean bottom to unlimited altitude. Its southern border is located approximately 40 NMI northeast of Roosevelt Roads. Bravo/South Range encompasses W-370, W-372, W-373, W-374, W-375, and W-376. W-370, W-372, and W-373 extend from the ocean bottom up to unlimited altitude. W-374, and W-375 extend from the ocean bottom to 6,000 feet. W-376 is 17,000 feet to FL-210. The northern border of South Range is approximately 40 NMI south of Roosevelt Roads. See Figures VII.A-5, VII.A-5A, and VII.A-6 for radar and telemetry coverage within the Outer Range.

b. Exercises/Ordnance

All air, surface, and subsurface exercises using conventional ordnance are authorized. Instrumented missile firings and EW training exercises are also conducted in the Outer Range.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

The Outer Range is available 24 hours a day with missile exercises usually conducted between 0800 to 1700.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. WAAS Phased-Array Radar at Pico del Este
IOC: 1983

Operation and Maintenance is accomplished by Range Operation and Maintenance (O&M) contractor personnel. (Refer to Appendix A for WAAS Radar description.)

2 ea. AN/FPS-105(C) CAPRI Radar located at St. Thomas and St. Croix Radar Sites
IOC: 1978

Operation and maintenance is accomplished by Range O&M contractor personnel.

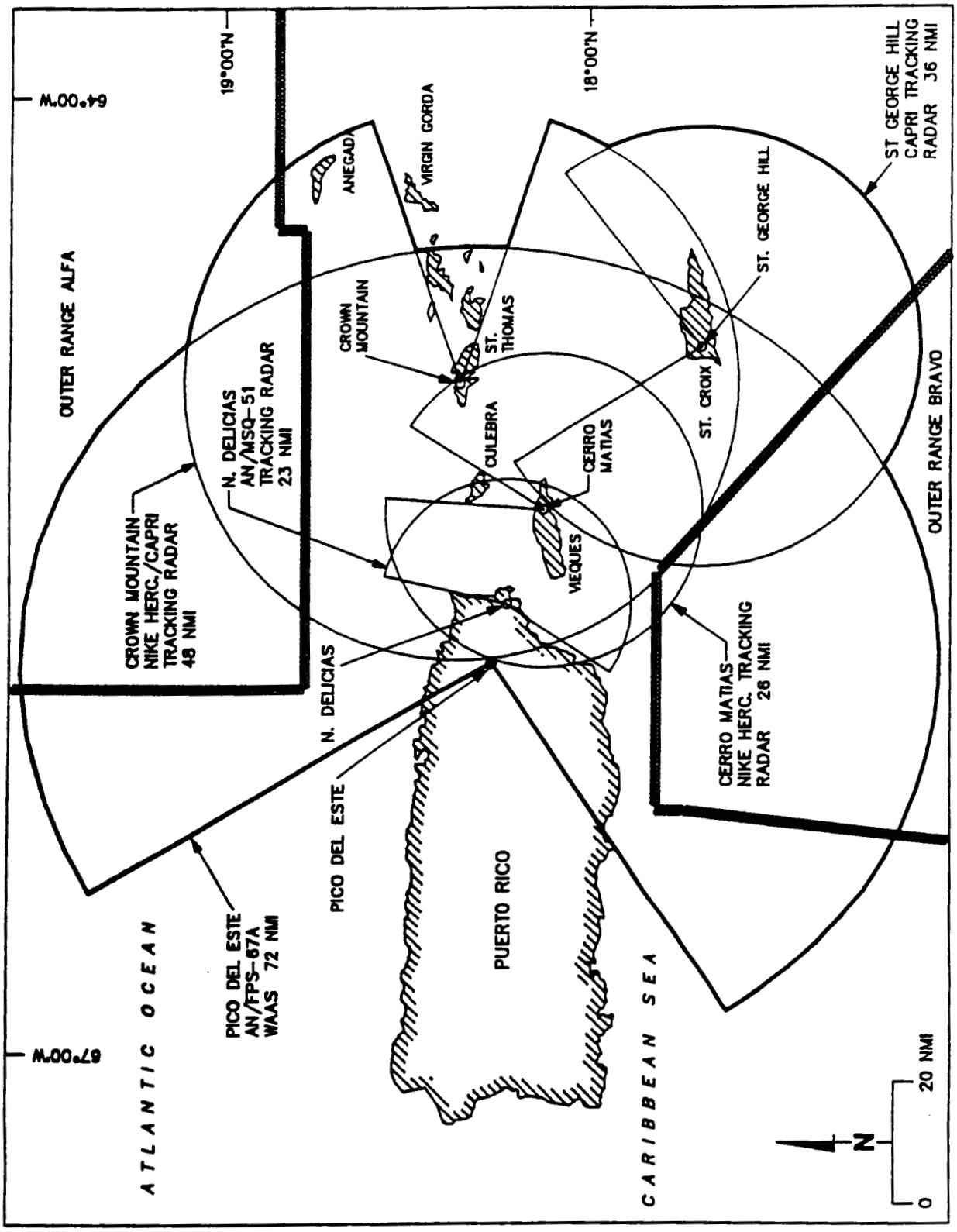

FIGURE VII.A-5 AFWTF RADAR SURFACE COVERAGE AREA

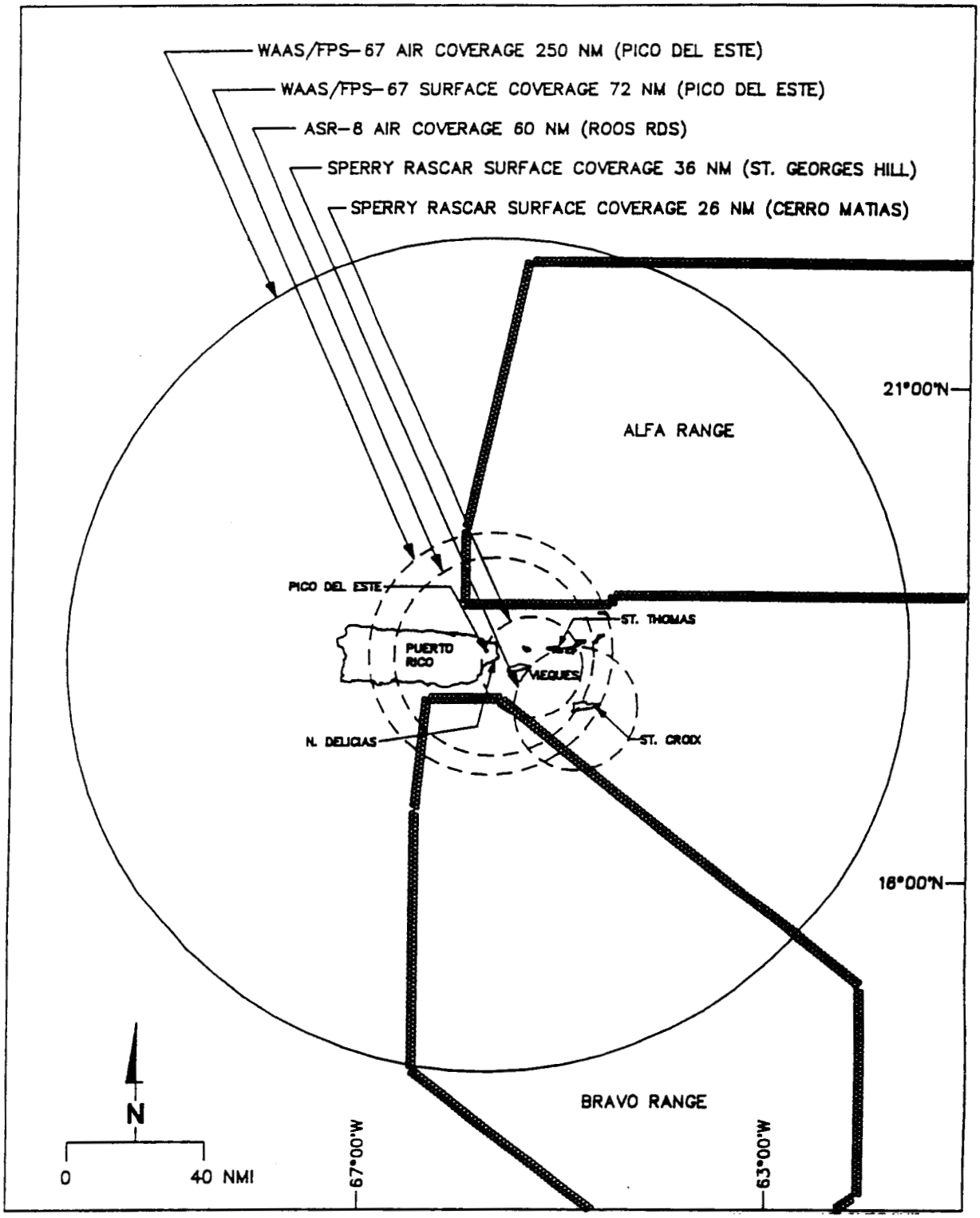

FIGURE VII.A-5A AFWTF RADAR AIR COVERAGE AREA

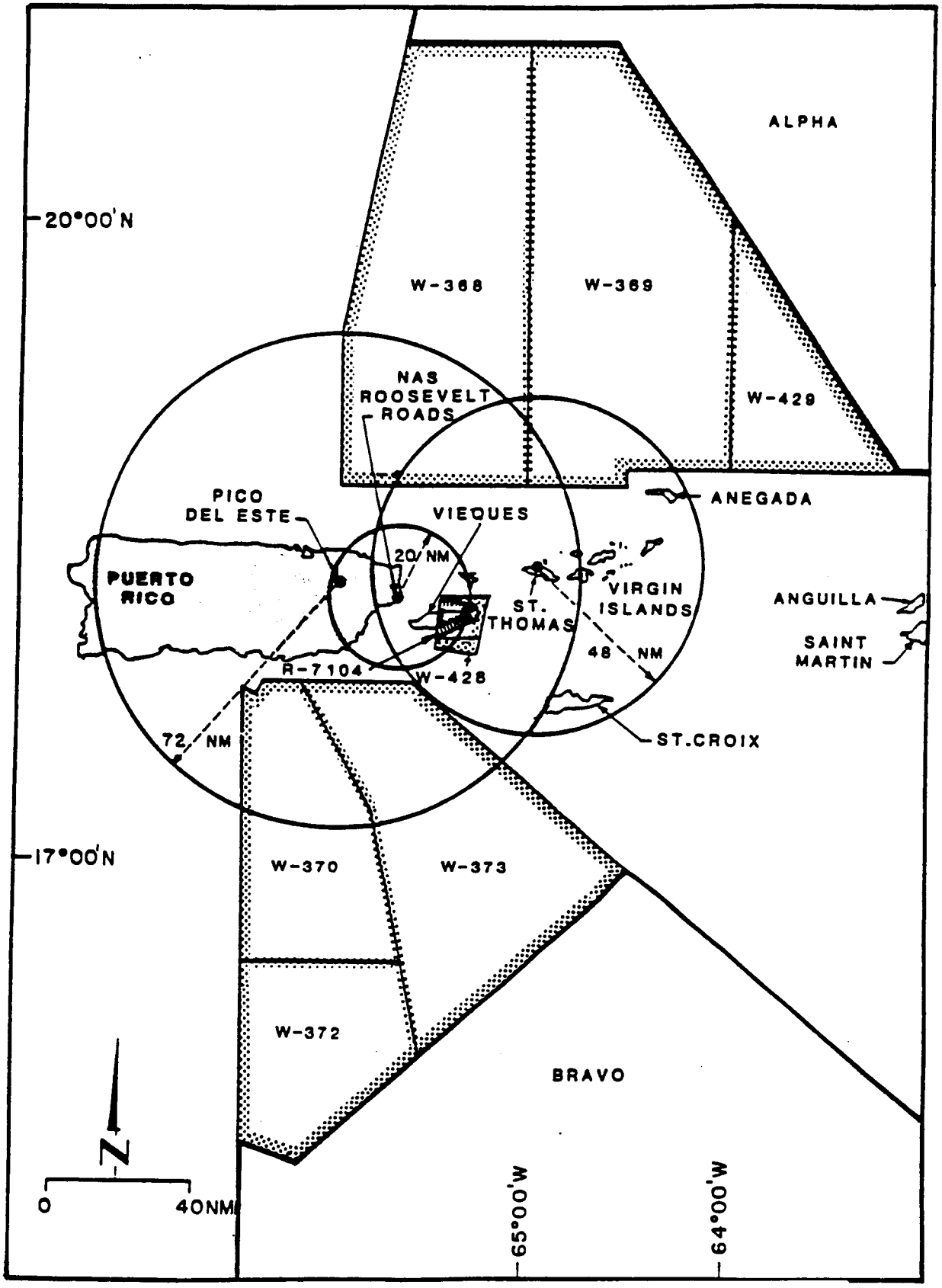

FIGURE VII.A-6 AFWTF TELEMETRY COVERAGE

The CAPRI Radar is a G-band, high accuracy, long range, amplitude comparison, monopulse radar. The radar is capable of skin or beacon tracking and can operate at ranges up to 5,000,000 yards or 2450 NMI. NOTE: The radar at St. Croix will be relocated to Pico del Este.

1 ea. NIKE-HERCULES Radar located at St. Thomas Radar Site
IOC: 1975

Operation and maintenance is accomplished by Range O&M contractor personnel.

The NIKE-HERCULES Radar at St. Thomas consists of a monopulse, I-band Instrumentation Radar. This radar provides target control and aircraft tracking services in support of Inner and Outer Ranges. Maximum operating range is approximately 200 NMI.

1 ea. Integrated Target Control System (ITCS).
Location: Trackers - Pico del Este (4), and St. Thomas (2). The Control is positioned at the Range Operations Center
IOC: 1978/1986

Operation and maintenance is accomplished by on-site contract personnel. (Refer to Appendix A for system description.

1 ea. Tactical Data Links 11, 14, and 4A (UHF and HF)
IOC: 1970

Operation and maintenance is accomplished by on-site contract personnel.

Navy Tactical Data System (NTDS) Links 11 and 14 provide means for exchanging tactical information between Fleet operational units and the AFWTF Range Operations Center. Link 4A, with IOC of June 91, is for aircraft tactical control.

3 ea. UNIVAC-1230 Central Processing Units
IOC: 1967/1970

Operation and maintenance is accomplished by on-site contract personnel.

The UNIVAC-1230 Computer System is the heart of the Central Command and Control System (CCCS). It consists of various peripheral equipments to process and store exercise collected data for operations command and control. All major range instrumentation systems like radars, displays, video processors, NTDS systems, etc., are connected to these computers. UNIVAC-1230s are 30-bit word length machines with 32K RAM having a cycle time of 2 microseconds.

1 ea. Integrated Data Extraction and Reduction (IDER) System
IOC: 1982

Operation and maintenance is by on-site contract personnel.

The IDER System is basically a computer system presently being used to support the data reduction functions of the AFWTF.

1 ea. Real Time Display System (RTDS) located at the ROC.
IOC: 1982

Operation and maintenance is accomplished by on-site contract personnel.

The RTDS performs the data processing and real time display of exercise units for operations command and control. The RTDS includes a Large Screen Display (LSD) System, which consists of three 7-foot by 7-foot rear projection screens, a RAMTEK 9300 Display Generator Subsystem, and "light-valve"-type video projectors. LSD control is performed through an AN/UYA-4(V) console. A Display Operations Console (DOC) is used for system initialization and control. The command and control sub-system consists of eight command and control terminals which are used to perform range control management functions.

1 ea. AN/MSQ-51 Aerial Target Control Center
IOC: North Delicias 1963

Operation and maintenance is accomplished by on-site contract personnel.

The AN/MSQ-51 consists of an acquisition and tracking radar, target control system, analog computer, communications equipment, and a remote data buffer. The target control system is used for the tracking and control of QST-35 SEPTARS.

1 ea. Ground Telemetry Complex (UHF/VHF TLM station at Puerca Point, Puerto Rico)
IOC: 1970

Operation and maintenance is accomplished by civil service (NWAC) personnel.

The Ground Telemetry Complex provides the capability to monitor air-to-air, surface-to-air, and surface-to-surface instrumented missiles to determine weapon system performance. Performance data is maintained for post-exercise evaluation. See Appendix A for a more detailed description of Fleet telemetry services.

1 ea. Electronic Warfare Range (EWR)
IOC: 1974

Operation and maintenance is accomplished by on-site contract personnel.

The EWR presently consists of the EW Control Room located in the Range Operations Center (ROC) aboard the Naval Station Roosevelt Roads, and one Threat Platform Simulators (TPS) located at Pico del Este for the coverage of all the operating ranges. Four additional TPSs are awaiting critically short supplies. Additional TPS's will be located at St. Croix and St. Thomas, USVI and Vieques Island. The EWR TPS is capable of simulating enemy threats in the E, F, H, I, and J bands. The Noise Jammer Simulator (NJS) (undergoing long-term repairs), is a generic noise jammer which encompasses all major types of airborne and ship-borne jamming threats which Navy radar operators may encounter. The NJS is capable of simulating numerous targets with multiple jammers. See Appendix A.3 (REWS) for a detailed description of the surface EW training system. Surface EW and NJS coverage is shown in Figures VII.A-7 and VII.A-7A.

8 ea. AN/SRW-4D Target Command and Control Systems
IOC: 1960

Operation and maintenance is accomplished by on-site contract personnel. The AN/SRW is used to control SEPTARs via UHF radio signals.

(2) Communications. UHF and microwave communications for voice and data transmissions are available. The existing microwave equipment consists of an analog-type Lenkurt 76C radio and a 46A1/46A3 Multiplex System with a 54A FM program channel subsystem. A wide variety of fixed and portable radios are used to support operations. Secure voice and data (tactical links) communications are also available.

(3) Facilities. AFWTF telemetry, radar, and C3 facilities are located on Vieques, St. Thomas, St. Croix, as well as the main island of Puerto Rico. Facilities consist of both permanent and nonpermanent structures to house the instrumentation systems equipment, as well as to provide space for offices, maintenance, power generators, storage, and personnel facilities in general. Facilities at Vieques are located at Cerro Matias and Mt. Pirata. Facilities at St. Thomas and St. Croix are located at Crown Mt. and St. George Hill. Facilities in the Puerto Rico area are on the Naval Station, Roosevelt Roads, and Pico del Este.

(4) Electrical Power. Three-phase, 60 Hz, 115/208 volt power is provided at AFWTF sites by diesel motor generators and/or commercial power.

