DCN 120

DEFENSE BASE CLOSURE AND REALIGNMENT COMMISSION

SUMMARY SHEET

NAVAL AIR WARFARE CENTER, WEAPONS DIVISION
POINT MUGU, CALIFORNIA

INSTALLATION MISSION

Research, development, test and evaluation and in-service engineering for weapon systems associated with air warfare (except antisubmarine warfare systems), missiles and missile subsystems, aircraft weapons integration, and assigned airborne electronic warfare systems.

DOD RECOMMENDATION

- None.

COMMISSION ALTERNATIVE

- Commission added NAWC-Point Mugu for consideration for realignment or closure.

JUSTIFICATION

- Department of Defense Inspector General reported on June 8, 1994, that Navy could potentially save $1.7 billion over the next 20 years by consolidating functions from NAWC-Point Mugu, CA to NAWC- China Lake, CA.
- DOD's Test and Evaluation Joint Cross-Service Group on November 22, 1994, proposed realignment of NAWC- Point Mugu's test and evaluation missions primarily to NAWC-China Lake.

COST CONSIDERATIONS DEVELOPED BY DOD

- COBRA analysis not yet available. Requested by DBCRC May 11 with a suspense of May 24.

MANPOWER IMPLICATIONS

- See comments above. Manpower implications to be determined.

ENVIRONMENTAL CONSIDERATIONS

- None at this time.

REPRESENTATION

Governor:	Pete Wilson
Senators:	Dianne Feinstein
	Barbara Boxer
Representatives:	Elton Gallegly
	Anthony C. Beilenson

MILITARY ISSUES

- This realignment will reduce infrastructure and increase synergy at NAWC-Point Mugu and NAWC-China Lake. Both activities perform in-service engineering and conduct simulations on Navy air vehicles. The scenario : 1. retains the Sea Test Range and associated airspace and instrumentation, 2. closes or mothballs remaining facilities, runways and hangars, 3. transfers all in-service engineering functions to China Lake, and 4. provides support for remaining Point Mugu activities from Port Hueneme.

ECONOMIC IMPACT

- To be determined.

COMMUNITY CONCERNS/ISSUES

- Letter from California senators and representatives to DBCRC May 3, 1995, made the following points:
  (1) High military value accorded Point Mugu.
  (2) Absent closure of the Sea Range, no real closure of facilities can be achieved that result in cost savings.
  (3) Maximum consolidation of Point Mugu functions has already been achieved.
  (4) True consolidation of joint servicing can be achieved through implementation of the Southwest Test and Training Complex.

ITEMS OF SPECIAL EMPHASIS

- None at this time.

Lester C. Farrington/Cross Service Team/05/20/95 12:16 PM

Document Separator

NAVAL AIR WARFARE CENTER
WEAPONS DIVISION
POINT MUGU

QUESTIONS

For Navy:

1. What savings can be realized by moving F-14 Weapon System Support and In-Service engineering activities from Point Mugu to China Lake?

2. What personnel reductions have occured over the last two years as a result of the "core competencies" and management structure developed by NAWC-Weapons Division?

3. What has been done to reduce overlap of in-service engineering functions at both Point Mugu and China Lake?

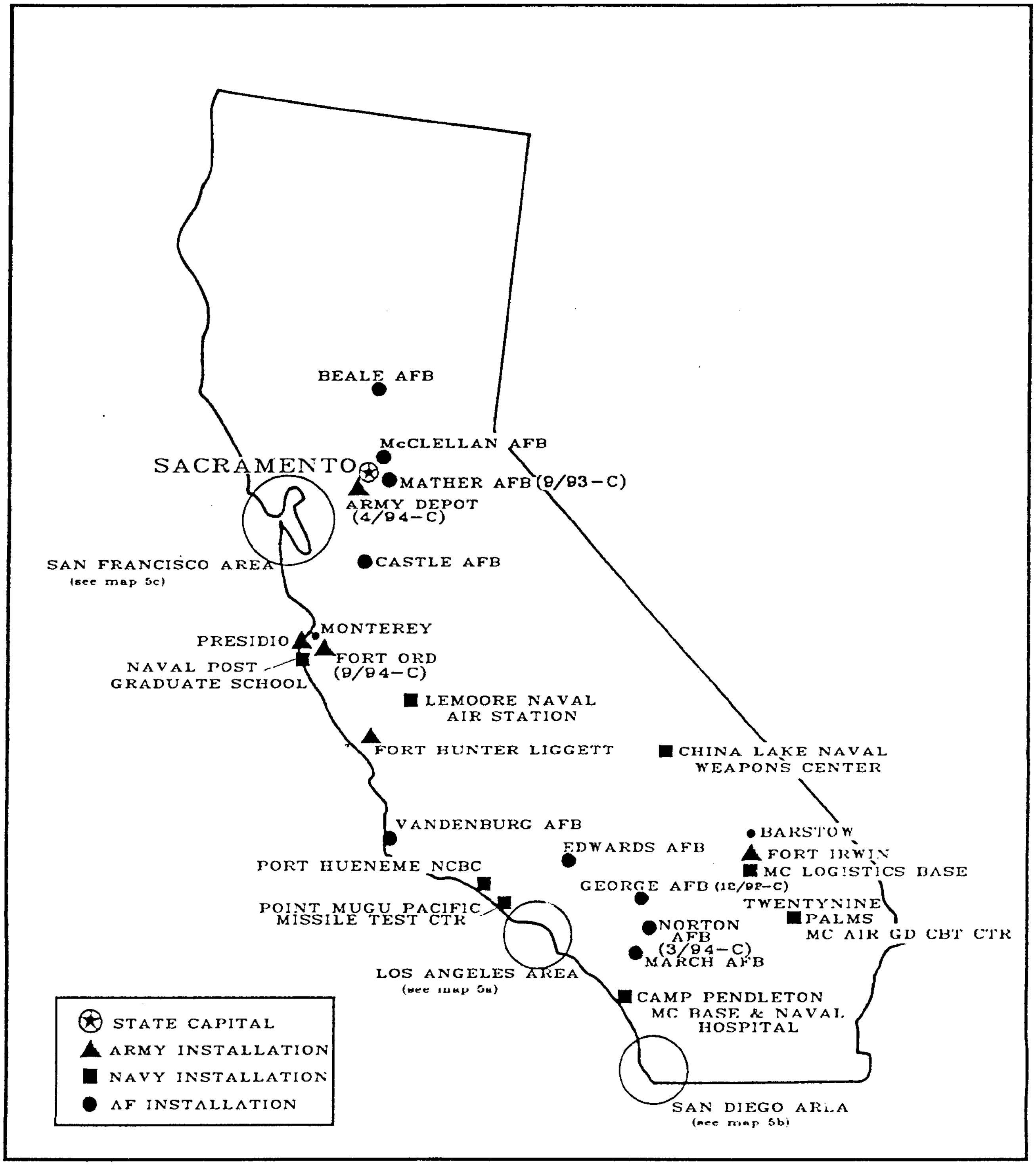
For Community

1. A few years ago we learned that a joint use arrangement (Ventura County and Navy) of use of the Point Mugu airfield was attempted but was unsuccessful. Why did it fail and what are the prospects that this could be successful at the present time?

2. What does the community estimate it will cost to move Point Mugu functions (except Sea Range and associated instrumentation) to China Lake and/or Port Hueneme?

MAP NO. 5

CALIFORNIA



Prepared By: Washington Headquarters Services
Directorate for Information
Operations and Reports

CALIFORNIA

FISCAL YEAR 1994 (DOLLARS IN THOUSANDS)

Personnel/Expenditures	Total	Army	Navy & Marine Corps	Air Force	Other Defense Activities
I. Personnel - Total	374,554	84,068	201,952	74,881	13,653
Active Duty Military	143,220	13,696	97,700	31,824	0
Civilian	99,906	8,290	57,508	20,455	13,653
Reserve & National Guard	131,428	62,082	46,744	22,602	0
II. Expenditures - Total	$36,040,373	$4,701,109	$14,612,676	$14,088,392	$2,638,196
A. Payroll Outlays - Total	13,467,267	1,570,280	8,518,650	2,866,189	512,148
Active Duty Military Pay	5,623,613	455,757	4,297,227	870,629	0
Civilian Pay	4,076,390	301,311	2,512,997	751,934	512,148
Reserve & National Guard Pay	352,659	180,700	75,380	96,579	0
Retired Military Pay	3,412,605	632,512	1,633,046	1,147,047	0
B. Prime Contracts Over $25,000 Total	22,573,106	3,130,829	6,094,026	11,222,203	2,126,048
Supply and Equipment Contracts	11,822,927	959,587	2,788,174	7,060,256	1,014,910
RDT&E Contracts	4,278,899	1,017,963	684,280	1,887,332	689,324
Service Contracts	5,665,889	807,308	2,236,299	2,200,580	421,702
Construction Contracts	637,216	177,796	385,273	74,035	112
Civil Function Contracts	168,175	168,175	0	0	0

Major Locations of Expenditures	Expenditures			Major Locations of Personnel	Military and Civilian Personnel		
	Total	Payroll Outlays	Prime Contracts		Total	Active Duty Military	Civilian
San Diego	$4,748,224	$2,683,196	$2,065,028	San Diego	38,871	25,897	12,974
Long Beach	3,550,195	330,892	3,219,303	Camp Pendleton	30,761	28,394	2,367
Pico Rivera	3,272,224	4,824	3,267,400	McClellan AFB	12,962	2,870	10,092
Sunnyvale	3,088,332	93,664	2,994,668	North Island NAS	10,527	5,142	5,385
Los Angeles	1,409,989	199,572	1,210,417	Travis AFB	9,683	7,677	2,006
Sacramento	928,313	137,557	790,756	Monterey	8,931	5,996	2,935
Camp Pendleton	923,961	803,482	120,479	Twentynine Palms	8,763	8,026	737
Travis AFB/Fairfield	517,962	356,453	161,509	Edwards AFB	8,137	4,690	3,447
North Island NAS	506,163	476,268	29,895	Oakland	7,486	1,974	5,512
Edwards AFB	493,650	249,240	244,410	El Toro	6,664	5,665	999

Prime Contracts Over $25,000 (Prior Three Years)	Total	Army	Navy & Marine Corps	Air Force	Other Defense Activities
Fiscal Year 1993	$22,951,965	$2,917,702	$7,945,883	$9,419,942	$2,668,438
Fiscal Year 1992	23,843,135	3,538,823	8,069,838	10,106,398	2,128,076
Fiscal Year 1991	24,265,041	4,098,936	7,289,024	10,954,901	1,922,180

Top Five Contractors Receiving the Largest Dollar Volume of Prime Contract Awards in this State	Total Amount	Major Area of Work: FSC or Service Code Description	Amount
1. NORTHROP GRUMMAN CORPORATION	$3,464,882	Aircraft Fixed Wing	$3,199,600
2. MCDONNELL DOUGLAS CORPORATION	3,389,624	Aircraft Fixed Wing	2,928,741
3. LOCKHEED CORPORATION	2,602,749	Guided Missiles	1,087,459
4. GENERAL MOTORS CORPORATION	1,478,702	Expert Witness	200,761
5. TRW INC	729,883	Drones	123,376
Total of Above	$11,665,840	(51.7% of total awards over $25,000)	

Prepared by: Washington Headquarters Services
Directorate for Information
Operations and Reports

Document Separator

BASE VISIT REPORT

NAVAL AIR WARFARE CENTER-WEAPONS DIVISION CHINA LAKE AND POINT MUGU, CALIFORNIA

MAY 15-17, 1995

STAFF-ONLY VISIT

COMMISSION STAFF:

Les Farrington-Cross-Service Team

LIST OF ATTENDEES:

NAVAL AIR WARFARE CENTER WEAPONS DIVISION
Rear Admiral Dana McKinney-Commander

China Lake
Sterling Haaland-Head, Research and Engineering Group
Milt Burford-Head, Corporate Operations Group
Matt Anderson-Head, BRAC Office
Bill Ball-Assoc. Head, Pacific Ranges and Facilities Dept.
Arlo Micklesen-Head, Anti-Air Analysis Branch, Targets Dept.
Chris Peterson-Assoc. Head, Weapons Prototype Div.
Captain Douglas Henry-Deputy, Research & Engineering Group
Rich Bruckman-Head, Carrier-Based Tactical Div., Systems Engr. Dept.

Point Mugu
Captain Hull-Vice Commander
Gerry Wrout-Head, Test and Evaluation Group
Brad Gilmer-F-14 Weapon Systems Support Activity
David Ayub-Head, Strike Systems Division
Dave Banks-Head, Air Intercept Systems Division
Terry Clark-Head, Cruise Missiles/UAVs/Target Systems Division
Captain Mike Barrett-Deputy, Pacific Ranges Dept./T & E Group
Rick Smith-Assoc. Head-Pacific Ranges/T & E Group
Commander Scott Graves-Deputy, Threat/Target Systems Dept.
Allen Vines-Threat/Target Team Leader
Captain Jack Dodd-Commander, Naval Test Wing Pacific
Ken Lyle-Surface Targets Team Leader

Port Hueneme
Commander Denny Plockmeyer-Public Works Officer, Naval Construction Battalion
Bob Wood-Associate Public Works Officer

San Nicolas Island
Lieutenant Commander Reg Egeln-Officer-In-Charge

BASE'S PRESENT MISSION:

Performs full spectrum research, development, test and evaluation and in-service engineering for weapon systems associated with air warfare (except ASW systems), missiles and missile subsystems, aircraft weapons integration, and assigned airborne electronic warfare systems.

MAIN FACILITIES REVIEWED:

China Lake-Michelson Laboratory, Machine shop, F/A-18 Weapon System Support Activity (WSSA), and AH-1W and AV-8B in-service engineering and simulation facilities.

Point Mugu-Range Control Center, F-14 and EA-6B Weapon System Support Activities, Hardware-in-the-loop simulation facilities, Targets and threat simulation facilities, Instrumentation supporting the Sea Range (including visit to Laguna Peak) .

Tour of Point Mugu's San Nicolas' island and instrumentation that supports the Sea Range.

Tour of Port Hueneme's Surface Targets and Public Works facilities, windshield tour of Naval Facilities Engineering Service Center.

KEY ISSUES IDENTIFIED

NAWC-Weapons Division is an add by DBCRC. We have provided Navy with the following scenario and have asked for a response (COBRA analysis) by May 24, 1995:

Retain the Sea Range
Retain airspace and island instrumentation in support of the Sea Range
Close or mothball remaining facilities, runways and hangars
Transfer all in-service engineering functions from Point Mugu to China Lake
Provide support for remaining Point Mugu activities from Port Hueneme.

This scenario was basically set forward by the Test and Evaluation Joint Cross-Service Group in Nov. 1994 and included by the DOD Inspector General in their report of June 1994.

During my visit many NAWC-Weapons Division officials were working around the clock to respond to the data call containing the above scenario. The data call was completed May 17, sent to Washington on May 18 and then forwarded to BSAT. During my visit, I discussed the scenario with Navy officials and some clarifications and minor changes were made as appropriate; I did not get an opportunity to see the results of the data call, although I did have some discussions on various parts of it.

The primary purpose of my visit was to gain a good understanding of the capabilities at China Lake and Point Mugu, especially for in-service engineering, and to get a handle on the instrumentation in direct support of Point Mugu's testing activities. As for in-service engineering, it appears that much similarity in functions appears between the two activities, with China Lake primarily supporting strike aircraft and Point Mugu supporting fighter aircraft. The Sea Range at Point Mugu is unique and the basic question is whether or not it can be cost effectively supported from China Lake, 162 miles away. Also of concern is the impacts of not being able to operate in close proximity to the Sea Range.

Based on discussions, the **Navy** made the following points:

(1) The one-time cost to relocate to China Lake will be high, perhaps as much as $500-750 million. Some of the big cost drivers are construction of the F-14 Weapon System Support Activity and increased cost of operation of F-14 aircraft at China Lake (transit back and forth to the Sea Range, increased fuel and operating costs,etc)

(2) Since the DOD-IG completed its work in 1993, NAWC has made significant personnel reductions, both at China Lake and Point Mugu. As a result, the current scenario will not result in additional major reductions of in-service engineering personnel. However, some reduction will take place with respect to support personnel.

(3) The National Guard has said to NAWC that they will plan to continue to use the Point Mugu runway regardless of whether or not NAWC plans to close it. The Guard recently spent approximately $70 million on facilities to give them ready access to the runway. The current data call includes the annual cost to operate the runway which would have to be absorbed by the Guard.

(4) A few years ago joint use of the runway was proposed (Navy and Ventura County) but efforts to make this happen were unsuccessful.

<u>COMMUNITY CONCERNS RAISED</u>:

I did not meet with community representatives during my visit.

<u>REQUESTS FOR STAFF AS A RESULT OF VISIT</u>:

Not applicable.

Les Farrington, Cross-Service Team
5/19/95

Document Separator

BASE VISIT REPORT

NAVAL AIR WARFARE CENTER-WEAPONS DIVISION
POINT MUGU, CALIFORNIA

May 30, 1995

LEAD COMMISSIONER:

Commissioner Ben Montoya

ACCOMPANYING COMMISSIONER:

Commissioner Rebecca Cox

COMMISSION STAFF:

Jim Owsley-Cross-Service Team Leader
Lester C. Farrington-Cross-Service Team Analyst

LIST OF ATTENDEES:

NAVAL AIR WARFARE CENTER WEAPONS DIVISION

Rear Admiral Dana McKinney-Commander
Captain Roger Hull-Vice Commander

Point Mugu

Gerry Wrout-Head, Test & Evaluation Group
Captain Selwyn Laughter-Commanding Officer, Naval Air Weapons Station
Captain Jack Dodd-Commanding Officer, Weapons Test Squadron
Brad Gilmer-F-14 Weapon System Support Activity
Paul McQuaide-F-14 Weapon System Support Activity
Terry Clark-Head, Cruise Missiles/UAVs/Targets Division
Commander Scott Graves-Deputy,Threat/Targets Systems Dept.
Allen Vines-Threat/Targets Team Leader
Dave Banks-Head, Air Intercept Systems Div. (Bistatic Chamber)
Don Hilliard-Head, Radar Imaging Branch, Air Intercept Systems Div.
Captain Mike Barrett-Deputy, Pacific Ranges & Facilities Dept.
Rick Smith-Associate Head, Pacific Ranges & Facilities Dept.
Captain Jack Dodd-Commander, Navy Test Wing Pacific

Naval Construction Battalion, Port Hueneme

Captain Jim Delker-Commanding Officer, Naval Construction Battalion Command

China Lake

Captain Charles Stevenson-Commanding Officer,Naval Weapons Station
Rich Bruckman-Head, Carrier-Based Tactical Aircraft Div. (F/A-18, AV-8, AH-1W)
Rick Lamp-Head, RF Missile Systems Section, Weapons/Targets Dept.
(Missile Engagement Encounter Simulation Arena)

Pacific Fleet

Admiral Ronald Zlatoper-Commander-In-Chief, U. S. Pacific Fleet
Commander Guadaginni-Flag Lieutenant to CINCPACFLT
Lieutenant Commander Hankins-Flag Lieutenant to CINCPACFLT

Naval Air Systems Command

Vice Admiral John Lockard-Commander
Lieutenant Reggie Baker-Flag Lieutenant to COMNAVAIR

Congressional Representatives/Staff

Congressman Elton Gallegly-(R), 23rd District, CA
Congressman Anthony Beilinson-(D), 24th District, CA
Commander Tom Dreyer-Office of Legislative Affairs, Wash.,DC
Matt Middlebrook-Field Representative For Senator Feinstein
Dave Thompson-Field Representative For Senator Boxer
Jolena Voorhis-Field Representative For Governor Wilson
Brian Miller-Field Representative For Congressman Gallegly
Kay Van Horne-Field Representative For Congressman Bielinson

BASE'S PRESENT MISSION:

Performs full spectrum research, development, test and evaluation and in-service engineering for weapon systems associated with air warfare (except antisubmarine warfare systems), missiles and missile subsystems, aircraft weapons integration, and assigned airborne electronic warfare systems.

DOD RECOMMENDATION:

Not applicable-Point Mugu was added by DBCRC.

DOD JUSTIFICATION:

Not applicable-Point Mugu was added by DBCRC.

MAIN FACILITIES REVIEWED:

Point Mugu-F-14 and EA-6B Weapon System Support Activities, Target and Threat Simulation Facilities, Bi-Static Chamber and Range Control Center.

Port Hueneme-Windshield tour of Naval Construction Battalion Command Areas.

China Lake-F/A-18 Weapon System Support Activity, AH-1W and AV-8B In-Service Engineering Facilities and the Missile Engagement Encounter Simulation Arena.

KEY ISSUES IDENTIFIED

1. Navy strongly believes that and realignment of Point Mugu to China Lake is not in the best interests of the Navy. Navy claims that the current integrated mix of facilities and capabilities at Point Mugu and China Lake are a result of major management streamlining efforts that have reduced 2,000 employees and eliminated duplicative functions.

2. Navy completed its COBRA analysis in response to the realignment scenario supplied by DBCRC. The scenario transfers RDT&E missions from Point Mugu to China Lake, retains the Sea Test Range,airspace and island instrumentation, and closes or mothballs remaining facilities, runways and hangars. The COBRA showed a one-time cost of $805 million, which included a MILCON estimate of almost $500 million.

3. Navy claims that the data in the DOD/IG study is dated and does not reflect Navy streamlining initiatives that have already taken place. Further, Navy believes that considering the significant up front investment and the low recurring savings does not justify further realignment of Point Mugu and further change would only disrupt or eliminate existing synergy within the NAWC Weapons Division.

COMMUNITY CONCERNS RAISED:

We did not meet with community representatives during the visit.

REQUESTS FOR STAFF AS A RESULT OF VISIT:

Staff plans to meet with DOD/IG and Navy BSAT representatives to pursue their analyses of the cost and feasibility of realigning Point Mugu to China Lake.

Document Separator

NAVY INSTALLATION LIST -- BRAC 95

TECHNICAL CENTERS/LABORATORIES

Commander-in-Chief, Atlantic Fleet
- Atlantic Fleet Weapons Training Facility, PR
- Fleet Technical Support Center, Atlantic, Norfolk, VA
- Fleet Technical Support Center, Atlantic, Norfolk Detachment, Mayport, FL
- Fleet Technical Support Center, Atlantic, Norfolk Detachment, Norfolk, VA

Commander-in-Chief, Pacific Fleet
- Pacific Missile Range Facility, Hawaii Area, Barking Sands, HI
- Fleet Technical Support Center, San Diego, CA
- Fleet Technical Support Center, Pearl Harbor, HI

Chief of Naval Operations
- Operational Test and Evaluation Force, Norfolk, VA

Bureau of Medicine and Surgery
- (c) Naval Medical Research Institute, Bethesda, MD
- (c) Naval Health Research Center, San Diego, CA
- Naval Aerospace Medical Research Laboratory, Pensacola, FL
- (c) Naval Biodynamics Laboratory, New Orleans, LA
- Naval Submarine Medical Research Laboratory, Groton, CT
- Naval Dental Research Institute, Great Lakes, IL

Bureau of Naval Personnel
- (c) Navy Personnel Research and Development Center, San Diego, CA

Chief of Naval Research
- Naval Research Laboratory, Washington, DC
- (c) Naval Research Laboratory Detachment, Underwater Sound Reference Laboratory, Orlando, FL
- (rd)Office of Naval Research, Arlington, VA

Naval Air Systems Command
- Naval Air Warfare Center, Headquarters, Washington, DC
- Naval Air Warfare Center, Weapons Division, China Lake, CA
- (a) Naval Air Warfare Center, Weapons Division, Point Mugu, CA
- (c) Naval Air Warfare Center, Aircraft Division, Indianapolis, IN
- Naval Air Warfare Center, Aircraft Division, Patuxent River, MD
- (c) Naval Air Warfare Center, Aircraft Division, Patuxent River Detachment, Warminster, PA
- (c) Naval Air Warfare Center, Aircraft Division, Patuxent River Detachment, Deep Water Test Facility, Oreland, PA
- (ce)Naval Air Warfare Center, Aircraft Division, Lakehurst, NJ
- Naval Air Training Systems Division, Orlando, FL
- (c) Naval Air Technical Services Facility, Philadelphia, PA
- (c) Naval Aviation Engineering Service Unit, Philadelphia, PA

Naval Sea Systems Command
- (rd)Naval Sea Systems Command, Headquarters, Arlington, VA
- Naval Surface Warfare Center, Crane Division, Crane, IN
- (ce)Naval Surface Warfare Center, Crane Division Detachment, Louisville, KY
- Naval Surface Warfare Center, Crane Division Detachment, Hydroacoustic Test Area, Sullivan, IN
- Naval Surface Warfare Center, Dahlgren Division, Dahlgren, VA
- (c) Naval Surface Warfare Center, Dahlgren Division Detachment, White Oak, MD
- Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station, Panama City, FL
- Naval Surface Warfare Center, Port Hueneme Division, Port Hueneme, CA
- Naval Surface Warfare Center, Carderock Division, Carderock, MD
- Naval Surface Warfare Center, Carderock Division Detachment, Philadelphia, PA
- (c) Naval Surface Warfare Center, Carderock Division Detachment, Annapolis, MD
- Naval Surface Warfare Center, Carderock Division, Acoustic Research Detachment, Bayview, ID
- Naval Surface Warfare Center, Indian Head Division, Indian Head, MD
- Naval Surface Warfare Center, Indian Head Division Detachment, Yorktown, VA
- Naval Sea Logistics Center, Mechanicsburg, PA
- Naval Sea Operations Support Detachment Technical Representative, Moorestown, NJ
- Naval Undersea Warfare Center, Headquarters, Newport, RI
- (c) Naval Undersea Warfare Center, Newport Division, Newport, RI
- (r) Naval Undersea Warfare Center, Newport Division Detachment, New London, CT
- Naval Undersea Warfare Center, Keyport Division, Keyport, WA
- SEASPARROW Project Support Office, Arlington, VA
- (a) Naval Warfare Assessment Division, Corona, CA
- AEGIS Combat Center, Wallops Island, VA
- Naval Explosive Ordnance Disposal Technology Division, Indian Head, MD
- Naval Ordnance Center, Indian Head, MD

Space and Naval Warfare Systems Command
- Naval Command, Control, and Ocean Surveillance Center, Headquarters, San Diego, CA
- Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, San Diego, CA
- (c) Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, San Diego Detachment, Warminster, PA
- Naval Command, Control, and Ocean Surveillance Center, In-service Engineering, East Coast Division, Charleston, SC
- (ce)Naval Command, Control, and Ocean Surveillance Center, In-service Engineering, East Coast Division, Charleston Detachment, Norfolk, VA
- (c) Naval Command, Control, and Ocean Surveillance Center, In-service Engineering, West Coast Division, San Diego, CA
- Naval Command, Control, and Ocean Surveillance Center, In-service Engineering, West Coast Division, San Diego Detachment, Pearl Harbor, HI
- (c) Naval Management Systems Support Office, Chesapeake, VA
- Naval Technical Representative Office, Laurel, MD

Naval Facilities Engineering Service Center
- Naval Facilities Engineering Service Center, Port Hueneme, CA

Naval Supply Systems Command
- Navy Clothing and Textile Research Facility, Natick, MA

(c) Closure candidate **(ce) Closure-except candidate**
(r) Realignment candidate **(rd) Redirect candidate**
(a) Commission addition for further consideration

Document Separator

As of: 10:33 19 May 1995

Economic Impact Data

Activity: NAWC POINT MUGU
Economic Area: Ventura, CA PMSA

Impact of Proposed BRAC-95 Action at NAWC POINT MUGU:

Total Population of Ventura, CA PMSA (1992):	**686,600**
Total Employment of Ventura, CA PMSA, BEA (1992):	**332,643**
Total Personal Income of Ventura, CA PMSA (1992 actual):	**$15,088,406,000**
BRAC 95 Total Direct and Indirect Job Change:	**(10,010)**
BRAC 95 Potential Total Job Change Over Closure Period (% of 1992 Total Employment)	**(3.0%)**

		1994	1995	1996	1997	1998	1999	2000	2001	Total
Relocated Jobs:	MIL	0	0	0	(750)	0	0	0	0	(750)
	CIV	0	0	0	(3,599)	0	0	0	0	(3,599)
Other Jobs:	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
BRAC 95 Direct Job Change Summary at NAWC POINT MUGU:										
	MIL	0	0	0	(750)	0	0	0	0	(750)
	CIV	0	0	0	(3,599)	0	0	0	0	(3,599)
	TO	0	0	0	(4,349)	0	0	0	0	(4,349)
								Indirect Job Change:		(5,661)
								Total Direct and Indirect Job Change:		(10,010)

Other Pending BRAC Actions at NAWC POINT MUGU (Previous Rounds):

	1994	1995	1996	1997	1998	1999	2000	2001	Total
MIL	0	0	0	0	0	0	0	0	0
CIV	10	0	0	0	0	0	0	0	10

Ventura, CA PMSA Profile:

Civilian Employment, BLS (1993): 340,421 Average Per Capita Income (1992): $21,977

Annualized Change in Civilian Employment (1984-1993)		Annualized Change in Per Capita Personal Income (1984-1992)	
Employment:	7,517	Dollars:	$865
Percentage:	2.5%	Percentage:	4.9%
U.S. Average Change:	1.5%	U.S. Average Change:	5.3%

Unemployment Rates for Ventura, CA PMSA and the US (1984 - 1993):

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Local	7.7%	7.3%	6.9%	5.5%	5.3%	5.1%	5.5%	7.1%	8.4%	8.8%
U.S.	7.5%	7.2%	7.0%	6.2%	5.5%	5.3%	5.5%	6.7%	7.4%	6.8%

1 Note: Bureau of Labor Statistics employment data for 1993, which has been adjusted to incorporate revised methodologies and 1993 Bureau of the Census metropolitan area definitions are not fully compatible with 1984 - 1992 data.

As of: 10:33 19 May 1995

Economic Impact Data

Activity: NAWC POINT MUGU
Economic Area: Ventura, CA PMSA

Cumulative BRAC Impacts Affecting Ventura, CA PMSA:

Cumulative Total Direct and Indirect Job Change:	**(9,844)**
Potential Cumulative Total Job Change Over Closure Period (% of 1992 Total Employ	**(3.0%)**

		1994	1995	1996	1997	1998	1999	2000	2001	Total
Other Proposed BRAC 95 Direct Job Changes in Economic Area (Excluding NAWC POINT MUGU)										
Army:	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Navy:	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	2	0	35	72	0	109
Air Force:	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Other:	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Other Pending Prior BRAC Direct Job Changes in Economic Area (Excluding NAWC POINT MUGU)										
Army:	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Navy:	MIL	5	0	0	(1)	0	0	0	0	4
	CIV	(46)	(14)	0	0	0	0	0	0	(60)
Air Force:	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Other:	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Cumulative Direct Job Change in Ventura, CA PMSA Statistical Area (Including NAWC POINT MUGU)										
	MIL	5	0	0	(751)	0	0	0	0	(746)
	CIV	(36)	(14)	0	(3,597)	0	35	72	0	(3,540)
	TO	(31)	(14)	0	(4,348)	0	35	72	0	(4,286)

Cumulative Indirect Job Change: (5,570)

Cumulative Total Direct and Indirect Job Change: (9,844)

Document Separator

BRAC-95 TASK FORCE
COMMITTED TO SAVING OUR BASES

Testimony Before the Base Realignment and Closure Commission Regional Hearing

May 25, 1995

San Francisco

TESTIMONY BEFORE THE BASE REALIGNMENT
AND CLOSURE COMMISSION
REGIONAL HEARING, MAY 25, 1995
SAN FRANCISCO, CALIFORNIA

STATEMENT OF THE HONORABLE ELTON GALLEGLY

MEMBER OF CONGRESS, 23RD DISTRICT, CALIFORNIA

Statement of the Honorable Elton Gallegly
Member of Congress, 23rd District of California
to The Defense Base Closure and Realignment Commission
Regional Hearing, Treasure Island, California
May 25, 1995

I appreciate this opportunity to address the Commission and to make some brief comments on behalf of the Point Mugu Naval base, which was added to the base closure list earlier this month.

Like other elected officials who have come before you to voice their concerns over proposed base closures in their respective districts, I could speak today from a strictly parochial point of view. I could discuss this proposed closure in terms of the thousands of jobs and hundreds of millions of dollars such action would strip from our already-suffering local economy. But I know that you've heard these arguments many times before from many different people in many different places.

Instead, I would like to direct your attention to the critical military value of Point Mugu - and to the consolidations and management streamlining that have taken place at Point Mugu and China Lake in recent years. The result of that effort by the Navy has been tens of thousands of man hours saved without any degradation of mission.

Since the addition of Pt. Mugu to the closure list, I have held numerous meetings with Navy officials to gain a more complete understanding of how they view this facility. The result of these meetings is that I am today more convinced than ever before that Point Mugu is an essential component of our overall fleet readiness and national defense. For that reason, I appear before you today to strongly state that the closure or further realignment of Point Mugu as proposed by the Commission would be a serious mistake.

For just a moment, Commissioners, please consider that Point Mugu offers some truly unique and critical assets - including the largest instrumented sea test range in the world - essential for live-fire fleet surface/air testing and training operations that require large footprint, multi-participant, joint service capabilities.

An itemized list of some of the other special and unique capabilities afforded at Point Mugu are identified in my testimony but I will, in the interest of time, forego an enumeration of those assets in my statement here today.

Partial list of additional assets at Point Mugu:

* mandatory space launch support site for Vandenberg AFB;
* the sole site for F-14 test aircraft and the Weapons System Support Activity;
* the largest test operations control facility;
* the sole site for sea and air targets presentation;
* the sole site for air mobilization support for the Construction Battalion Center at Port Hueneme;
* the only bistatic chamber in existence capable of obtaining near and far field monostatic and bistatic radar cross-section measurement;
* the fully integrated operation with China Lake to ensure a continuum of quality in weapon systems research development, test and evaluation.

Members of the Commission, this list could go on and on. Point Mugu was established in the 1940's precisely because of its unique geographic attributes - attributes which have not changed over time. The functions and activities designated to remain at Point Mugu after the Navy's T&E consolidations of the past several years do so because of their mission capabilities including these geographic features.

I know the Commission has, at least in part, felt obliged to add Point Mugu to the closure list for further examination because of the June 1994 DOD Inspector General Report alleging "excess capacity" at Point Mugu and projecting that further consolidation with China Lake could result in a $1.7 billion savings over the next 20 years. However the very people responsible for that IG report now acknowledge that it would be less than prudent for the Commission to use the 1993 data contained in that report to make a 1995 decision about the future of Point Mugu.

That was a key development that emerged last week when staff members from my office and from the offices of my colleagues Tony Beilenson, Dianne Feinstein and Barbara Boxer met with the authors of that IG Report. They further conceded that recent changes at Point Mugu in terms of workload, employment force and management streamlining have overtaken the validity of that report.

Admiral Dana McKinney, Commanding Officer for both Point Mugu and China Lake, will address you in just a few minutes, as will several officials from Ventura County who are also here today. In the days ahead you will visit Point Mugu and China Lake and receive additional detailed briefings and data from Navy officials in Washington. I ask you to evaluate this new information carefully. I am confident your conclusion will be that Point Mugu plays a critical role in our nation's defense and that you will move with justified confidence in deleting this base from the final closure list.

TESTIMONY BEFORE THE BASE REALIGNMENT
AND CLOSURE COMMISSION
REGIONAL HEARING, MAY 25, 1995
SAN FRANCISCO, CALIFORNIA

STATEMENT OF THE HONORABLE ANTHONY C. BEILENSON

MEMBER OF CONGRESS, 24TH DISTRICT, CALIFORNIA

Good morning Members of the Commission. I had hoped to be able to appear before you today but scheduled votes on the House floor preclude my presence. Please do not interpret my absence as a lack of concern regarding the recent action of the Commission to add Point Mugu to the closure list for consideration. I want to register my strong opposition to the proposal to realign Point Mugu facilities and activities to China Lake. I am convinced that after you have heard all the facts you will grasp the inadvisability of your proposal.

As you are no doubt aware, Point Mugu is a weapons systems Test and Evaluation (T&E) facility. This is a highly complex technical issue area and sometimes difficult to comprehend. As I have had to educate myself over the last several years I thought a brief description of the mechanics and importance of T&E would help set the framework for the presentations you will hear this hour.

The testing of weapons systems involves two phases: the testing of a weapons system from a technical perspective - evaluating the performance of a system prior to deployment. The second phase involves operational testing - testing the system in a real life scenario. Point Mugu and its tenants engage in both types of testing. Much of the technical testing is accomplished in a laboratory setting using sophisticated simulation capabilities. This capability reduces the need to run the much more expensive live fire tests and is used increasingly in these times of budgetary constraints.

Test and evaluation is done throughout the entire cycle of a weapons system - from development to post deployment. As a system is developed the T&E progresses from performing evaluations accomplished in the laboratories to live fire test accomplished on the ranges. To accomplish a weapons systems test you need space - air, land, sea and subsea. This space is called a range. On the range you need instrumentation - the capability to track and measure all the various components of the test as well as any unsuspecting ships or planes wandering onto the range during a test. You need combatants - airplanes, ships, land forces and you need the threat - again airplanes ships or land forces that are you targets. In a highly orchestrated way Point Mugu pulls all these test participants together to perform precise evaluations of the development and performance of the weapons system.

I think it is extremely important to keep a mental picture of the coordinated and interrelated nature of a test operation as you listen to our panel today.

I have also followed with great interest the debate over potential cost savings that might result from closing or realigning Point Mugu. The community has taken the infamous IG report, updated its information, corrected it inaccuracies and run new cost figures using the COBRA model. I urge you to listen carefully to this portion of the community's presentation later this hour.

The community has also run a COBRA on the proposed BRAC scenario as they understand it. Despite everyone's attention to on-time closure costs, I would urge you all to focus on the recurring annual costs that will result from this proposed scenario. To me, that is the essence of the argument - why disrupt mission capability when the inefficiencies created will cost so much each year so as to preclude any return on investment.

Ladies and gentleman, I do not intend to dwell overly much on the economic impact this action would have in my neighboring districts. Every facility closure will have an impact. The point I wish to make is that my state and my district has borne a disproportionate share of that impact. While such considerations will not form the basis of your decision in this case, I believe it merits some more than cursory consideration - particularly when the base under closure evaluation ranks so high in military value and will cost so much to close.

I appreciate the opportunity to provide this statement and I am available in Washington or in my district to answer any questions you may have.

TESTIMONY BEFORE THE BASE REALIGNMENT
AND CLOSURE COMMISSION
REGIONAL HEARING, MAY 25, 1995
SAN FRANCISCO, CALIFORNIA
BY
CAL CARRERA, CHAIR
VENTURA COUNTY BRAC 95 TASK FORCE

INTRODUCTION

Good morning, Members of the Commission. My name is Cal Carrera and I am Chairman of Ventura County's BRAC 95 Task Force, dedicated to preserving Ventura County's Navy bases. It is my pleasure to introduce the members of our community panel and also to give you a brief preview of the points we hope to make before you today.

It is our job today and in the upcoming weeks to show you how and why the existing location of the activities at Point Mugu is critical to the efficient and effective operation of the Naval Air Warfare Center - Weapons Division, of the 3rd Fleet and of the DOD's overall weapons systems Test and Evaluation program.

On May 10th, we listened carefully to the staff presentation and your discussions regarding Pt. Mugu. We heard briefings on a 1994 DOD Inspector General's report suggesting that a closure of Pt. Mugu and consolidation of most of its activities to China Lake, would result in significant savings. We also heard briefings on a portion of the Joint Cross Services Group for Test and Evaluation's which suggested that the DOD might examine the feasibility of realigning Point Mugu to China Lake. We know you made the decision to add Point Mugu for closure consideration without the benefit of a full analysis of the feasibility and costs of that closure. That, after all, is the purpose of the "adds process" -- to allow for this full analysis. To help you with your analysis, our Task Force has assembled the panel you see before you today -- all experts in the highly complex field of weapons systems RDT&E.

To my immediate right is Rear Admiral Dana McKinney, Commander, Naval Air Warfare Center - Weapons Division. Admiral McKinney commands the operations at both Point Mugu and China Lake. We are particularly honored by his presence on our panel and know of no one better to present to you the case for keeping Pt. Mugu intact. Admiral McKinney will explain the military value of Point Mugu's present configuration and will show that the proposed BRAC realignment scenario would result in increased costs and horrible inefficiencies that would impact Fleet readiness.

To Admiral McKinney's right is Bob Conroy, former Naval Air Systems Command Program Manager. Bob will present our analysis of the IG report and the current BRAC scenario. He will show you that the IG report was flawed at the time of its issuance and why its findings are even less valid today.

He will also show that, even aside from the military mission and readiness issue, the proposed BRAC scenario does not make sense from a cost or return on investment perspective. In fact, he will share an actual COBRA analysis (which we prepared independent of the Navy) which shows a Return on Investment break even figure of over 100 years.

To Bob's right is John Flynn, member of the Board of Supervisors of Ventura County and well acquainted with Point Mugu's contribution to the local economy. Supervisor Flynn will address the devastating impact the closure of Point Mugu would have on Ventura County.

To Supervsior Flynn's right is Ted Rains, former Executive Director of the Naval Surface Warfare Center, Port Huemene Division. Ted will shed further light on T&E operations at Point Mugu through the use of actual recent examples.

And I will end our community presentation with concluding remarks.

Now, I'd like to show you a short video which will help in visualizing the attributes of the national treasure we have at Point Mugu.

TESTIMONY BEFORE THE BASE REALIGNMENT
AND CLOSURE COMMISSION
REGIONAL HEARING, MAY 25, 1995
SAN FRANCISCO, CALIFORNIA

STATEMENT OF REAR ADMIRAL DANA McKINNEY

USN COMMANDER, NAVAL AIR WARFARE CENTER, WEAPONS DIVISION

Mr. Chairman, Commissioners:

Good morning. My name is Dana McKinney, and I command the Naval Air Warfare Center Weapons Division. My purpose in being here today is to make clear the position of the Department of the Navy and the Department of Defense in regard to the realignment of functions at the Naval Air Weapons Station Pt. Mugu.

We oppose this realignment strongly. It fails to accomplish the primary intent of the Joint Cross Service Group for Test and Evaluation, fails to meet reasonable goals for return on investment, and jeopardizes the future of an extremely valuable test and training range which supports a significant West Coast Fleet concentration.

The fact that the Division includes the bases at Pt. Mugu and China Lake, puts me in the unique position of being both the losing command and the primary gaining command in the scenario that we are discussing today. As you can imagine, I've been having an interesting time with the community relations in the past two weeks.

Let me just touch briefly on a little background. The Naval Air Warfare Center was established in 1992 as a result of a consolidation of 38 Navy Research, Development, Test, and Evaluation sites into four warfare centers. The 1991 BRAC Commission endorsed this consolidation. The Weapons Division of the Naval Air Warfare Center brought together four of these sites with the primary mission of the Research, Development, Test, and Evaluation and in-service engineering support of Naval aviation weapons and ship-launched surface to air missiles. As a result of this consolidation, the subordinate sites fell under a unified command structure. In addition, overhead functions such as Human Resources, Information Management, Comptroller, Procurement, Public Affairs, etc. were consolidated at the Division level with management at a single site. Technical management was also consolidated, with the Deputy Commander for Test and Evaluation located at Pt. Mugu and the Deputy Commander for Research and Development located at China Lake. The focus in the last three years has been on elimination of duplicate functions at the two major bases, and as a result, today there are virtually no redundant functions performed at Pt. Mugu and China Lake.

The Pt. Mugu site's primary focus is on operation of the Sea Test Range, development, maintenance and operation of target aircraft and ships, development and maintenance of software upgrades and integration of new weapons for the F-14 and EA-6B aircraft, electronic warfare avionics integration, and support of naval strike missiles such as the Tomahawk, Harpoon and SLAM. In addition, the site includes unique indoor facilities for bi-static radar cross section measurements and air to air missile seeker simulation labs used to reduce actual flight testing.

The China Lake site's primary focus is on operation of the Navy's largest air to ground weapons test range and electronic warfare test complex, development and maintenance of software upgrades and weapons integration for the F/A-18, AV-8B, AH-1W, and A-6E aircraft, development and test of new and modified air-to-air and air-to-ground weapons, and aircraft survivability development and test. In addition, the site performs sophisticated outdoor radar cross section measurements, large scale explosive effects testing, prototype explosive and warhead development, and basic research in a number of weapons related areas.

The two sites operate as a single organization with two campuses. Their facilities and personnel skills are complementary rather than overlapping.

I'd like to emphasize the fact that the Navy made a determination to retain Pt. Mugu in its current configuration following an extremely rigorous analysis process. As a result of the process Pt. Mugu was ranked #2 of 64 Navy technical centers. The primary value of Pt. Mugu is obviously the Sea Test Range with its 36,000 square miles of highly instrumented and controlled air and sea space. The range is unique in DoD due to the use of 1500-foot Laguna Peak adjacent to the main base and San Nicolas Island, sixty miles offshore, both of which are heavily instrumented and provide extended coverage far out to sea. In addition to San Nicolas' geographic position, its remote nature provides a base unmatched in its ability to provide absolute security for highly classified projects and a 10,000 foot runway for launching full-scale unmanned aircraft targets without major concern for public safety caused by encroachment from local communities. Pt. Mugu is located adjacent to the deep water port of Port Hueneme, providing an ideal base for our fleet of target ships.

The airfield at Pt. Mugu supports a variety of users. It is the deployment airhead for the SEABEES located at Port Hueneme, and the base for two Naval Air Reserve squadrons and a Naval Air Reserve Center. The airfield is shared with the California Air National Guard as the home of the largest C-130 Guard Wing in the nation. The airfield provides logistical support for Division operations, ferrying equipment and personnel from Pt. Mugu to China Lake and San Nicolas Island. This capability is extremely important to the day to day management of the Division because it provides a means to rapidly and routinely commute between the two major bases as required. All full-scale and sub-scale target operations and maintenance originate from the field at Pt. Mugu, as well as the surveillance, control, and range clearance aircraft which are vital to the operation of the Sea Test Range. Finally, the Navy maintains a squadron sized detachment at Pt. Mugu exclusively for operational testing of the F-14 weapon system, as well as the F-14 aircraft which are used by the Weapons Division's Test Squadron for developmental test.

I mentioned the F-14 aircraft last because I want to use them as an example of the synergy between the Research and Development and Test and Evaluation elements which are co-located at Pt. Mugu.

The Navy has embraced the concept of full spectrum Research, Development, Test, and Evaluation centers located at two hubs, one on either coast. The West coast hub is the Pt. Mugu-China Lake complex. We have consciously placed the full spectrum of technical support for air munitions Research, Development, Test, and Evaluation and ISE at this hub. In this manner we can provide a single site for expertise for all Navy air-launched weapons throughout their entire life cycle, from concept to deployment and ultimately disposal. We believe strongly that we have achieved large efficiencies by pursuing this approach. Co-location provide efficient use of personnel and facilities in laboratory and aircraft avionics support, shared use of flight test engineers, on-site coordination between customers and range operations, near real time analysis and correction of deficiencies encountered in tests, and the sharing of lessons learned amongst design, flight test, and in-service engineers. For instance, the F-14 Weapon System Support Activity, or WSSA, is involved in development of future capabilities for the F-14, is supporting three deployed configurations of the aircraft, and participates daily in the developmental test and evaluation of the changes that they initiate. Flight test engineers who work with the co-located Weapons Test Squadron routinely interface with both the WSSA engineers and with the Range operators. In addition, co-location of the operational testers of the F-14 at Pt. Mugu provides a vital fleet input to the kinds of software changes being incorporated into the aircraft. Spare parts, as well as systems expertise, are shared between the Test Squadron and the WSSA. Over the past several months we have been forced to cost out the impacts of establishing separate facilities for software support, development, and test and evaluation, and have been impressed at the magnitude of the inefficiencies caused by such an arrangement.

I'd like to talk a little bit about the things required to perform the kinds of Test and Evaluation that we do at Pt. Mugu. We need a highly instrumented test arena (STR), a range control/operations center, a data gathering and analysis capability, Modelling and Simulation augmentation (HWIL, WSLs for component stim), targets to shoot at (full-scale, sub-scale, air, and ship), and finally shooters (F-14, F-18, surface combatants, subs [TLAM], or Foreign Military customer assets). The combination of these elements and the extent to which you need them varies from program to program, and within each program depending on where it is in its life cycle. At the beginning of a weapon's life you may depend more on Modeling and Simulation and controlled stimulation of components in laboratories. As the program matures, more use is made of integrated system stimulation and actual flight testing. In production and deployment, operational testing and full scale fleet exercises require the most complex open air test scenarios available, often augmented by simulation. At Pt. Mugu, these components are all available at a single location. The proposed scenario would leave the Sea Test Range operations at Mugu, retain sub-scale aircraft and ship targets on the coast, move supersonic high altitude and sea skimming targets and full-scale aircraft targets to China Lake, locate the range customers and their test assets 160 miles from the range, and eliminate the ability to easily get by air from where the products are developed to where they are tested. This scenario will generate significant inefficiencies in operating the Division's aircraft on the range, and will require additional infrastructure to be built on San Nicolas Island in order to provide a staging base for range target presentation.

In short, the proposed scenario will destroy the synergy which currently exists between Research and Development and Test and Evaluation at Pt. Mugu and will lead to a less, rather than more, efficient organization. This will have an adverse effect on the cost of operation of the range which will be reflected in increased costs to our customers. These customers are not only within the developmental community. The Sea Test Range also performs a significant Fleet training role, due to its close proximity to the San Diego operational Fleet bases, and its demonstrated ability to generate complex and challenging scenarios for our operators.

At this point, I'd like to show you a short video which emphasizes these points.

Let me now turn to some significant issues associated with the scenario itself. As I understand it, this scenario was derived from the report of the Joint Cross Service Group for Test and Evaluation. In its report the Joint Cross Service for Test and Evaluation identified significant Test and Evaluation capacity roughly equal to twice the projected workload. Yet, this scenario preserves all of the Test and Evaluation capacity at Pt. Mugu by retaining the Sea Test Range. It results in no reduction of excess DoD Test and Evaluation capacity. It therefore does not accomplish the goals of the Joint Cross Service Group for Test and Evaluation.

In my opinion, this scenario will not accomplish the goals of the Commission. Previous recommendations for closure or realignment have focused rightly on scenarios which target bases with lower military value, which afford an acceptable return on investment, and which involve lower impacts to the community.

As previously stated, Pt. Mugu has an exceptionally high military value and is located in close proximity to a major fleet concentration. Implementation of this scenario will jeopardize the continued viability of the range by driving up operating costs.

Based on my review of the scenario and the Division's response, I believe that the return on investment will be unacceptable due to significant initial costs and low recurring savings. Our data show an initial investment cost of approximately $735M, not counting the COBRA costs to move over 2800 personnel and 13,700 tons of equipment. Due to the requirement to locate a large number of range customers and all test assets 160 miles away from the range, we believe there will be a recurring net loss of $4.6M per year in operations. While the personnel reductions associated with shutting down the airfield and base infrastructure generate recurring savings, we believe the net recurring savings will not exceed $30M per year. If these savings are applied only to the initial investment cost, not including COBRA moving costs and zero annual inflation, it will result in a break-even period of 24 years. When standard inflation indices are applied and the COBRA moving costs are added, I am not confident that there will ever be a break-even point. Of course, I do expect that the Commission staff will discount some of our initial cost estimates and perhaps find additional recurring savings. However, I am convinced that the magnitude of the final costs and savings involved will still yield an unacceptable return on investment.

I won't dwell on the IG report, but the Commission was briefed that there were approximately $1.7B in savings to be derived from that proposal, which was very similar to the one before the Commission. I want to reiterate that the Navy does not agree with this position. Those savings were a direct result of proposed elimination of 1049 jobs at Pt. Mugu, and the use of 937 personnel at China Lake to perform work to be shifted from Pt. Mugu. Essentially the report concluded that 20% of the Weapons Division's workforce (1984 people) was redundant. This is not the case. The Division is largely a DBOF organization, which means that we operate like a business, except that we attempt to set our rates each year to achieve a zero profit. Because we must generate revenues to pay for our cost of labor and other production overhead, we attempt to size our workforce to meet demand. For example from 1991, the year of the initial decision to consolidate Pt. Mugu and China Lake, through this fiscal year, the Division's government-only workload has decreased approximately 15%. During the same period, the government workforce available to accomplish the work has been reduced by a little over 1700 people or approximately 19%. Due to Federal hiring constraints, we have actually not been able to retain adequate government employees to match the workload, and have had to increase our use of commercial contractors to make up the difference in workyears. So, the excess workforce assumed in the IG report does not exist. Without those excess jobs to eliminate, the savings just aren't there.

As to community impact, other speakers are addressing these issues.

In summary, the consolidation of four independent sites into the Weapons Division has, over the past three years, resulted in the virtual elimination of redundant capabilities. The sites perform complementary, vice overlapping functions. Because of this and because of the nature of DBOF business operations, the workforce levels are driven by available workload. The Weapons Division workforce has actually been declining at a higher rate than the available customer demand, resulting in a scarcity, rather than a surplus, of government employees. The redundant facilities and idle workers envisioned in the DoD IG report do not exist, nor do the savings claimed in that report. The proposed scenario will not reduce the excess capacity in DoD Test and Evaluation, and, in my opinion, will not result in an acceptable return on investment. If executed, it will result in the fragmentation of an efficiently integrated Research, Development, Test and Evaluation center resulting in cost inefficiencies. It will jeopardize a national Test and Evaluation asset which supports a significant fleet concentration.

The retention of Pt. Mugu in its current configuration is supported by the Secretary of the Navy and the Secretary of Defense. I urge the Commission to reject this proposal and remove Pt. Mugu from further consideration for closure or realignment.

Thank you.

TESTIMONY BEFORE THE BASE REALIGNMENT
AND CLOSURE COMMISSION
REGIONAL HEARING, MAY 25, 1995
SAN FRANCISCO, CALIFORNIA
BY
BOB CONROY, TECHNICAL ADVISOR
VENTURA COUNTY BRAC 95 TASK FORCE

Admiral McKinney has confirmed the high military value of Point Mugu as an integrated testing facility. Under the new scenario being considered Point Mugu would be reduced from World Class status as it is today to an adjunct Sea Range, depending heavily on outside distant services to satisfy its customers from the Fleet and Acquisition Communities. But more than that, the cost of dismantling this premier facility will be extensive and does not show a return on investment for greater than 100 years.

A principal reason that Point Mugu was added to the list was the DoD Inspector Generals' report published June 8, 1994. The report was faulty in its cost analysis when written in 1993 and with current data now in hand is considered even more erroneous. Let me give you a few technical and cost assumptions that were incorrect and led to the faulty conclusions.

On these viewgraphs I'll demonstrate some of the erroneous assumptions made by IG report authors.

The IG assumed large reductions by combining departments with similar functions. A number of studies concluded that only small amounts of overhead would be saved by this integration. These departments are all fully customer funded and are workload driven.

The IG concluded that there was excess capacity with duplication of effort. The engineering performed by these two departments is similar but the work is applied to unique programs, e.g. F-14 and EA-6B at Point Mugu and the F/A-18, AV-8B, A-6E and AH-1 at China Lake.

The IG discounted the projected workload funding for Point Mugu by 50%. For FY-94 the IG was informed that the projected funding was approximately $400 million to support weapons project, but the authors of the report only credited Point Mugu with $200 million (the actual funded budget was over $400 million). By reducing the projections, the auditors justified a reduction in capability and associated personnel.

The IG assumed a 20% reduction in personnel in consolidation but in fact he applied the 20% to all departments not just those consolidating. He eliminated 2000 personnel by this assumption-proper application of this factor eliminates only 1100 personnel.

The IG accepted only 22% of the Navy's cost for moving-this caused a difference of $604 million in the one time cost of moving.

The Community COBRA model of the IG report finds that the Return on Investment is 23 years vice 3 years found by the IG. The Net Present Value shows a loss of $329 million as opposed to a savings of $602 million identified by the IG, and a one time cost of $1.247 billion as compared to $518 million in the IG's report. The "net savings", a product not found in the COBRA model but discussed in the IG's report is shown as $1.7 billion. the community has calculated it to be $358 million in updated numbers.

These major discrepancies must cause the commission to ask why this report was given such status and created such a lop sided picture toward the realignment of Point Mugu. It might also be noted that the data used in this study was <u>not</u> certified.

Although the IG's report called attention to Point Mugu and caused it to be added to the list, the current realignment scenario is the issue at hand and I'll address it at this time.

The consolidation at NAWC Weapons has made some significant cost savings already. The funded man years of work varied from FY-93 to FY-95 by 11% while the personnel at Point Mugu was reduced by over 1700. The base is operating quite efficiently at this time. Out of a total 10,400 population of both Point Mugu and China Lake only a total of 330 positions will be eliminated by this scenario. The base retains active use of 58% of the buildings and support infrastructure and 100% of acreage but the management and cost of operating these facilities transfers to Port Hueneme. The transfer of the F-14 weapons laboratory will cause between a 12-24 month gap in service to the Fleet users while fleet EA-6B Electronic Warfare aircraft will also be unsupported for 10-16 months while these labs are moved.

There will be extensive additional operating costs accrued to use the Sea Range while flying flights from China Lake - 162 miles away vice from the airfield at Point Mugu. This is an additional $10.6 million a year cost to the customers.

The F-14 laboratory seen in the video is perfectly located 75 feet above the ocean, providing the perfect salt air environment for radar and infra-red sensors. This can not be duplicated in the high desert of Ridgecrest (China Lake).

The Community made a number of assumptions when it ran its COBRA model and tried to be as conservative as possible in its estimates. There were no MILCON costs computed for transfers to bases other than China Lake and Port Hueneme, no MILCON for the new pier required at San Nicolas Island, no cost calculated for an EIS for the pier construction on the island. All other MILCON at San Nicolas Island is costed at mainland prices. We used the low cost alternative for moving the F-14 and EA-6B Weapons laboratories. We did not add in any MILCON costs for the main base at Point Mugu. This conservative approach does not include a possible $378.9 million in one time costs.

The bottom line as reflected in this viewgraph is that the return on investment for the current realignment scenario for Point Mugu is in excess of 100 years-the Net Present Value shows a loss of $298 million and you accrue a one time cost to institute the scenario of $496 million.

SUMMARY

- The proposed BRAC scenario retains the base infrastructure and simply moves operations to China Lake. Personnel reduction is minimal.
- The inefficiencies created by moving operations 160 miles away result in recurring annual costs of over $10 million.
- Regardless of the one time costs for closure or realignment the annual recurring costs ensure there is no return on investment or recoupment of expenditure for over 100 years.

We recommend reconsideration of the realignment of Point Mugu; it does not make good sense from a technical standpoint and most assuredly does not make economic sense.

TESTIMONY BEFORE THE BASE REALIGNMENT
AND CLOSURE COMMISSION
REGIONAL HEARING, MAY 25, 1995
SAN FRANCISCO, CALIFORNIA
BY
JOHN FLYNN
VENTURA COUNTY SUPERVISOR

My name is John K. Flynn, a member of the Ventura County Board of Supervisors. I am a Ventura County native and reside in Oxnard, California. I speak for a community of over 700,000 people.

If Point Mugu had low military value, I would not be here today. I have observed the Commission on two occasions and am convinced that you will base your decisions on the merits of keeping Point Mugu open.

NATIONAL DEFENSE

Ventura County citizens and residents support a strong national defense. We recognize the charge of the Commission and support the mission. Beginning in 1990, NAWCWPNS went through a reorganization. Further reorganization or realignment, however, meets our opposition. It is not in the national interest to mothball Point Mugu. Ventura County unequivocally supports the present continued use of Point Mugu and furthermore, increasing the workload to meet the optimum use.

COMMON-SENSE MODEL

As a local elected official for about 20 years, I know how difficult it is to locate facilities like airstrips and live testing facilities. Remoting the mission presently conducted at Point Mugu is questionable at best. But to shut down so valuable a facility jeopardizes the opportunity for reopening, should it ever be attempted. Common sense tells me to keep Point Mugu open or risk losing everything, thereby placing the sea range and air space at risk.

LAND USE

The Ventura County Board of Supervisors has maintained land use policies through the years to accomplish a variety of things but to especially protect the mission at Point Mugu. If Mugu shuts down, there is no guarantee that present land use will be maintained. If land use surrounding the base should change, the integrity of the sea range is endangered. As an elected official, through the years I have reviewed land use policies with officials at Point Mugu. The Board is strongly committed to protecting Point Mugu by maintaining present land uses and opposing urban encroachment.

ECONOMIC IMPACT

Naturally we are very concerned about the impact the closing of Point Mugu would have on Ventura County. We have experienced so many disasters in the past few years: earthquakes, fires, floods have been devastating to many of our residents. Our analysis identifies the impacts of Point Mugu closure with the table as shown overhead.

SOCIAL IMPACT

The social impact is very important to us. Point Mugu has had no small impact on our population. The employment opportunities has provided opportunity to every segment of our population. Point Mugu has provided our multicultural, diverse population with a springboard of upward mobility. Programs for high school and college students have provided education and job experience that are unmatched. The workforce provides expertise to our county and cities on many technical issues. Individuals serve on our committees and commissions.

CONCLUSION

We all have a jewel in Point Mugu. It is too valuable for the nation, the Navy, the military establishment and Ventura County to relinquish. The people, communities, organizations, submit that the base is defensible on the merits.

TESTIMONY BEFORE THE BASE REALIGNMENT
AND CLOSURE COMMISSION
REGIONAL HEARING, MAY 25, 1995
SAN FRANCISCO, CALIFORNIA
BY
TED RAINS, TECHNICAL ADVISOR
VENTURA COUNTY BRAC 95 TASK FORCE

During your viewing of the video tape on Point Mugu, you saw a very short clip on a recent NATO Sea Sparrow launching from the Navy's Self Defense Test Ship. The overhead that you are now looking at is a Sea Sparrow shot from an aircraft carrier. The NATO Sea Sparrow is a surface launched self defense missile carried aboard many of our surface combatants in the US Navy. I feel I am qualified to discuss this with you because I am the recently (1994) retired Executive Director of the Port Hueneme Division of the Naval Surface Warfare Center. NATO Sea Sparrow is under the engineering responsibility of the Port Hueneme Division as is the operation and support of the Self Defense Test Ship. The shot you saw in the video tape was fired on 11 May on the Sea Test Range at 1730 (5:30 PM). The test consisted of shooting two missiles that didn't have live warheads. Because of the stringency of the target presentation, it was determined in advance that the results of the first firing should be reviewed before firing the second missile, thus making sure that the second firing would not be wasted. To avoid the very high cost of carrying the second firing over to the next day and adding approximately $40 thousand to the test cost, the data review of the first firing had do be very nearly real time. By collecting the telemeter data at the operations control center and by having the "Hardware in the Loop Laboratory" personnel a couple of blocks away, rather than 160 miles, as part of the review group along with the cognizant engineers from Port Hueneme, the team was able to complete the review in an hour's time determining that the first missile performed as designed and the target stringent was appropriate for a repeat presentation. The second missile was fired on that same day on the range at about 1900 (7 PM) and was highly successful. The collocation of the "Hardware in the Loop Lab" with the range ops center and the close proximity of the Port Hueneme Division of the Naval Surface Warfare Center to Point Mugu was key to the above scenario that was highly successful and that allows for major cost avoidance. From the stand point of the surface community of the US Navy, Point Mugu's range and laboratory assets are of great value. I could cite many more examples but time does not permit.

From our National Defense Strategy involving two simultaneous regional conflicts, flows the Navy's "From the Sea" vision. An integral part of "From the Sea" is that of going in harms way in the littoral environment. The reality is that the post cold war world situation doesn't support a "blue water" requirement nearly as much as it supports a "littoral" force projection requirement. The Navy needs to be able to operate in coastal waters, controlling them out to a notional distance of 40 or so miles. This requires that they control the air above and the water beneath the surface. It also requires that they be able to clear the surf zone for amphibious assault purposes. Finally, and most importantly, they must be able to project power ashore with the goal of controlling the air and land surface for a distance of 40 or so miles in from the beach. The slide you see provides a graphic picture of what I have such discussed. Note that littoral warfare is usually a joint service type of situation with Army, Navy, and Air Force resources all being involved. So why have I spent a minute of your valuable time discussing littoral warfare. The answer is because the unique assets at Point Mugu; that is Laguna Peak, the coastal mountains, the Channel Islands, the sea range, San Nicholas Island, etc. are ideally suited to support the testing of littoral warfare systems and concepts. An example would be Theater Air Defense. It is also ideally suited to supporting joint testing as well as interoperability/joint service training exercises. As a recent retiree of the Navy's surface warfare community, I see great value in Point Mugu as a major asset in helping the US Armed Services in their drive to learn how to fight and win in a littoral environment.

The Self Defense Test Ship is the Navy's asset for live testing of self defense systems such as NATO Sea Sparrow, Rolling Airframe Missile, Close In Weapon System, SLQ-32 EW System, etc. It is home ported at Port Hueneme under the responsibility of the Port Hueneme Division of the Naval Surface Warfare Center. The Port Hueneme Division also has T&E and engineering responsibility for most systems on the ship. It is capable of being remotely controlled, thereby eliminating the safety constraints on manned vessels. This supports the firing of live missiles and other ordnance towards it so its onboard systems can detect, engage and fire on them. This provides a very high degree of realism in the testing of improvements to existing systems and the testing of new developmental systems. During remote operations on the range, the ship is under the control of the Naval Air Warfare Center Weapons Division (Point Mugu) and the combat systems installed are under the remote control of the Port Hueneme Division of the Naval Surface Warfare Center. The view graph on the screen shows this concept in operation. This is only possible because of the close proximity of Port Hueneme and the Point Mugu range, including its range operations control center (Building 53). Note the fiber optic links that are key to this concept of operation. While not shown on the overhead, the concept also calls for tying the "Hardware in the Loop Lab" into this fiber optic network, allowing real time integration of its simulation capability. This concept of operations, the facilities at Point Mugu and the sea range are vital to the future effectiveness of the Navy's ship self defense capability.

TESTIMONY BEFORE THE BASE REALIGNMENT
AND CLOSURE COMMISSION
REGIONAL HEARING, MAY 25, 1995
SAN FRANCISCO, CALIFORNIA
BY
CAL CARRERA, CHAIR
VENTURA COUNTY BRAC 95 TASK FORCE

CONCLUSION

Members of the Commission, you have just spent the last fifty-five minutes listening to representatives of the Navy, local government and the business community make the case for retaining Point Mugu. You have heard Admiral McKinney explain how closing the base ranked second highest in military value of the Navy's 64 technical centers would negatively impact the military mission and readiness capability of the fleet. How the proposed realignment of activities would result in unacceptably inefficient and ineffective operation of the sea test-range. How the proposed realignment would impact the cost of operations and how strongly the Navy objects to its closure. You have heard Bob Conroy detail the fallacies in the IG report at the time it was issued and explain how its findings are even less valid due to the passage of time. You have seen our independent COBRA calculations of the proposed BRAC scenario that shows a break even point in return on investment more than a century away. You have heard Supervisor Flynn describe the tremendous impact the proposed BRAC action would have on Ventura County.

Member of the Commission, we are confident that, as a result of our presentation today and the ongoing analysis we will provide over the next few weeks, you will vote to retain Point Mugu intact. If you have any questions or want additional information, please do not hesitate to contact us.

Thank you for your consideration.

VENTURA COUNTY BRAC 95 TASK FORCE

PANELISTS

Calvin (Cal) Carrera

Cal carrera has 27 years experience with Pt. Mugu laboratories and the Sea Range. He was a member of the original F-14 laboratory design team in 1968, led development of the EA-6B Weapon System Support laboratory and supported Naval Air System Command in a number of Tri Service issues. He is chairman of the BRAC-95 Task Force, Director of Advanced Programs for Engineering Management Concepts, and President of the Defense Services Industry Executive Association.

Robert O. (Bob) Conroy

Bob Conroy is a retired, 26-year veteran of the U.S. Navy. He retired as a Commander, his last position while on active duty was with the Naval Air Systems Command, where he served 4 years as the Assistant Program Manager for Aerial Targets (Acquisition) and 2 years as the Navy's Program Manager for Training Ranges. He is well steeped in the Test and Evaluation process, having spent 2 years as the Assistant Range Operations Officer at the Kwajalein Missile Range and 2 tours of duty in Fleet squadrons as an Aerial Targets Controller and Targets Department Head. In addition, he served as a Fleet Fighter Pilot and as a Carrier Ordnance Officer in Vietnam. He also served a tour on the Joint Staff at CINPAC.

Bob is currently a corporate vice-president with SRS Technologies, an engineering contractor supporting the Defense Department, NASA and aerospace industries.

John K. Flynn

John K. Flynn was born in Ventura County and was first elected to the Ventura County Board of Supervisors in 1972. In 1981 he first served as a member of the Local Agency Formation Commission (LAFCO). He continues to serve on this Board today.

John also serves as Chair of the Groundwater Management Agency, is founder and chair of the Beach Erosion Authority for Control and Nourishment, and participates in many other teams, including the Oxnard and Camarillo Airport Authorities. He is also a leader in agriculture and water issues.

Roger T. (Ted) Rains

Roger (Ted) Rains retired from active service with the Department of Navy in April of 1994 after 34 years of service which included four years of active duty in the US Marine Corps. His career included in-depth experience in the Test and Evaluation and in the in-service engineering of both air-launched, e.g., missiles, bombs, rockets, A/C guns, etc.; and ship-launched weapon/combat systems, e.g., AAW and cruise missiles, 2D and 3D radars, AEGIS combat system etc.

Mr. Rains' last assignment was as the Executive Director of the Port Hueneme Division of the Naval Surface Warfare Center (PHD/NSWC) where he was responsible to the Commander for the technical mission accomplishment, for the planning and budgeting of Division's resources, for the oversight management of all civilian personnel (up to 3200 civil servants) and for the total quality management of the divisions operations.

POINT MUGU NAVAL AIR STATION
LAND USE FACT SHEET

The Base is a federally owned facility and is, therefore, exempt from local plans and regulations. However, Ventura County has taken many steps to insure that the Base is protected from urban encroachment.

- The Base is itself designated on the Ventura County General Plan as "State/Federal Facility" thereby placing interested parties on notice that that area is restricted to institutional uses.

- The surrounding area is designated by the Ventura County General Plan as either "Agricultural" (forty-acre parcel size minimum) since 1983, or "Open Space" (ten-acre parcel size minimum) since 1973. These land use designations are Board-adopted and have never been seriously challenged or amended.

- The zoning of the "Agricultural" lands is "A-E" (Agricultural Exclusive, forty acre minimum). The "Open Space" lands are zoned "O-S-160AC" (660-acre minimum) reflecting the rugged topography to the east and the "duck ponds" to the west. These zonings were adopted by the Board of Supervisors in 1984 and 1987.

- A portion of the Base is located within the Coastal Zone, but as a Federal owned facility, is excluded from the provisions of the State and County Coastal regulations. Areas surrounding the Base within the Coastal Zone are designated as "Coastal Agriculture" or "Coastal Open Space" and were zoned accordingly by the Board in 1983.

- The Base itself is zoned "C-O-S" for those portions within the Coastal Zone, and "O-S-160AC" for those portions outside the coastal zone. Development options are limited and most permitted uses (including single family dwellings) require discretionary permits.

- The southern portion of the Base is immediately adjacent to state-owned lands, Pt. Mugu State Park, which limits any future development.

- The Ventura County Coastal Plan designates the area south of the Base, along the coastline as having "special biological significance" and limits disruption to the "Rocky Tidepools" located in the area.

- Any future private development of The Base would have to take into account the existence of extremely sensitive habitats such as the Mugu Lagoon. Coastal Plan policies place a high priority on protecting unique saltwater habitats and other areas of biological significance. To the Navy's credit, the Base has done an excellent job of protecting those coastal resources.

- Many parcels of land surrounding the Base are subject to Land Conservation Act (LCA) contracts making it difficult to assemble large tracts of land for development. New contracts on the Oxnard Plain are being executed by interested property owners and the Board annually.

- Any future private development of the Base or the area surrounding the Base would require amendments by the Board to the Ventura County General Plan and the Local Coastal Plan (a multi-year undertaking); any changes to the Local Coastal Plan would also require State Coastal Commission approval.

- "Airport Hazard" (2.10) and "Noise" (2.16) policies of the General Plan limit uses adjacent to airports to low-intensity uses such as Agriculture, Open Space, cemeteries, waste treatment and disposal, and to noise levels which must be reduced to "residential" levels. These Board adopted polices serve to further protect the Base from inappropriate uses.

- Per the Ventura County's Guidelines for Orderly Development, the cities and the County have agreed most urban development will occur within the ten cities, not in the unincorporated areas. Spheres of Influence determine the ultimate urban growth line for each city. Point Mugu is <u>outside</u> the sphere line for the closest city (Oxnard), underscoring the Board's commitment that land uses inappropriate to the Base will <u>not</u> occur. The Oxnard Sphere of Influence (urban limit line) was first adopted in 1978.

TB:po/1ptmugu.fct

Realignment Scenario

Realign the Naval Air Warfare Center (NAWC), Weapons Division, Point Mugu to transfer Test and Evaluations missions to NAWC Weapons Division, China Lake

- ☆ Retain the Sea Test Range
- ☆ Retain airspace and island instrumentation
- ☆ Close or mothball remaining facilities, runways and hangars
- ☆ Transfer all In-Service Engineering functions to China Lake
- ☆ [illegible] remaining Point Mugu [illegible]

Excerpts from DoD Inspector General's Report with Rebuttal ...

BRAC-95 TASK FORCE — COMMITTED TO SAVING OUR BASES

IG Report Finding		Navy/Community Rebuttal
"We concluded that several NAWC-WPNS departments at China Lake and Point Mugu performed duplicative functions" (See page 10 - Table 1)	➡	Studies conclude that is a natural outcome of having 2 sites. The sites are workload driven (these are fully customer funded) and very little extra costs accrue.
"Our review determined that the type of work performed by both departments are duplicative" (Fighter Department at Point Mugu and Fighter/Attack Department at China Lake) (See page 11)	➡	Both sites have similar work but each site performs their function for unique programs (e.g. F-14 and EA-6B at Point Mugu and F/A-18, AV-8B, A-6E and AH-1 at China Lake.
[illegible]	➡	[illegible]

Excerpts from DoD Inspector General's Report with Rebuttal ...

BRAC-95 TASK FORCE — COMMITTED TO SAVING OUR BASES

IG Report Finding		Navy/Community Rebuttal
Assumed 20% reduction in consolidation - assumed 20% across the board and applied to many departments not involved in consolidation eliminated 2,000 personnel	➡	Proper application of 20% factor eliminates only 1,100 personnel
Moving expense Navy estimate - $777 million IG estimate - [illegible]	➡	IG only accepted 22% of Navy estimate. "Use Navy estimate if no reasonable rationale is otherwise"

COBRA Analysis of IG Scenario

BRAC-95 TASK FORCE
COMMITTED TO SAVING OUR BASES

	Outdated IG COBRA	Updated Community COBRA
Return on Investment	3 years	23 years
Net Present Value (total 20-year savings in first year dollars)	$602 million	($329 million) loss
One Time Cost	$518 million	$1.247 billion
Net Savings	$1.7 billion	$358 million

Results of Realignment Scenario

BRAC-95 TASK FORCE — COMMITTED TO SAVING OUR BASES

- ☆ Consolidation / Work Load Reduction / Efficiencies
- ☆ Reduction of 330 personnel
  - 280 due to closure of airfield
  - 50 due to management consolidation
- ☆ Retains active use of 58% of buildings and support infrastructure and 100% of land, transfers management and cost to Port Hueneme
- ☆ Major Fleet readiness impacts
  - Loss of F-14 weapons laboratory support capability for 12 - 24 months
  - Loss of EA-6B weapons laboratory support capability for 10 - 16 months
- ☆ Extensive additional operating cost flying out of China Lake vice Point [illegible]
- ☆ [illegible]

Assumptions ...

Community Approach to COBRA

(applied conservative estimates of cost)

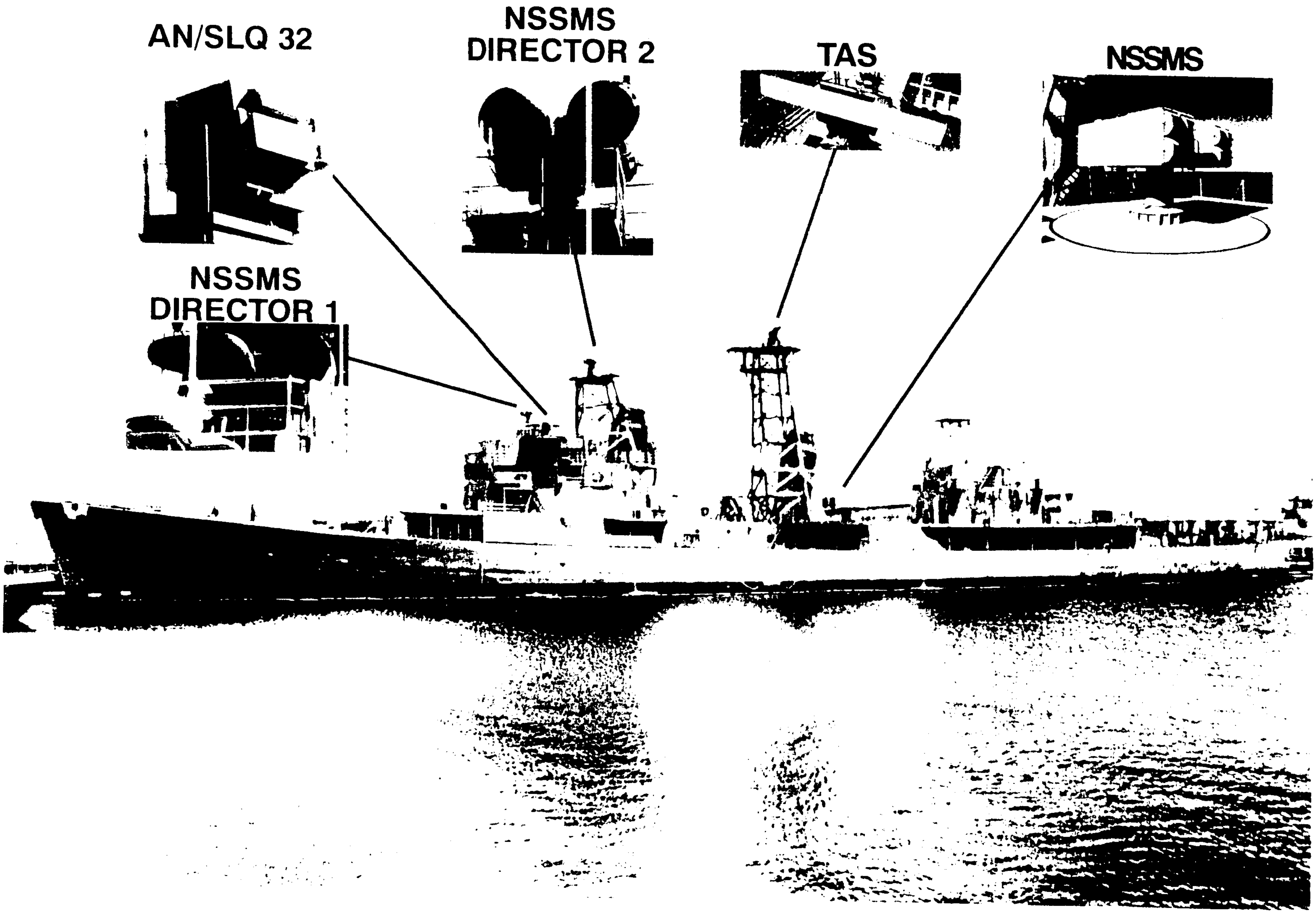
- No MILCON costs for personnel transfers to Edwards AFB, NAS North Island, NAR Santa Clara
- No MILCON for pier at San Nicolas Island (est. at $15 - 25 million)
- No Environmental Impact Statement (EIS) costed at San Nicolas Island for MILCON (est. $1 - 2 million)
- MILCON at San Nicolas Island costed at mainland prices vs. 200% historical cost (reduced MILCON by $30 million)
- Took low cost alternative for F-14 and EA-6B weapons laboratories move (reduced cost $222 million)
- [illegible] include increased mission cost to Air National Guard and [illegible]
- [illegible]

Bottom Line ...

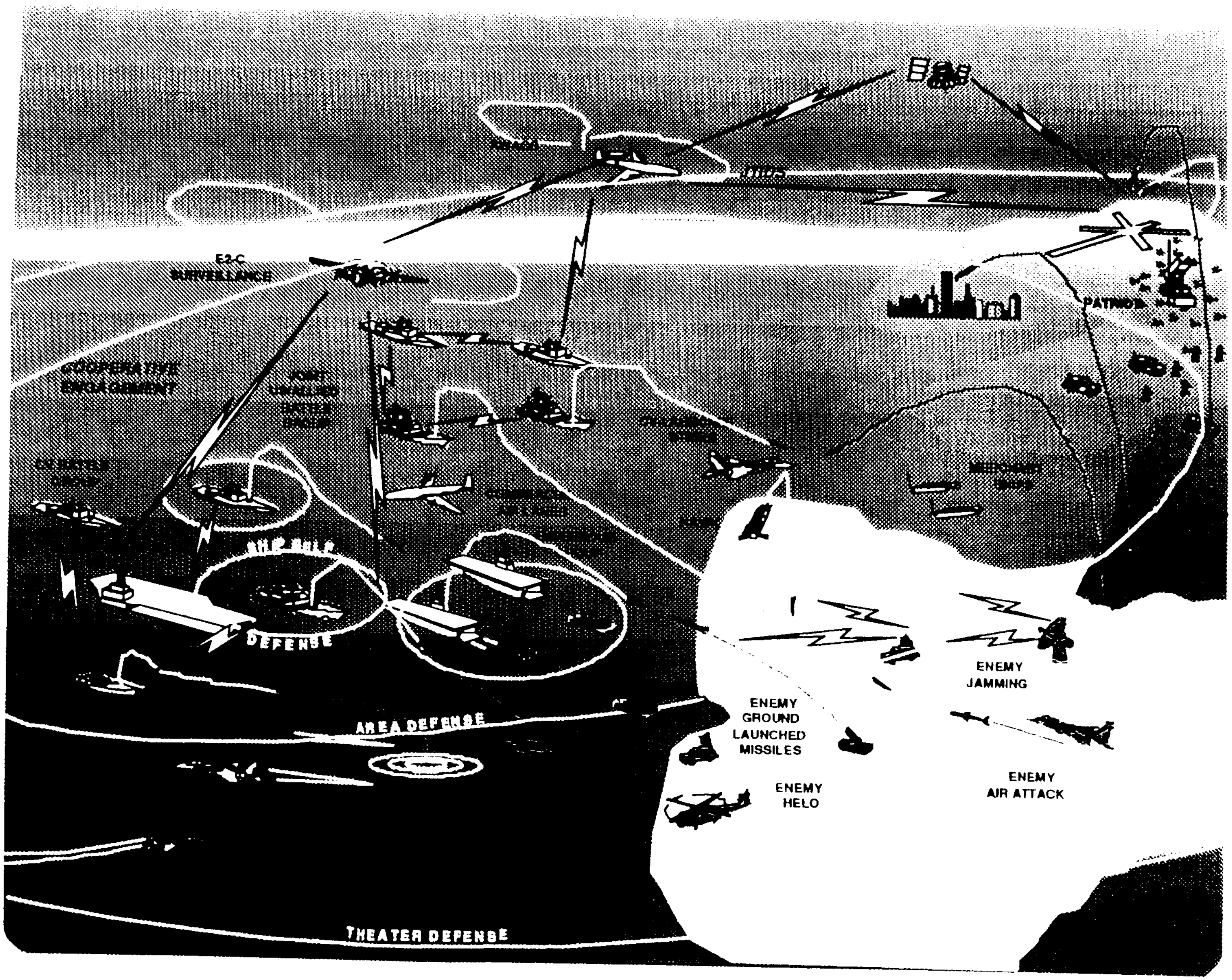
BRAC-95 TASK FORCE
COMMITTED TO SAVING OUR BASES

Return on Investment	➡	100+ Years
Net Present Value (total 20-year savings in first year dollars)	➡	($298 million) loss
One Time Cost	➡	$496 million

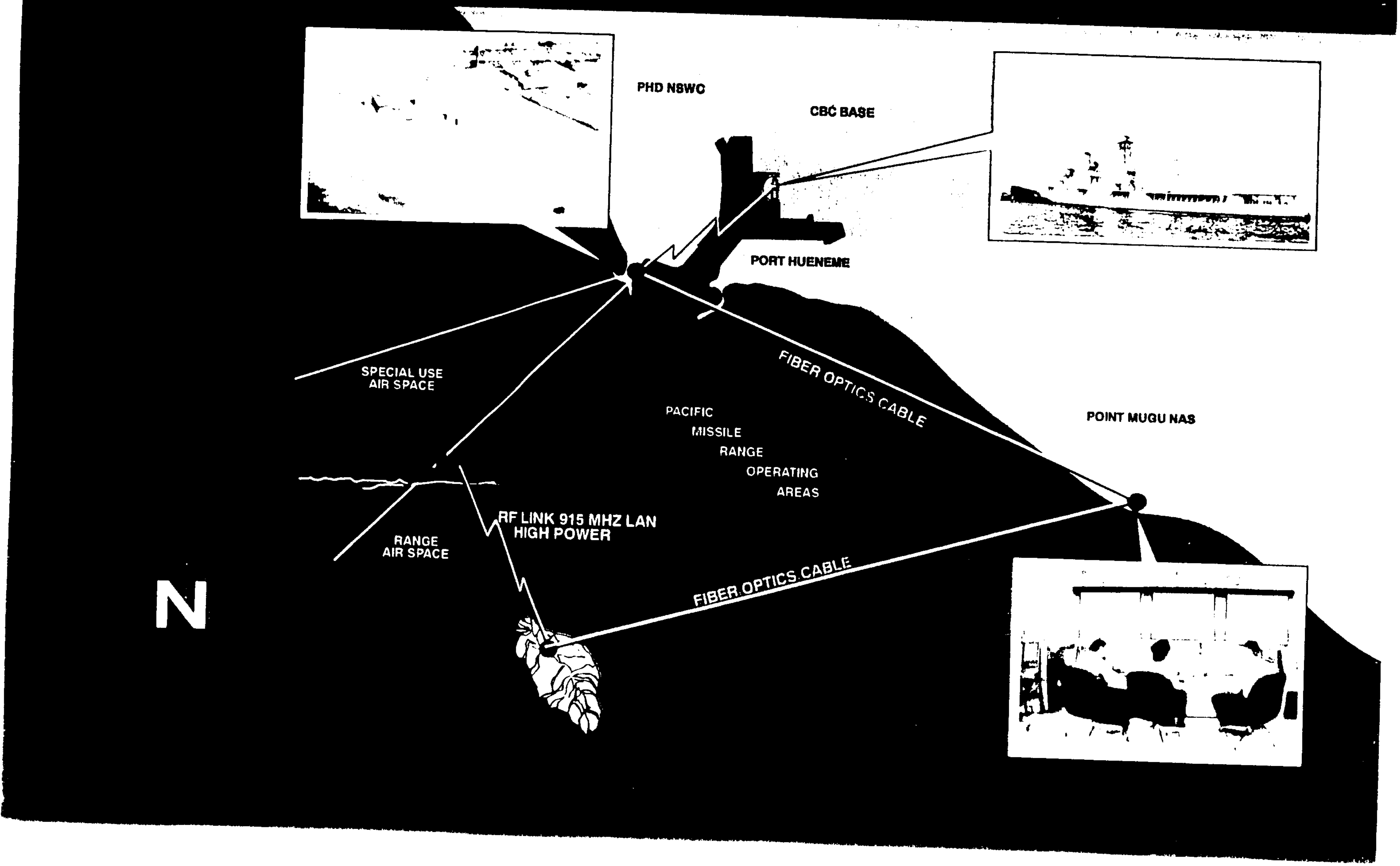
THIS REALIGNMENT OFFERS NO COST BENEFIT!!


AN/SLQ 32
NSSMS
DIRECTOR 2
TAS
NSSMS
NSSMS
DIRECTOR 1

LITTORAL ENVIRONMENT



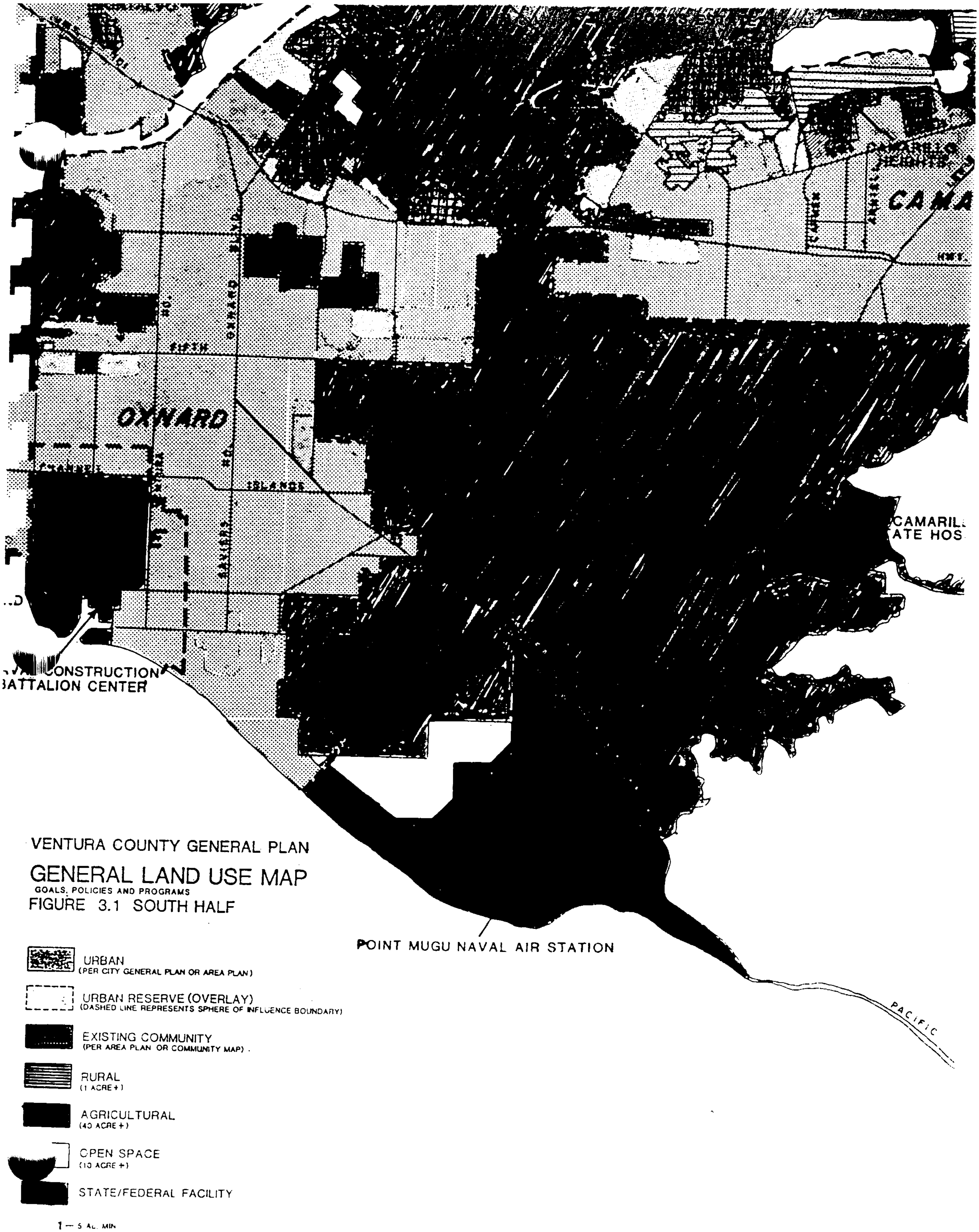
Self Defense Test Ship Concept of Operations



Economic Impact of Base Closure on Ventura County

CLOSURE SCENARIOS		NAWCWPNS and All Tenants
Procurement Loss		$200,915,000
Employment Loss		
	Direct	9,228
	Induced	8,837
	Total	18,065
Income Loss		
	Direct	$431,682,192
	Induced	$255,389,300
	Total	$687,071,492
Population Loss		
	Total Population	29,826
	School Children	4,273
Housing Units Vacated		
	Rental	3,753
	Owner Occupied	5,936

Source: US Army Corps of Engineers Economic Impact Forecast System (EFIS) II



VENTURA COUNTY GENERAL PLAN

GENERAL LAND USE MAP

GOALS, POLICIES AND PROGRAMS

FIGURE 3.1 SOUTH HALF

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 146th AIRLIFT WING (ANG)
Port Hueneme, CA

MEMORANDUM FOR CAPT JACK DODD
Commander Test Wing
Point Mugu NAS

16 May 1995

FROM: 146 AW/CV
100 Mulcahey Dr.
Port Hueneme, CA 93041

SUBJECT: BRAC 95

1. The 146th Airlift Wing occupies 225 acres and approximately 345,000 square feet of facilities at Channel Islands Air National Guard Station (ANGS) adjacent to Point Mugu NAS. The unit operates twelve (12) C-130E aircraft and averages 5,000 flying hours per year. These aircraft operate from the ANGS and use the runway and Air Traffic Control (ATC) facilities of Pt Mugu NAS.

2. The estimated cost to relocate the 146 AW in response to the proposed closure of the adjacent Pt Mugu NAS is as follows:

Military Construction and Land Purchase	$92,000,000
Permanent Change of Station Cost	
(285 civilians – 56 AGR)	9,500,000
Movement of Equipment	500,000
Total	$102,000,000

3. In recognition of these factors, the position of the Air National Guard will be to retain the present facility adjacent to NAS Point Mugu. Operation of the airfield and ATC facilities would require funds not presently in the Channel Islands ANGS budget.

4. Questions can be directed to Lt Col Bellion at DSN 893-7503 or Commercial 805 986-7503.

HENRY E. BELLION, LT COL, CA ANG
Vice Air Commander

Community Perspective on Return on Investment for Proposed Scenario

The DBDRC proposal to maintain Sea Range operations at Point Mugu, close the main airfield, realign engineering and weapons system support activities to China Lake, and transfer target operations to China Lake and San Nicolas Island, results in such high closure costs and annual recurring costs that a reasonable Return On Investment is not possible. The community COBRA shows:

- One Time Costs of over $579 million

- 73 years to Break Even (ROI year)

- $338 million Loss after 20 years (NPV)

Consolidation of Point Mugu and China Lake into NAWCWPNS has already produced most of the savings in the technical areas and significant savings in the overhead areas: little additional efficiencies would occur under the proposed scenario.

- Reductions of 1,200 positions (over and above Force Structure Reductions) and of $ 55.4 million per year in total overhead have already been achieved resulting in a $2.28 billion gross savings over 20 years.

- Proposed scenario eliminates most positions due to airfield closure rather than consolidation of technical functions. More than 55% of the positions eliminated are Enlisted Military.

- Navy response failed to account for the Air National Guard position that they will continue operation of the airfield rather than relocate.

The community COBRA analysis used a very conservative approach.

- Required MILCONs at San Nicolas Island were priced at mainland costs versus the 200% historical cost.

- No MILCONs for relocating Reserve Units were included.

- Low cost approach for moving the F-14 and EA-6B WSSAs was used (Community strongly believes this will have a negative impact on Fleet Readiness and approved development/procurement schedules).

- Minimum cost estimate for Air National Guard operation of the airfield was used.

- Community ran several alternative COBRAs which produced ROI variations from 25 years to 100+ years.

Notes on the Community COBRA

The basis for the community COBRA is the response of Point Mugu to Data Call CR95-004, BSAT questions and responses dated May 20, 1995, the BSAT COBRA run dated May 24, 1995, and the Air National Guard Memorandum dated May 16, 1995.

The original community COBRA (submitted on May 25, 1995, at the Regional Hearing) was based on incomplete information. Specifically, it did not contain the right data for some of the receiving bases and it did not reflect the position of the Air National Guard relative to assuming the operation of the main airfield at Point Mugu. While the detailed results of that analysis were not completely accurate, the general conclusion that the proposed realignment of Point Mugu offers no cost benefit remains true.

The community subsequently received the BSAT COBRA and the memorandum stating the position of the Air Guard. Based on an analysis of all the data, the community has produced a new COBRA which shows a one-time cost $579 million, an ROI of 73 years, and an NPV of +$338 million.

In conducting this analysis, the community maintained its conservative approach. MILCON costs were minimized and the low cost alternative for moving the WSSAs was used. (The technical and programmatic issues associated with this alternative have been thoroughly discussed in other documents) This approach has resulted in a one-time cost estimate that is $226 million less than the BSAT estimate.

The Air National Guard estimated their total relocation costs at $102 million. This, coupled with the lack of a suitable receiving site, has lead them to adopt the position that they will remain in place and assume operation of the main airfield at Point Mugu. This is what they did when Moffet Field was closed by a previous BRAC action. Their estimate for doing this was $8 million to $15 million per year, with a most likely cost of $12 million per year based on their experience at Moffet. (For further information, contact LT COL Henry Bellion at DSN 893-7503 or Commercial 805 986-7503) The community used the $8 million estimate in our analysis.

In our original COBRA we estimated $10.7 million as an annual recurring cost for Port Hueneme to assume support of the remaining facilities at Point Mugu. The BSAT eliminated this cost on the grounds that the COBRA model already accounted for them. We disagree. The COBRA model uses the ratio of people before and after the scenario. Because of the large number transferring out of Mugu and the small number moving to Hueneme relative to the facilities and land left at Mugu, this particular algorithm does not accurately reflect the resulting net cost. However, without a solid basis for calculating what the actual cost would be, we eliminated it from our basic analysis.

After conducting our basic analysis, we ran several variations on both our scenario and the BSAT scenario using different costs and different NPV/ROI discount rates. For both scenarios, any meaningful addition to one-time costs or recurring costs resulted in an ROI of 100+ years. Also, increasing the discount rate from the standard 2.75% to above 3% produces the same result.

It should be noted that the discount rates used in the 1991 and 1993 BRACs were 10% and 7% respectively. Any scenario that has an ROI beyond 15 years is very sensitive to this rate. While inflation has been very low the past two years, assuming that it will remain so is very a dubious position when making long range financial projections.

The most favorable outcome (from an ROI perspective) was using the community low cost approach to one-time costs, relocating the Air Guard, and using a discount rate of 0%. This resulted in an ROI of 25 years.

In addition to all the technical and operational problems, the proposed scenario makes no sense from a financial perspective.

COBRA REALIGNMENT SUMMARY (COBRA v5.08) - Page 1/2
Data As Of 21:51 05/13/1998, Report Created [illegible]

Department : Navy
Option Package : [illegible], Community
Scenario File : C:\COBRA[illegible]\VENTURA1.CBR
Std Fctrs File : [illegible]

Starting Year : 1996
Final Year : 2001
ROI Year : [illegible]

NPV in 2015($K): 337,830
1-Time Cost($K): 579,362

Net Costs ($K) Constant Dollars

	1996	1997	1998	1999	2000	2001	Total	Beyond
MilCon	46,310	137,893	13,384	130,480	31,633	0	[illegible]	0
Person	[illegible]	[illegible]	-2,383	-4,900	-5,394	-11,414	-22,050	[illegible]
Overhd	6,030	5,399	10,844	2,829	8,670	-8,311	25,376	-12,105
Moving	[illegible]	2,070	19,515	17,326	41,732	4,761	85,308	0
Missio	0	0	1,044	[illegible]	12,620	12,420	28,411	[illegible]
Other	[illegible]	10,377	[illegible]	[illegible]	10,700	[illegible]	[illegible]	0
TOTAL	[illegible]	166,079	70,464	178,666	99,763	6,079	570,798	-19,652

	1996	1997	1998	1999	2000	2001	Total
POSITIONS ELIMINATED							
Off	0	0	0	1	0	15	16
Enl	0	0	34	15	6	184	239
Civ	0	0	11	9	0	157	177
TOT	0	0	45	25	6	356	432
POSITIONS REALIGNED							
Off	3	2	39	0	117	0	161
Enl	19	6	236	5	587	0	853
Stu	0	0	0	0	0	0	0
Civ	0	165	792	116	566	122	1,761
TOT	22	173	1,067	121	1,360	122	2,763

Summary:

This is the Ventura County BRAC 95 Task Force's best estimate of the costs to implement the BRAC Commission realignment scenario for Point Mugu accounting for the Air National Guard's position that they will remain at their current location and assume the cost of operating the main airfield at Point Mugu.

COBRA REALIGNMENT SUMMARY (COBRA v5.08) - Page 2/2
Data As Of [illegible] 05/[illegible]/1995, Report Created [illegible] 06/[illegible]/1995

Department : Navy
Option Package : SBA/Gen. Community
Scenario File : C:\[illegible]
Std Fctrs File : C:\COBRA508\NAVY\N95DBOF.SFF

Costs ($K) Constant Dollars

	1996	1997	1998	1999	2000	2001	Total	Beyond
MilCon	88,320	[illegible]	28,766	160,089	21,432	0	370,381	0
Person	130	323	1,854	749	3,146	3,047	8,240	3,193
Overhd	6,057	5,740	13,668	11,887	22,043	21,577	87,931	[illegible]
Moving	[illegible]	8,486	[illegible]	[illegible]	42,380	4,751	88,480	0
Missio	0	0	3,944	2,664	14,608	14,445	33,680	14,645
Other	922	18,377	28,187	22,612	18,988	8,486	56,378	0
TOTAL	[illegible]	[illegible]	86,164	[illegible]	[illegible]	52,466	[illegible]	[illegible]

Savings ($K) Constant Dollars

	1996	1997	1998	1999	2000	2001	Total	Beyond
MilCon	1,300	0	8,500	600	0	0	10,400	0
Person	218	393	4,134	4,480	6,440	26,652	[illegible]	22,282
Overhd	23	350	2,825	11,058	13,463	29,838	57,557	31,874
Moving	0	7	243	4	587	0	842	0
Missio	0	0	0	36	8,339	2,117	[illegible]	2,337
Other	0	0	0	0	22	0	22	0
TOTAL	1,541	750	15,704	17,147	22,628	46,617	104,384	[illegible]

Document Separator

	97	94 & Prior Max WY	Total Civilians on Board	Civilian Technical on Board	
NAWC HQ					
NAWC CHINA LAKE	4526	5910	4495	3266	
NAWC POINT MUGU	4098	5969	3549	2533	
NAWC INDIANAPOLIS	2736	3383	2844	2414	
NAWC PAX RIVER	3644	4308	4907	3461	
NAWC DET WARMINSTER	—	—	—	—	
NAWC DWTF ORELAND	—	—	—	—	
NAWC LAKEHURST	1825	2619	1879	1243	
NATSD ORLANDO	1050	1323	931	616	
NATSF PHILADELPHIA	284	323	237	201	
NAESU LAKEHURST	891	1614	78	20	
NSWC HQ	NA	NA	11	ND	
NSWC CRANE	2973	4002	3666	2577	
NSWC DET LOUISVILLE	1746	2705	2165	1732	
NSWC HTA SULLIVAN	3	3	ND	ND	
NSWC DAHLGREN	2860	3429.2	3637	2774	
NSWC DET WHITE OAK	70	2121.5	922	712	
NSWC PANAMA CITY	1156	1333	1431	1073	
NSWC PORT HUENEME	1984	3075	2508	2185	
NSWC CARDEROCK	1425	1963	1712	1223	
NSWC DET PHILADELPHIA	1614	1758	1899	1443	
NSWC DET ANNAPOLIS	431	807	372	386	
NSWC ARD BAYVIEW	51	68	48	37	
NSWC INDIAN HEAD	1895.2	2637.7	2414	1714	
NSWC DET YORKTOWN	41.38	61.33	46	46	
NAVSEALOGCEN MACHANICSBURG	308	374	357	214	
NAVSEASUPCEN SAN DIEGO	329	494	442	382	
NAVSEASUPCEN PEARL HARBOR	55	54	54	51	?
NUWC HQ	19	19	17	3	
NUWC NEWPORT	2820	2470	1146	1013	
NUWC DET NEW LONDON	510	1584	528	459	
NUWC KEYPORT	2206.9	3452	2695	2251	
SEASPARROW PSO	65	52	32	18	
NAVWARASSESDIV CORONA	1062.8	1322.1	890	813	
NAVEODTECHDIV INDIAN HEAD	233	267	235	166	
NOC INDIAN HEAD	95	104	85	0	
AEGIS COMBAT CENTER WALLOPS IS	345	388	40	16	
AEGIS TECH REP MOORESTOWN	97.5	103.5	—	—	
NCCOSC HQ	ND	ND	23	0	
NCCOSC RDT&E SAN DIEGO	2738	3841	2951	2392	
NCCOSC RDT&E DET WARMINSTER	ND	ND	ND	261	?
NCCOSC RDT&E DET PHILADELPHIA	ND	ND	ND	28	?
NCCOSC ISE EAST CHARLESTON	950	1426	1213	970	
NCCOSC ISE EAST DET ST INIGOES	ND	ND	ND	267	?
NCCOSC ISE EAST DET NORFOLK	ND	ND	ND	314	?
NCCOSC ISE WEST SAN DIEGO	631	994	919	845	
NCCOSC ISE WEST PEARL HARBOR	132	223	135	108	
NAVMASO CHESAPEAKE	500	677	270	216	
NAVTECHREPO LAUREL	11	40	14	3	
NRL	ND	ND	ND	ND	
NRL DET UNDERWATER SOUND REF	—	—	—		
ONR	ND	ND	ND	ND	
NAVFACENGSERCEN PT HUENEME	525	602	434	324	
AFWTF	39	47	36	15	
FTSC ATLANTIC	653	607	557	484	
FTSC ATLANTIC NORFOLK	151	151	30	26	
FTSC ATLANTIC MAYPORT	138	130	49	43	
PMRF BARKING SANDS	153	141	140	65	
NPRDC SAN DIEGO	167	371	220	152	
COMOPTEVFOR NORFOLK	71	71	59	5	
NCTRF NATICK	47	52	41	34	
NAVMEDRESINST BETHESDA	162	166	139	114	
NAVHTHRESCEN SAN DIEGO	165	155	58	43	
NAVAERMEDRESLAB PENSACOLA	35	60	ND	14	?
NAVBIOLAB NEW ORLLANS	46	85	34	16	
NAVSUBMEDRESLAB GROTON	0.064	0.072	34	25	
NAVDENRESINST GREAT LAKES	0.047	0.047	12	6	
	50763.89	69936.45	53610	41892	

TECHNICAL CENTERS Military Value Matrix

Que Seq	QUESTIONS	AFWTF	Naval Air Warfare Center								NAESU	NATSF	NATSD			
			HQ	China L	Pt Mugu	Indy	Pax Riv	Warmin	Oreland	Lakehst				HQ	RDT&E	Warmin
	MISSION STATEMENT	1.536	1.090	11.234	11.234	4.062	11.234	3.193	1.407	5.740	0.749	1.119	8.656	0.667	10.440	6.258
1	Includes full-spectrum life cycle responsibility.	0	0	1	1	0	1	0	0	0	0	0	1	0	1	1
2	Includes total systems responsibility.	0	0	1	1	0	1	0	0	1	0	0	1	0	1	0
3	Includes sub-system/component responsibility.	0	0	1	1	1	1	1	1	1	0	0	1	0	0	1
4	Includes systems integration responsibility.	0	0	1	1	0	1	0	0	0	0	0	0	0	1	0
5	Includes component integration responsibility.	0	0	1	1	0	1	0	0	1	0	0	1	0	0	0
6	Includes research.	0	0	1	1	1	1	1	0	0	0	0	1	0	1	1
7	Includes development.	1	0	1	1	1	1	1	0	1	0	0	1	0	1	1
8	Includes test and evaluation.	1	0	1	1	1	1	1	1	1	0	0	1	0	1	1
9	Includes procurement/acquisition.	0	0	1	1	1	1	0	0	1	0	1	1	0	0	0
10	Includes in-service engineering.	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1
11	Includes support to direct formal training of naval forces.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	A naval surface warfare activity.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	A naval air warfare activity.	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0
14	A naval undersea warfare activity.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	A naval command, control, and ocean surveillance activity.	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
16	A naval research laboratory activity.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Includes joint/lead service assignments..	0	1	1	1	1	1	0	0	0	0	0	1	0	1	1
	TECHNICAL FUNCTIONS	0.000	0.000	7.669	8.021	7.217	7.609	0.296	0.000	1.735	0.000	0.444	2.254	0.000	7.735	1.852
18	Include a minimum of 100 in-house technical WYs in PLATFORMS.	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0
19	Include a minimum of 100 in-house technical WYs in WEAPONS SYSTEMS.	0	0	1	1	1	0	0	0	0	0	0	0	0	1	0
20	Include a minimum of 100 in-house technical WYs in COMBAT SYSTEM INTEGRATION.	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0
21	Include a minimum of 100 in-house technical WYs in SPECIAL OPERATIONS SUPPORT.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
22	Include a minimum of 100 in-house technical WYs in SENSORS & SURVEILLANCE SYSTEMS.	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0
23	Include a minimum of 100 in-house technical WYs in NAVIGATION.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
24	Include a minimum of 100 in-house technical WYs in C3I.	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
25	Include a minimum of 100 in-house technical WYs in DEFENSE SYSTEMS.	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0
26	Include a minimum of 100 in-house technical WYs in STRATEGIC PROGRAMS.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Include a minimum of 100 in-house technical WYs in GENERAL MISSION SUPPORT.	0	0	1	1	1	1	0	0	0	0	1	1	0	0	0
28	Include a minimum of 100 in-house technical WYs in GENERIC TECHNOLOGY BASE.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
29	Include a minimum of 100 in-house technical WYs in BASIC RESEARCH (RDT&E).	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	Include a minimum of 100 in-house technical WYs in TECHNICAL BASE (RDT&E).	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0
31	Include a minimum of 100 in-house technical WYs in DEVELOPMENT & DEVELOPMENT SUPPORT (RDT&E).	0	0	1	1	1	1	0	0	0	0	0	0	0	1	0
32	Include a minimum of 100 in-house technical WYs in ACQUISITION.	0	0	1	1	1	1	0	0	1	0	1	1	0	1	1
33	Include a minimum of 100 in-house technical WYs in LIFETIME SUPPORT.	0	0	1	1	1	1	0	0	1	0	0	1	0	1	0
34	Include a minimum of 100 in-house technical WYs in TRAINING/SIMULATION.	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
35	PLATFORMS share of DON in-house technical WYs is => 5%.	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
36	WEAPONS SYSTEMS share of DON in-house technical WYs is => 5%.	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
37	COMBAT SYSTEMS INTEGRATION share of DON in-house technical WYs is => 5% .	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0
38	SPECIAL OPERATIONS SUPPORT share of DON in-house technical WYs is => 5%.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
39	SENSORS & SURVEILLANCE SYSTEMS share of DON in-house technical WYs is => 5%.	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0
40	NAVIGATION share of DON in-house technical WYs is => 5%.	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1
41	C3I share of DON in-house technical WYs is => 5%.	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
42	DEFENSE SYSTEMS share of DON in-house technical WYs is => 5%.	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0
43	STRATEGIC PROGRAMS share of DON in-house technical WYs is => 5%.	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1
44	GENERAL MISSION SUPPORT share of DON in-house technical WYs is => 5%.	0	0	1	1	0	1	0	0	0	0	0	1	0	0	0
45	GENERAL TECHNOLOGY BASE share of DON in-house technical WYs is => 5%.	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
46	BASIC RESEARCH (RDT&E) share of DON in-house technical WYs is => 5%.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	TECHNICAL BASE (RDT&E) share of DON in-house technical WYs is => 5 %.	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0
48	DEVELOPMENT & DEVELOPMENT SUPPORT (RDT&E) share of DON in-house technical WYs is => 5%.	0	0	1	1	0	1	0	0	0	0	0	0	0	1	0
49	ACQUISITION share of DON in-house technical WYs is => 5%.	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0
50	LIFETIME SUPPORT share of DON in-house technical WYs is => 5%.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0

TECHNICAL CENTERS Military Value Matrix

Que Seq	QUESTIONS		Naval Air Warfare Center													
		AFWTF	HQ	China L	Pt Mugu	Indy	Pax Riv	Warmin	Oreland	Lakehst	NAESU	NATSF	NATSD	HQ	RDT&E	Warmin
51	TRAINING/SIMULATION share of DON in-house technical WYs is => 5%.	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
52	Technical functions are performed for aircraft.	0	0	1	1	1	1	1	0	1	0	0	1	0	1	1
53	Technical functions are performed for submarines.	0	0	0	1	1	0	0	0	0	0	0	1	0	1	1
54	Technical functions are performed for surface ships.	0	0	0	1	1	1	0	0	0	0	0	1	0	1	1
55	Technical functions are performed for command, control and ocean surveillance.	0	0	1	1	1	1	0	0	0	0	0	0	0	1	1
	FACILITIES	1.646	0.000	7.468	6.761	7.009	3.040	3.468	3.227	7.431	0.148	0.148	6.456	2.620	6.426	0.895
56	Facility is a host activity.	0	0	1	1	1	1	1	0	1	0	0	1	1	1	0
57	80% to 89% of administrative & laboratory space is ADEQUATE.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	90% to 100% of administrative & laboratory space is ADEQUATE.	0	0	0	1	1	0	1	1	1	0	0	1	0	0	0
59	3% to 5% of administrative & laboratory space is INADEQUATE.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
60	Less than 3% of administrative & laboratory space is INADEQUATE.	0	0	0	0	1	1	1	1	1	0	0	1	0	0	0
61	No funds are required to correct inadequacies.	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0
62	Funds are required to correct inadequacies, but less then $500,000.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
63	Funds are required to correct inadequacies, totaling between $500,000 and $5,000,000.	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0
64	Less than 5% of utilized floor space is leased.	1	0	1	0	0	1	1	1	1	1	1	0	1	1	1
65	Less than 25% of plant account space is assigned to tenants.	0	0	1	1	1	1	1	1	1	0	0	0	0	1	0
66	10,000 to 49,999 sqft of existing Government owned space is available for expansion.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
67	50,000 to 100,000 sqft of existing Government owned space is available for expansion.	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
68	More than 100,000 sqft of existing Government owned space is available for expansion.	0	0	1	1	0	0	0	0	1	0	0	0	0	1	0
69	10,000 to 49,999 sqft of Government owned space can be constructed for expansion.	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
70	50,000 to 100,000 sqft of Government owned space can be constructed for expansion.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
71	More than 100,000 sqft of Government owned space can be constructed for expansion.	0	0	1	1	1	0	0	0	0	0	0	0	0	1	0
72	Expansion opportunities can support 50 to 99 additional persons.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
73	Expansion opportunities can support 100 to 499 additional persons.	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0
74	Expansion opportunities can support more than 500 additional persons.	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
75	250 to 499 unimproved & unencumbered acres available for expansion.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
76	500 to 1000 unimproved & unencumbered acres available for expansion.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
77	More than 1,000 unimproved & unencumbered acres available for expansion.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
78	Expansion is not constrained by parking limitations.	1	0	1	0	1	1	0	1	1	0	0	0	1	0	0
79	Expansion is not constrained by radio frequency limitations.	1	0	1	1	0	1	0	1	1	0	0	0	1	1	0
80	10 to 49 acres with roads and utilities available for expansion.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81	50 to 499 acres with roads and utilities available for expansion.	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0
82	More than 500 acres with roads and utilities available for expansion.	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
83	Site utilizes less than 70% of its utility capacity.	0	0	1	1	1	1	1	0	1	0	0	1	1	1	0
84	Less than 20% of replacement value of the Site's SF&E is PORTABLE.	0	0	1	1	0	1	1	1	1	0	0	1	0	1	1
85	Replacement value of FIXED SF&E is between $25,000,000 and $100,000,000.	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1
86	Replacement value of FIXED SF&E exceeds $100,000,000.	1	0	1	1	0	1	0	0	1	0	0	0	0	1	0
87	Site has revenue producing resources.	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	RANGES, FEATURES AND OTHER CAPABILITIES	6.676	1.626	9.734	10.137	4.030	7.468	0.000	0.000	4.452	0.000	1.678	1.678	1.577	5.405	1.577
88	Site operates piers that can support naval combatants.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
89	Site operates an operational air field that supports high performance aircraft.	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0
90	Site has ordnance storage capacity between 500,000 and 999,999 net explosive wieght.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91	Site has ordnance storage capacity between 1,000,000 and 9,999,999 net explosive weight.	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0
92	Site has ordnance storage capacity is at least 10,000,000 net explosive weight.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93	Facility has a super computer or parallel computer on site.	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
94	Data transfer across the site is supported by a high speed network.	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1
95	Real time data interconnectivity is achieved with other sites.	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1
96	Production is accomplished at this site.	0	0	1	1	1	0	0	0	1	0	0	0	0	1	0
97	Site has a real time Video Teleconferencing Center.	0	1	1	1	1	1	0	0	1	0	0	0	0	1	0
98	Officially assigned mobilization responsibility.	0	0	1	1	1	1	0	0	1	0	0	0	0	1	0
99	Adequate facilities available to support mobilization responsibilities.	0	0	1	1	1	1	0	0	1	0	0	0	0	1	0
100	Site maintains production facilities to be activated for contingencies.	0	0	1	1	1	1	0	0	0	0	0	0	0	1	0

TECHNICAL CENTERS Military Value Matrix

Que Seq	QUESTIONS	AFWTF	Naval Air Warfare Center								NAESU	NATSF	NATSD			
			HQ	China L	Pt Mugu	Indy	Pax Riv	Warmin	Oreland	Lakehst				HQ	RDT&E	Warmin
101	Site supports Reserve Unit mobilization responsibilities.	0	0	1	1	1	1	0	0	1	0	1	1	0	1	0
102	Site controls range airspace of greater than 5,000 sq mi..	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0
103	Airspace range(s) has no limiting (current or future) encroachment or environmental concerns.	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
104	Site controls range sea/undersea space of greater than 100 sq mi.	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0
105	Seaspace/undersea range(s) has no limiting (current or future) encroachment or environmental concerns.	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
106	Site controls range landspace of greater than 100 sq mi.	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
107	Landspace range(s) has no limiting (future or current) encroachment or environmental concerns.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	Site has range facilities that are used for fleet tactical training.	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0
109	Facility is part of the DoD Major Range and Test Facility Base.	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0
110	At least 100,000 man hours of depot/industrial maintenance performed in FY 1993.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	MANPOWER	2.370	0.000	7.233	6.962	4.560	6.833	2.815	0.000	4.055	1.037	1.185	4.360	0.000	6.708	4.127
111	Total civilians on board is between 1000 and 1999.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
112	Total civilians on board is between 2000 and 3,999.	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0
113	Total civilians on board is greater than 4000.	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
114	Average civilian technical staff years of experience is less than 7.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	Average civilian technical staff years of experience is greater than 7 and less than 9.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
116	Average civilian technical staff years of experience is greater than 9 and less than 11.	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0
117	Average civilian technical staff years of experience is greater than 11 and less than 13.	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
118	Average civilian technical staff years of experience is greater than 13 and less than 15.	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0
119	Average civilian technical staff years of experience is greater than 15.	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
120	Average civilian technical staff education level is less than 13.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
121	Average civilian technical staff education level is greater than 13 and less than 14.	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
122	Average civilian technical staff education level is greater than 14 and less than 15.	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0
123	Average civilian technical staff education level is greater than 15 and less than 16.	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0
124	Average civilian technical staff education level is greater than 16.	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
125	Average # of articles published over last 4 years per 100 technical staff is in the top 25%.	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
126	Average # of articles published over last 4 years per 100 technical staff is in the next 25%.	0	0	1	1	1	1	0	0	1	0	0	1	0	0	1
127	Books/chapters written over last 4 years per 100 technical staff is in the top 25%.	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0
128	Books/chapters written over last 4 years per 100 technical staff is in the next 25%.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	Activity has Nobel laureate(s) employed.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	Average # of awards over last 4 years per 100 technical staff is in the top 25%.	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0
131	Average # of awards over the last 4 years per 100 technical staff is in the next 25%.	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0
132	Patents granted over last 4 years per 100 technical staff is in the top 25%.	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0
133	Patents granted over last 4 years per 100 technical staff is in the next 25%.	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1
134	Patents applied for over last 4 years per 100 technical staff is in the top 25%.	0	0	1	0	0	1	0	0	0	0	0	0	0	1	1
135	Patents applied for over last 4 years per 100 technical staff is in the next 25%.	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0
136	National Academy of Engineering/Science members.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	# of CRDAs signed by the Activity is over 10.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
138	Annual royalty income per 100 technical staff is in the top 25%.	0	0	1	1	0	1	0	0	0	0	0	1	0	1	0
139	Annual royalty income per 100 technical staff is in the next 25%.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	Number of major end item prototypes currently in use is in the top 25%.	0	0	1	1	1	1	0	0	1	0	0	0	0	1	0
141	Number of major end item prototypes currently in use is in the next 25%.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	LOCATION/ENVIRONMENT	3.650	2.305	4.365	4.169	1.935	3.677	2.460	2.460	1.936	1.713	1.713	2.729	3.194	2.167	2.460
142	Location is necessary to perform assigned technical functions.	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
143	Location has natural features that are essential to the mission of the facility.	1	0	1	1	0	1	1	1	0	0	0	0	0	1	1
144	Location enhances synergy with other activities and bases.	0	1	1	1	0	1	0	0	0	0	0	1	1	0	0
145	Location enhances joint use capability.	0	0	1	1	1	1	0	0	1	0	0	1	0	0	0
146	Location provides favorable weather conditions.	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
147	Location is important to customers.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
148	Site has no endangered/threatened species and biological habitats that restrict current operations.	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
149	Site has no jurisdictional wetlands that currently restrict base operations or development plans.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
150	Site has no National Register cultural resources that constrain base ops or devlopment plans.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TECHNICAL CENTERS Military Value Matrix

Que Seq	QUESTIONS	AFWTF	Naval Air Warfare Center HQ	China L	Pt Mugu	Indy	Pax Riv	Warmin	Oreland	Lakehst	NAESU	NATSF	NATSD	HQ	RDT&E	Warmin
151	Base ops or development plans are not constrained by laws applying to environmental facilities/NPDES.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
152	Site is in an 'attainment' or 'maintenance' air quality control area for CO, Ozone, PM-10.	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0
153	Site operations or development plans have not been restricted due to air quality considerations.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
154	Site has no Installation Restoration issues that restrict operations or development plans.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
155	Site has no significant maintenance dredging restrictions.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	QUALITY OF LIFE	3.419	3.991	8.765	6.156	4.907	7.271	6.400	0.148	7.197	3.911	3.911	3.266	4.759	4.759	6.400
156	Is there sufficient off base housing?	1	0	1	1	1	1	1	0	1	0	0	1	0	0	1
157	Do 90% or more of the housing units have all the required amenities?	1	1	1	0	1	1	1	0	0	1	1	0	0	0	1
160	Is the average wait for housing three months or less?	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0
163	Are 90% of BEQ rooms adequate?	0	0	1	1	0	1	1	0	1	0	0	0	1	1	1
165	Are 90% of BOQ rooms adequate?	0	1	1	0	0	1	1	0	1	0	0	0	1	1	1
166	Does the site have >90% of the listed MWR facilities?	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0
169	Are >90% of the child care facilities adequate?	0	1	1	0	0	1	1	0	1	1	1	0	1	1	1
172	Is the average wait for 0-12 month child care <180 days?	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
177	Do >50% of site military and civilian personnel live within a 30 minute commute?	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1
178	Are local area educational institution programs adequate for military family members?	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
179	Are there educational opportunities at all college levels within a 30-mile radius?	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1
180	Are college education courses available on the base?	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
184	Do military family members have reasonable access to medical/dental facilities?	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
185	Is the violent crime rate <758/100,000?	0	0	1	1	1	1	1	1	1	1	1	0	0	0	1
186	Is the property crime rate <4902/100,00?	0	1	1	1	0	1	1	1	0	1	1	0	0	0	1
187	Is the drug crime rate <402/100,000?	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	COST	0.889	0.519	1.185	1.185	1.037	1.037	1.185	0.000	0.889	0.667	0.889	0.889	0.296	1.037	1.333
188	Percent of all employees employed in technical operations is more than 90.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
189	Percent of all employees employed in technical opertions is between 70 and 90.	0	0	1	1	1	0	0	0	0	0	1	0	0	1	0
190	Percent of all employees employed in technical opertions is between 50 and 70.	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0
191	Percent of all employees employed in technical opertions is between 30 and 50.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
192	Percent of all employees employed in technical opertions is less than 30.	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0
193	Percent of overhead performed by government civilians is greater than 90.	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
194	Percent of overhead performed by government civilians is between 70 and 90.	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
195	Percent of overhead performed by government civilians is between 50 and 70.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
196	Percent of overhead performed by government civilians is between 30 and 50.	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0
197	Percent of overhead performed by government civilians is less than 30.	0	0	1	1	1	0	1	0	0	0	1	0	0	1	1
198	Percent of technical operations performed by government civilians is greater than 90.	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0
199	Percent of tech. operations performed by government civilians is between 70 and 90.	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
200	Percent of tech. operations performed by government civilians is between 50 and 70.	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
201	Percent of tech. operations performed by government civilians is between 30 and 50.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
202	Percent of tech. operations performed by government civilians is less than 30.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	LOSS IMPACT	0.545	0.000	2.000	2.000	1.699	2.000	0.148	0.296	1.602	0.000	0.000	0.794	0.000	2.000	0.296
203	Directly impact naval force training. (20 TO 39 WYs in Training/Simulation.)	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
204	Directly impact naval force training. (40 or higher WYs in Training/Simulation.)	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0
205	Directly impact existing naval force readiness. (100 to 499 WYs in Lifetime Support.)	0	0	1	0	1	1	0	0	1	0	0	1	0	1	0
206	Directly impact existing naval force readiness. (500 or higher WYs in Lifetime Support.)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
207	Directly impact future naval force development. (100 to 499 WYs in RDT&E.)	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
208	Directly impact future naval force development (500 or higher WYs in RDT&E.)	0	0	1	1	0	1	0	0	0	0	0	0	0	1	0
209	Loss of activity adversely affects top 25% of technical mission areas.	0	0	1	1	1	1	0	0	0	0	0	0	0	1	0
210	Loss of activity adversely affects 2nd 25% of technical mission areas.	1	0	0	0	0	0	0	1	1	0	0	1	0	0	1
211	Loss of activity adversely affects 3rd 25% of technical mission areas.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
		20.53	9.73	59.61	54.62	36.66	- 51.17	19.97	7.54	34.95	8.22	11.09	30.07	13.11	46.67	25.20

Document Separator

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
A						
	AFRC, LOS ALAMITOS					
	CAMP ROBERTS ANNEX					
	FORT HUNTER LIGGETT					
	FORT IRWIN					
	FORT ORD	90/91	PRESS/DBCRC	COMPLETE	CLOSE	1990 PRESS: Realign 7th Infantry Division (Light) to Fort Lewis, WA and close installation (Changed by Public Law 101-510) 1991 DBCRC: Close (does not include Fort Hunter-Liggett); completed FY 94; pending disposal Realign 7th Infantry Division (Light) to Fort Lewis, WA (one brigade will move; other two will be inactivated); completed FY 93
	HAMILTON ARMY AIRFIELD	88	DEFBRAC	COMPLETE	CLOSE	1988 DEFBRAC: Close and dispose of approximately 695 acres not needed by the Army Reserve; closed FY 94; pending disposal Realign 91st Division Aviation Detachment and 343rd Medical Detachment to leased space at a local airifeld; units inactivated FY 94 Realign Sixth Army Aviation Detachment to Fort Carson, CO (Changed to Fort Lewis, WA as part of reorganization of all fixed wing assets under the "Hub Concept"); completed FY 93
	OAKLAND ARMY BASE					

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	PRESIDIO OF MONTEREY AND ANNEX	93	DBCRC	ONGOING	REALGNDN	1993 DBCRC: Dispose of all facilities at the Presidio of Monterey Annex except the housing, commissary, child care facility, and post exchange required to support the Presidio of Monterey and the Naval Post Graduate School; Army legal opinion states that "...Secretary of Defense (SECDEF) is legally required to implement only that portion of the 1993 Commission's recommendation that directs the retention of the Presidio of Monterey." Consolidate base operations support with the Naval Post Graduate School by interservice support agreement; Army legal opinion states that "...Secretary of Defense (SECDEF) is legally required to implement only that portion of the 1993 Commission's recommendation that directs the retention of the Presidio of Monterey." Evaluate whether contracted base operations support will provide savings; Army legal opinion states that "...Secretary of Defense (SECDEF) is legally required to implement only that portion of the 1993 Commission's recommendation that directs the retention of the Presidio of Monterey."

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	PRESIDIO OF SAN FRANCISCO	88/91/93	DEFBRAC/DBCRC	COMPLETE	REALGNDN	1988 DEFBRAC: Close (Changed by 1993 Defense Base Closure Commission) Realign Headquarters, Sixth Army to Fort Carson, CO (Changed by 1993 Defense Base Closure Commission) Realign medical assets of Letterman Army Medical Center throughout the Army medical force structure; completed FY94 Realign Letterman Army Institute of Research to Fort Detrick, MD (Changed by 1991 Defense Base Closure Commission) 1991 DBCRC: Disestablish the Letterman Army Institute of Research; move trauma research to the U.S. Army Institute of Surgical Research, Fort Sam Houston, TX; collocate blood research with the Naval Medical Research Institute, Bethesda, MD; collocate laser bioeffects research with the Armstrong Laboratory, Brooks AFB, TX (Change to 1988 SECDEF Commission recommendation); completed FY 93 1993 DBCRC: DoD recommendation to realign 6th Army Headquarters to NASA Ames instead of Fort Carson, CO changed to permit headquarters to remain at the Presidio of San Francisco (Change to 1988 SECDEF Commission recommendation)
	RIVERBANK ARMY AMMUNITION PLANT					
	SACRAMENTO ARMY DEPOT	90/91	PRESS/DBCRC	ONGOING	CLOSE	1990 PRESS: Close (Changed by Public Law 101-510) 1991 DBCRC: Close, realign workload by competition, and retain approximately 50 acres for Reserve Component enclave; scheduled FY 93-95 Realign Communications Systems Test Activity to Fort Lewis, WA; scheduled FY 95
	SHARPE ARMY DEPOT					

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	SIERRA ARMY DEPOT					
AF						
	BEALE AFB	88/91/93	BRAC/DBCRC/DBCRC	ONGOING	REALGN UP	1988 DEFBRAC: Directed movement of the 323rd Flying Training Wing from Closing Mather AFB to Beale AFB (See 1991 DBCRC). 1991 DBCRC: Reversed 88 DEFBRAC decision and directed movement of 323rd FTW to Randolph AFB, TX rather than Beale AFB. 1993 DBCRC: The 1991 OSD recommendation for Mather AFB, CA directed movement of the 940 Air Refueling Group (AFRES) with KC-135 aircraft to McClellan AFB, CA. The 1993 action is to move 940ARG to Beale AFB, CA to save $21.2M in MILCON. This will include movement of 0 military and 243 civilian personnel.
	CASTLE AFB	91/93	DBCRC/DBCRC	ONGOING	CLOSE/9-95	1991 DBCRC: Directed Closure. (Scheduled Sep 30, 1995) Transfer assigned B-52 to K.I.Sawyer AFB, MI. Transfer KC-135s to other Active or Reserve Component units. Transfer B-52 and KC-135 Combat Crew Trng Missions to Fairchild AFB, WA. 1993 DBCRC: Redirects movement of Castle's B-52 Combat Crew Training mission from Fairchild AFB, WA to Barksdale AFB, LA. Also redirects KC-135 training from Fairchild to Altus AFB, OK. Projected savings if $19.2M. Movement of personnel to Altus: 668 Mil and 38 Civ.

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	EDWARDS AFB	90/91	PRESS/DBCRC	ONGOING	REALGNUP	1990 Press Release indicated realignment. No specifics given. 1991 DBCRC: Directed consolidation of the 4950th Test Wing from Wright-Patterson AFB, OH with the Air Force Flight Test Center at Edwards AFB as a result of the transfer of the 160th Air Refueling Group and the 970th Tactical Airlift Group to Wright-Patterson AFB from the Closing Rickenbacker Air Guard Base, OH. 1993 DBCRC: As a note, the ANG refueling missions were retained at Rickenbacker.
	FRESNO AIR TERMINAL AGS					
	GEORGE AFB	88	DEFBRAC	COMPLETE	CLOSE12-92	1988 DEFBRAC: Directed Closure. (Completed December 15, 1992). Directed transfer of 35th Tactical Trng Wg and 37th Tactical Fighter Wg (F-4EE/G) to Mountain Home AFB, ID. Move the 27th Tactical Air Support Squadron (OV-10) to Davis-Monthan AFB, AZ.
	LOS ANGELES AFB	90	PRESS	CANCELED	CLOSE	1990 Press Release: Recommended Closure. Action not followed through in either 1991 Defense Report or 1991 DBCRC.

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	MARCH AFB	88/91/93	BRAC/DBCRC/DBCRC	ONGOING	RELGNDN	1988 DEFBRAC: Directed move of The Air Force Audit Agency (AFAA) from Closing Norton AFB, CA to March AFB (See 1991 DBCRC). Directed the transfer of three squadrons of the 63rd Military Airlift Wing and the 445th Military Airlift Wing (AFRes) from Closing Norton AFB, CA to March AFB. Remaining squadron goes to McChord AFB, WA. Gives option of moving Air Force Audio Visual Service Center from Closing Norton FB to March AFB or retaining at Norton AFB. Recommends retaining Norton AFB family housing for personnel assigned to March AFB. 1991 DBCRC: Directs realignment of the 45 Air Force Audit Agency manpower authorizations from Closing Norton AFB, CA to National Capitol Region (Show at Bolling AFB for purpose of this report) to support alignment of AFAA into Secretariat. Supports transfer of remaining 139 AFAA manpower authorizations to March AFB. 1993 DBCRC: Directs inactivation of 22ARW. KC-10 active and reserve associate squadrons & aircraft relocate to Travis AFB, CA. SW Air Defense Sector remains in cantonment pending outcome of North American Air Defense (NORAD) study and possible transfer to ANG. 445AW (AFRES), 452ARW (AFRES), 163RG (ANG), AF Audit Agency, and Media Center will remain and base reverts to a reserve base. Cost to realign is $134.8M for ROI of 2 years. Net Personnel changes: 3222 Mil Out and 174 Civ In.

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	MATHER AFB	88/91/93	BRAC/DBCRC/DBCRC	COMPLETE	CLOSE/9-93	1988 DEFBRAC: Directed Closure including hospital (See 1991 DBCRC).(Completed Sep 30, 1993.) Transfers the 323rd Flying Training Wing to Beale AFB, CA. Transfers the 940th Air Refueling Group (AFRes) to McClellan AFB, CA if the local authorities do not elect to operate Mather as an airport. 1991 DBCRC: Directs realignment of the 940th Air Refueling Group to McClellan AFB. Retains the 323rd Flying Training Wing Hospital as an annex to McClellan AFB. 1993 DBCRC: Redirects 940th Air Refueling Group movement from McClellan AFB, CA to Beale AFB, CA to save \$21.2M in MILCON.

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	MCCLELLAN AFB	88/90/91/93	BRAC/PR/DBCRC	ONGOING	REALGNDN	1988 DEFBRAC: Directs transfer of the 940th Air Refueling Group (AFRes) from Closing Mather AFB, CA to McClellan AFB, CA if local authorities do not elect to use Mather as an airport (See 1991 DBCRC). 1990 Press release indicated realignment. No specifics given. 1991 DBCRC: Directs transfer of the 940th Air Refueling Group from Closing Mather AFB, CA to McClellan AFB. Directs retention of the Mather hospital as an annex to McClellan AFB. See 1988 DEFBRAC. 1993 DBCRC: Redirects movement of 940th Air Refueling Group, that was scheduled to go from Mather AFB to McClellan as a result of 1991 DBCRC, to Beale AFB, CA. The unit will temporarily move to and operate out of temorary facilities at McClellan until Beale facilities are ready. Projected savings of $21.2M in MILCON. NOTE: AF recommended closure to OSD. OSD did not forward AF closure recommendation due to cumulative economic impact. DBCRC added for consideration on 24 March but did not recommend closure.
	NORTH HIGHLANDS AGS					

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	NORTON AFB	88	DEFBRAC	COMPLETE	CLOSE/3-94	1988 DEFBRAC: Directed Closure. (Completed March 31, 1994). Complex issues involved. Transfers three squadrons of the 63rd Military Airlift Wing and the 445th Military Airlift Wing (AFRes) (C-141, C-21, and C-12) to March AFB, CA. Transfers the remaining squadron (C-141) to McChord AFB, WA. The Air Force Inspection and Safety Center transfers to Kirtland AFB, NM. The Air Force Audit Agency transfers to March AFB, CA (See March AFB for 1991 DBCRC change-45 of 184 manpower authorizations moved to National Capitol Region, rest to March AFB). DBCRC gives option of moving Air Force Audio Visual Service Center to March AFB or retaining at Norton AFB. Recommends Ballistic Missile Office remain at Norton AFB and recommends retaining Norton AFB military family housing for personnel assigned to March AFB.
	ONIZUKA AFB					
	ONTARIO IAP AGS					
	TRAVIS AFB	93	DBCRC	ONGOING	REALIGNUP	1993 OSD Recommendation: Establish Travis AFB as the West Coast Mobility Base. Transfer of KC-10 aircraft and active and reserve associate squadrons from March AFB, CA realignment to Travis AFB, CA. Personnel movement into Travis: 774 Mil and 112 Civ.
	VAN NUYS AGS					
	VAN NUYS AIRPORT AGS					
	VANDENBERG AFB					
D						
	DEFENSE CONTRACTING DISTRICT WEST	93	DBCRC	COMPLETE	REJECT	1993 DBCRC: Reject DoD recommendation to close DCMD West, El Segundo, CA, and relocate its mission to Long Beach Naval Shipyard, CA. Close DCMD West and relocate its mission to either Long Beach Naval Shipyard or other space in Long Beach.
	DEFENSE DEPOT TRACY					

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	DEFENSE DISTRIBUTION DEPOT OAKLAND	93	DBCRC	COMPLETE	CLOSE	1993 DBCRC: Accept DoD recommendation. Close DDOC and relocate its mission to other DDDs.
MC						
	MC AIR GD CBT CTR 29 PALMS					
	MC MOUNTAIN WARFARE TNG CTR, BRIDGEPOR					
	MC RECRUIT DEPOT SAN DIEGO					
	MCAS CAMP PENDLETON					
	MCAS EL TORO	93	DBCRC	ONGOING	CLOSE	1993 DBCRC RECOMMENDATION: Recommended closure of MCAS El Toro, CA and relocation of its aircraft along with their personnel, equipment, and support to NAS Miramar, CA and MCAS Camp Pendleton, CA.
	MCAS TUSTIN	91/93	DBCRC	ONGOING	CLOSE	1991 DBCRC: Recommended closing MCAS Tustin, retention of family housing and personnel suport facilities, and relocation of air groups to MCAGCC Twentynine Palms or Camp Pendleton. The Commission also directed consideration of a fair market exchange of land and facilites at Tustin for new facilities at the receiving base. 1993 DBCRC: Recommended changing the 1991 recommendation and relocating air groups to NAS North Island, NAS Miramar, or MCAS Camp Pendleton.
	MCB CAMP PENDLETON					
	MCLB BARSTOW					
N						
	FLEET ASW TRAINING CENTER, PACIFIC					
	FLEET COMBAT TRAINING CENTER, PACIFIC					
	FLT COMBAT DIRECTION SOFTWARE SPT, SAN DI	91	DBCRC	COMPLETED	REALIGNDN	1991 DBCRC: The DBCRC recommended realignment as part of the Naval Command, Control and Ocean Surveillance Center, RDT&E Directorate.

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	HUNTER'S POINT ANNEX, SAN FRANCISCO	88/91/93	DBCRC	CLOSED	CLOSE	1988 DEFBRAC: BRAC 1 stopped construction of the strategic homeport but retained the use of the drydock for ship repair. Construction planned for ships to be homeported at Hunter's Point will be done at new hoemports, including Pearl Harbor, Long Beach, and San Diego. 1991 DBCRC: Recommended closing the facility and outleasing the entire property. SUPSHIPS will remain as a tenant on the property. 1993 DBCRC: Permitted disposal of Hunter's Point Annex in any lawful manner, including outleasing.
	INTEGRATED COMBAT SYS TEST FAC SAN DIEGO	91	DBCRC	CLOSED	CLOSE	1991 DBCRC: The DBCRC recommended closure as part of the Naval Surface Warfare Center Combat & Weapons Systems ISE Directorate.
	LONG BEACH NAVAL SHIPYARD	90	PRESS	CANCELLED	CLOSE	1990 PRESS: DOD Secretary proposed Long Beach Naval Shipyard as a closure in his 1990 press release.
	MARE ISLAND NAVAL SHIPYARD	93	DBCRC	ONGOING	CLOSE	1993 DBCRC: Closed shipyard and relocated Combat Systems Tech Schools Command to Dam Neck, VA. Relocated one submarine to NSB Bangor, WA. Family housing to be retained to support NWS Concord.
	NAS ALAMEDA	93	DBCRC	ONGOING	CLOSE	1993 DBCRC: Closed the NAS and relocated aircraft and their logistics support to NAS North Island, CA. Ships to be relocated to San Diego/Bangor/Puget Sound/Everett. Reserve aviation assets to be relocated at NASA Ames/Moffett Field, CA; NAS Whidbey Island, WA; NAS Willow Grove, PA.
	NAS LEMOORE					
	NAS MIRAMAR	93	DBCRC	ONGOING	REALIGN	1993 DBCRC: Relocated fixed wing aircraft from MCAS El Toro and rotary wing aircraft from 29 Palms to NAS Miramar. Squadrons and related activities originally located at Miramar will be relocated primarily to NAS Lemoore, CA and NAS Fallon, NV.

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	NAS MOFFETT FIELD	90/91	PRESS/DBCRC	ONGOING	CLOSE	1990 PRESS: DOD Secretary proposed NAS Moffett Field as a closure in his 1990 press release. 1991 DBCRC: Recommended closing the facility and transferring assigned P-3 aircraft to NAS Jacksonville, Brunswick and Barbers Point. The Commission also suggested that the base remain in federal use by other agencies, such as NASA.
	NAS NORTH ISLAND					
	NAV CIV ENG LAB PORT HUENEME	93	DBCRC	ONGOING	CLOSE	1993 DBCRC: Directed the closure of NCEL and realignment of needed functions personnel, equipment, and support at the Construction Battalion Center, Port Hueneme, CA.
	NAV CONST BN CTR PORT HUENEME	93	DBCRC	ONGOING	CLOSE	1993 DBCRC: Recommended closure of the Naval Civil Engineering Laboratory, Port Hueneme, CA.
	NAV FAC ENG CMD WESTERN DIVISION	93	DBCRC	ONGOING	REALIGN	1993 DBCRC: Recommended realignment of the NAVFAC Western Engineering Field Div and retention of needed personnel, equipment, and support as a BRAC Engineering Field Activity to handle environmental matters arising from 1993 BRAC closures in the geographical area.
	NAV MEDCOM NW REG					
	NAV SUB BASE, SAN DIEGO					
	NAVAL AIR FACILITY EL CENTRO	90	PRESS	CANCELLED	CLOSE	1990 PRESS: DOD Secretary proposed NAF El Centro as a closure in his 1990 press release.
	NAVAL AMPHIB BASE CORONADO					
	NAVAL AVIATION DEPOT ALAMEDA	90/93	PRESS/DBCRC	ONGOING	CLOSE	1990 PRESS: DOD Secretary proposed NADEP Alameda as a closure in his 1990 press release. 1993 DBCRC: Directed closure of NADEP Alameda and relocation of repair capability to other depots to include the private sector.

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	NAVAL AVIATION DEPOT NORTH ISLAND					
	NAVAL COMM STATION SAN DIEGO					
	NAVAL COMM STATION STOCKTON					
	NAVAL HOSPITAL CAMP PENDLETON					
	NAVAL HOSPITAL LONG BEACH	91	DBCRC	ONGOING	CLOSE	1991 DBCRC: Recommended closing NAVHOSP Long Beach.
	NAVAL HOSPITAL OAKLAND	93	DBCRC	ONGOING	CLOSE	1993 DBCRC: Directed the closure of the Naval Hospital Oakland, CA and relocation of certain personnel to other Naval Hospitals.
	NAVAL HOSPITAL SAN DIEGO					
	NAVAL OCEAN SYSTEMS CENTER					
	NAVAL POSTGRADUATE SCHOOL					
	NAVAL SPACE SYSTEMS ACTIVITY LOS ANGELES	91	DBCRC	ONGOING	CLOSE	1991 DBCRC: Recommended closure as part of the Naval Command, Control and Ocean Surveillance Center, RDT&E Directorate.
	NAVAL STATION LONG BEACH	91	DBCRC	ONGOING	CLOSE	1991 DBCRC: Recommended closing NAVSTA Long Beach and transferring land and ship support functions to Long Beach Naval Shipyard.
	NAVAL STATION MARE ISLAND					
	NAVAL STATION SAN DIEGO					
	NAVAL SUPPLY CENTER OAKLAND	90/93	PRESS/DBCRC	CANCELLED	CLOSE	1990 PRESS: DOD Secretary proposed NSC Oakland as a closure in his 1990 press release. 1993 DBCRC: Directed that NSC Oakland remain open despite OSD's original recommendation to close the Fleet and Industrial Supply Center.
	NAVAL SUPPLY CENTER SAN DIEGO					
	NAVAL TRAINING CENTER SAN DIEGO	93	DBCRC	ONGOING	CLOSE	1993 DBCRC: Directed the closure of NTC San Diego and relocation of certain personnel, equipment and support to NTC Great Lakes, IL.

CLOSURE HISTORY - INSTALLATIONS IN CALIFORNIA

22-May-95

SVC	INSTALLATION NAME	ACTION YEAR	ACTION SOURCE	ACTION STATUS	ACTION SUMMARY	ACTION DETAIL
	NAVAL WEAPONS CENTER CHINA LAKE	91	DBCRC	ONGOING	REALIGNDN	1991 DBCRC: Recommended realignment as part of the Naval Air Warfare Center, Weapons Division.
	NAVAL WEAPONS STATION CONCORD					
	NAVAL WEAPONS STATION SEAL BEACH					
	NAVY PUBLIC WORKS CENTER SAN DIEGO					
	NAVY PUBLIC WORKS CENTER SAN FRANCISCO	93	DBCRC	ONGOING	DISESTAB	1993 DBCRC: Disestablished PWC San Francisco due to excess capacity. Due to other Navy closures its principal customer base (e.g., NAS Alameda) has been eliminated.
	NESEC SAN DIEGO	91/93	DBCRC	CLOSED	REALIGN	1991 DBCRC: Directed the closure of NESECs San Diego and Vallejo, Ca with relocation of staff and associated equipment to Point Loma, CA to form the Naval Command, Control, and Ocean Surveillance Center (NCCOSC). 1993 DBCRC: Changed the receiving location of NESEC San Diego and NESEC Vallejo to Air Force Plant #19 (San Diego, CA) in lieu of new construction at Point Loma, Ca.
	NESEC VALLEJO	91	DBCRC	ONGOING	CLOSE	1991 DBCRC: Recommended closure as part of the Naval Command, Control and Ocean Surveillance Center, West Coast ISE Directorate.
	NRC PACIFIC GROVE	93	DBCRC	ONGOING	CLOSE	1993 DBCRC: Recommended closure of the Naval Reserve Center Pacific Grove, CA because its capacity is in excess of projected requirements.
	PACIFIC MISSILE TEST CENTER, POINT MUGU	91	DBCRC	COMPLETED	REALIGNDN	1991 DBCRC: Recommended realignment as part of the Naval Air Warfare Center, Weapons Division.
	PERA (SURFACE) PACIFIC SAN FRANCISCO	93	DBCRC	ONGOING	DISESTAB	1993 DBCRC: Disestablish and relocate functions to SUPSHIP San Diego, CA.

Document Separator

PROGRAM
FOR
MR. LESTER C. FARRINGTON, JR.
DEFENSE BASE CLOSURE AND REALIGNMENT COMMISSION
WASHINGTON, D. C.

15-18 MAY 1995

MONDAY, 15 MAY

1325 ARRIVE INYOKERN AIRPORT VIA AMERICAN AIRLINES, FLIGHT #3369. MET BY:

MR. MIKE BIDDLINGMEIER
PROTOCOL OFFICER

PROCEED TO NAVAL AIR WEAPONS STATION CHINA LAKE, MICHELSON LABORATORY, MANAGEMENT CENTER

1400 NAVAL AIR WARFARE CENTER WEAPONS DIVISION (NAWCWPNS) OVERVIEW

REAR ADMIRAL DANA MCKINNEY, USN
COMMANDER, NAVAL AIR WARFARE CENTER WEAPONS DIVISION

MR. STERLING HAALAND
HEAD, RESEARCH AND ENGINEERING GROUP

MR. MILT BURFORD
HEAD, CORPORATE OPERATIONS GROUP

MR. MATT ANDERSON
HEAD, NAWCWPNS BRAC OFFICE

MR. BILL BALL
ASSOCIATE HEAD, PACIFIC RANGES AND FACILITIES DEPARTMENT
TEST AND EVALUATION GROUP

1530 PROCEED TO SIMULATION LABORATORY

1535 MISSILE HARDWARE-IN-THE-LOOP SIMULATION

MR. ARLO MICKELSEN
HEAD, ANTI-AIR ANALYSIS BRANCH
WEAPONS/TARGETS INTEGRATION DIVISION
WEAPONS/TARGETS DEPARTMENT
RESEARCH AND ENGINEERING GROUP

1615 PROCEED ON WALKING TOUR OF MICHELSON LABORATORY MACHINE SHOP AREA

MR. CHRIS PETERSON
ASSOCIATE HEAD, WEAPONS PROTOTYPE DIVISION
RESEARCH AND TECHNOLOGY DIVISION
WEAPONS/TARGETS DEPARTMENT
RESEARCH AND ENGINEERING GROUP

1700 PROCEED TO QUARTERS, HERITAGE INN

1815 PROCEED TO SANTA FE GRILL FOR NO-HOST DINNER WITH:

MR. STERLING HAALAND MR. MATT ANDERSON

MR. MILT BURFORD MR. BILL BALL

TUESDAY, 16 MAY

0650 CONVENE IN LOBBY OF HERITAGE INN, MET BY:

MR. MIKE BIDDLINGMEIER

PROCEED TO CHINA LAKE GOLF COURSE FOR NO-HOST BREAKFAST WITH:

MR. STERLING HAALAND

CAPTAIN DOUGLAS HENRY, USN
DEPUTY, RESEARCH AND ENGINEERING GROUP

MR. MATT ANDERSON MR. BILL BALL

0745 PROCEED TO RANGE CONTROL CENTER (RCC), CONFERENCE ROOM

0800 PACIFIC RANGES AND FACILITIES DEPARTMENT OVERVIEW

MR. BILL BALL

0930 PROCEED TO WEAPON SYSTEMS SUPPORT ACTIVITY (WSSA) ROOM 206

0945 WSSA BRIEF AND FACILITY TOUR

MR. RICH BRUCKMAN
HEAD, CARRIER-BASED TACTICAL AIRCRAFT DIVISION
SYSTEMS ENGINEERING DEPARTMENT
RESEARCH AND ENGINEERING GROUP

1130 PROCEED TO SEAFARER CLUB FOR NO-HOST LUNCH WITH:

MR. STERLING HAALAND MR. BILL BALL

1215 PROCEED TO PASSENGER TERMINAL

1230 DEPART NAVAL AIR WEAPONS STATION CHINA LAKE VIA C-12 TO NAVAL AIR WEAPONS STATION POINT MUGU

MR. STERLING HAALAND MR. BILL BALL

1315 ARRIVE NAVAL AIR WEAPONS STATION POINT MUGU, MET BY:

CAPTAIN ROGER HULL, USN
VICE COMMANDER, NAVAL AIR WARFARE CENTER WEAPONS DIVISION

MR. GERRY WROUT
HEAD, TEST AND EVALUATION GROUP

PROCEED TO BUILDING 7020 AND 761

1330 F-14 WSSA

MR. BRAD GILMER
CARRIER-BASED TACTICAL AIRCARFT DIVISION
SYSTEMS ENGINEERING DEPARTMENT
RESEARCH AND ENGINEERING GROUP

1515 PROCEED TO STRIKE WEAPONS LABORATORY

1520 STRIKE WEAPONS BRIEF AND FACILITY TOUR

MR. DAVID AYUB
HEAD, STRIKE SYSTEMS DIVISION
TEST AND EVALUATION ENGINEERING DEPARTMENT
RESEARCH AND ENGINEERING GROUP

1545 PROCEED TO BUILDING 3015

1600 HARDWARE IN THE LOOP/RADAR CROSS SECTION BRIEF AND FACILITY TOUR

DR. DAVE BANKS
HEAD, AIR INTERCEPT SYSTEMS DIVISION
TEST AND EVALUATION ENGINEERING DEPARTMENT
RESEARCH AND ENGINEERING GROUP

1700 PROCEED TO QUARTERS, REGULUS SUITE.

DINNER TBD

WEDNESDAY, 17 MAY

0700 CONVENE AT QUARTERS, MET BY:

MS. JEANNE BENDOT
PROTOCOL OFFICE

PROCEED TO GALLEY FOR NO- HOST BREAKFAST WITH:

MR. GERRY WROUT — MR. STERLING HAALAND

CAPTAIN ROGER HULL, USN — CAPTAIN JACK DODD, USN

0800 PROCEED TO BUILDING 3008

0810 EA-6B/TACAIR EW/IW BRIEF AND FACILITY TOUR

MR. TERRY CLARK
HEAD, CRUISE MISSILES/UAVS/TARGET SYSTEMS DIVISION
SYSTEMS ENGINEERING DEPARTMENT
RESEARCH AND ENGINEERING GROUP

0910 PROCEED TO BUILDING 53

0920 SEA RANGE BRIEF AND FACILITY TOUR

CAPTAIN MIKE BARRETT, USN
DEPUTY, PACIFIC RANGES AND FACILITIES DEPARTMENT
TEST AND EVALUATION GROUP

MR. RICK SMITH
ASSOCIATE HEAD, PACIFIC RANGES AND FACILITIES DEPARTMENT
TEST AND EVALUATION GROUP

1040 TARGETS/THREAT SIMULATION

COMMANDER SCOTT GRAVES, USN
MILITARY DEPUTY, THREAT/TARGET SYSTEMS DEPARTMENT
TEST AND EVALUATION GROUP

MR. ALLEN VINES
THREAT/TARGET SYSTEMS TEAM LEADER
TEST MANAGEMENT OFFICE
THREAT/TARGET SYSTEMS DEPARTMENT
TEST AND EVALUATION GROUP

1140 PROCEED TO LAGUNA PEAK (GOOD WEATHER/VISIBILITY)

1215 NO-HOST LUNCH AT THE POINT RESTAURANT, BURGUNDY ROOM.

1300 PROCEED TO PORT HUENEME WITH:

MR. KEN LYLE
SURFACE TARGETS TEAM LEADER
TEST MANAGEMENT OFFICE
THREAT/TARGET SYSTEMS DEPARTMENT
TEST AND EVALUATION GROUP

1330 SURFACE TARGETS BRIEF AND FACILITY TOUR

MR. KEN LYLE

1500 PROCEED TO NAVAL CIVIL ENGINEERING LABORATORY (NCEL) WITH:

COMMANDER WILLIAMS, CEC, USN
ACTING EXECUTIVE OFFICER
NAVAL CONSTRUCTION BATTALION

MR. BOB WOOD
ASSOCIATE PUBLIC WORKS OFFICER

1510 TOUR NCEL FACILITY

1600 RETURN TO POINT MUGU, PROCEED TO QUARTERS

TBD DINNER

THURSDAY, 18 MAY

0530 CONVENE AT REGULUS SUITE. MET BY:

CAPTAIN JACK DODD, USN
COMMANDER
NAVAL TEST WING PACIFIC

PROCEED VIA DUTY DRIVER TO LAX.

OFFICIAL NAWCWPNS HOST:
REAR ADMIRAL DANA MCKINNEY, USN

TENANT COMMANDS

UNIT	OFFICER/ENLISTED/CIVILIANS
Air Test & Evaluation Squadron 9 (VX-9)	39/279/5
Antarctic Development Squadron Six (VXE-6)	74/359/2
Branch Clinic (Medical)	4/15/9
Branch Dental Clinic	3/5/2
ComThirdFleetRep (C3FR)	1/1/0
DECA (Commissary)	0/3/16
Explosive Ordnance Disposal MU Three Detachment (EOD)	1/10/1
Helicopter Combat Support Squadron 5 (HCS-5)	8/93/0
Marine Aviation Detachment (MAD)	6/11/0
Naval Satellite Operations Center (NAVSOC)	6/29/74
Naval Air Reserve Forces(NAVAIRES)	12/98/17
Naval Investigative Service (NIS)	0/0/1
Naval Engineering Service Unit Detachment (NAESU)	0/1/2
Naval Audit Office (NAO)	0/0/7
Naval Research Laboratory Site Detachment (NRL)	3/19/0
Navy Campus Field Activity (NCFA)	0/0/2
Naval Military Personnel Command (NMPC)	1/16/0
Naval Publishing & Printing Service Detachment Office (NPPSDO)	0/0/2
Patrol Squadron 65 (VP-65)	8/111/0
Personnel Support Activity Detachment (PSD)	1/21/19
Resale Act Det (Navy Exchange)	4/3/75
Resident Officer in Charge of Construction (ROICC)	4/0/9
Defense Finance and Accounting Service	0/0/13
Federal Bureau of Investigation (FBI)	0/0/10
SPINTCOMM (NIACN)	0/1/0
Cumulative Officer/Enlisted/Civilian in above commands:	**175/1,075/266**

HISTORY

"Mugu" beach is believed to be the site where Juan Cabrillo landed October 10, 1542. "Muwu" was the capital village of the Chumash Indians located along the shores of Mugu Lagoon. Most of its early history centers around ranching, farming and the famous Mugu fish camp.

The history of most of the Navy's guided missile and drone programs is the early history of the Navy at Point Mugu. During World War II, the Navy simultaneously had efforts underway to develop sites where both missiles and pilotless aircraft could be tested. In 1947 Congress appropriated funding to establish a permanent Navy presence here for this purpose.

Since the mid 1940's, Point Mugu has had several "Center names," all with the mission to develop, test and evaluate missiles and related systems and for drones to use in naval test programs. Missiles such as Oriole, Lark, Gorgon, Regulus, and many others have been developed and tested at Point Mugu. Many roads aboard the base bear these names. A park on Navalair Road proudly displays many of the contributions and developments for which Point Mugu has received world wide acclaim.

In January 1992, the Pacific Missile Test Center was disestablished and the Naval Air Warfare Center Weapons Division was formed which aligned technical functions with those of the former Naval Weapons Center China Lake, California. At the same time the Naval Air Station Point Mugu was disestablished and the Naval Air Weapons Station was commissioned.

Today, with a combined military/civilian/contractor team effort, the Point Mugu Naval complex continues to provide development and testing of weapons that work.

October 1, 1946 - U.S. Naval Air Missile Test Center
August 1, 1949 - Naval Air Station
June 16, 1958 - Pacific Missile Range
January 7, 1959 - Naval Missile Center
April 26, 1975 - Pacific Missile Test Center
January 21, 1992 - Naval Air Warfare Center Weapons Division
January 21, 1992 - Naval Air Weapons Station

NAVAL AIR WARFARE CENTER WEAPONS DIVISION

Point Mugu is part of the Naval Air Warfare Center Weapons Division (NAWCWPNS) the Navy's full spectrum research, development, test evaluation and in-service engineering center for weapons systems associated with air warfare (except for antisubmarine warfare systems), missiles and missile subsystems, aircraft weapons integration and assigned airborne electronic warfare systems. NAWCWPNS also maintains and operates the air, land and sea Naval Western Test Range Complex (NWTRC). The Weapons Division includes the Naval Air Weapons Station (NAWS), Point Mugu, California, the Naval Air Weapons Station (NAWS), China Lake, California, and the Ordnance Missile Test Station (NOMTS), White Sands, New Mexico.

NAWCWPNS integrates the activities of these organizations thereby providing an expanded capability for research, development, test, evaluation and support throughout the life cycle of Department of Defense weapon and aircraft weapons systems. Additionally, NAWCWPNS organizations also contribute to naval surface missile systems and tactical as well as strategic deterrent weapons, and support various Department of Defense and other government agencies for special projects.

NAVAL AIR WEAPONS STATION

The Naval Air Weapons Station, Point Mugu, operates and maintains station facilities and provides support services for NAWCWPNS and assigned tenants and activities at Point Mugu. These services include air terminal, air traffic control, fire fighting and crash crews and an outlying landing facility at San Nicolas Island. A multi-talented, dedicated work force of military and civilian personnel provide public works support, including facilities engineering and maintenance, utilities and transportation for Point Mugu and offshore islands. NAWS employees also provide supply, administrative and military community programs, explosive ordnance handling, storage and disposal service and physical security services.

Commander, Naval Air Weapons Station
Public Affairs Office, Code 750000E
521 9th Street
Point Mugu, CA 93042-5001
(805) 989-8094 Autovon 351-8094
FAX (805) 989-1785 (03-15-95)

Naval Air Weapons Station
Point Mugu, California

Fact Finder '95

POINT MUGU

"Mugu" beach is believed to be the site where Joao Cabrilho (or more commonly known, Juan Cabrillo) landed Oct. 10, 1542. "Muwu" was a capital village of the Chumash Indians located along the shores of Mugu Lagoon. Most of its early history centers around ranching and farming the famous Mugu fish camp.

In 1946 the Navy came to this area for the purposes of developing test drones and early missiles. At that time, land was considered almost worthless unless it could sustain a profitable agricultural effort or contained valuable minerals.

Recently, however, most land in California has become valuable simply because of its potential to be developed. Fortunately, the Navy obtained this land before it was developed, when its worth as an ecological and historic treasure was barely recognized. But we now know that some things in nature and our history can be lost forever if we're not determined to protect them.

Today, Naval Air Weapons Station Point Mugu remains committed to gathering knowledge of the cultural and natural resources located within its boundaries. Protecting these resources is viewed as a critical element in the initial planning phase of a weapons systems testing program. This type of stewardship ensures the continuance of the much-needed testing of new technologies, electronic warfare, telemetry, and various missiles conducted at this site by the Department of Defense.

SAN NICOLAS ISLAND

Withdrawn by President Hoover for the U.S. Navy in 1933, San Nicolas Island today serves as an important instrumentation and launch site for the sea test range. Located on this island are various protected species as well as many undisturbed archeological sites of native Americans that lived on the island for more than8,000 years.

Located 65 miles off the southern coast of California, San Nicolas Island is one of the eight Channel Islands. The island contains more than 20 square miles of gently rolling terrain accentuated with steep sea cliffs. These steep cliffs are perfect nesting habitat for seabirds such as Brandt's cormorants and western gulls. Annually more than 25,000 California sea lions, 15,000 elephant seals and 1,500 harbor seals "haul out" on the beaches and rocky outcroppings to give birth and rear their pups.

On the island, the tiny San Nicolas Island fox and the white-footed deer mouse are the only two land mammals. Dense, undersea kelp forests surround the island providing food and shelter for many species of fish, intertebrates, and once again for sea otters recovering from near extinction. Pristine tidepools ring the island's rocky shores where crabs, abalone, sea urchins, and sea snails have adapted to their ever-changing homes. San Nicolas Island is typical of the islands in the Channel Islands archipelago -- but it is also unique.

The natural resources of San Nicolas Island are managed by a joint agreement between the Department of the Navy, and Department of the Interior, and California's Department of Fish and Game.

Environmental Division
Naval Air Weapons Station
Point Mugu, California
1993/94

Navy Environmental Stewardship

Naval Air Weapons Station
Point Mugu CA 93042-5001

LIST OF ATTENDEES FOR BRAC SITE VISIT, 30 MAY 1995 TO THE NAVAL AIR WARFARE CENTER WEAPONS DIVISION POINT MUGU, CHINA LAKE AND PORT HUENEME:

✓ ADMIRAL RONALD J. ZLATOPER, USN
COMMANDER-IN-CHIEF, U.S. PACIFIC FLEET

✓ COMMANDER GUADAGINNI, USN
FLAG LIEUTENANT TO CINCPACFLT

✓ LIEUTENANT COMMANDER HANKINS, USN
FLAG LIEUTENANT TO CINCPACFLT

VICE ADMIRAL JOHN LOCKARD, USN
COMMANDER, NAVAL AIR SYSTEMS COMMAND
WASHINGTON, D. C.

✓ LIEUTENANT REGGIE BAKER, USN
FLAG LIEUTENANT, COMNAVAIR

✓ CONGRESSMAN ELTON GALLEGLY
(R) 23 DISTRICT, CALIFORNIA

✓ CONGRESSMAN ANTHONY BEILINSON
(D) 24TH DISTRICT, CALIFORNIA

COMMANDER TOM DREYER, USN
NAVY, OFFICE OF LEGISLATIVE AFFAIRS
WASHINGTON, D. C.