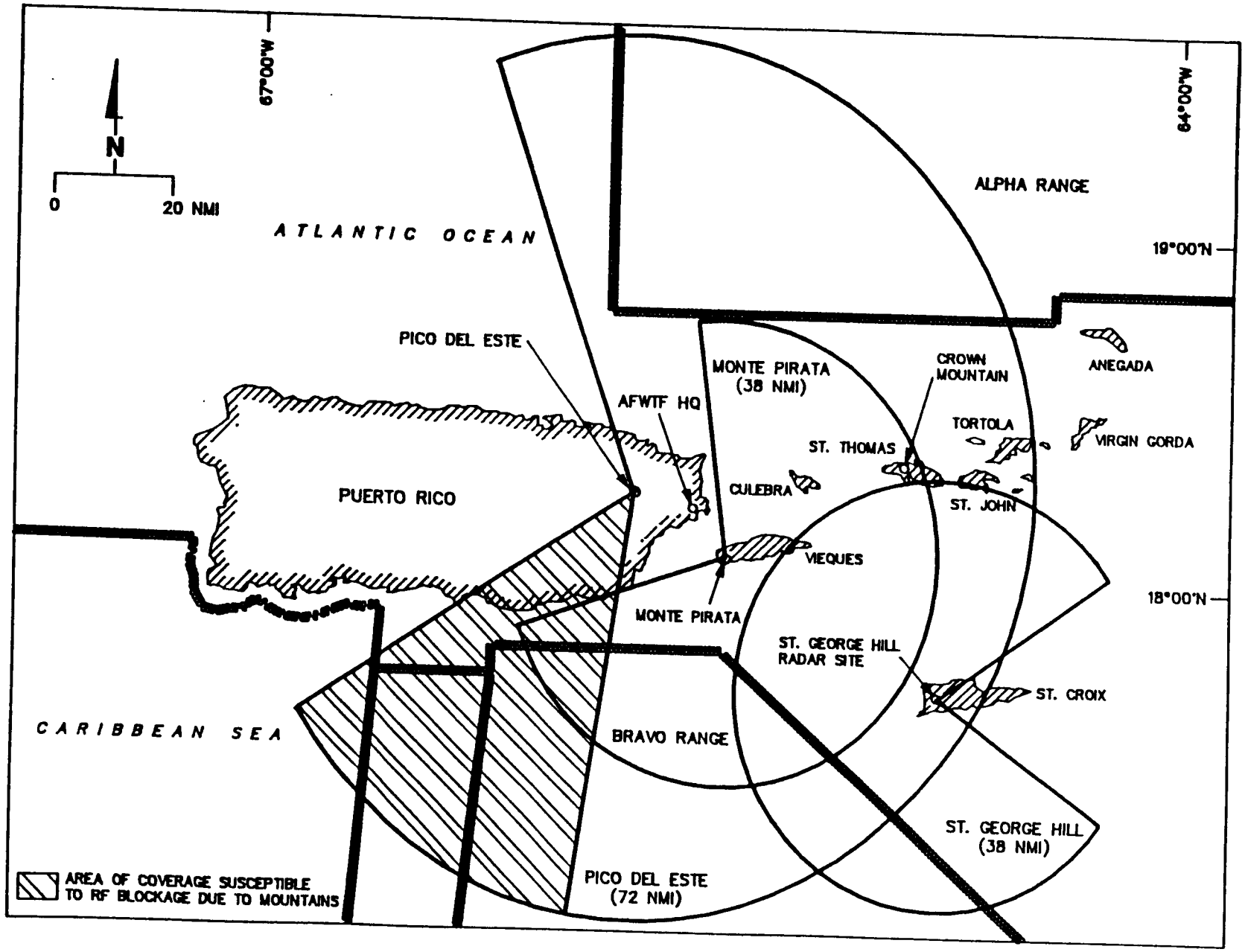

FIGURE VII.A-7 EWR SURFACE COVERAGE

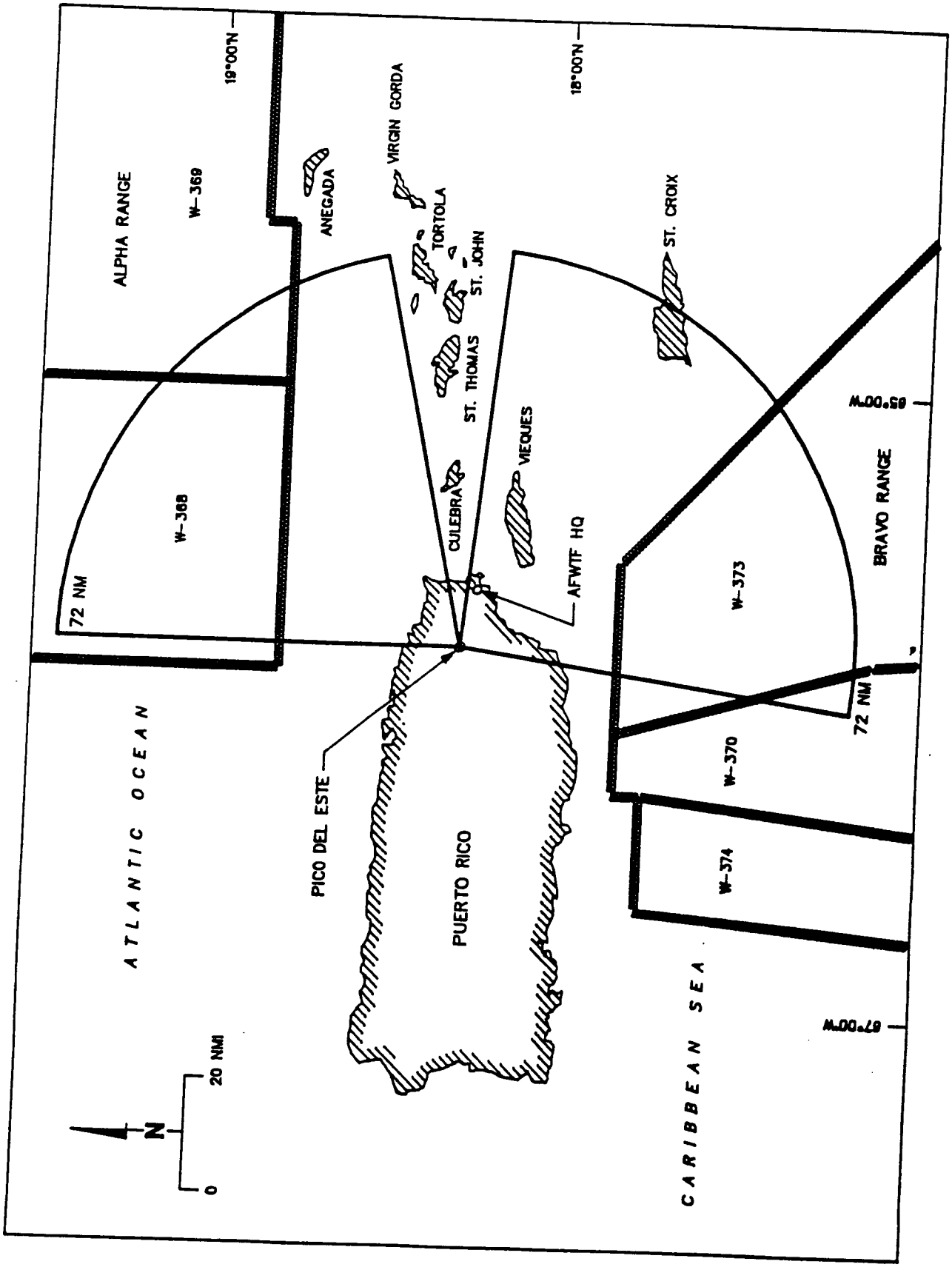

FIGURE VII.A-7A NOISE JAMMER SIMULATOR (NJS) COVERAGE

d. Range Availability

The St. Croix UTR is available as scheduled by the Commanding Officer, AFWTF.

e. Range Instrumentation/Resources

The underwater and shore-based instrumentation provides the capability to conduct ASW and ASU warfare training in an instrumented environment which permits evaluation of the effectiveness of the tactics employed and the performance of the weapon systems. See Appendix A for a more detailed description of the system.

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD, Keywest, FL (Host UIC 00213)
Range Nomenclature or Title	Tactial Aircrew Combat Training System (TACTS)

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

The TACTS provides real-time monitoring and post-exercise evaluation of aircrew performance of air combat manevuering, simulated air-to-ground ordnance deliveries, simulated mine-laying, Electronic Warfare (EW) systems employment. Aircraft equipped with an Aircraft Instrumentation Subsystem (AIS) flying on the TACTS range, continuously provides information for the Control and Computation Subsystem (CCS) for computation. This accomplished by two-way microwave datalinks, which interface with CCS, the Tracking Instrumentaion Subsystems (TIS), and the AIS into a closed- looped system. The Display Debriefing Subsystem (DDS) provides a capability for real-time monitoring of these data on large screen displays and smaller displays at the controllers' console and maintains UHF voice communications with the participating aircrews. The DDS stores these data on magnetic tape for replay during aircrew debriefing.

b. Geographic location of the range.

Southern Florida

c. Distance from the range to the activity's headquarters facility (main site).

2,400 miles

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Page ___ of ___
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d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Host Command

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Time, space, and event instrumentation.

i. Accuracy of tracking.

Sufficient for Pk in air-to-air combat.

j. Data collection/replay capability.

Full time, space, and event data collection; top down and pilot-view display.

k. What are the maxim hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY 1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

Reported by host Command

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

SECTION VI.I

EASTERN CONTINENTAL UNITED STATES

I. KEY WEST COMPLEX

A. Operating Area Manual

Information contained herein is based upon Commander in Chief, U.S. Atlantic Fleet Instruction 3120.26. Further detailed information may be found in that instruction.

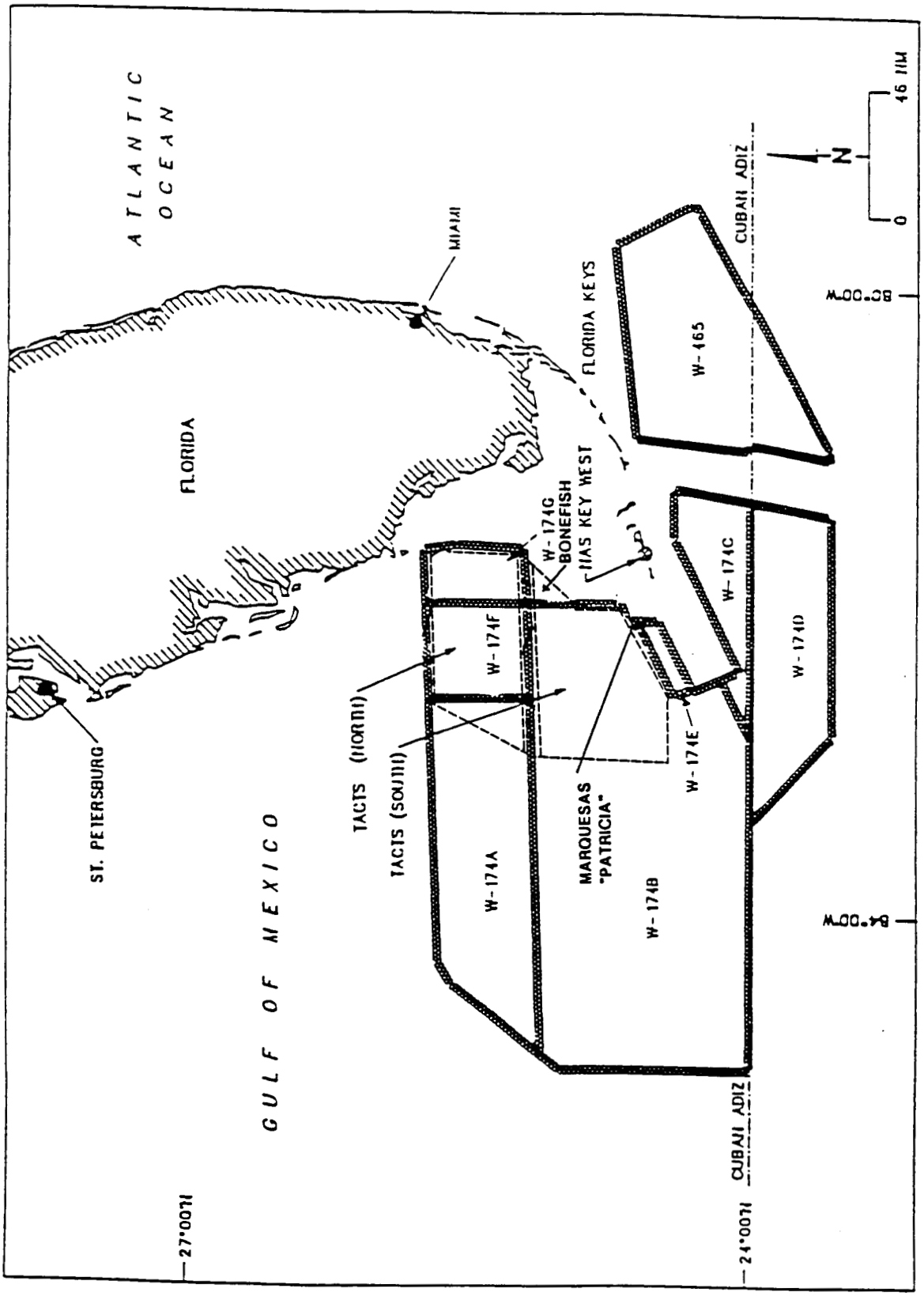
B. General Description

The Key West complex is located over open ocean in waters adjacent to the southwestern coast of Florida, west of the Florida Keys. See Figure VI.I-1. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The Scheduling Activity can provide information about the warning/operating areas. The complex is composed of the following ranges/areas:

1. Marquesas "Patricia" Target
2. Warning Area 174 (W-174)
3. Warning Area 465 (W-465)
4. Key West Tactical Aircrew Combat Training System (TACTS)

C. Command Structure

1. Scheduling Authority:	Commanding Officer Naval Air Station (NAS) Key West, FL 33040-5000 DSN: 483-2853
2. Scheduling Activity: (Except TACTS)	NAS Key West, (Tarpon MRU) DSN: 483-2430
TACTS	VF-45 Liaison Officer NAS Key West, FL DSN: 483-3278 COMM: (305) 293-3278
	NAS Key West (NWAC) DSN: 483-2501 COMM: (305) 293-2501
3. Resource Manager:	Air Traffic Control Facility Officer (ATCFO) Naval Air Station Box 9031 Key West, FL 33040-5000 DSN: 483-2756



(Change 2 Deleted Homestead AFB, corrected location of TACTS.)

FIGURE VI.I-1 KEYWEST COMPLEX

D. Geography and Characteristics of Range/Target Areas

1. Marquesas "Patricia" Target

a. Range/Area Boundaries/Access

The Marquesas "Patricia" Target is an unattended/non-instrumented target located in Warning Area 174E (W-174E) 29 NMI from the NAS Key West TACAN, Channel 29, bearing 270°. See Figure VI.I-1. The target is surrounded by a 2 NMI radius surface danger area. W-174E extends from the surface up to FL300.

b. Exercises/Ordnance

All air-to-surface exercises using inert ordnance are authorized. Explosives are limited to spotting/marking charges only.

c. Target

The target is a grounded Amphibious Personnel Destroyer (APD) 306 feet in length and 37 feet abeam. The target is visible only during low tide. The target does not protrude above the surface.

d. Range Availability

The Marquesas "Patricia" Target is available during daylight hours for ordnance deliveries and during night hours for searchlight runs. The target is not available on Saturdays, Sundays, and holidays.

2. Warning Area 174 (W-174)

a. Range/Area Boundaries/Access

W-174 is special-use airspace over open ocean located from the eastern quadrant clockwise through the northern quadrant of the NAS Key West TACAN, Channel 29, bearing 065° through 355°. W-174 is divided into 7 areas which extend from the surface up to FL700 in areas W-174A/B/C/D/F/G and from the surface up to FL300 in area W-174E. See Figure VI.I-1.

b. Exercises/Ordnance

Air-to-air gunnery is authorized only in W-174A. Air combat maneuvering, instrument training, ground controlled intercepts (GCI), and other exercises are scheduled as requested.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

W-174 is available continuously; however, it is normally scheduled from 0700 to 2400 hours local daily.

e. Range Instrumentation/Resources

(1) Instrumentation

1 ea. AN/FPS-67B radar
IOC: Early 1960s

Operation and maintenance is accomplished by on-site military and contract personnel.

The AN/FPS-67B is used in conducting ground controlled intercept training of aircrews.

1 ea. AN/FYK-17(V)7 Radar Data Display System

Operation and maintenance is accomplished by on-site military and contract personnel.

(2) Communications

40 ea. AN/GRR-24 UHF Receiver
39 ea. AN/GRT-22 UHF Transmitter

Operation and maintenance is accomplished by on-site military and contract personnel.

(3) Facilities

1 ea. Hurricane-proof building of concrete construction.

(4) Electrical Power. Commercial 115/208 volt, 60 Hz, three-phase power is used. Diesel motor generators are used as backups.

3. Warning Area 465 (W-465)

a. Range/Area Boundaries/Access

W-465 is special-use airspace over open ocean located approximately 65 NMI east of the NAS Key West TACAN, Channel 29, bearing 090°. See Figure VI.I-1. W-465A/B extends from the surface up to FL700. W-465 extends from FL210 to FL700.

b. Exercises/Ordnance

W-465 is primarily scheduled for air combat maneuvering and instrument training flights; however, exercises using conventional ordnance may be scheduled upon request.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

W-465 is available continuously; however, it is normally scheduled from 0700 to 2400 daily. W-465 airspace is scheduled by Commanding Officer, NAS Key West, FL.

4. Key West Tactical Aircrew Combat Training System (TACTS)

a. Range/Area Boundaries/Access

This range is comprised of 1800 square miles of airspace in W-174. The TACTS is a 36-aircraft, advanced aircrew training facility developed to enhance aircrew proficiency and evaluate aircrew effectiveness in a tactical environment. TACTS consists of two master tracking towers and six remote towers located in W-174A, W-174B, W-174F, W-174G and the BONEFISH area shown on Figure VI.I-1. The range is divided into two distinct operating areas, the north range and the south range. The two ranges have the capability of being combined for large operations. The TACTS range is normally scheduled from 50 feet to FL430.

b. Exercises/Ordnance

The TACTS range is normally used to enhance aircrew proficiency and evaluate aircrew effectiveness during ACM. Ordnance is not normally expended on the TACTS range.

c. Targets

Targets are not normally required on the TACTS range.

d. Range Availability

Each range will be available for forty minute periods seven days a week, from 0740 until 1620 during the months of November through February and 0740 until 1900 during the months of March through October. Debriefing periods are normally held one hour following completion of each live exercise.

e. Range Instrumentation/Resources

(1) Instrumentation. The TACTS CCS, DDS and support equipment are located in building A-4082 NAS Key West. Appendix A contains additional information on TACTS.
IOC 1989

(2) Communications.

10 ea. AN/URC 101 Transceivers
IOC 1990

Two DDS including one Large Screen Display.
IOC: 4th Qtr. 1989
An Advanced Data Display System (ADDS) will replace the DDSs in March 1994.

Operation and maintenance is accomplished by on-site government and contractor personnel.

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD, NAMFI Range, Crete, Greece
Range Nomenclature or Title	TLM Station

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

Fleet Training and Operational Test and NATO Exercises

b. Geographic location of the range.

NAMFI, Crete, Greece

c. Distance from the range to the activity's headquarters facility (main site).

7,046 miles

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

COMSIXTHFLT

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

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Reported by host Command
h. Instrumentation capability.

Full telemetry capability (missiles), and data links

i. Accuracy of tracking.

Reported by host Command

j. Data collection/replay capability.

Full telemetric parameter data collection/replay for missiles, targets, and data links

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY 1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

CRETE TELEMETRY FIELD OFFICE DESCRIPTION AND CAPABILITIES

April 1994

Prepared By:
Naval Warfare Assessment Division
Performance Assessment Directorate
P.O. Box 5000
Corona, CA 91718-5000

NWAD

Naval Warfare Assessment Division

1.0 EXECUTIVE SUMMARY

1.1 Purpose

This document is intended to provide information concerning the capabilities and site characteristics of the Naval Warfare Assessment Division (NWAD) Telemetry Field Office located on the NATO Allied Missile Firing Installation (NAMFI), Souda Bay, Crete, Greece.

1.2 Field Office Mission

The NWAD Telemetry Field Office in Crete is one of three currently active Field Offices which provide missile telemetry services to Fleet elements for both developmental programs and Fleet training exercises. The Field Office operates in concert with the NAMFI Range Coordinator during operations, and scheduling, and coordination for U.S. Navy firings is done through Commander, SIXTH Fleet (COMSIXTHFLT). The Field Office mission is to acquire, process, display and transmit missile telemetry data from all telemetered missiles fired at the NAMFI firing range.

1.3 Facility Description

TheTelemetry Field Office is a tenant activity located on Greel soil on the Greek operated NAMFI facility overlooking the off-shore firing range. The facility consists of five transportable vans housing equipment and providing operations and office space, two diesel generators and a motor generator with a separate distribution panel, and three antennas mounted on concrete pads. Figure 1.1 is a photograph of the exterior of this facility

1.4 Operations and Instrumentation

Figure 1.2 shows the NAMFI operating area. The antennas at NAMFI are at an elevation of 1,300' above sea level, making the radio horizon approximatly 50 nm. To enable the station to receive telemetry from a ship-launched missile while the missile is is still on the launcher or is in the early portion of its flight, it is desirable for the firing ship to be positioned within a 50 nm radius of the NAMFI Range Control Building. Telemetry signals can be received from an air-launched missile fired at any point on the range, provided that the aircraft's altitude is sufficient to place the missile above the radio horizon of the telemetry station. Fleet exercises require telemetry station instrumentation to support both air launched and surface launched missile firings. The telemetry station supports all telemetered missile firings by receiving telemetry signals from missiles (and targets if required) in flight, recording telemetered data for future playback, and displaying data in real time for analysts to provide "quick look" analysis feedback to the Fleet or other using activities as appropriate. Figure 1.3 illustrates the Field Office operations.

2.0 BACKGROUND

2.1 History

The NAMFI facility became operational in August, 1971. The Naval Air Systems Command tasked and funded NWAD (then Fleet Analysis Center (FLTAC) to provide a telemetry station to support Navy missile firings on the NAMFI range. In August,1971, an interim VHF telemetry station was installed, followed in September, 1971, by the final operational UHF configuration. Continuing system modifications have been accomplished

over the years to accommodate ever changing missile telemeter designs, which have required new systems development and implementation. This includes the transition from analog to digital systems which, among other things, provided a PCM capability. Over the years the facility has supported telemetry from U.S. Navy and NATO tactical missiles, as well as U. S. Army tactical missiles.

2.2 Operational Commitment

The Crete Telemetry Field Office is authorized by directives (see references b,c,d and e) and is directed and funded by NAVAIRSYSCOM (PMA 248) to provide telemetry support of Fleet missile firing exercises conducted on the NAMFI range. Telemetry data acquisition and processing operations must be capable of collecting the maximum amount of weapon system data while imposing minimum constraints on Fleet operations. Data results must be available to analysts both real time and near real time at the Field Office. After analysis, analytical results must be available to the Fleet commands in the shortest possible time.

The Field Office supports all NAMFI missile firing operations, including non-U.S. firings. For non-U.S. NATO HAWK firings, support consists of acquiring the missile telemetry, displaying the data on paper records and providing the records to NAMFI. No analysis is performed on the data. Such missile operations occur on a one day a week basis for half of the weeks of the year. For all other non-U.S. firings, support consists of acquiring the missile telemetry and providing the analog tape to NAMFI, or to NWAD Corona if a separate FMS case is involved. In return for NWAD support of NAMFI missile firing operations, NAMFI provides real estate and facility support including power, water, sanitary facilities, security, safety, etc. This mutual support is provided through a formal Technical Arrangement between NAMFI and the U.S. Navy.

3.0 FACILITIES_AND INSTRUMENTATION DESCRIPTION

3.1 Facilities

The telemetry instrumentation and associated equipment are contained in one 40' instrumentation van and one 20' maintenance van. Office facilities are contained in a separate 20' van. Two 8' by 20' enclosures are used for storage. Electrical power during operations is provided by on-site diesel generators, and a motor generator is used for standby power. Data acquisition is provided by two 10' UHF autotrack antennas and one 4' UHF azimuth only autotrack antenna. Figure 1.1 shows the facility exterior. Figure 3.1 is a photograph of the interior of the facility.

3.2 Instrumentation Requirements and Specifications

3.2.1 Requirements

Telemetered missile firing exercises conducted on the NAMFI range require data acquisition, processing, and display instrumentation to support both air launched and surface launched missiles. The Field Office facilities and instrumentation can: (1) dynamically track both missiles and targets in flight, (2) record telemetered data for future playback, and (3) display data in real time to provide "quick look" analysis feedback to the Fleet in support of the exercises and programs conducted on the range (see Table 1).

Table 1 - Exercises and Programs Supported by the Crete Telemetry Field Office

Air-launched weapons systems verification

Annual Fleet training (air and surface)
- Refresher training
- Fleet exercises
- Ship pre-deployment exercises

Other U.S. military service firings (if required)

Foreign Military Sales

NATO firings

NATO HAWK (backup only)
- Evaluation acceptance rounds

3.2.2 Specifications

Tables 2 and 3 describe the system specifications and capabilities.

Table 2 - Input Capabilities

Number of telemetry autotrack antennas		
10' azimuth and elevation		2
4" azimuth only		1
Radio horizon coverage (nm)		50
Frequency coverage (MHz)		
S-band		2200 - 2290
L-band		1760 - 1850
MDI-band		1435 - 1535
Maximum telemeter data rates		
PCM		5 MBits/Sec
PAM		100 KCh/Sec
Number of PCM channels		1
Number of PAM channels	Limited to any combination	
Number of FM/FM channels	---------- 2	
Number of Doppler channels	of two (only two data buses)	
Range timing		IRIG-B

Table 3 - Output Capabilities

Analog recorders	
Number	2
Record characteristics	
Direct record bandwidth	
Lower limit	400 Hz
Upper limit	2 MHz
Number of tracks	14
Pen Recorder Displays	
Number	6
Functions per display	
Analog	8
Discrete	8
Maximum chart speed	500 mm/Sec
Doppler Displays	
Number of flight Doppler systems	1
Number of intercept Doppler systems	1

3.3 Instrumentation Detailed Descriptions

3.3.1 Physical Layout

Figure 3.1 shows the interior of the instrumentation van.

3.3.2 Subsystem Details

Figure 3.2 is a block diagram of the equipment.

3.3.2.1 Antenna Subsystem

There are two 10' autotrack UHF subsystems and one 4' azimuth only autotrack UHF antenna subsystem. Each subsystem performs the function of detecting the missile telemetry signal, tracking the signal throughout the flight to missile-target intercept, and providing the signal to the receiver subsystem. Signals can be received in the UHF frequency bands of 1435-1535 MHz (L), 1760-1850 MHz (MDI),and 2200-2290 MHz (Low-S). The 10' antenna beamwidth is approximately three degrees at S-band, whereas the 4' antenna beamwidth is approximately eight degrees. Signals are down-converted at the UHF antennas to minimize transmission losses. The 10' antennas are based on a dual axis design to allow for tracking in both azimuth and elevation. Both Right Hand Circular (RHC) and Left Hand Circular (LHC) polarization are available for all three bands (L, MDI, and S). Studies have shown the fading caused by multipath and other factors independently affect the RHC and LHC polarization. Each 10' UHF antenna utilizes two tracking receivers, one of which functions as a tracking receiver while the other can automatically select the signal polarity with the greatest strength (or a manual selection can be made).

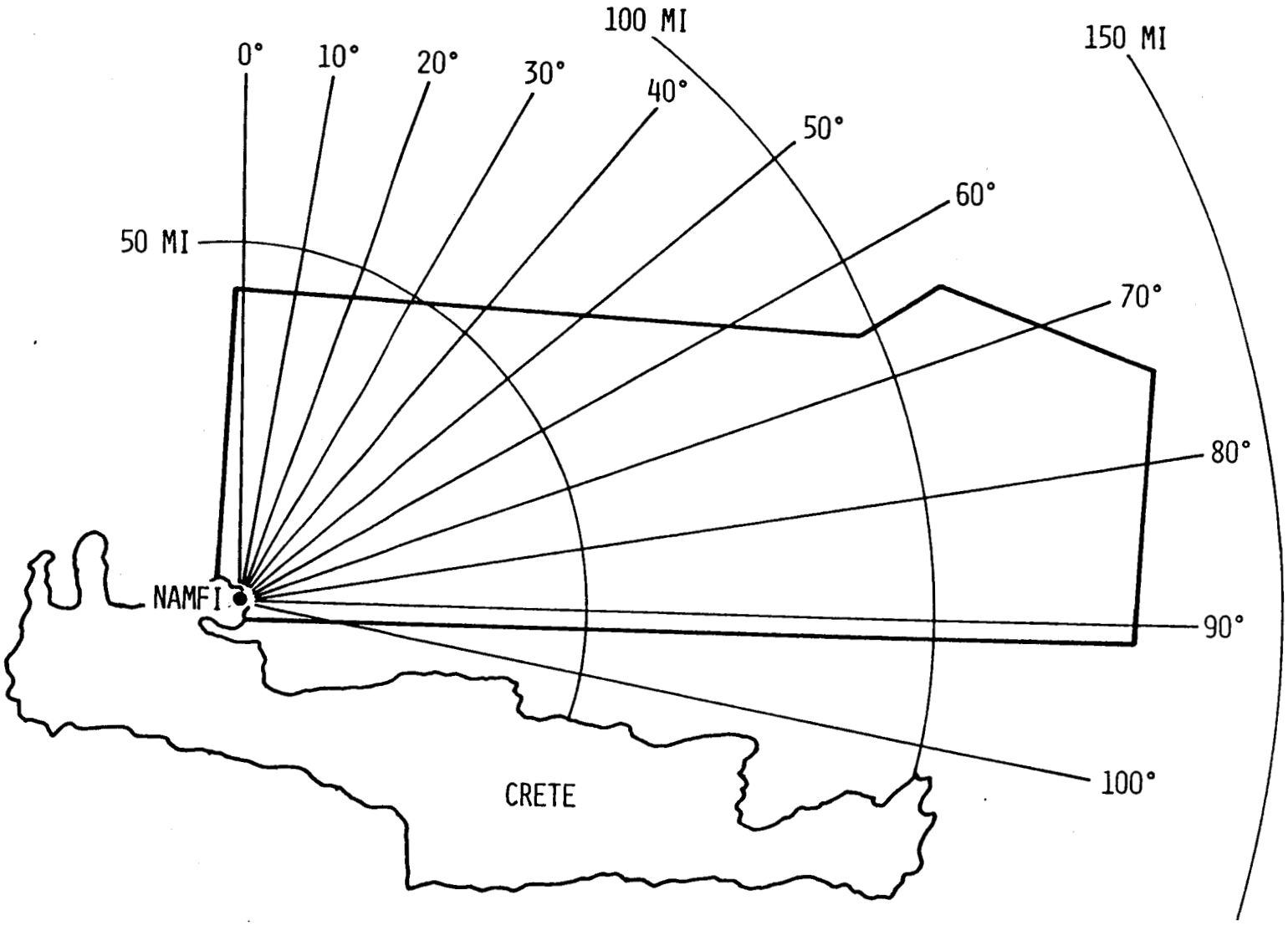


FIGURE 12. NAMFI OPERATING AREA

SECTION VIII.A

MEDITERRANEAN AREA

I. NATO MISSILE FIRING INSTALLATION (NAMFI)

A. Operating Area Manual

Information contained herein is based upon the Commander, Sixth Fleet Instruction C3500.4. Further detailed information may be found in that instruction.

B. General Description

NAMFI is located in the Mediterranean Sea on the Acrotiri peninsula of the island of Crete. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. See Figure VIII.A-1. The complex consists of:

1. NATO Missile Firing Installation (NAMFI)

C. Command Structure

1. Scheduling Authority: SHAPE, Europe
   APO New York 09055
   (Brussels, Belgium)

2. Scheduling Activity: Commander
   Sixth Fleet
   FPO New York 09501-6002
   (COMSIXTHFLT)

D. Geography and Characteristics of Range/Target Areas

1. NATO Missile Firing Installation (LG(D)CI01A/B/C)

a. Range/Area Boundaries/Access

The NAMFI range is an open ocean area located in the Mediterranean Sea north of the island of Crete. The airspace extends from the surface up to unlimited altitude. Access to the installation is by ship or by aircraft to the Souda Airfield and surface vehicle to the range installation approximately 5 km north of the airfield.

b. Exercises/Ordnance

NAMFI provides for surface-to-surface, surface-to-air, air-to-air, and air-to-surface missile exercises using conventional ordnance.

c. Targets

Targets are arranged and/or supplied by the user. SEPTARS and MQM-74C drones are available.

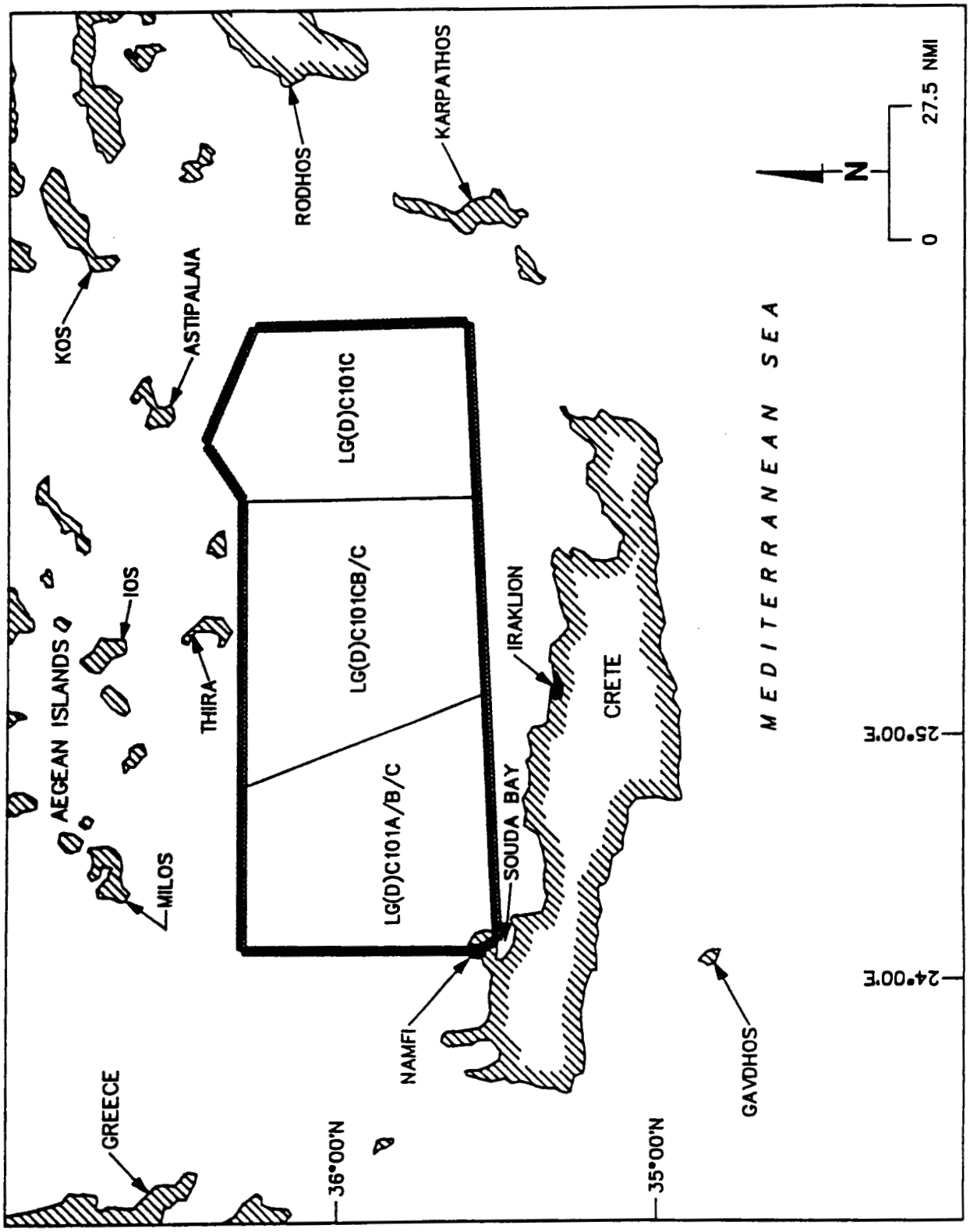


FIGURE VIII.A-1 NAMFI

d. Range Availability

NAMFI is available as scheduled by COMSIXTHFLT.

e. Range Instrumentation/Resources

1 ea. Ground Telemetry (TLM) Complex
IOC: 1971

Operation and maintenance is accomplished by on-site civil service personnel.

See Appendix A for a more detailed description of Fleet telemetry services.

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD, White Sands Beach, Okinawa Japan
Range Nomenclature or Title	WESTPAC TLM Station

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

WESTPAC Fleet training and operational exercises

b. Geographic location of the range.

Okinawa, Japan area

c. Distance from the range to the activity's headquarters facility (main site).

6,484 miles

d. Range size in square miles.

Reported by host Command

e. Scheduling authority.

Commander, U.S. Naval Forces, Japan; FPO Seattle 98762

f. Air space available/restrictions.

Reported by host Command

g. Maximum water depth available/restrictions.

Reported by host Command

h. Instrumentation capability.

Reported by host Command

i. Accuracy of tracking.

Reported by host Command

j. Data collection/replay capability.

Full telemetric parameter data collection/replay for missiles, targets, and data links

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

Reported by host Command

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Reported by host Command

m. What were the actual hours that this range was utilized in FY 1993?

Reported by host Command

n. Who are the customers of the range?

Reported by host Command

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

Reported by host Command

p. Provide a sketch, drawing or map of the range.

To be provided as hard copy under separate cover

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

Reported by host Command

3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

SECTION V.C

WESTERN PACIFIC OCEAN AREA

II. OKINAWA AREA

A. Operating Area Manual

Information contained herein is based upon the Commander, Fleet Air Western Pacific Instruction 3500.2 and the Commander, U.S. Naval Forces, Japan Instruction 3500.3. Further detailed information may be found in these instructions.