MR. MATT MIDDLEBROOK
FIELD REPRESENTATIVE FOR SENATOR FIENSTIEN

MR. DAVE THOMPSON
FIELD REPRESENTATIVE FOR SENATOR BOXER

✓ MS. JOLENA VOORHIS
FIELD REPRESENTATIVE, GOVERNOR WILSON

MR. BRIAN MILLER
FIELD REPRESENTATIVE, CONGRESSMAN GALLEGLY

✓ MS. KAY VAN HORNE
FIELD REPRESENTATIVE, CONGRESSMAN BIELINSON

NAWCWPNS ATTENDEES:

✓ REAR ADMIRAL DANA MCKINNEY, USN
COMMANDER, NAWCWPNS

✓ CAPTAIN ROGER HULL, USN
VICE COMMANDER, NAWCWPNS

✓ MR. GERRY WROUT
HEAD, TEST AND EVALUATION GROUP

✓ CAPTAIN SELWYN LAUGHTER, USN
COMMANDING OFFICER
NAVAL AIR WEAPONS STATION POINT MUGU

✓ CAPTAIN JACK DODD, USN
COMMANDING OFFICER
WEAPONS TEST SQUADRON

✓ CAPTAIN CHARLES STEVENSON, USN
COMMANDING OFFICER
NAVAL AIR WEAPONS STATION CHINA LAKE

Document Separator

Mr Farrington

Sea Range Overview

Briefing for Les Farrington

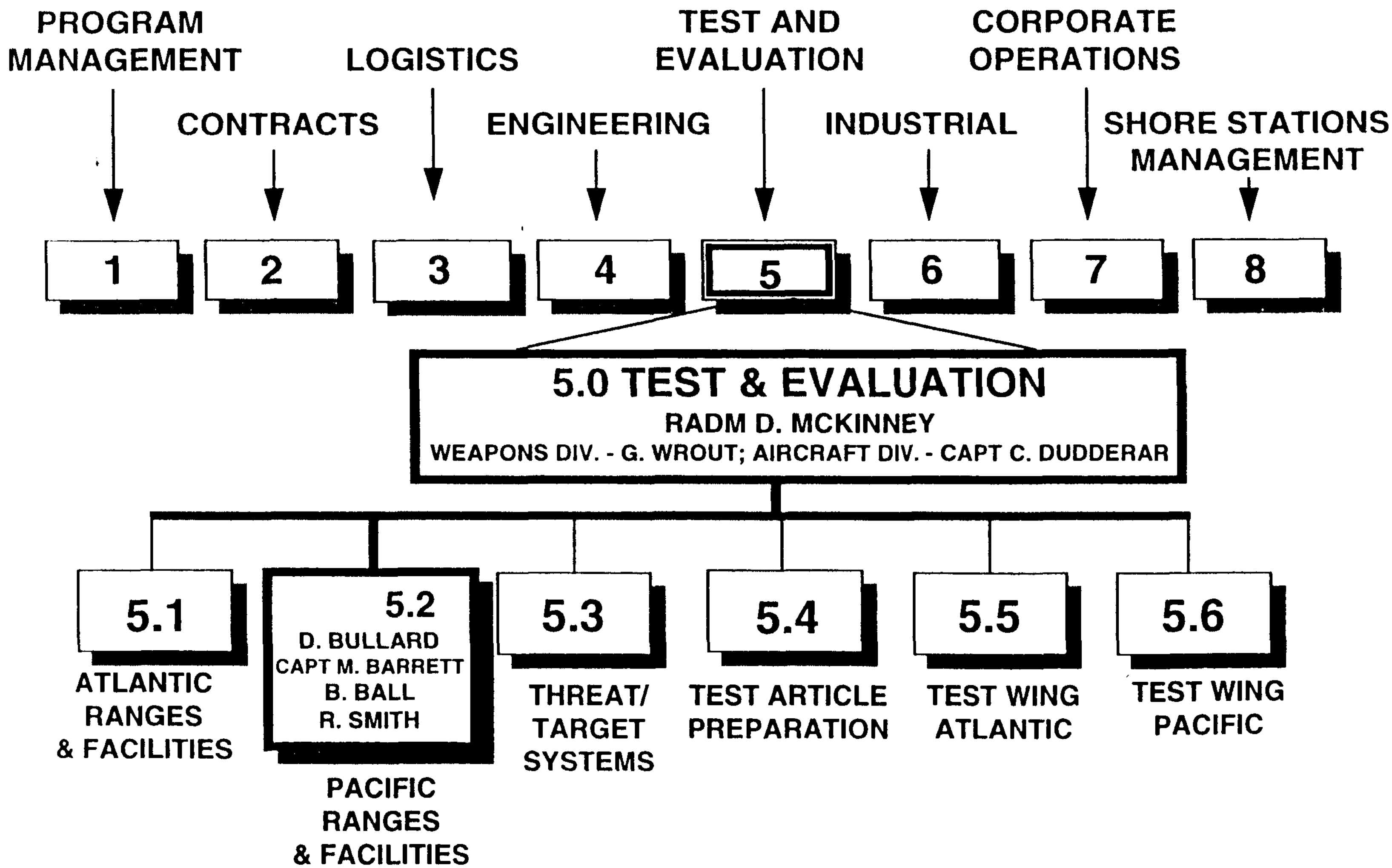
Capt. Mike Barrett
Rick Smith

17 May 1995

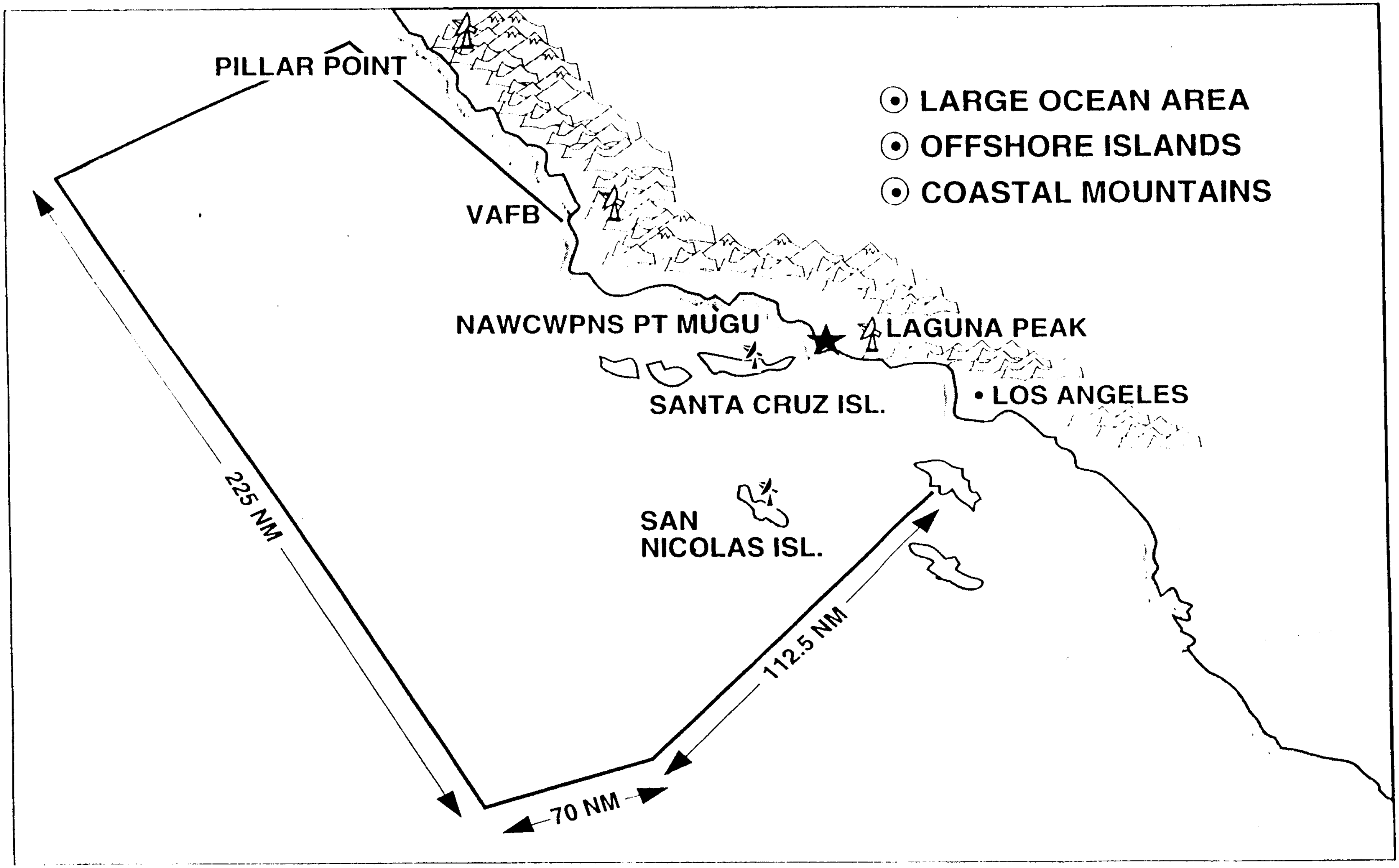
Outline

- CAO and the Ranges
- Sea Range Overview
- FY-94 Workload
- Typical current Operations

Competency Aligned Organization



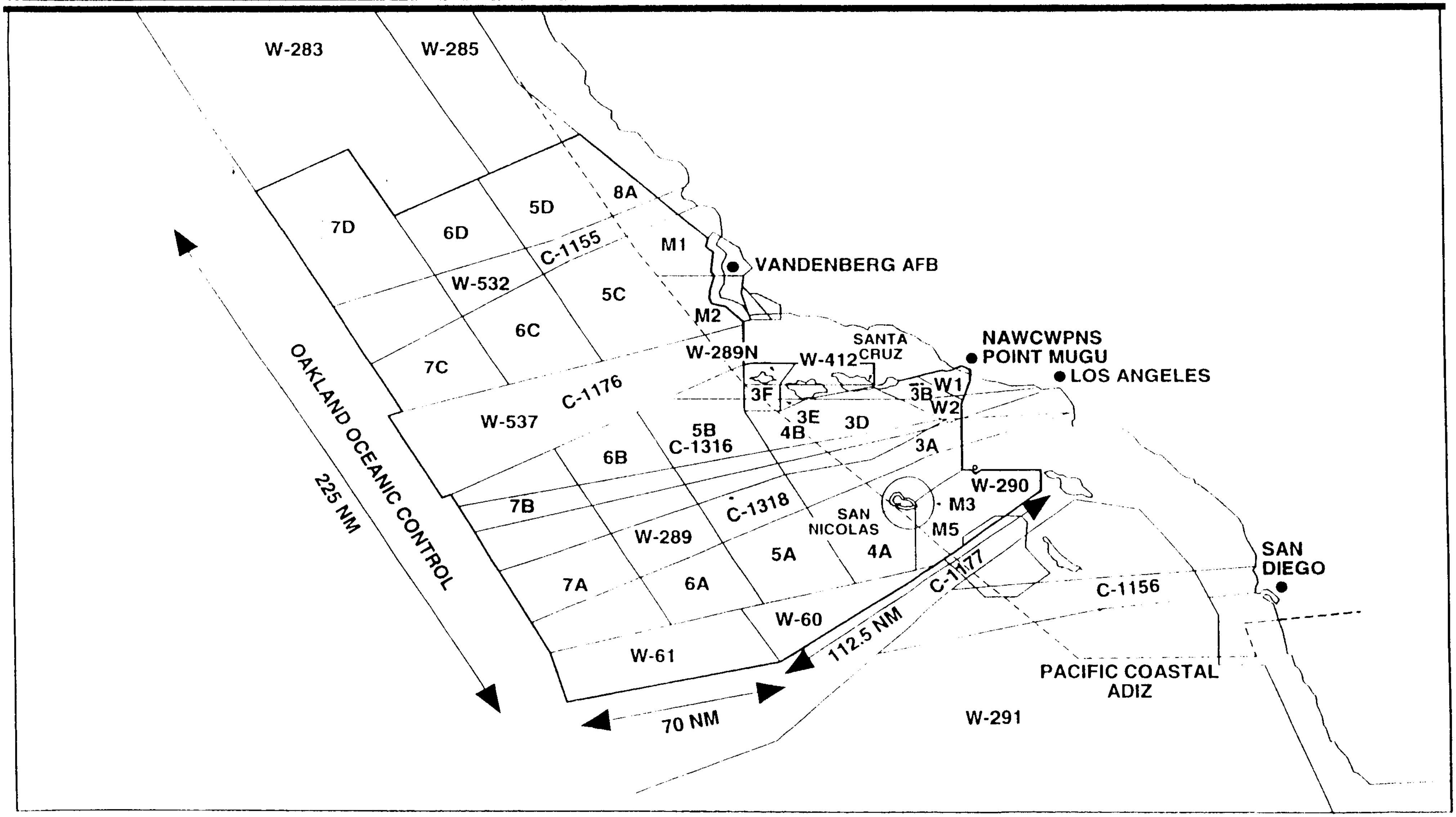
SEA RANGE GEOGRAPHICAL ATTRIBUTES



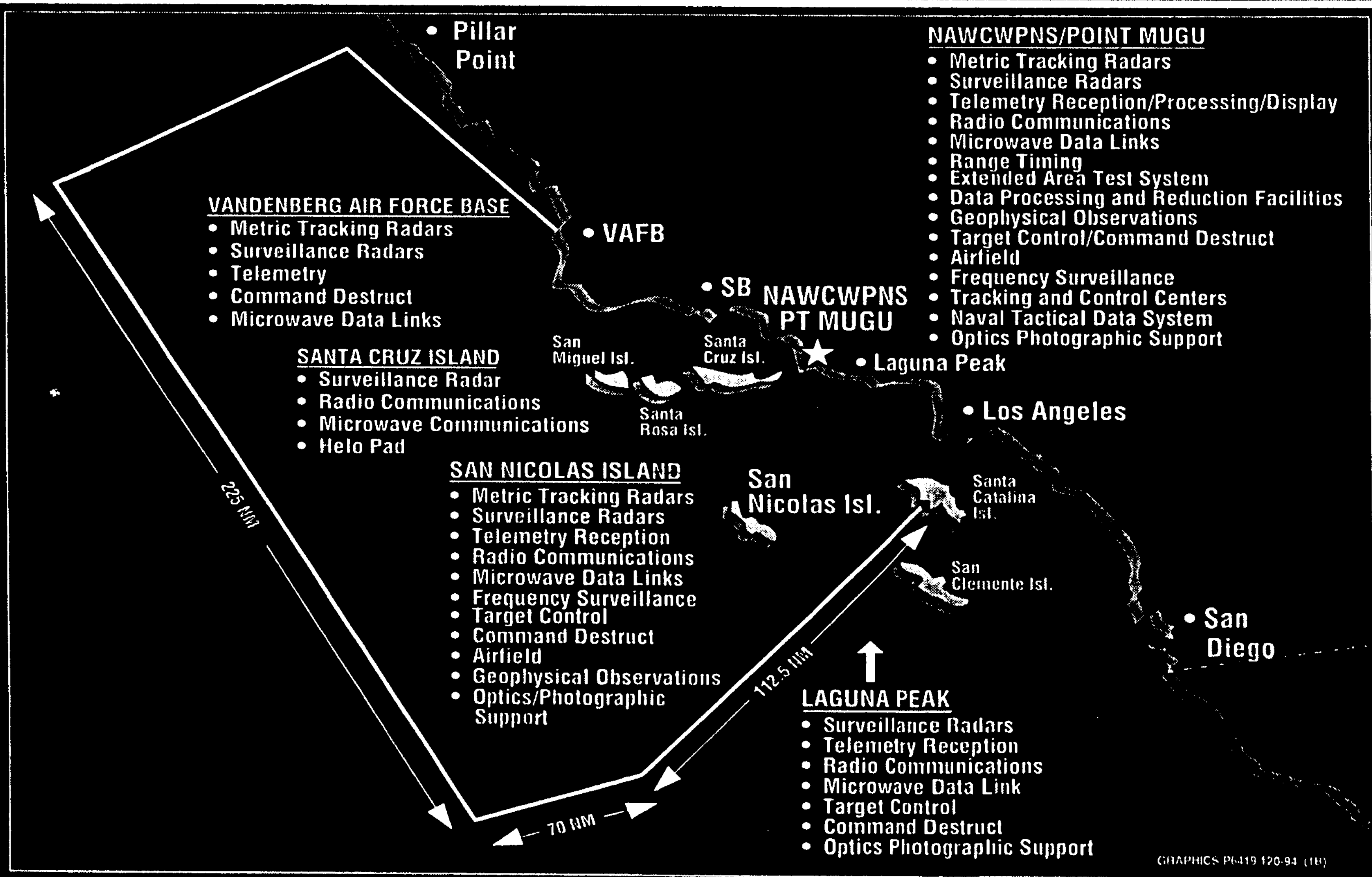
- LARGE OCEAN AREA
- OFFSHORE ISLANDS
- COASTAL MOUNTAINS

GRAPHICS P6419 120 94

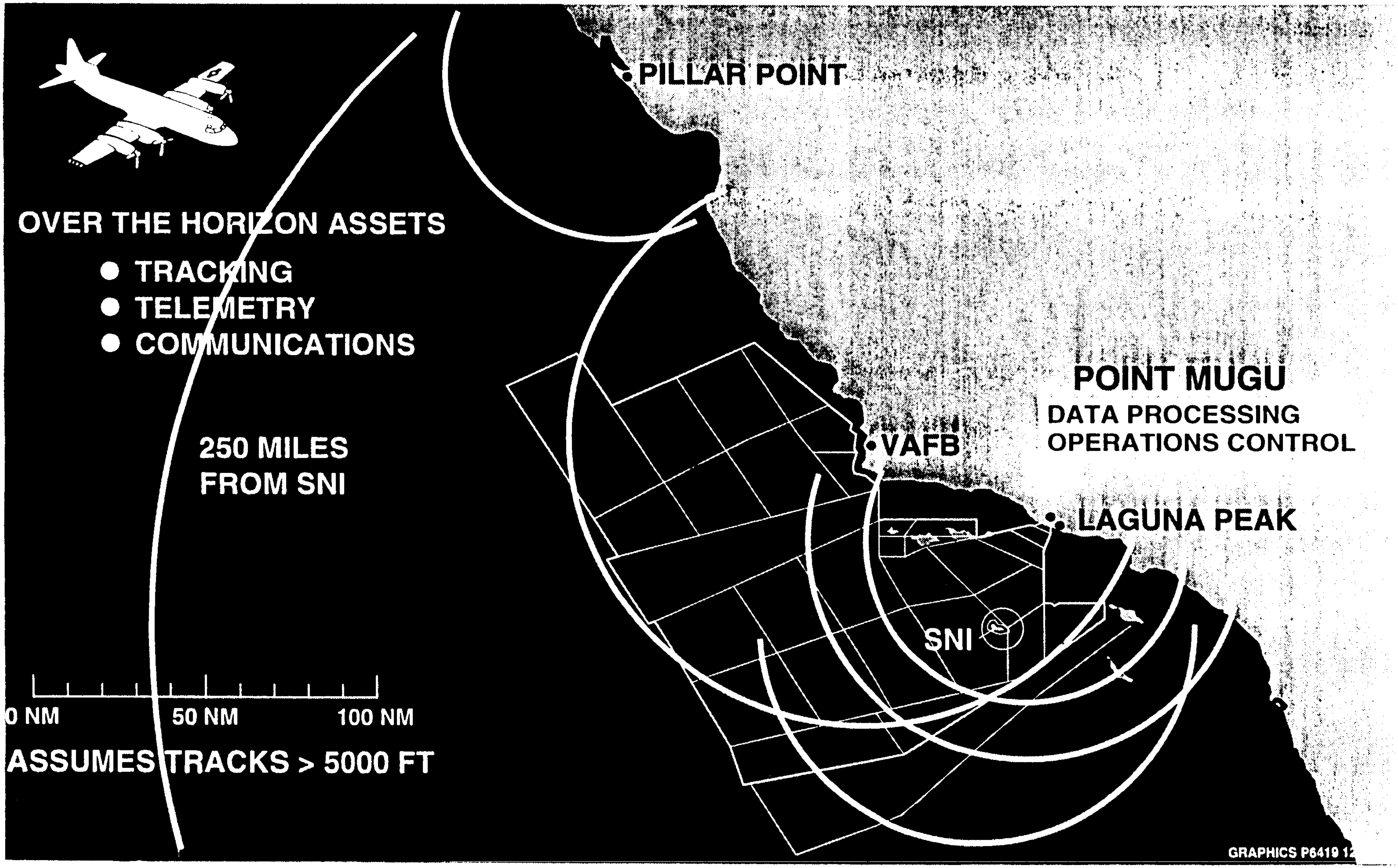
SEA RANGE WARNING AREAS



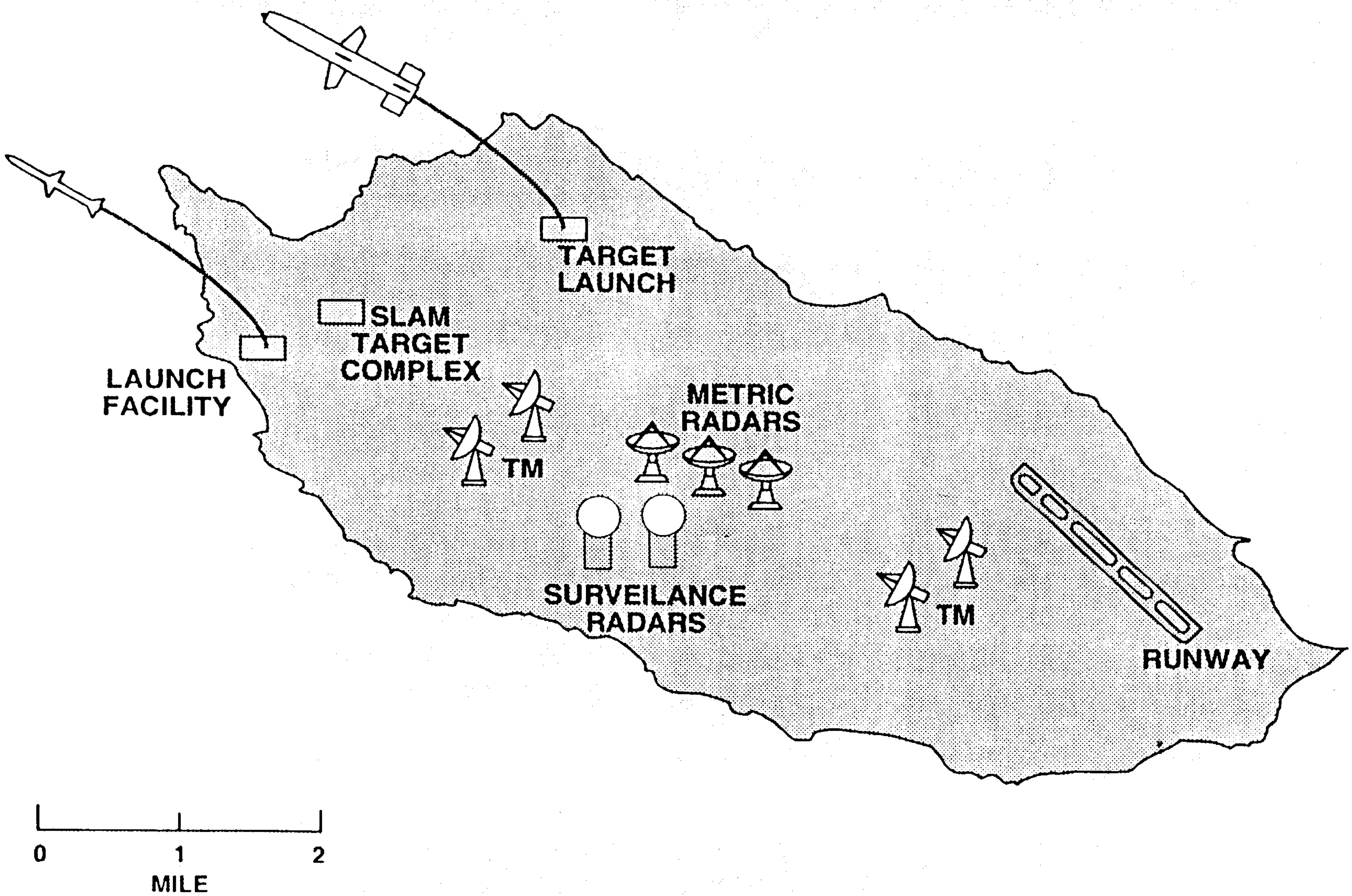
RANGE INSTRUMENTATION AND FACILITIES



RANGE INSTRUMENTATION COVERAGE



SAN NICOLAS ISLAND
THE RANGE CORNER STONE



GRAPHICS P6419 120-94-4

Sea Range Capabilities

OCEAN

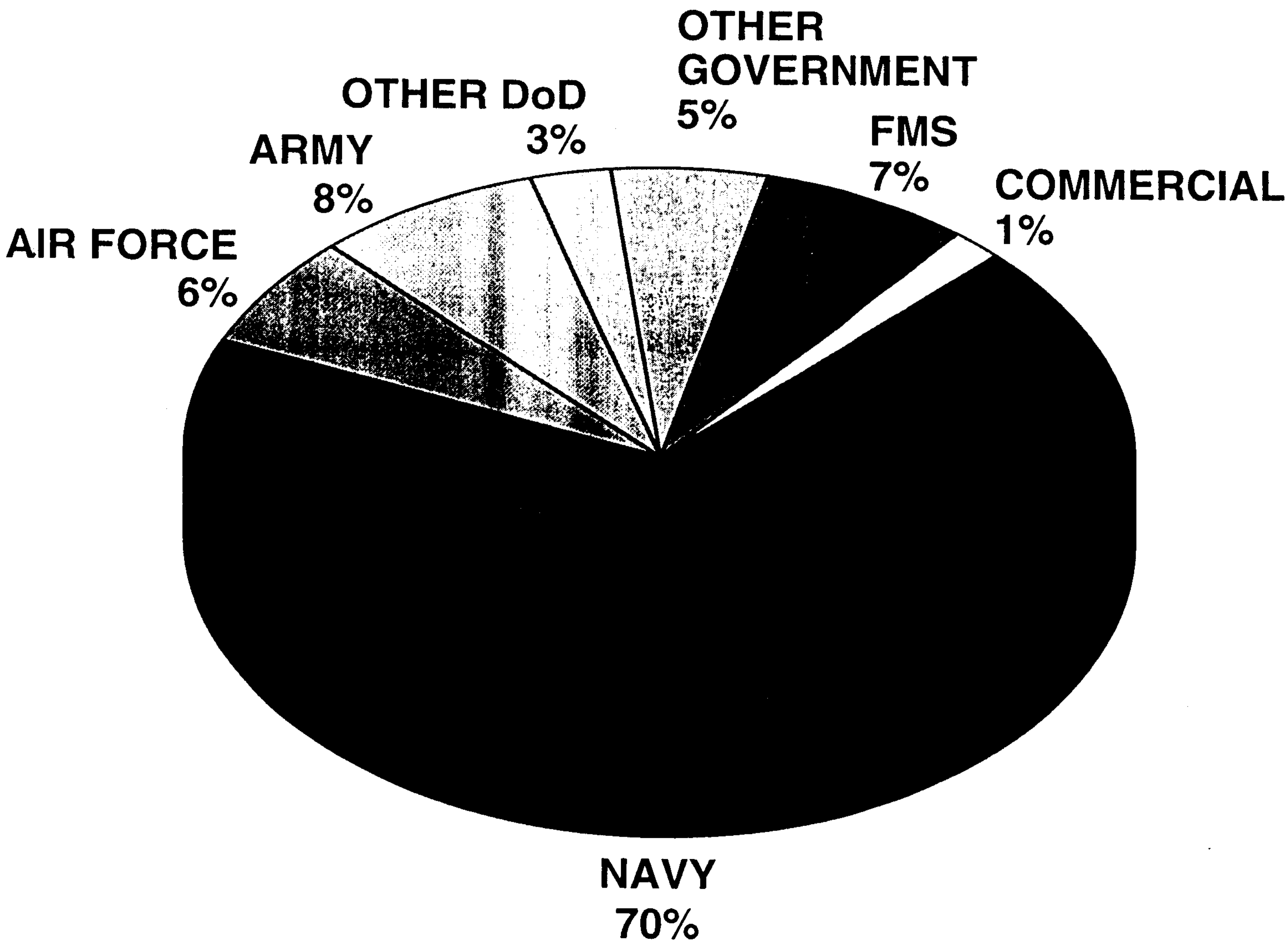
- LARGE AND UNCLUTTERED OPERATING AREAS
- PROXIMITY TO FLEET
- PROXIMITY TO OTHER DoD SEA AND LAND RANGES
- ACCESS TO IR200/IR206

ISLANDS

- HEAVILY INSTRUMENTED
- 55-MI STANDOFF (SAFETY)
- 55-MI ADDITIONAL INSTRUMENTATION REACH
- BLUE WATER
- LITTORAL SCENARIOS
- ISOLATED RUNWAY/ FACILITIES
- FULL SCALE TARGETS
- COMMON RELAY SITES
- ELECTROMAGNETICALLY CONTROLLED QUIET ARENA

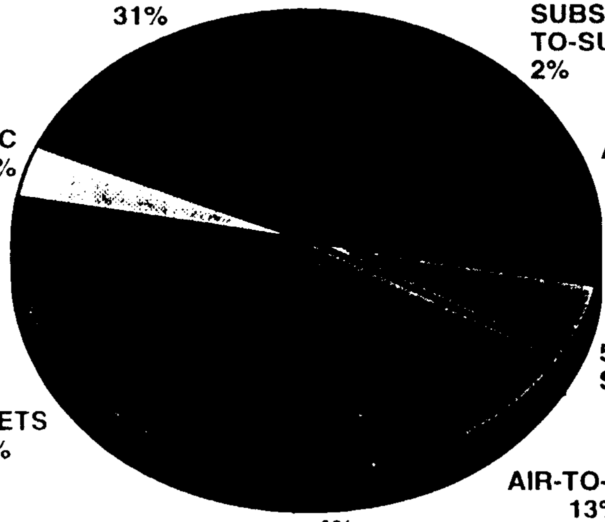
- MULTIPLE INSTRUMENTED AIR/GROUND/SEA SITES CHANNEL ISLANDS, COASTAL MOUNTAINS
- PROXIMITY TO OTHER T&E FACILITIES
- PRINCIPAL TEST SITE FOR MANY NAVY WEAPONS
- PRIMARY TEST SITE FOR SHIP BORNE WEAPONS, INCLUDING SELF DEFENSE SYSTEMS, MINE SCORING, COMBINED DOT&E/OT&E/FOT&E AND TRAINING
- BATTLE MANAGEMENT INTEROPERABILITY CENTER
- DEEP WATER PORT
- LITTORAL SCENARIO TESTING
- LARGE MIX OF AIRBORNE TARGET TYPES AND SEA SURFACE TARGETS
- CAST GLANCE–AIRBORNE OPTICAL PHOTOGRAPHY
- ANTENNA RANGES
- MODELING AND SIMULATION
- COMPLEX MANY-ON-MANY TEST AND TRAINING SCENARIOS
- INTERRANGE TESTING WITH POINT MUGU, EDWARDS AFB, FT IWRIN, UTTR

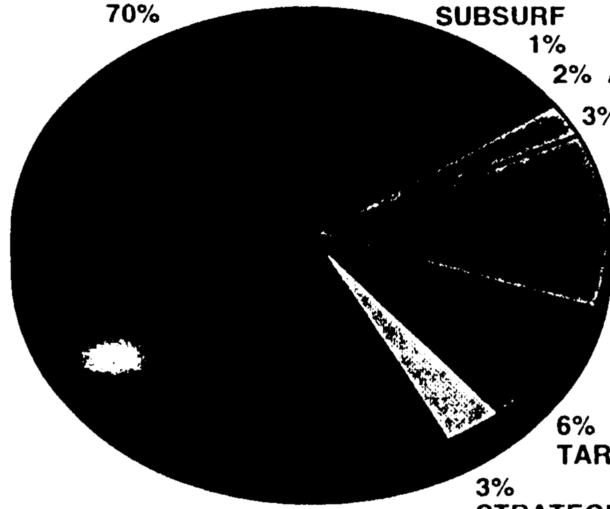
REIMBURSABLE FUNDING



PK 331 11

Workload Distribution FY-94





LAUNCHES	NO. OF OPS
SUBSURF-TO-SURF	0
SUBSURF-TO-SUBSURF	10
AIR-TO-AIR	76
SURF-TO-AIR	30
AIR-TO-SURF	73
SURF-TO-SURF	23
TARGETS	150
STRATEGIC	21
OTHER	169
TOTAL	551

SUPPORT OPS	NO. OF OPS
SUBSURF-TO-SURF	0
SUBSURF-TO-SUBSURF	14
AIR-TO-AIR	55
SURF-TO-AIR	64
AIR-TO-SURF	306
SURF-TO-SURF	61
TARGETS	156
STRATEGIC	81
OTHER	1708
TOTAL	2445

COMPLEX SCENARIOS

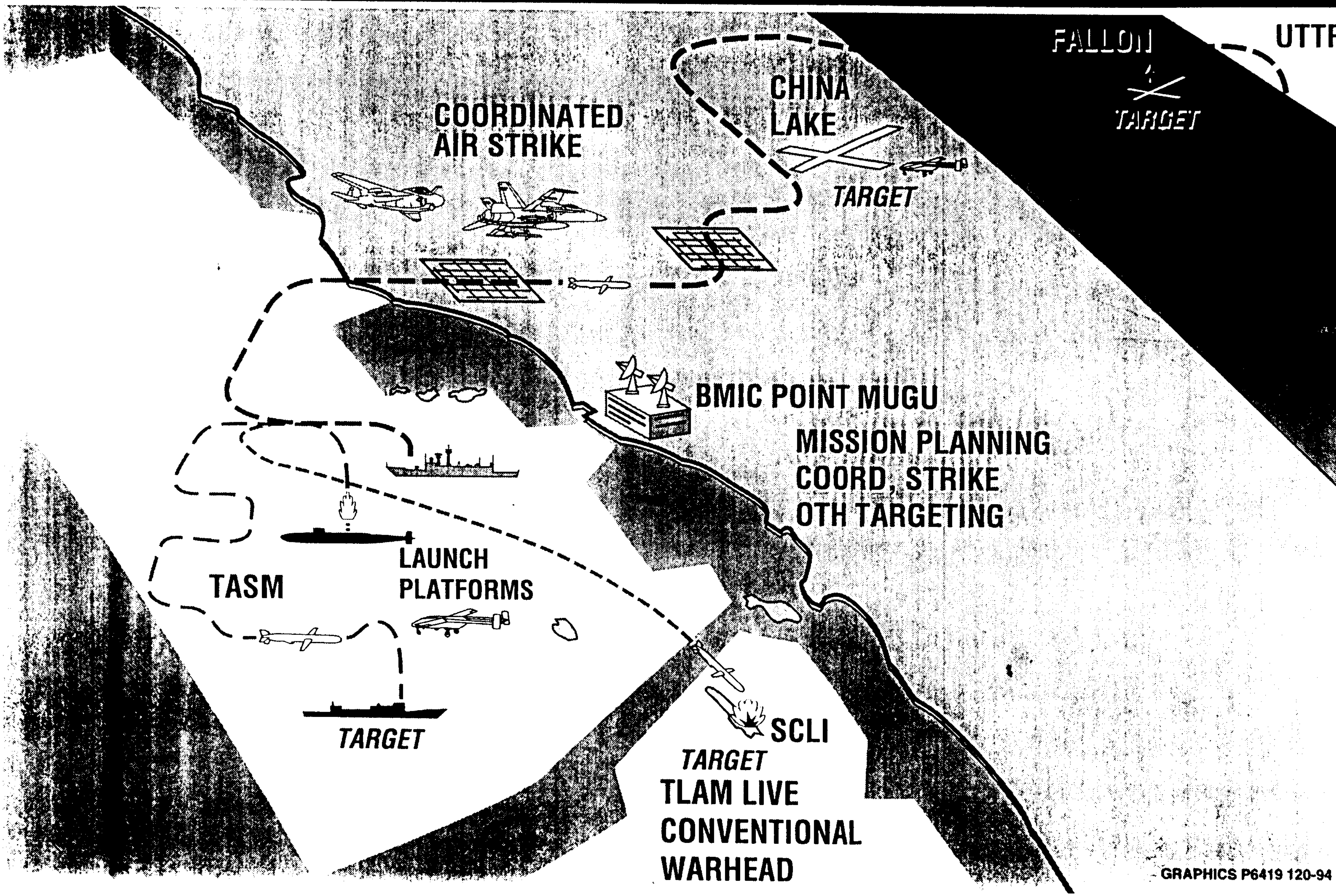
- NINE VS NINE AEGIS AAW (1988)
- SIX ON SIX F-14/PHOENIX AAW (1976)
- FOUR ON FOUR F-18/AMRAAM (1993 -)
- TOMAHAWK TLAM INTO CHINA LAKE, FALLON, & UTTR (1978 -)
- TOMAHAWK LIVE WARHEAD TESTS AT SAN CLEMENTE (1990)
- SLAM SEA/SHORE TRANSITION TESTS (1991 -)
- COORDINATED STRIKE MISSIONS (1987 - PRESENT)
- JOINT MISSIONS WITH NTC AND FALLON (1994 -)
- JOINT ELECTROMAGNETIC INTERFERENCE TESTS (1992)

- BATTLE GROUP EXERCISES
  - 10+ AIR TARGETS (JOINT AAW ENGAGE ZONE) (1993 -)
  - FIVE ON ONE ASUW (1993 -)
- BATTLE MANAGEMENT INTEROPERABILITY EXERCISES (1991 -)
- JOINT AIR DEFENSE (NAVY MARINE) (1995 -)

Typical Current Operations

- Tomahawk OTL Multi-Range
- Fleetex
  - 25-30 missiles, all types, 2 days, complex (JEZ) scenarios
- Self Defense Test Ship
- Navy Leap
- AAMRAM 4v4
- IRIS demo

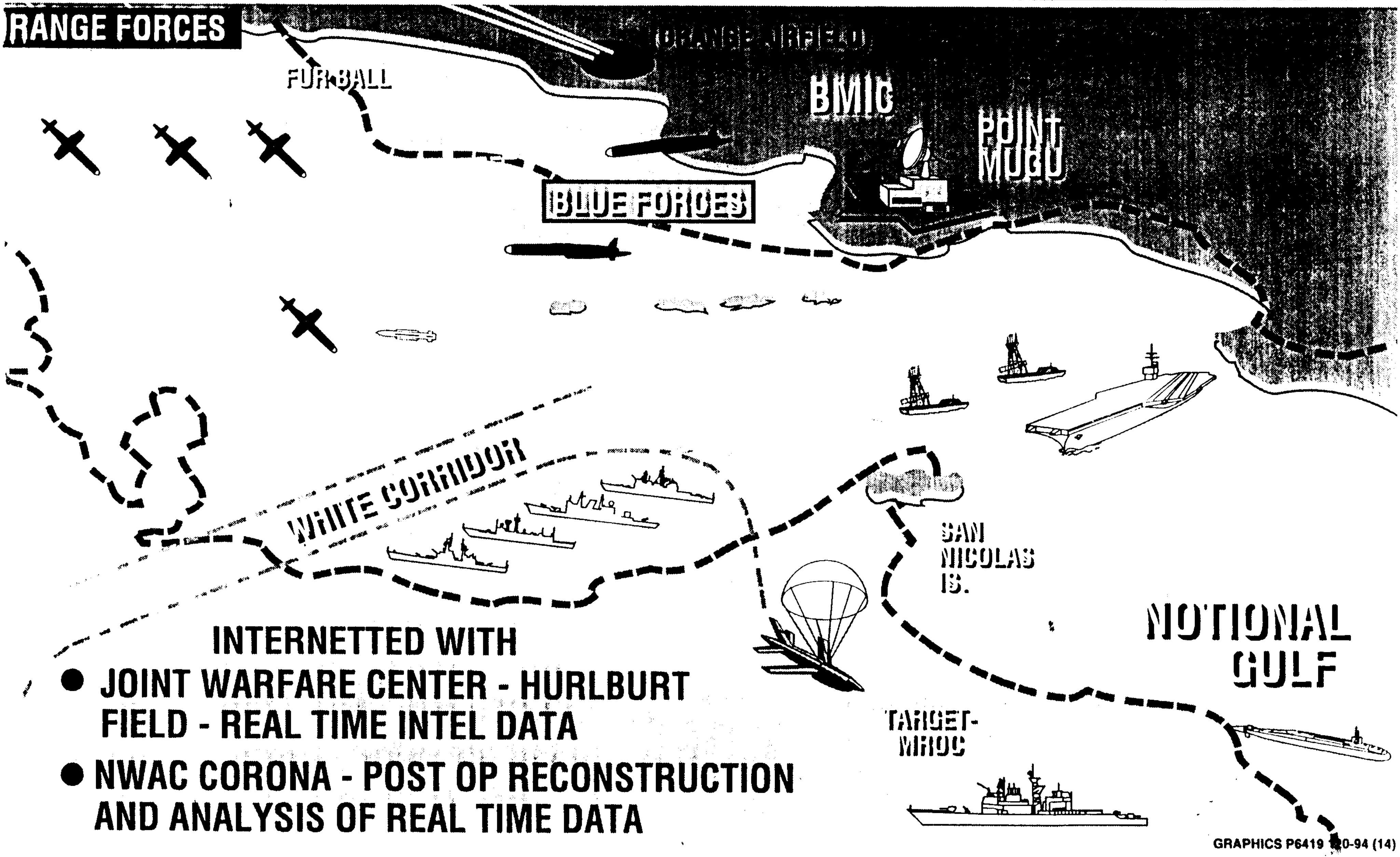
TOMAHAWK TESTING - MULTIPLE SCENARIOS



GRAPHICS P6419 120-94 9

NAWC
NAVAL AIR WARFARE CENTER

FLEET SUPPORT
CARRIER BATTLE GROUP TRAINING
JOINT ENGAGEMENT ZONE (JEZ)



INTERNETTED WITH

- JOINT WARFARE CENTER - HURLBURT FIELD - REAL TIME INTEL DATA
- NWAC CORONA - POST OP RECONSTRUCTION AND ANALYSIS OF REAL TIME DATA

GRAPHICS P6419 [illegible]0-94 (14)

FLEETEX 95-1

- *1 FEBRUARY 1995*
- TRACKEX
  - BATTLE GROUP tracked 3 manned raids by F-111 A/C
- AAWEX/SAMEX/GUNEX
  - USS PRINCETON launched SM-2 BLK III agst AQM-37S
  - USS PAUL JONES launched SM-2 BLK III agst AQM-37S
  - USS JOHN PAUL JONES launched SM-2 BLK III agst BQM-74E
  - HMCS VANCOUVER launched RIM-7P agst BQM-74E
  - USS PRINCETON, MERRILL, JOHN PAUL JONES, RENTZ & HMCS VANCOUVER fired 54 rounds of 5'54 agst two BQM-74E's and one QST-35 with an ISTT. Target loss-one BQM-74E
- ASUWEX/AIR-SURF EX/SURF-SURF EX/SUB-SURF EX
  - Off the USS ABRAHAM LINCOLN, CVW-11, VS-29 & VA-95 launched two dual air-launched Harpoons(ATM-84D) agst one QST-35 Target Hulk
  - USS PASADENA launched sub-launched Harpoon(UTM-84D) agst the same Target Hulk
  - USS RENTZ launched surface-launched Harpoon(RTM-84D) agst the same Target Hulk

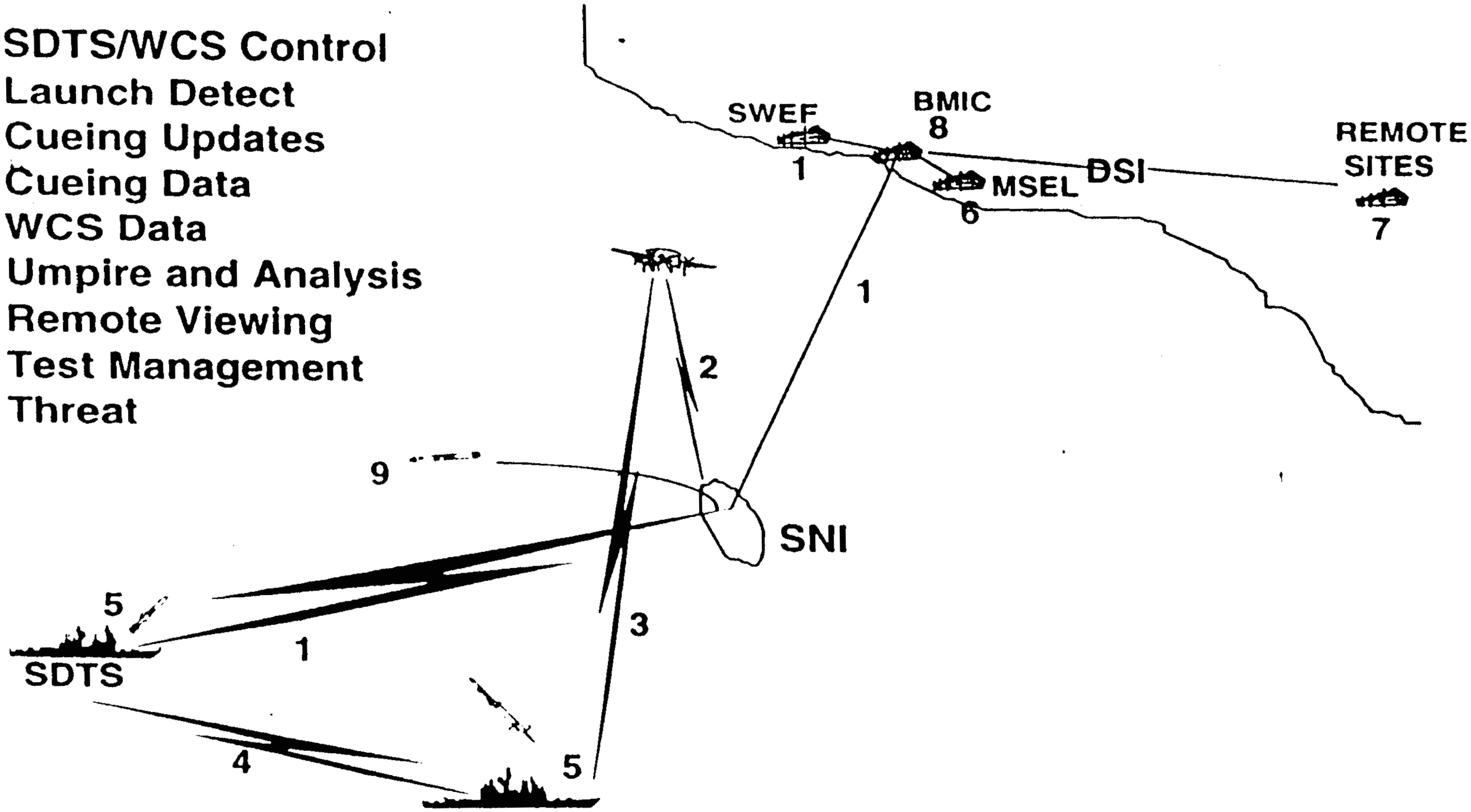
FLEETEX 95-1

- *2 FEBRUARY 1995*
- AAWEX/SAMEX/NSSMS
  - USS ABRAHAM LINCOLN launched two RIM-7P's agst BQM-74E
  - USS MERRILL launched RIM-7P agst BQM-74E
  - USS SACRAMENTO launched RIM-7P agst BQM-74E
- SAMEX
  - VF-213 launched four AIM-54's and one AIM-9M agst three BQM-74E's
  - VFA-22 launched one ATM-7M and AIM-7M agst two BQM-74E's
  - VFA-94 launched four AIM-7M's and one AIM-9M agst two BQM-74E's
- SAMEX/VANDALEX
  - USS PRINCETON launched SM-2 BLK III agst MQM-8G(ER)
  - USS JOHN PAUL JONES launched SM-2 BLK III agst MQM-8G(ER)
  - USS RENTZ launched SM-1 BLK VI agst MQM-8G(ER)
  - USS RENTZ launched SM-1 BLK V agst MQM-8G(ER)

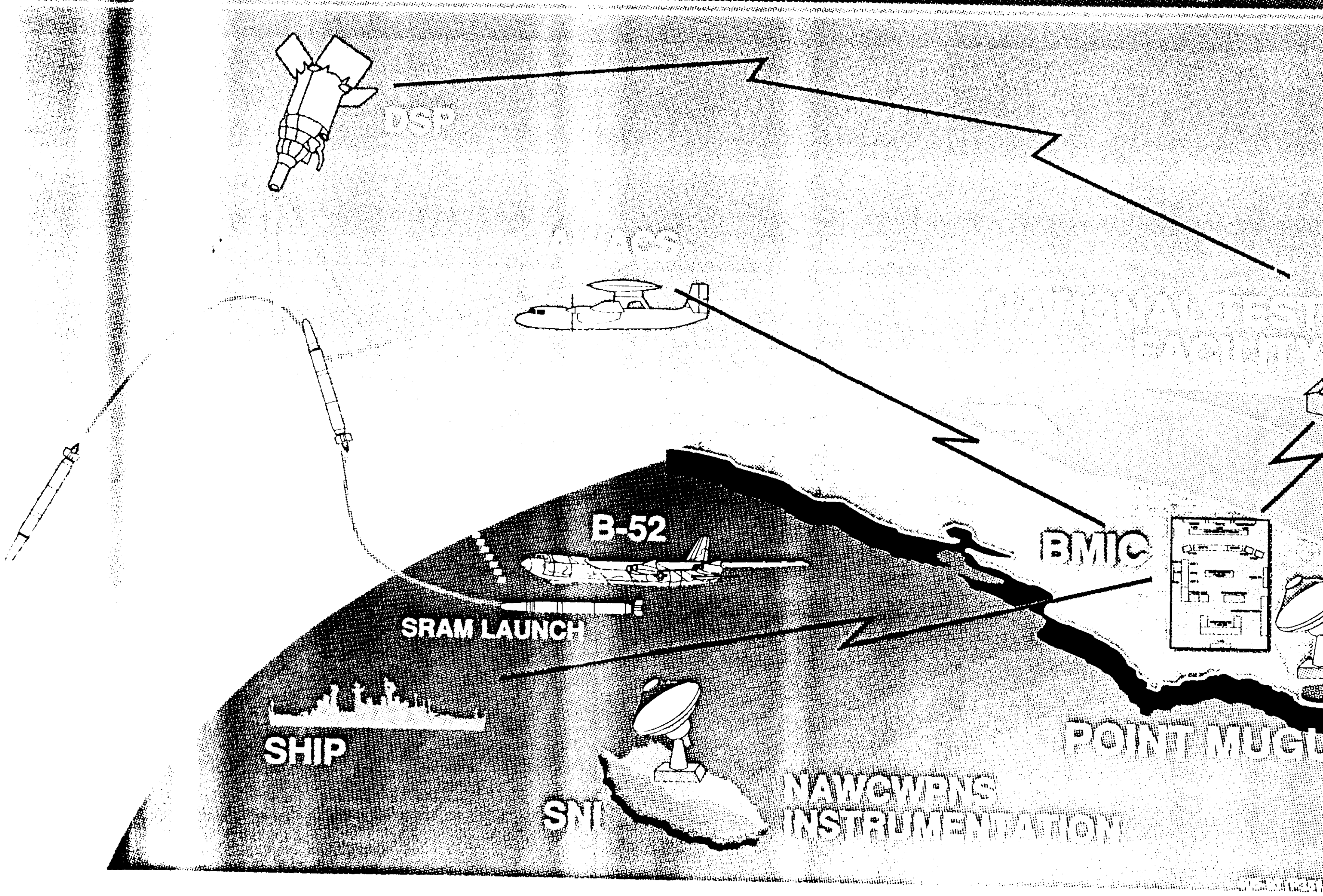
SELF DEFENSE TEST SHIP

Located @ Hueneme

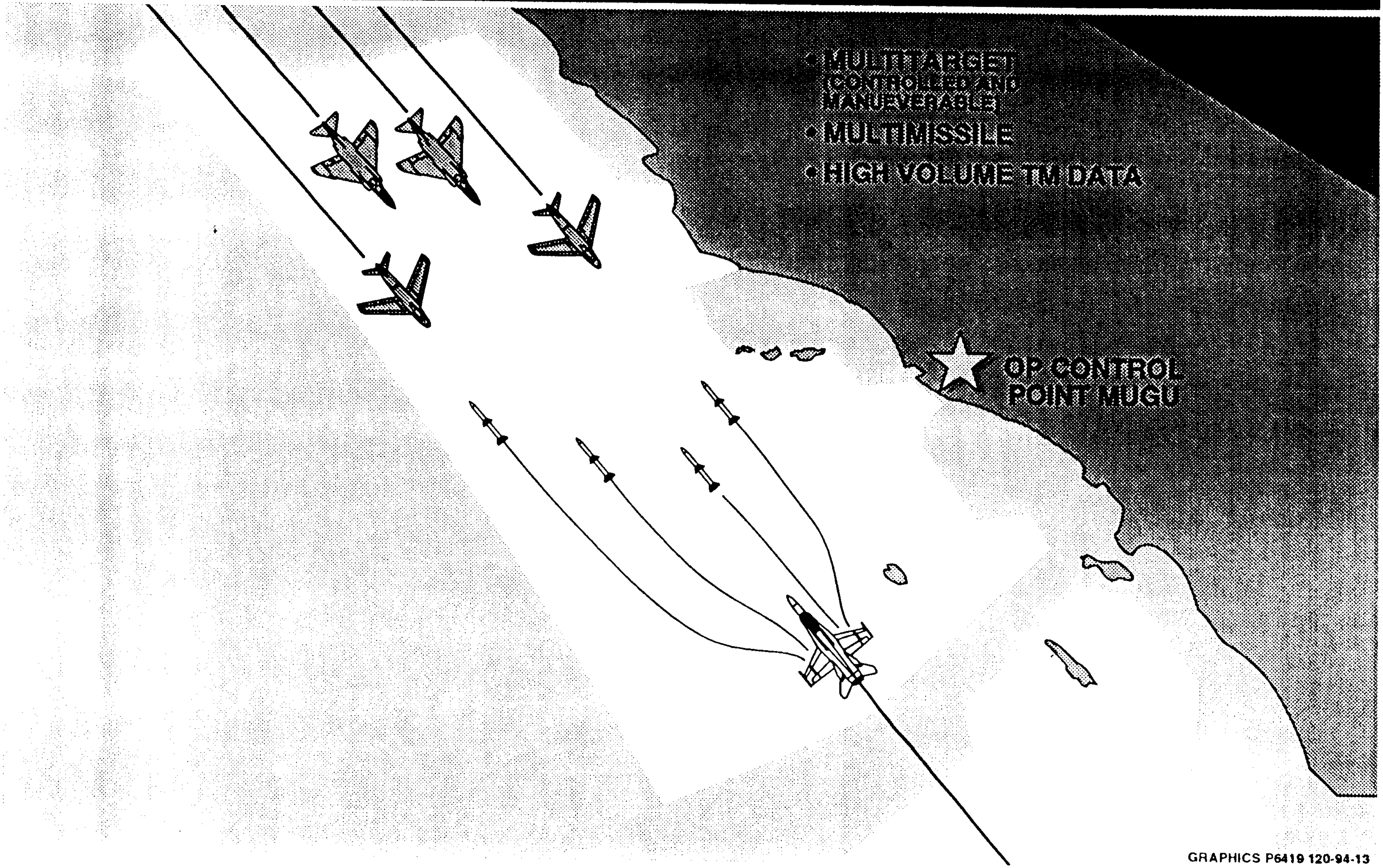
1 SDTS/WCS Control
2 Launch Detect
3 Cueing Updates
4 Cueing Data
5 WCS Data
6 Umpire and Analysis
7 Remote Viewing
8 Test Management
9 Threat



SRAM TECHNOLOGY FLIGHT 2



COMPLEX T&E SCENARIOS
AMRAAM 4 ON 4



GRAPHICS P6419 120-94-13

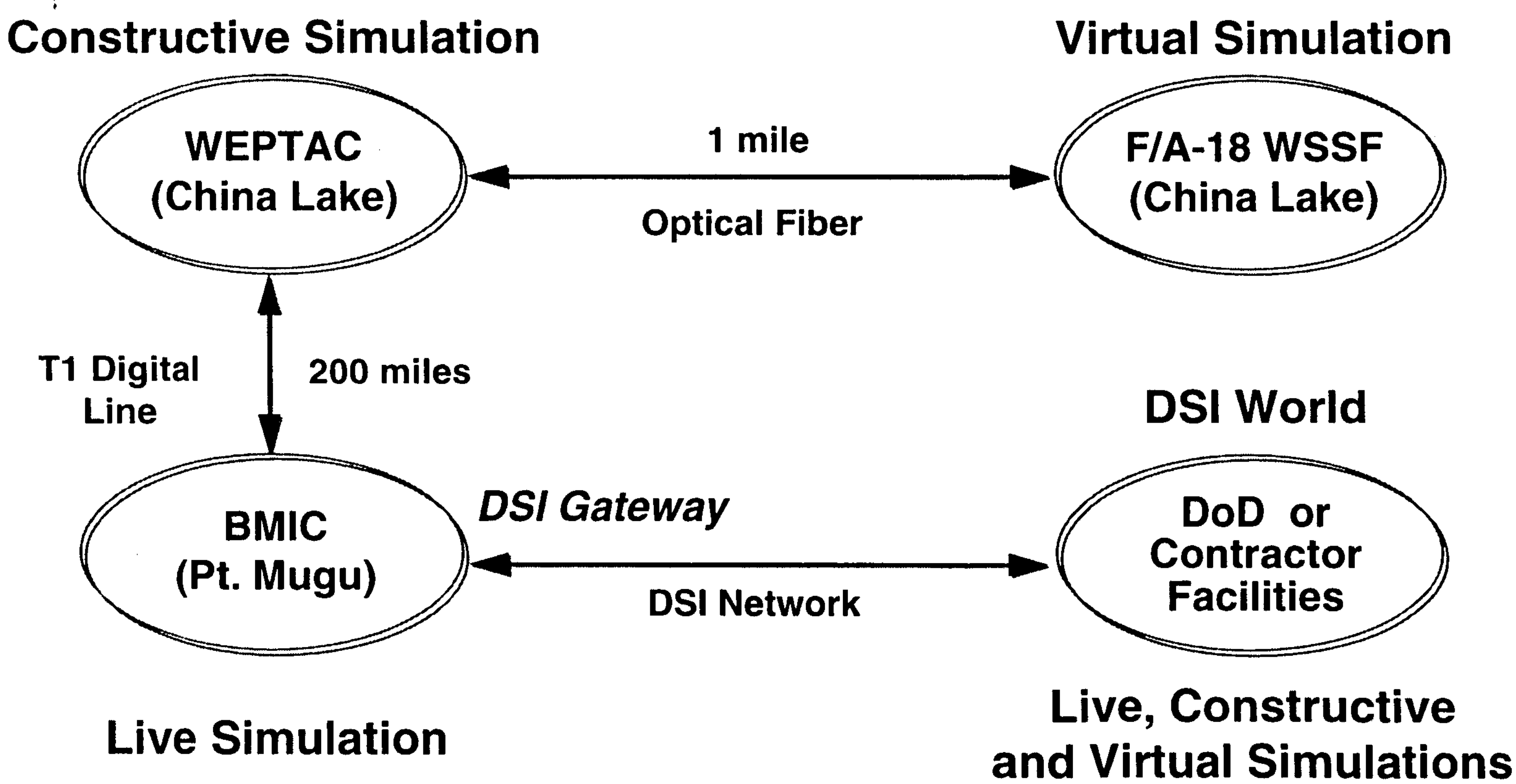
MODELING AND SIMULATION
THE EXPANDING FUTURE OF TEST & TRAINING

NAWC
NAVAL AIR WARFARE CENTER

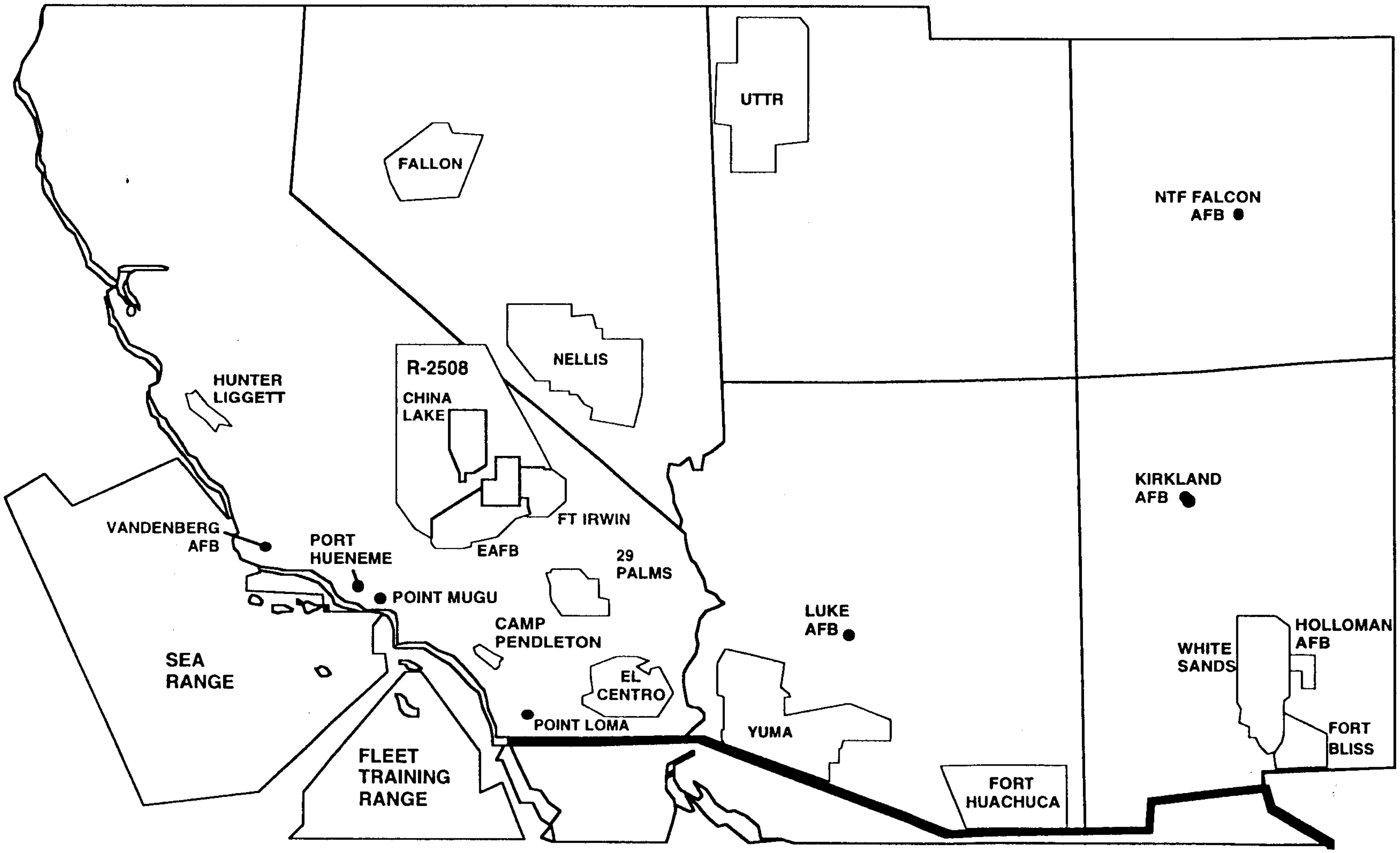
PR&F
DEPARTMENT

- KNOWLEDGE OF WHAT IS GOING TO HAPPEN BEFORE OR AS IT HAPPENS
- PRF ROLES IN MODELING AND SIMULATION
  - EVENT PLANNING AND REHEARSAL
  - SYNERGY - SOFTWARE SUPPORT ACTIVITIES, WAR GAMING, WEAPONS LABS, SHIP SYSTEMS LABS, AND THE RANGES COME TOGETHER
  - KNOWING WHAT IS A CRITICAL EVENT BEFORE IT OCCURS IN "REAL" WORLD
  - KNOWING WHEN TO LOOK FOR CRITICAL EVENTS AND THEIR ASSOCIATED DATA POINTS
  - REPETITION OF CRITICAL EVENTS IN THE SAME TEST/ TRAINING OPERATION
  - TYING MULTIPLE ACTIVITIES AND FORCES TOGETHER FROM A DISTANCE - WHY DUPLICATE WHEN THE REAL MODEL IS AVAILABLE?

Inter-Range Internetted System

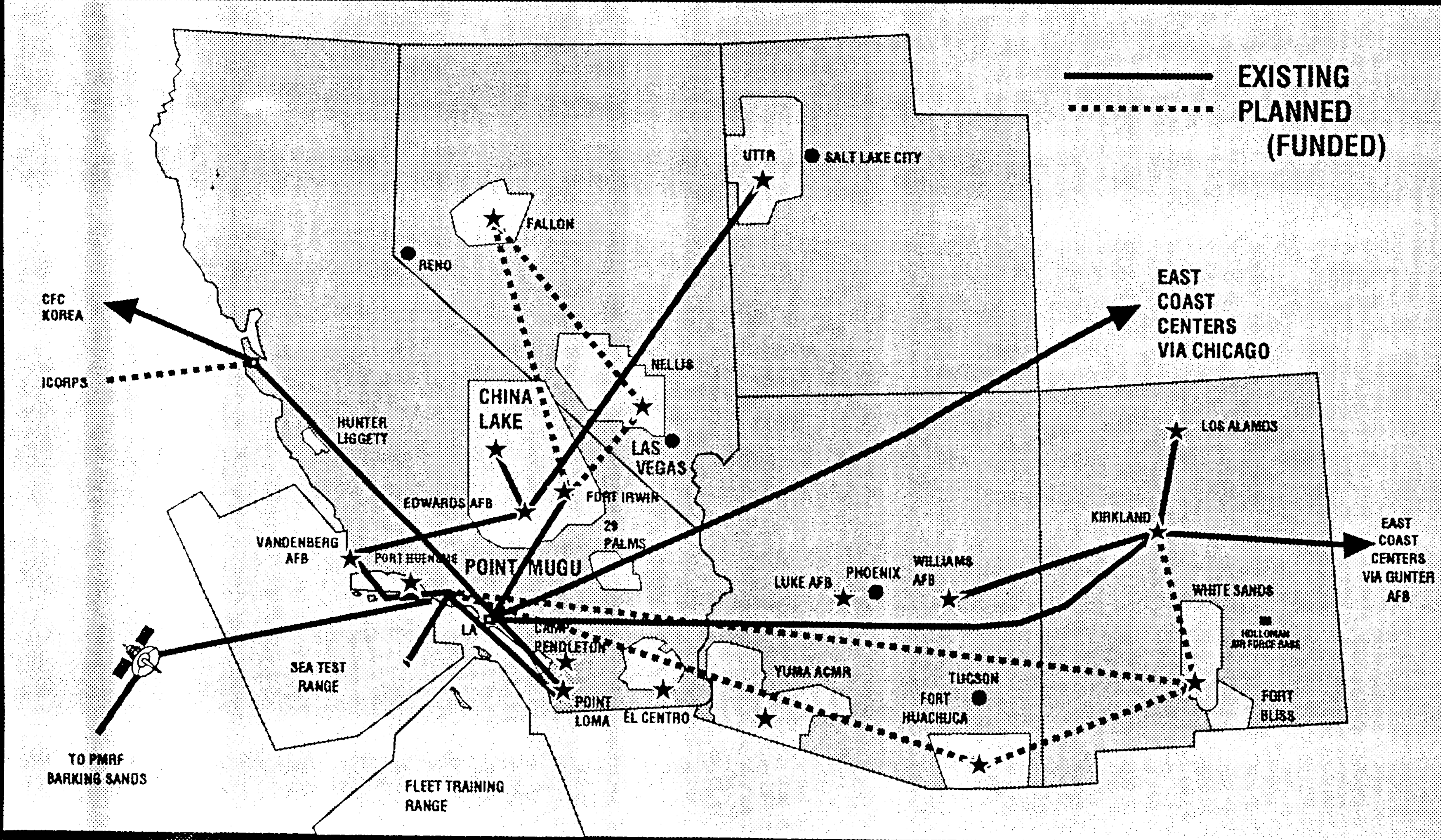


SOUTHWESTERN RANGE COMPLEX



NAWC
NAVAL AIR WARFARE CENTER

WEST COAST RESOURCES
UNITE - UNIFIED NETWORK FOR INTEROPERABILITY TEST AND TRAINING EVOLUTIONS



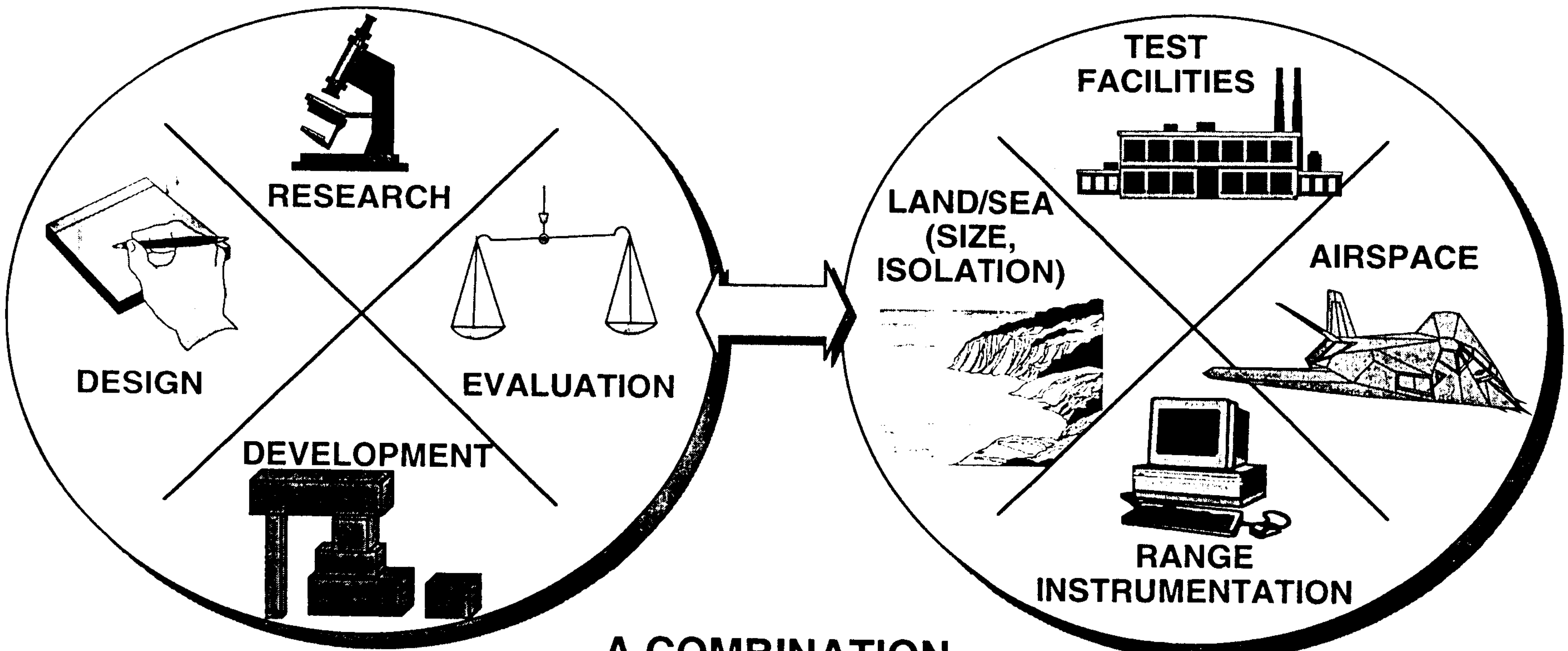
NAVAL AIR WARFARE CENTER

NAWCWPNS

PR&F DEPARTMENT

LABORATORIES

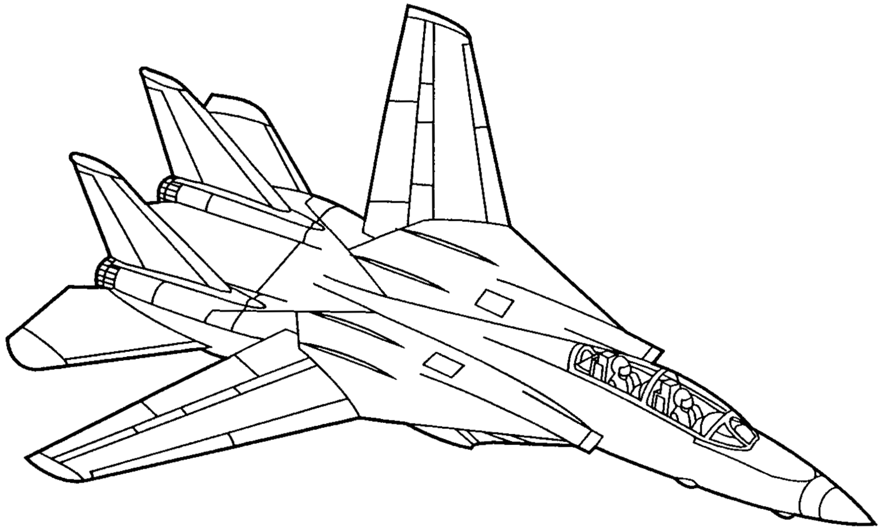
RANGES



A COMBINATION NOT DUPLICATED ELSEWHERE

Document Separator

Document Separator



F-14 WEAPON SYSTEM SUPPORT ACTIVITY (WSSA)

Brad Gilmer
Site Manager
F-14 Integrated Product Team

4-30-92

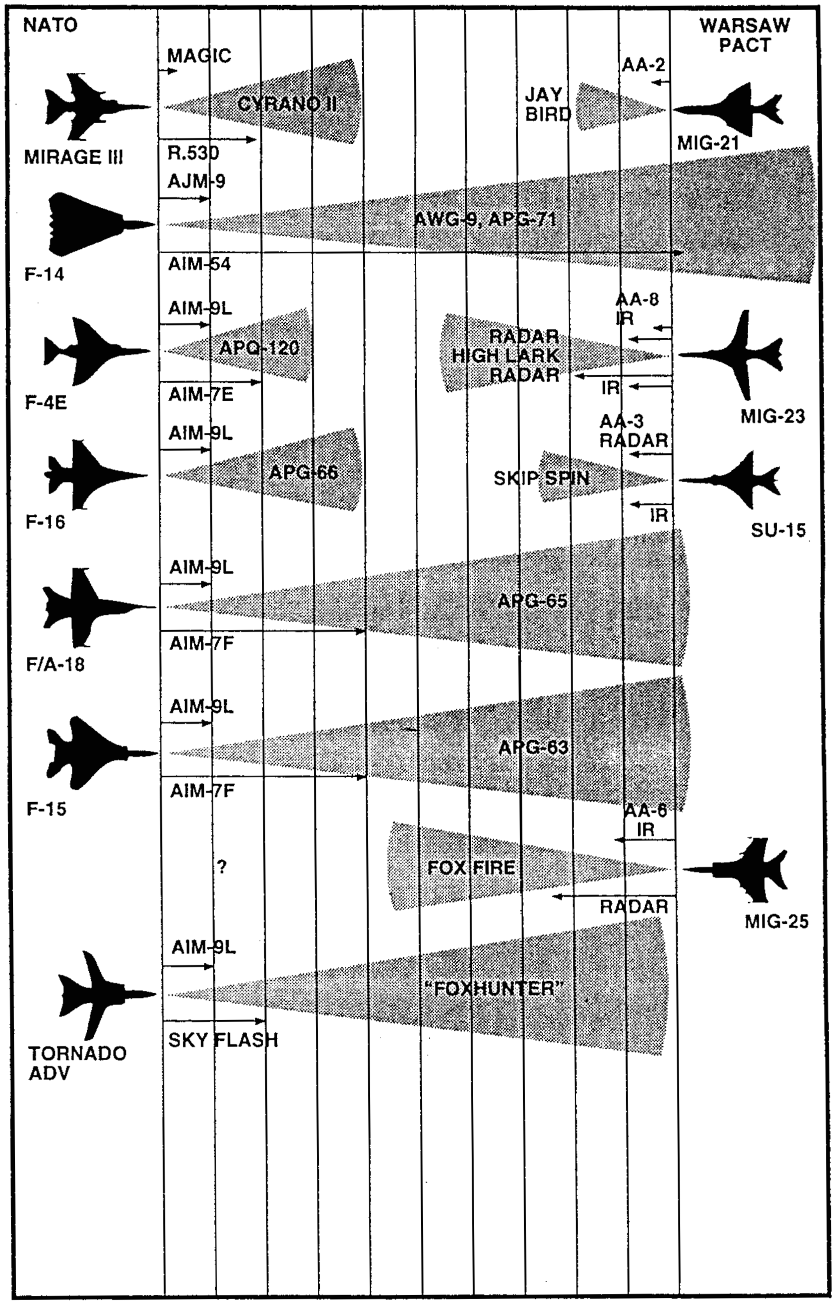
OUTLINE

- F-14 WSSA MISSION
- CURRENT PROGRAMS
- LABS USED FOR DEVELOPMENT AND TEST & EVALUATION
- TOUR OF FIXED BASE FACILITIES

F-14 MISSIONS

- AIR-TO-AIR INTERCEPT
  - PROTECT CARRIER BATTLE GROUP
  - SHOOT DOWN INCOMING AIRCRAFT BEFORE THEY CAN LAUNCH WEAPONS
  - REQUIRES LONG-RANGE WEAPONS
  - REQUIRES EVEN LONGER RANGE SENSORS
    - AWG-9, APG-71, IRSTS
  - YOU MUST SEE THEM TO SHOOT: F-14 SENSORS DETECT TARGETS AT MORE THAN 2X RANGE OF OTHER NAVY AIRCRAFT
  - PHOENIX IS LONGEST RANGE OF AIR-TO-AIR MISSILES

THE TECHNOLOGY OF AIR COMBAT
NATO/WARSAW PACT RADAR AND AAM RANGES

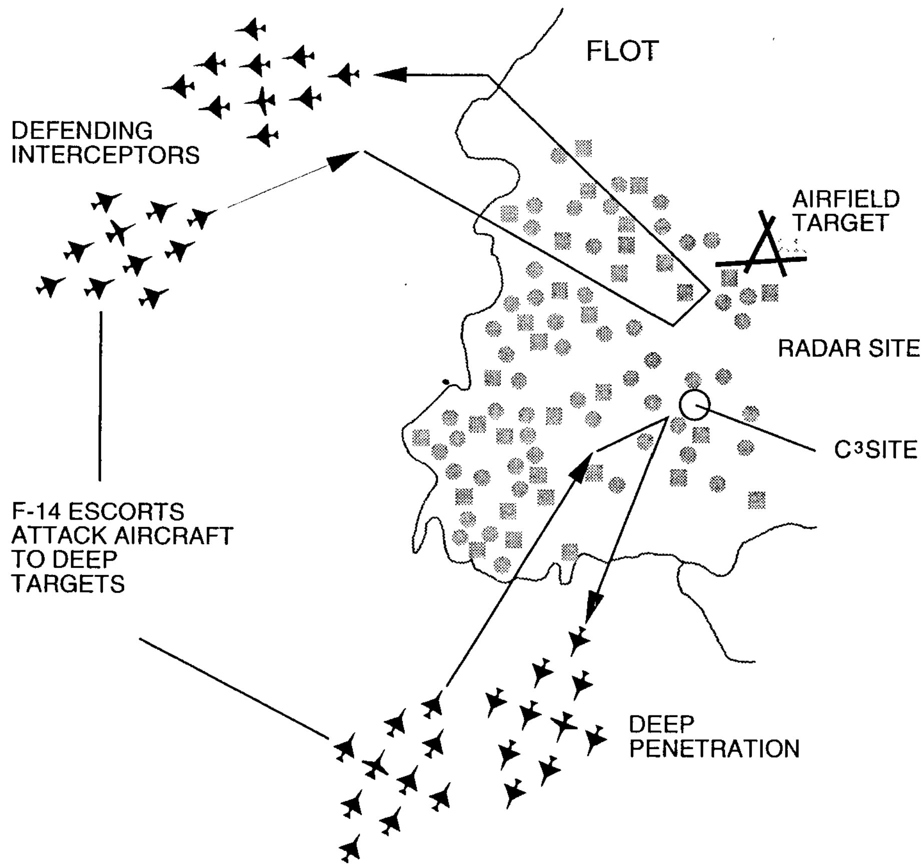


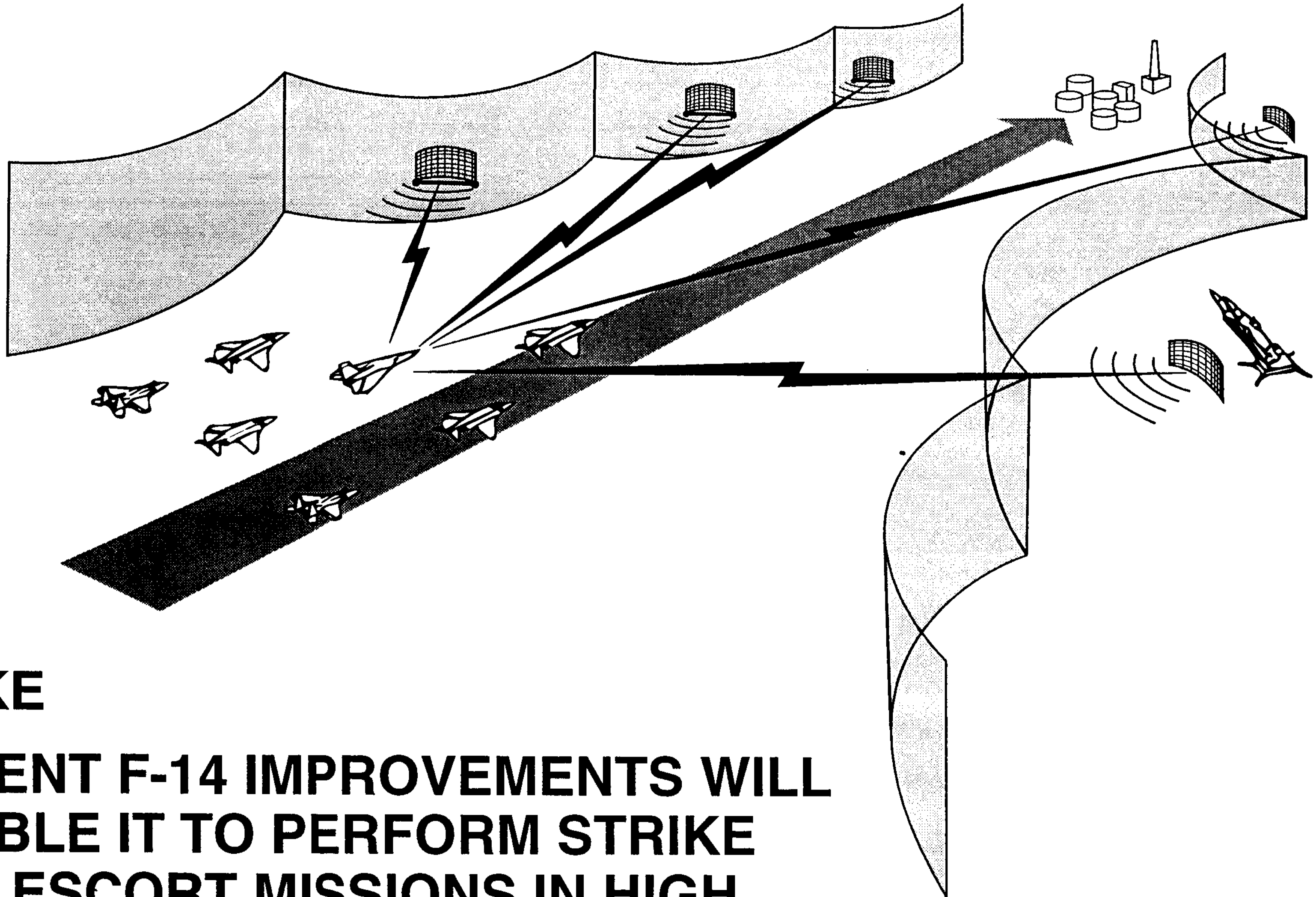
F-14 MISSIONS

- **STRIKE ESCORT ROLE**
  - **REQUIRES LONG RANGE**
  - **REQUIRES SENSORS WHICH DETECT TARGETS AT LONG RANGE OVER LAND AND SEA AND IN THE LAND/SEA TRANSITION**

F-14 CAN TRACK TARGETS OVER WATER AS WELL AS IN GROUND CLUTTER AND CAN TRACK TARGETS WITHOUT BEING DETECTED

THE PENETRATION ESCORT ROLE

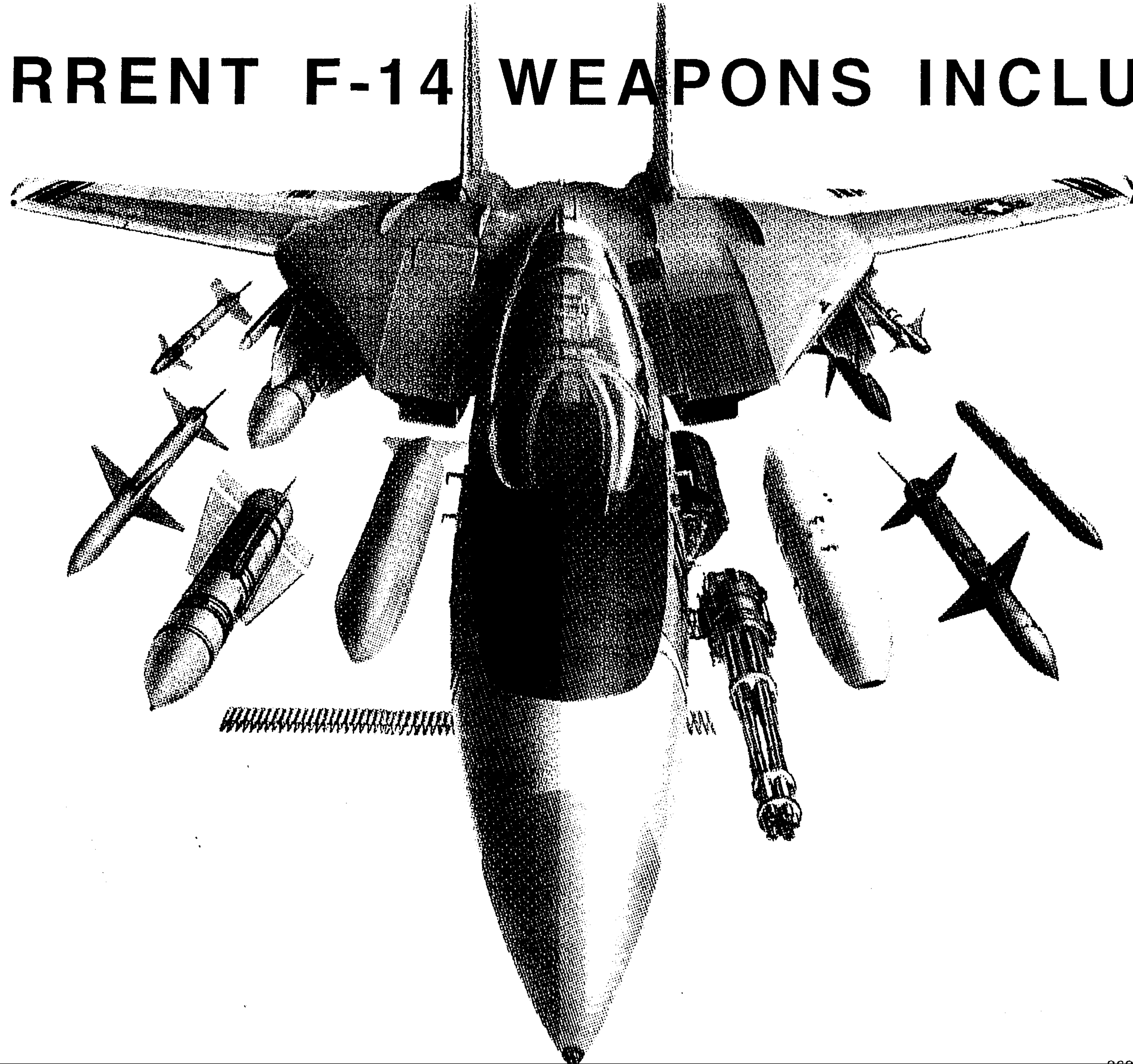




- **STRIKE**

RECENT F-14 IMPROVEMENTS WILL ENABLE IT TO PERFORM STRIKE AND ESCORT MISSIONS IN HIGH THREAT ENVIRONMENTS

CURRENT F-14 WEAPONS INCLUDE



ROLE OF THE WSSA

- A WEAPON SYSTEM IS THE COMBINATION OF AIRCRAFT, SENSORS, AVIONICS, WEAPONS, AND AIRCREW

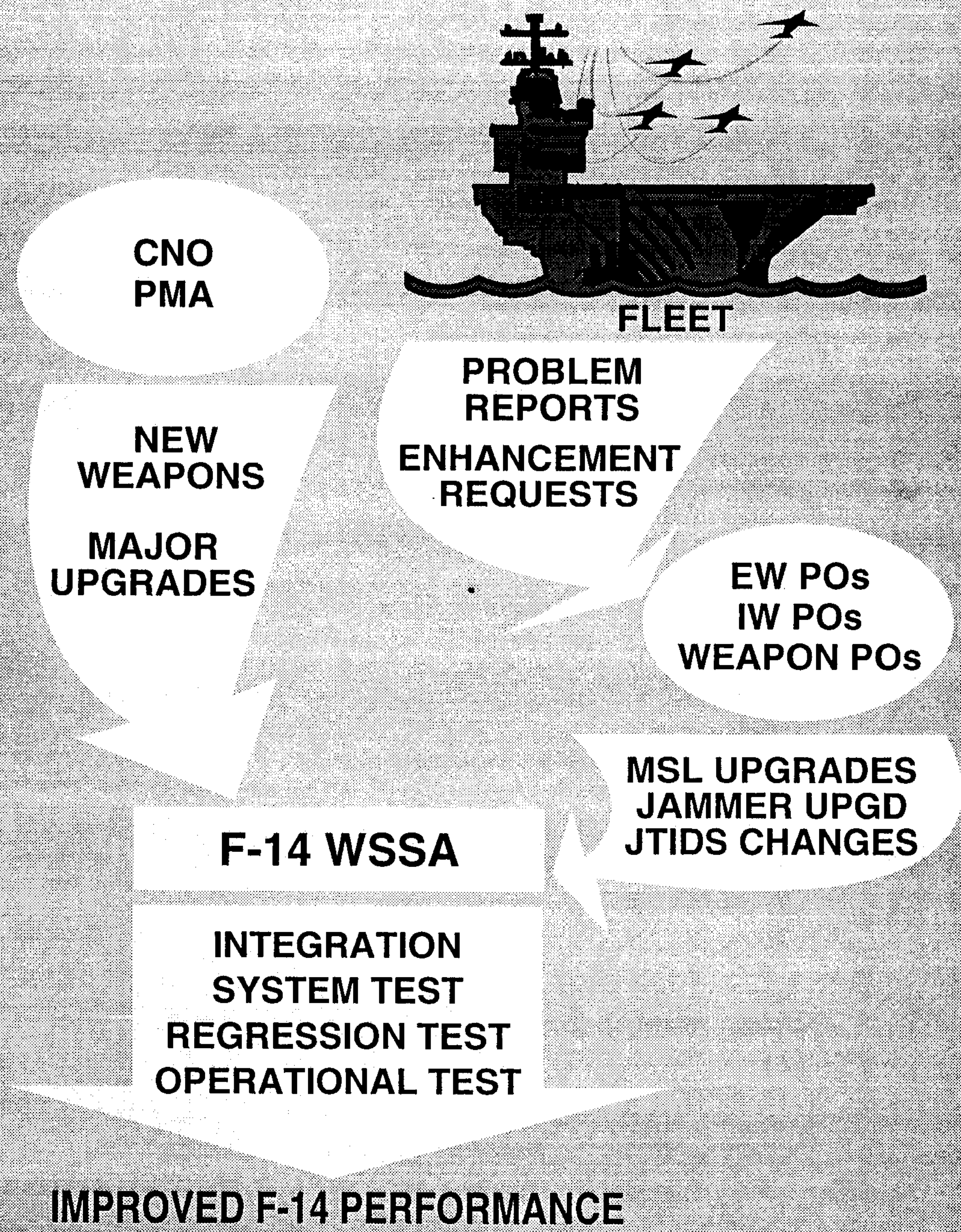
- THE WSSA'S ROLE IS TO CONTINUOUSLY UPDATE THE TACTICAL PERFORMANCE OF THE WEAPON SYSTEM FROM THE TIME IT ENTERS FLEET SERVICE UNTIL ITS REMOVAL FROM THE INVENTORY

  -UPDATES DEVELOPED THROUGH PERIODIC CHANGES IN AVIONICS HARDWARE AND OPERATIONAL FLIGHT SOFTWARE

  -THE WSSA PERFORMS DESIGN, INTEGRATION, TEST & EVALUATION, AND FLEET INTRODUCTION

WHY UPDATES ARE NECESSARY

- AS LONG AS F-14 IS IN THE INVENTORY THERE CONTINUES TO BE A REQUIREMENT FOR SYSTEM UPGRADES
  - CHANGING THREATS
  - TECHNOLOGY IMPROVEMENTS/ OBSOLESCENCE
  - DRIVEN BY IMPROVEMENTS TO OTHER COMMON SYSTEMS
  - SINGLE SHIPBOARD CONFIGURATIONS DRIVE RELEASE SCHEDULES (e.g., ONE ALR-67 CONFIG FOR MULTIPLE PLATFORMS ABOARD SHIP)



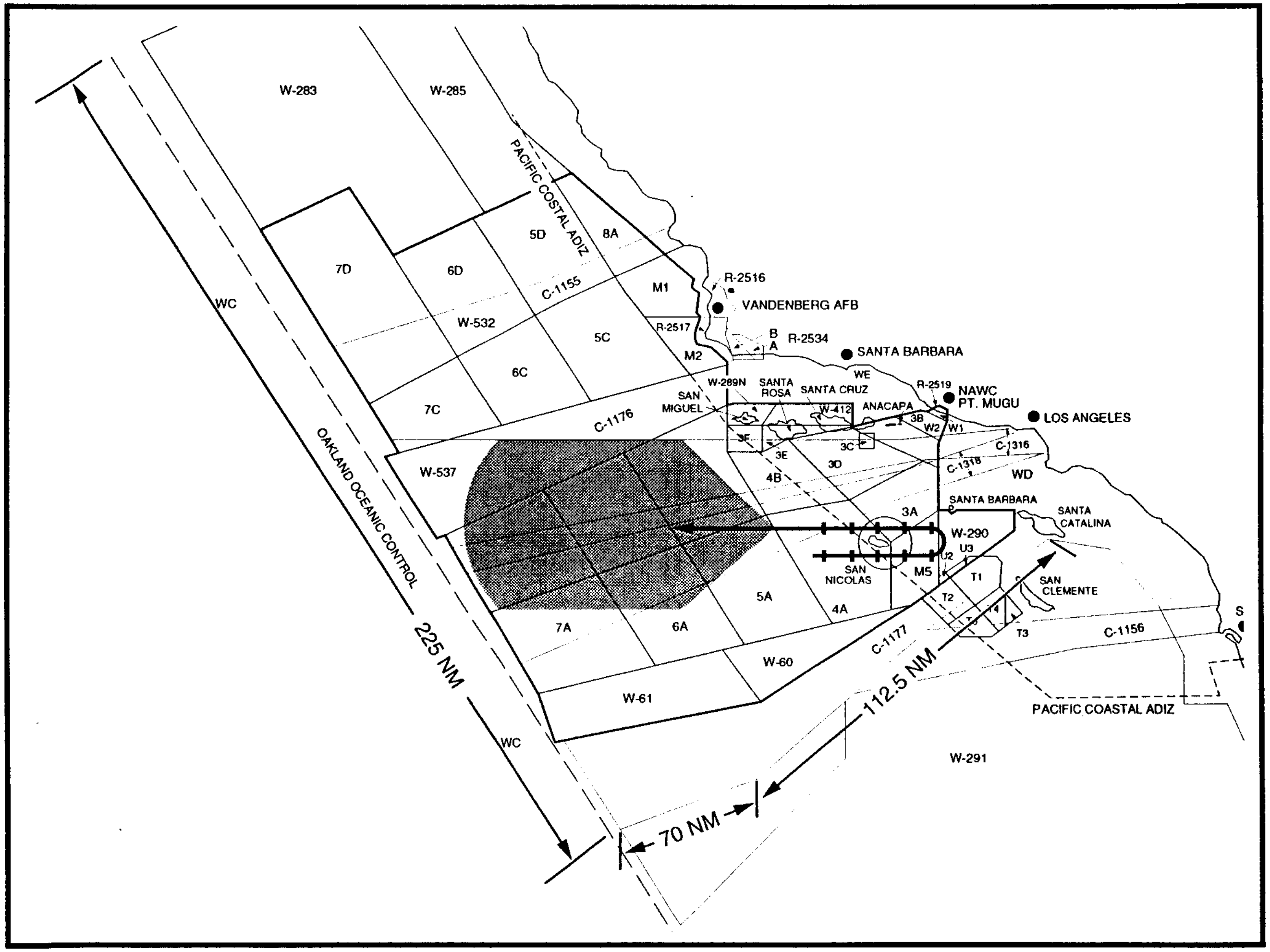
F-14 WSSA LOCATION

- F-14 WSSA ORIGINALLY LOCATED AT POINT MUGU TO SUPPORT INITIAL F-14 (GRUMMAN) AND AWG-9/PHOENIX (HUGHES) WEAPON SYSTEM INTEGRATION
- ADJACENT TO SEA TEST RANGE
- ONLY FACILITY IN EXISTENCE
  - ALL F-14 AVIONICS, WEAPONS, AND TACTICAL SOFTWARE SUPPORT IS HERE INCLUDING PRIME CONTRACTORS (GRUMMAN AND HUGHES)

FLIGHT TESTS REQUIRE LARGE OPEN AIR TEST RANGE

NAWC Weapons Division NAVAL AIR WARFARE CENTER

- **LONG-RANGE MISSILE INTEGRATION**
- **GROUND CLUTTER FREE (OVER WATER) SENSOR INTEGRATION ENVIRONMENT**
- **COMMAND, COMMUNICATION, AND CONTROL (C^3) WITH SHIPS AND LARGE NUMBER OF AIRCRAFT ON AND OFF RANGE**



F-14 CONFIGURATIONS

- F-14 WSSA SUPPORTS 3 DIFFERENT CONFIGURATIONS
  - F-14A (PRIMARILY ANALOG AVIONICS)
  - F-14B UPGRADE (NEW ENGINES, MIXTURE OF OLD/NEW AVIONICS)
  - F-14D (NEW AVIONICS, NEW ENGINES)
- F-14 SYSTEM ENGINEERING EXPERTISE IS UNIQUE TO THE F-14 HARDWARE AND MISSION
  - WEAPON SYSTEM UPGRADES REQUIRE THREE SEPARATE TEAMS, LABORATORIES, AND FLIGHT TEST VEHICLES AT POINT MUGU
    - » F-14A TEAM, F-14B UPGRADE TEAM AND F-14D TEAM

F-14 PROGRAM STATUS

- F-14A
  - NEW COMPUTER SIGNAL DATA CONVERTER (LECP)
  - NEW BROADBAND DIRECTIONAL DATA LINK
- F-14B
  - NEW AVIONICS (MISSION COMPUTER, DISPLAY PROCESSOR, STORES MANAGEMENT PROCESSOR)
- F-14D
  - THREE POST FSD UPGRADES FUNDED
    IRSTS, JTIDS, ASPJ, TRAINING MODES
    OVERLAND RADAR MODES, AIR-TO-GROUND ATTACK
    AMRAAM, GPS, IMPROVED MISSILE LAUNCH CAPABILITY
- BUDGETING IN PROCESS FOR NEXT UPGRADES
  - PRECISION STRIKE FOR F-14B AND F-14D (CIRCA FY98)
  - GPS FOR F-14A AND F-14B (CIRCA FY99)
  - IMPROVED TRAINING PODS INTEGRATION (CIRCA FY00)
  - IMPROVED DATA LINK (C^3) CAPABILITIES (CIRCA FY01)
  - .....