B. General Description

The Okinawa area encompasses the island of Okinawa and its adjacent waters. See Figure V.C-1. Radar and telemetry support may be available for some or all of the ranges/areas listed, refer to the OPAREA Manual and the instruction indicated for a complete description of the support available. The area consists of the following:

1. Area Hotel Hotel (RO)W-173
2. Camp Hansen (RO)R-177
3. Area Golf Golf (RO)W-181
4. Sekibi Sho (RO)W-182
5. Okino Daito Jima (RO)W-183/W-183A
6. Area India India (RO)W-184
7. Area Mike Mike (RO)W-185
8. Camp Schwab (RO) R-195
9. IE Shima (RO) W-178/W-178A

C. Command Structure

1. Scheduling Authority:

   Commander
   U.S. Naval Forces, Japan
   FPO Seattle 98762-0051
   (COMNAVFORJAPAN)

2. Scheduling Activities:

Area Hotel Hotel, Area Golf Golf, Sekibi Sho, Okino Daito Jima, Area India India, Area Mike Mike	Commander Fleet Activities U.S. Naval Air Facility FPO Seattle 98770-1100 (COMFLEACTS,Okinawa/Kadena,Japan) Tel: 634-4637
Ie Shima	Commanding General Marine Corps Base Camp Smedley D. Butler FPO Seattle 98773 (Okinawa, Japan) Tel: 635-7221/7222

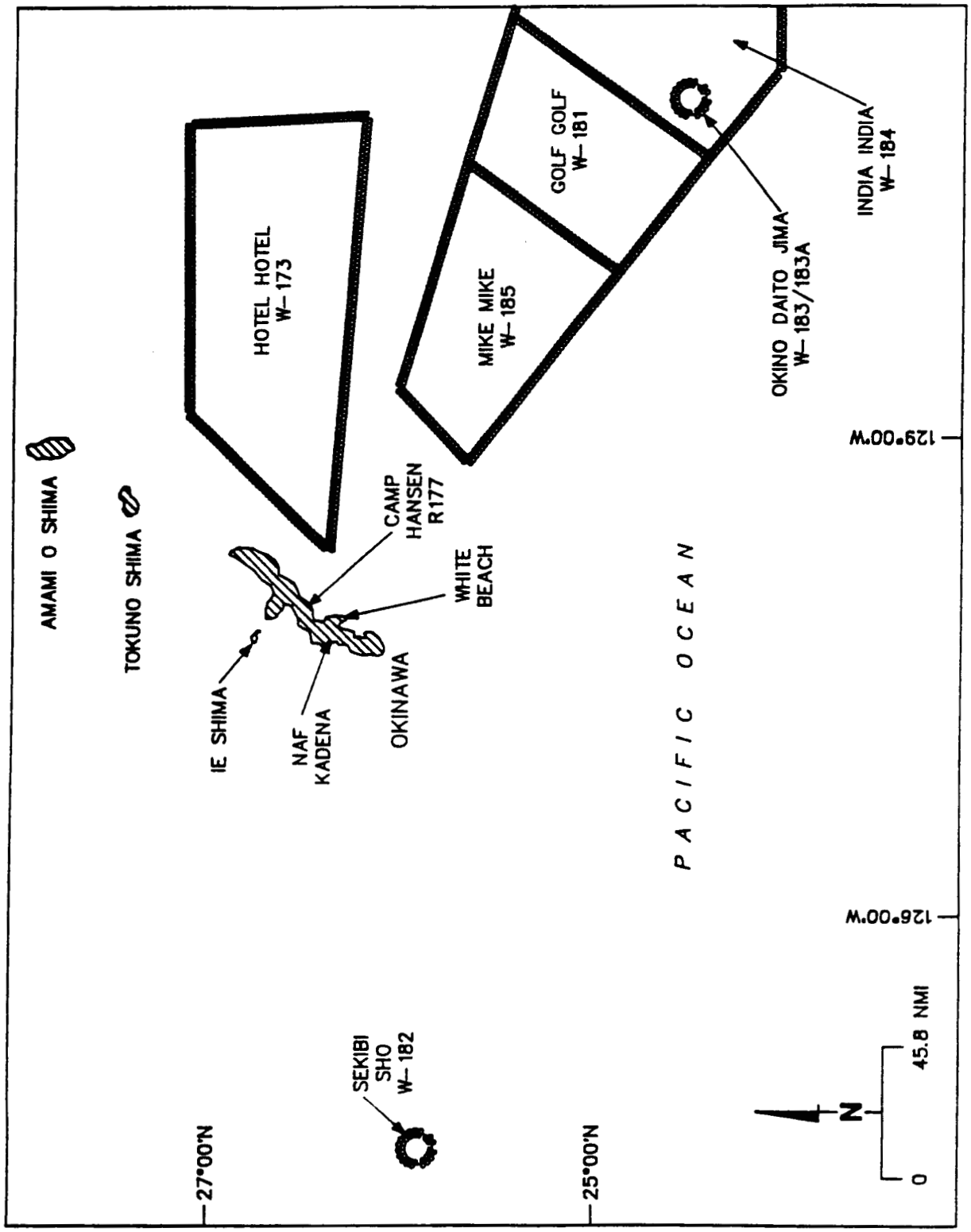


FIGURE V.C-1 OKINAWA AREA

Camp Hansen Camp Schwab	Commanding General Marine Corps Base Camp Smedley D. Butler Range Officer Tel: 623-4583/4385

3. Resource Managers:

Okino Daito Jima	COMFLEACTS,Okinawa/Kadena,Japan Tel: 634-4637
Camp Hansen	Commanding General Marine Corps Base Camp Smedley D. Butler FPO Seattle 98773 (Okinawa, Japan) Tel: 635-7221

D. Geography and Characteristics of Range/Targets

1. Area Hotel Hotel (RO)W-173

a. Range/Area Boundaries/Access

Area Hotel Hotel is special-use air and surface space over open ocean located approximately 50 NMI northeast of the Kadena VORTAC, Channel 57. The airspace extends from the surface up to unlimited altitude.

b. Exercises/Ordnance

Area Hotel Hotel is used for surface-to-surface, surface-to-air, air-to-surface, and air-to-air exercises with conventional ordnance. It is the primary area for air-to-air and surface-to-air instrumented missile shoots in the Okinawa area.

c. Targets

Targets are arranged and/or supplied by the user. AQM-37 and MQM-74 aerial targets are arranged through VC-5, NAS Cubi Point, R.P., or NAF Kadena. Drone launch is either open sea or airborne with the telemetry station located at White Beach.

d. Range Availability

Area Hotel Hotel is available daily from 0600 to 2000.

2. Camp Hansen (RO)R-177

a. Range/Area Boundaries/Access

The Camp Hansen Range is special-use airspace located approximately 10 NMI northwest of the Kadena VORTAC, Channel 57. The area extends from the surface up to 3000 feet MSL.

b. Exercises/Ordnance

The Camp Hansen range is used for amphibious training and weapons exercises. Weapons used are organic to an amphibious division and its supporting aircraft.

c. Targets

Multiple targets are located within the impact area.

d. Range Availability

Camp Hansen range is available continuously.

3. Area Golf Golf (RO)W-181

a. Range/Area Boundaries/Access

Area Golf Golf is special-use airspace over open ocean located approximately 160 NMI southeast of the Kadena VORTAC, Channel 57. The airspace extends from the surface up to 4000 feet MSL.

b. Exercises/Ordnance

Area Golf Golf is used for air-to-air exercises with conventional ordnance.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

Area Golf Golf is available continuously.

4. Sekibi Sho (RO)W-182

a. Range/Area Boundaries/Access

Sekibi Sho is special-use air and surface space over open ocean located approximately 160 NMI west of the Kadena VORTAC, Channel 57. W182 is a 5 NMI diameter circular area extending from the surface up to 4000 feet MSL. Access is by helicopter or surface vessel.

b. Exercises/Ordnance

The Sekibi Sho range is used for ship-to-shore and air-to-surface exercises with conventional ordnance.

c. Targets

Unknown.

d. Range Availability

Not currently active.

5. Okino Daito Jima (RO)W-183 and (RO)W-183A

a. Range/Area Boundaries/Access

Okino Daito Jima is special-use air and surface space located approximately 200 NMI southeast of the Kadena VORTAC, Channel 57. W183 and W183A are defined by concentric circles. W183 is a 6 NMI diameter circle around Okino Daito Jima. W183A extends outward an additional 4 NMI from the boundary of W183. Both Warning Areas extend from the surface up to an unlimited altitude.

b. Exercises/Ordnance

Okino Daito Jima is used for ship-to-shore and air-to-surface gunnery and bombing exercises with conventional ordnance. Okino Daito Jima is certified "safe" for A-6E TRAM and OV-10D NOS laser system operations. See COMNAVFORJAPANINST 3500.3 for information concerning laser operations. Access is by helicopter or surface vessel.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

Okino Daito Jima is available 24 hours a day, averaging 15 days per month, not to exceed 180 days a year.

6. Area India India (RO)W-184

a. Range/Area Boundaries/Access

Area India India is special-use air and surface space over open ocean located approximately 200 NMI southwest of the Kadena VORTAC, Channel 57. The airspace extends from the surface up to unlimited altitude.

b. Exercises/Ordnance

Area India India is used for surface-to-surface, surface-to-air, and air-to-air exercises with conventional ordnance.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

Area India India is available daily from 0600 to 1800.

7. Area Mike Mike (RO)W-185

a. Range/Area Boundaries/Access

Area Mike Mike is special-use air and surface space over open ocean located approximately 90 NMI southeast of the Kadena VORTAC, Channel 57. The airspace extends from the surface up to unlimited altitude.

b. Exercises/Ordnance

Area Mike Mike is used for surface-to-surface, surface-to- air, air-to-surface, and air-to-air exercises with conventional ordnance.

c. Targets

Targets are arranged and/or supplied by the user.

d. Range Availability

Area Mike Mike is available daily from 0600 to 1800.

8. Camp Schwab (RO)R-195

a. Range/Area Boundaries/Access

The Camp Schwab range is a special use air space located approximately 15 NMI northeast of the Kadena Vortec, Channel 57. The airspace extends from surface to 3000 feet MSL.

b. Exercises/Ordnance

The Camp Schwab range is used for amphibious training and weapons exercises. Weapons used are organic to an amphibious division and its supporting aircraft.

c. Targets

Multiple targets are located within the impact area.

d. Range Availability

Camp Schwab range is available 0600 - 2400 hours, Monday - Saturday.

9. Ie Shima (RO) W-178/W-178A

a. Range/Area Boundaries/Access

The Ie Shima training facility is located on the western third of the island, due west of Okinawa's Motobu peninsula. Two special use air space areas are used. W178 is a circle radius 5 statute miles centered 26° 44' N, 127° 46' E to 15000 MSL. W178A beginning at 26° 40' N, 127° 36' E to 26° 51' N, 127° 31' E hence clockwise along the area of a circle radius 15 NMI centered on 26° 44' N, 127° 46' E to 26° 50', 128° 0' E to 26° 44' N, 127° 46' E to point of beginning to 13000 MSL.

b. Exercises/Ordnance

The Ie Shima training facility is designed and intended to enable units to conduct training in a tactical environment. The following types of training may be scheduled at Ie Shima. This list is by no means all inclusive:

(1) Helicopter Training (incl. NVG's, Externals)
(2) Fixed Wing Training (AV-8, OV-10, KC-130)
(3) Remotely Piloted Vehicle Training
(4) Field Carrier Landing Practice (FCLP) Helo's/ AV/8
(5) Forward Arming and Refueling Point (FARP) Training
(6) Expeditionary Airfield (EAF) Training
(6) Parachute Training (STATIC LINE & HALO/HAHO)
(8) Joint Airborne/ Air Transportability Training (JA/ATT)
(9) Air Delivery/Rigging Training
(10) Special Warfare Training
(11) Rigid Raiding and Craft Training
(12) Small Unit (Company and smaller) Infantry Training
(13) Artillery Raid Training
(14) NBC Defense Training
(15) Rapid Runway Repair Training
(16) Miscellaneous Engineering Training
(17) Mass Casualty Evacuation

* No live fire of any kind is authorized *

c. Targets

There are no targets available.

d. Range Availability

Ie Shima is available for use 0600 - 2300, Monday - Friday, 0600 - 1200 Saturday. One week prior notification at a minimum is required. Training is scheduled on a first come, first served basis.

RANGE RESOURCES
RANGE CAPABILITY FORM

Technical Center Site	NWAD Corona, CA
Range Nomenclature or Title	WISS/Strafe System Test Range

1. List all the ranges that your activity maintains and operates. Provide the following information on each range:

a. A brief statement of what the range is used for.

Development, test, evaluation, and calibration of unique range instrumentation systems used for weapons scoring at NTTRs (Instrumentation & Optical Systems)

b. Geographic location of the range.

NWAD Corona, CA

c. Distance from the range to the activity's headquarters facility (main site).

Located at NWAD Corona, CA main site

d. Range size in square miles.

0.3 square miles

e. Scheduling authority.

NWAD, Corona

f. Air space available/restrictions.

N/A

g. Maximum water depth available/restrictions.

TAB C
Page ___ of ___
UIC: 64267

N/A

h. Instrumentation capability.

Optical and acoustic measuring systems. Mcrowave link and "hot mock-up." Range is surveyed.

i. Accuracy of tracking.

+/- 1 foot for impact point estimate.

j. Data collection/replay capability.

Full data processing/display

k. What are the maximum hours per year that this range is available to support activities? Provide the actual hours that the range was up and capable of providing services. Do not count "down time" due to maintenance, reconfiguration, or administrative activities (i.e., Holiday shutdowns).

4,400 hours per year

l. What were the actual hours this range was utilized per year for the last five years (FYs 1989-1993)?

Year	Use (hrs)
89	3,200
90	3,400
91	3,350
92	3,700
93	3,900

m. What were the actual hours that this range was utilized in FY 1993?

93 - 3,900

n. Who are the customers of the range?

NWAD Instrumentation Engineers

TAB C
Page ___ of ___
UIC: 64267

o. Of the actual hours utilized what percentage of utilization time was provided to which customers?

100% NWAD

p. To be provided as hard copy under separate cover

No

2. Are any of your ranges part of the DoD Major Range and Test Facility Base (MRTFB)? (yes/no) If yes, which ones?

No

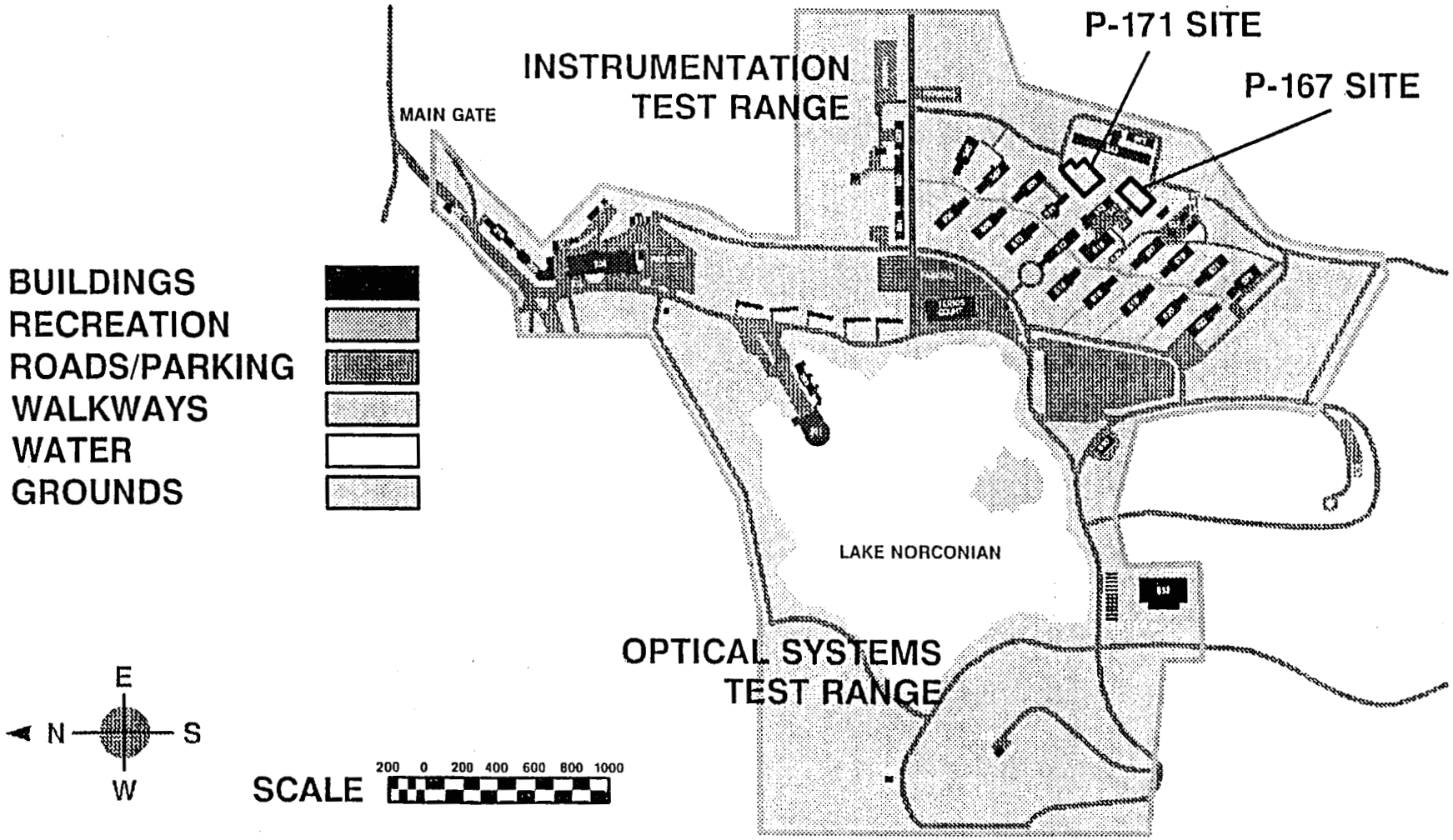
3. Are there any limiting (current or future) environmental and/or encroachment characteristics that are associated with this range.

Reported by host Command

NAVAL WARFARE ASSESSMENT DIVISION, CORONA

NWAD

CORONA SITE



I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

R. SUTTON, RADM, USN
NAME (Please type or print)

Signature

COMMANDER
Title

Date

NAVAL ORDNANCE 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

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.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

NAME (Please type or print)

Signature

Title

Date

NWAD CORONA
DATA CALL #5

JL
SEA 04X
5/13/94

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

R. SUTTON, RADM, USN
NAME (Please type or print)

Signature

COMMANDER
Title

5/10/94
Date

NAVAL ORDNANCE 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

G. R. STERNER
NAME (Please type or print)

Signature

Commander
Title

5-13-94
Date

Naval Sea 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
NAME (Please type or print)

Signature

ACTING
Title

23 MAY 1994
Date

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Edward G. Schwier
NAME (Please type or print)

Edward G. Schwier
Signature

Commanding Officer
Title

5 May 1994
Date

Naval Warfare Assessment Division
Activity

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Edward G. Schwier
NAME (Please type or print)

Edward G. Schwier
Signature

Commanding Officer
Title

5 May 1994
Date

Naval Warfare Assessment Division
Activity

Document Separator

212

1995

BASE REALIGNMENT AND CLOSURE

ENVIRONMENTAL

DATA CALL

DATA CALL 33

FOR

NAVAL WARFARE ASSESSMENT DIVISION

CORONA, CALIFORNIA

27 MAY 1994

ENVIRONMENTAL DATA CALL:
DATA CALL TO BE SUBMITTED TO
ALL NAVY/MARINE CORPS HOST ACTIVITIES

20 APRIL 1994

BRAC 1995 ENVIRONMENTAL DATA CALL:
All Navy/Marine Corps Host Activities

INDEX

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ENVIRONMENTAL COMPLIANCE	18
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Activity: N64267

ENVIRONMENTAL DATA CALL

Responses to the following questions provide data that will allow an assessment of the potential environmental impact associated with the closure or realignment of a Navy shore activity. This criterion consists of:

- Endangered/Threatened Species and Biological Habitat
- Wetlands
- Cultural Resources
- Environmental Facilities
- Air Pollution
- Environmental Compliance
- Installation Restoration
- Land/Air/Water Use

As part of the answers to these questions, a *source citation* (e.g., **1993** base loading, **1993** base-wide Endangered Species Survey, **1993** letter from USFWS, **1993** Base Master Plan, **1993** Permit Application, **1993** PA/SI, etc.) must be included. It is probable that, at some point in the future, you will be asked to provide additional information detailing specifics of individual characteristics. In anticipation of this request, supporting documentation (e.g., maps, reports, letters, etc.) regarding answers to these questions should be retained. Information needed to answer these questions is available from the cognizant EFD Planning and Real Estate Divisions, and Environment, Safety, and Health Divisions; and from the activity Public Works Department, and activity Health Monitoring and Safety Offices.

For purposes of the questions associated with land use at your base is *defined* as *land* (acreage owned, withdrawn, leased, and controlled through easements); *air* (space controlled through agreements with the FAA, e.g., MOAs); *and water* (navigation channels and waters along a base shoreline) *under the control of the Navy.*

Provide a list of the tenant activities with UICs that are covered in this response.

Tenant Command	UIC
Naval Weapons Station, Seal Beach	60701
Naval Weapons Center, China Lake	62738
DPS Det., Point Mugu	66965
Branch Medical Clinic, NH Long Beach	46360

Activity: N64267

NAVFACENGCOM, OCICC 68711

1. ENDANGERED/THREATENED SPECIES AND BIOLOGICAL HABITAT

1a. For federal or state listed endangered, threatened, or category 1 plant and/or animal species on your base, complete the following table. Critical/sensitive habitats for these species are designated by the U. S. Fish and Wildlife Service (USFWS). A species is present on your base if some part of its life-cycle occurs on Navy controlled property (e.g., nesting, feeding, loafing). Important Habitat refers to that number of acres of habitat that is important to some life cycle stage of the threatened/endangered species that is not formally designated.

NO.

SPECIES (plant or animal)	Designation (Threatened/ Endangered)	Federal/ State	Critical / Designated Habitat (Acres)	Important Habitat (acres)
example: Haliaeetus leucocephalus - bald eagle	*threatened*	*Federal*	*25*	*0*
Least Bell's Vireo	Endangered	Both	Unknown	8.5
Blue-gray Gnatcatcher	Threatened	Federal	Unknown	Unk.
Yellow-billed Cuckoo	Threatened	Both	Unknown	Unk.
Southern Bald Eagle	Endangered	Both	Unknown	Unk.
Willow Flycatcher	Endangered	State	Unknown	Unk.
Vermillion Flycatcher	Endangered	State	Unknown	Unk.
Stephen's Kangaroo Rat	Endangered	Both	Unknown	Unk.

Source Citation: **Natural Resources Management Plan Naval Warfare Assessment Center, Corona, California, 1990.**

The U.S. Fish and Wildlife Service has never had the opportunity to officially designate Naval Warfare Assessment Division (NWAD) acreage as "Critical/Designated Habitat". Hence the acreage is listed as unknown. "Important Habitat," for the most part, is also unknown. However, in the case of the Least Bell's Vireo, it is listed as 8.5 acres, because

this is the number of acres of Riparian woodland on the property. The above list is derived from two sources:

1. San Bernardino County Museum vertebrate biologist/area bird expert, Bob McKernon.

2. Biological Assessment of Riverside Community College and Deane Homes Developments, by Michael P. Hamilton and Associates, 1987.

Designation reference: State of California Department of Fish and Game, ENDANGERED AND THREATENED ANIMALS OF CALIFORNIA, April, 1994.

1b.

Have your base operations or development plans been constrained due to: - USFWS or National Marine Fisheries Service (NMFS)? - State required modifications or constraints? If so, identify below the impact of the constraints including any restrictions on land use.	YES/NO **NO**
Are there any requirements resulting from species not residing on base, but which migrate or are present nearby? If so, summarize the impact of such constraints.	YES/NO **YES**

According to the San Bernardino County Museum bird biologist, The Migratory Bird Act of 1973 grants protection for all migratory birds seen here, except the non-native (introduced) species. There are about 100 species of migratory birds, numbering in the tens of thousands, which visit, feed, or rest here. At times, such as during December and January, there may be 20,000 waterfowl on or around the 55 acres of Lake Norconian at once. Human activity on the lake is curtailed during the migration season to avoid disturbing the birds.

Similarily, in California all raptors and herons, migratory or stationary, are protected. There are over ten raptor species and six heron species seen here. Some of these species are designated as "Species of Special Concern," which means they are candidates for the "Threatened Species List."

Under the Federal Endangered Species Act, the presence of endangered species, whether resident or migratory, requires a "Section 7 consultation with the Lead Agency" to establish a plan of action for species and habitat protection before development can be initiated. This consultation has not taken place. No biological assessment, specific just to NWAD, has ever been conducted.

1c. If the area of the habitat and the associated species have not been identified on base maps provided in Data Call 1, submit this information on an updated version of Data Call 1 map.

N/A.

1d.

Have any efforts been made to relocate any species and/or conduct any mitigation with regards to critical habitats or endangered/threatened species? Explain what has been done and why.	YES/NO **NO**

1e.

Will any state or local laws and/or regulations applying to endangered/threatened species which have been enacted or promulgated but not yet effected, constrain base operations or development plans beyond those already identified? Explain.	YES/NO **NO**

2. WETLANDS

Note: Jurisdictional wetlands are those areas that meet the wetland definitional criteria detailed in the Corps of Engineers (COE) Wetland Delineation Manual, 1987, Technical Report Y-87-1, U.S. Army Engineer Waterway Experiment Station, Vicksburg, MS or officially adapted state definitions.

2a.

Does your base possess federal jurisdictional wetlands?	YES/NO **YES**
Has a wetlands survey in accordance with established standards been conducted for your base?	YES/NO **YES**
When was the survey conducted or when will it be conducted? _7_/_00_/_93_	**JULY 93**
What percent of the base has been surveyed?	**100%**
What is the total acreage of jurisdictional wetlands present on your base?	**55.0 ACRES**

Source Citation:_**Master Plan 1989**_____

2b. If the area of the wetlands has not been identified on base maps provided in Data Call 1, submit this on an updated version of Data Call 1 map.

See attached map.

2c. Has the EPA, COE or a state wetland regulatory agency required you to modify or constrain base operations or development plans in any way in order to accommodate a jurisdictional wetland?___**Base operation and development plans have not been impacted by any requirements. However, accommodations have been made to mitigate storm water discharge. Also, during the winter, recreational boating is suspended to avoid disturbing migratory birds.**_____If YES, summarize the results of such modifications or constraints.

3. CULTURAL RESOURCES

3a.

Has a survey been conducted to determine historic sites, structures, districts or archaeological resources which are listed, or determined eligible for listing, on the National Register of Historic Places? If so, list the sites below.	YES/NO **YES**

Potential National Register resources have been identified. The Lake Norconian resort/hotel-Navy Hospital may be considered a significant resource potentially important for local landmark status. Registry would require a joint effort by the Navy and the State of California who now owns and controls a portion of the Lake Norconian Club complex built during the 1920's as a resort. Per the Master Plan Update, Cultural Findings and Conclusions: "Among the historic architectural resources present on the [NWAD] site, four major groups of facilities including the entire [NWAD] sites have potential elgibility for inclusion on the National Register of Historic Places as Historic Districts. No individual building on [NWAD] site would probably be eligible for separate inclusion on the National Register of Historic Places. Of these groups of facilities identified with potential for nomination to the National Register of Historic Places, the former Lake Norconian Club complex, (today only partly under Navy control but including all the Corona site) probably has the highest potential for inclusion on the National Register. Because a large portion of the former Lake Noronian Club complex is now under State of California ownership, a joint proposal for inclusion on the National Register of Historic Places would be necessary."

<u>Archaeological Site CA-Riv-1230 at the Corona Site</u>. The value of this recorded archaeological site is very much in question, however, on 25 January 1988, Mr. Richard Hamilton, Public Works, Corona site, verified that the archaeological site location is on Corona site property. The surface indications of the site may be misleading, since a surface collection may have already been made. It is suggested that the site be subjected

to test excavation to determine its potential and Nation Register eligibility. This project should include an effort to determine if a surface collection was made, and, if so, where the collection is now as well as what it contains.

Survey Projects. Five additional archaeological sites are known to exist to the southwest of the Corona site boundary on property which once was part of the Corona site Naval complex, but which was transferred to other ownership some years ago. Four of the sites were orginially recorded by Eastvoid (1977b) under one site number with four loci. Each locus was subsequently assigned a separate site number. H. H. Feickart (1980a, 1980b) revisited the sites as part of a project in support of the land ownership transfer. He updated the site records and took numerous photographs which are currently filed at the California State Land Commission under file number W20999. The last of sites was recorded by McCarthy (1985a, 1985b). All of the sites within this cluster consist of bedrock grinding implements. No other class of remains has been observed by any of the researchers who have visited the sites.

Source: Master Plan Update, 1989
Preparer: ARCHIPLAN, INC.

3b. YES/NO

Has the President's Advisory Council on Historic Preservation or the cognizant State Historic Preservation Officer required you to mitigate or constrain base operations or development plans in any way in order to accommodate a National Register cultural resource? If YES, list the results of such modifications or constraints below.	YES/NO **YES**

FY 90 MILCON Project P-171 (now completed) orginally called for demolition of Bldg. 210 at NWAD/Corona. Per WESTNAVFACENGCOM first end 11000 Ser 2022B/P2-736 of 20 Nov 87, Bldg. 210 was identified as part of the 1920's resort complex at Corona with potential for National Registry. Per CO/NWS Seal Beach ltr 11000 Ser 054/2334 of 29 Dec 87, Bldg. 210 was deleted from MILCON Project P-171 and construction proceeded to conclusion. This eliminates any impact on the 1920's era Norconian Club Resort structures. The project was also designed to blend with the existing 1940's structure and documentation submitted in compliance with Section 106 of the National Historic Preservation Act indicating the project will have no adverse effect.

3c.

Are there any on base areas identified as sacred areas or burial sites by Native Americans or others? List below.	YES/NO **Unknown**

Although no sacred areas or burial sites have been located, to date, the Corona-Norco area of Western Riverside County is within the area that had been inhabited by the Gabrielino Indians in times before European contact. Flint flakes, which apparently were man-made have been found at the NWAD site, which indicates Native Americans activity, possibly this tribe. Native Americans are known to have inhabited, hunted, and gathered in this area for at least 7,500 years. When this area was permanently settled by the Spaniards in 1769, they brought with them their Spainsh Mission system. The Native Americans living in Norco at this time thus became associated with Mission San Gabriel. They, along with tribes widely spread in Southern and Central California, became known as the "Gabrielino Indians." In their own dialect, however, their tribal name was "Kumi Vit."

4. ENVIRONMENTAL FACILITIES

Notes: If your facility is permitted for less than maximum capacity, state the maximum capacity and explain below the associated table why it is not permitted for maximum capacity. Under "Permit Status" state when the permit expires, and whether the facility is operating under a waiver. For permit violations, limit the list to the last 5 years.

NWAD does not have any landfill operations.

4a.

Does your base have an operating landfill?					**YES/NO** **NO**
ID/Location of Landfill	**Permitted Capacity (CYD)**		**Maximum Capacity (CYD)**	**Contents[1]**	**Permit Status**
	TOTAL	**Remaining**			
N/A	N/A	N/A	N/A	N/A	N/A

[1] Contents (e.g. building demolition, asbestos, sanitary debris, etc)

Are there any current or programmed projects to correct deficiencies or improve the facility.

4b. If there are any non-Navy users of the landfill, describe the user and conditions/agreements.

N/A.

4c.

Does your base have any disposal, recycling, or incineration facilities for solid waste?					**YES/NO** **NO**
Facility/Type of Operation	**Permitted Capacity**	**Ave Daily Throughput**	**Maximum Capacity**	**Permit Status**	**Comments**
N/A	N/A	N/A	N/A	N/A	N/A

List any permit violations and projects to correct deficiencies or improve the facility.

NONE.

4d.

Does your base own/operate a Domestic Wastewater Treatment Plant (WWTP) ?					**YES/NO** **NO**
ID/Location of WWTP	**Permitted Capacity**	**Ave Daily Discharge Rate**	**Maximum Capacity**	**Permit Status**	**Level of Treatment/Year Built**
N/A	N/A		N/A	N/A	N/A

List permit violations and discuss any projects to correct deficiencies.

NONE.

4e. If you do not have a domestic WWTP, describe the average discharge rate of your base to the local sanitary sewer authority, discharge limits set by the sanitary sewer authority (flow and pollutants) and whether the base is in compliance with their permit. Discuss recurring discharge violations.

Average discharge rate of 90,000 gallons per week. Sewage discharge is connected to the Santa Ana Regional Waste line (SARI). Long term arrangements are in place to continue use of the SARI line. No volume limitations have been placed on discharge; no pollution discharge is allowed. The sewer lift station has reserve capacity more than double that used. There have been no discharge violations.

4f.

Does your base operate an Industrial Waste Treatment Plant (IWTP)?					**YES/NO NO**
ID/Location of IWT	**Type of Treatment**	**Permitted Capacity**	**Ave Daily Discharge Rat**	**Maximum Capacity**	**Permit Status**
N/A	N/A	N/A	N/A	N/A	N/A

List any permit violations and projects to correct deficiencies or improve the facility.

NONE.

4g. Are there other waste treatment flows not accounted for in the previous tables? Estimate capacity and describe the system.

NO.

4h.

Does your base operate drinking Water Treatment Plants (WTP)?					YES/NO NO
ID/Location of WTP	**Operating (GPD)**		**Method of Treatment**	**Maximum Capacity**	**Permit Status**
	Permitted Capacity	**Daily Rate**			
N/A	N/A	N/A	N/A	N/A	N/A

List permit violations and projects/actions to correct deficiencies or improve the facility.

NONE.

4i. If you do not operate a WTP, what is the source of the base potable water supply. State terms and limits on capacity in the agreement/contract, if applicable.

NWAD does not operate a WTP. NWAD's potable water supply is from the Santa Ana River basin wells. The California Rehabilitation Center (CRC) is the owner of the systems and provides potable water to NWAD via an easement to the deeded property. No limitations are known. NWAD's full and complete water rights were retained by the Navy when a portion of the Corona complex was deeded to the State of California.

4j.

Does the presence of contaminants or lack of supply of water constrain base operations. Explain.	YES/NO **NO**

4k.

Other than those described above does your base hold any NPDES or stormwater permits? If YES, describe permit conditions.	YES/NO **YES**
If NO, why not and provide explanation of plan to achieve permitted status.	

NWAD's NPDES General Permit identification No. 8-33S004650 is grouped with the Naval Weapons Station, Seal Beach in the Santa Ana Regional Water Quality Control Board, Region 8 group. The permit conditions are as follows:

1. Eliminate non-storm water discharge, including illicit discharge, which is any discharge to a municipal separate storm sewer that is not composed entirely of storm water. This has been completed with the exception of run-off from the sprinkler sytems.

2. Develop and implement a storm water pollution prevention plan. Such a plan has been developed by NWS, Seal Beach for the Corona site.

3. Perform monitoring of discharge to the storm water system. Monitoring includes an annual inspection, a dry season inspection, and a wet season inspection. NWS, Seal Beach performs these inspections and supplies a final report to the Santa Ana Regional Water Quality Control Board, Region 8 Group.

4l.

	YES/NO
Does your base have bilge water discharge problem?	**NO**
Do you have a bilge water treatment facility?	**NO**

Explain:

4m.

Will any state or local laws and/or regulations applying to Environmental Facilities, which have been enacted or promulgated but not yet effected, constrain base operations or development plans beyond those already identified? Explain.	YES/NO **NO**

No environmental facilities are located at NWAD.

4n. What expansion capacity is possible with these Environmental Facilities? Will any expansions/upgrades as a result of BRACON or projects programmed through the Presidents budget through FY1997 result in additional capacity? Explain.

No environmental facilities in place at NWAD.

4o. Do capacity limitations on any of the facilities discussed in question 4 pose a present or future limitation on base operations? Explain.

No environmental facilities in place at NWAD.

5. AIR POLLUTION

5a.

What is the name of the Air Quality Control Areas (AQCAs) in which the base is located? **South Coast Air Quality Management District.**_____
Is the installation or any of its OLFs or non-contiguous base properties located in different AQCAs? ____**NO**_____ . List site, location and name of AQCA.

5b. For each parcel in a separate AQCA fill in the following table. Identify with and "X" whether the status of each regulated pollutant is: attainment/nonattainment/maintenance. For those areas which are in non-attainment, state whether they are: Marginal, Moderate, Serious, Severe, or Extreme. State target attainment year.

Site: N/A AQCA: N/A

Pollutant	Attainment	Non-Attainment	Maintenance	Target Attainment Year[1]	Comments[2]
CO		**Serious**		**2000**	
Ozone		**Serious**		**2010**	
PM-10		**Serious**		**2000**	
SO_2	**X**				
NO_2		**Serious**		**1999**	
Pb	**X**				

1 Based on national standard for Non-Attainment areas or SIP for Maintenance areas.
2 Indicate if attainment is dependent upon BRACON, MILCON or Special Projects. Also indicate if the project is currently programmed within the Presidents FY1997 budget.

Except for SO_2 and NO_2, NWAD is located in a non-attainment area to which it contributes negligible quantities of pollutants. Pollutants generated in the Los Angeles metropolitan area are the major contributors to our non-attainment status.

5c. For your base, identify the baseline level of emissions, established in accordance with the Clean Air Act. Baseline information is assumed to be 1990 data or other year as specified. Determine the total level of emissions (tons/yr) for CO, NOx, VOC, PM10 for the general sources listed. For all data provide a list of the sources and show your calculations. Use known emissions data, or emissions derived from use of state methodologies, or identify other sources used. "Other Mobile" sources include such items as ground support equipment.

	Emission Sources (Tons/Year)				
Pollutant	Permitted Stationary	Personal Automobiles **(828)**	Aircraft Emissions	Other Mobile	Total
CO	**0.2**	**69.7**	**N/A**	None	**69.9**
NOx	**0.9**	**5.4**	**N/A**	None	**6.3**
VOC	**0.0**	**5.4**	**N/A**	None	**5.4**
PM10	**0.0**	**N/A**	**N/A**	--------	**0.0**

Source Document: **CY 1990 Annual Air Emissions Report, AP 42 Emissions Data**
NOTE: See calculations on following page.

5d. For your base, determine the total FY1993 level of emissions (tons/yr) for CO, NOx, VOC, PM10 for the general sources listed. For all data provide a list of the sources and show your calculations. Use known emissions data, or emissions derived from use of state methodologies, or identify other sources used. "Other Mobile" sources include such items as ground support equipment.