DEVELOPMENT AND T&E RESOURCES

THE F-14 WEAPON SYSTEM IMPROVEMENT PROCESS REQUIRES:

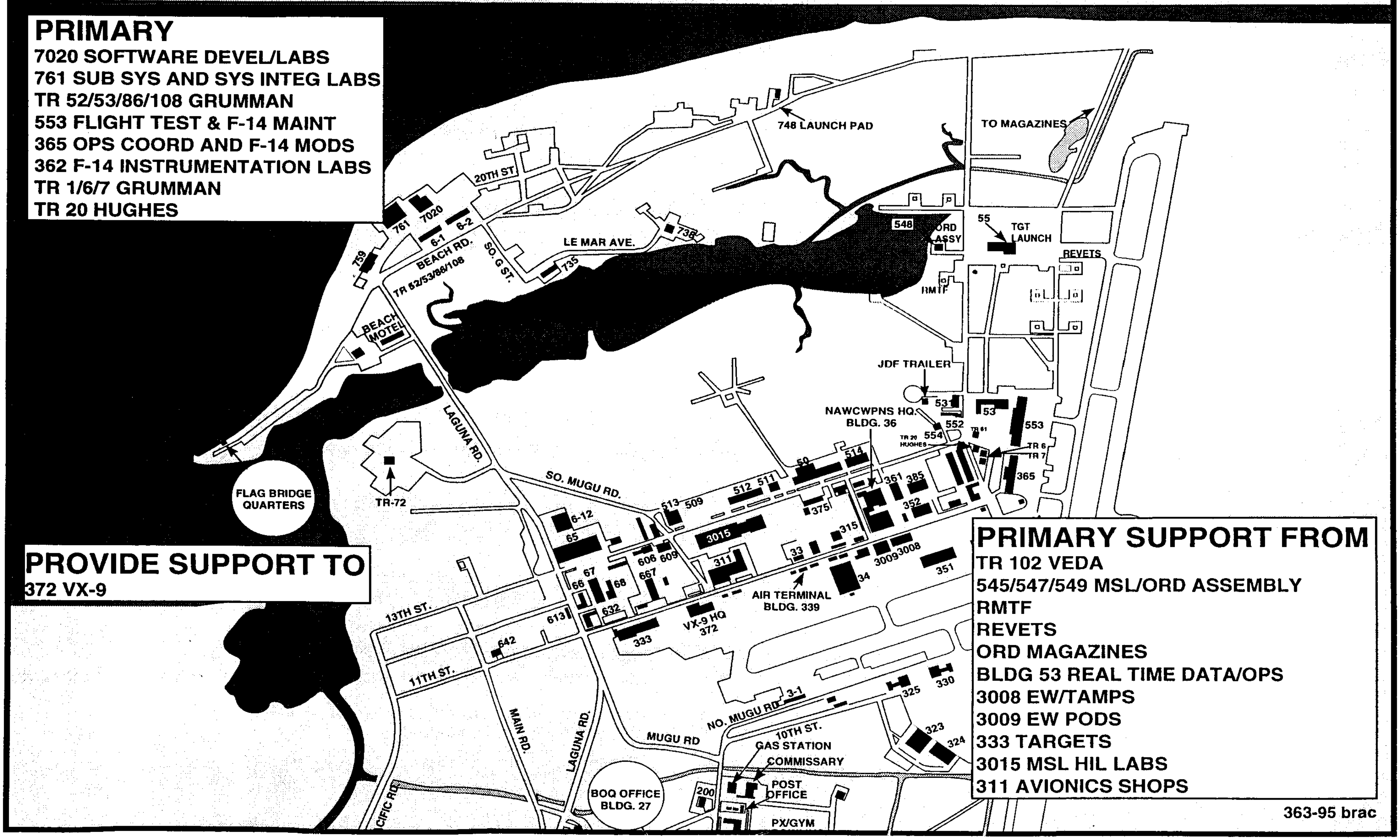
- HIGHLY SKILLED F-14 SPECIFIC WORK FORCE
  - NAVY CIVILIAN AND MILITARY
  - NORTHROP-GRUMMAN
  - HUGHES AIRCRAFT
- SOFTWARE DEVELOPMENT FACILITY
- SUBSYSTEM DEVELOPMENT LABS
- SYSTEM INTEGRATION TEST LABS
- HIGHLY INSTRUMENTED F-14A/B/D TEST AIRCRAFT
- F-14 INSTRUMENTATION DATA REDUCTION FACILITY
- DATA ANALYSIS LABS
- TEST RANGES (POINT MUGU, CHINA LAKE, WHITE SANDS, YUMA, NELLIS) WITH FULL TARGET AND ORDNANCE SUPPORT

NAWC Weapons Division
NAVAL AIR WARFARE CENTER

F-14 WSSA FACILITIES

PRIMARY

7020 SOFTWARE DEVEL/LABS
761 SUB SYS AND SYS INTEG LABS
TR 52/53/86/108 GRUMMAN
553 FLIGHT TEST & F-14 MAINT
365 OPS COORD AND F-14 MODS
362 F-14 INSTRUMENTATION LABS
TR 1/6/7 GRUMMAN
TR 20 HUGHES



PROVIDE SUPPORT TO

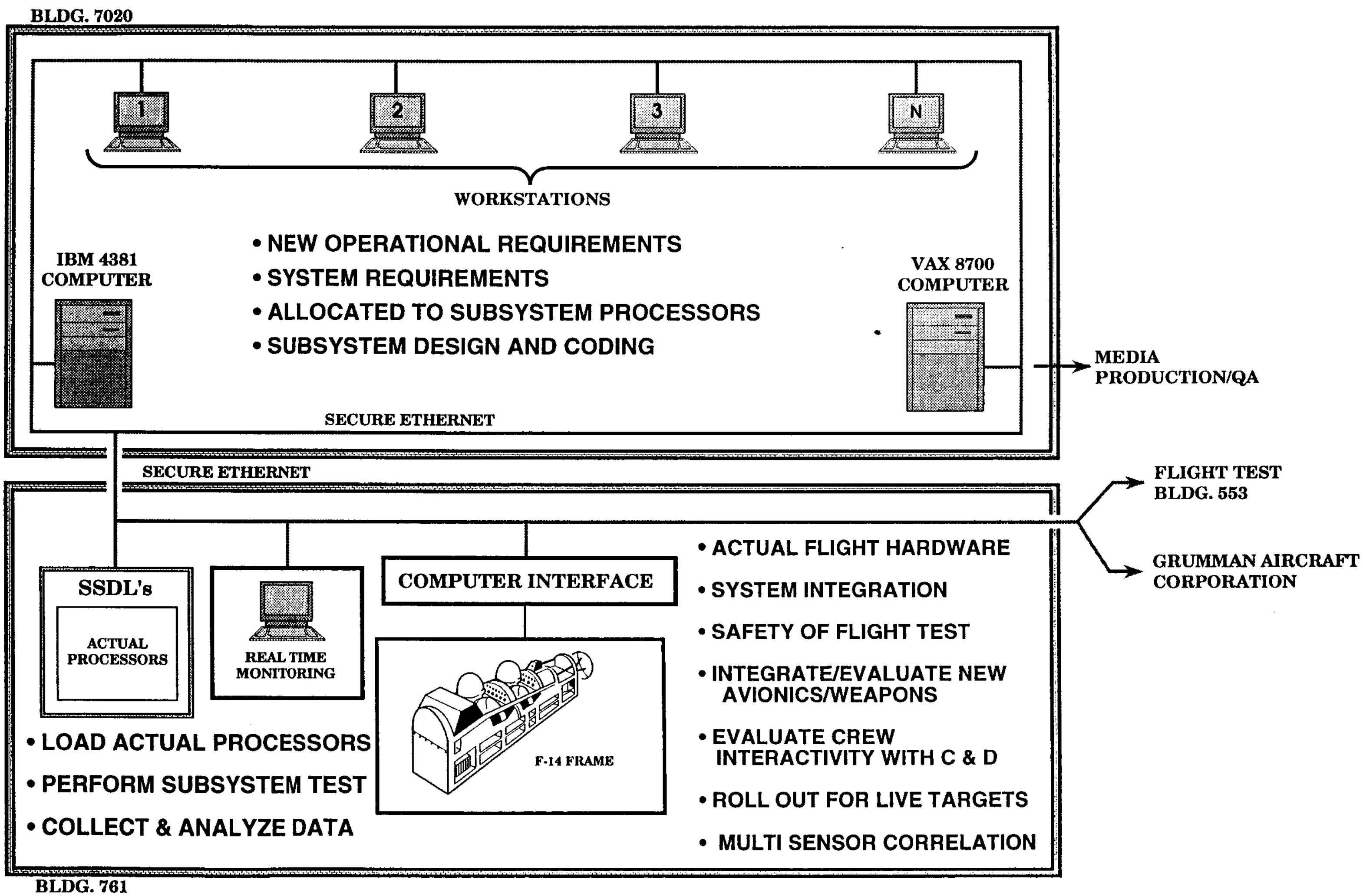
372 VX-9

PRIMARY SUPPORT FROM

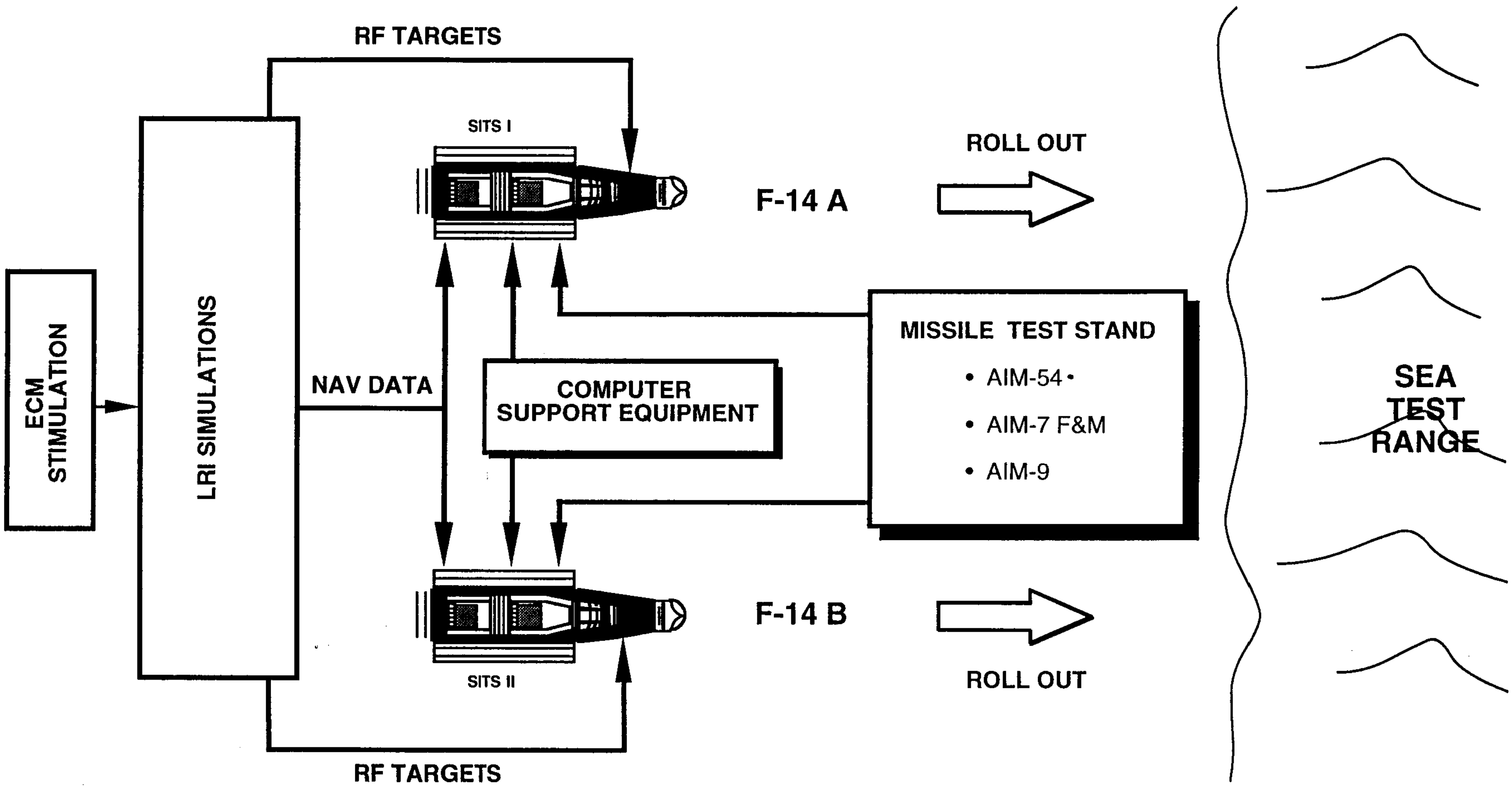
TR 102 VEDA
545/547/549 MSL/ORD ASSEMBLY
RMTF
REVETS
ORD MAGAZINES
BLDG 53 REAL TIME DATA/OPS
3008 EW/TAMPS
3009 EW PODS
333 TARGETS
3015 MSL HIL LABS
311 AVIONICS SHOPS

363-95 brac

BEACH DESIGN CENTER

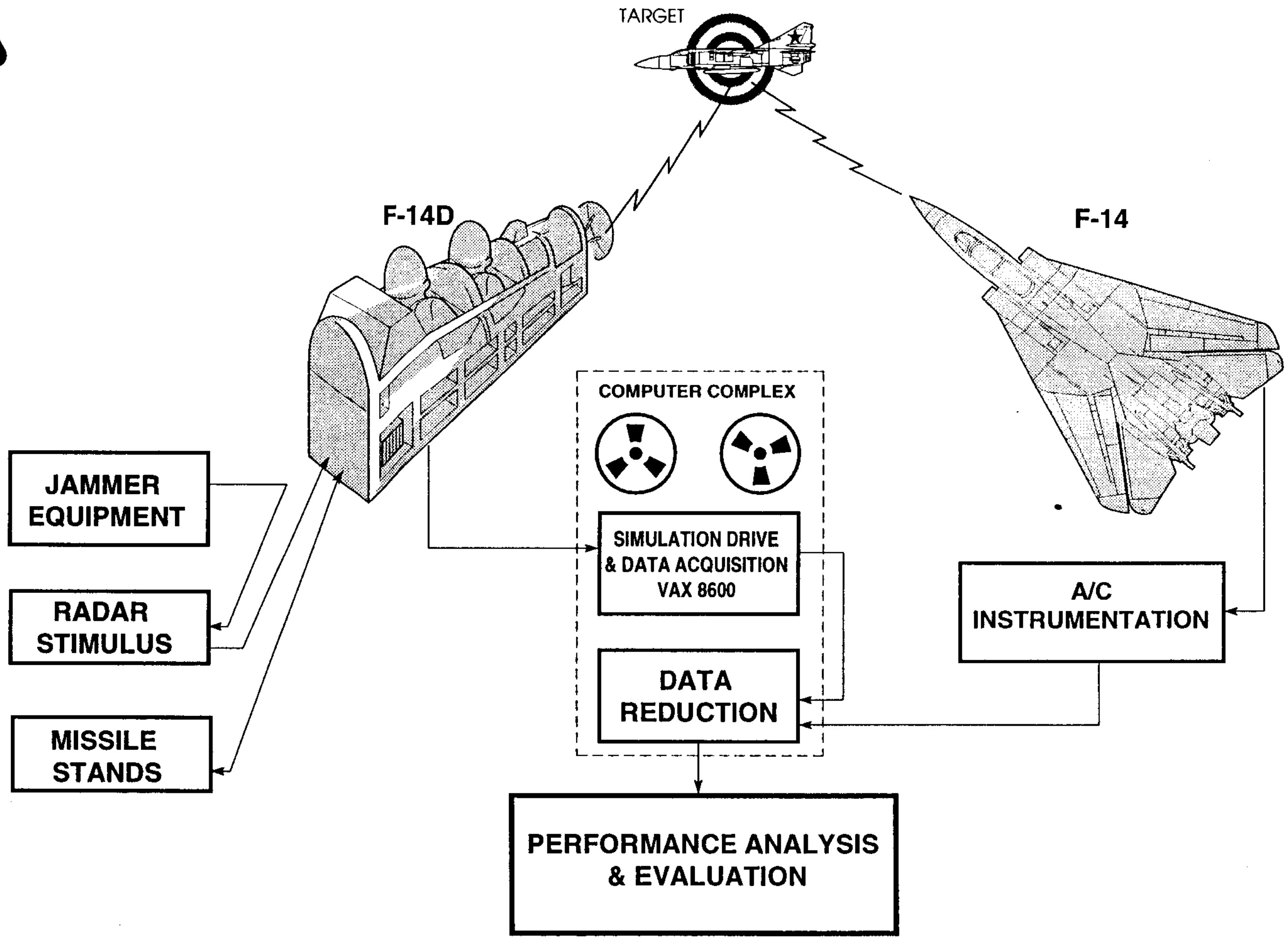


F-14 SYSTEMS INTEGRATION LABS



- **PRECISION REPEATABILITY OF TEST ENVIRONMENT**
- **SUBSTANTIAL COST SAVINGS COMPARED TO FLIGHT TEST**
- **SOFTWARE SAFETY OF FLIGHT CERTIFICATION TESTING**

INTEGRATION CENTER CAPABILITIES



- COMMON DATA PRODUCTS FOR POST TEST PERFORMANCE ASSESSMENT
- REAL TIME INTERACTIVE MODIFICATION OF SYSTEM PERFORMANCE
- INTERNETTING WITH OTHER T&E ACTIVITIES (e.g. NRAD SAN DIEGO FOR JTIDS)

SUMMARY

- NAWCWPNS PROVIDES F-14 MISSION SYSTEM UPGRADES IN SUPPORT OF THE PROGRAM EXECUTIVE OFFICER FOR TACAIR
  - CARRIER AVIATION PLAN CANNOT ACCOMMODATE AN INTERRUPTION IN SUPPORT
- F-14 GROUND TEST FACILITIES ARE AN INTEGRAL PART OF THIS SUPPORT THAT ONLY EXIST HERE AND WOULD REQUIRE TURNKEY DUPLICATION AT ANOTHER SITE
- F-14 EXPERTISE HAS TAKEN 25+ YEARS TO DEVELOP AND ANY SIGNIFICANT LOSS WOULD RESULT IN AN INTERRUPTION OF F-14 UPGRADES AND IN-SERVICE ENGINEERING SUPPORT

Document Separator

• Intro

• Info- 1995 Fact Finder File. NAWS provides full range of services for 8500 personnel (2000 military, 3500 civilian, 3000 contractors). Also for 3400 housing residents
• Admin, Supply, PW, Security, Weapons, Air Ops, OSH, SNI
• 4500 acres, 6 miles of coast line and 1000 buildings
• Indian Village (Chumash) and Fish Camp
• Broome Family/Rancho Guadalasca/23k acres/shoreline testing of missiles and pilotless aircraft.
• V-1 Buzz Bomb/Loon/50years
• Land use compatibility/strawberries/berm-1984
• Great community relationships
• Laguna Peak/access/tracking and control radars and command destruct

Housing

• 3400 residents in 1000 homes...668 on base...200 whole house repair/100 new (junior enlisted)....315 in Camarillo (Oxnard AFB)
• High cost of living/housing list/supplemental offbase housing
• NOE-future improvements (lighting, entrances, curbs/gutter, utilities/whole house repair, completed 24 playgrounds

CBQ

• 22 buildings/1000 beds/BUPERS 4 Star Award/NAVAIR Innkeeer of the year 1995
• Good combo of contractor rehab and self help (saved half mil this year so far)
• Innovative mgt-central reservation sys and third party telephone

Galley

• 1.4 mil rehab
• semifinalist for Admiral Edward Ney Award/Medium Category
• Foundation of basic QOL for single sailor along with CBQ

Base Theater...underway to update and modernize
Ball Fields..2 lighted intramural and youth baseball/soccer..1989. WX for year round sports. 2 Youth Centers, CDC, FSC, Chapel, Auto Hobby, Pool, etc

NEX

• Branch of Hueneme
• Mutual work with MWR and Port Hueneme NEX to save costs
• Low expenses and profitable
• 7 mil/year (300k profit)

Fitness Center
- Aerobics, gym, roller Hockey, weights, bowling alley
- MWR, ITT, leisure travel

Commissary
- 3 mil year/MG Beale/new Store/branch/combined accounting

NAR..127
- VP65..119, HCS5..100, great recruiting area
- Hosted annual joint exercise, Lobo Flag, with up to 65 aircraft launching from PM

Airfield
- 11K and 5.5K runways/E-28/ILS/PAR/3 C-5 sports
- Control airspace below 8k in valley/150k ops per year

Users
- Airhead for Seabees Port Hueneme..regular batt and desert storm/around the world
- NAR/2 squadrons
- 146th ANG/largest C-130 guard wing in nation/fought Malibu fires from here with MAFFS
- Logistics support ferrying equip and personnel to CL and SNI. Can rapidly and routinely transit.
- Point out F-4's and VX-9 Det (OT&E)
- All full scale and sub-scale target ops and maint originate from this field. Launch directly into the restricted area..covers half the field
- Surveillance , control, and range clearance a/c vital to sea test range
- WTS PM F14 DT collocated with OT
- Support det's for SLAM, HARM and the other fleet training
- NTC/C5's/Apaches's
- Marine Expeditionary Forces
- True Joint Air Station with full weapons support

"Point" Mugu

Fire Department
- hazmat, mutual aid, best fire dept in Navy/Ogden

Natural Gas Refueling Station/30 converted vehicles, cleaner and cheaper

Hazmat Program

- Point Mugu model/now DOD model
- Simple concept/HICS/30 minute response
- Reduces Hazmat inventory and costs/combined with effective recycling

Environmental

- No cleanup sites on NPL
- Best preserved salt water lagoon on the west coast. Covers more than 1/3 of base acreage (2000 acres)
- Harbor seals
- 7 endangered and threatened species: light footed clapper rail, California least tern, California brown pelican, snowy plover, saltmarsh bird's beak (plant), peregrine falcon, belding's savannah sparrow
- Undergoing cooperative consultation with US fish and Wildlife service regarding a plan for overall management of our endangered and threatened species at Mugu and SNI.
- Inventory and survey by our in-house ecologists provides that no loss of work or major adverse mission affects from impacts to sensitive species.
- Strong relationship with environmental regulators
- Active environmental public outreach program for schools, environmental groups, and interested public
- Environmental learning center
- Archeological inventory info providing that no adverse mission effects with excellent public rations data on the subject

World famous Beach Motel and RV park/outstanding QOL programs/pristine beach and environment

Document Separator

EA-6B

WEAPON SYSTEM SUPPORT ACTIVITY

EA-6B TEAM POINT MUGU

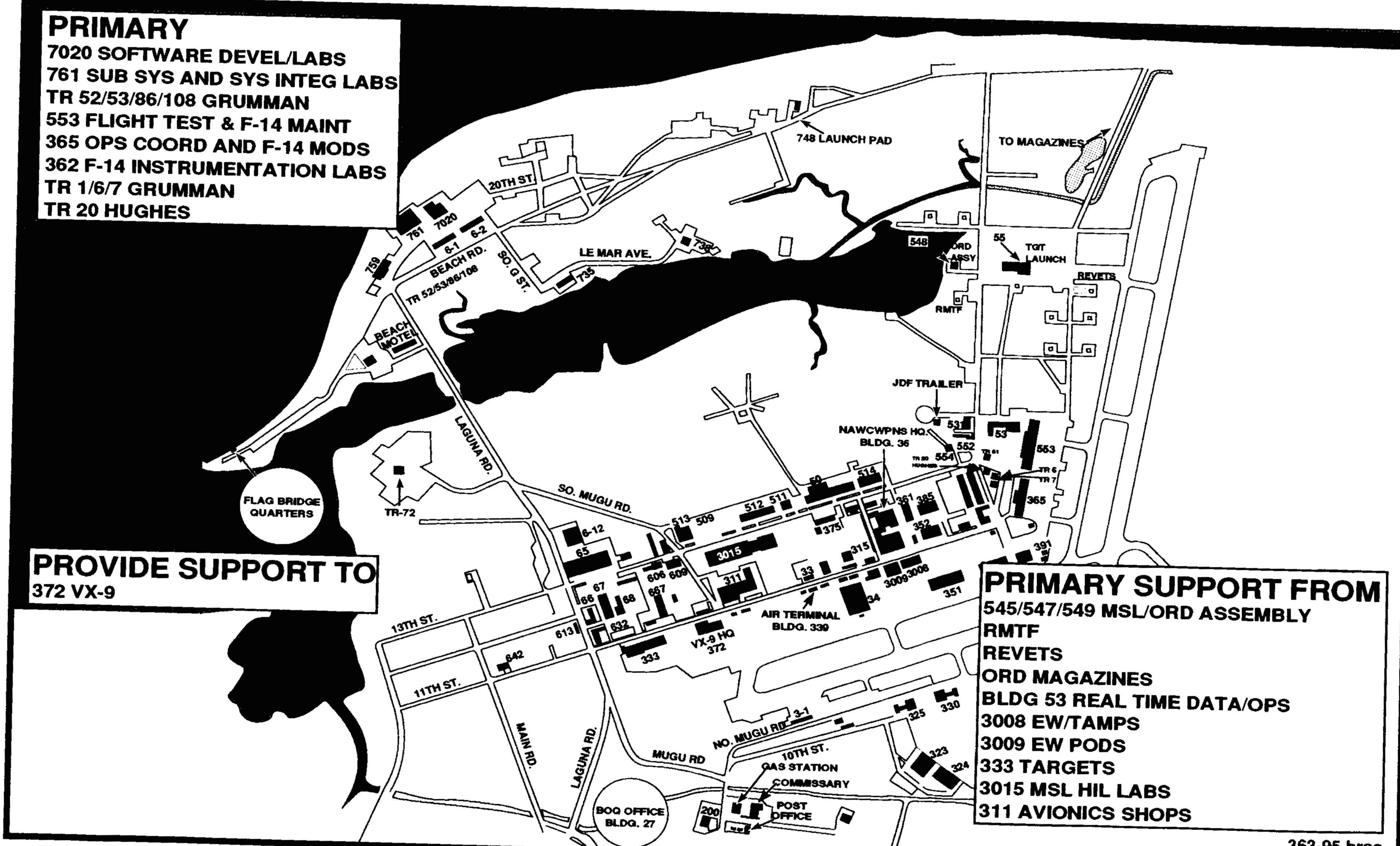
30 May 1995

NAWC
Weapons Division
NAVAL AIR WARFARE CENTER

F-14 WSSA FACILITIES

PRIMARY

7020 SOFTWARE DEVEL/LABS
761 SUB SYS AND SYS INTEG LABS
TR 52/53/86/108 GRUMMAN
553 FLIGHT TEST & F-14 MAINT
365 OPS COORD AND F-14 MODS
362 F-14 INSTRUMENTATION LABS
TR 1/6/7 GRUMMAN
TR 20 HUGHES



PROVIDE SUPPORT TO

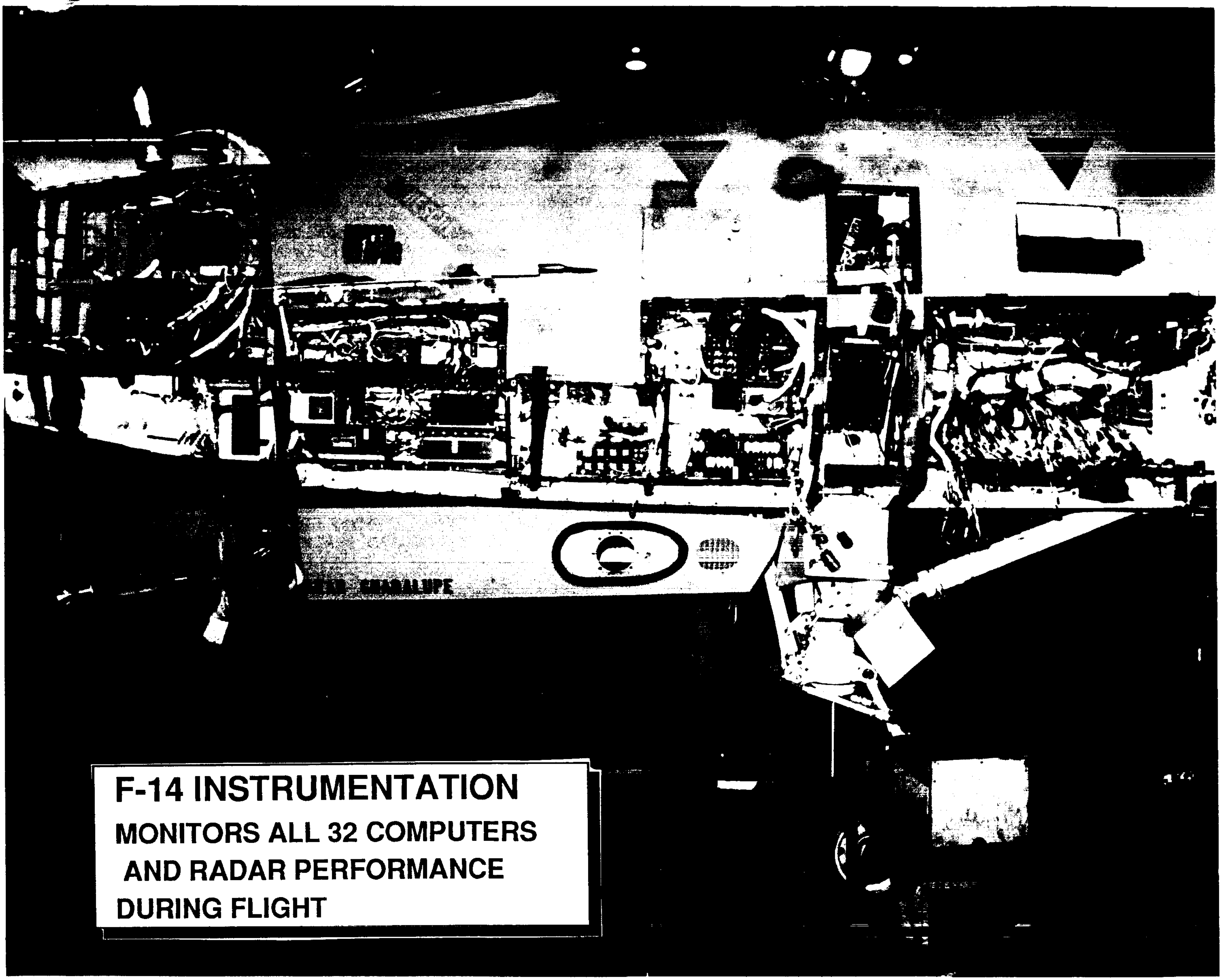
372 VX-9

PRIMARY SUPPORT FROM

545/547/549 MSL/ORD ASSEMBLY
RMTF
REVETS
ORD MAGAZINES
BLDG 53 REAL TIME DATA/OPS
3008 EW/TAMPS
3009 EW PODS
333 TARGETS
3015 MSL HIL LABS
311 AVIONICS SHOPS

F-14 D AIRCRAFT SENSORS

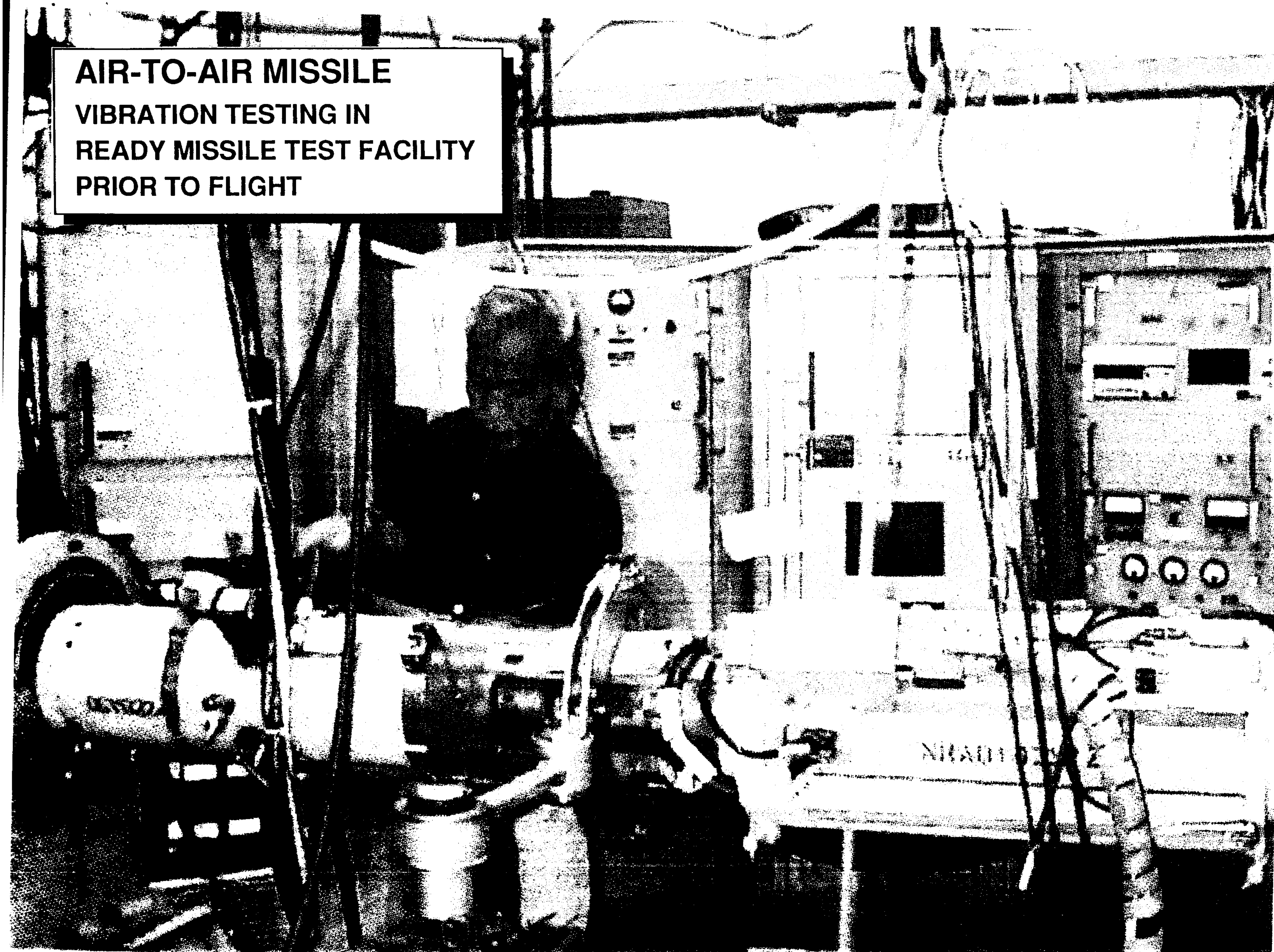
APG-71 RADAR
TELEVISION CAMERA
IRSTS



F-14 INSTRUMENTATION
MONITORS ALL 32 COMPUTERS AND RADAR PERFORMANCE DURING FLIGHT

RANGE CONTROL CENTER

MONITORING OF AIRCRAFT AND MISSILE PERFORMANCE DURING FLIGHT TEST

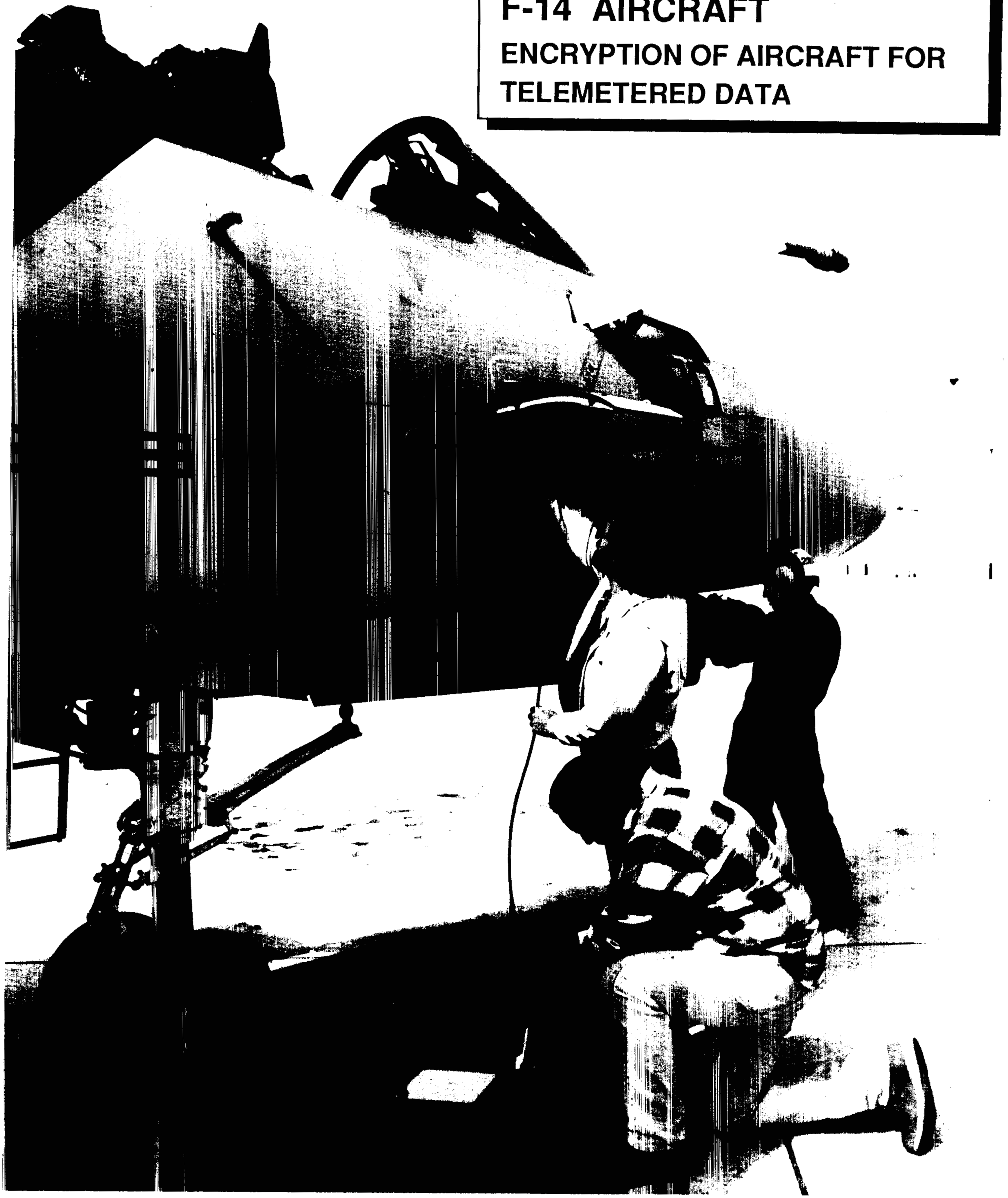


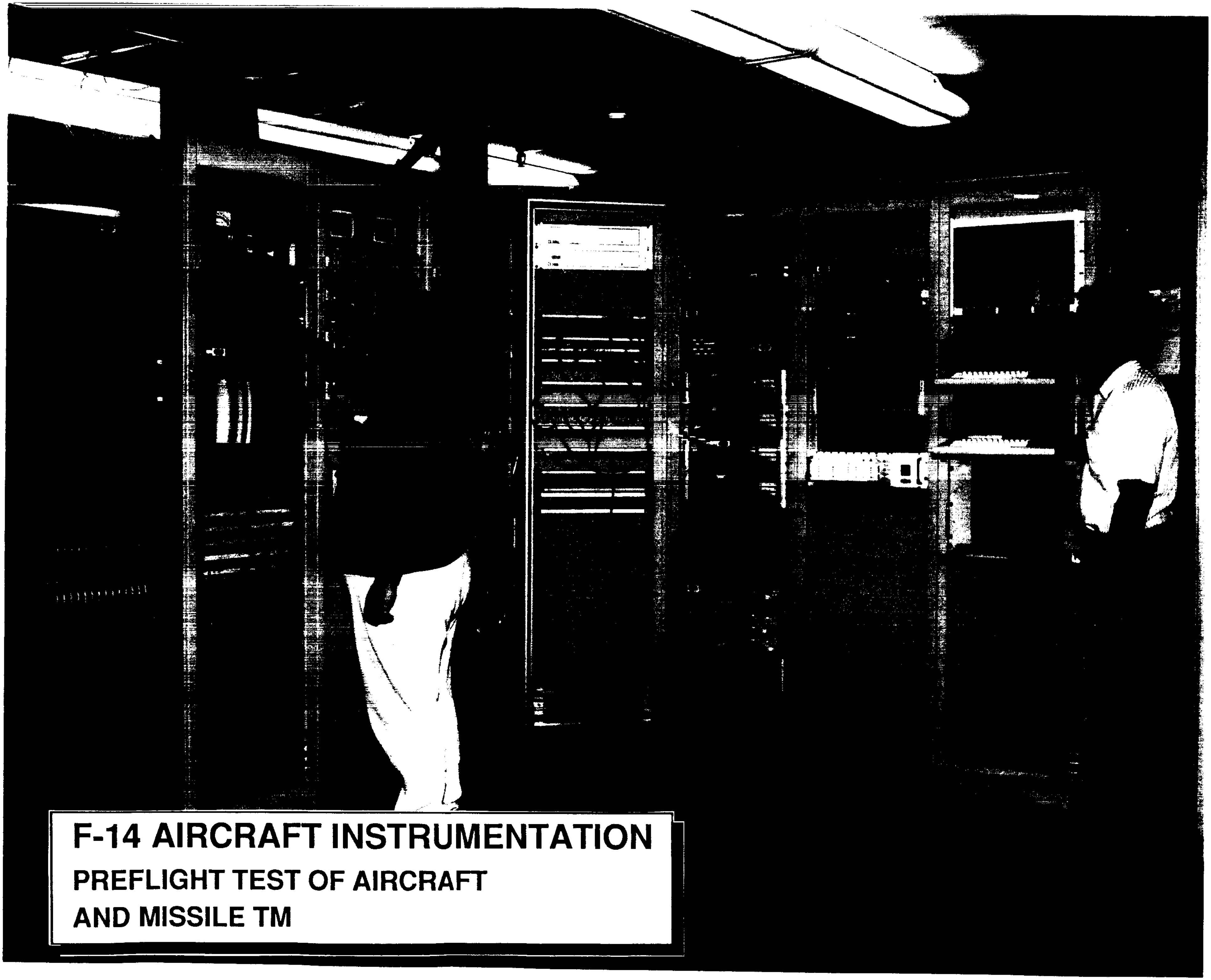
AIR-TO-AIR MISSILE

VIBRATION TESTING IN READY MISSILE TEST FACILITY PRIOR TO FLIGHT

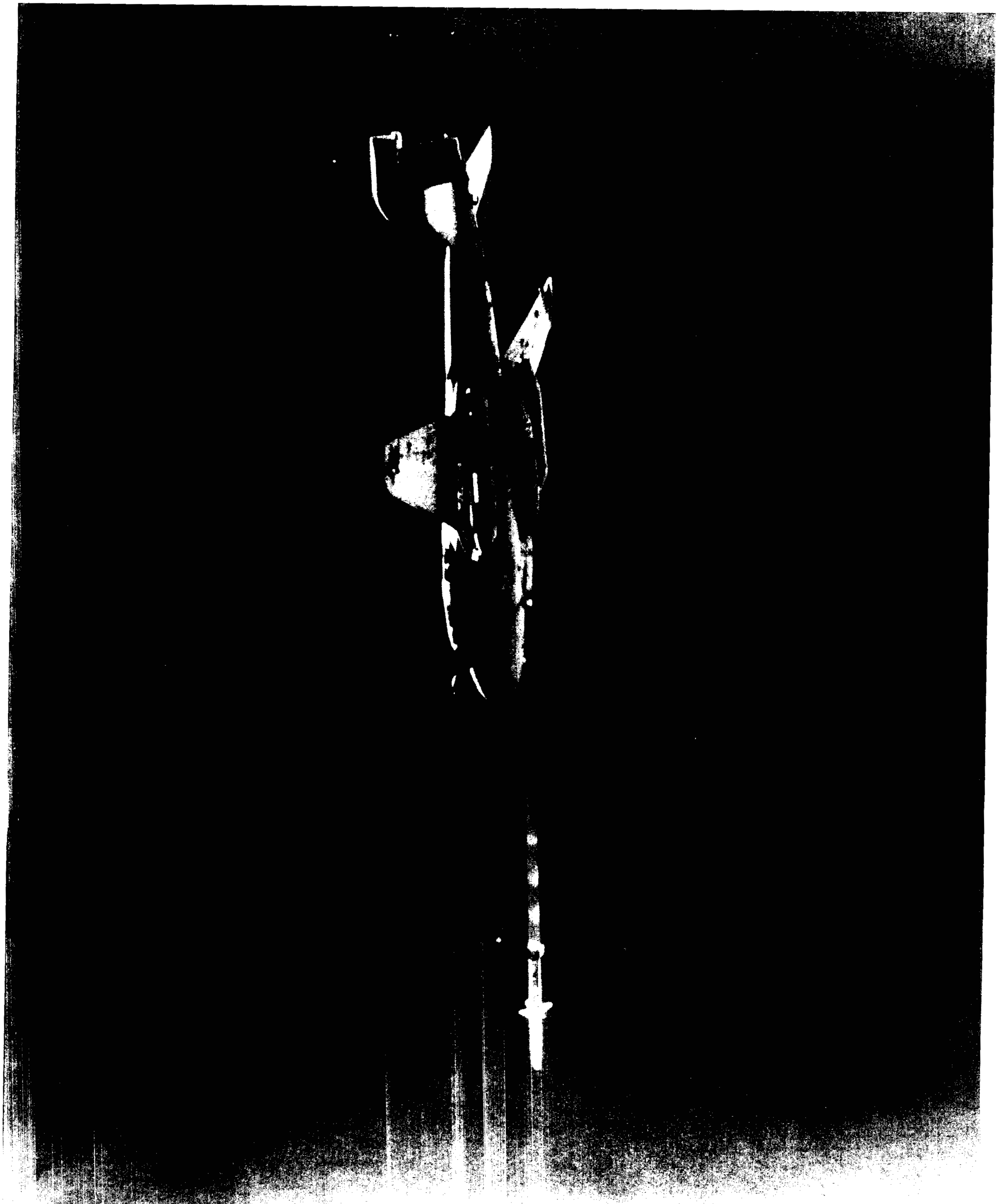
F-14 AIRCRAFT

ENCRYPTION OF AIRCRAFT FOR TELEMETERED DATA





F-14 AIRCRAFT INSTRUMENTATION
PREFLIGHT TEST OF AIRCRAFT
AND MISSILE TM



EA-6B
ROLES AND MISSIONS

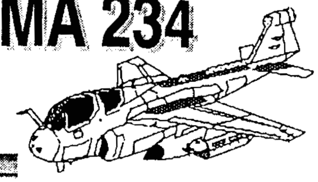
- *Suppression of Enemy Air Defenses (SEAD)*
- *Strike Warfare*
- *Electronic Surveillance (EOB Assessment and Update)*
- *Force Multiplier (Stealth Protection)*

EA-6B CAPABILITIES

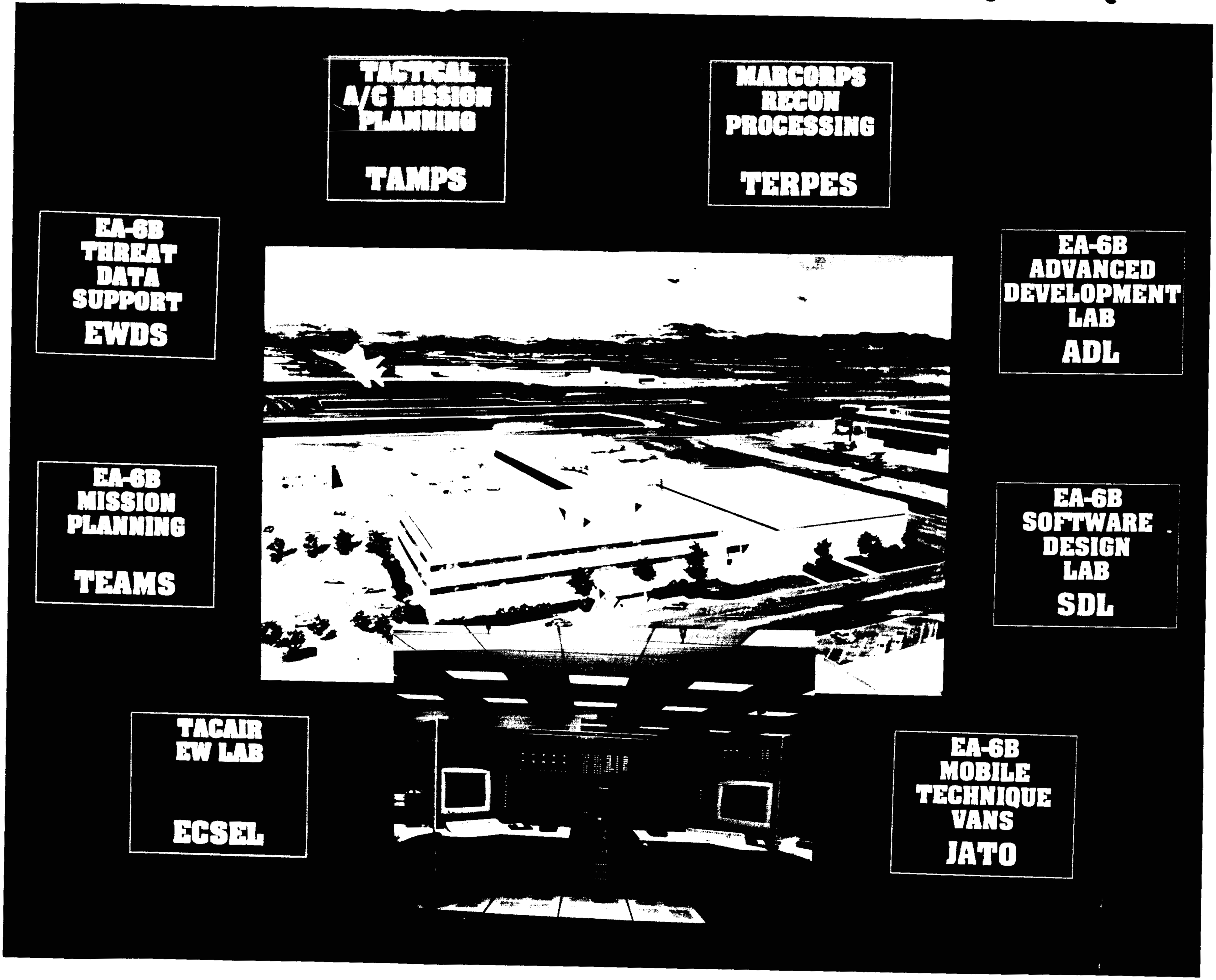
- *Non-Lethal*
  - *Radar Jamming*
  - *Communication Jamming*
    - *Voice & Data Link*
  - *ELINT & SIGINT*

- *Lethal*
  - *HARM (Sensor Integration for Real Time Targeting and BDA)*

MILITARY FORCES SUPPORTED BY EA-6B



- *Navy TACAIR*
  - *In Service since Vietnam*
- *Joint and Multinational*
  - *Gulf War*
  - *Bosnia*
  - *Grenada*
  - *Panama*


TACTICAL A/C MISSION PLANNING
TAMPS
MARCORPS RECON PROCESSING
TERPES
EA-6B THREAT DATA SUPPORT
EWDS
EA-6B ADVANCED DEVELOPMENT LAB
ADL
EA-6B MISSION PLANNING
TEAMS
EA-6B SOFTWARE DESIGN LAB
SDL
TACAIR EW LAB
ECSEL
EA-6B MOBILE TECHNIQUE VANS
JATO

NAWCWPNS Tasks

- *Tactical Software Support (O&M,N)*
  - *OFP & TEAMS (EA-6B Mission Planning)*
  - *EWDS (C2W & HARM)*
  - *HARM Control Panel*
- *Weapon System Support (RDT&E)*
  - *Universal Exciter Upgrade (UEU)*
  - *Jammer Technique Optimization (JATO)*
- *Weapons System Support (APN-5)*
  - *Block 89A Development/Integration*
  - *Band 10 Receiver Production Support*
  - *Transmitter Development*

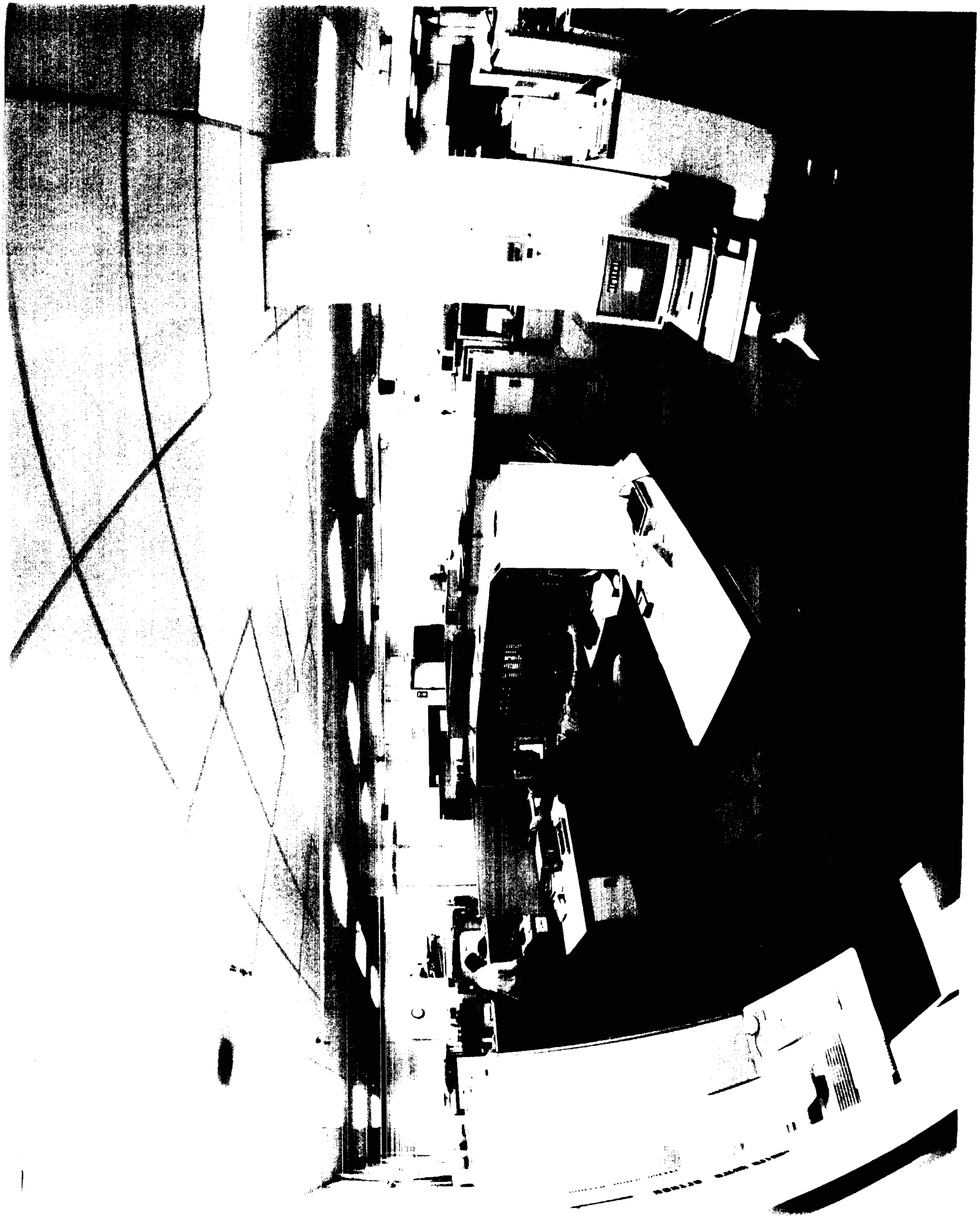
EA-6B TEAM POINT MUGU

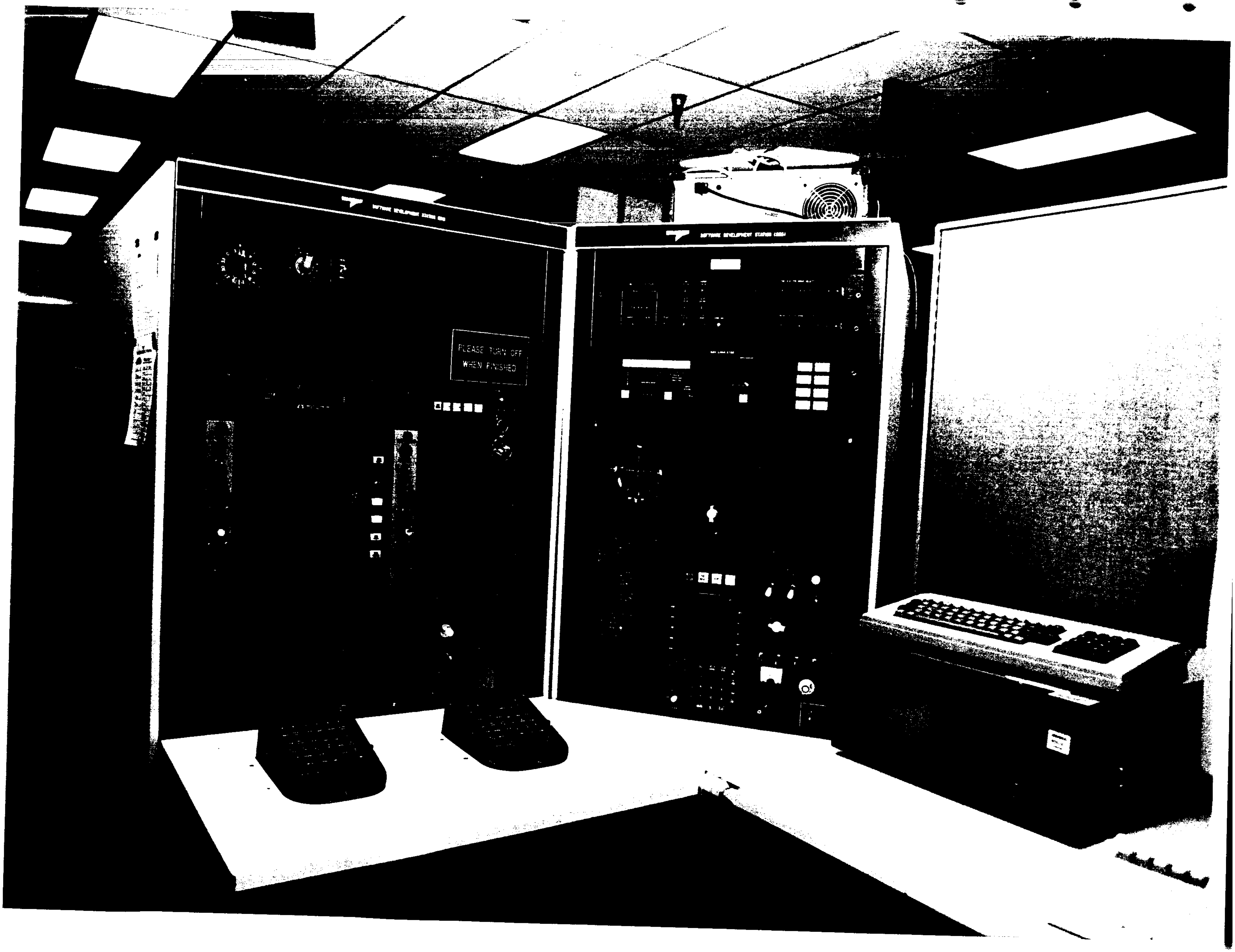
FACILITY MISSION AND UNIQUENESS

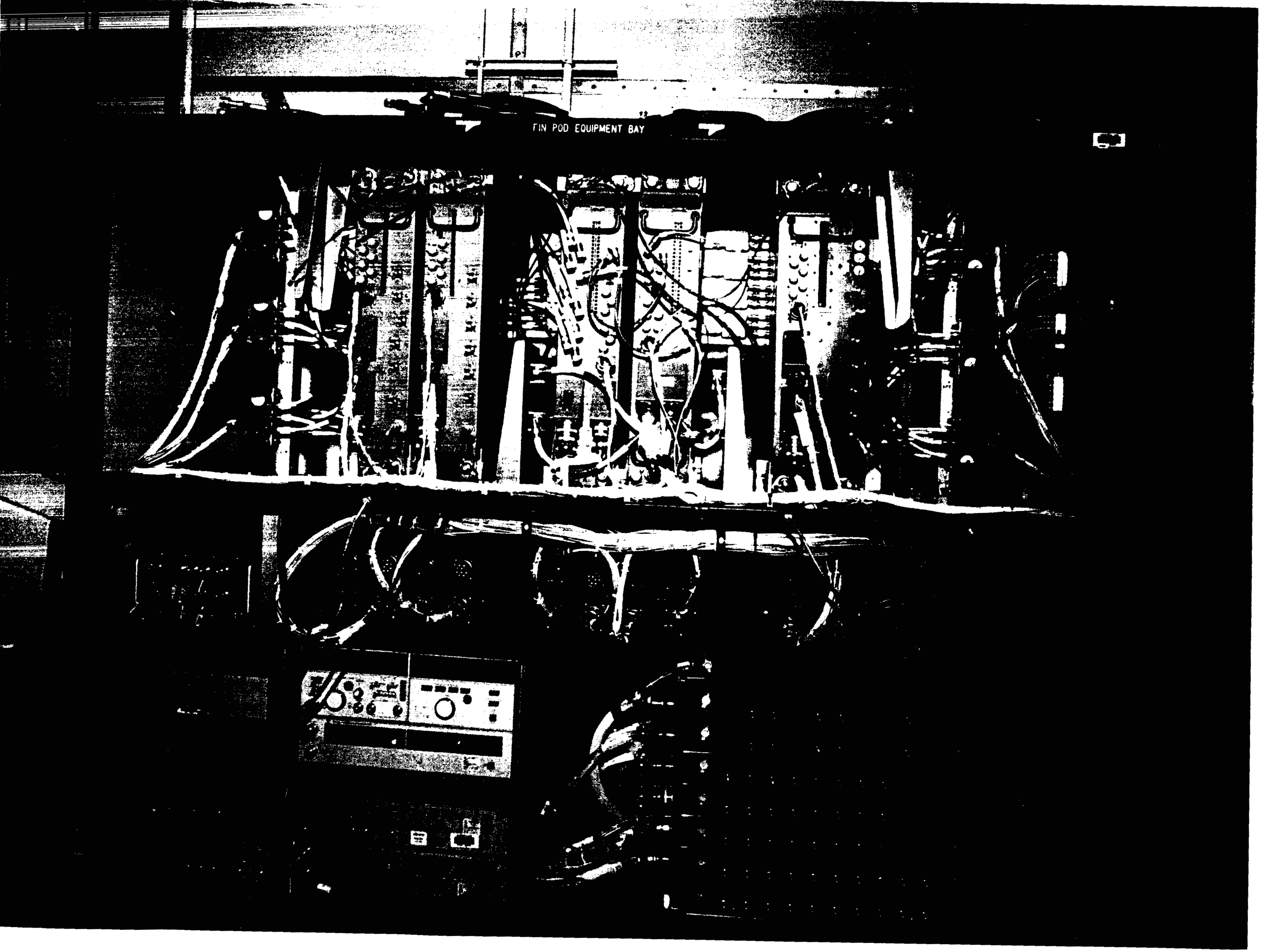
EA-6B IPT
PMA 234

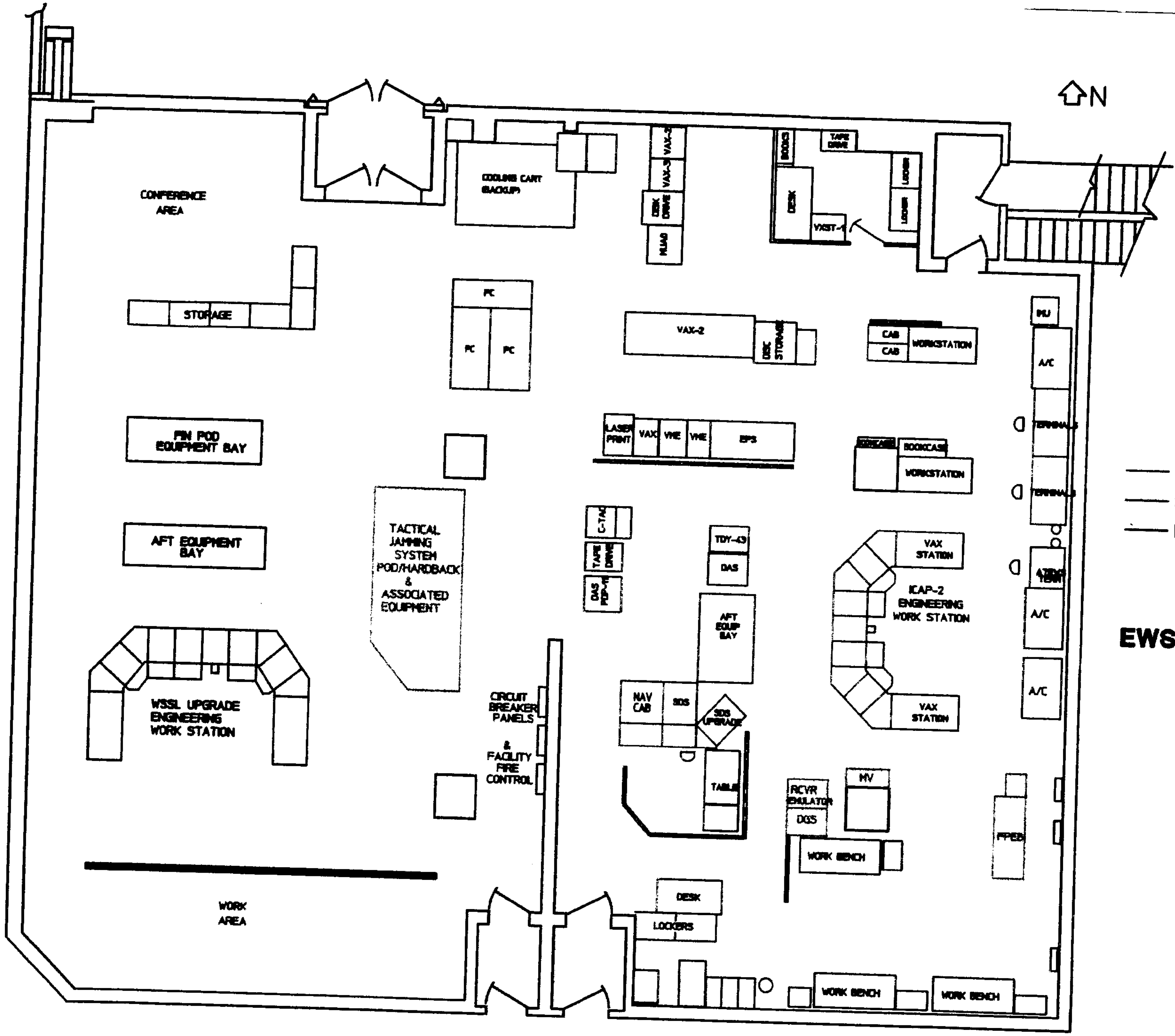
- *Support the Fleet Through the Design, Development, Integration, and Testing of Updates to EA-6B Avionics and Weapons Systems*

- *The EA-6B WSSL is <u>the only existing</u> software/hardware development, integration, and test facility to support two operational configurations of the EA-6B aircraft (Block 82/86) and the upgraded aircraft (Block 89A)*




PLEASE TURN OFF
WHEN FINISHED


FIN POD EQUIPMENT BAY



MAY 4, 1995
BLDG 3008

2'
2'

—— EXISTING EQUIPMENT
—— SHARED EQUIPMENT
—— BLK 89A EWS

EWS FLOOR PLAN

EA-6B TEAM POINT MUGU

EA-6B
BLOCK 89A UPDATE

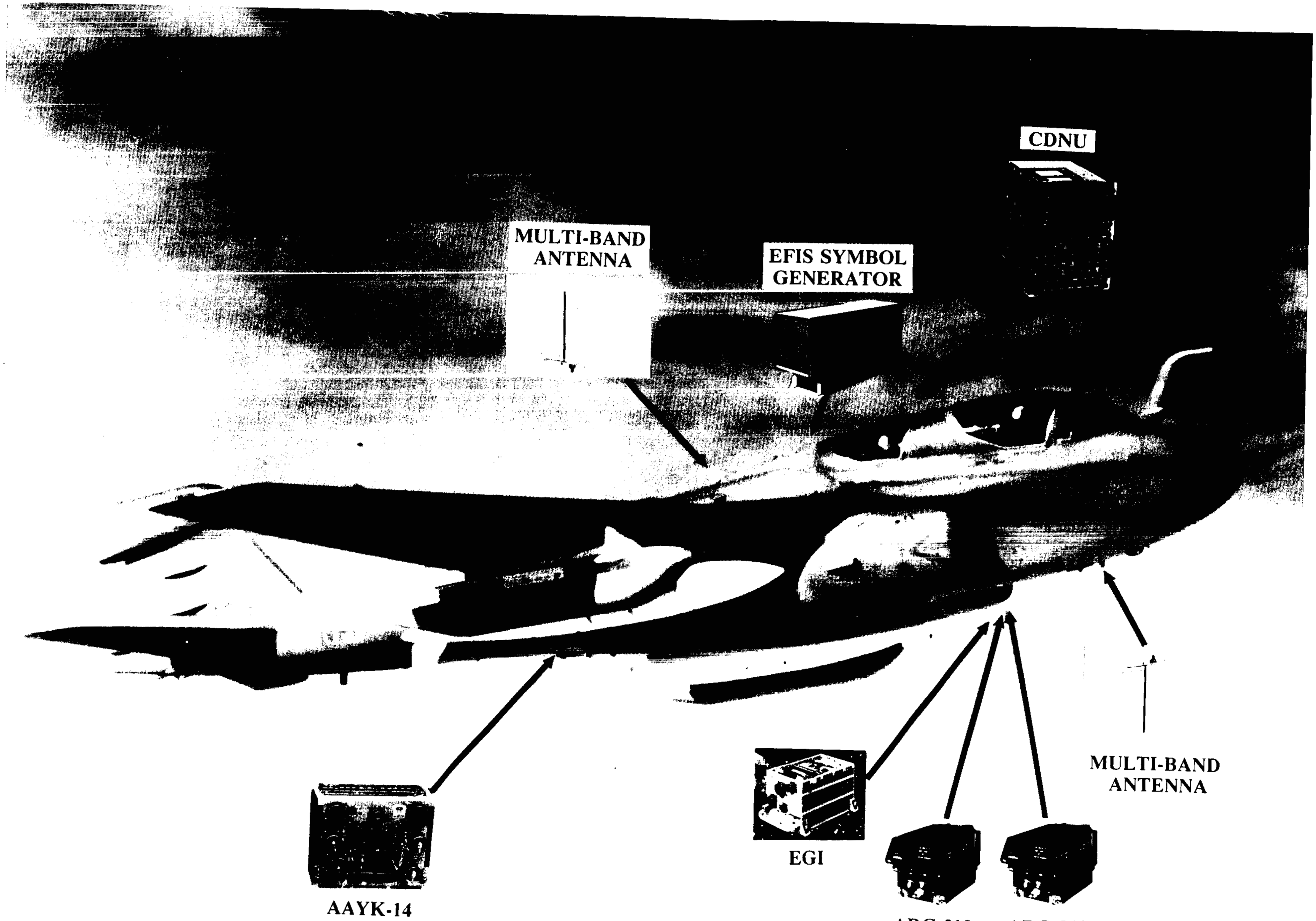
EA-6B IPT
PMA 234

- *EA-6B Block-89A is an affordable, maintainable, and supportable upgrade to the aircraft's navigation, communications, and mission computer systems. The upgrade provides:*

  - *Advanced GPS navigation capability by integrating a Non-Developmental Item (NDI) GPS with the Inertial Navigation Systems and an advanced navigation computer with a Commercial-Off-the-Shelf (COTS) Electronic Flight Instrumentation System (EFIS)*

  - *Advanced anti-jam V/UHF communications capable of supporting Joint Services Interoperability by integrating two AN/ARC-210 transceivers.*

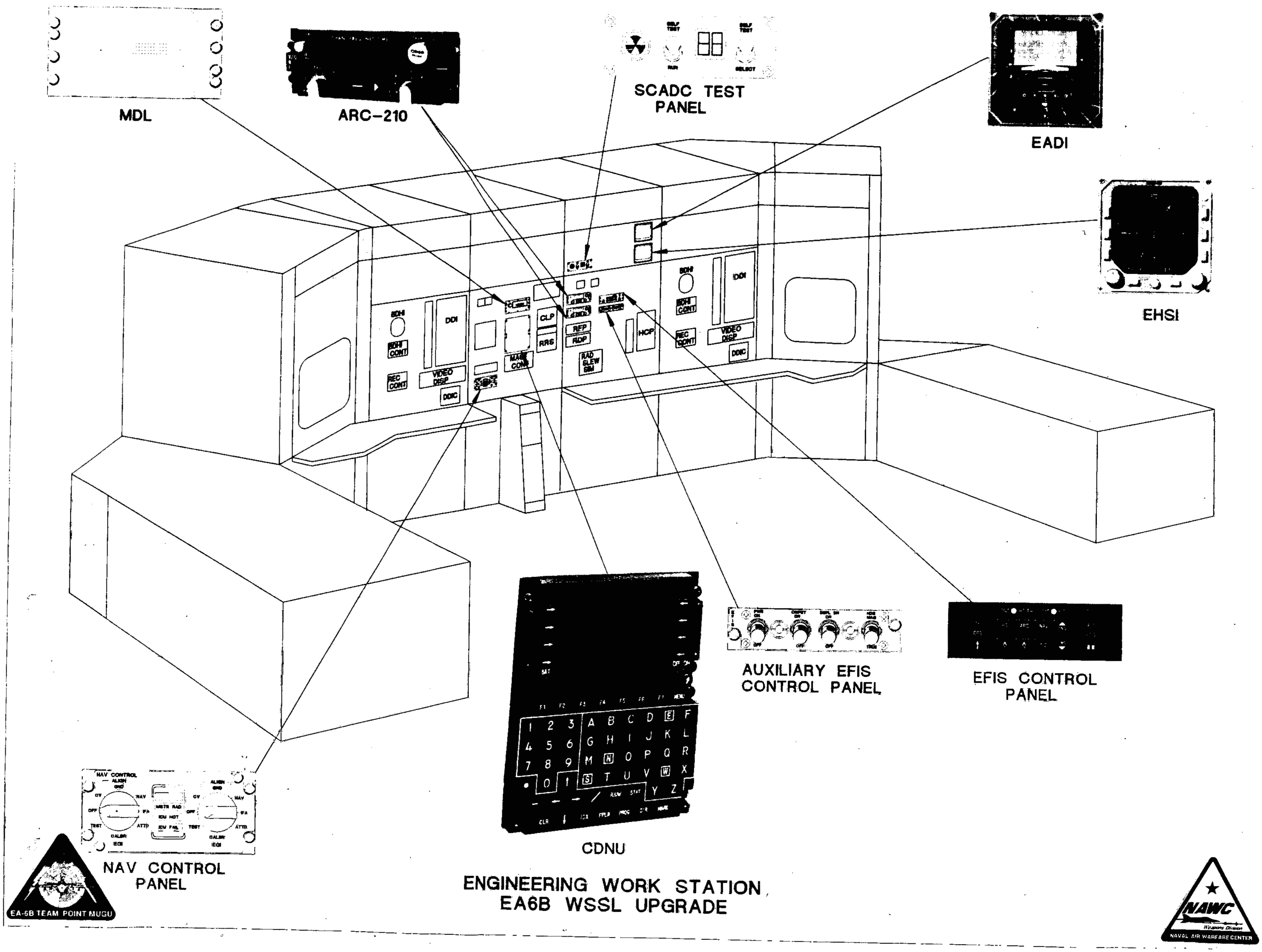
  - *A Superior mission processing capability by increasing memory and processing speed and providing growth capabilities with future technologies*