	Emissions Sources (Tons/Year)				
Pollutant	Permitted Stationary	Personal Automobiles	Aircraft Emissions	Other Mobile	Total
CO	**0.2**	**69.7**	**N/A**	None	**69.9**
NOx	**0.9**	**5.4**	**N/A**	None	**6.3**
VOC	**0.0**	**5.4**	**N/A**	None	**5.4**
PM10	**0.0**	**N/A**	**N/A**	None	**0.0**

Source Document: **CY 1993 Annual Air Emissions Report, AP 42 Emissions Data**

NOTE: See calculations on this and following page.

5c. and 5d. CALCULATIONS

BACKGROUND

References:

(1) Light-Duty, Gasoline-Powered Vehicles (Automobiles) Table 3.1.2-4, by Kircher, Williams and Masseo, Dec 75

(2) CALTRANS RideGuide by Commuter Transportation Services, Inc., 1992

From Ref (1):

1972 Vehicle exhaust emissions consist of:

CO	Hydrocarbons (VOC)	Nitrogen (NOx) Oxides
46.7 gm/mi	**3.56 gm/mi**	**3.81gm/mi**
(0.103 lb/mi)	**(0.008 lb/mi)**	**(0.008 lb/mi)**

Total Pollutants: 0.103 + 0.008 + 0.008 = 0.119 lb/mi per car

5c. and 5d. CALCULATIONS (cont'd)

From Ref (2):

1991 Vehicle total pollutants = 0.035 lb/mi

Ratio of 1972 versus 1991 vehichle emission = 0.119/0.035 = 3.4 (A 1972 vehicle produces approximately 3.4 times the pollutants of a typical 1991 vehicle.)

Calcuations Assumptions:

1. The above information is valid.

2. Calculations for representative 1994 commuters' emissions may be based upon the 1972 figures, adjusted by a factor of 1/3.4, per the 1991 versus 1972 ratio.

3. NWAD commuters total = 852 vehicles

4. Average round trip of NWAD commuter = 30 miles

5. Average round trips per year for NWAD commuter = 180 trips (this accounts for leave days, TDY, etc.)

6. Total NWAD employee commuting mileage = 852 x 30 x 180 = 4,600,000 mi/yr

Calculations:

CO
(4,600,000 mi/yr) (0.103 lb/mi) (1/2000 lb/ton) (1/3.4) = 69.7 tons/yr CO

VOC
(4,600,000 mi/yr) (0.008 lb/mi) (1/2000 lb/ton) (1/3.4) = 5.4 tons/yr VOC

NOx
(4,600,000 mi/yr) (0.008 lb/mi) (1/2000 lb/ton) (1/3.4) = 5.4 tons/yr NOx

5e. Provide estimated increases/decreases in air emissions (Tons/Year of CO, NOx, VOC, PM10) expected within the next six years (1995-2001). Either from previous BRAC realignments and/or previously planned downsizing shown in the Presidents FY1997 budget. Explain.

Workloading during the next six years is expected to remain constant. We anticipate air emissions will decrease slightly as a result of increased carpooling incentives or the ridesharing program as well as the 5/4/9 work schedule.

5f. Are there any critical air quality regions (i.e. non-attainment areas, national parks, etc.) within 100 miles of the base?

NWAD is located in the South Coast Air Quality Management District (SCAQMD) non-attainment area for CO, Ozone, PM-10, SO2 and NO2. However, the cause for non-attainment is the pollutants generated in the Los Angles Metropolitan area.

5g. Have any base operations/mission/functions (i.e.: training, R&D, ship movement, aircraft movement, military operations, support functions, vehicle trips per day, etc.) been restricted or delayed due to air quality considerations. Explain the reason for the restriction and the "fix" implemented or planned to correct.

NO.

There have been no base operations/mission/functions impacts. However, a habitat improvement plan which consisted of a controlled burn, approved by appropriate wildlife agencies, was disallowed by SCAQMD.

5h. Does your base have Emission Reduction Credits (ERCs) or is it subject to any emission offset requirements? If yes, provide details of the sources affected and conditions of the ERCs and offsets. Is there any potential for getting ERCs?

NO.

New equipment must have offsets. Exceptions are allowed for emergency use equipment or replacements for previously permitted equipment. A proposed amendment to this rule exempts facilities emitting < 4 tons/year (pollutant specific). NWAD would qualify for offsets based on this exemption.

6. ENVIRONMENTAL COMPLIANCE

6a. Identify compliance costs, currently known or estimated that are required for permits or other actions required to bring existing practices into compliance with appropriate regulations. Do not include Installation Restoration costs that are covered in Section 7 or recurring costs included in question 6c. For the last two columns provide the combined total for those two FY's.

Program	Survey Com-pleted?	Costs in $K to correct deficiencies					
		FY94	FY95	FY96	FY97	FY98-99	FY00-01
Air	Yes	0	0	0	0	0	0
Hazardous Waste	Yes	0	0	0	0	0	0
Safe Drinking Water Act	Yes	0	0	0	0	0	0
PCBs	Yes	0	0	0	0	0	0
Other (non-PCB) Toxic Substance Control Act	Unk.	0	0	0	0	0	0
Lead Based Paint	N/A	0	0	0	0	0	0
Radon	Yes	0	0	0	0	0	0
Clean Water Act	Yes	0	0	0	0	0	0
Solid Waste	Yes	0	0	0	0	0	0
Oil Pollution Act	Yes	0	0	0	0	0	0
USTs	Yes	0	0	0	0	0	0
Other	----	0	0	0	0	0	0
Total	---	0	0	0	0	0	0

Provide a separate list of compliance projects in progress or required, with associated cost and estimated start/completion date.

Existing practices for these program areas are in compliance. However, NWAD has initiated additional improvement actions that will further reduce enviromental exposure. Projects include:

(1) Upgrade of boilers: Cost $200K Start: Aug 94 Complete: Nov 94
(2) Install backflow prevention Device: Cost $50K Start: Aug 94 Complete: Sep 94 (3) Flourescent lighting PCB transformers, remove: $1K/Yr for FY 94-FY 97.

6b.
Does your base have structures containing asbestos? **Yes.** What % of your base has been surveyed for asbestos? **100%** Are additional surveys planned? **Comprehensive surveys are conducted prior to renovation/modification of structures.** What is the estimated cost to remediate asbestos ($K) **Refer to following table.** Are asbestos survey costs based on encapsulation, removal or a combination of both? **Costs are based on removal. Asbestos is encapsulated or segregated from personnel. Therefore, no remediation is required. However, asbestos removed is currently planned according to the following schedule.**

Bldg #	Scheduled	Cost
209	FY 96	$31.78K
501	FY 97	$19.81K
502	FY 96	$33.07K
503	FY 94	$19.82K
505	FY 94	$36.09K
506	FY 94	$35.99K
508	FY 95	$36.15K
509	FY 95	$39.12K
510	FY 95	$36.28K
511	FY 95	$19.20K
513	FY 96	$21.34K
517	FY 95	$47.00K
520	FY 95	$31.93K
522	FY 95	$31.98K

Total Planned Cost $439.56K

Costs identified:
(1) Abatement of contaminated attic spaces
(2) Abatement of pipe runs located in attic spaces

Cost not identified:
(1) Reinsulation costs for attic spaces, pipe runs, HVAC, walls & ceiling board
(2) Removal costs asbestos insulation from HVAC
(3) Removal costs vinyl asbestos floor tile encapsulated by carpet

(4) Removal costs of unidentified ACM: i.e. pipe runs in walls, wall & ceiling board

Costs estimated based on:
(1) Removal and disposal of existing asbestos = $3.00 per L.F., 4" or less dia. pipe pipe insulation
(2) Cleaning and lockdown of attic spaces = $ .50 per square foot
(3) Removal of up to 6" thick contaminated attic insulation = $1.75 per square foot
Estimated total costs for abating all asbestos is $2 million

6c. Provide detailed cost of recurring operational (environmental) compliance costs, with funding source.

Funding Source	**FY92**	**FY93**	**FY94**	**FY95**	**FY96**	**FY97**	**FY98-99**	**FY00-01**
O&MN								
HA								
PA								
Other (specify) O/H	250K	260K	280K	290K	300K	315K	325K	340K
TOTAL	250K	260K	280K	290K	300K	315K	325K	340K

6d. Are there any compliance issues/requirements that have impacted operations and/or development plans at your base.

NO.

7. INSTALLATION RESTORATION

7a.

Does your base have any sites that are contaminated with hazardous substances or petroleum products?	YES/NO **YES**
Is your base an NPL site or proposed NPL site?	**NO**

7b. Provide the following information about your Installation Restoration (IR) program. Project list may be provided in separate table format. Note: List only projects eligible for funding under the Defense Environmental Restoration Account (DERA). Do not include UST compliance projects properly listed in section VI.

Site # or name	Type site [1]	Groundwater Contaminated?	Extends off base?	Drinking Water Source?	Cost to Complete ($M)/Est. Compl. Date	Status[2]/Comments
#1- Hydrocarbons	CERCLA	**U/K** Unknow	**NO**	**NO**	**U/K** Unknown	**SI**

An old dump site located behind Hill "B" of the NWAD site has been identified as an IR site. No dumping operations have been conducted for years. The extent of contamination is not known. The site is far removed from operations and personnel.

[1] Type site: CERCLA, 'RCRA corrective action (CA), UST or other (explain)
[2] Status = PA, SI, RI, RD, RA, long term monitoring, etc.

7c. Have any contamination sites been identified for which there is no recognized/accepted remediation process available? List.

NO.

7d.

Is there a groundwater treatment system in place?	YES/NO **NO**
Is there a groundwater treatment system planned?	YES/NO **NO**

State scope and expected length of pump and treat operation.

7e.

Has a RCRA Facilities Assessment been performed for your base?	YES/NO **NO**

7f. Does your base operate any conforming storage facilities for handling **hazardous materials**? If YES, describe facility, capacity, restrictions, and permit conditions.

NO.

7g. Does your base operate any conforming storage facilities for handling **hazardous waste**? If YES, describe facility, capacity, restrictions, and permit conditions.

NO.

7h. Is your base responsible for any non-appropriated fund facilities (exchange, gas station) that require cleanup? If so, describe facility/location and cleanup required/status.

NO.

7i.

Do the results of any radiological surveys conducted indicate limitations on future land use? Explain below.	YES/NO **NO**

7j. Have any base operations or development plans been restricted due to Installation Restoration consideration?

NO

7k. List any other hazardous waste treatment or disposal facilities not included in questions 7b. above. Include capacity, restrictions and permit conditions.

N/A

8. LAND/AIR /WATER USE

8a. List the acreage of each real estate component controlled or managed by your base (e.g., Main Base - 1,200 acres, Outlying Field - 200 acres, Remote Range - 1,000 acres, remote antenna site - 5 acres, Off-Base Housing Area - 25 acres).

Parcel Descriptor	Acres	Location
Main Base	**250 acres**	**Norco, California**

8b. Provide the acreage of the land use categories listed in the table below:

LAND USE CATEGORY		ACRES
Total Developed: (administration, operational, housing, recreational, training, etc.)		**137 acres**
Total Undeveloped (areas that are left in their natural state but are under specific environmental development constraints, i.e.: wetlands, endangered species, etc.)		Wetlands: **63.5 acres**
		All Others: **0**
Total Undeveloped land considered to be without development constraints, but which may have operational/man caused constraints (i.e.: HERO, HERF, HERP, ESQD, AICUZ, etc.) TOTAL		**0 acres**
Total Undeveloped land considered to be without development constraints		**49.5 acres**
Total Off-base lands held for easements/lease for specific purposes		**0 acres**
Breakout of undeveloped, restricted areas. Some restricted areas may overlap: **0 acres**	ESQD	**0 acres**
	HERF	**0 acres**
	HERP	**0 acres**
	HERO	**0 acres**
	AICUZ	**0 acres**
	Airfield Safety Criteria	**0 acres**
	Other	**0 acres**

8c. How many acres on your base (includes off base sites) are dedicated for training purposes (e.g., vehicular, earth moving, mobilization)? This does not include buildings or interior small arms ranges used for training purposes. **0 acres**

8d. What is the date of your last AICUZ update? _____/_____/_____ Are any waivers of airfield safety criteria in effect on your base? Y/N Summarize the conditions of the waivers below.

N/A.

8e. List the off-base land use *types* (e.g, residential, industrial, agricultural) and *acreage* within Noise Zones 2 & 3 generated by your flight operations and whether it is compatible/incompatible with AICUZ guidelines on land use.

Acreage/Location/ID	Zones 2 or 3	Land Use	Compatible/ Incompatible
N/A			

8f. List the navigational channels and berthing areas controlled by your base which require maintenance dredging? Include the frequency, volume, current project depth, and costs of the maintenance requirement.

Navigational Channels/ Berthing Areas	Location / Description	Maintenance Dredging Requirement			
		Frequency	Volume (MCY)	Current Project Depth (FT)	Cost ($M)
N/A					

8g. Summarize planned projects through FY 1997 requiring **new channel or berthing area** dredged depths, include location, volume and depth.

N/A.

8h.

Are there available **designated dredge disposal areas** for maintenance dredging material? List location, remaining capacity, and future limitations.	**N/A**
Are there available **designated dredge disposal areas** for new dredge material? List location, remaining capacity, and future limitations.	**N/A**
Are the dredged materials considered contaminated? List known contaminants.	**N/A**

8.i. List any requirements or constraints resulting from consistency with **State Coastal Zone Management Plans**.

N/A.

8j. Describe any **non-point source pollution problems affecting water quality** ,e.g.: coastal erosion.

N/A.

8k.

If the base has a cooperative agreement with the US Fish and Wildlife Service and/or the State Fish and Game Department for conducting a hunting and fishing program, does the agreement or these resources constrain either current or future operations or activities? Explain the nature and extent of restrictions.	YES/NO **N/A**

8l. List any other areas on your base which are indicated as protected or preserved habitat other than threatened/endangered species that have been listed in Section 1. List the species, whether or not treated, and the acres protected/preserved.

N/A.

9. WRAP-UP

9a. Are there **existing or potential environmental showstoppers** that have affected or will affect the accomplishment of the installation mission that have not been covered in the previous 8 questions?

YES.

Besides the single IR site identified in question 7b., two other potential sites have recently been identified. Both are relatively small in size (less than 100 sq. yds.) These potential sites are:

1. Site 1 the is result of years of spilling of diesel fuel used in a small above ground fuel storage tank that feeds emergency power generators used as back-up power for a computer system housed in Bldg. 509. Problem has been corrected and contamination is localized. However, contamination has not as yet been removed.

2. Site 2 is a possible small dump site of chemicals behind Bldg. 543 which was a chemicals laboratory over 20 years ago. No chemical laboratory operations have been conducted since the early 1970's. A recent renovation project has raised this site as a potential small clean-up issue. No hazard to operations or personnel is at issue.

9b. Are there any **other environmental permits** required for base operations, include any relating to industrial operations.

YES.

Title IV Federal Facilities Permit.

9c. Describe any **other environmental or encroachment restrictions** on base property not covered in the previous 8 sections.

YES.

Although the present NWAD mission is compatible with the environment, prior Navy uses have not been and future use could be restrictive. The NWAD grounds consist of 250 acres of which 55 acres is freshwater wetlands, namely Lake Norconian, and 8.5 acres is Riparian woodland from the lake's runoff and leakage. Riparian woodland and freshwater habitats are excedingly rare and highly valued in Southern California. This 8.5 acres contains a number of sensitive species including several important ones, such as the Least Bell's Vireo, a Federally-listed Endangered Species, and thus is protected by the Endangered Species Act. Also, Lake Norconian

plays host to over 100 species of migratory birds, which are protected under the Migratory Bird Treaty Act of 1973. Tens of

thousands of birds pass through, rest, feed, or stay here during their annualmigrations. Amongst the California-State protected species which visit are numerous raptors, herons, song birds, and others. Several are "Species of Special Concern," meaning they are candidates for the Threatened Species lists. Some species are listed as "Threatened" on either the State or Federal lists. Besides birds, there are reptiles such as the San Diego Coast Horned Lizards, which are rare, and mammals like the Stephen's Kangaroo Rat, which is a Endangered. Within a short distance there are several other Threatened, Endangered, or Rare birds or other animals. No studies have been conducted to determine the area's insects, crustacea, or other fauna or the flora which may likewise be highly valued.

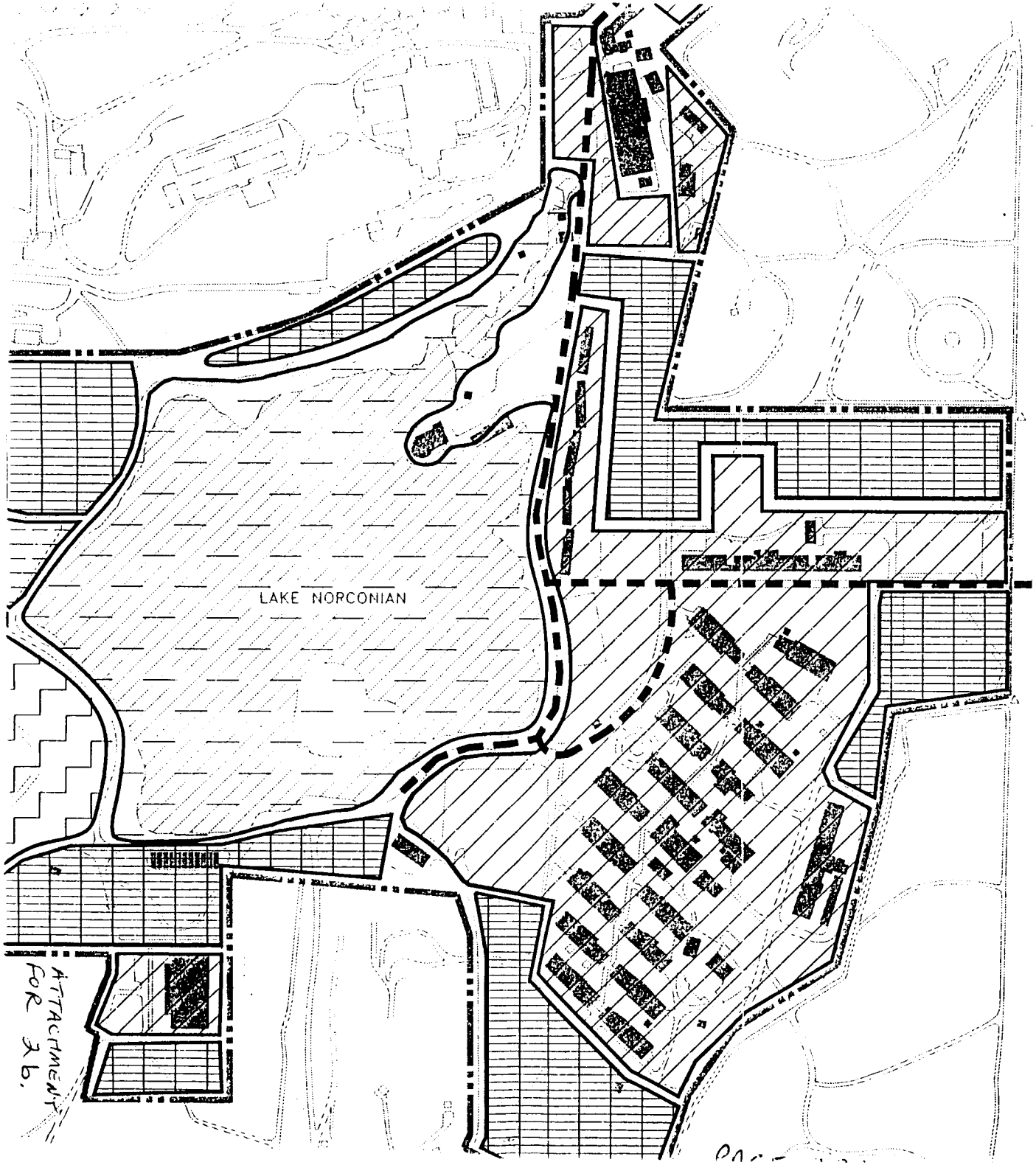
The NWAD grounds may not be suitable for commercial or residential development by future tenants or transfer to others because of the restrictions placed on potential uses. Development would reduce the already constrained native populations. A habitat management plan, designed by the U.S. Fish and Wildlife Service and the California Department of Fish and Game is required to ensure optimal strategy and protection of viable habitat. Furthermore, under the Federal Endangered Species Act, the presence of the Least Bell's Vireo (or any other Federally-listed Endangered Species), requires a Section 7 consultation with the Lead Agency to establish an action plan for protecting the species and its habitat prior to development. This could halt any proposed development of or near the wetlands or Riparian areas. Basically, established wetlands must be maintained continuously into the future.