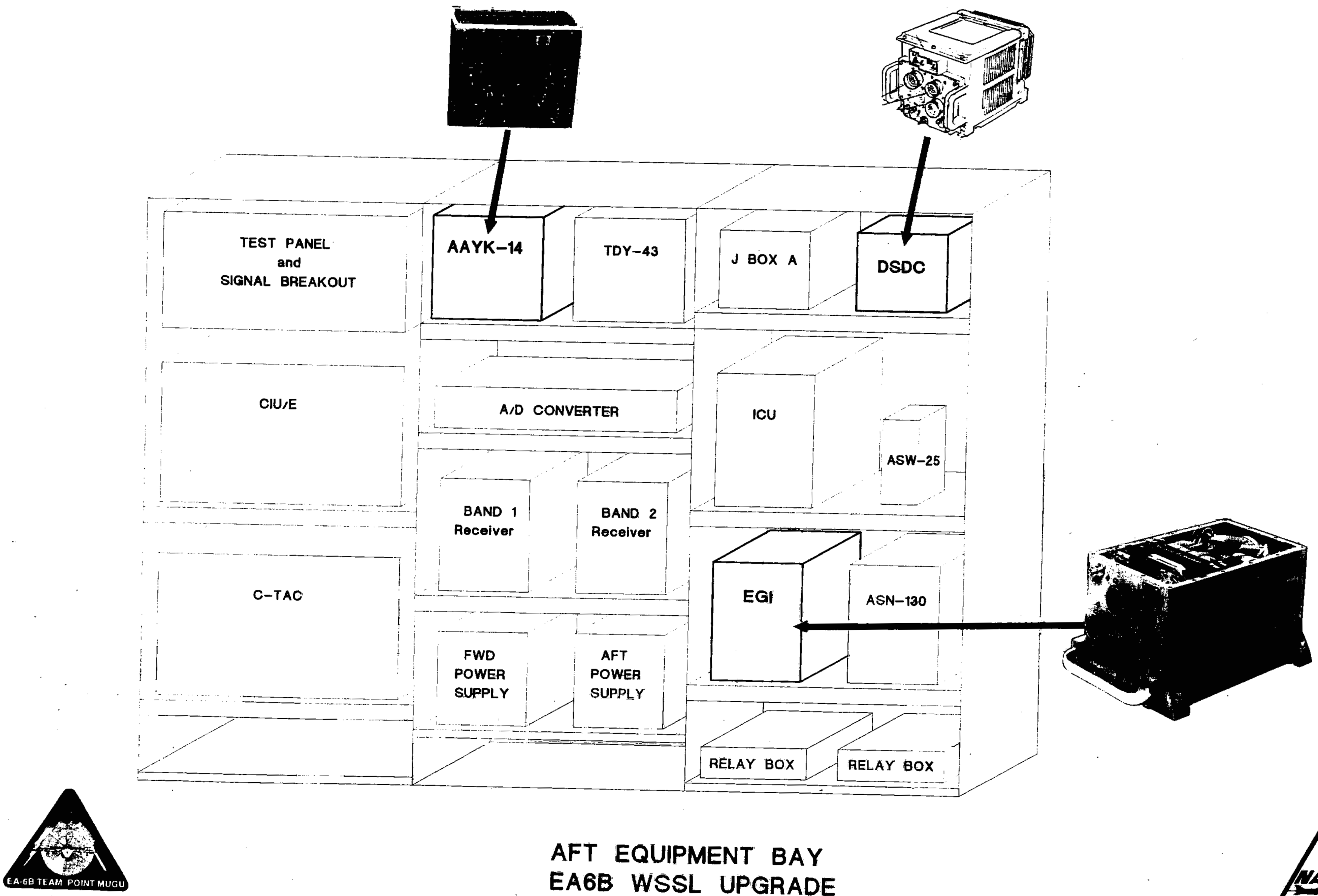
EA6B UPGRADE

EA-6B TEAM POINT MUGU

NAWC
NAVAL AIR WARFARE CENTER

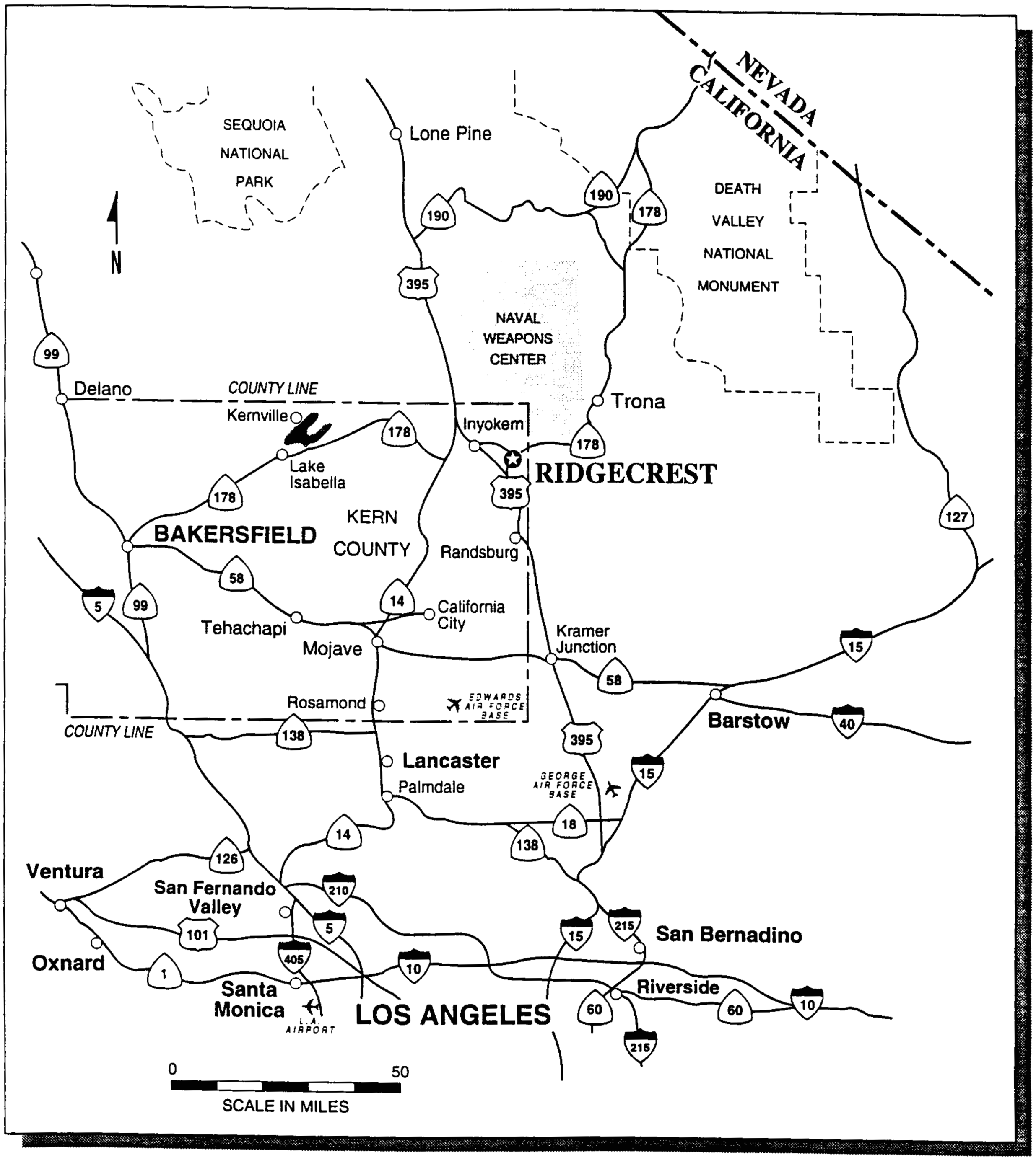


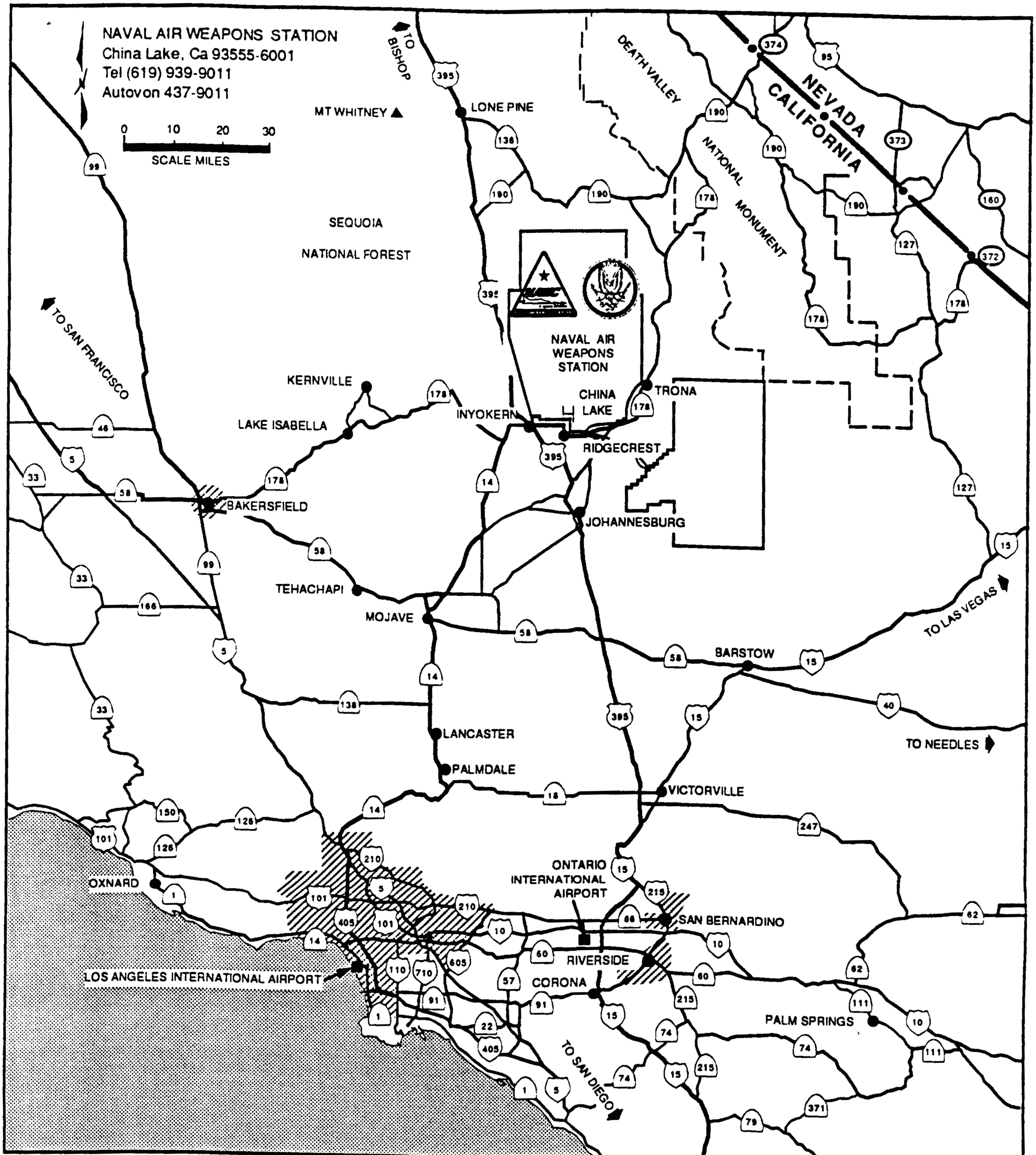
ENGINEERING WORK STATION
EA6B WSSL UPGRADE



AFT EQUIPMENT BAY
EA6B WSSL UPGRADE

Document Separator


NEVADA
CALIFORNIA
SEQUOIA NATIONAL PARK
Lone Pine
DEATH VALLEY NATIONAL MONUMENT
N
NAVAL WEAPONS CENTER
Delano
COUNTY LINE
Kernville
Trona
Inyokern
RIDGECREST
Lake Isabella
BAKERSFIELD
KERN COUNTY
Randsburg
California City
Tehachapi
Mojave
Kramer Junction
Rosamond
EDWARDS AIR FORCE BASE
COUNTY LINE
Barstow
Lancaster
Palmdale
GEORGE AIR FORCE BASE
Ventura
San Fernando Valley
San Bernadino
Oxnard
Santa Monica
L.A. AIRPORT
LOS ANGELES
Riverside
190
395
99
178
58
5
14
138
18
126
101
405
210
1
10
15
215
60
127
40
0
50
SCALE IN MILES



HOW TO GET TO NAWS

BY AIR

There are commercial flights from Los Angeles International Airport to Inyokern

BY BUS

Direct Greyhound bus service is available to Ridgecrest from Los Angeles and Reno

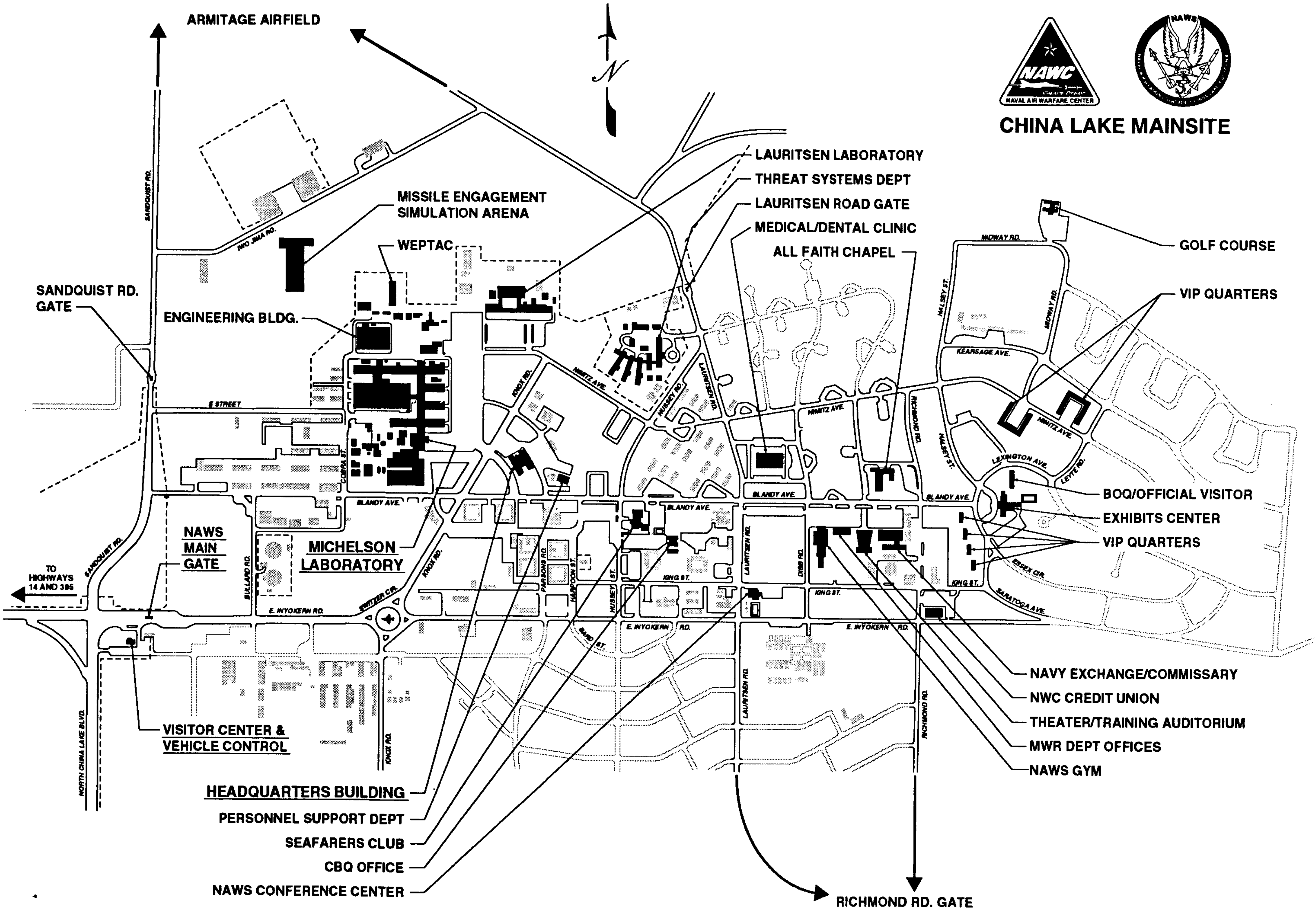
There is no passenger train service to NAWS/NAWCWPNS

NAWCWPNS CL 5000/8 (REV. 3-93) (BACK)

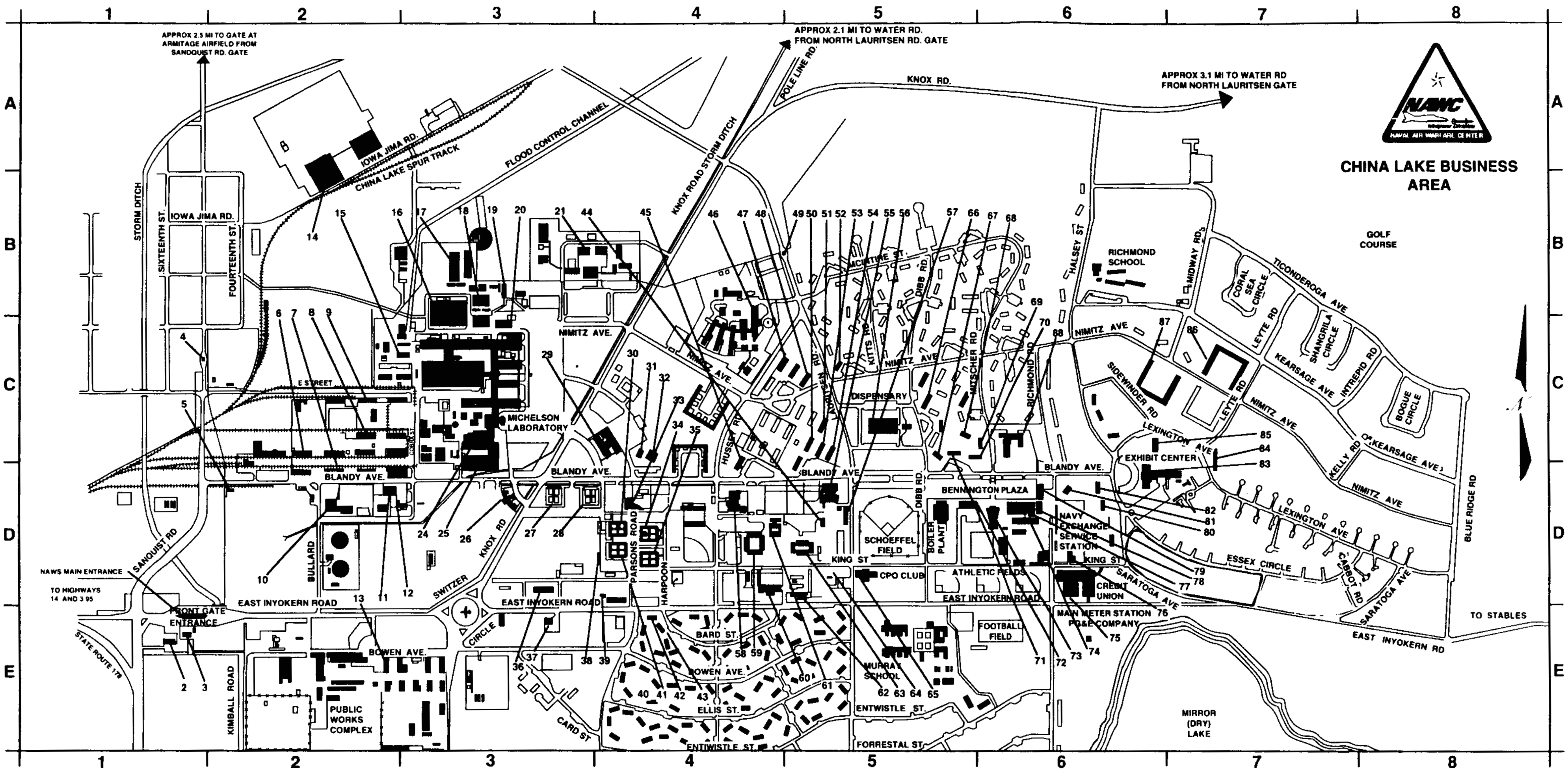
APPROXIMATE MILEAGE FROM NAWS

BAKERSFIELD	115
BARSTOW	85
BISHOP	125
DEATH VALLEY	90
LAS VEGAS	240
LOS ANGELES	155
MOJAVE	60
SAN BERNARDINO	125

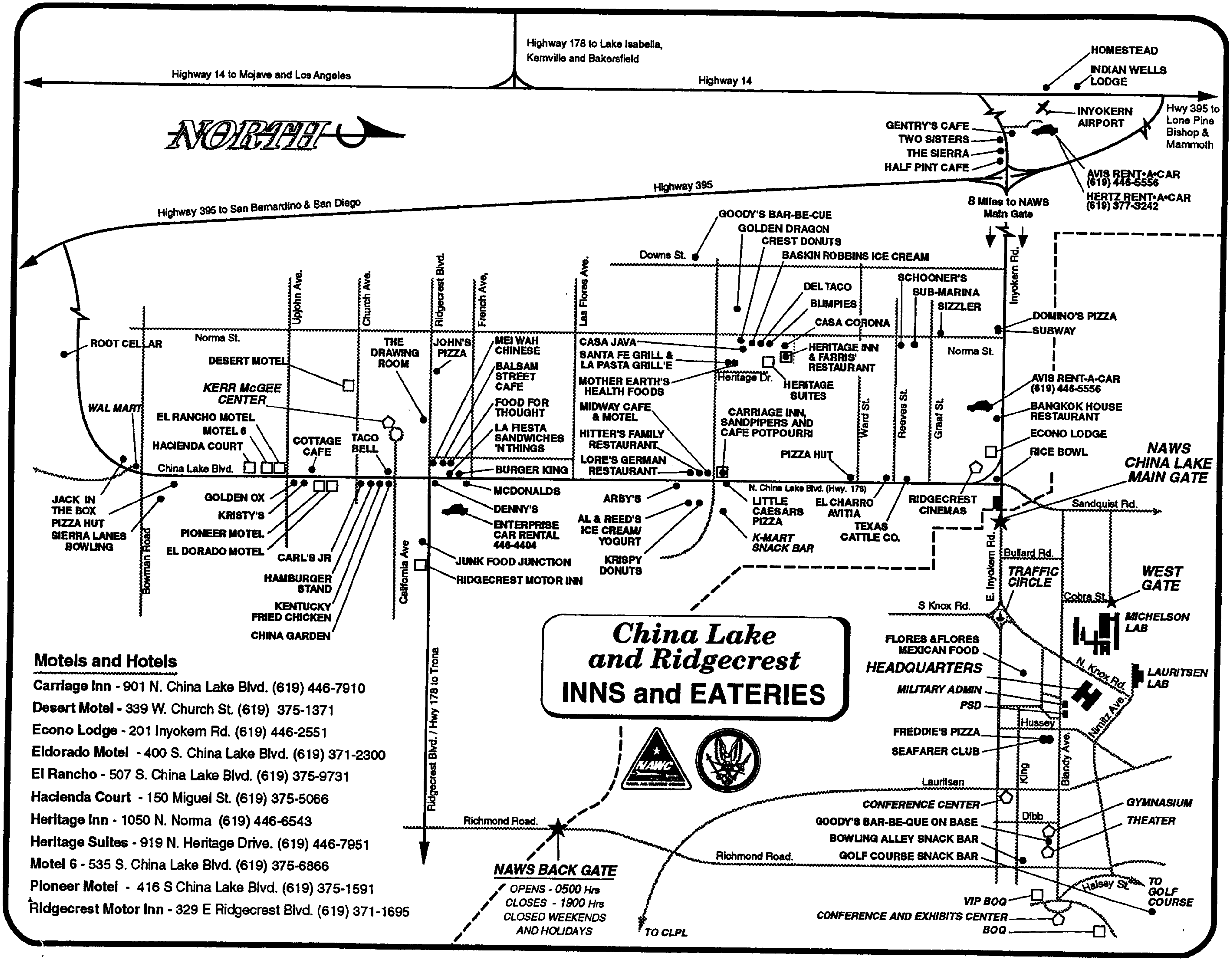
Cars may be rented at the Inyokern



NAWCWPNS CL 5000/8C (1/94)



Location	Facility	Ident no.	Bldg no
D - 4	Administrative Offices/TID Services	33	02334
D - 5	Administrative Computer Center/Data Processing (ADP)	55	00033
B - 4	Aerosystems Dept	46	00003
D - 3	Annex 95 (Multiple Use Bldg)	38	00095
	Child Care		
C - 5	Child Care Center	45	00457
C - 5	Childrens Center	48	00468
C - 5	Childrens Center, Part Time	53	00462
C - 5	Childrens Center, School Age	50	00461
C - 5	Day Nursery	54	00463
C - 4	Community Liaison Office	29	00001
C - 3	Computer Wing (Michelson Lab)	24	00005
D - 6	Conference Center	83	00500
C - 5	Counseling & Assistance Center	68	00357
D - 6	Credit Union	75	
C - 5	Dental Clinic	56	01403
C - 5	Despensary (Medical Clinic)	56	01403
C - 2	Distribution Section	9	01041
D - 2	Document Incinerator	12	01018
B - 3	Electronic Plating Facility	16	02466
C - 2	Energetic Materials Lab	15	01058
B - 3	Engineering Bldg	16	02466
D - 5	Exhibit Center	44	00052
D - 3	Exhibits (Annex)	36	00931
D - 5	Fire Station No. 1	64	00878
D - 4	Fleet Engineering (Code 336)	41	02338
D - 2	Fuze T&E	11	01021
	Gate Houses		
D - 1	Blandy Ave	5	91078
B - 5	Lauritsen Rd	49	01364
E - 1	Main Gate	1	00986
C - 1	Sandquist Rd	4	02465
C - 4	Headquarters Bldg	29	00001
E - 3	Housing Office	37	01671
D - 3	Human Resources Dept (Civilian)	27	02335
B - 4	Lauritsen Lab	21	01400
	Libraries		
D - 6	Center (Public)	79	00017
C - 3	Technical	20	02496
C - 3	Michelson Lab	23	00005
	Military		
C - 6	BOQ & Official Visitors Quarters, A Lexington Ave	85	00496
D - 7	BOQ & Official Visitors Quarters, B Lexington Ave	84	00499
D - 6	Commissary/Navy Exchange	77	00019
D - 4	Enlisted personnel Quarters, BEQ No. 1	59	01394
D - 4	Enlisted personnel Quarters, BEQ No. 2	61	01395
D - 5	Enlisted personnel Quarters, BEQ No. 3	63	01396
D - 4	Galley	60	00880
C - 5	Marine Aviation Detachment	51	00670
C - 4	Military Administrative Division	31	02483
D - 6	Navy/Marine Uniform Shop	81	00016
D - 5	Navy Relief/Thrift Shop	57	00054
D - 6	Package Liquor Store	78	00018
D - 4	Seafarers Club	58	01384
D - 6	Service Station	76	01094
D - 4	Transient Quarters	35	02340
D - 6	VIP Quarters, Essex	80	00662
D - 6	VIP Quarters, Essex	82	00663
C - 7	VIP Quarters, 1225 Nimitz	87	02242
C - 7	VIP Quarters, 1310 Nimitz	86	02244
D - 6	Wearhouse, Navy Exchange	74	00023
D - 5	Morale, Welfare & Recreation Department	72	00021
	DPSDBO		
C - 2	DPSDBO OFFICE	9	01041
B - 3	DPSDBO	16	02466
D - 5	Conference Center	65	00874
E - 4	Patent Counsel	42	00100
E - 4	Patent Counsel	43	00101
C - 2	Personnal Property Office (Whse 24)	8	01033
E - 1	Personnel Security	3	01182
C - 4	Personnel Support Dept (PSD)	32	02481
D - 5	Police Station	62	00879
D - 3	Procurement Dept	28	02336
B - 3	Propulsion Research Lab	19	01371
E - 2	Public Works Dept	13	00981
D - 2	Receiving/Supply Operations Contractor	7	01024
C - 5	Red Cross	66	00358
A - 2	Reutilization & Marketing Office (Whse 41)	14	01073
C - 5	Rocketeer Office	52	00418
	Religious		
C - 6	All Faith Chapel	88	02601
D - 6	Director of Religious Education/Sunday School	70	00354
D - 5	Jewish/Islamic Center	71	00353
D - 5	Sunday School	67	00352
C - 6	Sunday School/Chapel Nursery	69	00355
D - 3	Safety & Security Department	26	00008
C - 5	Safety Office & Issue	47	00466
D - 5	Snack Bar	72	00021
B - 2	Soldering Technology	16	02466
C - 3	Solid State Device Facility	25	01332
C - 2	Supply Operations Contractor	6	01028
D - 2	Sup-R-Mart (warehouse 10)	10	01202
D - 4	Technical Information Department (TID)	34	02339
D - 6	Training Auditorium (Center Theater)	73	00020
D - 4	Training Center	40	00947
D - 4	Training Center (Annex)	39	02469
C - 3	Weapons Display (Michelson Lab Main Loby)	22	00005
C - 3	Weapons Planning Group	18	02461
B - 3	Weapons Planning Group	17	02464
E - 1	Visitors Center/Employee Badges/Vehicle Control	2	01487
D - 4	71 Parsons	30	02337


China Lake and Ridgecrest
INNS and EATERIES
NORTH
Highway 178 to Lake Isabella, Kernville and Bakersfield
Highway 14 to Mojave and Los Angeles
Highway 14
Hwy 395 to Lone Pine Bishop & Mammoth
Highway 395
Highway 395 to San Bernardino & San Diego
HOMESTEAD
INDIAN WELLS LODGE
INYOKERN AIRPORT
GENTRY'S CAFE
TWO SISTERS
THE SIERRA
HALF PINT CAFE
AVIS RENT-A-CAR (619) 446-5556
HERTZ RENT-A-CAR (619) 377-3242
8 Miles to NAWS Main Gate
GOODY'S BAR-BE-CUE
GOLDEN DRAGON
CREST DONUTS
BASKIN ROBBINS ICE CREAM
Downs St.
DEL TACO
BLIMPIES
CASA CORONA
SCHOONER'S
SUB-MARINA
SIZZLER
DOMINO'S PIZZA
SUBWAY
Inyokern Rd.
Norma St.
ROOT CELLAR
DESERT MOTEL
Upjohn Ave.
Church Ave.
Ridgecrest Blvd.
French Ave.
Las Flores Ave.
THE DRAWING ROOM
JOHN'S PIZZA
MEI WAH CHINESE
BALSAM STREET CAFE
FOOD FOR THOUGHT
LA FIESTA SANDWICHES 'N THINGS
CASA JAVA
SANTA FE GRILL & LA PASTA GRILL'E
MOTHER EARTH'S HEALTH FOODS
MIDWAY CAFE & MOTEL
HITTER'S FAMILY RESTAURANT
LORE'S GERMAN RESTAURANT
HERITAGE INN & FARRIS' RESTAURANT
Heritage Dr.
HERITAGE SUITES
CARRIAGE INN, SANDPIPERS AND CAFE POTPOURRI
Ward St.
Reeves St.
Graaf St.
PIZZA HUT
AVIS RENT-A-CAR (619) 446-5556
BANGKOK HOUSE RESTAURANT
ECONO LODGE
RICE BOWL
NAWS CHINA LAKE MAIN GATE
KERR McGEE CENTER
WAL MART
EL RANCHO MOTEL
MOTEL 6
HACIENDA COURT
COTTAGE CAFE
TACO BELL
China Lake Blvd.
BURGER KING
MCDONALDS
DENNY'S
ENTERPRISE CAR RENTAL 446-4404
ARBY'S
AL & REED'S ICE CREAM/ YOGURT
KRISPY DONUTS
N. China Lake Blvd. (Hwy. 178)
LITTLE CAESARS PIZZA
K-MART SNACK BAR
EL CHARRO AVITIA
TEXAS CATTLE CO.
RIDGECREST CINEMAS
Sandquist Rd.
JACK IN THE BOX
PIZZA HUT
SIERRA LANES BOWLING
GOLDEN OX
KRISTY'S
PIONEER MOTEL
EL DORADO MOTEL
CARL'S JR
HAMBURGER STAND
KENTUCKY FRIED CHICKEN
CHINA GARDEN
Bowman Road
California Ave
JUNK FOOD JUNCTION
RIDGECREST MOTOR INN
Bullard Rd.
E. Inyokern Rd.
TRAFFIC CIRCLE
WEST GATE
Cobra St.
S Knox Rd.
MICHELSON LAB
FLORES &FLORES MEXICAN FOOD
HEADQUARTERS
MILITARY ADMIN
PSD
N. Knox Rd.
LAURITSEN LAB
Nimitz Ave.
Hussey
FREDDIE'S PIZZA
SEAFARER CLUB
King
Blandy Ave.
Lauritsen
Ridgecrest Blvd. / Hwy 178 to Trona
Richmond Road.
NAWS BACK GATE
OPENS - 0500 Hrs
CLOSES - 1900 Hrs
CLOSED WEEKENDS AND HOLIDAYS
TO CLPL
Richmond Road.
CONFERENCE CENTER
Dibb
GOODY'S BAR-BE-QUE ON BASE
BOWLING ALLEY SNACK BAR
GOLF COURSE SNACK BAR
GYMNASIUM
THEATER
Halsey St.
TO GOLF COURSE
VIP BOQ
CONFERENCE AND EXHIBITS CENTER
BOQ
NAWC
Motels and Hotels
Carriage Inn - 901 N. China Lake Blvd. (619) 446-7910
Desert Motel - 339 W. Church St. (619) 375-1371
Econo Lodge - 201 Inyokern Rd. (619) 446-2551
Eldorado Motel - 400 S. China Lake Blvd. (619) 371-2300
El Rancho - 507 S. China Lake Blvd. (619) 375-9731
Hacienda Court - 150 Miguel St. (619) 375-5066
Heritage Inn - 1050 N. Norma (619) 446-6543
Heritage Suites - 919 N. Heritage Drive. (619) 446-7951
Motel 6 - 535 S. China Lake Blvd. (619) 375-6866
Pioneer Motel - 416 S China Lake Blvd. (619) 375-1591
Ridgecrest Motor Inn - 329 E Ridgecrest Blvd. (619) 371-1695

DIRECTORY OF MOTELS
RIDGECREST/CHINA LAKE AREA

November 1994

ATLAS HOTELS CARRIAGE INN 901 No. China Lake Blvd. Phone: (619) 446-7910	163 units, air conditioning, in-room coffee, king size beds, direct dial phones, cable TV, showtime, in-room pay movies, remote control, complimentary morning weekday newspaper, refrigerators and microwaves available. Valet and room service, fitness center, conference and banquet facilities, pool, therapy pool and sauna. Complimentary coffee and muffins Mon. thru Fri. until 8 a.m. Cafe Potpourri and Sandpipers restaurant and lounge located on the premises. Major credit cards accepted. Corporate/Government rates: Single $65 to $68, double $75 to $78.
HERITAGE INN 1650 No. Norma Street Ph: (619) 446-6543 800-843-0693	126 units, many with kitchen facilities. Five suites with hydro-jet bathtubs. Air conditioning, direct dial phones, cable TV, showtime, VCR, pool, jacuzzi, fitness center. Queen and king size beds, in-room coffee, coin operated laundry, room service, microwaves available. Breakfast served daily 6 to 9 a.m. Banquet and conference facilities. Farris' Fine Dining located on premises, open 6 a.m. to 10 p.m., cocktail lounge. Computer Center available, Macintosh and IBM compatible. Laser printer. Free airport shuttle transportation. Major credit cards accepted. Corporate/Government rates: Single $62 to $77, double $67 to $82. Breakfast included in all Corporate/Government rates. Weekly and group rates available.
HERITAGE SUITES 919 No. Heritage Drive Ph: (619) 446-7951 800-843-0693	One and two bedroom suites with full kitchens, separate living and dining rooms, some with sofa beds, two televisions with cable and showtime, VCR, drip coffee maker, direct dial phones, pool, spa, fitness center, laundry facilities. Microwaves available. Free airport shuttle transportation. Major credit cards accepted. Corporate/Government rates: One bedroom, $77 to $82, two bedrooms $134 to $139. Weekly & monthly rates available. Breakfast included in all Corporate/Government rates.

Document Separator

Document Separator

NAWCWPNS ON-BOARD

CIVILIAN			
POINT MUGU	3599		
*CHINA LAKE	4598		
	8197		
MILITARY			
POINT MUGU	729		
*CHINA LAKE	548		
	1277		
TOTAL			9474

*INCLUDES WHITE SANDS & ALBUQUERQUE

30 SEP 1994

FY94 REVENUE

	NAWCWD	PT. MUGU
DBOF		
• AIRCRAFT SYSTEMS		
• F-14	104,798.0	104,798.0
• F-18	193,084.3	2,669.0
• EA-6B/A-6E	30,936.9	18,268.0
• AV-8	49,547.6	1,344.0
• OTHER	69,824.8	27,510.1
• WEAPONS		
• AIR INTERCEPT	197,406.4	100,651.8
• STRIKE	250,508.2	105,989.2
• ORDNANCE	74,030.5	31,167.2
• OTHER	96,391.5	47,638.3
• EW	139,741.2	101,336.6
• RANGES AND TARGETS	123,753.0	85,940.8
• OTHER	214,618.6	58,612.6
SUB-TOTAL	1,544,641.0	685,925.6
INSTITUTIONAL		
• MRTFB	150,801.2	90,726.1
• BOS	32,916.7	20,080.0
SUB-TOTAL	183,717.9	110,806.1

NAWCWPNS
DBOF OVERVIEW

16 May 1995

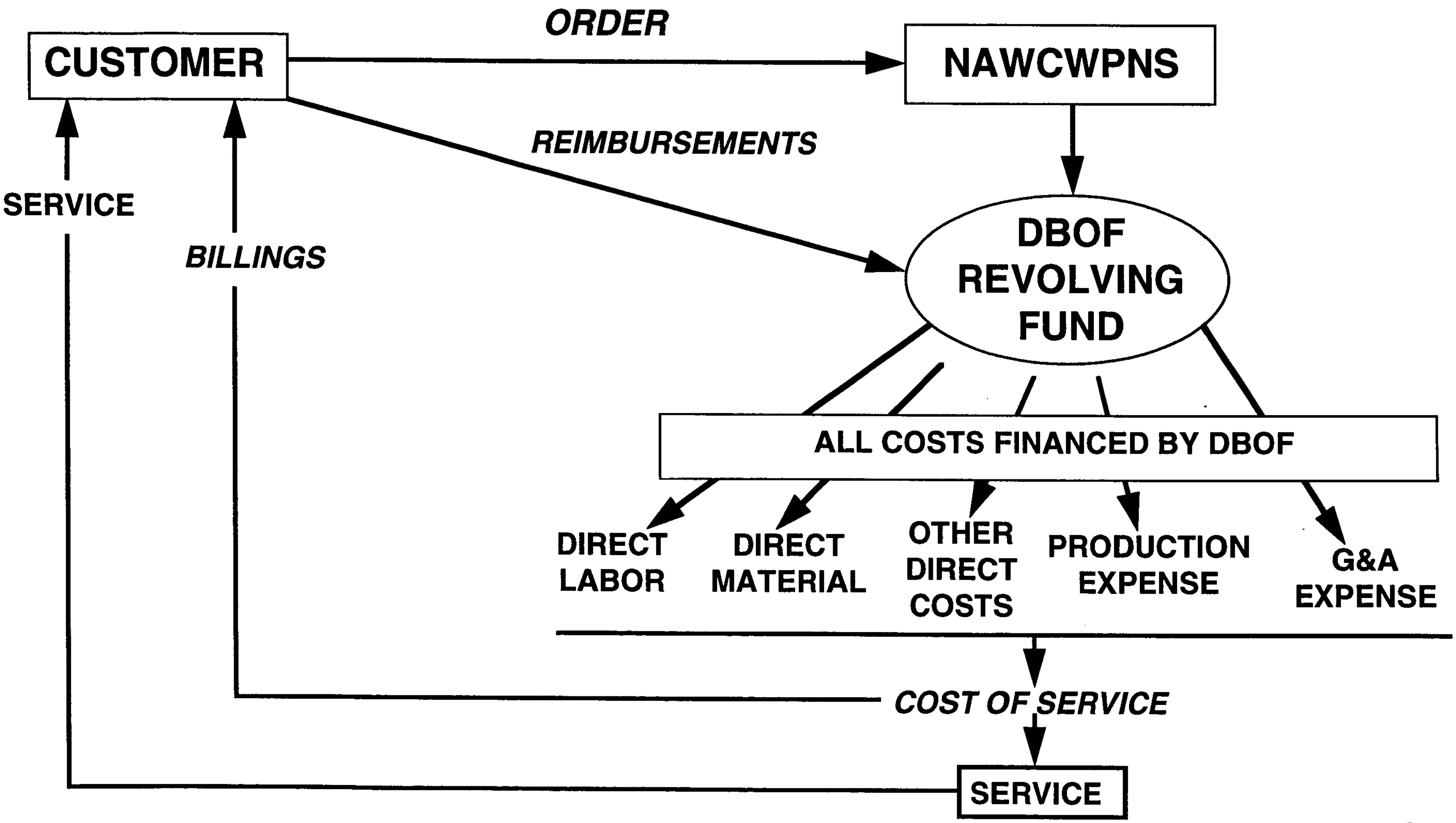
DBOF
BASIC OPERATING AUTHORITY

- Working Capital Funds Established by Title 10, USC Sec 2208
  - Intended for Commercial/Industrial Type Activities Whereby a Buyer/Seller Relationship Can Be Established
- Defense Business Operations Fund (DBOF) Established by Defense Management Review Decision (DMRD) 971, Effective With FY92 Operations
  - Merged 17 Existing Industrial and Stock Funds Throughout DOD
- NAWCWPNS Operates Entirely Under DBOF Charter With Unique Treasury Symbol Subhead
  - DBOF RDT&E Business Area
  - NAWC Activity Group

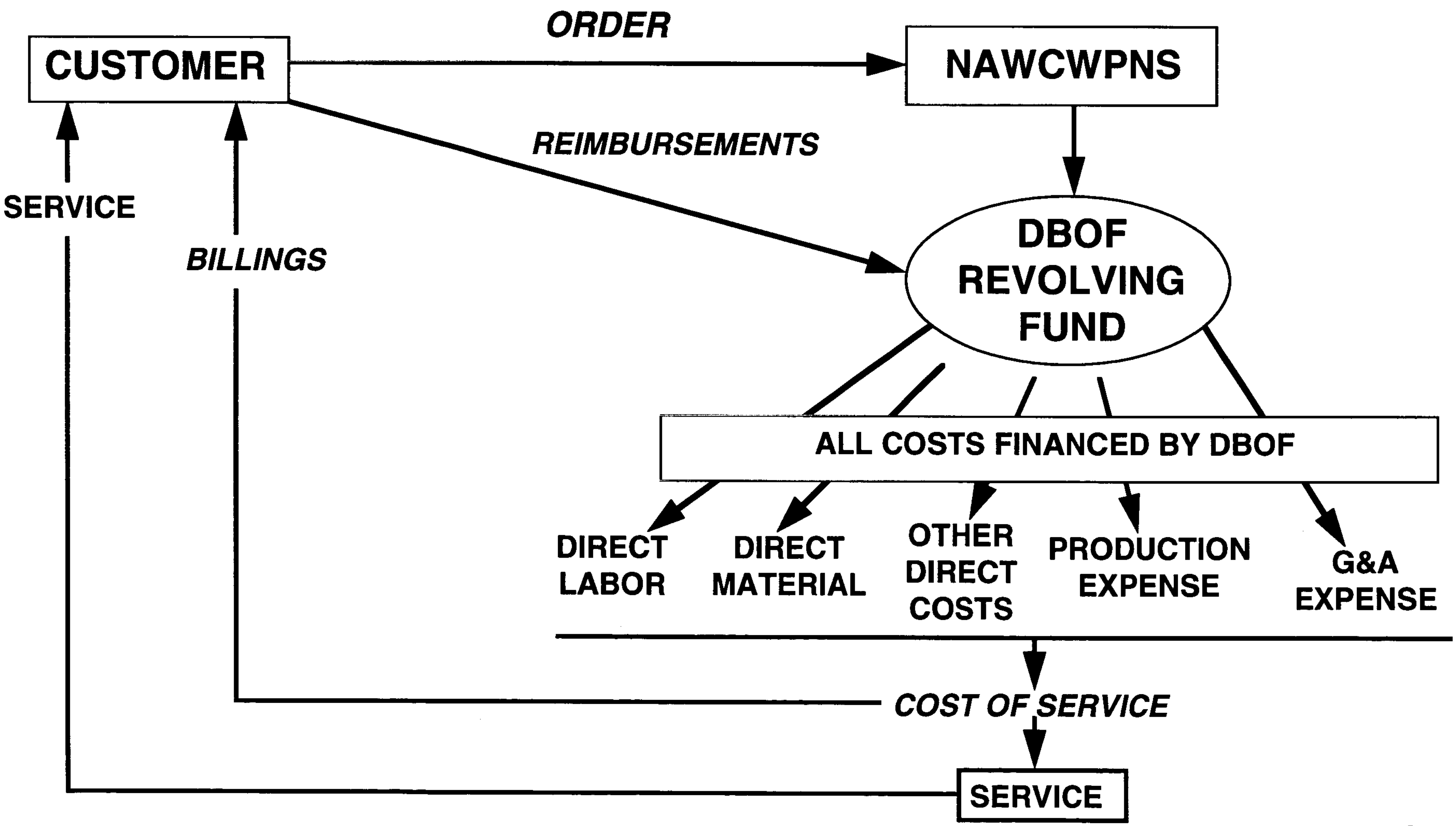
DBOF BUSINESS CONCEPT

- Key Operating Concepts:
  - Establish Businesslike Buyer/Seller Relationship Between Provider (Field Activity) and Customer (Program Sponsor)
  - Improve Full Acquisition Life Cycle Management Program Cost Identification in Budget Justification to Congress
  - DBOF Business Entities Finance 100% of Costs from Customer Reimbursement for Services Provided (i.e., Reimbursable Costs Include Direct Costs, Indirect Costs, and General Overhead)
  - Promote Effective Customer Business Planning and Cross Servicing Through Use of Stabilized Rates
- DOD Statement of DBOF Business Objectives Addressed in DOD Instruction 7000.14R (DOD Financial Management Policy & Procedures)

CYCLE OF OPERATIONS UNDER DBOF FINANCING (GENERIC SCHEMATIC)



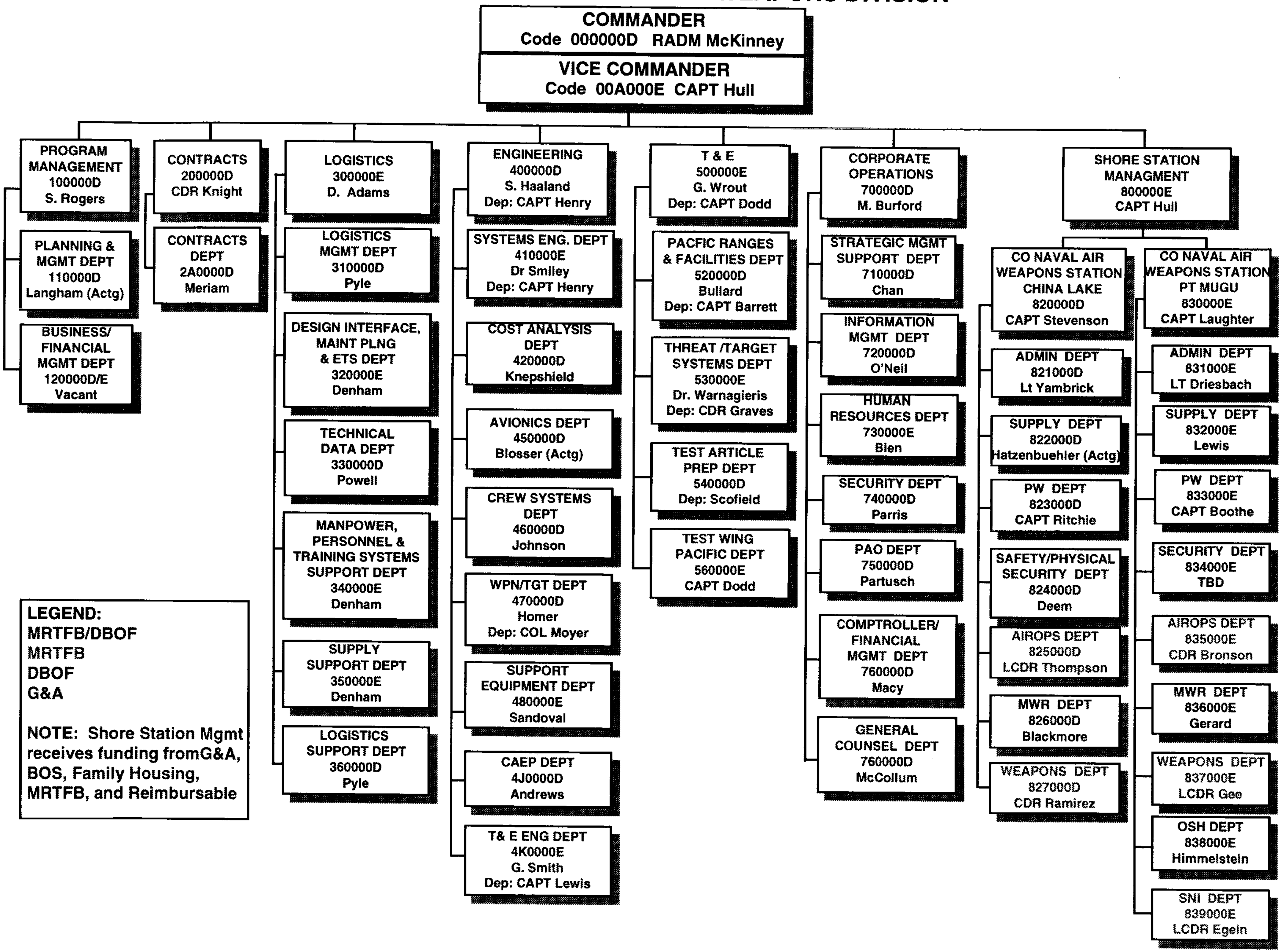
CYCLE OF OPERATIONS UNDER DBOF FINANCING
(GENERIC SCHEMATIC)



DBOF/MRTFB INTEGRATION AT NAWCWPNS

- NAWCWPNS Chartered Entirely As a DBOF Activity, But With a Significant MRTFB Component
  - DBOF Technical Base and MRTFB Operate Under Distinct Funding Policies, With Different Customer Charging Practices
- DBOF Technical Base Charges Customer For G&A, Production Overhead, and Direct Operating Costs
- MRTFB Pays for G&A and Production Overhead from RDT&E Appropriation; Charges Customers for Direct Operating Costs, Only
- MRTFB G&A Contribution to NAWCWPNS Pays for Its Share of Common Services/Infrastructure
  - MRTFB G&A Contribution Is a "Revenue Source" to the DBOF Activity Which Offsets a Portion of the Total Command G&A (~$48M of $242M)

NAVAL AIR WARFARE CENTER - WEAPONS DIVISION



LEGEND:
MRTFB/DBOF
MRTFB
DBOF
G&A

NOTE: Shore Station Mgmt receives funding fromG&A, BOS, Family Housing, MRTFB, and Reimbursable

F-14 WSSA

- **Function**
  - F-14 Weapons System Support Activity (WSSA) provides full spectrum development, test, and evaluation support for the F-14A, F-14B, and F-14D mission system throughout the aircraft life cycle.
- **Capability**
  - The F-14 WSSA is the only facility in existence for the development and test of mission system upgrades.
- **Replacement Value**
  - $185.6M including software development facility, simulation laboratory complex, and flight test facility
- **Significant Issues**
  - The WSSA is under contract with the Navy Program Executive Officer for Tactical Aircraft to design, develop, and test several major block upgrades to the F-14A, F-14B, and F-14D aircraft, including support for the Navy plan for retirement of the A-6E. The NAVY cannot accommodate an interruption in support and meet the deployment schedules that extend well into the next century.
- **Impacts of Move**
  - To support the block upgrade schedule, full duplication and certification of current facilities would have to be done prior to relocation of the WSSA function.
  - Relocation to a site away from the Sea Test Range would require additional expensive flight tests due to the loss of "look out over water" lab tests
  - The size of the Sea Test Range is required to test long range capabilities of the F-14 sensors and missiles
  - Relocation significantly increases the cost of each flight test because of transit time and fuel consumption getting to the Sea Test Range
  - Increase contract costs to relocate essential contractors
  - Interruption of support to re-build expertise that is lost in the move

•STRIKE WEAPONS TEST & EVALUATION

- **FUNCTION**
  - — Full spectrum T&E support to current and advanced strike systems through a balanced mix of laboratory, simulation, captive, and free flight testing
- **CAPABILITY**
  - — 25 years experience in the planning, management, and execution of T&E for cruise and strike weapons
  - — Laboratories and simulations to evauate pre-launch to impact performance of missiles and associated mission systems
- **REPLACEMENT COST**
  - — $17.0M ($8.2M Equipment + $8.8M Facility)
- **SIGNIFICANT ISSUE**
  - — Loss of rapid response capability to address fleet generated missile seeker issues
- **IMPACT OF MOVE**
  - — Higher recurring costs to customers for additional flight time to reach the sea range where test operations will be conducted
  - — Disruption of major weapon systems test schedules

•AIR INTERCEPT WEAPONS T&E

- FUNCTION
  - **MANAGE AND EXECUTE THE T&E OF AIR AND SURFACE LAUNCHED INTERCEPT WEAPONS USING BOTH LABORATORY AND OPEN AIR TESTING.**

- CAPABILITY
  - **85,000 Sq. Ft. Of Highly Secure Laboratory and Administrative Spaces Including; Four (4) Large Missile Hil Labs and 13 Support Laboratories Providing Missile Simulation, Modeling and Simulation, Flight Test Data Analysis and Weapons Lethality Predictions.**

- REPLACEMENT VALUE - **$81.1 M**

- SIGNIFICANT ISSUES
  - **Dedication to a Specific Weapon System**
  - **Unique Footprint of Anechoic Chambers**
  - **Close Proximity of Laboratory and Test Ranges**

- IMPACT OF MOVING
  - **Break in Support of Weapons Programs**

•RCS CHAMBERS

- FUNCTION - CHARACTERIZE MONOSTATIC AND BISTATIC RADAR CROSS SECTIONS (RCS) OF U.S. AND FOREIGN WEAPON SYSTEMS AND SURROGATE THREAT TARGETS.
-
- CAPABILITY - HIGHLY SECURE TS/SAR FACILITIES
- <u>BISTATIC ANECHOIC CHAMBER</u> - SIZE: 150' (W) x 150' (L) x 60' (H)
- FREQUENCY RANGES: 100 MHz TO 100 GHz
- FULL BISTATIC ANGULAR COVERAGE: 0 - 180° (Horz.), 0-90° (Vert.)
- <u>LARGE MONOSTATIC ANECHOIC CHAMBER</u> - SIZE: 40' (W) x 100' (L) x 40' (H)
- FREQUENCY RANGE: 800 MHz to 100 GHz
- <u>MONOSTATIC ANECHOIC CHAMBER</u> - SIZE: 27' (W) x 57' (L) x 17' (H)
- FREQUENCY RANGE: 1 - 100 GHz
-
- REPLACEMENT VALUE - $28.5 M
-
- SIGNIFICANT ISSUES
  - Unique National Assets & Expertise in RCS RDT&E.
  - Broad Customer Base: Tri-Services, Private Industry, Foreign Countries.
  - Weapon Development Programs Cannot Cope With Significant Downtime in RCS Testing.
  - Close Proximity to Related Laboratories, Test Ranges and Local Weapon Developers.
-
- IMPACT OF MOVING
  - Schedule Delay for Major Acquisition Programs.

•TACAIR EW

- FUNCTIONS
  - Provide Full Life Cycle Research, Development and In-Service Engineering support for all Navy Tactical Aircraft Electronic Warfare Systems and Support Systems
- CAPABILITY
  - Full spectrum (RF, EO, IR) EW support
  - 10,000 sq. ft. fully shielded laboratory development environment
  - FMS support
  - Navy's only TACAIR EW support capability
  - Experienced EW Workforce (Avg Exp = 15 yrs)
  - Airborne EW Test bed aircraft
- REPLACEMENT VALUE
  - $101.3 million
- SIGNIFICANT ISSUES
  - Navy's only Full capability R&D and In-Service Engineering asset
  - EW unique expertise requires significant learning curve
- IMPACT OF MOVE
  - Significant break in service for PMA customer
  - Significant impact to EW FMS customers

NAWC
NAVAL AIR WARFARE CENTER

EA-6B WSSA

- FUNCTION
  - Provide Full Life Cycle Research, Development, integration and In-Service Engineering support for the Navy's primary Tactical Jamming Aircraft, the EA-6B
- CAPABILITY
  - EA-6B Block 82 Support
  - EA-6B Block 86 Support
  - EA-6B Block 89A Support
- REPLACEMENT VALUE
  - $60 million
- SIGNIFICANT ISSUES
  - Prime contractor no longer has capability
  - DOD's only EA-6B (Research, Development and In-Service Engineering) capability
- IMPACT OF MOVE
  - Significant EA-6B shutdown impacts
  - <u>NO</u> Fleet Support During Move
  - Loss of synergy with Mission Planning/ Intell Data Fusion capabilities

•INFORMATION WARFARE

- FUNCTION
  - — Provide Full Life Cycle Research, Development, Test & Evaluation and In-Service Engineering support for the Navy's Information Warfare Systems including Standard Tactical Aircraft Mission Planning System and the Marine Corp TERPES
- CAPABILITY
  - — TAMPS RDT&E Support
  - — TERPES RDT&E Support
  - — Open System Architecture Expertise
  - — COTS/NDI Expertise
  - — Provide Intell Real-Time Data for Range Operations Support
- REPLACEMENT VALUE
  - — $16 million
- SIGNIFICANT ISSUES
  - — Navy's Only Advanced Architecture TAMPS Facility
  - — Marine Corps Only TERPES R&D and ISE Facility
  - — Shared Laboratory, Intelligence Data Fusion Capability
  - — TAMPS schedules Fully Integrated with TACAIR Aircraft and Weapons Systems schedules
  - — Sea Range's only source of Real-time ELINT and Trap Broadcast information
- IMPACT OF MOVE
  - — Significant schedule impacts to TAMPS and TERPES programs
  - — Injects significant schedule and program risks to associated Aircraft & Weapons Programs

SEA RANGE

- Functions
  - **PREMIER NAVY/DOD RANGE FOR TEST AND TRAINING IN SEA AND COASTAL ENVIRONMENTS**
- Capabilities
  - **FULL SPECTRUM OF RANGE SERVICES**
  - **EXPERTISE IN PLANNING AND CONDUCTING VERY COMPLEX TEST & TRAINING OPERATIONS**
  - **REALISTIC BATTLE GROUP EXERCISES**
  - **COMPLEX MULTI-THREAT SCENARIOS**
- Replacement Value
  - **$ 690.1M**
- Unique Features
  - **CLOSE PROXIMITY TO OTHER DOD RANGES**
  - **DIRECT ACCESS TO THE BROAD PACIFIC OCEAN**
  - **LARGE OFFSHORE ISLANDS AND HIGH COASTAL MOUNTAINS FOR SITING RANGE INSTRUMENTATION**
  - **A NEARBY DEEP WATER PORT (PORT HUENEME)**
  - **EXTENSIVE COMPLEX OF ADVANCED LABORATORIES & TEST FACILITIES INTEGRAL TO WEAPONS T&E**

MAIN BASE RANGE FACILITIES

- Functions
  - **RANGE INSTRUMENTATION**
  - **OPERATIONS CONTROL**
  - **MANAGEMENT/TECHNICAL SUPPORT**
- Capabilities
  - **METRIC RADARS**
  - **TELEMETRY**
  - **COMMUNICATIONS**
  - **DATA PROCESSING AND DISPLAY**
  - **CONTROL CENTERS**
- Replacement Value
  - **$543.5M** *(includes Port Hueneme facilities)*
- Unique Features
  - **LONG SHORELINE**
  - **PROXIMITY TO COASTAL MOUNTAINS & OFFSHORE ISLANDS**

LAGUNA PEAK

- Function
  - **RANGE INSTRUMENTATION SITE**
- Capability
  - **SURVEILLANCE RADAR**
  - **TELEMETRY**
  - **COMMUNICATIONS**
  - **COMMAND CONTROL/FLIGHT TERMINATION**
- Replacement Value
  - **$23.7M**
- Unique Features
  - **1,500 FOOT PEAK NEXT TO SHORELINE**
  - **CRITICAL TO VAFB OPERATIONS**

SAN NICOLAS ISLAND

- Function
  - **RANGE INSTRUMENTATION SITE**
  - **LAUNCH COMPLEX**
  - **SECURE AREA**
- Capability
  - **METRIC RADARS**
  - **SURVEILLANCE RADARS**
  - **TELEMETRY**
  - **COMMUNICATIONS**
  - **LAUNCH FACILITIES**
- Replacement Value
  - **$ 122.9M** *(includes other offshore islands)*
- Unique Features
  - **LARGE, GOVT-OWNED OFFSHORE LANDMASS**
  - **PROXIMITY TO COAST AND OTHER OFFSHORE ISLANDS**

•COMPLEX SCENARIOS

- Nine Vs Nine AEGIS AAW (1988)
- Six on Six F-14/PHOENIX AAW (1976)
- Four on Four F-18/AMRAAM (1993 -)
- TOMAHAWK TLAM Into China Lake, Fallon, & Uttr (1978 -)
- TOMAHAWK Live Warhead Tests at San Clemente (1990)
- SLAM SEA/SHORE Transition Tests (1991 -)
- Coordinated STRIKE Missions (1987 - Present)
- Joint Missions With NTC and Fallon (1994 -)
- Joint Electromagnetic Interference Tests (1992)
- Battle Group Exercises
  - 10+ Air Targets (Joint AAW Engage Zone) (1993 -)
  - Five on One ASUW (1993 -)
- Battle Management Interoperability Exercises (1991 -)
- Joint Air Defense (Navy Marine) (1995 -)

Aerial Targets

- **Functions:** World Wide Life-Cycle Support (Research, Development, Test & Evaluation) for technical development and operational use of Aerial Target Systems
- **Capabilities:**
  - Point Mugu Aerial Targets Complex is a one-of-a-kind capability
  - Navy's principal site for aerial targets
  - Provides for tri-service needs in development acquisition, production and operation of missile, sub-scale and full-scale targets including associated target control and augmentation systems
  - Systems are deployed both locally and world wide
- **Replacement Value:** $40.9M
- **Significant Issues:**
  - Aerial targets capability is integral to Sea Range testing
  - Weapons testing and training require aerial targets
  - No adequate surface launch capability alternative
- **Impact of Move:**
  - Removes surface launch capability from Sea Test Range
  - Duplication required before move to retain testing and Fleet training capability
  - Complexity of logistics and operational requirements to support sea operations from a remote site
  - Separation (remote placement) of engineering and operational capabilities and personnel

Seaborne Targets

- Functions
  - **World Wide Life-Cycle Support (Research, Development, Test & Evaluation, Product and Operational) for Seaborne Target Systems**
- Capabilities
  - **USN single site for development and acquisition of Seaborne Targets**
  - **Seaborne Powered 18/56 ft. Boat Targets**
  - **Towed Sleds**
  - **Ex-USN Target Ships**
  - **Mobile Ship Target**
  - **Target Control and Augmentation Systems**
- Replacement Value
  - **$1.5M**
- Significant Issues
  - **Seaborne Targets capability is integral to weapons systems testing and training on the Sea Range**
- Impact of Move
  - **Port Hueneme offers the only seaborne target harbor facility suitable for Sea Range operations**

•Threat Simulators

- Functions:
  - Develop, deploy and operate electronic warfare (EW) threat simulators (radar signal simulators and electronic countermeasures simulators)
  - Simulators are an integral part of U.S. weapons development, test and evaluation and operator training to assure our weapons and operators will be effective in a combat environment
  - Tri-service leader. Our simulators are recognized as the premier simulators and are used by the three services throughout the world
- Capabilities:
  - Life Cycle responsibility for all facets of threat simulators. This includes development, procurement, operation, in-service support and depot
  - Simulators have multiple applications including use in/on manned aircraft, unmanned targets, laboratories and land based
- Replacement Value:
- **$9.5M**
- Significant Issues:
- **None**
- Impact of Move:
  - Separating targets/threat systems from the Range will adversely affect weapons evaluation and operator training

WEAPONS TEST SQUADRON POINT MUGU

- **FUNCTION: TO PROVIDE RDT&E AIRCRAFT ASSETS TO SUPPORT:**
  - F-14 Tactical Software Development and Weapons Systems Integration
  - Sea Range Airborne Instrumentation and Area Clearance
  - All Weapons and Aircraft Programs Requiring:
    - » Full Scale Aerial Targets - Supersonic Target Launch - Towed Targets
  - Transportation of Passengers and Cargo
- **CAPABILITY:**
  - 9 F-14, 5 P-3, 16 QF-4, 2 Metro III and 1 C-12 Aircraft
  - Operational support and Aircrew for All Assigned Aircraft
  - Organizational Level Maintenance Support for All Assigned Aircraft
  - Intermediate Level Maintenance Support for All Assigned Aircraft, plus:
    - » NAWS Pt. Mugu, Air National Guard, Naval Air Reserve, and Air Test & Evaluation Squadron Nine
- **REPLACEMENT VALUE**
  - $155.7M
- **SIGNIFICANT ISSUES:**
  - Major Construction at China Lake
  - Significantly Increased Aircraft Activity at San Nicolas Island
  - Increased Cost/Reduced Utility for Sea Range Customers
- **IMPACT OF MOVE:**
  - Significantly Increased Aircraft Flight Time to Support Sea Range Operations
  - Adverse Impact to All Customers Due To:
    - » Increased Cost of Operations
    - » Reduced Operational Flexibility

•AIRFIELD OPERATIONS

- Function: **Airfield Operations**
- Capability:
  - **The Main Airfield Is a Class 'B' Airfield, With the Capacity to Handle All Types of Aircraft up to and Including a C-5A Aircraft**
  - **There Are Two Cross Runways: Runway 3-21, 11,100 Feet, 700Klbs Max Load; Runway 9-27, 5,500 Feet, 766Klbs Max Load**
  - **The Point Mugu Air Traffic Control Provides Airfield Radar Approach for Lax (0500 Hours to 2200 Hours)**
  - **In FY93 the Air Traffic Control Handled 214,578 Operations**
  - **Point Mugu Air Traffic Control Also Supports Civilian Airports at Oxnard Airport, Camarillo Airport, and Santa Paula Airport**
  - **The Airfield Is Utilized by the Following Activities/Organizations: Construction Battalion Center, VX-9, VXE-6, Channel Islands Air National Guard, Army National Training Center Fort Irwin, Federal Bureau of Investigations, Naval Air Reserve, Sea Range Detachments (SLAM, AMRAAM, Etc..), NAWCWPNS (Pacific Test Wing), Navy Contract Aircraft in Support of Shuttle Services for San Nicolas Island and China Lake.**
- Replacement Value: **$53.7M**
- Significant Issues:
  - **DOD and FAA Agreement for Airspace Operation and Control Would Require Immediate Increase in FAA Manpower and Capability to Control Offshore Airspace.**
  - **Radar Approach Air Traffic Control for Local Airports Would Be Eliminated.**
  - **Construction Battalion Rapid Deployment Logistics Support Precludes Ordnance Staging and Loading at Civilian Airports**

•AIRFIELD OPERATIONS (CONT'D)

- Impact of Move:
  - **Ordnance Shipments in Support of Construction Battalion Deployments Would Require Over Land Transportation to Alternate Military Facility With Ordnance Capability. This Would Result in Increased Costs for Shipping and Handling As Well As State and Local Licensing Requirements.**
  - **Loss of Ability to Launch Aircraft and Ordnance Directly Into Military Restricted and Warning Area Within Sea Test Range. Range Aircraft Support Would Require Deployment From Alternate Military Airfield Necessitating Additional Fuel and Flight Time to Arrive on Station Within the Sea Test Range. Also, Alternate Airfield Would Necessitate Flying Over California Mainland to Arrive at the Sea Test Range. Additional Flight Time to and From Sea Test Range Requires Air Refueling Capability As Increased Cost to Range Operations.**
  - **Current Military Tenants and Civilian Agencies Would Have to Be Relocated to Other Qualified Airfield Capable of Ordnance Storage, Handling, and Loading for Shipment.**
  - **California Air National Guard Would Require Relocation to Alternate Airfield. The Air Guard Would Have to Abandon Recently Constructed MILCON Facilities Valued at $76 Million.**

•ORDNANCE STORAGE & HANDLING

- Function: **Ordnance Storage & Handling**
- Capability:
  - **Receipt, Storage, and Handling of Ordnance for Point Mugu Site and Construction Battalion Center, Pt Hueneme, California Air National Guard, Naval Surface Warfare Center, Pt Hueneme, and Federal Bureau of Investigation, Los Angeles. NAWSs Point Mugu Also Handles Basic Capability in Support of All Types of Missiles, Jato, Chaff, and Chaff Roc.**
  - **The NAWS Performs Launch Pad Safety for All Surface Launches in Support of Range Customers.**
- Replacement Value: **$6.6M**
- Significant Issues:
  - **The Loss of This Capability Will Close All Support to the Japanese Defense Force Missile Testing and Support to the Surrogate Threat Program.**
  - **Impact to Range Operations on San Nicolas Island on a Scheduled Basis Due to Time Delay of Transporting Ordnance From Another Location.**
  - **Eliminates the Capability to Transport All up Round Missiles Directly to the Fleet Via Helo.**
- Impact of Move:

  -Alternate Storage/Handling Locations at: Vandenburg AFB; China Lake; Naval Weapons Station, Seal Beach; Camp Pendelton, CA

  -Increased Cost of Operations for Shipments of Ordnance From Storage Facility to Operational Build up Area in Preparation for Launch.

  -Increased Cost of Storage/Handling and Transportation From Storage Site to CBC Rifle Range

•BASE SUPPORT

- Function - **Base Support Functions**
- Capability
  - **Provide Crash, Fire, and Rescue Services Including Mutual Aid to Ventura County, the Cities of Oxnard, Camarillo, and Port Hueneme**
  - **Provide Structural Fire Protection Support Services and Crash Crew for Point Mugu Airfield and Facilities**
  - **Supply Support Services Including Receipt, Warehousing, and Issue of Materials and Equipment. Point Mugu Is Designated As a Navsup Material Stock Point for Navy Inventory System**
  - **Full Matrix of Personnel and Financial Resources Management Functions**
  - **Procurement of Equipment and Materials From Commercial Sources**
  - **Facilities Maintenance & Repair , Utilities Operation, Military Family Housing Management, Environmental Management and Transportation Services**
  - **Security Support Services Including Law Enforcement, Traffic Control, Investigations and Physical Security**
  - **Occupational Safety & Health to Include Inspections and Training of the Work Force and Work Environments**
  - **Family Services Center Provides a Full Range of Counciling and Referral Services to the Military Family and Direct Support to Family Advocacy Program**
  - **Chaplain Provides All Religious Education and Counciling Services**
  - **Civilian Employee Assistance Program Provides Counciling and Referral for Emotional, Family, and Financial Matters. Provides Drug & Alcohol Counciling and Referral for Medical Treatment Covering Both Military and Civilian Community.**
  - **Public Affairs Office Provides a Full Range of Publication, News Release, and Newsprint Material and Community Relations.**
  - **Navy Campus Provides DoN Managed Training Programs for Military Community and After Hours University Programs for Military and Civilian Community**
  - **Morale, Welfare and Recreation Provides Leisure Time Activities and Physical Training Facilities.**

•BASE SUPPORT (CONT'D)

- Replacement Value: N/A
- Significant Issues
  - **Based Upon the Assumption That Some Facilities and Personnel Remain at Point Mugu Site, Specific Support Services Such As Security, Fire, And Emergency Public Works Services, and Supply Services Would Have to Remain As Detachments From Hueneme and Maintain a Physical Presence at Point Mugu.**
- Impact of Move
  - **All Base Support Services Discontinued at Point Mugu Would in Fact Require Inclusion Into CBC Port Hueneme Manpower and Financial Responsibilities.**
  - **Would Require Labor Force Be Maintained at Point Mugu Site for Crash/Fire/Rescue, Fire Protection, Supply, Security, Public Works, and MWR.**
  - **Overall Numbers of Base Support Personnel Would Decrease by a Small Factor Depending On the Number of Personnel and Facilities to Remain at Point Mugu.**

NAWC
Weapons Division
NAVAL AIR WARFARE CENTER

•ENVIRONMENTAL MANAGEMENT

- Function - ENVIRONMENTAL MANAGEMENT
- Capability:
  - **Mugu Possesses Diverse Natural and Cultural Values Including 7 Endangered Species and Numerous Migratory Birds. More Than 1/3 of Point Mugu Is Wetlands and Is Ecologically the Most Valuable Salt Marsh in Southern California. We Have Documented a Complete Wetland Delineation Inventory.**
  - **Point Mugu Has Rich Archeological and Historic Values (Mugu Is From Chumash Indian "MUWU")**
  - **We Maintain Sensitive Species Inventories and Protection Programs**
  - **Recognized As DoD Leader in Hazmat Mgmt and Minimization**
  - **Point Mugu Has Received Multiple Environmental Awards**
  - **Recognized Expertise for Environmental Evaluation of All Test Scenarios Developed at Point Mugu.**
  - **Recognized by Federal and State Regulatory Agencies As Experts in Conservation Management for Cultural and Natural Resources Including Island Ecology**
- Replacement Value: N/A
- Significant Issues:
  - **The Management of Mugu Lagoon Would Have to Revert to Other Agencies. Currently, They Do Not Have the Specific Expertise, Manpower, or Funding to Take on the Additional Management Functions.**
  - **There Are Nine Sites at Point Mugu Which Are Currently in the Installation Restoration Program, One Site Is the Mugu Lagoon Which Will Require Further Study and Significant Cleanup Costs.**
  - **Thirty-One Sites Have Been Contaminated With Fuel That Escaped From Underground Storage Tanks. The Tanks Have Been Removed, but the Sites Will Require Cleanup**
- Impact of Move:
  - **The Title to the Area West of Laguna Road Would Be Assigned to the U.S. Fish and Wildlife Service.**
  - **Current Agreements With Federal Agencies Would Place the Title to the Mugu Lagoon Area East of Laguna Road to the Santa Monica Mountains National Recreation Area.**
  - **Annual Inventories for Sensitive Plants, Wildlife and Cultural Resources and the Protection of Endangered and Threatened Species and Their Habitat Would Have to Be Assumed by the Gaining Agencies.**

• DEPLOYMENT SUPPORT/MOBILIZATION

- Function: **DEPLOYMENT SUPPORT/MOBILIZATION**
- Capability:
  - **Point Mugu Airfield and Airfield Services Supports Construction Battalion Deployment Every 3 1/2 Months on DC10/L1011**
  - **Point Mugu Airfield and Airfield Services Supports Wartime Mobilization of Construction Battalion Center From Pt Mugu on C5-A, C-141, and C-130**
  - **Pt Mugu Provides Ability for Rapid Staging & Deployment of Construction Equip Including Ordnance**
  - **Point Mugu Airfield Provides Staging for Army Training Deployment to National Training Center, Fort Irwin on Multiple C5-A Flights**
  - **Support Transient Aircraft and Air Crews.**
  - **Support Sea Test Range Detachments Operating on the Sea Range (SLAM, AMRAAM, Etc..)**
- Replacement Value: N/A
- Significant Issues:
  - **Construction Battalion Rapid Deployment Logistics Support Precludes Ordnance Staging and Loading at Civilian Airports**
  - **Sea Test Range Dets Would Operate Out of China Lake. No on Site Briefings Would Be Possible.**
- Impact of Move:
  - **Ordnance Shipments in Support of Construction Battalion Deployments Would Require Over Land Transportation to Alternate Military Facility With Ordnance Capability. This Would Result in Increased Costs for Shipping and Handling As Well As State and Local Licensing Requirements.**
  - **Army Would Have to Relocate to Alternate Airfield for Operations at National Training Center, Fort Irwin**

•MILITARY HOUSING & BACHELOR QUARTERS

- Function: **Military Housing & Bachelor Quarters**
- Capability:
  - **The Bachelor Quarters Capacity Is 1,563 PN**
  - **The Bachelor Quarters Operation Was Awarded the Innkeeper of the Year Award for 1994. Also, the BQ'S Were the NAVAIR Nomination for the Zumwalt Award for the Current Year and the Previous 3 Years**
  - **The Installation Was Awarded the Bureau of Personnel (Bupers) 4 Star Award for Quality Bachelor Quarters, Which Places Them in the Top 3% of All Navy BQ'S.**
  - **Family Housing Consists of 668 Housing Units on Main Base and 315 Housing Units in Camarillo.**
  - **Point Mugu Shares the Housing Assets in Camarillo With Port Hueneme. 50-60% Of Camarillo Assets Are Occupied by Port Hueneme Military Families.**
  - **We Have an Active Program of Upgrading the Inventory of Housing Units. All of the Camarillo Units Have Been Completed Under the Whole House Renovation Program. An Additional 150 Units on the Main Base Have Also Been Renovated. In FY 95 an Additional 100 Units Will Be Renovated on the Main Base.**
  - **Point Mugu Family Housing Has Recently Completed the Comprehensive Neighborhood Plan Under the Neighborhoods of Excellence Program.**
- Replacement Value: **$62.9 M Family Housing; $61.4 M Bachelor Quarters**
- Significant Issues: N/A
- Impact of Move:
  - **Existing Assets Would Be Excessed Through Federal Disposal Procedures Including Federal Screening Procedures.**
  - **Existing Assets Could Be Reutilized by Other DOD Personnel on the Oxnard Plains.**

NAVAL AVIATION SYSTEMS TEAM

1994/95

SMALLER, STRON

MORE RESPONSI

A LETTER FROM

THE COMMANDER

NAVAL AIR SYSTEMS COMMAND

25 March 1994

The **Naval Aviation Systems Team (TEAM)** is positioning itself to be the world class example of an acquisition organization best suited for succeeding under changing conditions. This year our TEAM has developed the concept and plan for a major change in our organizational structure and business processes. With the implementation of this "reengineering" effort, we are making the closure of several of our major sites an opportunity to restructure the way we operate in order to take the very best practices that exist throughout the TEAM and make them our standard way of doing business.

We shall be making fundamental changes to our organization. Headquarters will no longer be a stand alone organization, but will move to Patuxent River and become fully integrated into a single NAVAIR that spans each of our sites. The full spectrum of capabilities across the life cycle of our products that will exist at our remaining sites will make us the envy of DoD for efficiency and effectiveness. From Science and Technology, to in-service support, our people will be better able to apply their knowledge across the life cycle of our weapon systems.

Representatives from throughout the TEAM participated in developing the **1994/95 Strategic Plan** to be the blueprint for our change to a more efficient and effective organization. We feel that our efforts have resulted in a plan that is challenging, yet achievable. The five strategies that are spelled out in the Strategic Plan represent the most important actions the TEAM needs to take to ensure our success in the future. The TEAM leadership has committed itself to full support of these five strategies. **All five strategies are interrelated and will be worked together as a coordinated whole, since any reduced emphasis on one strategy will mean weakening the effect and strength of the others.**

Inevitably, change will continue. The TEAM must remain responsive and flexible while ensuring our top priority — support to the Fleet — does not waiver. The good news is that the need for a ready and responsive Navy and Marine Corps Team has never been higher, and the need for our products and services remains high. Over 200 development and acquisition programs are being managed today, and major emphasis is continuing to be placed on technologies and systems for the next century.

I encourage you to read the TEAM's **1994/95 Strategic Plan.** It is important that you understand the means by which our strategies will lead us to a smaller, stronger, more responsive TEAM. The rewards of working with new techniques, great people, and Navy/Marine Corps systems that are vital for our Nation's defense will be better than ever as we become more product and Fleet/customer focused.