Recent development of the land adjacent to NWAD was preceded with a detailed biological examination of the area, including the Navy-owned grounds of NWAD. Much of what is discussed above also appears in the resultant report. For further reference on this subject, see the attached Biological Assessment of Riverside Community College and Deane Homes Developments, prepared by Michael P. Hamilton and Associates (1987). Also attached are several photographs of NWAD.

9d. List **any future/proposed laws/regulations or any proposed laws/regulations** which will constrain base operations or development plans in any way. Explain.

NONE.

OPPORTUNITIES/ CONSTRAINT



Unconstrained Development Areas

Major Development Infill Areas

Wetlands Constrained

Difficult Topography

Constrained Open Space-- Lake Norconian Drainage

Primary On-site Circulation System

Existing Boundary

ATTACHMENT FOR 3b.

ATTACHMENT FOR 3b.

CORONA SITE MAP

Biological Assessment

of

Riverside Community College and Deane Homes Developments

City of Norco
Riverside County, California

prepared for:

J.F. Davidson and Associates
Riverside, California

prepared by:

Michael P. Hamilton and Associates
P.O. Box 1807
Idyllwild, CA 92349
714/659-2344

ATTACHMENT for 9c.

INTRODUCTION

This reports describes the biological resources of the surplus navy property proposed for negotiated sale to the City of Norco for subsequent use as a satellite campus of the Riverside Community College District, and a portion of which will become residential housing.

The property is located in Riverside County within the city limits of Norco. Current land use is federal Naval Base with restricted public access. The entire base can be divided roughly into halves, the northern portion contains the navy facilities and Lake Norconian. The southern half includes an area which was once a golf course, and now serves as open space used for sheep grazing, organic waste storage and disposal, and as a buffer zone to the base. Adjacent to the base is the California Rehabilitation Center. Originally developed in the 1920's as a health resort, the navy base and CRC contains many of the original buildings and a fishing and boating reservoir. The Lake is of sufficient size to attract a diversity of resident and migratory waterfowl. The project described in this EIR will be situated on approximately 221 acres within the southern portion of the base, and does not include any portion of Lake Norconian or its southern shoreline.

METHODS

A biological resources survey of the 221 acre project area was conducted during January, February and March of 1987. Owing to the structural simplicity and low diversity of plant and animal communities of the site, walking transects were utilized to describe the nature and extent of vegetation associations and wildlife habitats, live trapping (500 trap nights) to assess small mammal diversity, and Emlen transects for bird census.

Plant associations were mapped on a 1:2000 scale plot map. Agencies contacted for local information and potential sensitive species included:

California Department of Fish and Game
U.S. Fish and Wildlife Service
Riverside County Planning Department
California Natural Diversity Data Base
University of California
San Bernardino County Museum
Sierra Club

Other resources consulted included USGS maps, USDA aerial photography, and local records for avifauna compiled by local Audubon Chapter field trips to Lake Norconian.

Sensitive species which might occur on or near the site are compiled state-wide by the California Natural Diversity Database. Although no records for sensitive taxa are indicated for the naval base, nearby populations of Least Bell's Vireo, Yellow-billed Cuckoo (federally and State listed endangered species) and Blue-gray Gnatcatcher (candidate federal endangered) , in the Santa Ana River drainage and the Prado Basin Flood Control area exist within 1 air mile of the project site.

Other species considered sensitive by California Department of Fish and Game, and the California Natural Diversity Database, and with known occurrences within a five mile radius of the project are listed in table 1.

Table 1.– Senstive Species Occurrences Within The Vicinity of Lake Norconian

Wildlife	
Southern Bald Eagle	Federal/Endangered
Least Bell's Vireo	Federal/Endangered
Yellow-billed Cuckoo	Federal/Endagered
Blue-gray Gnatcatcher	Federal candidate/ Endangered
Stephen's Kangaroo Rat	State/Rare
Orange-throated Whiptail	State/Rare
San Diego Coast Horned Lizard	State/Rare
Plants	
Caulanthus simulans Pays	List 1 CNPS
Allium fimbriatum var. *munzii* Ownby & Aase	List 1 CNPS
Myosurus minimus L. var. *apus* Greene	List 1 CNPS
Dudleya multicaulis (Rose) Moran	List 1 CNPS
Astragalus brauntonii Parish.	List 1 CNPS
Argemone munita Dur. & Hilg. var. *robusta* G. Ownbey	List 1 CNPS
Chorizanthe procumbens Nutt. var. *albiflora* Goodm.	List 4 CNPS

Specific searches for these species was conducted after examining site records of known locations.

Plant and wildlife species lists were developed over the 3 month field survey. Wildlife records of observed abundances were tallied, and the maximum number of observed individuals for any single observation period were recorded.

A literature review of published references are included with the results.

EXISTING ENVIRONMENT

Geography

The general topography of the project site consists of a variable terrain of low rounded hills, flat ground, and two distinct drainages with surface water and moist soils. Elevations range from 580' above sea level to 755' ASL. Soil samples were not analysed for this report, but they appear granitic in origin, loose and course textured on hillslopes, and fine textured loams with silt and clay in the bottomlands and along drainages. Except for the steep slopes, all soils have been tilled until recently, and much of the site was managed for turf as a golf course until the 1950's. The project is within the Santa Ana River Watershed, 1/2 mile from the Prado County Park, and 1 mile from the Prado Flood Control Basin.

Surrounding land uses are primarily residential and commercial. Western Riverside and San Bernardino County have experienced unprecedented population increases owing to the huge influx of people throughout the southern California region. Interstate 15 will soon link two major east-west corridors which will no doubt further increase rates of development in the Norco area. The result is an island-effect surrounding the entire study area with little or no corridors linking this open space to other areas nearby. The ecolgical effect of this isolation is one of decline in biological diversity and increased sensitivity to disturbance. Figure 1 shows a recent aerial photograph of the project and demonstrates the current level of isolation experienced by the biological resources of the project site.

Botanical Survey Results

Due to extensive cultivation and plantings on the ground, 212 acres of the project supports little native vegetation. Lake Norconian, a man-made reservoir, leaks water from the spillway into a drainage area to the southwest. This perennial water supply supports a 9 acre stand of riparian habitat consisting of approximately 3 species of willow ranging in size from sprouts to 10 meters in height. Other abundant species include *Baccharis viminea, Sambucus mexicana,* date palm saplings, and herbaceous wetland species such as *Typha, Scirpus* and *Juncus.* Adjacent to this wetland are small relict patches of coastal sage scrub predominated by *Happlopappus* and *Artemisia.*

The remainder of vegetation consists of a planted woodland of ornamental trees including Eucalyptus, Brazilian Pepper, Olive, Pines and Cypresses. Two palms are also common, the date palm, and a royal fan palm. All other areas are essentially a grassland pasture almost exclusively dominated by introduced annuals and turf species. Extensive grazing by domestic sheep was observed, indicating the mechanism by which this property is maintained in an early successional grassland. On steep slopes and hilltops, small areas of

*FIGURE 1

THIRD STREET AREA PLAN
NORCO, CALIFORNIA

rock outcrops provide relictual habitats for several native cismontane plants such as *Opuntia, Eriogonum, Mirabilis, Artemisia* and *Salvia*. Except for *Opuntia* and *Mirabilis*, all native species were extensively grazed by sheep, leaving only vestiges of woody stems and rootstock.

Other than the 9 acre riparian habitat, the remaining habitats are extensively modified or type converted. No evidence of sensitive taxa or their habitats were observed after meticulous walking surveys and transects. Figure 2 defines the location of the major plant communities within the project boundary.

Description of Vegetation

For purposes of this assessment, the vegetation was classified into three major groupings:

1) Pasture and Hillslope Grasslands
2) Planted Woodlands
3) Riparian Woodlands

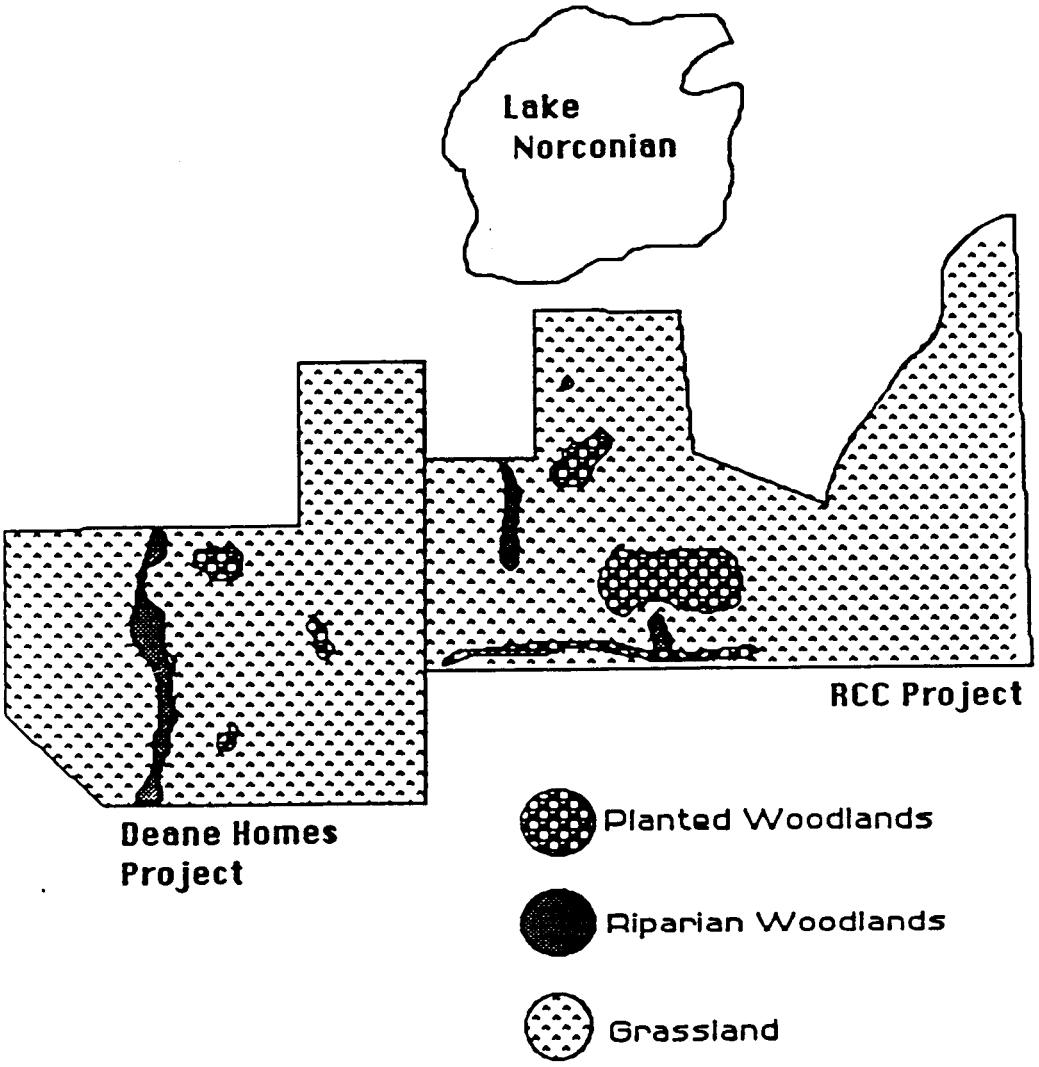
Grasslands and Planted Woodlands

Botanically speaking, the grassland and planted woodlands differ floristically only in the presense of a canopy and/or shrub overstory. The grassland understory was consistely uniform within slope classes. A list of species is shown in Appendix 1. A total of 61 species of vascular plants were associated with the grasslands and planted woodlands, 82% of which are non-native or introduced. Native botanical value of this property is very low, with the exception of the riparian woodland.

Riparian Woodlands

Riparian and other freshwater wetland habitats are exceedingly rare in southern California. Although dwarfed in scale by the nearby Santa Ana River drainage, the 9 acres of riparian woodland contains a significant assemblage of native species to support a diverse and viable wildlife community. Three species of willow, *Salix gooddingii, hindsiana* and *lasiolepis* , as well as *Bacharris viminea*, and *Sambucus mexicana* serve as a well established, multistoried canopy above a perenially wet stream. A variable density understory which includes *Typha, Scirpus, Juncus, Urtica, Polygonum*, and *Rorippa* is suprisingly robust considering this drainage has received extensive disturbance from sheep grazing, trash dumping, oil spills, and flooding. Other than annual grasses and herbs, very few non-native perennials have made it into this community, as upstream are residential homes and Lake Norconian with extensive plantings of exotic species such as Eucalyptus, TreeTobacco, Palms, Olives and other species which readily invade wetlands. A number of date palm seedlings have germinated beneath the willows and

Figure 2. -- Plant associations within the study area



appear quite healthy. No senstive or protected species of plants occur in this habitat.

Wildlife Survey Results

Unlike the botanical species, the majority of wildlife present are native species and are suprisingly rich in diversity. Although many wildlife species recognize and depend upon native vegetation, as is the case of riparian habitat specialists, the more common avifauna and small mammals can utilize, to a certain extent, the habitat values offered by non-native vegetation. The planted woodlands, for instance, serve as roosting and nesting sites for most of the raptors observed. Ground dwelling species such as California Ground squirrels, Desert Cottontails, and Pocket Gophers, are adaptable to many forms of human disturbance. An important element to wildlife success is the presence of habitat structural diversity, that is, a range of conditions permitting multi-storied and multiple age classes of vegetation within a relatively small area. The study area offers some habitat diversity, but favors those species with high dispersibility, such as raptors, and species which depend upon early successional vegetation such as squirrels and rabbits.

Another factor which influences the wildlife diversity of the project area is the nearby Lake Norconian. This popular bird watching area has open water and wetland vegetation which attracts migratory and resident waterfowl. Many of the species such as Common Egrets, Canada Geese, Great Blue Herons and the larger ducks will feed on land nearby the water.

Appendix 2 lists all observed wildlife species by habitat and relative abundance. It should be noted that the timing of this survey was not optimal for the assessment of avifauna diversity. Spring and fall migrants will most likely be missed as will the important spring and summer breeding periods.

Sensitive Species

Survey of wildlife with an emphasis on sensitive taxa revealed the presence of two important species, the Least Bell's Vireo, and the Blue-gray Gnatcatcher. The Least Bell's Vireo is a Federally-listed Endangered Species, and is thus protected by the Endagered Species Act. The Gnatcatcher is currently proposed as a candidate Endangered Species and is likely to be listed in the near future. Both species were observed in the 9 acre Riparian Woodland habitat. Breeding could not be determined as both species will not begin courtship and nest building until mid to late April.

ENVIRONMENTAL IMPACT

Vegetation

The project design for the study site calls for two separate developments: Riverside Community College Campus on the east side, and a residental housing area on the west of the site.

Impacts to vegetation associated with the college campus will result from development of buildings, roads and other facilities. It is doubrful that many of the existing trees will be saved, but landscaping will probably incorporate most of the same species. This impact is not considered significant due to previous land uses and the lack of any significant stands of native vegetation on the east side of the study site.

The residential development on the west side of the site will modify or remove portions of the existing riparian woodland. Current design plans call for a temporary setback of 50 to150 feet from the existing wet drainage due to engineering problems resulting from hydrology. Eventually, plans will follow to remove all of the existing vegetation and to channelize this drainage. The two stage development of this wet drainage will result in two levels of environmental impact. The first level of impact, caused by the enclosure of this habitat by residential development, will have the following effect:

1) changes in surface run-off patterns which will increase streamflow due to removal of vegetative cover within the watershed. Increased sediment loads are also expected which will remove much of the herbaceous understory, and reduce regeneration of overstory species.

2) After housing construction and soil stabilization from landscaping, stream flows may decrease because sewers and flood control devices may reduce recharge into sub-watershed aquafers. This will cause population declines in those species dependent on perennial water flows.

3) Nearby access of the riparian woodland by the public after decades of restricted access by the navy base will result in direct forms of disturbance such as fire wood harvest, possible fires, invasions by introduced exotic plants, and hunting.

If the second phase of stream channelization is completed the resultant impacts will be the complete elimation of all vegetation within the drainage.

Wildlife

The overall impact of both developments on wildlife will be the further reduction and constriction of native populations to an extent which will likely eliminate many of the species which safely reproduce within the project site.

Waterfowl from Lake Norconian will be excluded from terrestrial foraging in this open space. The food base for the raptors dependent on small mammals will be dramatically reduced, resulting in reduced population levels of predators. Ground dwelling species disrupted by grading and building construction are not likely to recover since there are no adjacent habitats to serve as sources for a new population. This is especially true for reptiles and amphibians, burrowing owls, and small mammals. Resident avifauna and mammals which can disperse will probably suffer high mortality since the surrounding urban matrix offers poor habitats which are already at their carrying capacity. Migratory breeders may find other suitable habitats, but reduced open space usually results in population declines in most species.

Urban wildlife populations will increase as these developments will tend to increase habitat diversity for species such as English House Sparrows, Mockingbirds, Starlings, and Rock Doves.

Impacts to Riparian Woodland Habitats

The impact to wildlife dependent upon the riparian woodland will be dramatic. The initial isolation of the woodland from adjacent open space will result in the following changes in habitat utilization:

1) Species which forage in the grasslands and find cover in the riparian woodlands such as badger, racoon, coyote, skunk, will initially become concentrated in the only undisturbed habitat. This concentration will likely eliminate the food base by increasing competition and result in the extinction of these individuals. If they are adaptable species (e.g. urban wildlife), a reduced population may result.

2) A dramatic increase in urban "predators" such as cats and dogs will further increase competition for food and shelter, resulting in population declines.

3) Nesting avifauna such as the Bell's Vireo will be harassed by pets and children from the adjacent residences, reducing the suitability of breeding habitat and possibly causing high levels of mortaility due to the increased energy "costs" of avoiding this new set of predators.

4) Increased siltation and variable stream flows will perterbate the present population dynamics of aquatic insect larvae which serve as the food base for most of the insectivorous vertebrates.