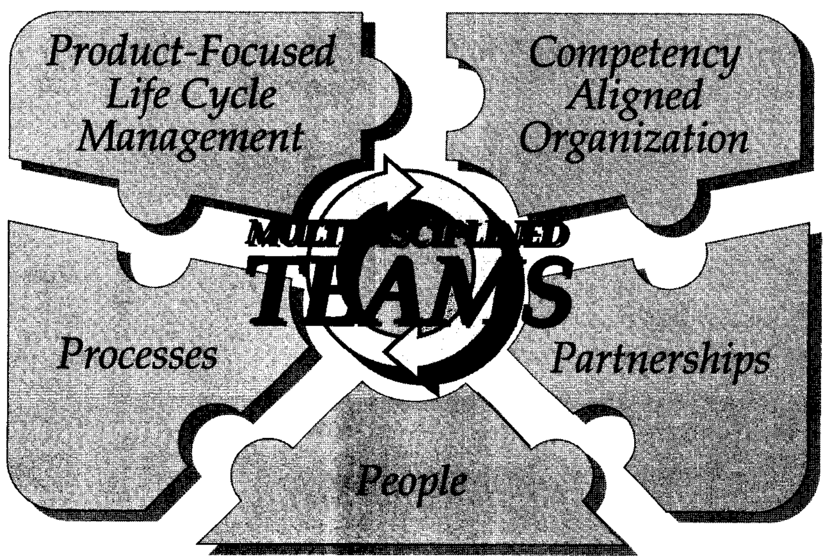
W C Bowes

W.C. Bowes
VICE ADMIRAL
U.S. NAVY

NAVAL AVIATION SYSTEMS TEAM

STRATEGIC PLAN

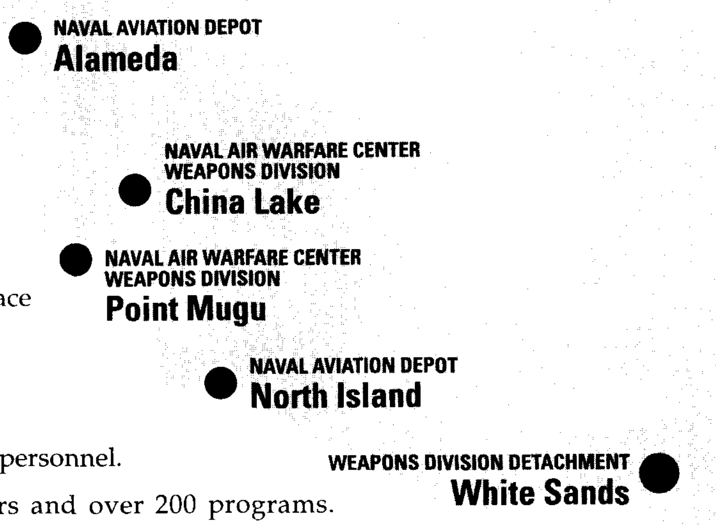
1994/95



ABOUT THE TEAM

The Naval Aviation Systems Team **(TEAM)** consists of the men and women of the Naval Air Systems Command* (NAVAIR), the Aviation Supply Office (ASO), and the aviation Program Executive Officers (PEOs). The TEAM is a successful partnership that is collectively dedicated to providing high quality, technologically superior products and support to our customers. The TEAM's **business** is to serve the nation as the government agency charged with delivering and supporting aircraft and related systems which can be operated, based and sustained at sea. Working with Industry and other government agencies on behalf of the Fleet, we develop, test, deliver, and support products and provide related services throughout the life cycle, including:

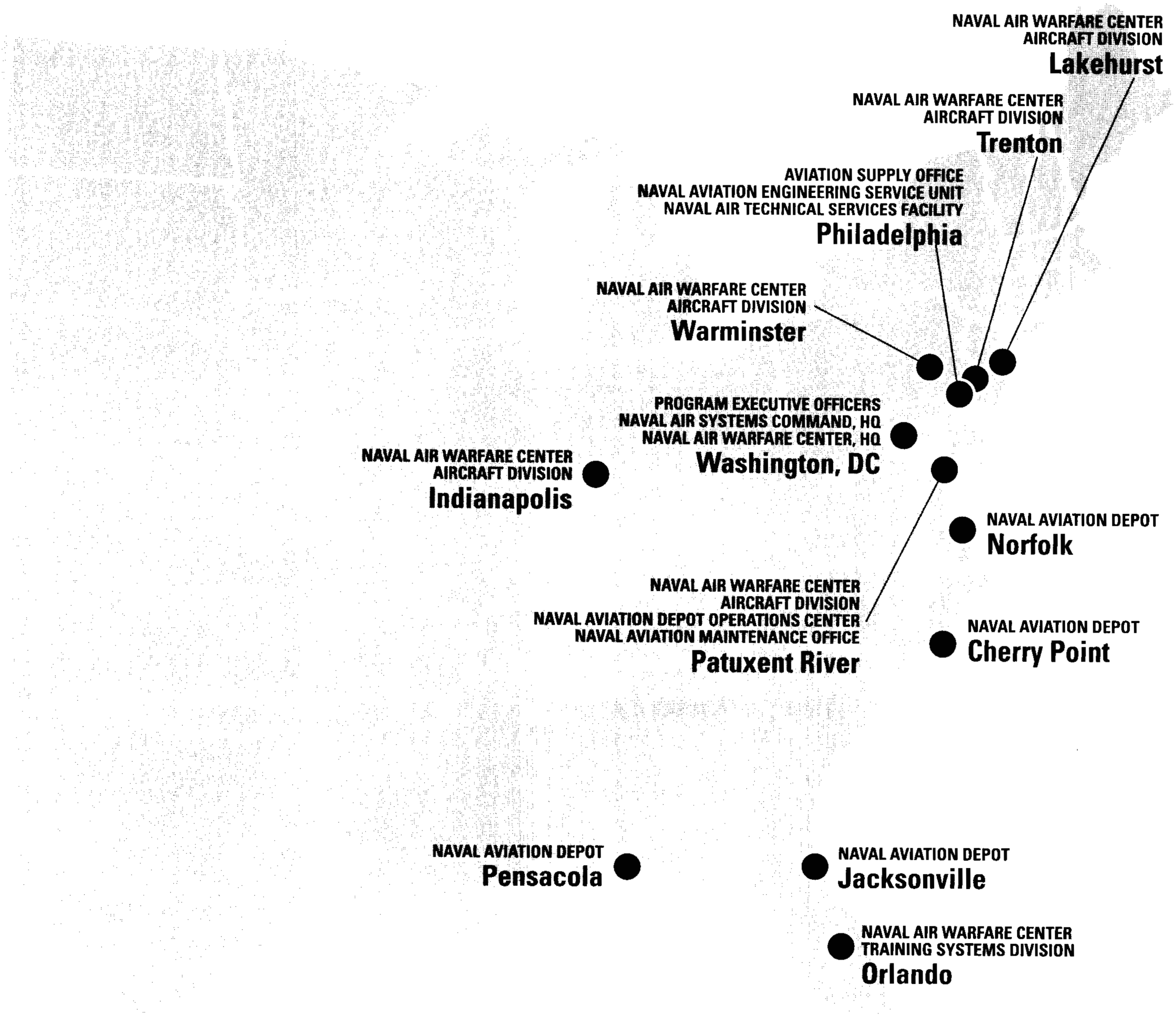
- Carrier and other air capable ship based aircraft and systems
- Integrated air anti-submarine warfare/anti-surface warfare mission systems
- Marine expeditionary forces aviation systems
- Maritime air launched and strike weapons
- Training systems for aircrew and maintenance personnel.



The TEAM in 1993 managed 17.3 billion dollars and over 200 programs. Employed by the TEAM are over 47,000 military and civilian personnel headquartered in Washington, D.C., and located at 18 major technology and engineering centers, test and evaluation facilities, depots and logistics support activities nationwide.

The TEAM is institutionalizing its **Concept of Operations** consisting of Integrated Program Teams (IPTs) fully empowered, under a program manager's leadership, to manage their assigned programs from concept formulation to disposal; and a Competency Aligned Organization charged with developing and sustaining TEAM resources in support of IPTs, and other customer needs.

* The Naval Air Systems Command consists of the Naval Air Systems Command Headquarters, the Naval Air Warfare Center (NAWC), the Naval Aviation Depots (NADEPs), and the Logistic Support Activities (NADOC, NAESU, NAMO, NATSF).


NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
Lakehurst
NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
Trenton
AVIATION SUPPLY OFFICE
NAVAL AVIATION ENGINEERING SERVICE UNIT
NAVAL AIR TECHNICAL SERVICES FACILITY
Philadelphia
NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
Warminster
PROGRAM EXECUTIVE OFFICERS
NAVAL AIR SYSTEMS COMMAND, HQ
NAVAL AIR WARFARE CENTER, HQ
Washington, DC
NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
Indianapolis
NAVAL AVIATION DEPOT
Norfolk
NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
NAVAL AVIATION DEPOT OPERATIONS CENTER
NAVAL AVIATION MAINTENANCE OFFICE
Patuxent River
NAVAL AVIATION DEPOT
Cherry Point
NAVAL AVIATION DEPOT
Pensacola
NAVAL AVIATION DEPOT
Jacksonville
NAVAL AIR WARFARE CENTER
TRAINING SYSTEMS DIVISION
Orlando

CONTENTS

A MESSAGE FROM
THE TEAM LEADERSHIP

The leadership of the Naval Aviation Systems Team (TEAM) is proud to present the **1994/95 Strategic Plan**. The Executive Steering Committee, supported by representatives from all TEAM sites, participated in developing the plan. Major reductions in the operating forces and shore-based infrastructure has brought about significant changes in our business environment. The requirement for the TEAM to continue to provide our customers with the levels of products and services that maximize the Navy's combat capabilities has compelled us to re-examine and modify our 1992/93 Strategic Plan, but the planning process itself is the same and is now an essential part of the way the TEAM positions itself for the future. Moreover, much of the planning we did in the 1992/93 Strategic Plan remains valid.

In this new plan, we continue our emphasis on people. The People Strategy has been adjusted to deal more effectively with radical environmental change. Our previous Jointness Strategy is expanded in the Partnership Strategy to include Industry and other Navy components with whom we interface and coordinate. A refocused strategy – Processes – will identify, document and improve our processes. The Product Focused Life Cycle Management Strategy evolved from the Team Integration Strategy and provides program management teams with responsibility, accountability, authority and adequate resources. The Competency Aligned Organization Strategy, the remaining element of Team Integration builds a stronger program support organizational structure with better access to our skilled personnel resources. Total Quality Leadership will continue to be the management philosophy that ties all our strategies together.

The five strategies in the 1994/95 Strategic Plan represent a holistic reengineering approach to accomplish a massive multi-dimensional change in the way we are organized and operate. In order to be successful we need to use the 1994/95 Strategic Plan as a tool to help build the TEAM of the future.

MISSION

The Naval Aviation Systems Team, in partnership with Industry, serves the Nation and the Navy by developing, acquiring and supporting Naval aeronautical and related technology systems with which the Operating Forces, in support of the Unified Commanders and our Allies, can train, fight and win.

DEPARTMENT OF THE NAVY
GUIDING PRINCIPLES

PERSONNEL—**to keep faith with our people: It is our responsibility to select, motivate, and thoroughly train personnel in an environment of respect and equal opportunity.**

READINESS—**to perform our mission: . . . future readiness depends on having the right forces and personnel to meet future challenges.**

EFFICIENCY—**to use resources responsibly: . . . founded upon efficiencies gained from reorganization around core functions, restructuring, acquisition reform and a commitment to Total Quality Leadership . . . we are executing a program today that will provide the nation with a capable, ready, modern, and efficient navy and Marine Corps for the 21st century.**

TECHNOLOGY—**to enhance our warfighting edge: In the face of new regional dangers, and despite fiscal constraints, it is important for our weaponry and equipment to remain at the cutting edge of technology so our force can "fight smart" and minimize battlefield casualties.**

These Guiding Principle statements have been extracted from the Department of the Navy, 1994 Posture Statement. Please refer to that document for the full text of the 1994 Department of the Navy Guiding Principles.

VISION

The Naval Aviation Systems Team is recognized as a national asset for its role in developing, acquiring and supporting maritime aeronautical systems well matched to the needs of our Navy and Marine forces. Our systems are interoperable and where possible common with the other services.

We are sharply customer and product focused. Our integrated program teams led by a program manager optimize the allocation of resources over the entire life cycle of each system to meet the requirements and priorities established by OPNAV, the Fleet and the Marine Corps. Extensive partnerships with other services and industry allow us to maximize the performance of our products and the value gained for each taxpayer dollar.

To better support the TEAM, the people of the Naval Air Systems Command are organizationally linked by competencies spanning all sites. The TEAM is consolidated at fewer sites to support the retention and application of our distinctive and essential capabilities at an affordable cost. We operate with defined and continuously improved processes which draw us together to transcend geographical separations.

We embrace the quality and creativity of our people as the source of our strength as we reshape and resize to meet the future. We are committed to the training, development and welfare of our people and to supporting the transition of those who depart.

We are a TEAM.

PEOPLE STRATEGY

	MOVE FROM	TO	DESIRED RESULT
Employee Satisfaction and Skills Development	An uncertain future and stressful work environment	People at all organizational levels are constructively involved in helping to shape ongoing changes	Informed, trusting workforce that knows its ideas and suggestions are considered and acted upon
	A lack of an organized employee communi-cations program	More effective communication up as well as down the chain of command	Impact of change is lessened by selling the Vision, explaining the benefits to employees and also taking steps to assist those adversely affected
	Functional specialists divided by organizational and geographical boundaries	Effective multi-disciplined teams that span competencies and site locations	Teams are cross-trained, multidisciplined and skilled in team dynamics
	Unclear understanding of how people are reacting to change and barriers that must be overcome	Better understanding our employees culture by using the right metrics for measuring employee values, beliefs and morale	More satisfied and productive employees with a value system based primarily on honesty, trust and satisfying customers
	Employees appraised and rewarded as individuals for personal accomplishments	Employees are rewarded for team contributions and learning new skills	An established team culture based on complementary skills, commitment to common purposes and mutual accountability

The welfare and development of our employees during this time of dramatic change makes the People Strategy our number one priority. Emphasis needs to be placed on the areas of change management including: enhancing employee communications, educating teams, measuring satisfaction and improving reward systems.

Strategy Intent

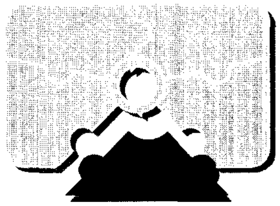
People continue to be the TEAM's most valuable resource. The Department of Defense downsizing and force structure reductions as well as activity consolidations and closures associated with the Base Realignment and Closure Act will be the most significant forces affecting our people. Recognizing that mobility, flexibility, workforce diversity and innovation will be the strengths of those who continue with the Naval Aviation Systems Team, and in partnership with our unions, we will focus on supporting the development of these attributes in our workforce. Our continued success depends upon staffing our competency areas with qualified, highly skilled people.

The TEAM's People Strategy addresses all human resource aspects of the workforce, including affirmative action, training, career development, placement, communications and a positive quality of life for both military and civilian members. The intent of this strategy is to provide the means for our leaders to take care of their people.

The TEAM must provide support to Integrated Program Teams and TEAM enterprise requirements with the right numbers of people with the necessary skills at the right sites; provide a minimum of 40 hours of training per person per year, support mission and professional development; provide opportunities for higher education at all sites; ensure that people are informed, satisfied, and have good quality of life and

"Take care of our people before, during and after this period of consolidation, closure and reorganization."

— LEADER: MR. L. Milan
ASSISTANT COMMANDER FOR CORPORATE OPERATIONS



safety in the workplace; provide affordable support services to relocate people displaced by base closures; make every effort for placement of people leaving the TEAM; ensure that the TEAM profile is consistent with affirmative employment goals; and ensure our people are recognized for their contribution.

Goals

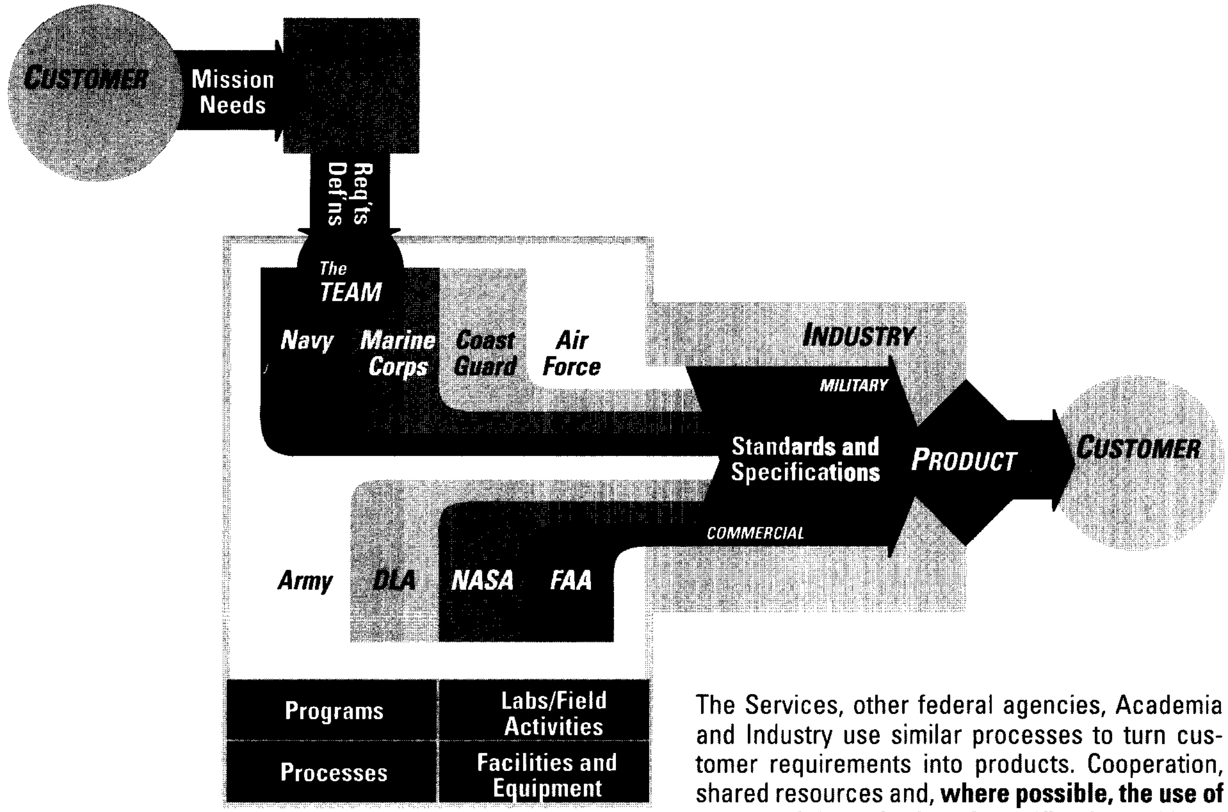
- **Help place all TEAM members affected by downsizing and relocation.**
- **Ensure people are well informed, have a good quality of work life and a safe work environment.**
- **Provide means to satisfy the training needs; provide access to educational resources at all sites; and develop the mechanism for career development programs.**
- **Ensure the TEAM profile is consistent with affirmative employment goals and provides a means to reconstitute the workforce at remaining sites.**
- **Ensure the rewards and recognition processes of our TEAM are well understood and utilized throughout the TEAM.**

Implementation Approach

The FY92/93 People Strategy Quality Management Board (SQMB) has chartered three Quality Management Boards (QMBs) to deal with the principle areas of the strategy. The Placement, Development/Skills and Safety QMBs, each led by members of the SQMB, continue their work to improve processes where appropriate. The Placement QMB will focus on developing and implementing a placement program that takes care of the needs of our employees and the organization. The placement process will include flexible accession guidelines to support movement of employees within the TEAM as well as to help members of the TEAM displaced by base closure and relocation find other jobs. The Development/Skills QMB will focus on implementing a comprehensive development program which supports a competency aligned organization. The Safety QMB will focus on the process of improving the safety and health of all TEAM employees.

Line managers, specialized staff and unions will work together to implement the People Strategy. Action oriented plans will ensure the goals are achieved for our TEAM's people and mission success. Metrics will be established to measure implementation progress. All congressionally-mandated actions will be appropriately executed.

PARTNERSHIPS STRATEGY



The Services, other federal agencies, Academia and Industry use similar processes to turn customer requirements into products. Cooperation, shared resources and, **where possible, the use of commercial standards and specifications** will provide tactical interoperability of our systems.

Strategy Intent

This strategy builds upon the accomplishments of the FY92/93 Jointness Strategy and expands the scope to include other federal agencies and Industry. Opportunities exist for partnerships in all stages of the acquisition process from requirements definition through development, procurement, and full life cycle support to the benefit of all partners.

We need to assure tactical interoperability of our systems in support of the Unified and Specified Commanders and to leverage the capabilities of the other services, federal agencies and Industry to provide that operational capability at an affordable cost.

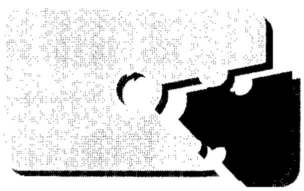
The intent of this strategy is to use standard processes and, where possible, commercial standards and specifications to develop products for our customers. Except for service-unique requirements, we shall share, rather than duplicate capabilities; and ensure that our interactions result in the best use of information to support quality decisions.

Goals

- **Develop, with Industry, complementary relationships and collaborative efforts through expansion of Integrated Program Team concepts.**
- **Increase, with Industry, the use of commercial practices and common processes.**

"Form partnerships with other services, with other Navy components, and with industry to ensure that the TEAM's weapons systems, aircraft, airborne equipment and support systems are effective and affordable over their life cycle."

— *LEADER: RADM D.V. Boecker*
VICE COMMANDER
NAVAL AIR SYSTEMS COMMAND



- **Work with our "partners" to achieve maximum commonality in aeronautical specifications, standards and the business practices we employ in acquiring weapon systems, components and services.**
- **Move toward a greater reliance on performance specification and non-military standards in order to achieve greater integration of military and commercial industrial bases, decrease government oversight, and lower costs.**
- **Partner with Industry to replace military standards with non-government standards where feasible and appropriate.**
- **Develop more partnerships with other services and non-DoD organizations.**
- **Develop common processes and share resources with OPNAV, other SYSCOMs and the Fleet.**

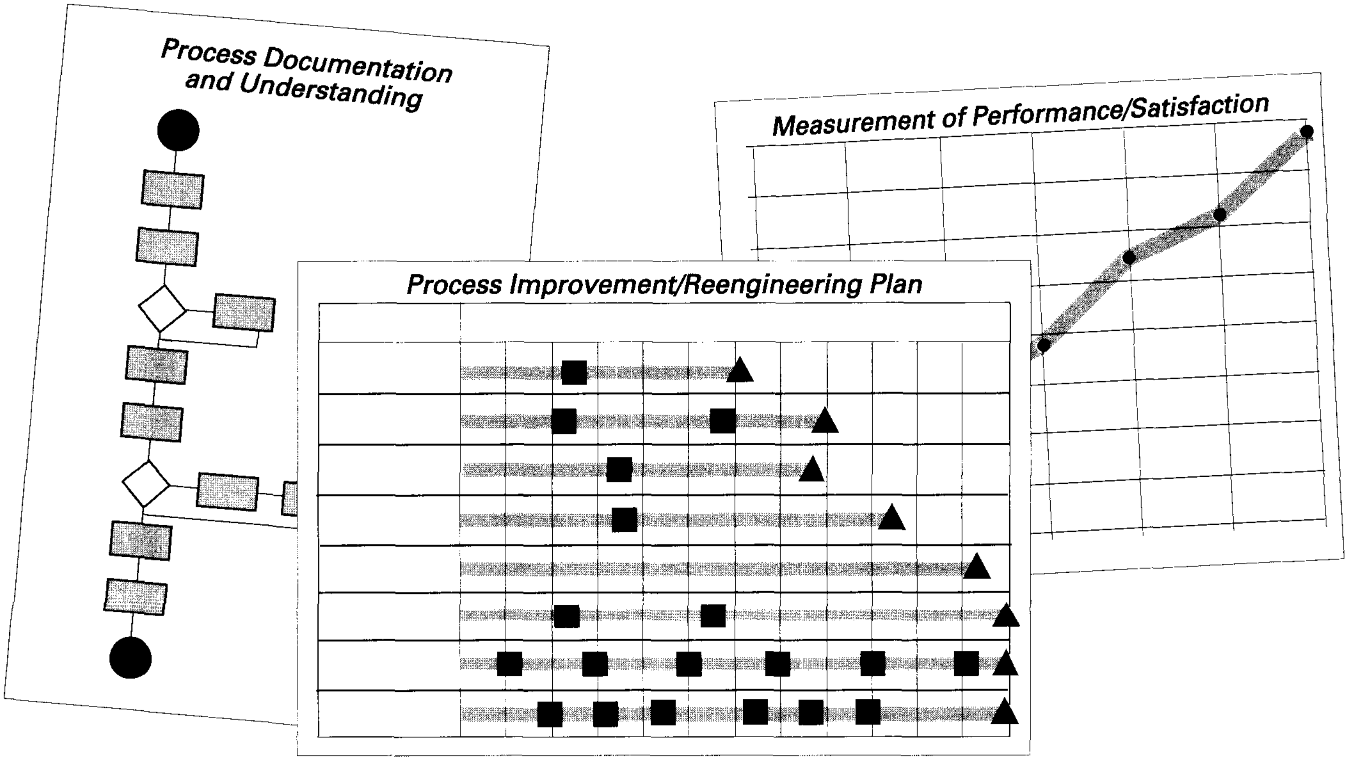
Implementation Approach

A key expansion in the scope of FY92/93 Jointness Strategy is the inclusion of other federal agencies and Industry as partners. We expect to take full advantage of our involvement with the Joint Aeronautical Commanders Group (JACG), the Joint Commanders Group (Test and Evaluation) and the Joint Directors of Laboratories. We intend to focus our partnership efforts with the other services through these groups. The Federal Aviation Administration (FAA), National Aeronautics and Space Administration (NASA), and the Defense Logistics Agency (DLA) are members of the JACG.

We will work with Industry to achieve a future industrial base that possesses the characteristics of common decision support systems; better organization interfaces; coordinated advanced research and development capability; maximum use of civilian technology; enhanced design and prototyping capability; more efficient business processes; engineering and production capabilities; healthy mobilizable civilian production capacity; robust maintenance and overhaul capacity; and integrated, streamlined management structure. Our relationship with Industry must become more complementary than ever before.

Within the Navy, we will develop partnerships that result in the sharing and integration of resources and information. Assets such as those at NAWC and Depot sites present unique Navy and national capabilities around which to build partnerships. These partnerships will build mutual trust, facilitate the exchange of ideas, improve our support of the Fleet, and reduce the costs associated with the acquisition and support of aeronautical weapons systems.

PROCESSES STRATEGY



All work processes, particulary primary processes, are critical to successful execution of our mission. It is through work processes that we obtain operational excellence and provide value to our customers. Measures of process performance need to be based primarily on customer satisfaction.

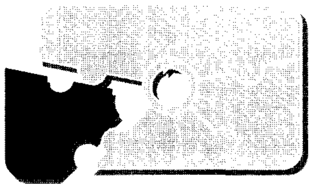
Strategy Intent

It is imperative that we identify, understand, and document our work processes as a result of the planned dramatic workforce reduction and restructuring of NAVAIR into a Competency Aligned Organization (CAO) in support of Integrated Program Teams (IPTs). This strategy will promote education and training in process definition, management, improvement and reengineering methodologies. Process training and education will become the central means of ensuring all TEAM members are qualified to carry out their assigned competency responsibilities. Valid metrics which are used to measure process performance and assess customer satisfaction will be developed. Methods for consistent process definition, management and improvement will be established.

While all work processes—for example, those that support the work of the IPTs—create value, there are a vital few primary processes which are critical to the successful execution of the TEAM mission. These primary processes can cut across organizational and geographical boundaries; reside entirely internal to the NAVAIR organizational element; or interface with external organizations such as OPNAV, other Services or Industry. **Emphasis will be placed on the identification and improvement of primary processes throughout the TEAM.**

"Throughout the TEAM, do business based on process management, measurement and improvement."

— LEADER: MR. J. Weathersbee
EXECUTIVE DIRECTOR FOR CORPORATE OPERATIONS
NAVAL AIR SYSTEMS COMMAND



Goals

- **Establish primary process owners to identify, document and manage top level processes.**
- **Establish mechanisms to determine process and product quality and identify metrics.**
- **Establish methods for consistent process improvement.**
- **Develop a mechanism for education and training in process management.**
- **Establish a methodology for setting process capability standards across the TEAM.**

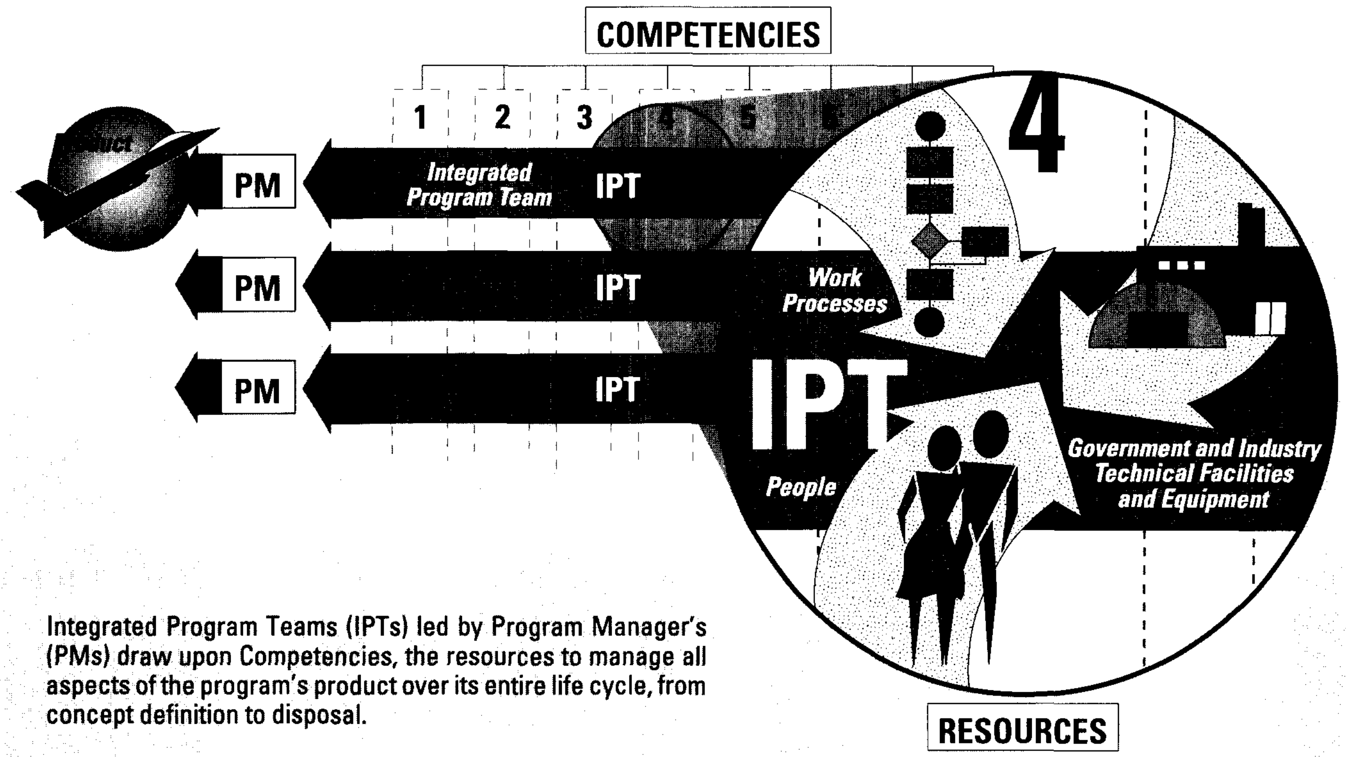
Implementation Approach

A leadership team comprised of senior competency representatives committed to process improvement will be established. To appropriately establish process ownership, they will identify and divide work processes into top level categories: Systems Requirements Definition, Systems Development, Transition to Production, Test and Evaluation, Acquisition Management, Fleet Support, Personnel Management, and Financial Management.

The leadership team will identify the TEAM's primary processes, process owners, and developing a comprehensive process improvement vision and implementation plan. They will initiate and oversee development of detailed process improvement methodologies and a corresponding education program. These methodologies and this education will provide improvement techniques and automated tools, will challenge fundamental business assumptions, and will incorporate innovative solutions for process improvements. Through use of the best practices of industry and government, the process owners will remain responsible and accountable for performance and management of their processes.

A process advisory team consisting of TEAM personnel well versed in process improvement methodologies will assist the leadership team and the process owners. Information technology will be used to improve process design and performance. The primary processes will be given priority and documented by process owners using competency personnel. A complete understanding of the processes will be achieved. If improvements are required, the techniques used will be in accordance with the established process improvement methodologies. Performance measures will be developed by the process owners to monitor process performance and to determine customer satisfaction.

PRODUCT-FOCUSED LIFE CYCLE MANAGEMENT STRATEGY



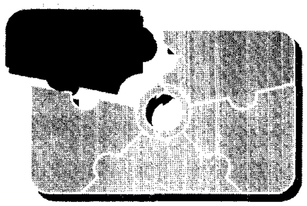
Integrated Program Teams (IPTs) led by Program Manager's (PMs) draw upon Competencies, the resources to manage all aspects of the program's product over its entire life cycle, from concept definition to disposal.

Strategy Intent

This strategy positions the TEAM to progressively and decisively implement an integrated life-cycle management operational concept. The Program Manager, as leader of the multidisciplinary team, needs clear responsibility with authority, accountability, human resources and program dedicated fiscal resources for all aspects of the program/product, from concept through disposal. In conjunction with the Office of the Chief of Naval Operations (OPNAV) and Fleet representatives, the Program Manager works to accomplish the best programmatic decisions and optimize the allocation of resources available to the program. Within the TEAM, integration of our eight competencies (Program Management, Contracts, Engineering, Logistics, Test and Evaluation, Industrial, Corporate Operations and Shore Station Management) into program specific teams is the cornerstone for implementation of the Product-Focused Life-Cycle Management Strategy. The result is a sharper focus on managing programs with dedicated resources configured to deliver full life-cycle support while operating in a resource constrained environment. The operating concept aligns and unifies the internal and external team members to provide quality life-cycle service to our Fleet customers.

"Mechanize life cycle management of our systems by focusing our people, work processes, technical facilities and equipment into Program Manager-led multidisciplinary teams, with the responsibility and authority to manage all aspects of our programs to meet OPNAV and Fleet requirements."

— LEADER: RADM J.A. Lockard
PROGRAM EXECUTIVE OFFICER
TACTICAL AIRCRAFT PROGRAMS



The intent of this strategy is to give the Program Manager responsibility and to define the external team operating relationships including OPNAV and Fleet participation in the life cycle management process, as well as establish the structure, processes and procedures necessary for the TEAM to support the multidisciplinary program teams.

Goals

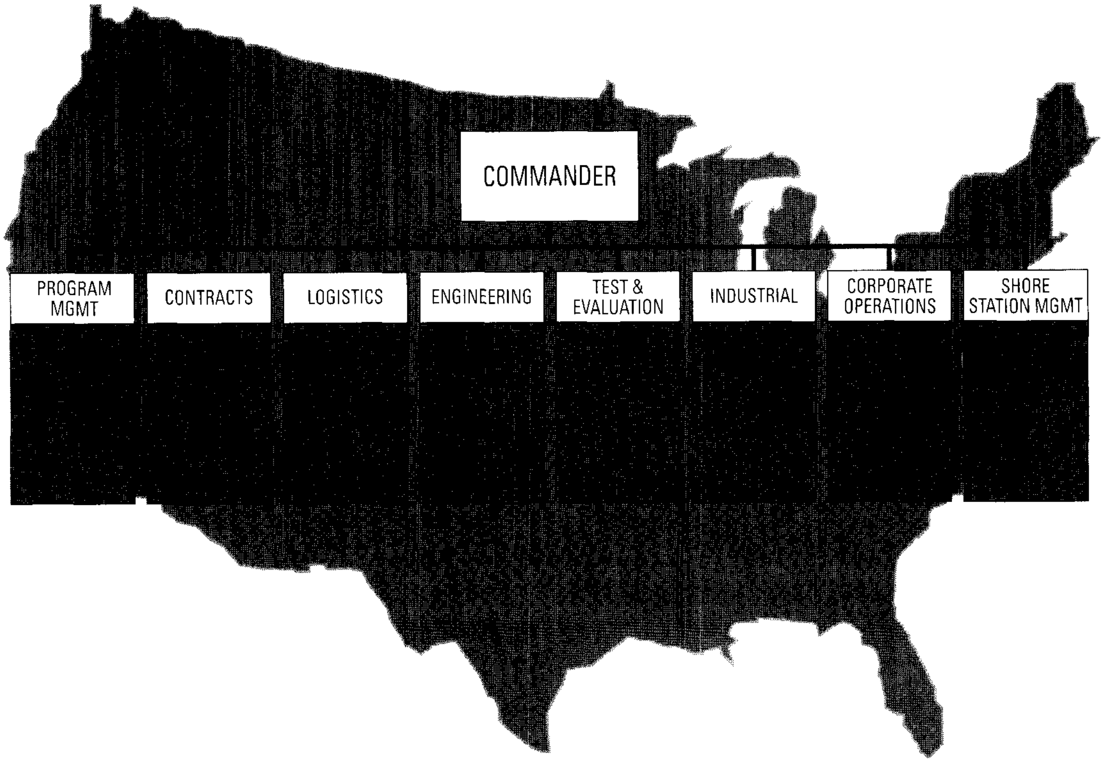
- **Provide the Competency Aligned Organization with an IPT implementation information package.**
- **Define supervisor relationships within the IPT structure and draft an implementing instruction leading to IPT stand up.**
- **Define "IPT Co-Location" and draft an implementing instruction to stand up co-located teams, to address space/facility, and to allocate requirements.**
- **Develop the procedures required to allocate all organizational resources (including people, funds, facilities and services). This plan should address the formal process to establish priorities; allocate people, funds, facilities and services; define competency manager responsibilities; and create conflict resolution procedures.**
- **Construct a generic plan for all IPT members covering all roles in the IPT including as a minimum: self-managing team concepts, supervisory roles, resource allocation process and program specific planning.**

Implementation Approach

All actions necessary to define and implement the IPT operational concept, including the scope and makeup of multidisciplinary teams, were started during the first quarter of calendar 1994.

Progressive implementation will proceed as soon as practical. Specific prototype programs and teams will be identified and serve as guideposts while refining procedures and processes for smooth full organizational application. A top level plan of action and schedule for full implementation through all selected programs and teams will be developed. The currently developed Plan of Action and Milestones (POA&M) will include program specific team discipline makeup roles, responsibilities and schedules for status reviews and full operational implementation. Detailed procedures, organizational structure and operating relationships will be established between all elements of the multidisciplinary teams.

COMPETENCY ALIGNED ORGANIZATION STRATEGY



A competency is a major organizational element that includes the people with knowledge, skills and experience in particular disciplines, technical facilities, equipment and processes necessary to satisfy program and other demands. Competencies will be unified across the organization spanning all geographical sites, to affordably support robust corporate capabilities and resource planning.

Strategy Intent

This strategy builds upon and moves beyond the FY92/93 TEAM Integration Strategy to progressively implement a new unified organization for the Naval Air Systems Command that can better support its role as a member of the Naval Aviation Systems TEAM. A basic tenet of the new organization will be the unification of our business and technical competencies across the organization. Our Program Management, Contracts, Logistics, Engineering, Test and Evaluation, Industrial, Corporate Operations and Shore Station Management competencies will be unified to promote the most effective and economic use of our talents.

Within this construct, for instance, all the people in Engineering will report within the appropriate Engineering competency chain to the "chief engineer." Competency leaders will be responsible for development of competency talent, matching competency supply to demand, defining and improving processes, and integrating lessons learned and technology across programs. This new organizational structure will assign accountabilities to significant segments of our business and reduce reliance on formal site-centered command structure for work and organizational integration. The intent is a flatter, smaller organization, consolidated at fewer sites, configured to sustain our distinctive capabilities to deliver

"Build a new organization for the Naval Air Systems Command which organizationally links our people within competencies extending across all sites to strengthen our ability to perform our mission at reduced size and cost, to operate within defined and managed processes and to support our concept of operations for program life cycle management."

— LEADER: DR. A. Somoroff
DEPUTY COMMANDER
NAVAL AIR SYSTEMS COMMAND

maritime aeronautical systems/support, and able to draw upon government and industry partners to complement our efforts.

Goals

- **Define and establish the structure and operating precepts of a unified competency aligned organization.**
- **Ensure effective mechanisms are in place to manage the sizing and composition of our workforce to satisfy the needs of our customers and stakeholders now and into the future.**
- **In consonance with the Base Realignment and Closure (BRAC) process, consolidate our essential capabilities, people and facilities, while maintaining continuity of support to our customers during the transition.**

Implementation Approach

All actions necessary will be taken to establish this new organization in its entirety by a target date of October 1997.

Progressive implementation will proceed by building upon the phased unification and integration of competencies across geographic sites and existing organizational partitions.

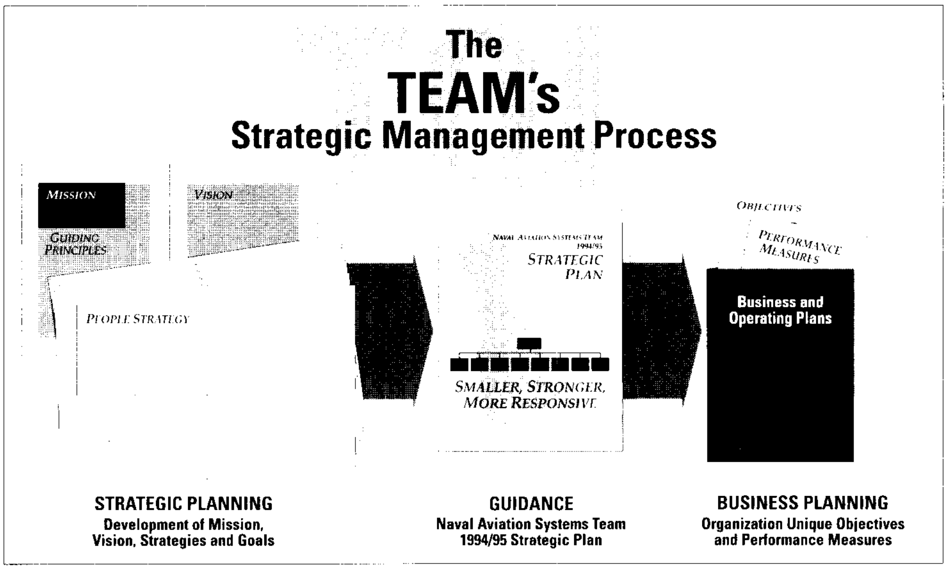
A top level Transition Plan for implementation has been developed. Teams for each competency area will be established to define a detailed organizational structure. Collectively, the teams will draft operating precepts for the entire organization. Each organizational element will develop a transition plan. These plans will serve as road maps and checklists of actions as we move through the transition phases.

Managing the size and composition of our workforce will include: understanding the capability/capacity and utilization of our workforce as it exists and as it will be required in the future; establishing mechanisms for a deliberate allocation of capability/capacity to the array of demands in the TEAM; and developing mechanisms to describe the factors driving the cost of our services as they are influenced by our workforce composition and business base.

BRAC planning and execution will be executed within the charter of the Naval Aviation Systems Team Steering Committee for BRAC. The integration of these activities with the establishment of our new competency aligned organization will be managed within this Strategy.

THE TEAM'S STRATEGIC MANAGEMENT PROCESS

Strategic Management is the process of implementing the TEAM strategies and accomplishing the TEAM Vision. It encompasses strategic planning and business planning and is guided by the principles and methodologies embodied in Total Quality Leadership. The Strategic Planning Process (shown below) is critical to the accomplishment of our mission and our long term success. The principles, strategies, goals and methods for accomplishing the TEAM's mission and achieving its vision must be aligned throughout the TEAM to form a consistent framework for ensuring a highly capable, fully integrated, customer focused organization. After the strategic planning decisions are made and articulated in the Strategic Plan the emphasis shifts to implementation through business planning.

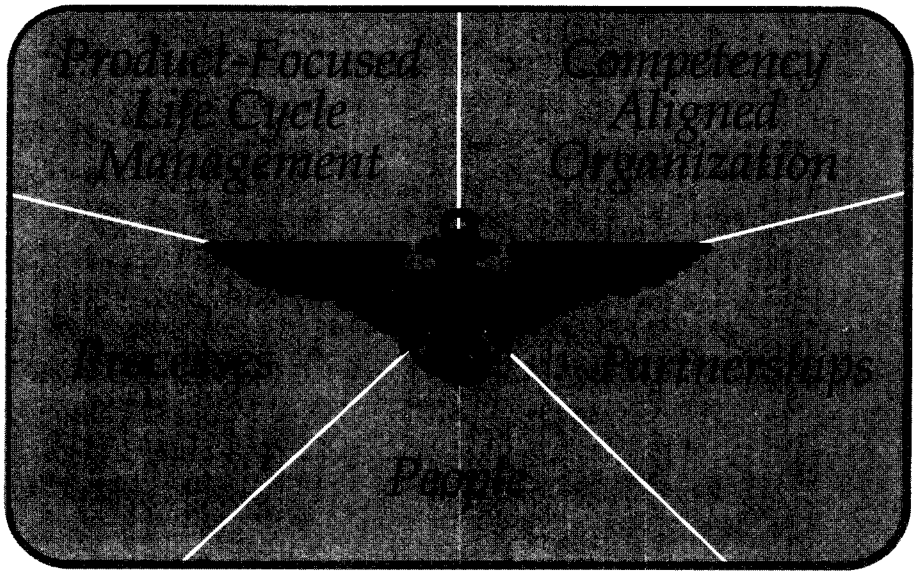


In order to perform the TEAM mission, we must communicate, execute, and deploy our Strategic Plan by translating strategies and goals into action. One of the key steps in this process is linking all organizational elements of the TEAM through a network of supporting plans. This is accomplished through the development of Business Plans and Operating Plans by functional groups and field activities until competency alignment is complete. These supporting plans serve as management tools to assist in the effective and efficient deployment of the TEAM's Strategic Plan throughout the entire TEAM. The Business and Operating Plans address the TEAM strategies from the perspective of the different organizational missions. They provide the short term, specific objectives that support the TEAM strategies, identify areas of special emphasis, and influence unique organizational priorities for day-to-day activities that result ultimately in the implementation of the Strategic Plan. Business planning relates individual organizational objectives to overriding goals of the corporation.

The three Total Quality Leadership (TQL) principles, customer satisfaction, process improvement, and performance measurement, continue to be the TEAM's central management strategy – the foundation of everything we do. Its philosophy is embedded in each of the new Team Strategies. Applying the ideas inherent in TQL will become absolutely vital as we move through our transition to fully institutionalize our Concept of Operations, Competency Alignment and Integrated Program Teams.

CONCLUSION

The five TEAM Strategies represent areas around which our actions must be organized to accomplish our vision. Similar to the National Performance Review's key principles of **Cut Back to Basics, Put the Customer First, Cut Red Tape** and **Empower Employees,** our Strategies fit together much like the pieces of a puzzle. Each supports the others and ultimately determines the overall effectiveness. The Strategies, used together with our Total Quality Leadership philosophy, will provide greater value to our customers.



The **Product Focused Life Cycle Management** and **Competency Aligned Organization Strategies** will be the source of the most visible changes in our future. It is through these strategies that we will totally revamp the way we have viewed ourselves and have conducted our business in the past. We will become a totally integrated corporation operating with defined and managed processes. Although our employees and capital resources may be geographically dispersed, we will operate as a single organizational unit.

The **People, Processes and Partnership Strategies** play a vital role in supporting the new concept of operations. Each of these strategies has specific goals that will enable us to utilize our resources more effectively. Our improved processes and performance measurement powered by skilled and satisfied employees form the common elements shared by all five Strategies.

In summary, our transition to a smaller, stronger, more responsive organization will involve reengineering our organizational structures, business and technical processes, management techniques, measurement systems, values and beliefs. The bottom line will be greater value to our customers and less cost to the taxpayer.

EXECUTIVE STEERING COMMITTEE

The Naval Aviation Systems Team Executive Steering Commitee (ESC) was established in 1991 to act as the senior leadership board for naval aviation acquisition and supply. The ESC has responsibility for strategic management, PEO/NAVAIR/ASO issues resolution, program assessment issues, and semi-annual updates/annual overviews of TEAM components. ESC membership is listed below.

VADM W.C. Bowes
COMMANDER
NAVAL AIR SYSTEMS COMMAND
ESC CHAIRMAN

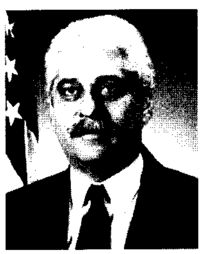
MR. D.P. Czelusniak
PROGRAM EXECUTIVE OFFICER
AIR ASW, ASSAULT AND
SPECIAL MISSION PROGRAMS

RADM G.F.A. Wagner
PROGRAM EXECUTIVE OFFICER
FOR CRUISE MISSILES PROJECT
AND UAV JOINT PROJECT

RADM J.A. Lockard
PROGRAM EXECUTIVE OFFICER
TACTICAL AIRCRAFT PROGRAMS

RADM J.P. Davidson
COMMANDING OFFICER
AVIATION SUPPLY OFFICE

RADM D.V. Boecker
VICE COMMANDER
NAVAL AIR SYSTEMS COMMAND



DR. A.R. Somoroff
DEPUTY COMMANDER
NAVAL AIR SYSTEMS COMMAND

RADM ***G.H. Strohsahl, Jr.***
COMMANDER
NAVAL AIR WARFARE CENTER

RADM ***R.G. Harrison***
DEPUTY COMMANDER
ACQUISITION & OPERATIONS
NAVAL AIR SYSTEMS COMMAND

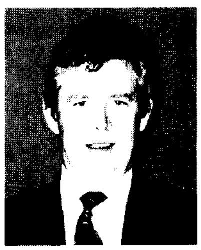
RADM ***W.J. Tinston, Jr.***
ASSISTANT COMMANDER
FOR LOGISTICS & FLEET SUPPORT
NAVAL AIR SYSTEMS COMMAND

RADM ***W.E. Newman***
ASSISTANT COMMANDER
FOR SYSTEMS & ENGINEERING
NAVAL AIR SYSTEMS COMMAND

RADM(S) ***W. Smith***
ORGANIZATION
TRANSITION EXECUTIVE
NAVAL AIR SYSTEMS COMMAND

MR. ***L.F. Milan***
ASSISTANT COMMANDER
FOR CORPORATE OPERATIONS
NAVAL AIR SYSTEMS COMMAND

MR. ***C.J. McManus***
COUNSEL
NAVAL AIR SYSTEMS COMMAND



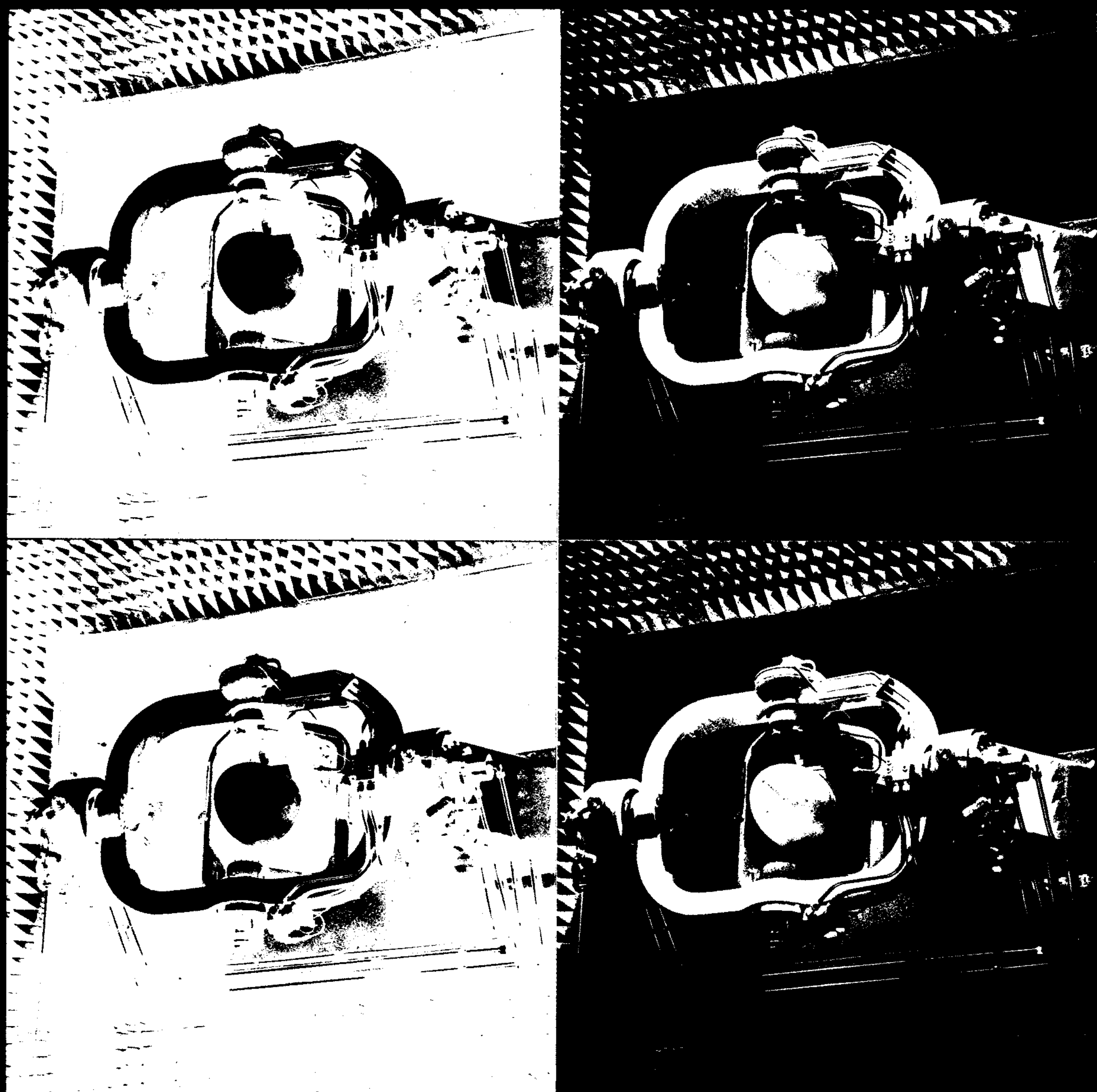
CAPT ***J.E. Mutty***
COMPTROLLER
NAVAL AIR SYSTEMS COMMAND

CAPT ***R. Jordan***
DEPUTY ASSISTANT COMMANDER
FOR AVIATION DEPOTS
NAVAL AIR SYSTEMS COMMAND

CAPT ***D.S. Parry***
ASSISTANT COMMANDER
FOR CONTRACTS
NAVAL AIR SYSTEMS COMMAND

MR. ***J. Weathersbee,***
ASSISTANT FOR CORPORATE QUALITY,
advises the ESC on Total Quality Leadership (TQL).

Document Separator



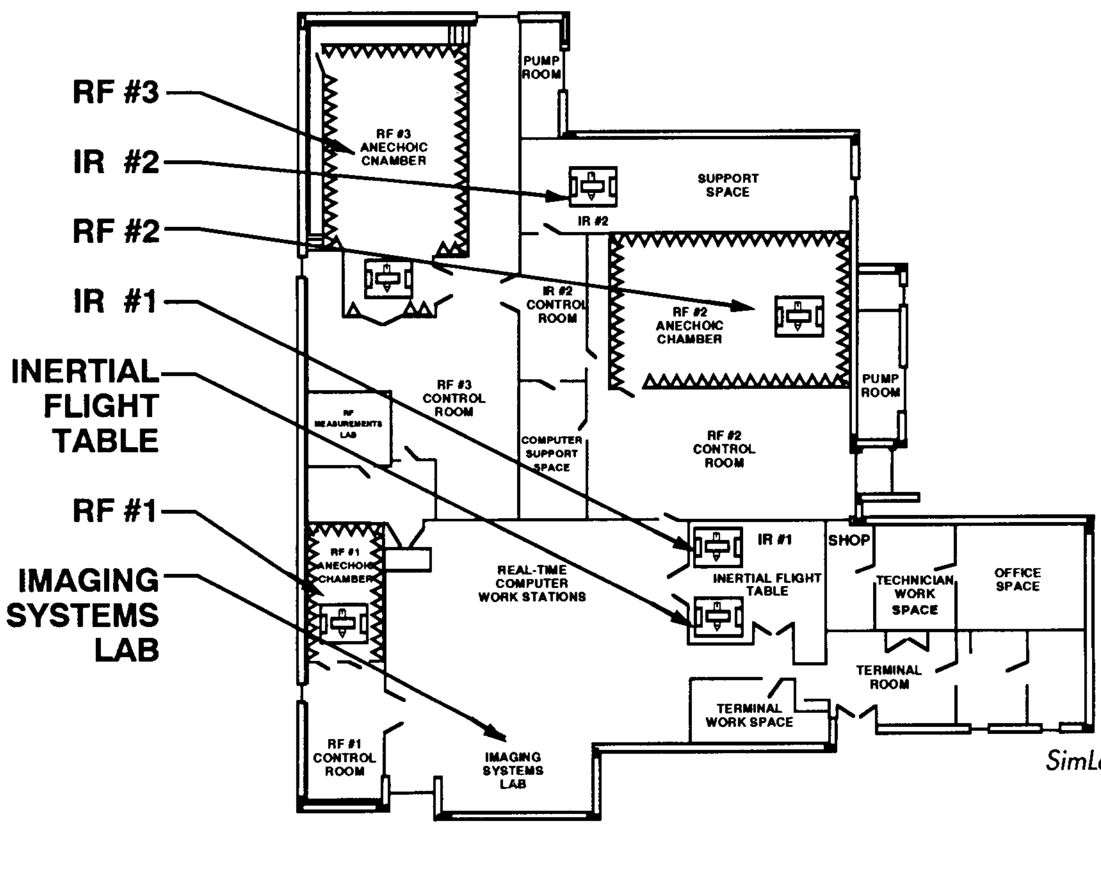
Missile Simulation Laboratory

Naval Air Warfare Center Weapons Division
China Lake, CA 93555-6001

China Lake. The name is synonymous with expertise, innovation, and a "can-do" attitude. What can be and has been done in China Lake's Missile Simulation Laboratory—or SimLab—is the design, development, test, and evaluation of the most effective and reliable missile systems now in the Fleet's arsenal.

SimLab personnel are experts at hardware-in-the loop (HWIL) simulation—the process of exercising actual weapon-system hardware in an environment that realistically simulates free-flight testing. HWIL simulations cut the risks and costs associated with free-flight testing, providing an effective way to evaluate missile-system designs and inter-system integration before any hardware is placed on an aircraft or ship. The use of HWIL also supplies systems analysts and engineers with a rigorous, thorough technique for concept validation. The SimLab is composed of seven distinct facilities. Each facility is capable of operating both autonomously (which is advantageous for security reasons) and in a linked fashion (which is ideal for customers who need to use the assets of more than one facility).

For software development work, including data transfer, all seven facilities share the resources of the central digital computers. For radio-frequency (RF) testing, three anechoic chambers are available in RF Facilities #1, #2, and #3. Two electro-optical/infrared (EO/IR) facilities, referred to as IR Facilities #1 and #2, support seeker testing in the visible as well as the near- and far-IR regions of the spectrum. An Inertial Flight Table (IFT) Laboratory is available specifically for evaluating guidance-system instrumentation packages. The SimLab also contains the Imaging Systems Laboratory (ISL), which is equipped to support various image-processing tasks, such as synthetic-background generation and algorithm evaluation via video injection to missile trackers.



SimLab Floor Plan

Typical HWIL Workstation Console

IR Facility #2

- three-axis hydraulic flight-motion simulator
- "Jaws" multifunction IR target system (extended targets, IR countermeasures, and backgrounds)
- AD-100 simulation computer
- VAX station 3500
- EAI 200 10-volt analog computer console
- Silicon Graphics visualization workstation
- Macintosh II documentation workstation
- low-pressure filtered air
- 400-Hz power
- closed-circuit TV system with VCR

SPECIAL DESIGN AND FABRICATION CAPABILITIES

The following special capabilities are offered by the SimLab:

- comprehensive in-house electronic design, RF design, and fabrication
- microwave system design, development, and fabrication
- computer-aided engineering (CAE) via 386/486 PC workstations
- PC-based development tools, including
  - schematic capture
  - programmable logic systems
  - functional and timing simulations
  - multilayer-printed-circuit-board design and verification
- MIL-STD-2000-certified operators and inspectors

PERSONNEL

The skills, expertise, and insight of SimLab personnel, coupled with careful planning and regular investment, ensure that the SimLab will continue to provide its users with state-of-the-art simulation capabilities. SimLab personnel excel in the following areas:

- simulations
- hardware interfaces
- computer engineering
- flight table maintenance, upkeep, and repair (MUR)
- target-presentation system development
- facility management

SECURITY CONSIDERATIONS

The SimLab meets automatic data processing (ADP) security requirements by

- using password systems
- using remote terminals for unclassified work only
- formally accrediting all systems through China Lake's Security Department
- storing back-up tapes in locations remote from the SimLab

The SimLab has also established the following special security provisions:

- four independent security zones
- separate computer systems for each security zone
- heat and/or motion detectors and group 1R locks
- continuous monitoring of all alarm systems

When your project requires simulation, contact the SimLab—the HWIL experts at China Lake

RF Facility #3

- three-axis hydraulic flight-motion simulator
- microwave anechoic chamber
- electric/hydraulic dual-target X-Y translator
- EAI 2000 10-volt analog computer console
- AD-100 simulation computer
- VAX station 3500
- Silicon Graphics visualization workstation
- Macintosh II documentation workstation
- RF test and calibration equipment
- 400-Hz power
- closed-circuit, high-resolution color TV system with VCR

Imaging Systems Laboratory (ISL)

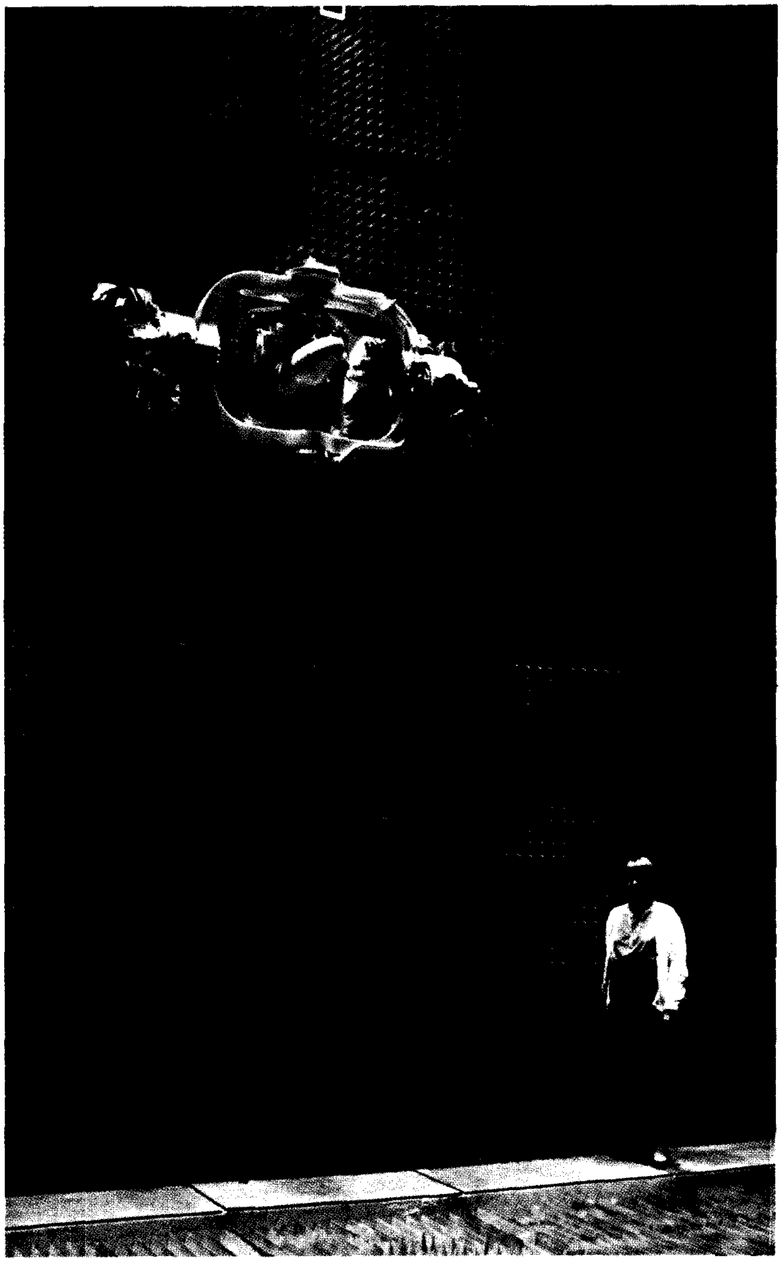
- real-time scan converter
- eight-processor Silicon Graphics 4D 320 VGX graphical workstation
- two-processor Silicon Graphics 4D 320 VGX graphical workstation
- special real-time video processor for closed-loop missile tracker-in-the-loop simulations
- rendering software for high-quality computer-generated imagery and/or IR modeling

Inertial Flight Table (IFT) Laboratory

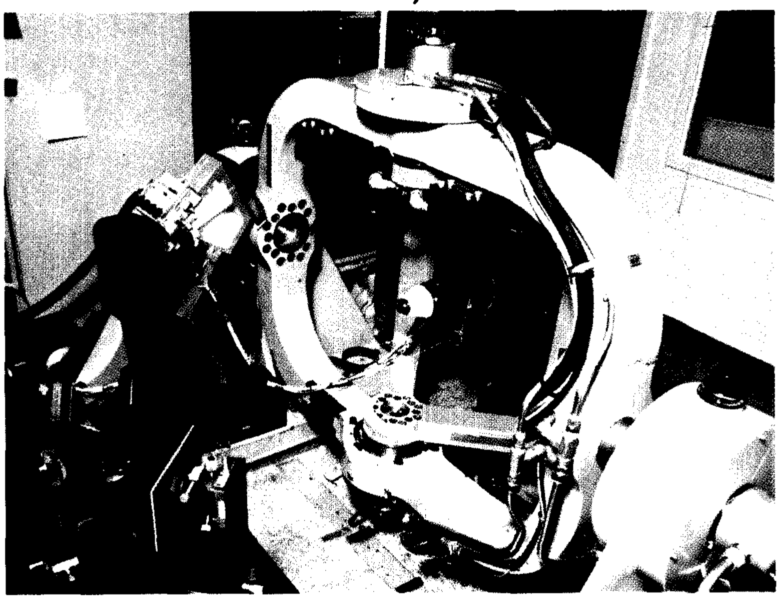
- three-axis hydraulic flight-motion simulator with ±120-degree pitch motion
- AD-100 simulation computer
- high- and low-pressure filtered, regulated air
- EAI 7800 100-volt analog console
- MicroVAX 3500 workstation

IR Facility #1

- three-axis hydraulic flight-motion simulator
- continuous roll via slip-ring package
- IR target-presentation system (primary target and IR countermeasures)
- EAI 781 100-volt analog console
- AD-10 and AD-100 simulation computers
- MicroVAX 3500 workstation
- Macintosh II documentation workstation
- dual VCR/monitor
- high- and low-pressure filtered, regulated air



RF Facility #2



Three-Axis Hydraulic Flight-Motion Simulator in IR Facility #1

CENTRAL DIGITAL COMPUTING CAPABILITY

The SimLab's central digital computing resources include

- VAX 750, 780, 3500, and 4000 computers
- fixed and removable hard-disk systems
- magnetic-tape drives
- Silicon Graphics 300 VGX workstations
- Ethernet connections to all workstations
- each VAX 3500 workstation can connect to all other workstations, if required

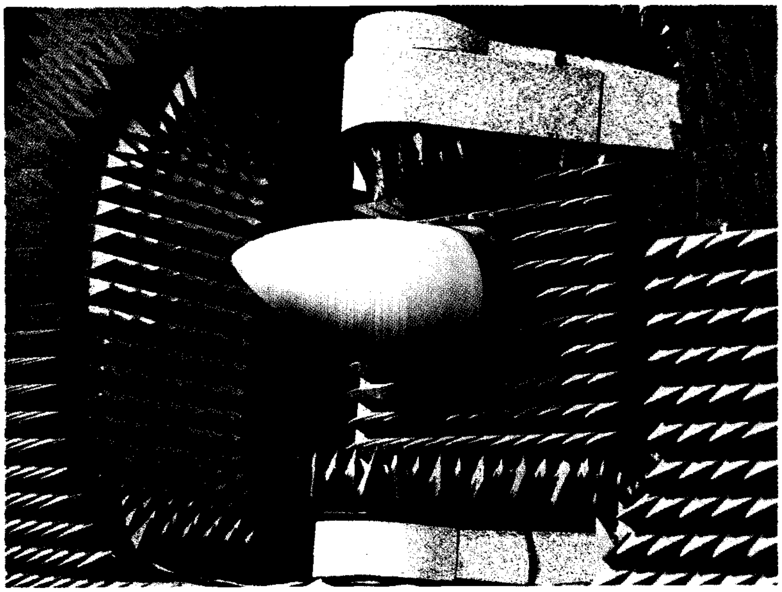
High-Speed Processors in Imaging Systems Laboratory

HWIL SIMULATION FACILITIES

The SimLab's specialized HWIL simulation facilities provide a controlled laboratory environment for testing missile hardware under realistic, simulated flight conditions.

RF Facility #1

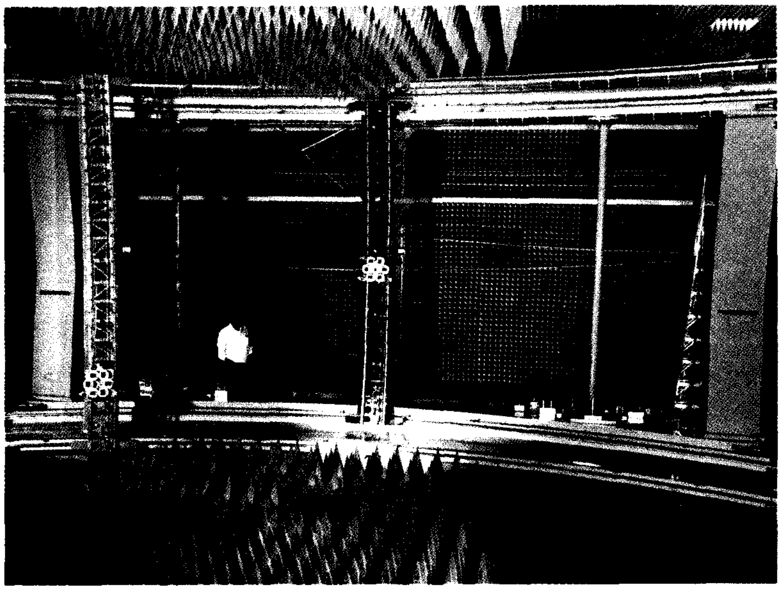
- three-axis hydraulic flight-motion simulator (2 roll fixtures)
- microwave anechoic chamber
- tracked and phased-array targets (primarily X and Ku bands)
- various transmitters and jammers (primarily X and Ku bands)
- EAI 781 100-volt analog computer console
- AD-10 and AD-100 simulation computers
- VAX station 3500
- Silicon Graphics visualization workstation
- Macintosh II documentation workstation
- RF test and calibration equipment
- high- and low-pressure filtered, regulated air
- 400-Hz power
- closed-circuit, high-resolution color TV system with video cassette recorder (VCR)



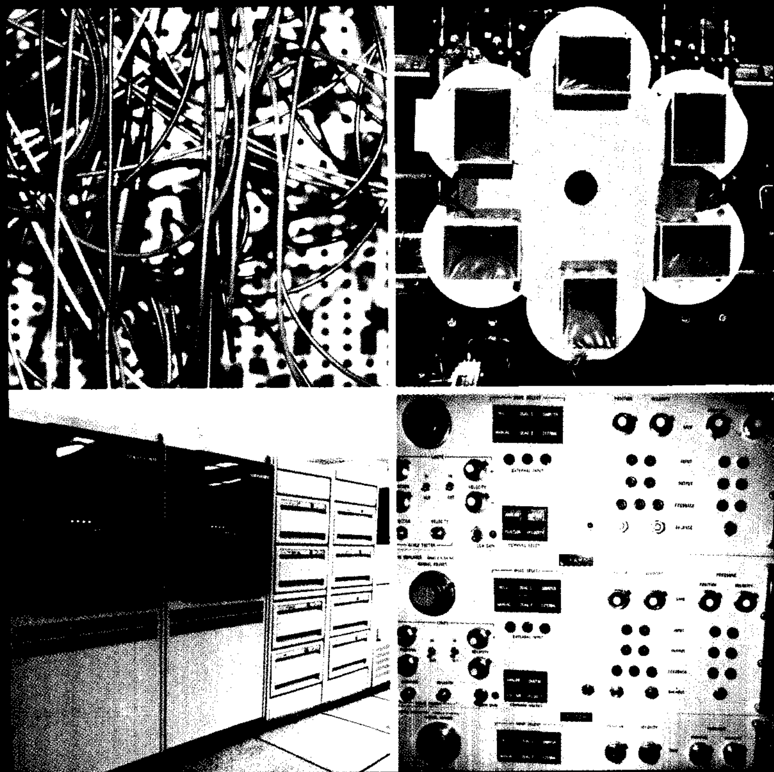
Test Item in RF Facility #1

RF Facility #2

- three-axis hydraulic flight-motion simulator
- microwave anechoic chamber
- three-element phased-array target (Ku band)
- AD-10 and AD-100 simulation computers
- MicroVAX II workstation
- Silicon Graphics visualization workstation
- Macintosh II documentation workstation
- RF test and calibration equipment
- closed-circuit, high-resolution color TV system with VCR



Dual-Target Motion System in RF Facility #3



For more information about SimLab facilities, capabilities, scheduling, and cost of services, contact

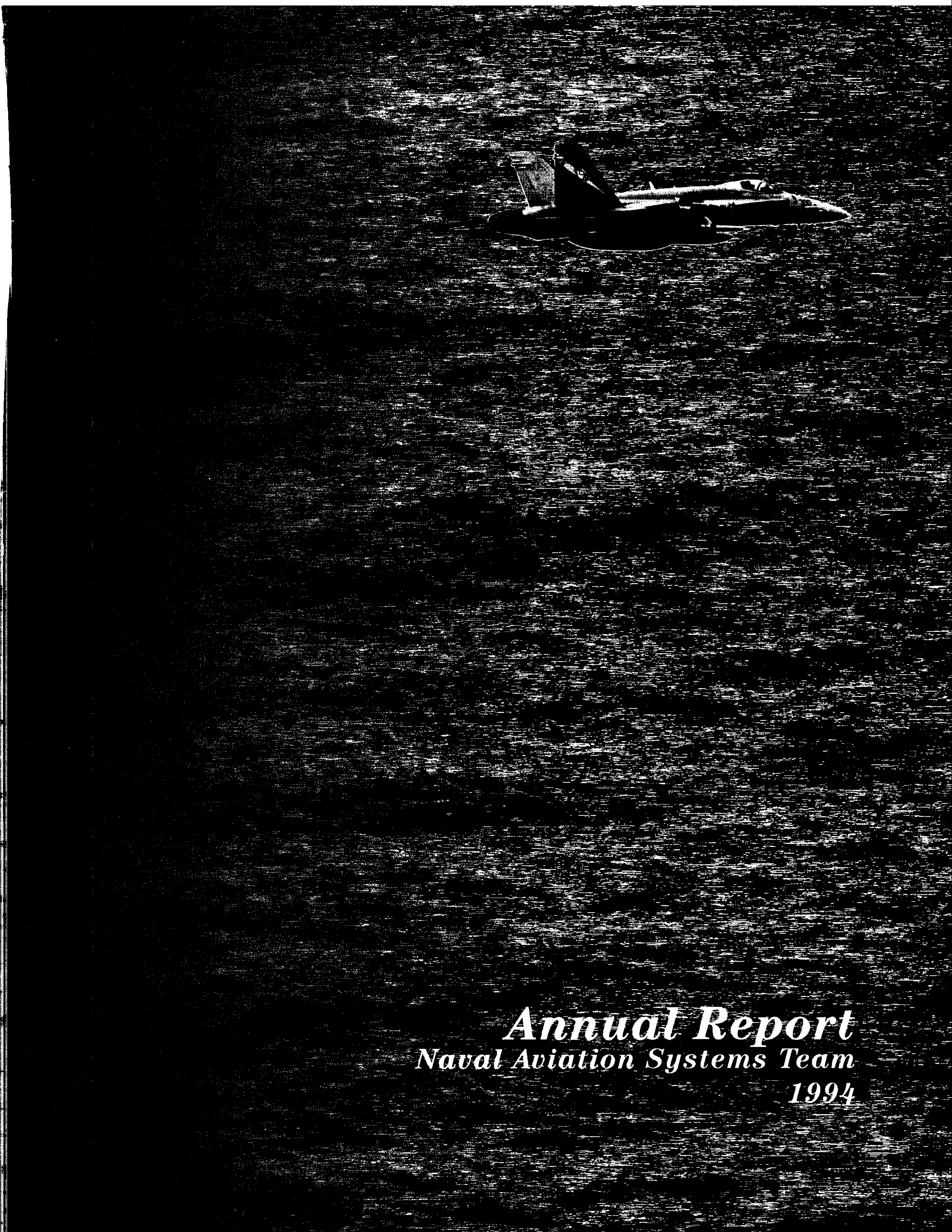
Dr. B.J. Holden
Head, Missile Simulation Branch
(619) 939-6651
Fax (619) 939-1825

or

Eileen Shibley
SimLab Business Manager
(619) 939-2086
Fax (619) 939-1882

NAWCWPNS Administrative Publication 006,
published by the Technical Information Department.
First printing, February 1993, 1,000 copies.

Reviewed and approved for publication by
S.E. SANDERS, Head, Technical Information Department,
NAWCWPNS, 22 February 1993
Approved for public release; distribution is unlimited



Annual Report
Naval Aviation Systems Team
1994

From the President

"NAVAIR has given us a valuable model for the transformed government we are striving to build.

Please convey my congratulations and appreciation to all the dedicated men and women of the Naval Air Systems Command, who deserve the highest accolades for their achievement."

Bill Clinton
April 19, 1994

From the Top

At the end of Fiscal Year 1994 the Naval Aviation Systems Team is proud of our many achievements despite unending challenges. Today we are stronger, smaller, and more responsive than ever before. Ours is an organization that has truly reinvented itself.

We won the Presidential Award for Quality, for the second time—an achievement unmatched in the public sector. We won the first time in 1989 just when real change was beginning throughout the Department of Defense; now five years into it, and no end in sight, we continue to exercise leadership in the quality arena.

While our organization adjusts to rightsizing, we still provide top quality support to our customer, the Fleet who relies upon us, and we can report with confidence to our shareholders, those who pay the taxes that fund us. This report details the support we furnished the Fleet during Fiscal Year 1994 and describes the improvements we made to the products and services that we provide.

It also describes how we intend to continue this support with the confidence that we will remain the most cost effective acquisition organization within DOD, maintaining quality while reducing system life cycle costs. The TEAM of the late 1990s will be a model for all acquisition agencies of the Federal Government. We have the *Right Plan for the Future.*

Our transition to this reengineered structure is on schedule. By the end of 1994 we had stood up as a Competency Aligned Organization (CAO) based upon eight competencies across the entire TEAM. This structure enables us to operate more efficiently with far less overhead.

The year ahead will inevitably bring its unique challenges, but I remain committed to ensuring that we are prepared to meet them and to maintain our support of the Fleet.

VADM W. C. Bowes
Commander, Naval Air Systems, Command

Vision

The Naval Aviation Systems TEAM is recognized as a national asset for its role in developing, acquiring and supporting maritime aeronautical systems well matched to the needs of our Navy and Marine forces. Our systems are inter-operable and where possible common with the other services.

We are sharply customer and product focused. Our integrated program teams led by a program manager optimize the allocation of resources over the entire life cycle of each system to meet the requirements and priorities established by OPNAV, the Fleet and the Marine Corps. Extensive partnerships with other services and industry allow us to maximize the performance of our products and the value gained for each taxpayer dollar.

To better support the TEAM, the people of the Naval Air Systems Command are organizationally linked by competencies spanning all sites. The TEAM is consolidated at fewer sites to support the retention and application of our distinctive and essential capabilities at an affordable cost. We operate with defined and continuously improved processes which draw us together to transcend geographical separations.

We embrace the quality and creativity of our people as the source of our strength as we reshape and resize to meet the future. We are committed to the training, development and welfare of our people and to supporting the transition of those who depart.

Our plan for the future involves 5 Strategies and Multi-Disciplined Teams that empower our people, improve our processes, focus on the product and customer, and cut red tape.

Mission Statement

Mission

During Fiscal Year 1994 the mission of the Naval Aviation Systems Team remained unchanged. We continued to provide the Navy's and Marine Corps' aviation systems and keep them in top operating condition.

Our country continues to face great challenges in a world of uncertainty and danger. The Navy's forward presence around the world remains an essential stabilizing force and provides the necessary power when that power is required. The Naval Aviation Systems Team is responsible for providing a crucial part of the Navy's capacity to go in harm's way and get the job done.

Our Team is composed of five organizations:

- Naval Air Systems Command (NAVAIRSYSCOM)
- Program Executive Officer, Air ASW, Assault & Special Mission Programs (PEO (A))
- Program Executive Officer, Cruise Missiles Project and UAV Joint Project (PEO (CU))
- Program Executive Officer, Tactical Aircraft Programs (PEO (T))
- Aviation Supply Office (ASO)

We operate facilities and detachments around the world. At the end of Fiscal Year 1994, our work force numbered over 44,200 military and civilian personnel at 17 sites. Our unique responsibility, to see that the Fleet is furnished with technologically superior, affordable, high quality aircraft, avionics, air-launched weapons, cruise missiles, unmanned vehicles, and all related equipment and support, remains unchanged as we enter a new fiscal year. We manage the life cycle of all the systems we furnish, beginning with the technology base from which they are researched, designed, developed, and engineered. We acquire these systems from private industry, test and evaluate them, and furnish them to their users along with the necessary training equipment. From then on, we ensure the maintenance of these systems, modify them as needed, furnish all necessary supplies, and ultimately dispose of them when they reach the end of their useful life.

Our approach to life cycle management is driven by a strong product and customer focus and the need to minimize costs throughout each system's life cycle. We will improve our ability to develop and deliver the best, most technologically advanced, most affordable products to the Fleet and keep Naval aviation ready and capable to meet any challenge.

This is nothing new to our organization. We have been doing it for seventy-three years and have come through many changing environments in technology, geopolitics, and financial resources. We have the experience it takes to assess the future, make plans for its challenges, and convert our plans into action.

Power Projection

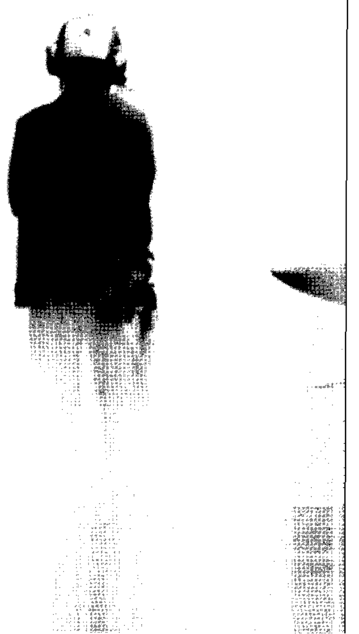
As 1994 ended, we watched American aircraft carriers steam in the Adriatic, the Persian Gulf, and off the coasts of Bosnia, Korea, Haiti in response to existing or developing crises. Demonstrating the flexibility and rapid movement of an aircraft carrier, the *USS George Washington* (CVN-73) transited in less than 48 hours from the Adriatic, where it was enforcing the no-fly restriction over Bosnia, to the Red Sea to discourage thoughts of aggression possibly harbored by Iraq. An amphibious Ready Group based around *USS Tripoli* (LPH-10) and including 2,200 Marines was also on scene within days. But this was just one of many crisis responses during 1994.

The most important role of naval forces short of war is to be engaged in forward areas, with the objectives of preventing conflicts and controlling crises. The basic building blocks of forward presence are the Carrier Battle Groups and the Marine Corps Amphibious Ready Groups. Their potent weapon of airpower arrives on the scene aboard carriers and amphibious ships and can be directed against warships at sea or military targets ashore. The Naval Aviation Systems Team provides the Fleet with all the aircraft and ordnance required to ensure this power is always at hand.