5) The possibility of wildfire, and the detrimental effects of harvesting firewood will further reduce the viability of this habitat.

6) Each of these factors will steadily induce a decline in wildlife use within this small ecological island.

If the vegetation is completely removed for stream channelization, all existing wildlife values will be eliminated. Removal of nesting habitat for the Least Bell's Vireo may cause the death of the breeding pairs. Should a spring census disclose breeding by the vireos, the loss of this habitat will constitute a legal "taking" of those individuals, which is a federal offense.

Summary of Biological Impacts

Construction activities will reduce or eliminate wildlife which are year round residents to the project site. Low dispersal species are not likely to reoccur after construction is completed as there are no nearby population sources due to the high urban densities in the surrounding area.

Urban wildlife with high dispersibility will recolonize the site after construction is completed.

Small islands of remaining habitats, such as the riparian woodland, will experience a permanent decline in species diversity and a loss of most breeding species other than the most resilient, urban associated wildlife. Riparian vegetation diversity will also decline due to changes in hydrology and soil erosion, and increased levels of vegetative disturbance.

Off-site wildlife populations will initially increase as wildlife populations disturbed by construction activities will attempt to enter nearby habitats. This effect will soon cause an overall decline in these populations since most wildlife habitats support local populations at or near the maximum carrying capacity

RECOMMENDATIONS

1. Biological impacts to vegetation in the grassland and planted woodlands are insignificant since most of the species are non-native and typical of urban and agricultural areas throughout Riverside County. ***No mitigation is recommended for this impact.***

2. Isolation and removal of the riparian woodland vegetation is not significant from a botanical standpoint as these species are relatively widespread and abundant in nearby floodplains and riparian woodlands. Disturbance by navy personnel to the understory of this vegetation has reduced the botanical values. ***Cleanup of the oil spills is highly recommended.***

3. Wildlife impacts from construction activities and change in landuse are significant. The loss of open space will reduce feeding opportunities for most of the native species. Landscaping with native species, and retaining as many of the larger trees will insure roosting and limited nesting opportunities for the larger raptors. ***Do not remove any perennial native vegetation without USFWS consultation.***

4. Isolation of the riparian woodland by the residential development will pose a significant impact to wildlife associated with this habitat. The long-range effect will be the decline in species diversity and the loss of many breeders, including the Least Bell's Vireo. ***An appropriate habitat management plan will need to be designed by US Fish and Wildlife Service, and California Department of Fish and Game biologists to insure an optimal strategy to protect the viability of this habitat for vireo reproduction. Under the federal Endangered Species Act, the presence of the Least Bell's Vireo on federal property will require a section 7 consultation with the Lead Agency to establish an action plan for protection of this species and associated habitat before development can be initiated. Additional study of breeding activities of avifauna will be necessary as a component of this recommendation.***

Literature Consulted

Benson, L. 1979. Plant Classification. D.C. Heath and Co. Lexington.

Burt, W. H. and R. P. Grossenheider. 1976. A Field Guide to the Mammals. Houghton Mifflin, Boston.

California Department of Fish and Game. List of Special Plants from the Natural Diversity Database. 1986. unpublished report.

California Department of Fish and Game. List of Special Animals from the California Natural Diversity Database. unpublished report.

Collins, C. T., L. R. Hays, M. Wheeler. 1986. The Status and Management of the Least Bell's Vireo Within the Prado Basin, California, During 1986. unpublished report to the California State Department of Transportation, District 8, San Bernardino, California. 17 pp.

Smith, J. P. and R. York. 1984. Inventory of Rare and Endangered Vascular Plants of California. Special Publication No. 1 (3rd Edition and supplements). California Native Plant Society.

Garrett, K. and J. Dunn. 198. Birds of Southern California: Status and Distribution. L.A. Audubon Society, Los Angeles.

Hinds, N. E. 1952. Evolution of the California Landscape. Bulletin 158. California Division of Mines. San Francisco.

Munz. P. 1974. A Flora of Southern California. University of California. Berkeley.

Munz. P. 1975. A California Flora. University of California. Berkeley.

Raven, P. and D. Axelrod. 1978. Origins and Relationships of the California Flora. University of California. Berkeley.

Stebbins, R. C. 1966. A Field Guide to Western Reptiles and Amphibians. Houghton Mifflin, Boston.

Appendix 1: Plant Observations

Family Genus Species	Habitat
Anacardiaceae	
Schinus molle L.	Planted
Arecaceae	
Mexican Fan Palm	Planted
Date Palm	Planted
	Riparian
Amaranthaceae	
Amaranthus albus L.	Pasture
A. graecizans L.	Pasture
Asteraceae	
Ambrosia psilostachya DC.	Pasture
Artemisia californica Less.	Pasture
Baccharis viminea DC.	Riparian
Chicorium intybus L.	Pasture
Circium vulgare (Savi) Ten.	Riparian
Conyza canadensis (L.) Cronq.	Pasture
C. bonariensis (L.) Cronq.	P/R
Corethrogyne filaginifolia (H. & A.) Nutt.	Pasture
Encelia californica Nutt.	Pasture
Gnaphalium beneolens A. Davids.	Pasture
G. palustre Nutt.	Riparian
Hedypnois cretica (l.) Willd.	Pasture
Heterotheca grandiflora Nutt.	Pasture
Lactuca serriola L.	P/R
Lepidospartum squamatum (Gray) Gray	Riparian
Microseris douglasii (DC.) Sch.-Bip.	Pasture
Perezia microcephala (DC.) Gray	Riparian
Senecio vulgaris L.	Pasture
Silybum marianum (L.) Gaertn.	P/R
Solidago occidentalis (Nutt.) T. & G.	Riparian
Sonchus oleraceus L.	Pasture
Taraxacum officinale Wiggers.	P/R
Xanthium strumarium L.	Pasture
Boraginaceae	
Cryptantha sp.	Pasture
Plagiorbothrys sp.	Pasture
Brassicaceae	
Brassica campestris L.	Pasture
B. geniculata (Desf.) J. Ball	Pasture
B. nigra (L.) Koch.	Pasture

Capsella bursa-pastoris (L.) Medic.	Pasture
Raphanus sativa L.	Pasture
Sisymbrium altissimum L.	Pasture
S. officinale (L.) Scop.	Pasture
Cactaceae	
Opuntia littoralis (Engelm.) Ckll.	Pasture
O. parryi Engelm.	Pasture
Caprifoliaceae	
Sambucus mexicana Presl.	Riparian
Cupressaceae	
Cupressus sp.	Planted
Chenopodiaceae	
Chenopodium album L.	Pasture
C. ambrosioides L.	Riparian
Salsola kali L.	Pasture
Convolvulaceae	
Convolvulus arvensis L.	P/R
Cyperaceae	
Scirpus validus Valh.	Riparian
Euphorbiaceae	
Eremocarpos setigerus (Hook.) Benth.	Pasture
Euphorbia polycarpa Benth.	Pasture
Fabaceae	
Medicago sativa L.	Pasture
Melilotus albus Desr.	Pasture
M. indicus (L.) All.	Pasture
Trifolium repens L.	Pasture
T. tridentatum Lindl.	Riparian
Geraniaceae	
Erodium cicutarium (L.) L'Her	Pasture
E. moschatum (L.) L'Her	Pasture
Hydrophyllaceae	
Amsinkia intermedia F. & M.	Pasture
Juncaceae	
Juncus balticus Willd.	Riparian
Lamiaceae	
Marrubium vulgare L.	Pasture
Salvia apiana Jeps.	Pasture

Myrtaceae		
	Eucalyptus globulus Labill.	Planted
Nyctaginaceae		
	Mirabilis californica Gray	Pasture
Pinaceae		
	Pinus sp.	Planted
Poeaceae		
	Avena barbata Brot.	Pasture
	A. fatua L.	Pasture
	Bromus diandrus Roth.	Pasture
	B. mollis L.	Pasture
	B. rubens L.	Pasture
	B. tectorum L.	Pasture
	Cynodon dactylon (L.) Pers.	Riparian
	Cynosurus echinatus L.	Pasture
	Hordeum jubatum L.	Riparian
	Poa annua L.	Pasture
	Polypogon interuptus HBK.	Pasture
	Sitanian hystrix (Nutt.) J. G. Sm.	Pasture
Polygonaceae		
	Eriogonum fasciculatum Benth.	Pasture
	Polygonum punctatum Elliot.	Riparian
	Rumex crispus L.	P/R
Salicaceae		
	Salix gooddingii Ball. var. *goodingii*	Riparian
	S.*hindsiana* Benth. var. *hindsiana*	Riparian
	S. lasiolepis Benth. var. *lasiolepis*	Riparian
Solanaceae		
	Nicotiana glauca Grah.	Pasture
Typhaceae		
	Typha latifolia L.	Riparian
Urticaceae		
	Urtica holosericea Nutt.	Riparian

Appendix 2: Wildlife Observations

Lake Norconian (*avifauna only*)	Maximum Number of Individuals Observed/day
California Gull	7
Western Grebe	4
American Widgeon	24
Pied-billed Grebe	19
American Coot	183
Common Egret	6
Double-crested Cormorant	3
Mallard	1
Shoveller	4
Northern Pintail	3
Great Blue Heron	1
Green Heron	1
Canada Goose	5
Grasslands and Hillslopes/ Planted Woodlands	
Sharp-shinned Hawk	2
Cooper's Hawk	1
Red-tailed Hawk	8
Common Crow	62
Common Raven	3
American Kestrel	9
Turkey Vulture	2
Burrowing Owl	2
Barn Owl	2
Great Horned Owl	1
Mourning Dove	6
Western Meadowlark	16
Loggerhead Shrike	11
Anna's Hummingbird	2
Rock Dove	27
Starling	12
Grasshopper Sparrow	2
Lesser Goldfinch	8
Tree Swallow	80

Coyote	Scat/tracks
Norway Rat	8
Desert Woodrat	1
House Mouse	2
White-footed Deer Mouse	33
Botta's Pocket Gopher	17
California Vole	2
Striped Skunk	Scat/tracks
Western Fence Lizard	18
Side-blotched Lizard	1
Alligator Lizard	2
Gopher Snake	3

Riparian Woodland

Anna's Hummingbird	8
White-crowned Sparrow	8
Song Sparrow	9
Lincoln's Sparrow	12
Savanna Sparrow	2
House Finch	3
Mockingbird	3
House Wren	7
Yellow-rumped Warbler	17
Brown Towhee	2
Catbird	1
Common Bushtit	1
Ground Dove	1
Greater Yellowlegs	1
Least Bell's Vireo	3
Blue-gray Gnatcatcher	2
California Ground Squirrel	27
Black-tailed Hare	1
Desert Cottontail	Scat/track
Raccoon	Scat/track
Oppossum	Tracks
White-footed Deer Mouse	3
Striped Skunk	Tracks/scat
Badger	Burrow/tracks
Pacific Treefrog	22
California Slender Salamander	3
Western Aquatic Gartersnake	1

NWADIV CORONA DC-33

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

R. SUTTON, RADM, USN
NAME (Please type or print)

Signature

COMMANDER
Title

Date

NAVAL ORDNANCE 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)

J.C. ROBERTSON, CAPT SC, USN
NAME (Please type or print)

Signature

ACTING COMMANDER
Title

6/10/94
Date

NAVAL ORDNANCE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STERNER
NAME (Please type or print)

Signature

Title

6-13-94
Date

Commander
Naval Sea Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

P.W. DRENNON
NAME (Please type or print)

Signature

ACTING
Title

6/24/94
Date

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

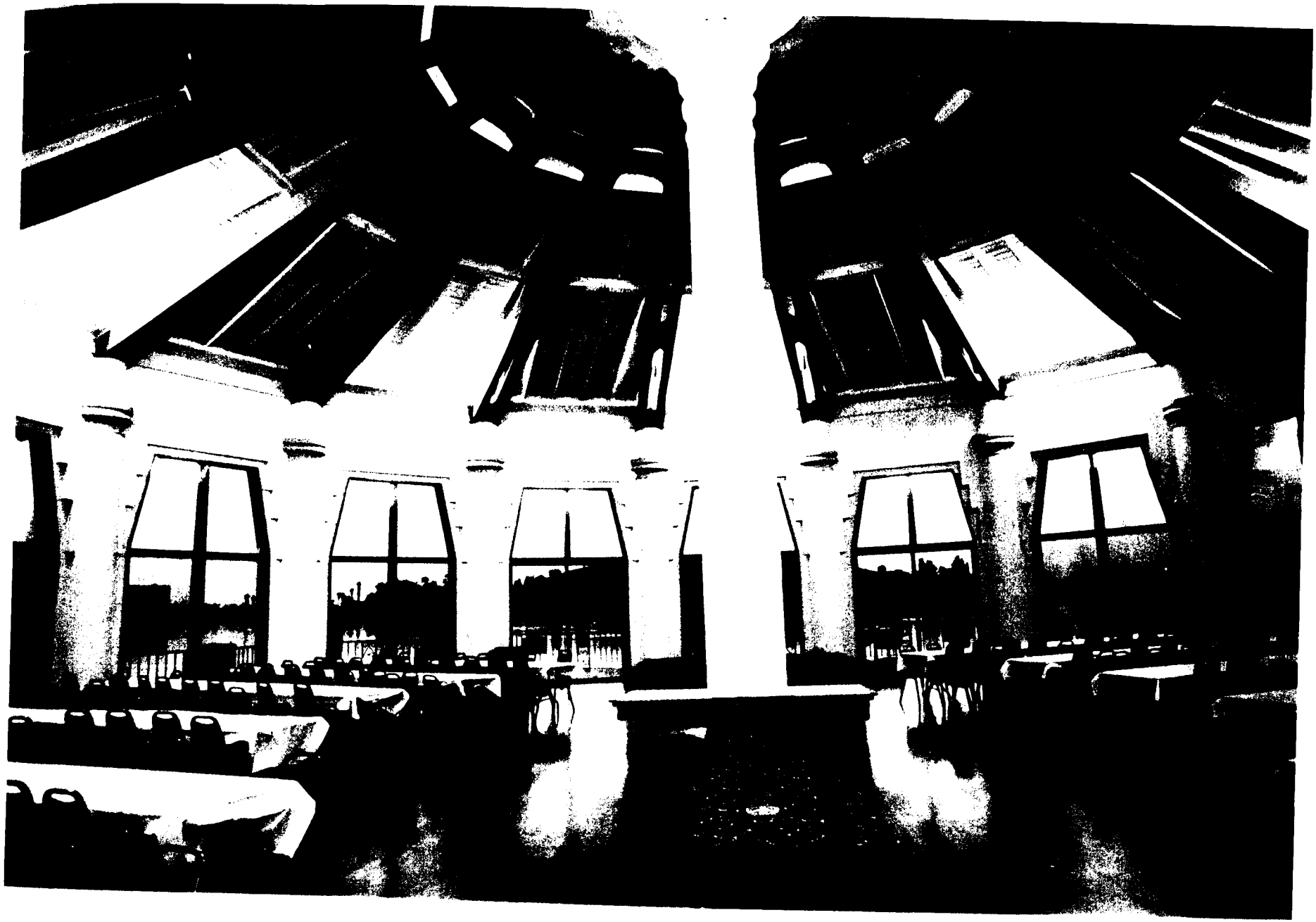
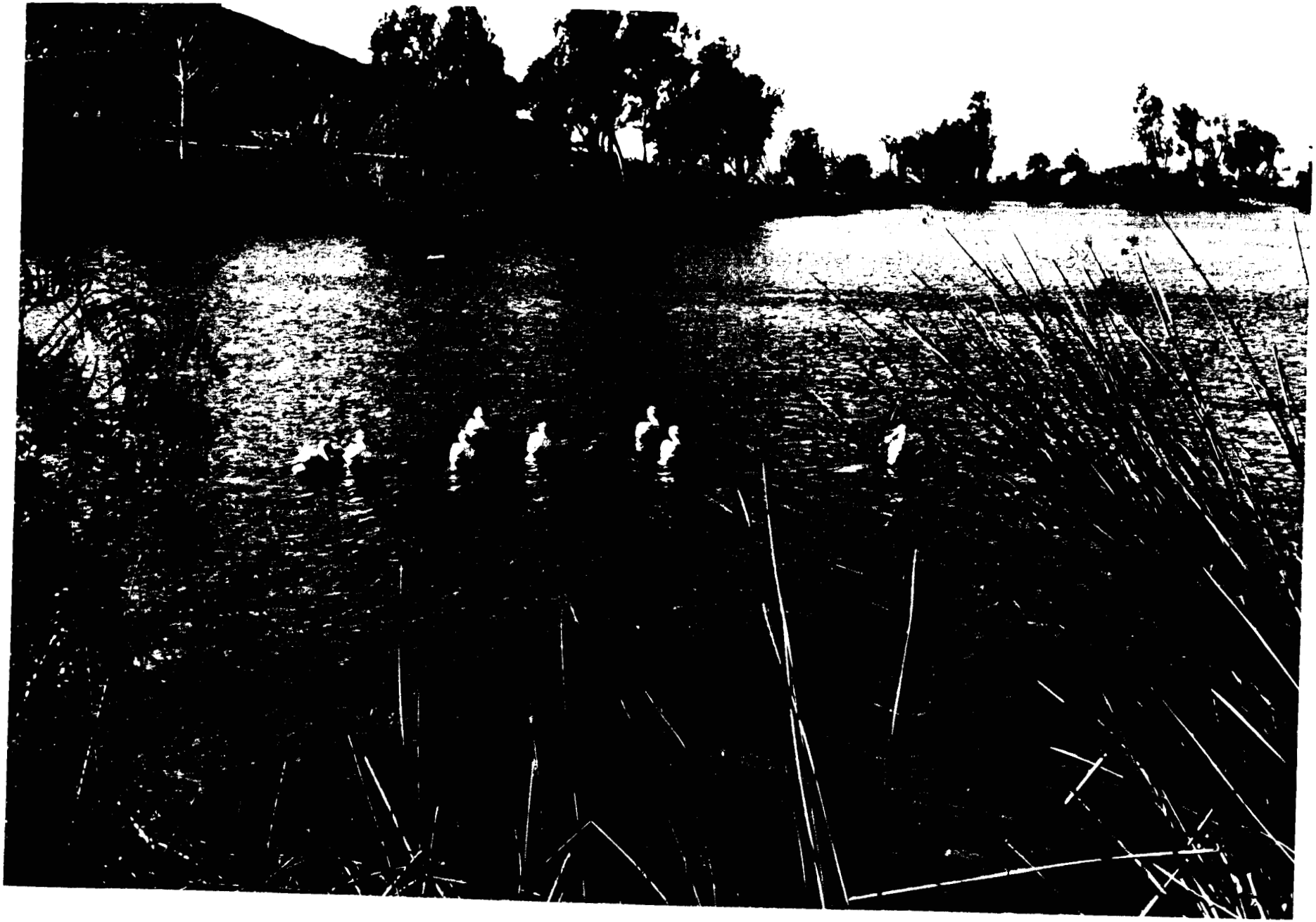
ACTIVITY COMMANDER

Edward G. Schwier
NAME (Please type or print)

Edward G. Schwier
Signature

Commanding Officer
Title

27 May 1994
Date

Naval Warfare Assessment Division
Activity

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