The Aircraft Carrier

F/A-18 *Hornet*

The versatile *Hornet* strike fighter continues to exceed expectations and is the world's most technologically advanced tactical aircraft with the ability to function as both a light strike plane and a high performance fighter. In the past year, *Hornets* flew 244,284 hours in demanding, high-intensity environments including support of NATO's peacekeeping forces in Bosnia-Herzegovina. During Fiscal Year 1994, we delivered 51 new *Hornets* to the Fleet, many equipped with the upgraded AN/APG-73 radar which offers the capability of countering electronic warfare threats well beyond the year 2000. We now have under development the F/A-18E/F variants which will increase the *Hornet's* range and strike capability to make it the Navy's and Marine Corps' premier tactical aircraft beyond the time of the F-14 *Tomcat* and A-6 *Intruder.*

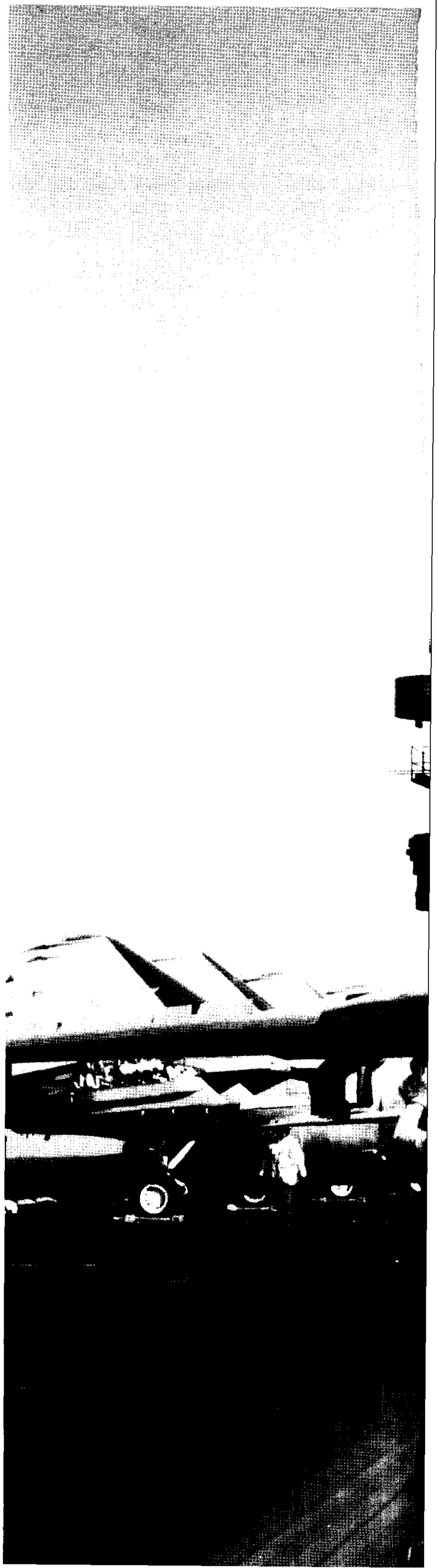


An F/A-18 *Hornet* on flight line *USS CONSTELLATION* (CV-64)

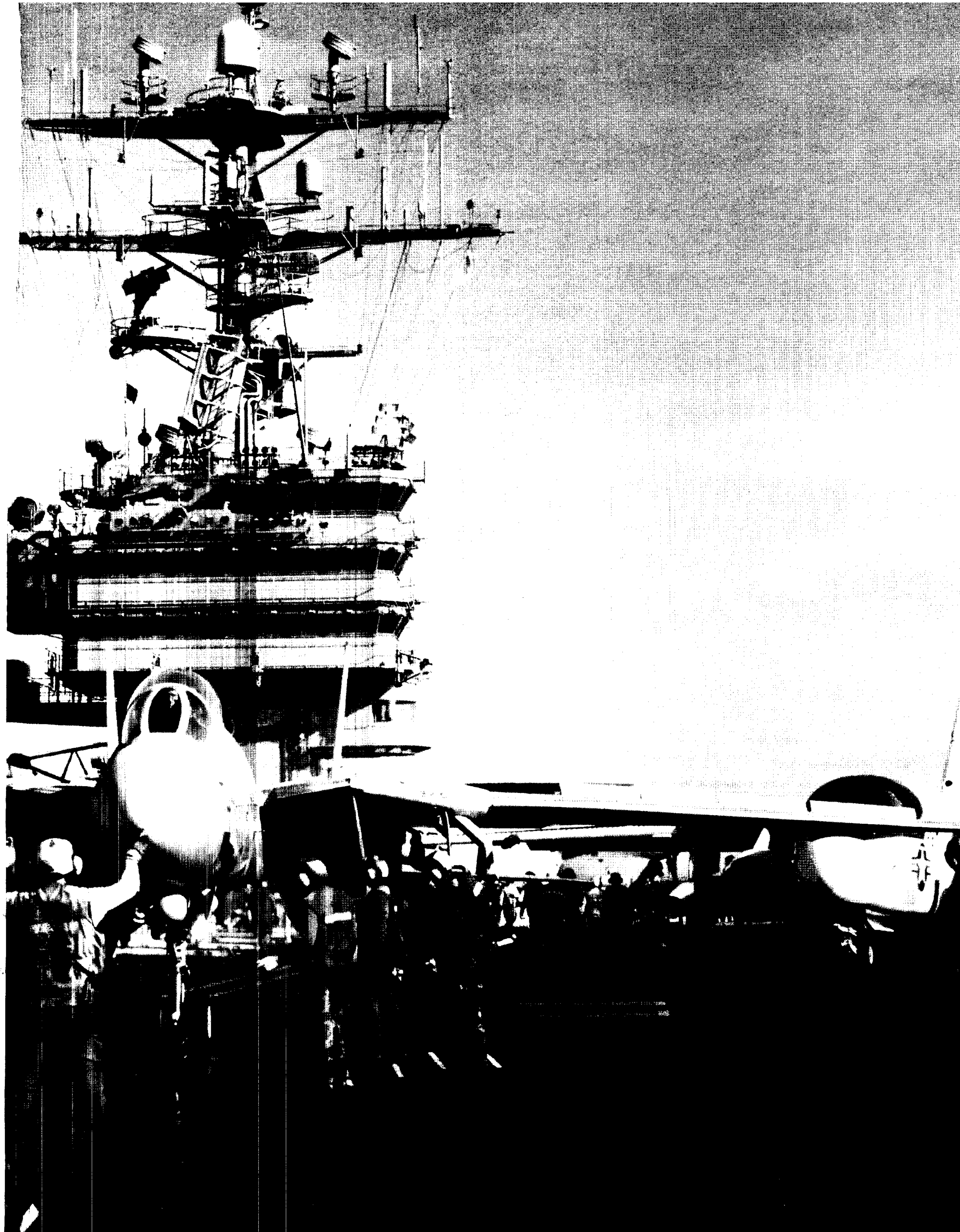

401

F-14 *Tomcat*

Still the front line fighter of the U.S. Fleet and the world's premier tactical aircraft, three variants of the TOMCAT are deployed aboard carrier: F-14A, F-14B, and F-14D. The *Tomcat* is no longer in production, but our aviation depots are converting existing aircraft to enhance their avionics suites and air-to-ground strike capability while the manufacturer is upgrading powerplants. The most advanced variant is the F-14D which this year completed its first carrier deployment aboard *USS Carl Vinson* (CVN-70).



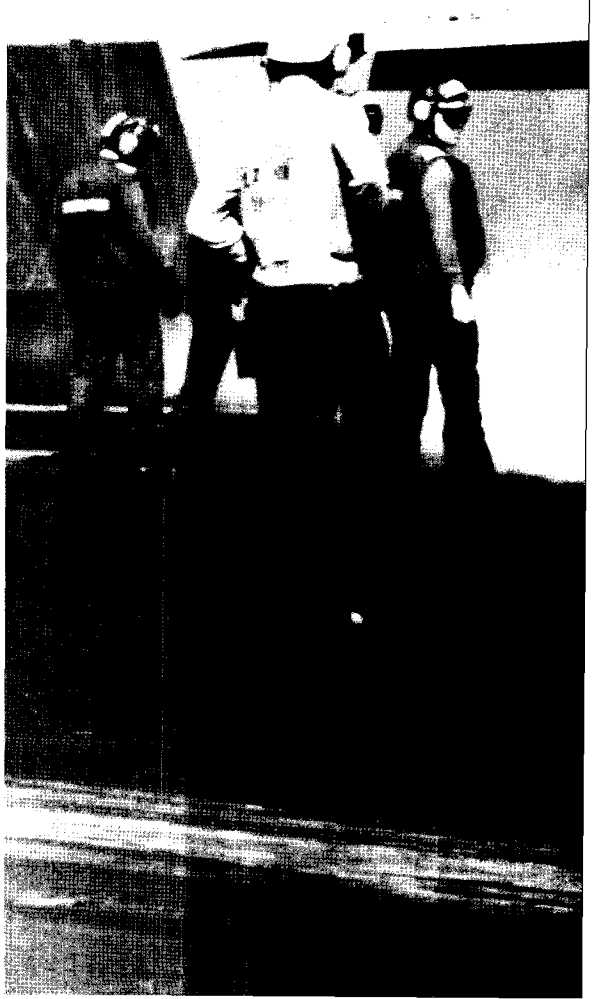
On *USS CARL VINSON* (CVN-70) a flight deck crewman signals an F-14 *Tomcat* onto the Number One catapult for launching



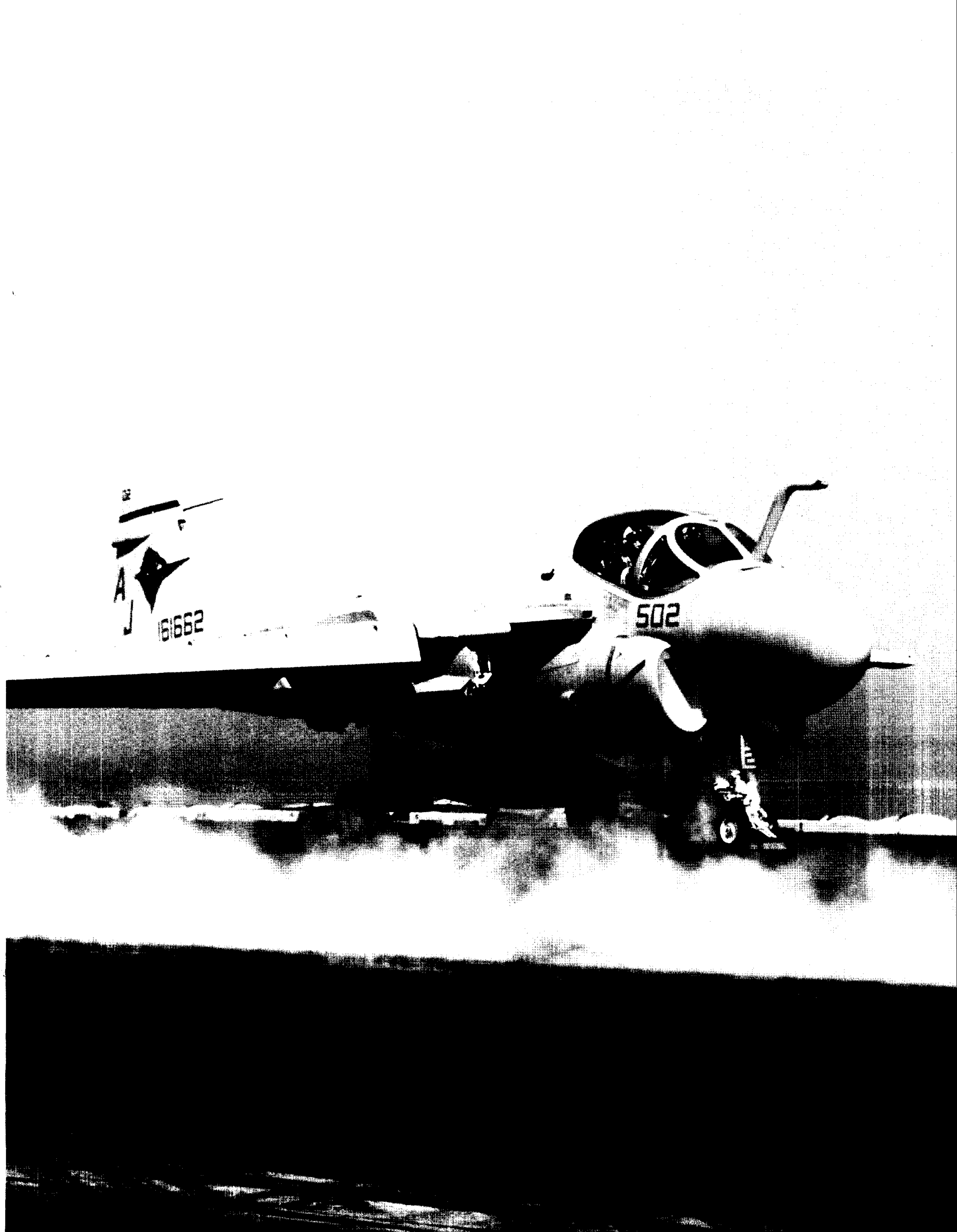
A-6 *Intruder*

The attack planes carry enough heavy ordnance to neutralize any surface target within their range. To get to their targets, and back home, they rely upon the fighters for protection and their own electronic countermeasures for self-defense.

The Navy's largest carrier of "tons of ordnance" per flight, the truly all-weather A-6 *Intruder* was introduced to the fleet in February 1963 to VA-42, the replacement air group training squadron. The first fleet squadron, VA-75, started training in September. 1963. It is still the main bomber in the U.S. Fleet though now out of production. In 1994, we delivered the last of the re-winged *Intruders* to the Fleet, an improvement that will keep the A-6E a dependable asset until its scheduled retirement in 1997.



An A-6E *Intruder* on the catapult of *USS THEODORE ROOSEVELT* (CV-71) in the Adriatic Sea during Operation Deny Flight.


AJ
161662
502

The Amphibious Force

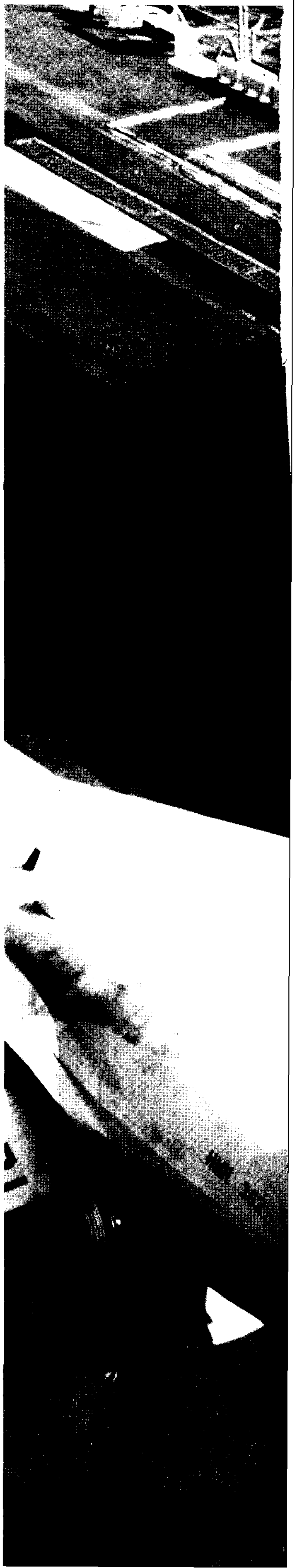
The Marine Corps provides the air-ground task forces for the Fleet's amphibious operations. They operate Hornets and Prowlers from carriers to suppliment naval forces. The Marines' also fly the *Hornet*, the *EA-6B Prowler*, the AV-8B *Harrier*, and the AH-1W *Supercobra* from land. They also operate the *Harrier* and the *Supercobra* from amphibious ships.

AV-8B *Harrier*

This year we delivered to the Fleet Marine Force 16 new production *Harrier II Plus* aircraft and inducted the first aircraft into our *II Plus* Remanufacture program. The *Harrier II Plus* is a night attack aircraft equipped with the APG-65 radar that increases the AV-8B's ability to provide effective close air support during day or night operations in all weather and enables the aircraft to acquire future weapons improvements. The *II Plus* variant will ensure that the AV-8B will provide the Fleet Marine Force the close-air support it requires into the 21st century.

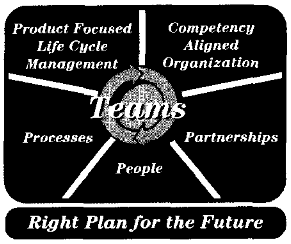
AH-1W *Supercobra*

In 1994 we delivered the first AH-1W Canopy Modification aircraft with Night Targeting System to the Fleet Marine Force. This anti-armor fire control system enables the Marine Corps' helicopter gunship to track and destroy targets at night, in adverse weather, and under other situations of limited visibility. The *Supercobra* can also now designate targets for air-launched laser guided ordnance.



Marine Corps AV-8B *Harriers* on the flight deck of amphibious assault ship *USS SAIPAN* (LHA-2) during Operation Desert Shield

Weapons



Guided Missiles

AIM-9 *Sidewinder*

The original *Sidewinder* was developed at our site at China Lake, California. It deployed only a few months after the *Sparrow* and like its predecessor has known a long series of improvements. The latest variant is the AIM-9M-8/9 which modifies the -9M's Guidance and Control Section (GCS) to improve its infrared counter-countermeasures. We are on contract to acquire 3,600 of these GCS. We have also begun a joint program with the Air Force to acquire the AIM-9X, a further advanced variant of the missile. The AIM-9 remains a tribute to the Navy's long and continuing story in the development of precision weapons.

AIM-7 *Sparrow III*

Developed by the Navy in the early 1950s, the *Sparrow III* is now the premier air-to-air guided missile for both the Navy and Air Force. In 1994 we produced 487 AIM-7P Block II missiles and 201 retrofit kits to upgrade existing stores to the Block II configuration which is the missile's latest variant. The AIM-7's adaptability is a testament to its original design and technology and the wisdom of always starting with the best available.

AIM-120 *AMRAAM*

Now widely deployed on the F/A-18C/D *Hornets*, the Advanced Medium Range Air-to-Air Missile (AMRAAM) was developed jointly by the Navy and Air Force. It will eventually replace the AIM-7 *Sparrow* with its smaller and lighter airframe and greater speed beyond visual range. We delivered 304 AIM-120As to the Fleet this year.

AIM-54C *Phoenix*

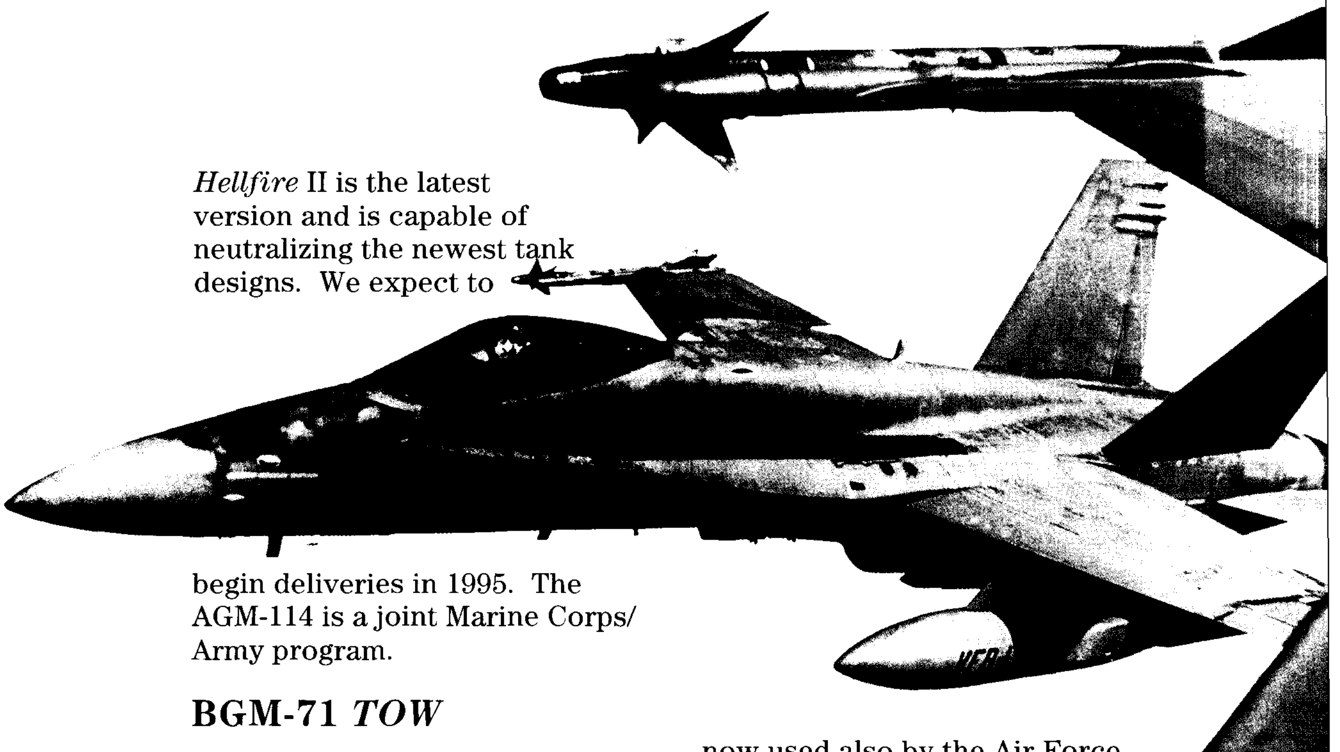
The Fleet's long-range air-to-air missile carried only by the F-14 *Tomcat*, the *Phoenix* is capable of simultaneous launches against six targets in all-weather under heavy jamming conditions. The *Phoenix* was developed by the Navy specifically for the *Tomcat*. During 1994, we finished installing in 185 missiles an enhancement to improve performance in countermeasures environments. We also accepted the first two production lots of the new FSU-10 Fuze Safe and Arming Devices to replace existing fuzes in all our *Phoenix* missiles.

AGM-84E *SLAM*

In 1995, we delivered 96 SLAM missiles to the Fleet. A variant of the older AGM-84 *Harpoon* missile, the Standoff Land Attack Missile (SLAM) is air-launched against only land targets. We developed SLAM to meet a Fleet requirement for a land attack missile launched from carrier-based aircraft in low intensity conflict. SLAM provides its launching aircraft a safe stand-off distance while preserving the missile's accuracy on target.

AGM-114 *Hellfire*

Launched by the Marine Corps' AH-1W *Supercobra*, the *Hellfire* is an effective anti-armor, laser-guided missile in day or night operations. The AGM-114K



Hellfire II is the latest version and is capable of neutralizing the newest tank designs. We expect to begin deliveries in 1995. The AGM-114 is a joint Marine Corps/ Army program.

BGM-71 *TOW*

The Tube-Launched Optically Track, Wire-Guided (TOW) BGM-71 anti-armor missile is a joint program for the Army and Marine Corps. The Marines launch TOW from their land-based AH-1W *Supercobra*. This year the TOW(2A)AIR variant qualified this year for use on ship-based helicopters and is now in production with initial deliveries expected next year.

AGM-119A *Penguin*

In 1995, we delivered 12 *Penguin* missiles to the Fleet. This air-launched, infrared guided, anti-ship missile deployed for the first time this year. The ship-based SH-60B *Seahawk* made the initial deployment thus becoming the first ever U.S. Navy helicopter with an anti-ship missile capability.

AGM-88 *HARM*

Enemy anti-aircraft defenses rely heavily on radar which is exactly what the High-Speed Anti-Radiation Missile (HARM) is designed to kill. It is the most effective weapon of its type in the United States' arsenal. HARM was developed by the Navy and is now used also by the Air Force. During the year, we delivered 1,494 missiles to the Navy and another 731 to the Air Force.

Tomahawk

In 1994 we delivered 642 new and remanufactured *Tomahawks* to the Fleet. Carried by battleships, cruisers, and destroyers, the Tomahawk's long range, accuracy, and payload provides these warships with a power projection capability unknown prior to its deployment. We developed the *Tomahawk* cruise missile and we remain constantly in the process of updating it to ensure that its capability remains preeminent. At the end of this year, the latest update had been installed on 48 of 56 surface ships and 30 of 72 submarines.

AGM-84 *Harpoon*

During 1994, we delivered 113 *Harpoon* missiles to the Fleet. This system is launched against ships from aircraft, surface vessels, and submarines. Its versatility and over-the-horizon range at low altitude make *Harpoon* an essential item in the Fleet's arsenal. *Harpoon* was developed by the Navy and is now used also by the Coast Guard and Air Force.

Smart Bombs

Smart bombs have no self-propelling capability but can adjust their trajectory to increase accuracy. We have furnished the Fleet with Laser Guided Bombs since the 1960s. Our newest development in this area is the Joint Stand-Off Weapon System (JSOW).

Joint Standoff Weapon JSOW

This joint development by the Navy and Air Force will enhance accuracy of target acquisition, increase the stand-off distance of our launching aircraft, reduce the number of weapon types by incorporating the capabilities of five systems into one weapon family. In 1994 we successfully completed JSOW's Airworthiness Testing on the F/A-18 *Hornet*, moving the system closer to deployment.

Laser Guided Bombs (LGBs)

Targets that at one time took several bombs to neutralize are now reduced by a fraction of the ordnance due to LGB accuracy. This bomb's guidance system pays for itself. Our inventory currently includes 500, 1,000, and 2,000 pounders. The newest is the GBU-24 Hard Target Penetrator, a 2,000 pound weapon that reached initial operating capability in January 1994.

Conventional Bombs

The success of guided missiles and smart bombs has given them much deserved publicity but it has tended to obscure the still crucial role played in Fleet operations by conventional, or "iron" bombs. In 1994, we furnished the Fleet with 72,500 conventional bombs ranging in size from 500 to 1,000 to 2,000 pounds.

Joint Direct Attack Munitions (JDAM)

The Navy and Air Force JDAM program will provide each service with low cost inertial navigation/global positioning system guidance kits attachable to 1,000 and 2,000 pound conventional bombs to enhance accuracy in adverse weather, from medium to high altitude, on a variety of aircraft. The program, now in its Engineering & Manufacturing Development phase, remained on track through Fiscal Year 1994.

Ordnancemen aboard *USS DWIGHT D. EISENHOWER* (CVN-69) load air-to-surface *Maverick* missile on aircraft during Operation Desert Shield


ORD

Other Fleet Operations

Product Focused Life Cycle Management
Competency Aligned Organization
Teams
Processes
Partnerships
People
Right Plan for the Future

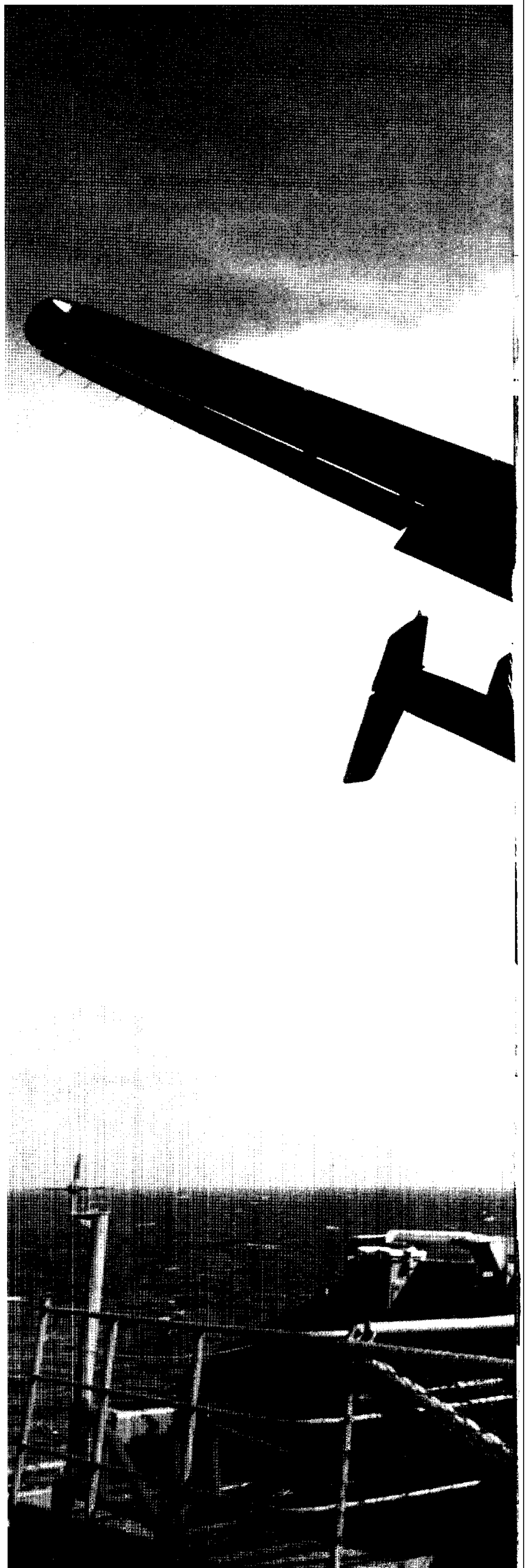
In addition to Power Projection, Fleet Air Operations include: Anti-Submarine Warfare, Airborne Early Warning, and Electronic Warfare are three crucial areas of Fleet defense that Naval aviation provides.

Airborne Early Warning

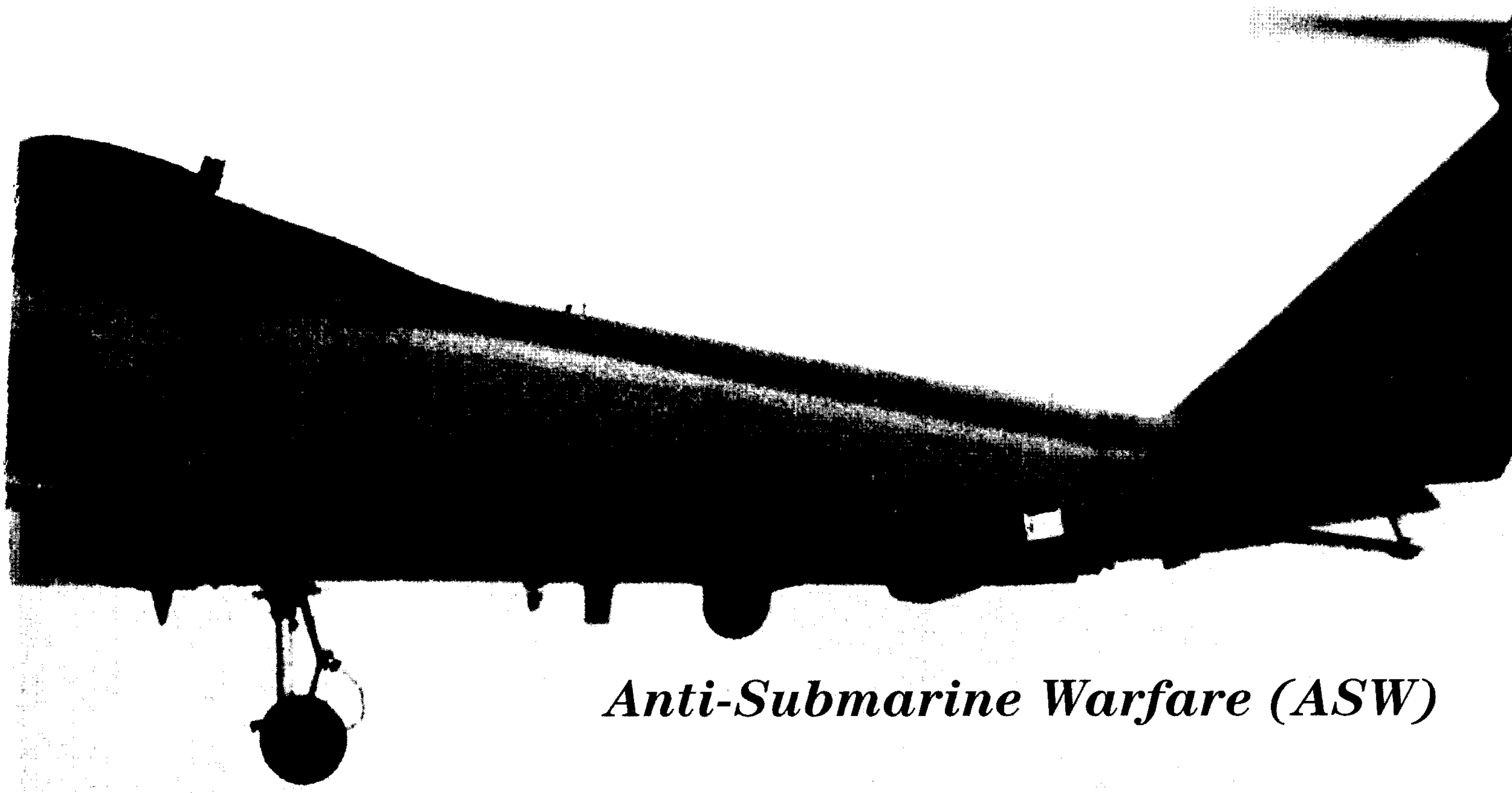
E-2C *Hawkeye*

This year, the E-2C *Hawkeye* was approved to resume production and continue performing into the next century its vital AEW mission, guarding against high speed aircraft and guided missiles.

In 1994, we delivered two new production *Hawkeyes* of the Group II configuration to the Fleet. Group II is the latest upgrade to the E-2C's mission equipment and we plan to convert all existing Group I systems to it. All new production *Hawkeyes* will be Group II and will include a Mission Computer Upgrade (MCU) to address the current computer's questions of weight, space, and capability. The MCU will use off-the-shelf open architecture to the greatest extent possible.



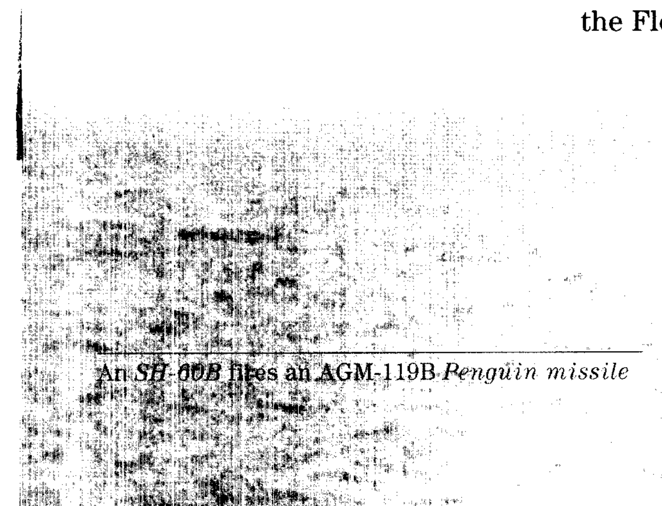
An E-2C Hawkeye makes a fly-by approach of *USS ABRAHAM LINCOLN* (CVN-72)



Anti-Submarine Warfare (ASW)

P-3C *Orion*

The Fleet's land-based ASW aircraft, *Orion* first deployed in 1962. The P-3C has the equipment to locate sub-surface and surface vessels and the ordnance to kill them. No longer in production but continually under improvement, the system is now in the Update III configuration. In 1994 we installed Update III's AN/ASQ-212 Tactical Mission Computer in 49 aircraft.



An *SH-60B* fires an AGM-119B *Penguin missile*

S-3B *Viking*

The Viking continues to the Fleet's carrier-based fixed wing ASW aircraft. The *Viking* is no longer in production and we are modifying the S-3As to the S-3B configuration to keep it capable of handling the existing and anticipated threat. It can locate and kill both submarines and surface warships. During the year we delivered the last 16 S-3B conversions to the Fleet.

H-60 *Seahawk & LAMPS*

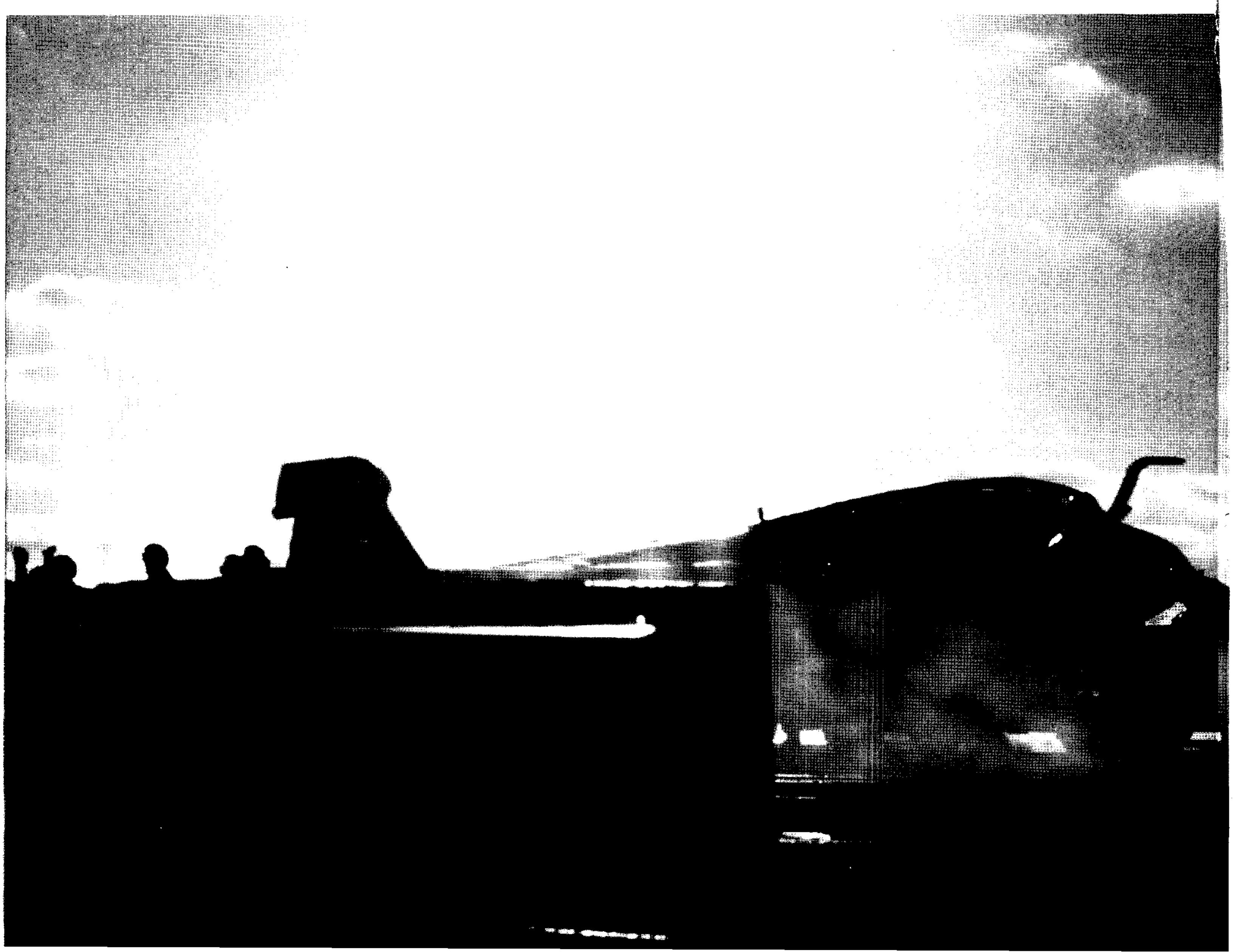
In 1994, we furnished the Fleet with thirteen SH-60B and seven SH-60F helicopters. The SH-60B Light Airborne Multipurpose System (LAMPS) MK III operates from cruisers, destroyers, and frigates and this year completely replaced the SH-2F helicopter which had been performing the LAMPS mission. The LAMPS is designed for both anti-submarine warfare and anti-surface warfare and can target over-the-horizon missiles. This year the SH-60B made the initial deployment with an AGM-119B *Penguin* missile introducing the first ever U.S. Navy helicopter with an anti-ship missile capability. Other H-60 helicopters, the SH-60F and the HH-60H, operate mostly from carriers with the primary missions of anti-submarine warfare and combat search and rescue.

Electronic Warfare

The Fleet relies on the Electronic Warfare aircraft for airborne surveillance, electronic countermeasures, and countermeasures. As the electronic capabilities of potential adversaries continue to grow, and more sophisticated technology becomes available to them, the Fleet's requirement for airborne electronic warfare will remain crucial. In 1994, the EA-6B *Prowler*, the ES-3A *Viking,* and the EP-3E *Orion* continued to provide this capability.

EA-6B *Prowler*

Now out of production, but still our leading EW aircraft. To maintain capability through the year 2015 we have established a project to modify up to 100 *Prowlers* to the Block-89A configuration. This will include integration of the ARC-210 radio, an embedded global positioning system/ inertial navigation system, and the integration of a very high speed integrated circuit card in the *Prowler's* AYK-14 computer.



ES-3A *Viking*

A modification of the S-3 *Viking* anti-submarine warfare plane, the ES-3A expands the Fleet's carrier-based airborne Electronic Reconnaissance capabilities. This year we installed new Digital Communication Interface Weapons Replaceable Assemblies in all ES-3As to correct an existing deficiency and improve reliability. We also delivered the Improved Processor and Enhanced Reporting system to all squadrons.

EP-3E *Orion*

The Fleet's land-based Electronic Reconnaissance aircraft, the EP-3E is a modification of the P-3 *Orion*. During the year, we updated many of its systems and pursued improvements in others. We also completed the first aircraft modified to the ARIES II configuration, a major update to the system.

Silhouetted against the sky, crewman aboard the *USS CONSTELLATION* (CV-64) prepare to launch an EA-6B *Prowler*

Support

Product Focused Life Cycle Management
Competency Aligned Organization
Teams
Processes
Partnerships
People
Right Plan for the Future

Mine Countermeasures

In 1994, we delivered the final lot of 48 MH-53E *Sea Dragon* helicopters to the Fleet. This multi-mission aircraft can conduct airborne mine countermeasures and carry out vertical onboard delivery of cargo, equipment, and personnel. The latest improvements to this aircraft include a Global Positioning System and an Integrated Mission Planning station, and power plant improvement.

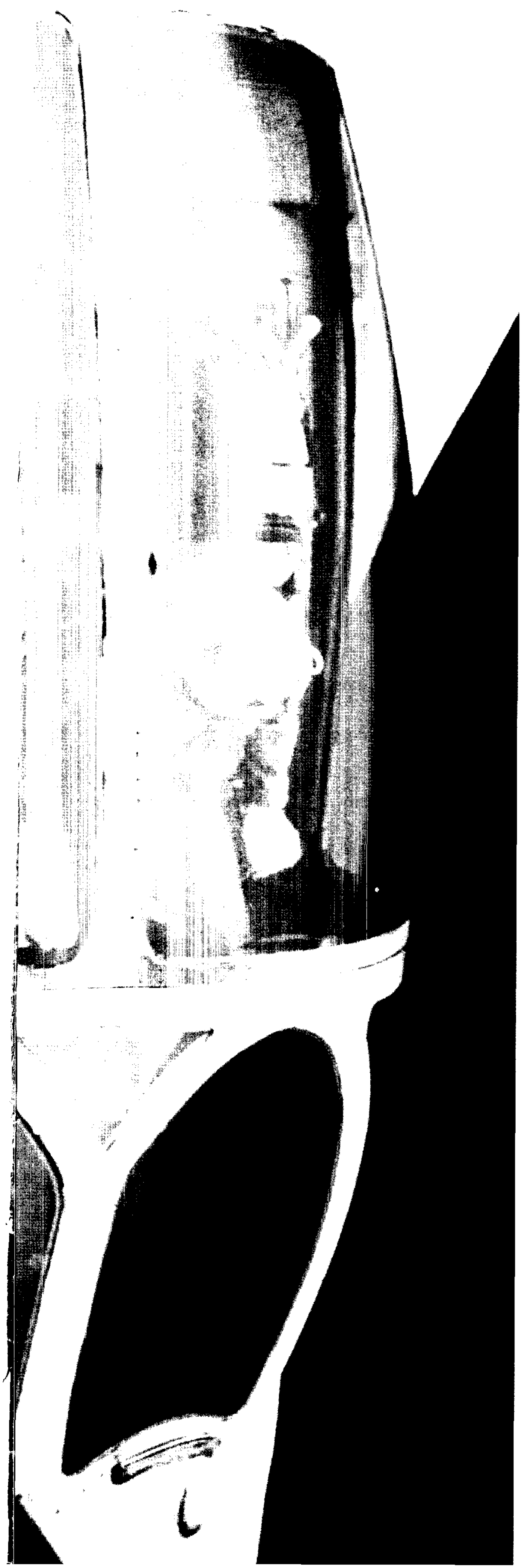
Cargo

In 1994, the CH-53E *Sea Stallion* cargo helicopter continued its support of Navy and Marine Corps operations around the world in austere and demanding environments. This year we delivered two new CH-53Es to the Fleet and completed the installation, and initial evaluation, of the Global Positioning System and Satellite Communication radio.

C-130

This aircraft, in the Fleet for over thirty years, remained in production in 1994. We delivered two KC-130T tankers with night vision lighting and four C-130Ts.

A-6 *Intruder*, top view



E-6 *TACAMO*

The national "Take Charge and Move Out" (TACAMO) mission is conducted by the Navy's E-6 aircraft. It forms the link between the national command authority and the country's strategic forces during time of international crisis. We have now delivered all E-6 aircraft to the Fleet and have begun developing a Block Upgrade to keep its systems current with advancing technology.

CH-46 *Sea Knight*

In service with the Marine Corps since 1964, the *Sea Knight* remains a vital system for medium lift capacity and vertical replenishment. During 1994, our H-46 Program Team won the Association of Naval Aviation's Edward H. Heinemann Award for consistent success in working against the odds to preserve the effectiveness of an aging system.

V-22

In 1994 the V-22 *Osprey* completed its reviews by both the Defense Acquisition Board, and the Defense Resources Board and the Full Scale Development aircraft reached a thousand flight hours. The *Osprey* is a multimission, Vertical/Short Take-Off and Landing (V/Stol), tilt-rotor aircraft to be used by the Navy, Marine Corps, and Air Force.

Other Equipment

Sonobuoys & Sensors

In 1994 we delivered 74,574 SSQ-B sonobuoys to the Fleet. Deployed from a wide variety of platforms, the sonobuoy is essential to the Fleet's anti-submarine warfare. We now have five types of passive and active sonobuoys in use and a sixth, the SSQ-110, is in final evaluation before deployment. The SSQ-110 will strengthen capability in the area of active area search.

Launch & Recovery

We provide the aircraft catapults and arresting gear used by carriers and all air-capable ships in the Fleet. In 1994, we fielded expeditionary air field marker lights that are compatible with night vision devices and certified as safe an adequate equipment aboard 242 ships.

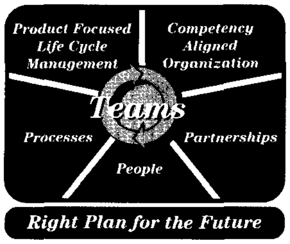
Common Avionics

Many of our aviation electronics (AVIONICS) systems are developed common to several systems. In 1994 we completed delivery of 54 Naval Aircraft Collision Warning Systems. We also awarded contracts to procure various systems for various aircraft, for example, we ordered 391 APX-100 systems that will be installed in eight different models of aircraft.

Crew Systems

We furnish everything used by Navy and Marine Corps aircrews. During 1994 we delivered 285 "Cats Eye" Night Vision Goggles and 1,250 Night Strike Helmets along with 2,300 new helicopter helmets. We delivered 100 new Navy aircrew Common Ejection Seat (NACES) systems.

Support Services



International Programs

International programs represent a growing and vital aspect of the Team's total corporate responsibilities. Foreign Military Sales (FMS), the largest of the international programs, was valued in 1994 at $27.2 billion and represented over half the Navy's total FMS program. Besides FMS we continue to pursue programs with foreign governments such as the Foreign Comparative Test (FCT) program which seeks out items developed abroad capable of meeting our own defense requirements thereby saving us the expense of research and development. In 1994, the Naval Aviation Systems Team maintained its role as leader of the Department of Defense's FCT program.

Facilities & Environment

Throughout the year, our Facilities & Environmental program continued with all the responsibilities that being in charge of extensive land areas and numerous buildings involves. In 1994, we conducted two major pollution prevention meetings and continued funding and overseeing pollution removal at our sites. We completed six Environmental Assistance Reviews. We also approved and funded installation of aviation equipment at 21 sites throughout the Fleet to improve flight safety and completed surveys at more than 60 sites in support of units relocated by the Base Closure and Realignment Commission.

NALCOMIS

This year we implemented Phase III of the Naval Aviation Logistics Command Management Information System (NALCOMIS) at 49 sites and implemented Phase II at seven others. NALCOMIS provides the Fleet with a management information system to support aircraft maintenance on carriers, other air-capable ships, and at aviation stations ashore. It is the standard Navy Automated Information System (AIS) for aviation maintenance and repairables management where depot-level maintenance is unavailable.

CASS

The Consolidated Automated Support System (CASS) provides equipment for testing electronics equipment aboard ship and ashore. In 1994, we delivered 60 CASS configurations to shore and shipboard sites and put another 64 on contract.

TAMPS

The Tactical Aircraft Mission Planning System (TAMPS) provides our aircrews with the planning tools they need to gain access to the theatre in the most tactically effective manner, place ordnance on target, and egress the area safely. The TAMP System enables planners to handle multiple data bases and process large quantities of digital data before selecting the most effective tactical option. By the end of the year we deployed over 200 TAMPS stations deployed worldwide in what ultimately will be a totally integrated land and sea-based system.

Air Traffic Control

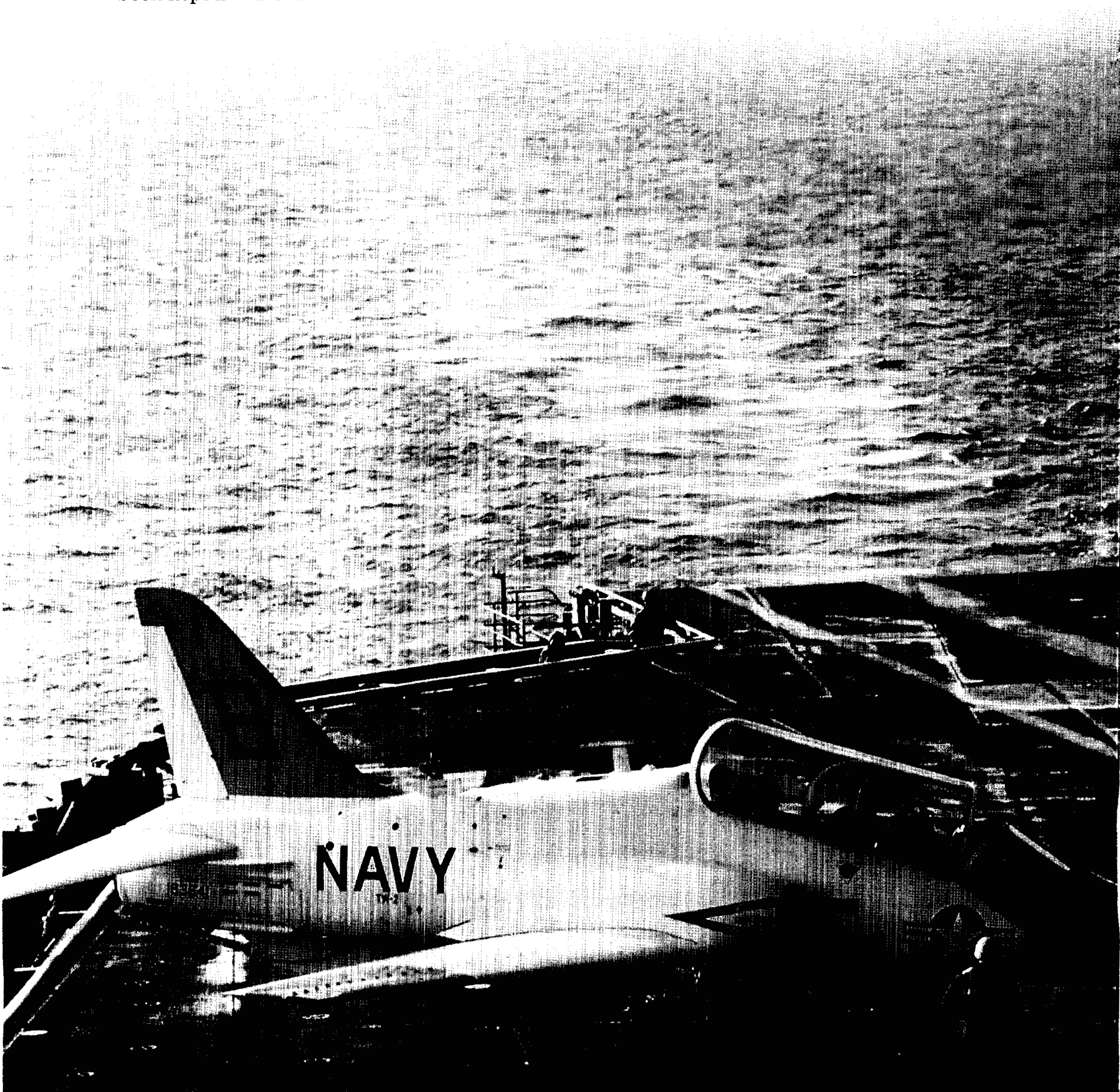
In support of Air Traffic Control aboard ship and at air stations, we continued to develop new equipment and support that already in use. We delivered 150 UPM-155 Test Sets to Navy activities along with two GPN-27 Airport Surveillance Radars and three FAC-6 Fiber Optic Intersite Systems. We replaced the URN-20 Navigation Set with the new URN-25 on eight Spruance Class Destroyers and delivered eight UPX-29 Central Identification Friend or Foe (IFF) systems to AEGIS class ships and one set to an LHD vessel.

Safety

During the year, our Safety program issued 322 Safety Bulletins, contributing to 1994 having the distinction as the safest year since records have been kept in Naval Aviation.

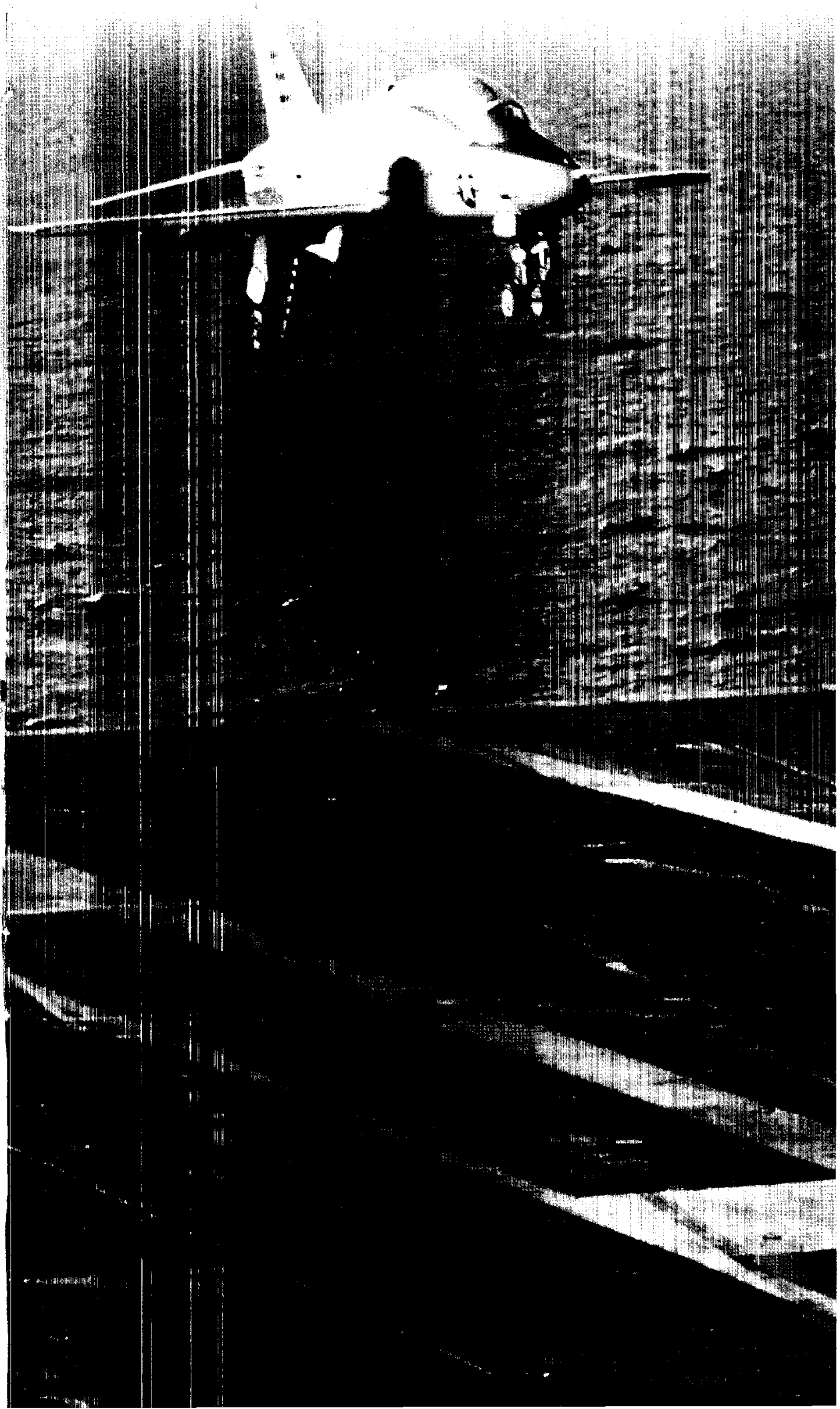
HONA

In 1994, the Health of Naval Aviation (HONA) continued to develop into a readily accessible data base of all elements of cost required for development, acquisition, and support of each of our Naval aviation systems.



Training

One of the primary responsibilities of the TEAM is to provide equipment for training Navy and Marine Corps personnel. Our training procedures cover the full spectrum from simulators to ranges. To facilitate the training process, we maintain the Naval Air Warfare Center Training Systems Division at Orlando, Florida. It is the principal Navy center for research, development, test and evaluation, acquisition, and product support for all training systems.



T45TS

Our newest trainer aircraft is the T-45 *Goshawk*, in partnership with the T45TS Naval Undergraduate Flight Training System (T45TS). The T45TS is a totally integrated training system that combines computer-based academics, simulators, and T-45 the aircraft itself. This system represents the first time that Department of Defense has applied such a total concept to training military flyers.

The first class of 10 students began training with the T45TS in January. By year's end we had delivered a total of 45 *Goshawks* for Navy use.

Student Naval aviator in the first class of the *T45TS* brings his *Goshawk* in for a landing aboard *USS CARL VINSON* (CVN-70)

JPATS

We released the Request for Proposal for the Joint Primary Aircraft Training Systems (JPATS) this year. A joint Navy/Air Force program, JPATS will replace the T-34C and the T-37B with a common training system including aircraft, academics, and simulators. The thrust of this program is to acquire a version of an existing aircraft design and use off-the-shelf components to the maximum extent throughout the system.

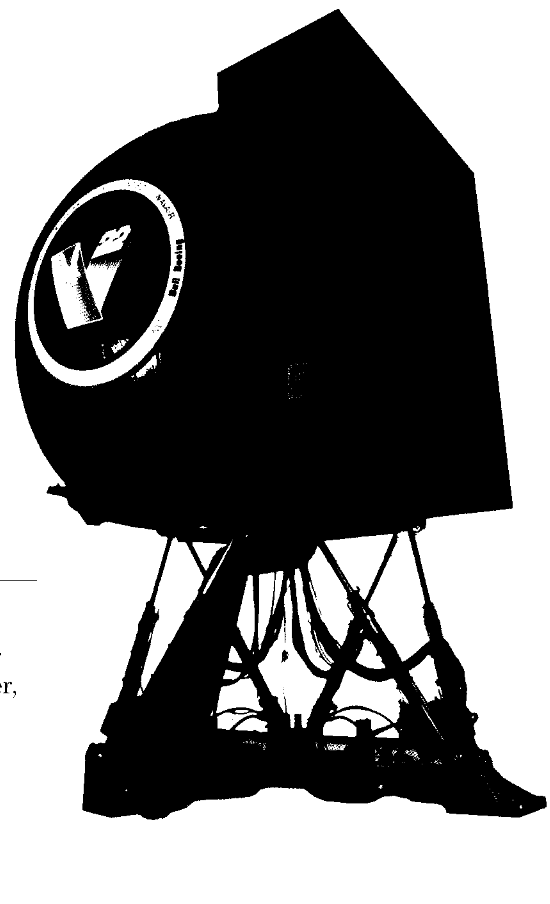
Training Ranges

Among the Team's most vital services is the Tactical Training Range Program. To increase Fleet readiness, we offer instrumentation systems to train naval air, surface, and subsurface crews in realistic combat environments. We provide this service to the entire Navy and support the other services as required.

Among the many accomplishments in this area during the year the following are mentioned as representative. We completed expansion of the Pinecastle Tactical Air Combat Training Range at the Beaufort Range. We deployed Laser Evaluation Systems-Mobile on *USS Camden* (AOE-2), *USS Kinkaid* (DD-965), and *USS California* (CGN-36). We installed the Navy Tactical Data System Upgrade at the Pacific Missile Range Facility and installed the Range Electronic Warfare Simulator at the Southern California Offshore Range. We completed installation of the new Fleet Telemetry Station at Puerto Rico and the Underwater Range in Australia for use by Australia. Besides installing new equipment we maintained the equipment already in service.

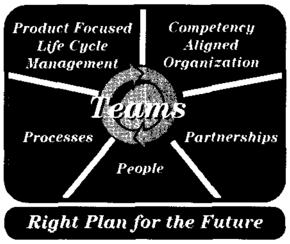
Training Systems

In 1994, we delivered 11 training systems to the Fleet, including five for the F-14D Tomcat, the first V-22 *Osprey* Operational Flight Trainer, and the first S-3B Computer Based Training System to *USS Carl Vinson* (CVN-70). We stood up the Aircrew Coordination Training Model Manager's course at Pensacola, Florida. Our refinement of the Navy Integrated Training and Resource Accounting System produced a 70 percent improvement. These are representative, but not all inclusive, of our achievements in this crucial area.



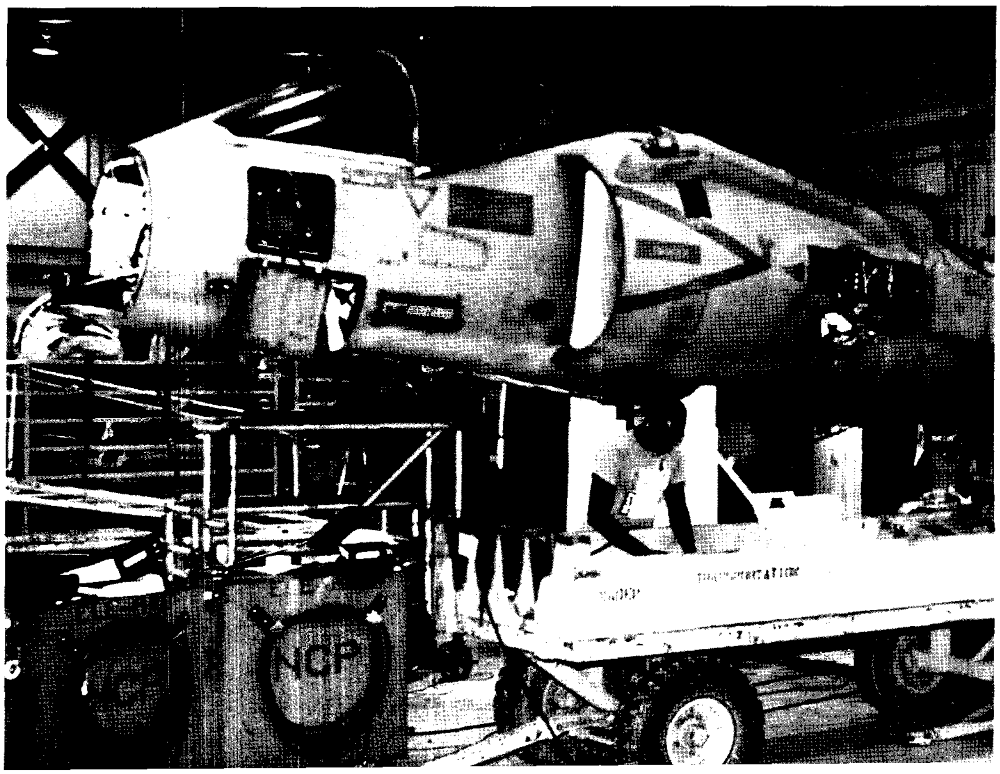
V-22 Operational Flight Trainer at Marine Corps Air Station New River, North Carolina

Core Capabilities



For as long as the Navy has flown aircraft, we have maintained a balance between the amount of RDT&E and Engineering done organically by the Navy and what we have procured from the private sector By far the majority of aeronautical goods and service have been furnished to us by private industry, and this ratio will undoubtedly continue. The Navy has not built an aircraft in-house since late in the Second World War, and we have no intention of resuming the practice, but we still conduct sizable portions of our own R&D, T&E, Engineering, and maintenance. We shall retain core capabilities in-house doing what the Navy must do in order to be smart buyers and smart and responsive supporters of all Naval aviation systems.

Another vital element of our industrial strategy is reduction of cycle times and cost of ownership. Lowest Cost to repair is not always the answer if the mean time to failure after a repair makes the operating cost per hour greater than if a replacement part were procured and used. Reducing depot turn around to reduce the number of aircraft in our pipeline and hence total inventory is a top priority. Less maintenance time offers reduced cost of ownership of each aircraft. In 1994, our NADEP at North Island, CA implemented a new Maintenance, Corrosion, and Paint program for the F/A-18 *Hornet* that reduced cycle time from over 200 to 110 days. At Jacksonville, FL our NADEP began replacing the P-3 Orion's Standard Level Depot Maintenance (SDLM) program with a new Phased Depot Maintenance (PDM) approach, The PDM is cutting costs, saving hours, and preserving the airframe by ensuring necessary maintenance on a regular basis every four years. The PDM is a result of communication with the Fleet and is a classic example of how communication with the Fleet can result in new solutions and is now an indispensable part of Naval aviation.

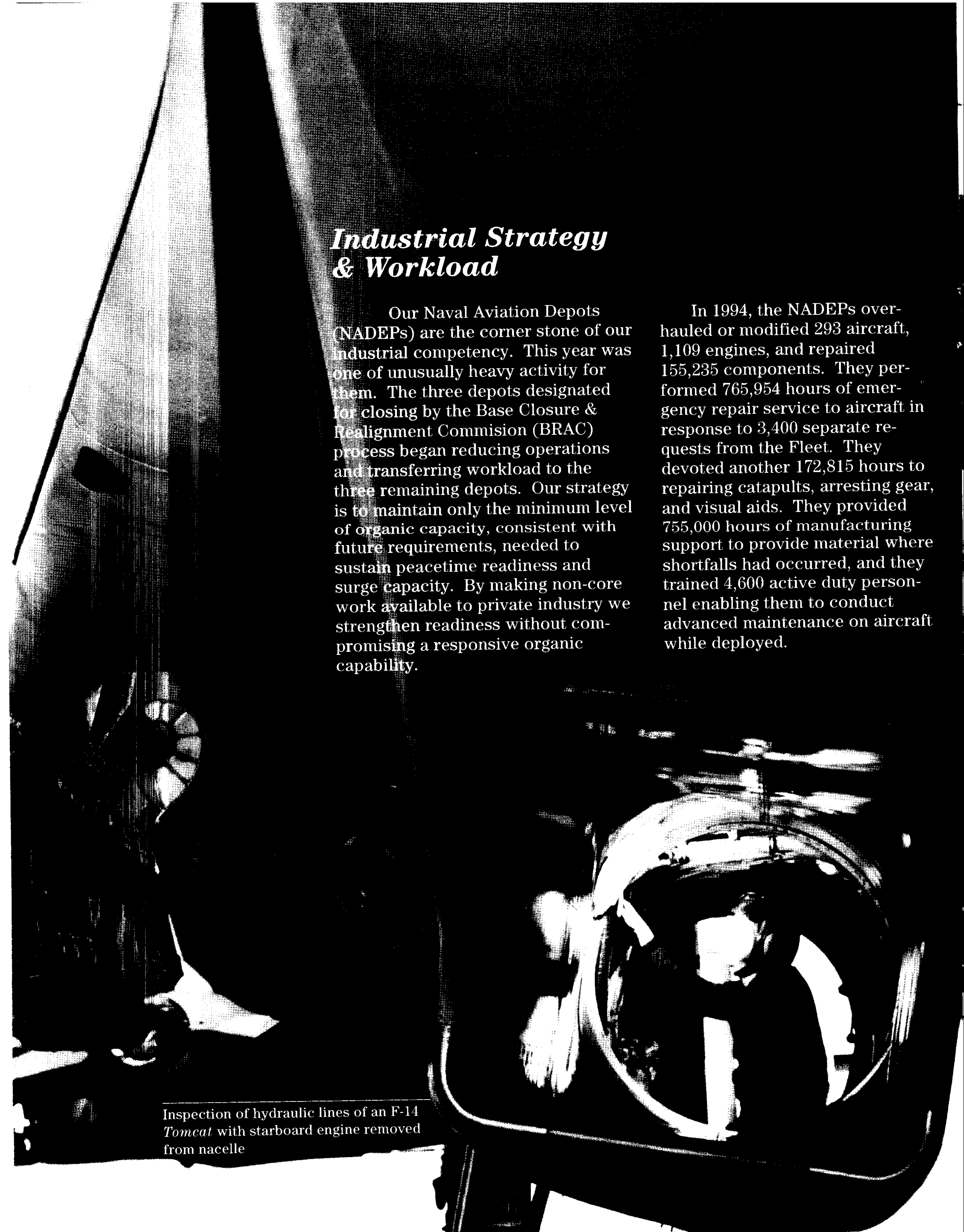


An *AV-8B* being disassembled at NADEP Cherry Point, North Carolina prior to shipment to the manufacturer, where it will be remanufactured into a *HARRIER II PLUS*.

Industrial Strategy & Workload

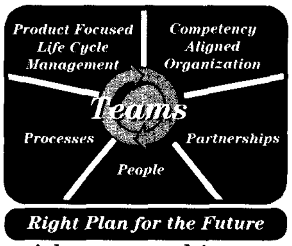
Our Naval Aviation Depots (NADEPs) are the corner stone of our industrial competency. This year was one of unusually heavy activity for them. The three depots designated for closing by the Base Closure & Realignment Commision (BRAC) process began reducing operations and transferring workload to the three remaining depots. Our strategy is to maintain only the minimum level of organic capacity, consistent with future requirements, needed to sustain peacetime readiness and surge capacity. By making non-core work available to private industry we strengthen readiness without compromising a responsive organic capability.

In 1994, the NADEPs overhauled or modified 293 aircraft, 1,109 engines, and repaired 155,235 components. They performed 765,954 hours of emergency repair service to aircraft in response to 3,400 separate requests from the Fleet. They devoted another 172,815 hours to repairing catapults, arresting gear, and visual aids. They provided 755,000 hours of manufacturing support to provide material where shortfalls had occurred, and they trained 4,600 active duty personnel enabling them to conduct advanced maintenance on aircraft while deployed.



Inspection of hydraulic lines of an F-14 *Tomcat* with starboard engine removed from nacelle

Supply Support Systems



Our people in the Logistics competency continue to come up with new and innovative ways of doing business and to refine the productive methods already in place. We continue to automate our systems wherever development allows.

In 1994 we established a projected savings of $167 million through 1998 through increased use of Logistics Engineering Change Proposals (LECP). We have also been successful in reducing the operating costs of our Inventory Control Points and achieved the lowest procurement administrative lead time at them in the Department of Defense. The following items describe a few of the logistics support program we have underway throughout the TEAM.

NALDA

The Naval Aviation Logistics Data Analysis (NALDA) is now in Phase II of its development as a major logistics information system. NALDA provides the TEAM and the Fleet with a powerful, full spectrum common and standard Integrated Logistics System information capability. NALDA Phase II permits the rapid development, implementation, and maintenance of automated logistics process improvements. With this improvement, engineers, logisticians, maintenance specialists dispersed throughout the TEAM and Fleet will have timely access to information in a shared environment to use in making crucial logistics support decisions.

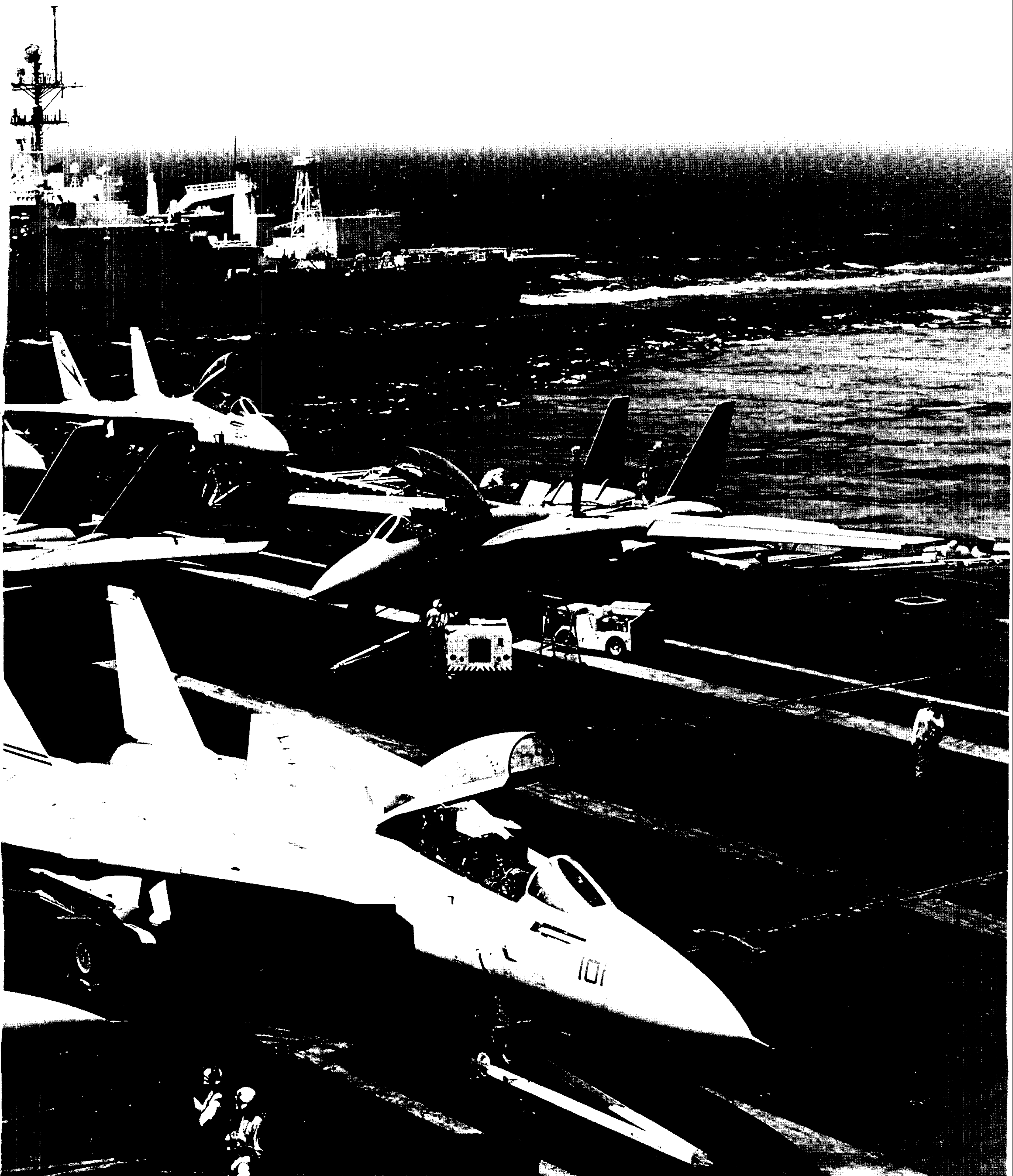
Logistics Review Groups

The Logistics Review Group Office has now begun conducting logistics reviews of Acquisition Category I and II programs in addition to the Category III and IV programs which the Office had been conducting. During the year, the Logistics Review Groups conducted 23 assessments emphasizing life-cycle affordability. The LRGs are able to ensure that supportability issues are considered in acquisition equally with the issues of cost, schedule, and performance.

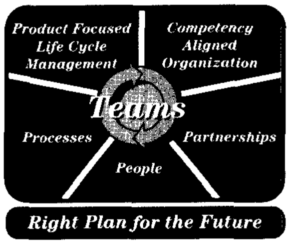
Logistics Financial Management

In 1994 we established a process to allow our Procurement Executive Officers and Program Managers to work as a team with the Financial Managers to manage Navy Operations & Maintenance Funding used for Fleet support. This process guarantees that all funding dedicated to Fleet readiness will be expended most effectively to that goal.

F-14 *Tomcats* on flight deck of *USS NIMITZ* (CVN-68) in the Persian Gulf with flagship *USS LASALLE* (AGF-3) passing astern


101

Science & Technology



X-31 Demonstrator

This year, the X-31 Technology Demonstrator aircraft completed all its objectives, including initial close-in combat flight tests and supersonic envelope expansion in both conventional and quasi-tailless configurations.

Multi-mission Propulsion

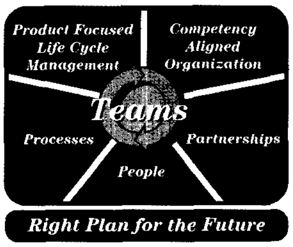
The Multi-mission Propulsion Technology Demonstration Program demonstrated for the first time successful pitch-over from a vertical launch without roll control.

Naval Aviation S&T Office

During 1994 the Commander of the Naval Air Systems Command, signed a Memorandum of Agreement with the Chief of Naval Research to create a joint Naval Aviation Science & Technology Office to foster the transition of advanced technologies into acquisition programs.

A *Tomahawk* cruise Missile lifts from a canister aboard the destroyer *USS FIFE* (DD-991) during Operation Desert Storm

Research & Development



It all begins with R&D. From the technology base that the TEAM maintains Naval aviation's systems are designed, developed, engineered, and produced. But R&D does not stop with production. Each system in the Fleet today was designed to accept improvement either by modification or technology insertion. It is through R&D and Pre-Planned Product Improvement P^{3}I that we will keep our aging systems capable of meeting the threat until our financial resources allow replacement. The following are a few examples of R&D underway by the TEAM during 1994.

Advanced Anti-Radiation Guided Missile (AARGM)

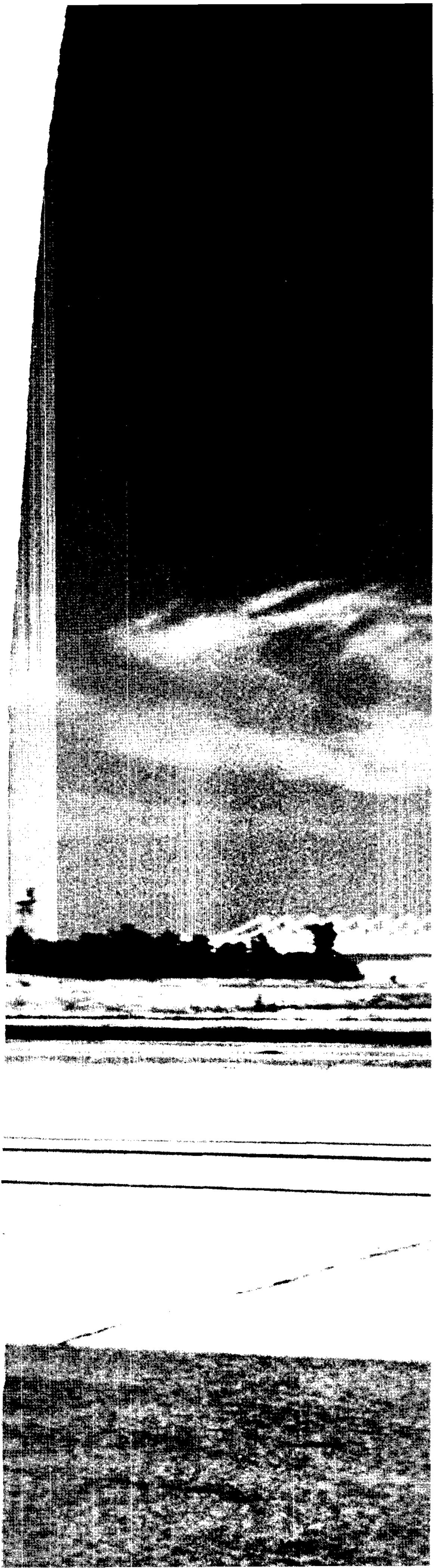
The AARGM is a technology demonstration program to develop a dual mode seeker that will fit an existing 5 inch missile airframe. This seeker will provide a capability greater than that currently available in the AGM-122 *Sidearm* short-range, low-altitude launched, anti-radiation missile.

Electronic Warfare Threat Simulation

R&D into airborne EW requires effective tools to evaluate system performance against known threats. Our ECHO program provides these tools through development of new simulators of EW threats to aircraft, and the continual update of existing ones to keep them current. In 1994, our work in this area was mainly with the externally carried aircraft pod ALQ-170 which is used also in the R&D of shipboard systems and Fleet EW exercises and tactics evaluation.

Explosives & Propellants

We have identified a new class of Insensitive Explosives that will reduce the risk of accidental detonation of ordnance. We have also identified a new type of Energetic Thermoplastic Elastomeric binder for explosives and propellants that provides higher energy formulations that are less hazardous and easily demilitarized.



Test & Evaluation

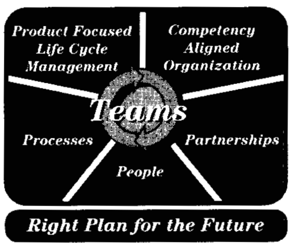
Before any system is deployed in the fleet, its evaluation must demonstrate that it meets the quality to do the job it was designed for, meet the requirement called for, and demonstrate the demanding reliability so critical in the Fleet's unforgiving environment. For us, T&E is conducted by the two divisions of the Naval Air Warfare Center: Aircraft at Patuxent River, Maryland and Weapons at China Lake and Pt. Mugu, California.

In 1994 we performed over 3,000 Test & Evaluation actions on aircraft and air-launched weapons and conducted exercises in support of the Third Fleet's training and weapon systems. Our Chesapeake Test Range completed refining its surface vessel tracing capabilities and built a prototype system the Coast Guard can use for harbor patrol. This has proved so successful that it is being replicated in several critical harbors in the United States. We also moved forward with our program to develop a Common Airborne Instrumentation System (CAIS) for use by Navy, Army, Air Force and the aviation industry. CAIS reached the flight test phase this year, on schedule.

A TEAM F/A-18 *Hornet* conducts airworthiness testing on the Joint Standoff Weapon (JSOW)

Vice Admiral Bowes, Commander, Naval Air Systems Command accepts Presidential Quality Award from Vice President Gore

Awards



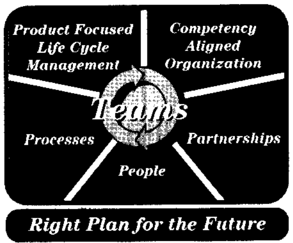
Presidential Quality Award

"The people at NAVAIR have not rested on their laurels. They have again surpassed any expected levels of excellence." Vice President Al Gore made these observations as he presented Vice Admiral Bowes with the 1994 Presidential Award for Quality. "This was not easy," he continued, "it was done in the midst of major restructuring that reduced its [the TEAM's] size by over 9,000 people over the last four years, facing a 30 percent cut over the next five years."

By "laurels" the Vice President was referring to our first having won the Award in 1989. Winning again in 1994 made us unique in the Federal Government—no other agency has won this Award twice, and we are rightfully proud of this achievement, but it was not the only award that we won in 1994. Others include:

- Secretary of Defense *Excellence Award for Hazardous Waste Management*
- Environmental Protection Agency *Stratospheric Ozone Protection Award*
- Federal Laboratory Consortium *Excellence in Technology Transfer Award.*
- Secretary of the Navy *Pollution Prevention Award*
- Secretary of the Navy *Safety Award*
- *RADM William Thompson Award for Excellence in Public Affairs*
- *Environmental Protection Board Award*
- American Institute of Aeronautics and Astronautics *Leadership in Quality Management Award.*
- Chief of Naval Operations *Readiness Through Safety Award.*

The Future & the Trends



The Department of Defense's Bottom-Up Review was very favorable to Naval aviation. The Carrier Battle Group is scheduled to remain the centerpiece of the Fleet and there is a national commitment to maintain it. Nevertheless, the tables shown here tell the story. The Naval Aviation Systems Team will have less money, fewer people, and fewer sites. Every aspect of our organization will be smaller. We can sit still and let the inevitable overwhelm us or we can take action that will let us absorb the reductions and continue sending the Fleet top quality products and services.

Embracing the principles of the National Performance Review (NPR) is a good place to start. And I'm pleased to say that at the Naval Aviation Systems Team we were embracing those ideas before the NPR was published:

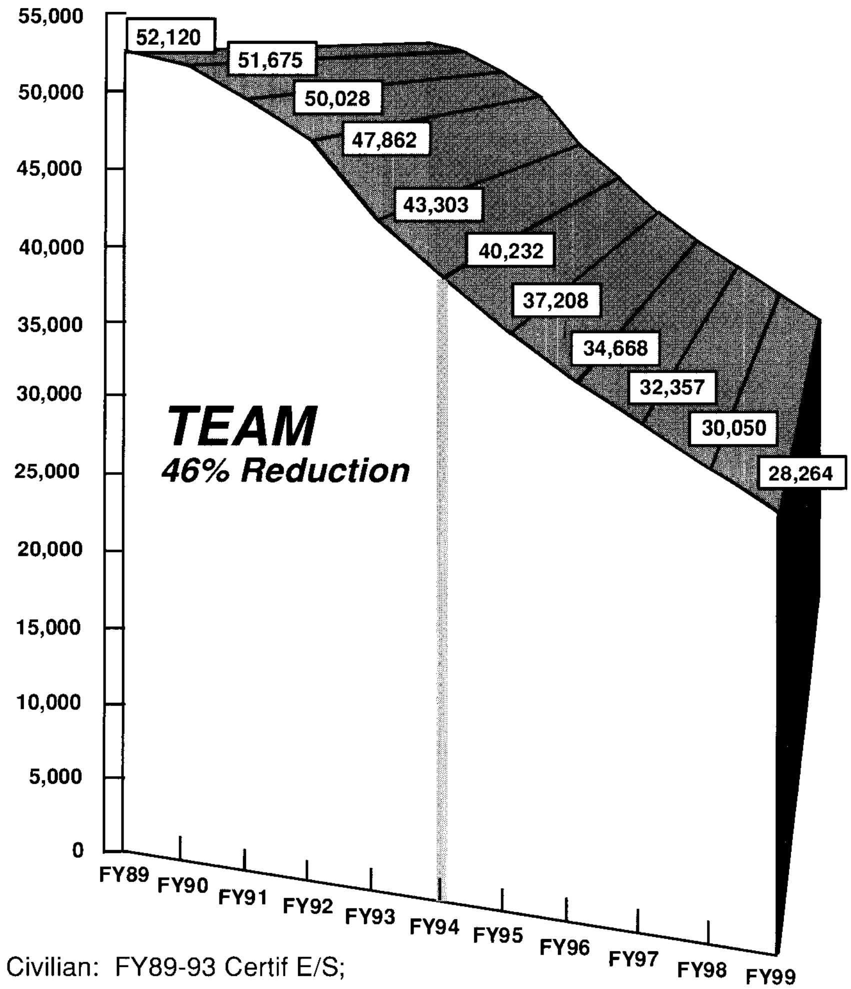
- Cut Back to Basics
- Put the Customer First
- Cut Red Tape
- Empower Employees

Money, the Undeniable Reality

The Team's Total Obligational Authority will decline less proportionately than the Navy's overall, but we will nonetheless arrive at the end of the century with no more than two-thirds of the financial resources we had at the beginning of the decade. At that, the TEAM's resources will decline by 30 percent while the Navy's resources overall will decline by 38 percent. Nontheless, a decline of this magnitude demands action on our part. We believe we have taken the necessary steps.

Team Sizing Plan

Civilian Total Reduction FY89-99



Civilian: FY89-93 Certif E/S;
FY94 Manual 30 Sep O/B;
FY95-99 TEAM Management Plan

Figure 1

People

People remain our most vital resource. We will have fewer of them but the greatest danger we face is losing the talents and skills that the naval aviation community has come to expect from the TEAM. We have taken steps to ensure that we retain our workforce and we are committed to improving their skills through training.

For those leaving the TEAM, and it is inevitable that thousands will, we are committed to assisting them in developing new careers. As the cutbacks approached (see figure 1), we took steps to determine what was available to us, and what we could do, to help our personnel to the greatest extent. In 1994, we were able to offer separation incentives to 1,037 people across the TEAM. By having people voluntarily leave, we minimized the number of those adversely affected by the reductions. Throughout the reduction process we have continually sought innovative ways to place TEAM members in other TEAM positions. In 1994, of those people whose jobs were abolished, we succeeded in placing 958 within the TEAM and helped others find work elsewhere in the Department of Defense, in other Government agencies, and in the private sector.

All TEAM members continue to have access to several forms of assistance to help them find alternate employment. These services are particularly important to TEAM members at facilities scheduled to close. Transitions Assistance Teams and Employee Assistance Centers are examples of what we have set up to help. They provide classes and resources to assist employees in finding, applying, and moving to their new jobs. Classes are offered on relocation procedures, resume preparation, buying and selling real estate, and small business development. Access to job opportunity services like the Federal Employee Information System, which lists job openings across the country.

The accompanying table displays that our workforce will decline by a third in just ten years. But the services we have in place will help to ease the stress involved in a major change. Ultimately these services will demonstrate available options and alternatives, making it easier for our personnel to move to new jobs.

Number of Sites

The Base Closure and Realignment Commission (BRAC) has directed that we close or realign five sites and relocate Headquarters. The site at Warminster, Pennsylvania will be realigned. The site at Trenton, New Jersey will be closed as will the Naval Aviation Depots (NADEPs) at Alameda, California; Norfolk, Virginia; and Pensacola, Florida in 1995. TEAM Headquarters, now located in Arlington, Virginia, will

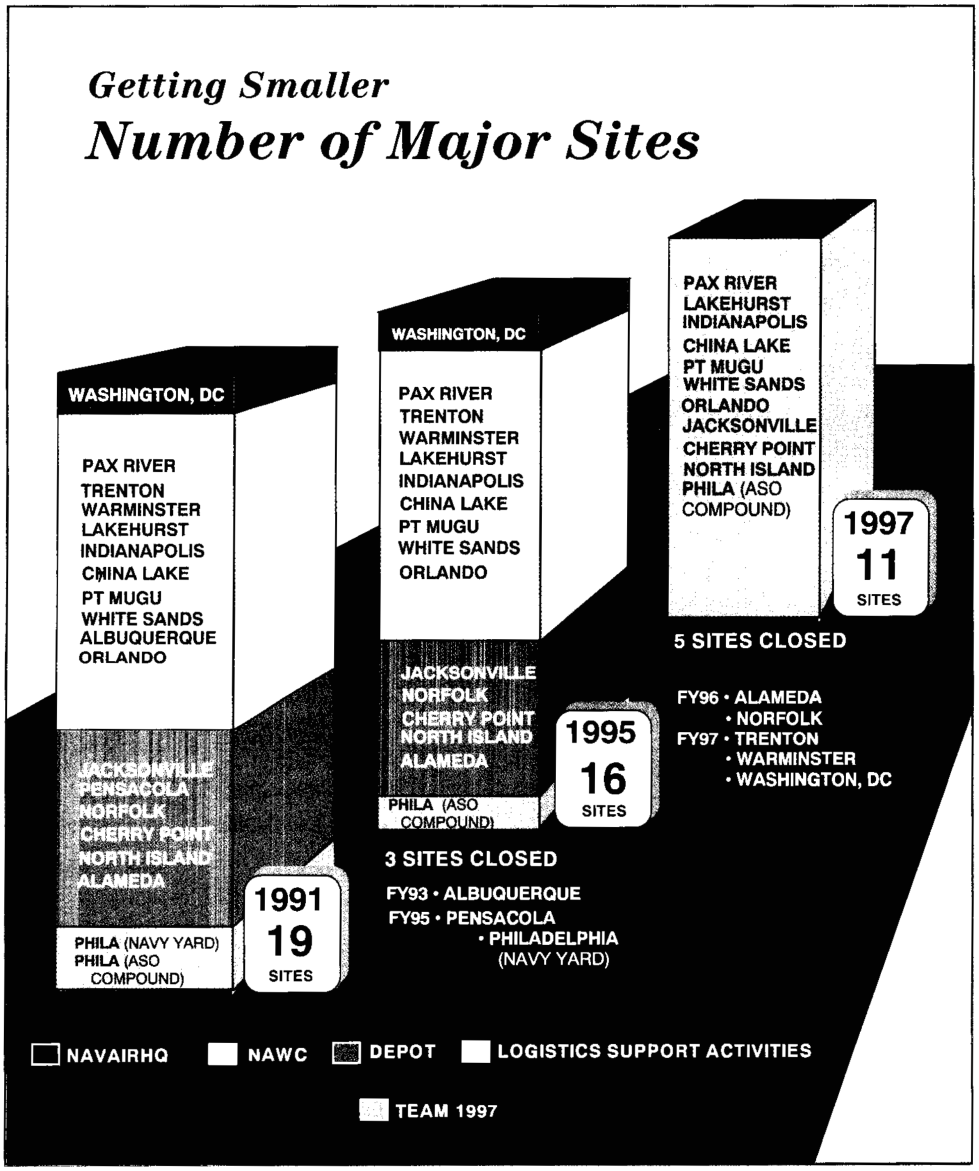


Figure 2

relocate to our site at Patuxent River, Maryland. The functions performed at the closing sites will be relocated to those remaining, and savings will result by eliminating duplication (see figure 2).

During 1994 we commenced the functions transfer from Trenton to Patuxent River. We also initiated functions transfer from NADEPs Pensacola, Alameda, and Norfolk to the remaining NADEPs and to the private sector.

Also, in 1994, two of our major contractors announced their intentions to vacate our Govenment Owned Contractor Operated facilities at McGregor, Texas and Calverton, New York.

Concept of Integrated Program Teams

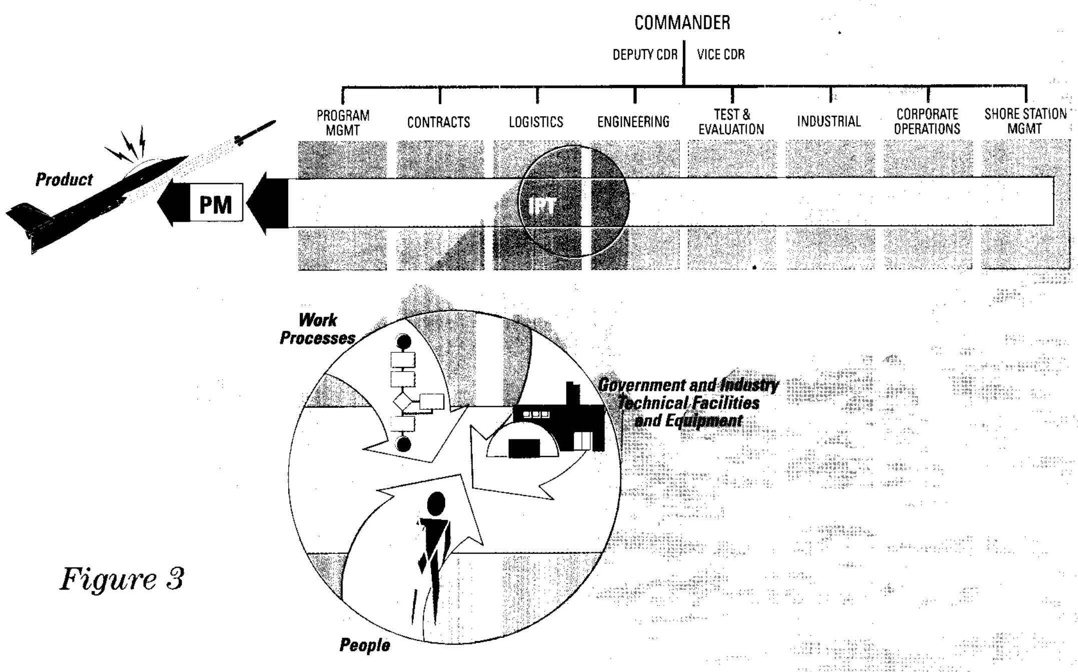


Figure 3

Reengineering & the Strategic Plan

This year we updated the Strategic Plan for a major change in our organizational structure and business processes. The Strategic Plan provides the blueprint to reengineer ourselves into a increasingly effective and efficient organization. At the heart of the reengineering are the Integrated Program Teams (IPTs). These IPTs will be led by program managers who will be vested with the authority, accountability, and resources necessary to manage all aspects of a weapons system, from concept definition to disposal. For the first time, our program managers will have direct control over all their technical and supporting personnel at every site across the TEAM (see figure 3).

The supply of skilled and knowledgeable people to our IPTs will be accomplished by the other major initiative in our reengineering efforts—Competency Alignment.

Concept of Operations

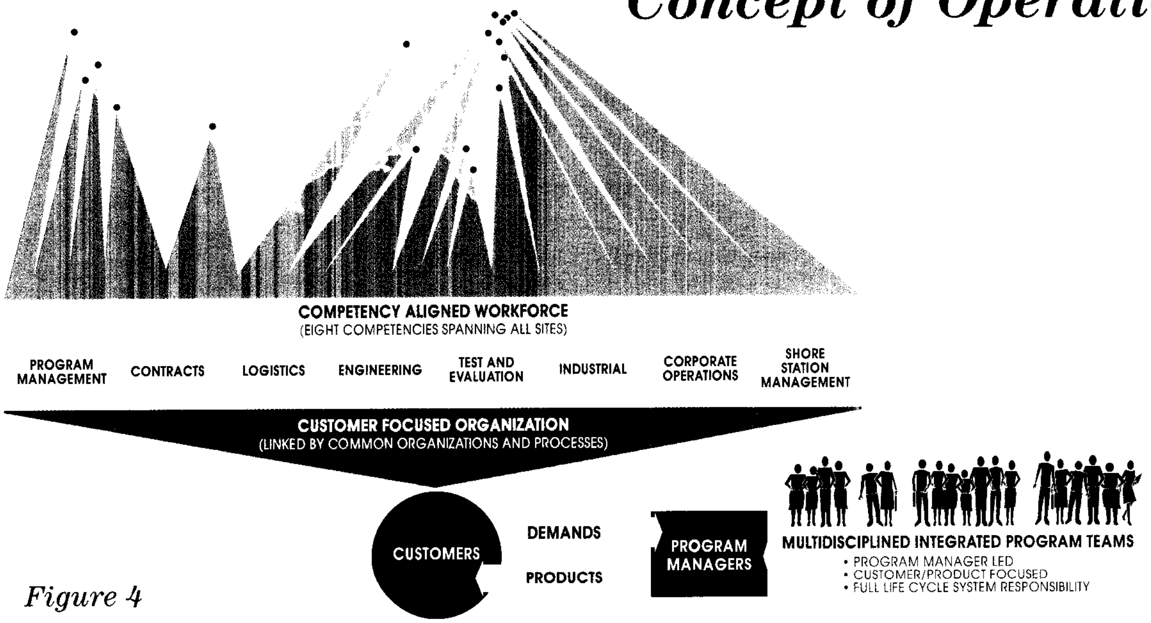


Figure 4

Competency Aligned Organization

On October first 1994 we stood up as a Competency Aligned Organization (CAO). To do so we availed ourselves of all the advantages offered by new and proven techniques of quality, management effectiveness, and especially information technology. We established eight competencies across the TEAM and aligned our people into them (see figure 4). The competencies are:

Program Management
Contracting
Logistics
Engineering
Test & Evaluation
Industrial
Corporate Operations
Shore Station Management

The competencies are to focus on three objectives: education and training of similar disciplines, allocation of human resources, and process improvement. Aligning our people by competency gave us a data bank of information that will allow us to identify our total organizational capability. We can now locate shortfalls and excesses in skills and distribute and grow our expertise in an informed and efficient manner—ensuring that we have the right skills in our work force to meet all program needs. The eight competencies extend across the entire TEAM replacing the old geographic distinctions and the site-based competencies that had been the bases of our operations for over seventy years. In setting up the CAO, information technology has been invaluable. Vice President Gore's National Performance Review makes a point that we have proved—"In transforming an organization, breaking down organizational boundaries, and speeding service delivery, information technology can be a powerful tool for reinvention." Electronic collocation has proven to be critical to the success of our reengineering.

Each of the eight competencies will have a leader who will support the IPTs by ensuring the development and training of competency personnel, matching competency supply to demand, drafting and improving processes, and integrating lessons learned and new technology across programs. They will empower our people and ensure that they receive the greatest level of education and training possible so that we retain the knowledge and skill to remain a "smart buyer."

MULTI-DISCIPLINED TEAMS

The axis of our Strategic Plan for reengineering is comprised of multidisciplined teams supporting the work of the TEAM. Around them are five basic strategies that form a holistic approach to accomplishing a fundamental change in the way we are organized and operate. These strategies are:

✪ **People**. Take care of our people before, during, and after this period of consolidation, closure, and reorganization.

✪ **Partnerships**. Form partnerships with other services, with other Navy components, and with industry to ensure that the Team's weapons systems, aircraft, airborne equipment and support systems are effective and affordable over their life cycle.

✪ **Processes**. Throughout the TEAM do business based on process management, measurement and improvement.

✪ **Product Focused Life Cycle Management.** Mechanize life cycle management of our systems by focusing our people, work processes, technical facilities and equipment into Program Manager-led multidisciplinary teams, with the responsibility and authority to manage all aspects of our programs to meet requirements.

✪ **Competency Aligned Organization**. Build a new organization for the Naval Air Systems Command which organizationally links our people within competencies that extend across all sites to strengthen our ability to perform our mission at reduced size and cost, to operate within defined and managed processes and to support our concept of operations for program life cycle management.

Our realignment will make us an organization capable of maintaining with reduced resources the full spectrum of capabilities Naval aviation needs to remain a potent force. The Naval Aviation Systems Team will be a world leader in each of these capabilities.

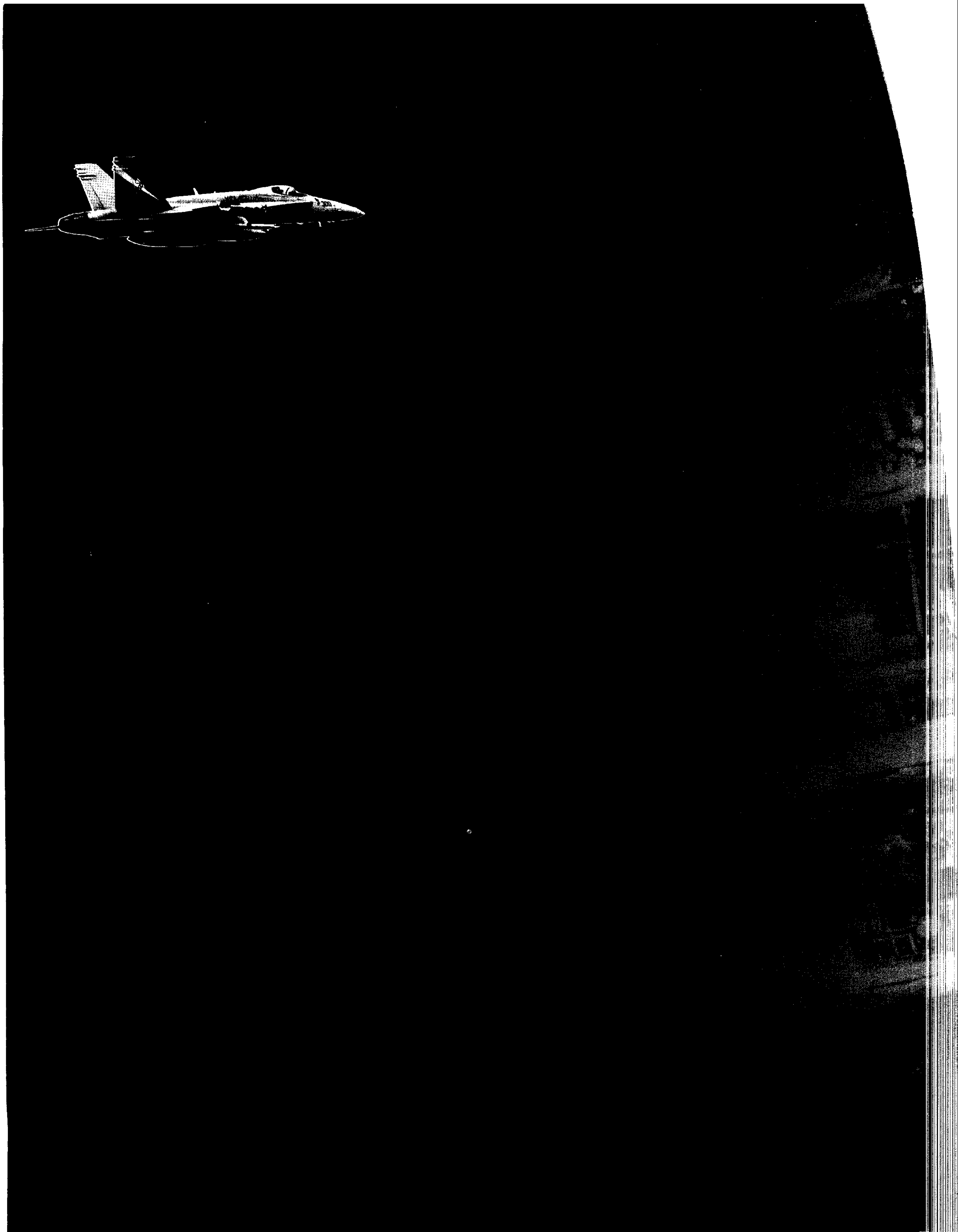
Thanks to the members of the TEAM, professionals who contributed time, expertise, and many hours of time to make this document possible

Wm. J. Armstrong, Editor, Information & Photographs
Michael Carr, Layout & Design
Thomas Crickmer, Charts
Captain Martin S. Kosiek, USN, Consultant

The Naval Aviation Systems Team wishes to express its appreciation to the following for the courtesy of photographs provided:

Navy Chief of Information, News Photo Division
Naval Aviation News
Hughes Aircraft Co., Aerospace & Defense Sector
Norsk Forsvarsteknologi as
McDonnell Douglas Corporation

In the Red Sea during Operation Desert Storm, fast combat support ship *USS DETROIT* (AOE-4) conducts underway replenishment of *USS JOHN F. KENNEDY* (CV-67) and guided missile cruiser *USS SAN JACINTO* (CG-56) (overleaf)



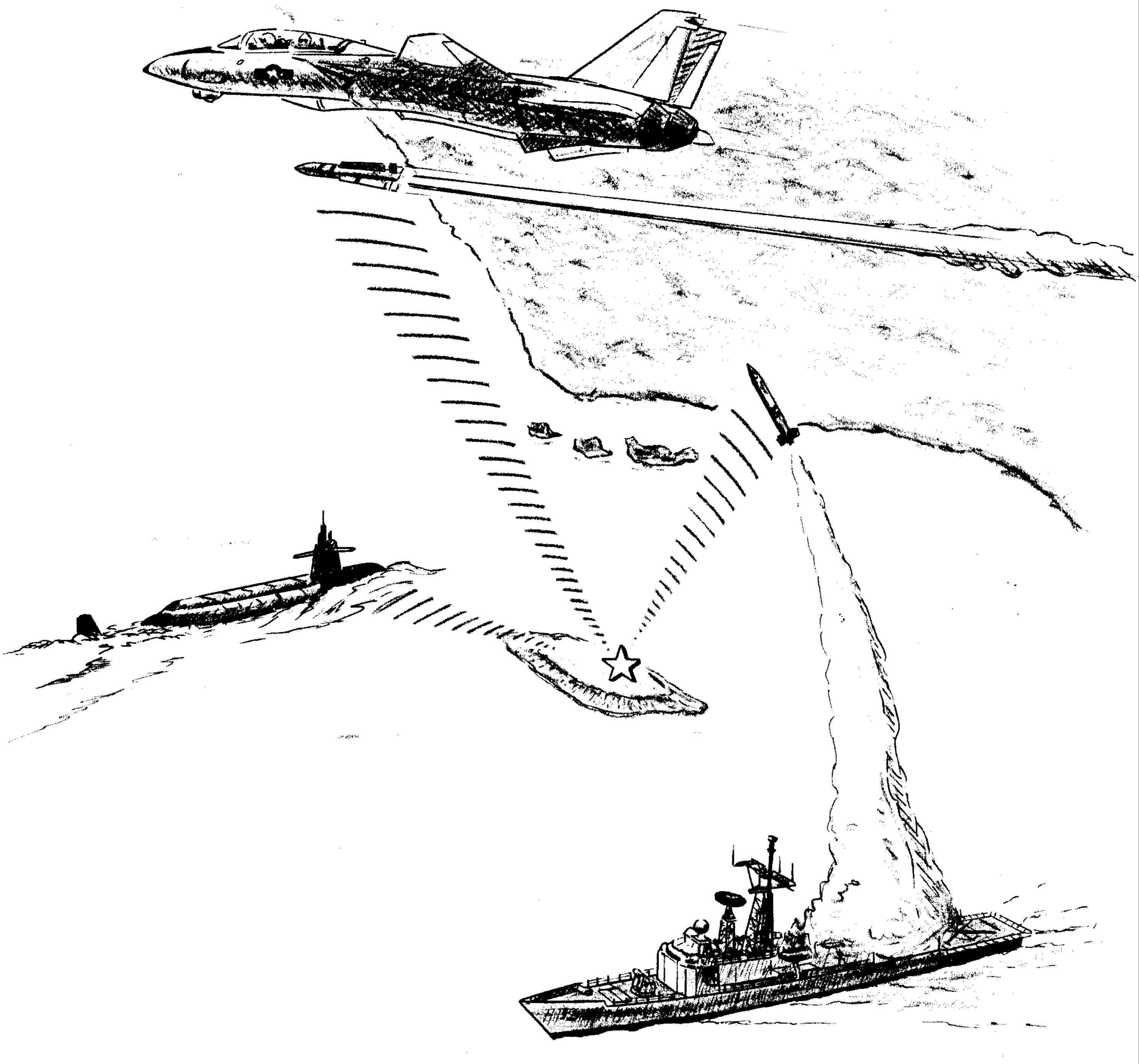
Annual Report

Naval Aviation Systems Team
1421 Jefferson Davis Highway
Arlington, VA 22243-5120
703 604-2875x4610

Document Separator

San Nicolas Island and Santa Cruz Island

Site Manual



October 1993

Quick Reference Index

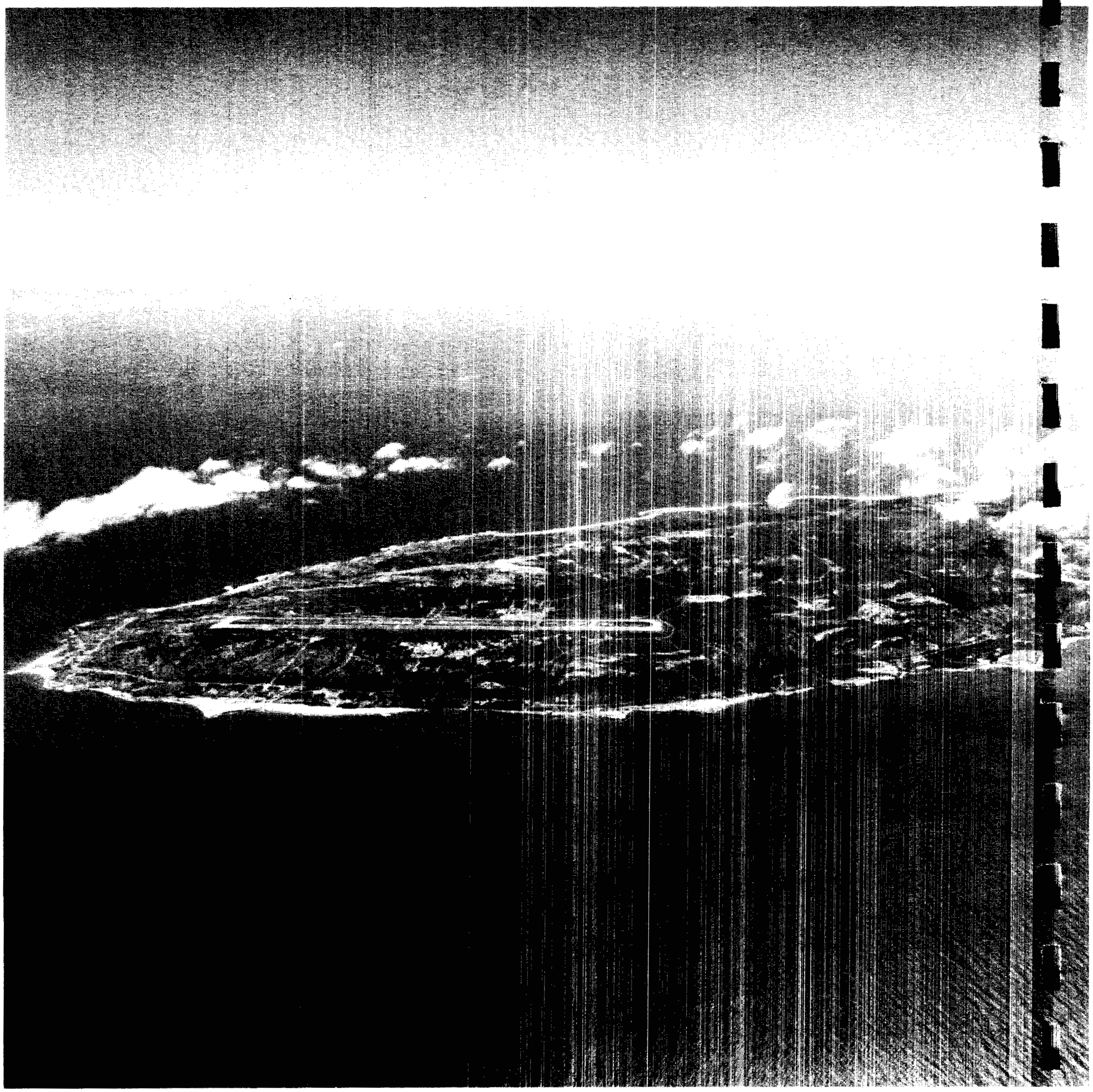
San Nicolas Island and Santa Cruz Island Site Manual

By: Kurt Dulka
Mary Dalke and Larry Barker

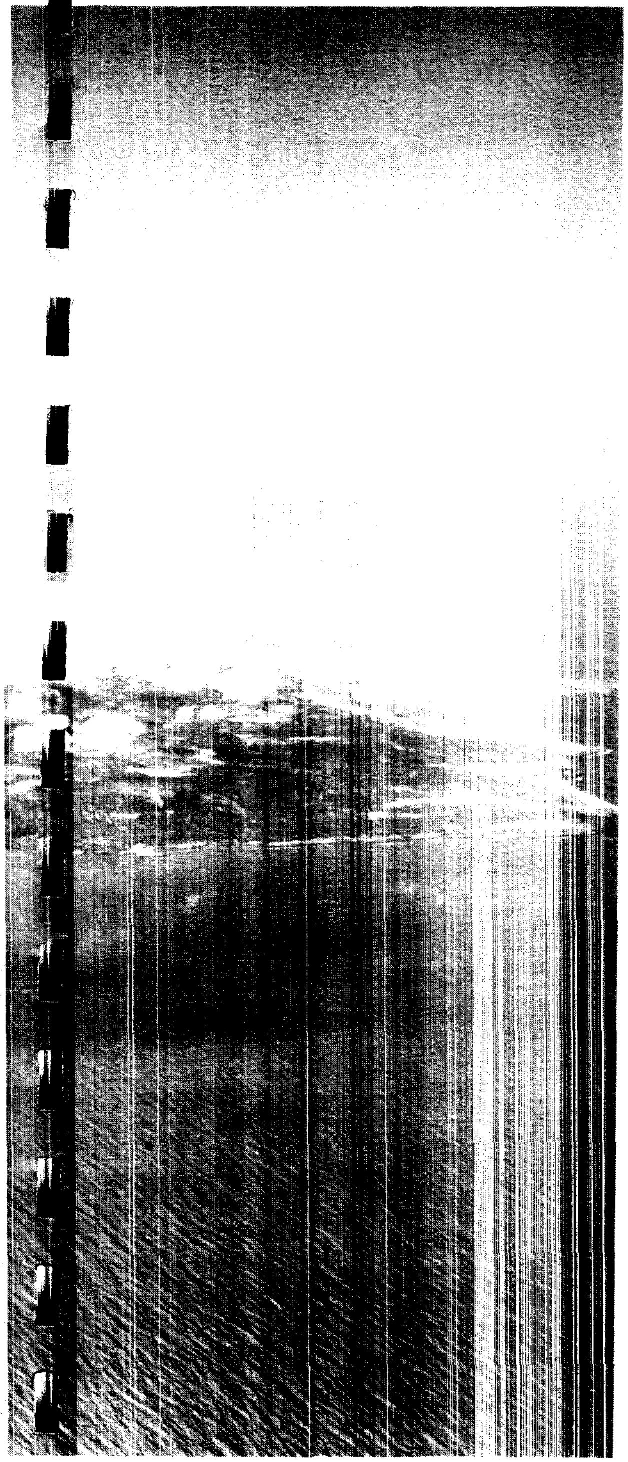
Approved by:

Paul D. Knight
Head, Workload Management Office

Naval Air Warfare Center Weapons Division **Point Mugu, California**



San Nicolas Island ranks fifth in size of the California Channel Islands. The island is nine miles long by 3.6 miles wide and approximately 33 square miles.



FORWARD

This manual describes the Range Operations site facilities and equipment of San Nicolas Island and Santa Cruz Island of the Naval Air Warfare Center Weapons Division (NAWCWPNSDIV), Point Mugu, California. It includes military operated facilities, public works operated facilities and facilities and functions operated by contractors. The purpose of this manual is to inform potential users and newly assigned personnel of the scope, history, and geography of San Nicolas Island and Santa Cruz Island. It can also be a valuable reference to NAWCWPNSDIV personnel.

This manual is divided into two parts. The San Nicolas Island information is presented in sections one through sixteen and the Santa Cruz Island information is presented in sections seventeen through twenty-six. A general overview and history is provided in section one and two for San Nicolas Island and section eighteen for Santa Cruz Island. Detailed information on range capabilities and instrumentation is provided in the remaining sections of the manual.

Direction and guidance for writing this manual was provided by the Workload Management Office NAWCWPNSDIV. Material and assistance were received from personnel of the functional and management subdivisions of the NAWCWPNSDIV.

Additional information regarding any aspects of the services and capabilities of San Nicolas Island and Santa Cruz Island can be obtained upon request from the Workload Management Office (805) 989-7780 or Autovon 351-7780. Technical inquires and requests for copies should also be addressed to the Workload Management Office.

Kurt J. Dulka
Workload Management Office
1 October 1993

Table of Contents

San Nicolas Island Sections

Table of Contents (Cont.)

Table of Contents (Cont.)

Table of Contents (Cont.)

Table of Contents (Cont.)

Table of Contents (Cont.)

Table of Contents (Cont.)

Table of Contents (Cont.)

Santa Cruz Island Sections

Table of Contents (Cont.)

Table of Contents (Cont.)

List of Illustrations

List of Illustrations (Cont.)

List of Tables

List of Tables (Cont.)

Section 1

San Nicolas Island Introduction

GENERAL INFORMATION

San Nicolas Island (SNI) is located 65 miles south of the Naval Air Weapons Station (NAWS), Point Mugu, California and 85 miles southwest of Los Angeles. SNI is situated on the continental shelf at latitude N 33°14′ and longitude W 119°27′. It is approximately 9 miles long and 3.6 miles wide and encompasses an area of 13,370 acres of land owned by the Navy in fee title.

The island, generally treeless, is relatively flat on top and drops sharply off on the south side with a more gradual slope to the ocean on the north side. The shore line is formed by cliffs averaging 500 feet with its highest point at 907 feet. The interior terrain is a rolling mesa, badly eroded with little vegetation, mostly coarse grasses, and few large shrubs. The western end contains large shifting sand dunes, while the eastern end has a large sand spit extending eastward. The southern side of the island rises from the sea to 700 feet within a mile of shore and the northern side of the island has cliffs which rise to the mesa at 300-400 feet above sea level.

Springs are found in many places on the island and the water, though highly mineralized, is potable.

The only residential area on the island is "Nicktown" located in the center of the north side of the island. There are no permanent residents on SNI, however, approximately 200 people have part-time quarters assigned to them while they work on the island.

ACCESSIBILITY

The Navy facility on SNI is easily accessible by air for personnel and most equipment. By sea, large items are barged in from the Navy's deep-water harbor at Port Hueneme and Long Beach. For access to the various instrumentation sites on the island there are over 50 miles of roads, of which 30 are paved.

A 10,000 foot permanent bituminous paved runway and parallel taxiway located on the top of the east end accommodates military air traffic to San Nicolas Island. The runway has a ground controlled approach facility, and can accommodate supersonic target aircraft and planes. True bearing of the runway is N 47°24′05″ W, with directional runway numerals 12-30.

OFFSHORE ISLANDS

GENERAL

San Nicolas Island is one of a chain of eight major offshore islands scattered over an area of about five thousand square miles and extending 160 miles from northwest to southeast. San Nicolas Island and the other seven major offshore islands in their relationship to the mainland are shown on a map in Figure 1-1.

Geographers commonly separate the offshore islands into two groups. The northern group consists of San Miguel Island, Santa Rosa Island, Santa Cruz Island, and Anacapa Island. The southern group consists of San Nicolas Island, Santa Barbara Island, Santa Catalina Island, and San Clemente Island.

All the offshore islands play an important role in supporting the Naval Air Warfare Center Weapons Division, (NAWCWPNSDIV) mission. Their locations, (most of them within the Sea Test Range), provide a relatively interference free environment for Range instrumentation covering both the inner and outer Sea Test Ranges. The instrumentation located on the offshore islands is required for

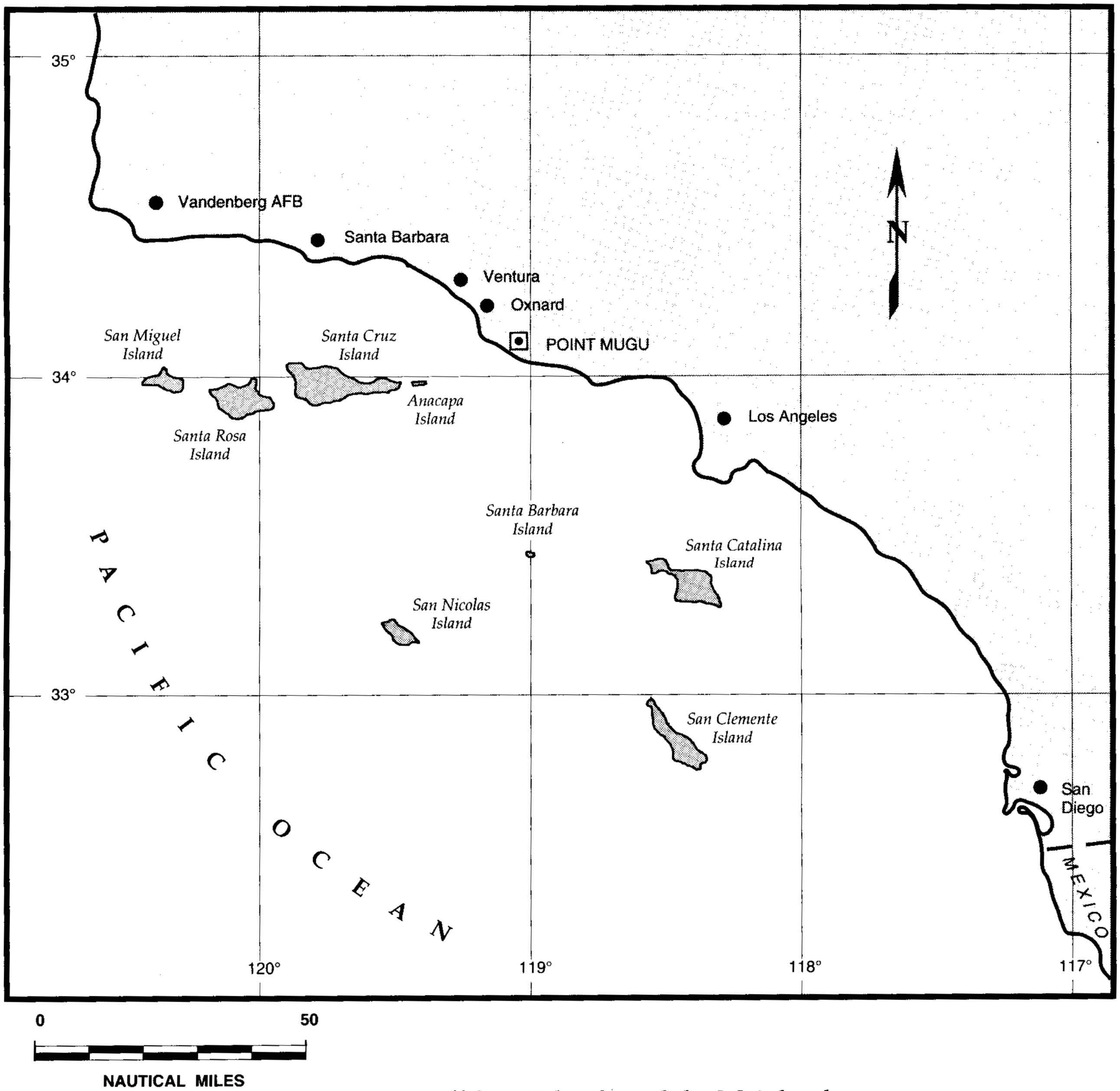


Figure 1-1. Offshore Islands and the Mainland

the successful conduction of operations on the range. A brief description of each island is provided below.

SAN NICOLAS ISLAND

Much of San Nicolas Island is used as a Navy Range Instrumentation test site. The island is equipped with facilities supporting metric radar, telemetry, Extended Area Test System (EATS), Optics, communications, microwave, missile launching, drone launching, surveillance radar, and target control. The main support facilities include a runway, an air terminal, housing, a power plant, a fuel farm, a reverse osmosis water system, and a public works and transportation detachment.

The SNI instrumentation facilities include three metric radars, five large and three small telemetry antennas with receive/retransmit stations, a frequency monitoring station, three surveillance radars, meteorological measurement systems, range communication systems, and ordnance and launching facilities.

The instrumentation facilities are essential for the conduction of range operations because of the location of the island, which is west of most interfering civilian activities. Testing of hazardous weapons systems can be carried out with minimal interference to operations and with maximum safety.

SANTA CRUZ ISLAND

Most of Santa Cruz Island is owned by the Nature Conservancy, a private organization that has purchased land in California for preservation in its natural state.

The Navy leases a mountain top near the eastern end of the island for an instrumentation site. The small site has microwave, communications, a sea surface surveillance radar, barracks, a power plant, and a heliport. One omni-directional and one Beam EATS Ground Reference Station are also installed on the island. An area near the site is used for an experimental underwater range and is operated by a Navy contractor.

SANTA ROSA ISLAND

Santa Rosa Island is owned by the Department of the Interior. It is administered by the National Park Service as a part of the Channel Islands National Park which plans to convert the island to a preserve for natural vegetation and wildlife. Island headquarters are located at Becher's Bay on the south side of the island in an abandoned Air Force site which has a number of empty buildings. Several abandoned radar sites are located on the hills to the north of the headquarters.

One site on Santa Rosa Island is being used by NAWCWPNSDIV to support an unattended EATS Ground Reference Station. It is the only existing site on the island that the park service has not identified as containing any endangered species or cultural heritage areas.

SAN MIGUEL ISLAND

San Miguel Island is owned by the Navy and administered by the National Park Service as part of the Channel Islands National Park. There are no Navy facilities on the island and the only equipment is a remotely interrogated automatic weather station.

ANACAPA ISLAND

Anacapa Island is part of the Channel Islands National Park and has exclusive civilian use. There is an unused Coast Guard station with a light house and a heliport. The heliport is sometimes used for emergency landing or short stays.

SANTA BARBARA ISLAND

Santa Barbara Island is part of the Channel Islands National Monument and has exclusive civilian use.

SAN CLEMENTE ISLAND

San Clemente Island is an instrumentation site for the Naval Oceans Systems Center (NOSC) in San Diego. NAWCWPNSDIV has four unattended EATS Ground Reference Stations on the island. All other instrumentation on the island is used by NOSC.

SANTA CATALINA ISLAND

Santa Catalina Island has one site presently used by NAWCWPNSDIV to support an EATS omni-directional Ground Reference Station.

SAN NICOLAS ISLAND NATURAL AND CULTURAL RESOURCES

SNI is home to a large array of unique plants and animals. Many of these have developed characteristics different from mainland populations due to long-term isolation. In some instances, whole new species or subspecies have developed.

PLANT SPECIES

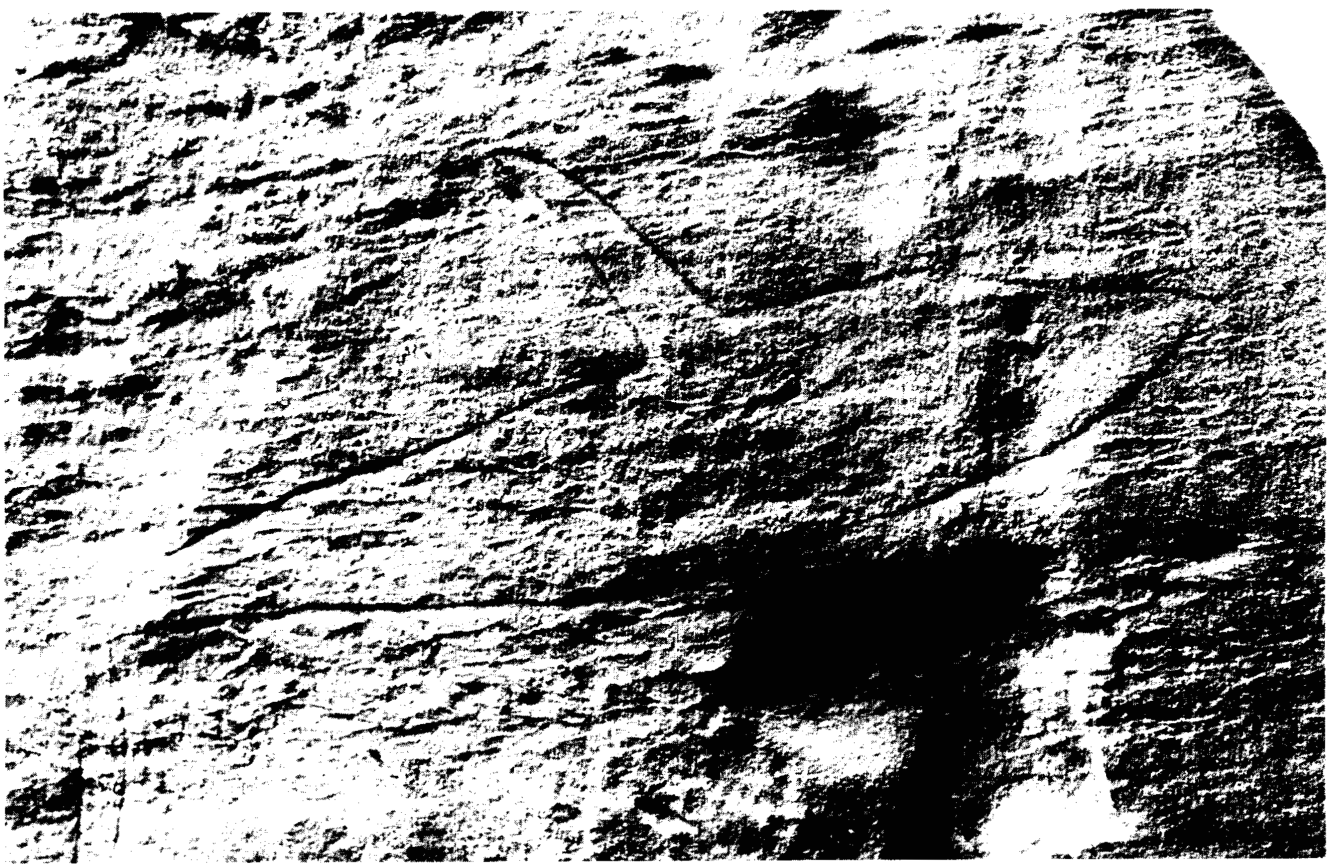
A total of 231 different plant species have been found on SNI. Eighteen species are island endemic, growing only on one or more of the Channel Islands and nowhere else on earth. The Island buckwheat and malocothrix are examples of plants that grow only on SNI.

ARCHAEOLOGICAL EVIDENCE

San Nicolas Island is rich in archaeological evidence. Over 500 Nicoleno Chumash Indian sites have been discovered and recorded on the island. Among these are villages, food processing kitchens (middens), and stone quarry sites.

San Nicolas Island is the location of the most spectacular cave art sites in California. The "Cave of the Killer Whales" contains many paintings (pictographs) and engravings (petroglyphs) of local sea life: whales, sharks, porpoises and fish. Carved in sandstone are at least nine killer whales in both horizontal and vertical positions.

These sites and all the artifacts contained therein are protected by the Antiquities Act of 1906 and the Archaeological Resources Protection Act. In



The "Cave of the Killer Whales" on San Nicolas Island contains the most detailed petroglyphs found on the Channel Islands. At least nine killer whales in both horizontal and vertical positions are carved in sandstone.

order to comply with this Act, the National Environmental Policy Act of 1969 and Executive Order No. 11593, the Commander, NAWS Point Mugu is responsible for local protection, care, and control of all archaeological sites. It is unlawful to disturb any of these sites, collect any artifact or remove material from an archaeological site on SNI. The archeologically sensitive areas on SNI are shown in Figure 1-2.

SAN NICOLAS ISLAND WILDLIFE

San Nicolas is a refuge for numerous land animals and marine mammals. The Island has one of the largest populations of seals and sea lions in the western United States.

LAND ANIMALS

San Nicolas Island provides habitat for five resident land birds, three reptiles (lizards), and two terrestrial land mammals. The island has both and endemic subspecies of fox and an endemic subspecies of deer mouse. The best known of these is the small species of fox found only on the Channel Islands.

The San Nicolas Island fox has reddish black fur and is generally nocturnal. The fox survives on insects, plant materials, crabs, mice, and the eggs of small birds. Because of its peculiar cry and hiss when angry, it's feline gait, and the way it handles it's forepaws, it has been described as catlike. It is believed the island's Indians brought the fox to SNI from the Northern Channel Islands approximately 6,000 years ago.

Several kinds of birds are found only on the Channel Islands. The rock wren, the horned lark and the house finch are endemic Channel Island races found on San Nicolas Island. Brandts' cormorant and western gull rookeries are seasonally established on the western end of the island while large numbers of brown pelicans roost near the shoreline. The snowy plover also nests on the undisturbed beaches.

The Island Fox inhabits six of the eight Channel Islands in six distinct subspecies. This gentle creature thrives upon a diet ranging from bird eggs, insects, and berries. Body proportions and coloring are similar to the mainland gray fox but the overall size is much smaller.

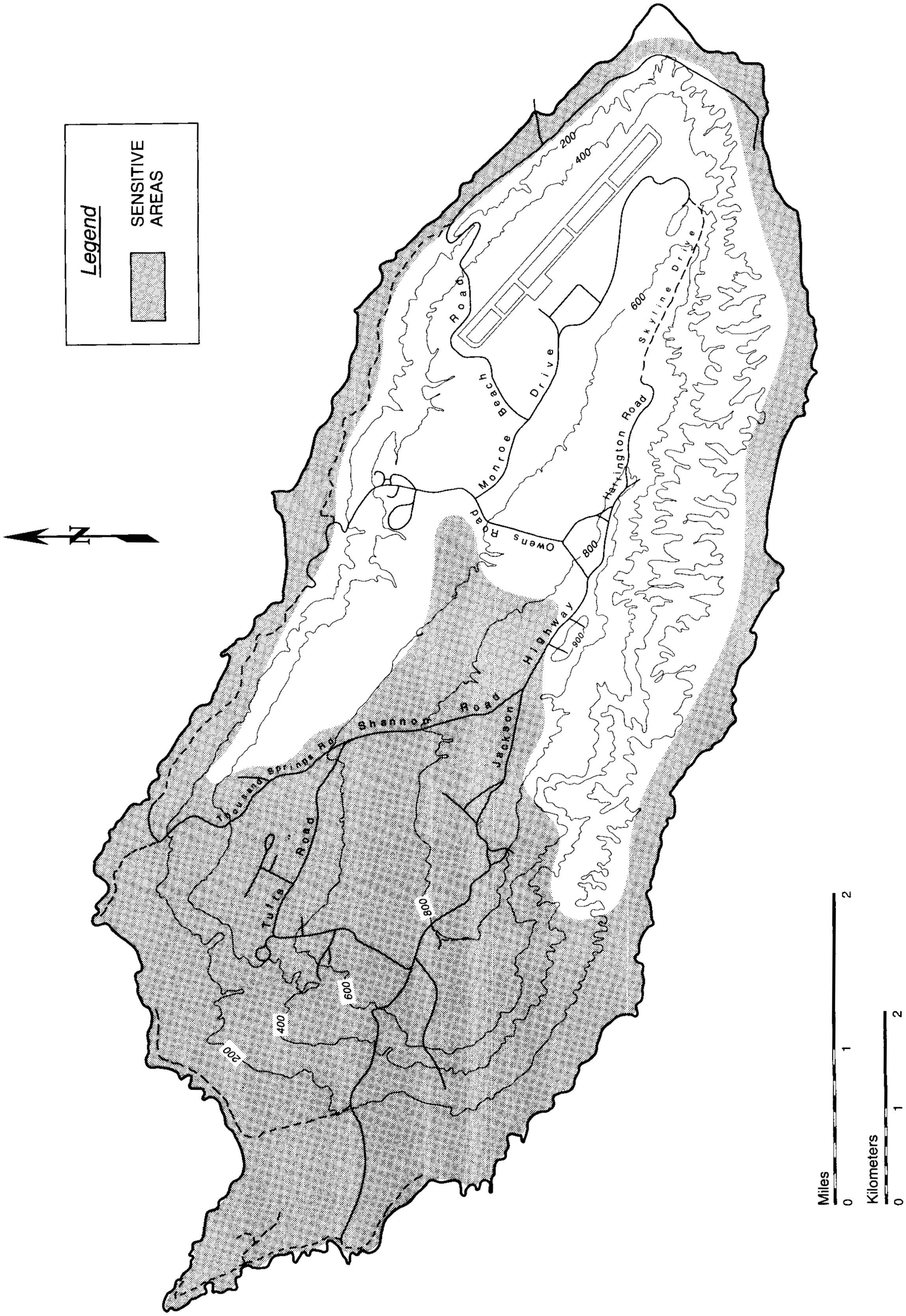


Figure 1-2. SNI Archaeologically Sensitive Areas

MARINE MAMMALS AND FISH

In contrast to the meager number of land mammals, the marine mammals and fish in the water around San Nicolas are both numerous and varied. There are many excellent fishing spots around the island with halibut, perch, and rock fish.

San Nicolas Island is near the migratory path of many whales. Its relative lack of development has made it a haven for seals and sea lions. The California sea lions and the harbor and elephant seals all share the island. Annually more than 25,000 California sea lions, 15,000 elephant seals, and 1,500 harbor seals "haul out" on the beaches and rocky outcroppings to give birth and rear their pups. It is then that San Nicolas becomes a major breeding ground. Although all three species are present year round, each species breeds at a different time of year. Below is a brief account of the seals and sea lions on the island.

California Sea Lions

The California sea lions are the only members of the sea lion group which breed on San Nicolas and the only marine mammals on SNI that bark. The sea lions are the most abundant, conspicuous, and loudest animals on the island. Full adult males are dark brown, with a large crest (bump) on their head. They weigh up to 800 pounds and are about eight feet long. Females weigh up to 250 pounds, are light tawny brown, and are about six feet long.

The California sea lions can be found breeding and "hauling out" on the rocky shores and beaches of San Nicolas Island.

On SNI, the sea lions begin breeding in mid-May. Pregnant females "haul out" on land a day or two before giving birth. After remaining for a week to suckle their pups on rich, fatty milk, females leave their pups to feed at sea. Most females appear to suckle their pups for almost one full year-or until the birth of their next pup. Females and pups can be seen on the western and southern beaches of San Nicolas from late May to late December.

Adult male sea lions compete with each other for the right to remain on breeding areas. Most males on breeding sites have cuts and scars obtained from fighting with other males. One interesting behavior which occurs between territorial males is known as the "boundary display". Two males will walk toward each other while swaying and barking. As they get within several feet of one another, one or both will fall forward, or lunge, toward the other. Both will continue barking and will stand just a few feet apart, facing away from one another. This display is thought to occur on the boundaries of male territories.

Males do not eat for their entire stay on the breeding areas which could last as long as six weeks. They begin to leave about mid-July.

California sea lions can be found breeding along many of the rocky outcroppings and beaches on the southern most west end of San Nicolas Island. They are shy and extremely wary of humans (their only land predator). If just one sea lion sees an upright human silhouette, it will run for the water and begin a stampede as others, seeing a fleeing animal, also will retreat to water. Female sea lions do not protect their pups when such a disturbance occurs. Sometimes this can cause abandonment and subsequently starvation of the pup. Also, repeated disturbances to a breeding area will cause the animals to abandon it completely. Such a disturbance could be subject to criminal penalties.

Harbor Seals

The last species of seal which breeds on San Nicolas Island is the Harbor seal. Harbor seals are more difficult to observe than either elephant seals or California sea lions due to their extremely nervous nature and habit of hauling out only on offshore rocks and very isolated beaches. Both male and female adult harbor seals weigh about 300 pounds and are up to six feet in length. Coloration in both sexes varies from tan to black and with varying degrees of spotting. Breeding season is approximately late March to early June.

Harbor seals are the one exception to the general pinniped rule of giving birth only on land. Although it is probable that most Harbor seals give birth on land, researchers believe they also can give birth in water. In any case, pups are capable of swimming minutes after birth (in contrast to the sea lions and elephant seals). Harbor seals mate exclusively in the water, and males are thought to have territories in the water, although relatively little is known about the mating system in these animals.

Harbor seals are extremely sensitive to human intruders and will probably retreat back into the water before you even see them if you are not careful. **Do not disturb "abandoned" harbor seal pups on the beach, often their mothers have just left them behind temporarily and will permanently abandon them if they are disturbed.**

Elephant Seals

Elephant seals are the most obvious seal species on San Nicolas. Their name comes from the elongated nose (or proboscis) seen on adult males (it is thought to act as a resonating chamber when males give their threat call). Adult male elephant seals can weigh up to two tons and grow to 18 feet long. Females can weigh up to one ton and are from seven to eleven feet long. Both are gray to tan

Young elephant seals often engage in mock combat, first making threatening gestures, then biting each other on the neck. The battles are fought in earnest and victorious bulls get their choice of harems.

in color most of the year. Elephant seals were almost hunted to extinction in the early 1890's by sealers who killed them for oil. The present population on San Nicolas (as well as for the rest of their range) came from a small number of animals who survived on one of the islands off Baja.

Breeding begins in late December on San Nicolas and ends in March. On large beaches, adult males, (distinguished by their large proboscis and a pink patch of thick skin on their chest area) fight for a place in the dominance hierarchy. The rather dramatic fights take place in shallow water and on land. Fighting males rear up and crash down with their huge canine teeth on their opponent's neck and chest area. The male threat vocalization can be heard from great distances and is reminiscent of a slow outboard motor. Males of this species also remain on land for the entire breeding season.

Female elephant seals arrive on the breeding area about a week before giving birth. They differ markedly from sea lions in that they remain with their pup for the entire suckling period. After three to four weeks of suckling, a female weans her pup by abandoning it. Before leaving the beach for sea, however, females usually mate one to several times.

From March to September the elephant seals can be seen hauled out on beaches to molt. The outer skin layer is lost along with the hair, peeling off in large patches. The seals "haul out" on beaches from September to the start of the breeding season in December.

Elephant seals do not retreat from approaching human (probably a factor in their near extinction). They are, however, extremely dangerous at all times of year, and especially during the breeding season. Human disturbance is particularly dangerous for pups. A large proportion of pup deaths can be attributed to bites from females other than their mothers and trampling by adult males. This occurs when pups are separated from their mothers during disturbances.

Other marine mammals which are occasionally observed on or offshore San Nicolas include Guadelupe fur seals (close relative of the sea lion), killer whales, gray whales, humpback whales, and schools of porpoises.

WILDLIFE SENSITIVITY

The southern and western shores of the Island are the haul-out and breeding sites for the endangered Northern elephant seal and the California sea lion. The mammals are protected under the Marine Mammal Protection Act. Access to certain areas of the island is restricted during certain times of the year to protect these animals. The areas closed to access are shown in Figure 1-3. The Officer-in-Charge is directly responsible for ensuring protection. Anyone disturbing the animals is subject to civil and criminal penalties.

The island night lizard, a federally "threatened" species, and eight plant species which are proposed for listing under the Endangered Species Act, must be protected from the impacts of Naval activities.

The island fox, lizard, snowy plover, seal and sea lion populations pose difficult problems. The numbers and distribution on SNI may change radically through time. It may be difficult to assess the impacts a project may exert upon any of the sensitive populations without a better understanding of their requirements and biology.

The northern elephant seal population is rebounding from near extinction during the last century. Population expansion is nearly exponential within its range and, consequently, this animal is expanding to new beaches on the island every year. There is a potential problem if a project is sited for an area which later becomes populated with breeding elephant seals prior to construction.

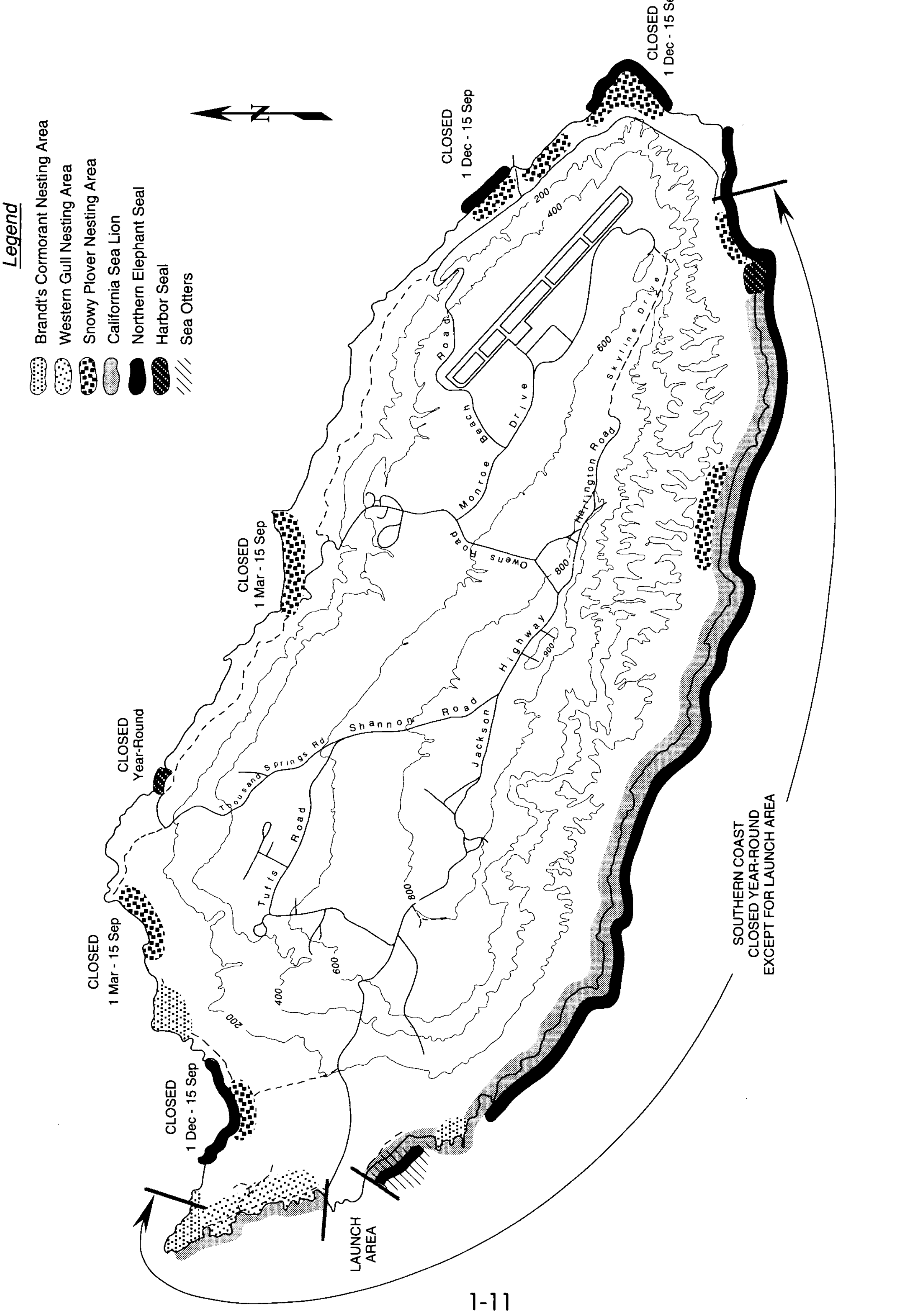


Figure 1-3. SNI Wildlife Closed Access

Section 2

San Nicolas Island History

DISCOVERY OF SAN NICOLAS ISLAND

San Nicolas Island was discovered by explorer Bartolome Ferrer, in February 1543. The island, however, was not named until December 6, 1602. Spanish explorer, Sebastian Vizcaino's launch, the Tres Reyes, passed by the island and the crewmen named it San Nicolas after the saint of that day. Some believe the island may have been sighted by Juan Rodriguez Cabrillo during his voyage of 1542 that put the Channel Island group on the maps but records of the discovery have not survived the centuries to settle the question. As far as is known, no Spanish ship ever dropped anchor off the island.

NICOLENO CHUMASH INDIANS

At the time of Cabrillo's voyage, the Channel Islands were thickly populated with Indians of the Chumash tribe. One of Cabrillo's men wrote: "The Indians are very poor. They are fishermen, they eat nothing but fish, they sleep on the ground, all their business and employment is to fish. They live very swinishly, they go naked".

Brief descriptions were written of the Indians in the area, but none were made of the inhabitants of San Nicolas Island, called "Nicolenos". Almost all knowledge of them has been gathered through archeological research. One archaeologist observed that the bones and skulls found on the island were especially large and that the people were taller than the inhabitants of the other islands and the coastal mainland.

Many authorities believe that the Nicoleno Chumash may have been of Shoshonean stock, and perhaps settled on the island long before the beginning of the Christian era.

CHUMASH INDIAN LIFE-STYLE

A Spanish journalist with Cabrillo recorded that the sea provided most of the raw material for these early islanders. Their diet consisted mainly of sea mammals, fish, birds, and shellfish, and some plants. Food mortars and pestles have been found that were used in its preparation.

Sea grass was used as material for clothing, fish lines, fish nets, bags, and baskets, some of which were elaborate works of art. Heavier clothing was made of the skins of cormorants and sea otters. Shells were used to make fish hooks and the ornaments the Indians wore in profusion.

The houses were brush enclosures about five feet high and six feet in diameter. Villages were usually located in areas with access to beaches, fresh water, and on elevated sites offering a clear view. Each village may have been fairly large, perhaps numbering as many as fifty people. Burials were sometimes accompanied by sculptured stone fetishes. The graves were marked with whale bones. Archaeologists have found that bodies were buried in a sitting position and evidences exist that some cremation might have been practiced.

It is believed that as many as fifteen hundred people lived on the island at one time. Contact with the other islands and the mainland is indicated by the materials found on San Nicolas that are not native to the island. The lack of Spanish trade goods indicates that there was little to no trade with the Spanish settlements on the mainland.

CHUMASH INDIAN ARTIFACTS

A distinctive feature of San Nicolas is the abundance of bones and artifacts found on the island. Five hundred sites of archaeological interest have been discovered. More than seventeen thousand specimens from San Nicolas Island are displayed in American and French museums. Authorities have stated that the quality of the artifacts found on San Nicolas shows distinct originality and superior workmanship. The Nicolenos' stone and wood sculpturing were well developed, and their whales, fish, bowls, and other vessels are prized museum pieces today. Thus it is probable that the Nicoleno was both physically and culturally distinct from the mainland Chumash and the other California Indians.

SEA OTTER HUNTING ON SNI

The destiny of San Nicolas Island itself was determined by the sea otter that romped and played in great numbers on its shores. Their reddish brown skins with a soft undercoat frosted with long, silver-tipped hairs brought fantastic prices. One fur sold for as much as $2,500. Russians sailed across the Bering Straits and down the California coast with gangs of Aleut Indian hunters to slaughter the animal by the thousands. Yankee traders sailed around the Horn to hunt. Captain Whittemore from Boston, landed about thirty Kodiak Indian sea otter hunters on San Nicolas Island in 1811. When he returned a year later, he found that the Alaskan Indians had killed nearly all the male inhabitants because of disagreements over property and women. The Kodiaks, with their firearms and knowledge of fighting had quickly done away with the peaceful Nicoleno men.

By the time the otters were nearly exterminated, only a small remnant of the Nicoleno tribe remained. New diseases brought by the white men and by the hunting parties also ended the Indian era on San Nicolas and the Channel Islands. The dozen survivors of San Nicolas were brought to the mainland in 1835, leaving the island for twenty years to the wild dogs, winds, and shifting sands.

One of the most famous historical stories of the island is "The Abandoned Woman of San Nicolas Island - Juana Maria" shown in Figure 2-1.

JUANA MARIA

The legend cites that when the Indian population began to dwindle, the Franciscan Mission fathers decided to move the last of the San Nicolas Island Indians to the Mainland. In 1835, they tasked Charles Hubbard to retrieve the 18-20 Indians remaining on the Island. When he arrived at the island, Captain Hubbard told the Indians they would be taken to the Mainland where food was plentiful and life was better.

A sudden gale churned up the sea and hurled the boat against the Island's rocky shores and Captain Hubbard made haste to leave. One of the Indian women discovered that her child had not been brought aboard. As the boat was leaving, she cried out that she had to go back for her baby. She jumped into the water and swam ashore.

Captain Hubbard could not wait any longer. He set sail across the choppy channel leaving the Indian woman and her child alone on the isolated island.

At the Los Angeles harbor, the last of the San Nicolas Island Indians were met by Franciscans and Captain Hubbard explained the unfortunate experience on the Island. He expressed the hope of returning to San Nicolas for the Indian woman but could not because of other commitments. Less than a month later, Captain Hubbard with his boat sank in San Francisco Bay.

Fifteen years later, in 1850, Thomas Jeffries and George Nidever with an Indian crew sailed to the distant Island in a small boat. They went to hunt otter and for six weeks they stripped otter and seal of hides. One night an Indian who had been on a hike around the island saw a figure running in the distance. He tried to catch up with the Island Phantom, but failed.

Three years later, on another otter hunting excursion on the Island, Nidever and his companion, Carl Ditman spotted a basket containing a robe sewed of bird's plumage. Nidever abandoned his hunt for otter. He ordered his men to join him in searching the Island, canyon by canyon, cave by cave.

It was Ditman who made the discovery a few days later. He traced footprints to a grass shelter on one of the Island's peaks. The woman was seated in her hideaway. She accepted his presence calmly and ordered the dogs away. Despite the fact that Ditman was first person she faced in 18 long, difficult years, she did not become alarmed. The woman was in excellent physical condition and there was a large supply of food in her grass hut.

When Ditman summoned Nidever and the entire party confronted the woman. Through sign language, she explained the story of her 18 year existence on the Island. Her child was found dead when she swam to the Island the day she was left behind.

She had never wanted for food. She lived off birds, fish, abalone and seal blubber. Water was easy to obtain from the many springs.

When Nidever returned to the Mainland he brought the Indian woman to his Santa Barbara home where his wife cared for her. The story of her discovery spread afar. The curious came from miles to see the strange wild woman, who, in reality, was a quiet, shy person, amazingly attractive despite her unique ordeal.

Civilization proved to be a greater challenge than her life alone on San Nicolas. She failed rapidly and in a short time she became too weak to walk. Within three months of her discovery, the last of the Channel Island Indians died. With her also died the great culture of the Island that had thrived for centuries.

On her death bed, a priest from the Santa Barbara Mission baptized her and gave her the name Juana Maria. Her robe of cormorant feathers was sent to the Pope in Rome, where it now rests in the Vatican museum.

She was buried in the Mission graveyard, where a plaque erected to her memory in 1928 reads:

Juana Maria
Indian Woman Abandoned on
San Nicolas Island Eighteen
Years
Found and Brought to
Santa Barbara
By George Nidever
in 1853
Santa Barbara Chapter
Daughters of the
American Revolution
1928

A fictionalized account of the Lone Woman's plight can be read in the novel "Island of the Blue Dolphin" by Scott O'Dell.

Figure 2-1. The Story of "The Abandoned Woman of San Nicolas Island - Juana Maria"

SHEEP RANCHING ON SNI

In 1857, Captain Martin Kimberly introduced sheep ranching to San Nicolas and it became the most destructive economic activity ever practiced on the island. The enterprise he started was continued for nearly a hundred years, with possession of the government lease changing hands from time to time. In 1890, San Nicolas was supporting more than thirty thousand sheep on its ten thousand acres of grazing land. This large flock soon overgrazed the island. By 1930 only four thousand vegetated acres remained.

In 1933 President Hoover gave jurisdiction of San Nicolas Island to the United States Navy. A few months later the Navy built a weather station and brought the island's human population to fifteen.

The last sheep rancher left the island in 1943. Three distinct ranch locations have been recorded. Except for the extreme erosion of San Nicolas Island, little trace remains of the once great sheep industry. The continual northerly winds and the drifting sands have erased all signs except for a few fence posts staggering over a sand dune.

MILITARY ACQUISITION

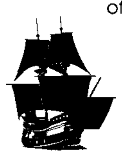
In November 1942 the Army was given temporary administration of San Nicolas. The island was used as a gunnery and bombing range. Live 100-pound, 20mm shells, and shrapnel can still be found on the sandy western end as mementos of those days. The temporary barracks that housed the men are still standing on the island's west side.

At the end of World War II, the Navy again took over San Nicolas. The location of San Nicolas Island 65 miles off the coast of Southern California was a major factor in the selection in 1946 of Point Mugu as the site for a missile complex. In January of 1947, the island was put under the control of the Naval Air Warfare Station at Point Mugu. Today the island's thirty-three square-mile area is occupied by about fourty-five million dollars worth of communication and missile-tracking instruments, all closely coordinated with those on mainland Point Mugu.

A time line with the historical dates and events of San Nicolas Island is shown in Figure 2-2.

1542 - Cabrillo thought to have sighted the island

February 1543 - Bartolome Ferrer discovered San Nicolas Island



December 6, 1602 - Sebastian Vizcaino's launch named Island after the Saint of the Day.

1804 - First sea otter hunters arrive on SNI. (Commanded by Captain Whittemore of Boston)

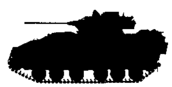
1835 - Charles Hubbard retrieve 18-20 Indians remaining on SNI.

Juana Maria abandoned on SNI.

1857 - Captain Kimberly introduced the most destructive economic activity on SNI, sheep ranching.

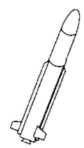
1933 - President Hoover gave jurisdiction of SNI to U.S. Navy.

1943 - Last sheep rancher left SNI.



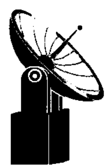
1942 - Army given temporary administration of SNI. Used island as a gunnery and bombing range.

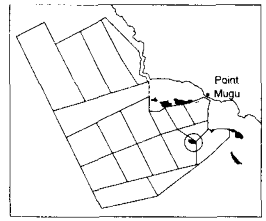
1946 - SNI selected as Point Mugu's missile complex.



1947 - SNI put under control of Naval Air Weapons Station Point Mugu.

1950's - SNI well instrumented with radar, telemetry, surveillance and communication equipment. Center became Pacific Missile Range.



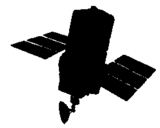


1960's - Offshore islands were playing vital role in Test and Evaluation (T & E) operations.

Late 1970's - Off-shore islands important to the conduction of T & E operations at Point Mugu.

EATS developed to provide over-the-horizon T & E support in the Outer Sea Test Range.

The Range became the Pacific Missile Test Center (PMTC).



1980's - Future satellite instrumentation rely on the noise-free environment of the off-shore islands for data reception.

1990's - SNI choice location for highly sensitive and classified programs.

FOCUS communication system installed linking Point Mugu and SNI.

Reverse Osmosis plant installed on SNI.

The Range became the Naval Air Warfare Center Weapons Division.

Figure 2-2. San Nicolas Island Historical Time Line

Section 3 San Nicolas Island and Range Operations

GENERAL DESCRIPTION

The primary function of the Range Operations Department on San Nicolas Island is to support operations for the NAWCWPNSDIV, headquartered at NAWS, Point Mugu, California. San Nicolas Island is located off the coast of Southern California and is one of the eight major offshore islands located within the NAWCWPNSDIV Sea Test Range.

SNI Range Operations Department has seven technical Operational Support sections on SNI. The operational personnel, with the range facilities, provide range support for sea surface, air and land test operations, and fleet exercises involving aircraft, ships and targets. A flow diagram of these Range Operations sections is shown in Figure 3-1.

The open sea between the SNI and Point Mugu is one of the most heavily instrumented areas

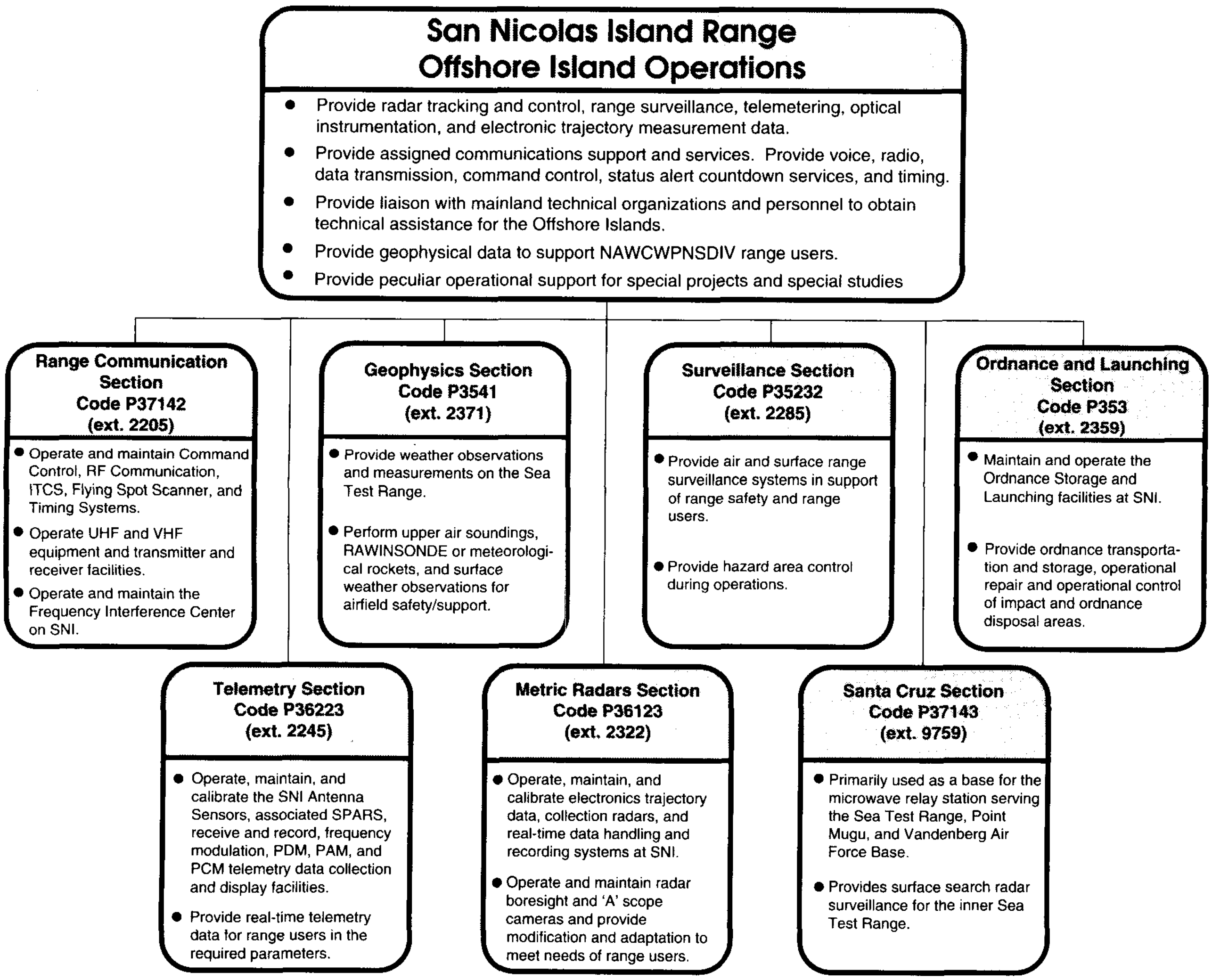


Figure 3-1. SNI Range Operations Offshore Island Sections

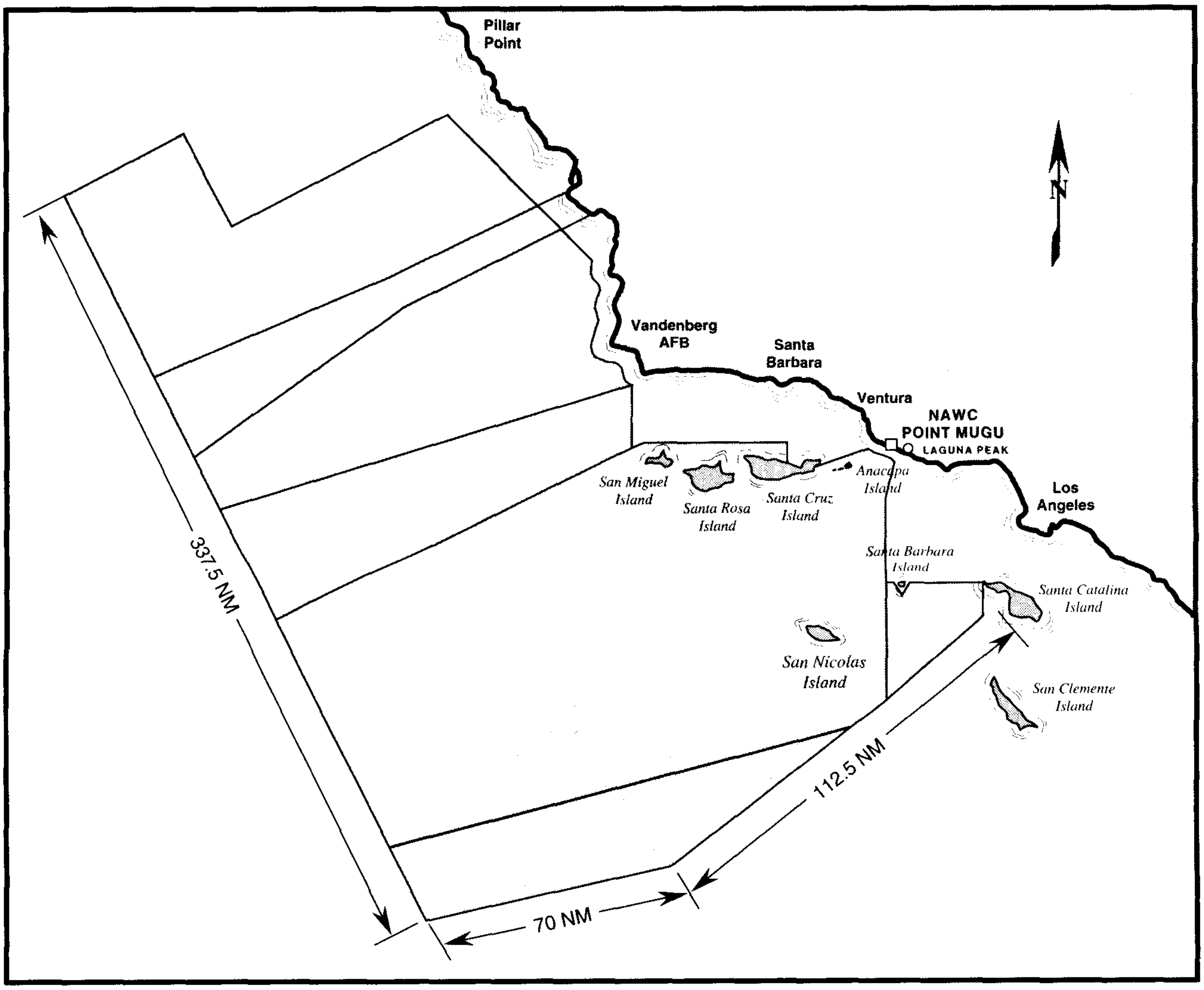


Figure 3-2. Naval Air Warfare Center Sea Test Range

known anywhere in the world. (San Nicolas Island is equipped with over $45 million in communication and missile tracking instrumentation). It is an ideal location for flight tests of air and sea launched missiles. Most Naval Weapons Center activity is conducted over this rectangular plot of ocean two hundred miles long and 80 miles wide. Here, detailed information can be obtained by radar, telemetry, photography, and other means during test operations. Once collected, this information is transmitted by microwave/fiber optics to computers at Point Mugu where it is further processed and analyzed for study.

SEA TEST RANGE

The Sea Test Range (STR), shown above in Figure 3-2, encompasses and area of 36,000 square nautical miles and extends approximately 170 nautical miles seaward from the California Coast. The range is equipped with sophisticated instrumentation installed on shore-based test sites and on the offshore islands.

SNI AS A TEST SITE

Lying within the STR, San Nicolas Island provides isolation and remoteness comparable to a ship at sea. As a test site, the west end of the island resembles a shipboard platform suitable for testing in a real-world marine environment but with the advantages of a mainland test site. Controlled by NAWCWPNSDIV, this large, stable platform is heavily instrumented with radar, telemetry, and communication equipment.

SNI has excellent support facilities, logistics, and accommodations for performing Range Operations. A 10,000-foot runway on the island provides the capability to retrieve drones and supports all sizes of aircraft. A launch complex and protected launch control point on the island enables small missiles and high-altitude probes to be launched.

The instrumentation sites located on the island range from sea level to 907 feet in altitude. Jackson Hill, the highest peak on SNI at 907 feet is equipped with surveillance, radar, and other communication equipment. This equipment provides the opportunity to test the effects of air, sea, and land environments including surf, waves, spray, and sea salt on various weapons. They are ideal for performing mock engagements and other operational tests in realistic, controllable environments. A diagram with the SNI instrumentation sites is shown in Figure 3-3.

Jackson Hill, the highest peak at 907 feet, has the greatest concentration of instrumentation on San Nicolas Island.

Facility No.	Description
R4	Underground Water Tank
19	Resident Officer in Charge of Construction (ROICC)
40	Powerhouse Storage Building
41	Mercury Fuel Storage
50	Water Desalinization Plant Building
58	Medical Dispensary
66	Supply Warehouse
68	Beacon Tower
89	Warehouse
92	Water Tank
98	Weather Center Office and Warehouse
104	Water Tank
105	Fuse/Detonation Magazine
106	High Explosive Magazine
107	High Explosive Magazine
108	Ordnance Warehouse
110	Ordnance Assembly Building (OAB)
111	Dining Facility/Galley
112	Radio Receiver Building
113	Radio Transmitter Building
114	Power Plant Island Utilities
115	Cinetheodolite and Cinesextant Station #22
116	Cinetheodolite Station #23
120	Water Pumping House #1
121	Vacant
122	Fuel Pumping Station
123	JP5 Fuel Tank
124	JP5 Fuel Tank
125	JP5 Fuel Tank
126	Enlisted Barracks and Visitor Center
127	Range Operations Office and Communications Section
127A	Communications Bldg. with ITCS Tracking Antenna
127B	Communications Bldg. with ITCS Tracking Antenna
129	Water Tank
130	Water Tank
135	Target Drone Aircraft Test Support Building
137	Environmental Lab and Archeological Lab and Warehouse
138	Surveillance Radar - AN/APS-20
143	Yellow Gear Storage
144	Aircraft Fire and Rescue Station
145	OLF Air Operations Control Tower/Weather Observation Station
147	Public Works Maintenance Shop
148	Cinetheodolite Station #24
149	Target Drone Aircraft Hangar
152	OLF Headquarters and Administration
155	Air Terminal
156	Biological and Archeological Office and General Quarters

Figure 3-3. SNI Instrumentation Sites, Page 1 of 3

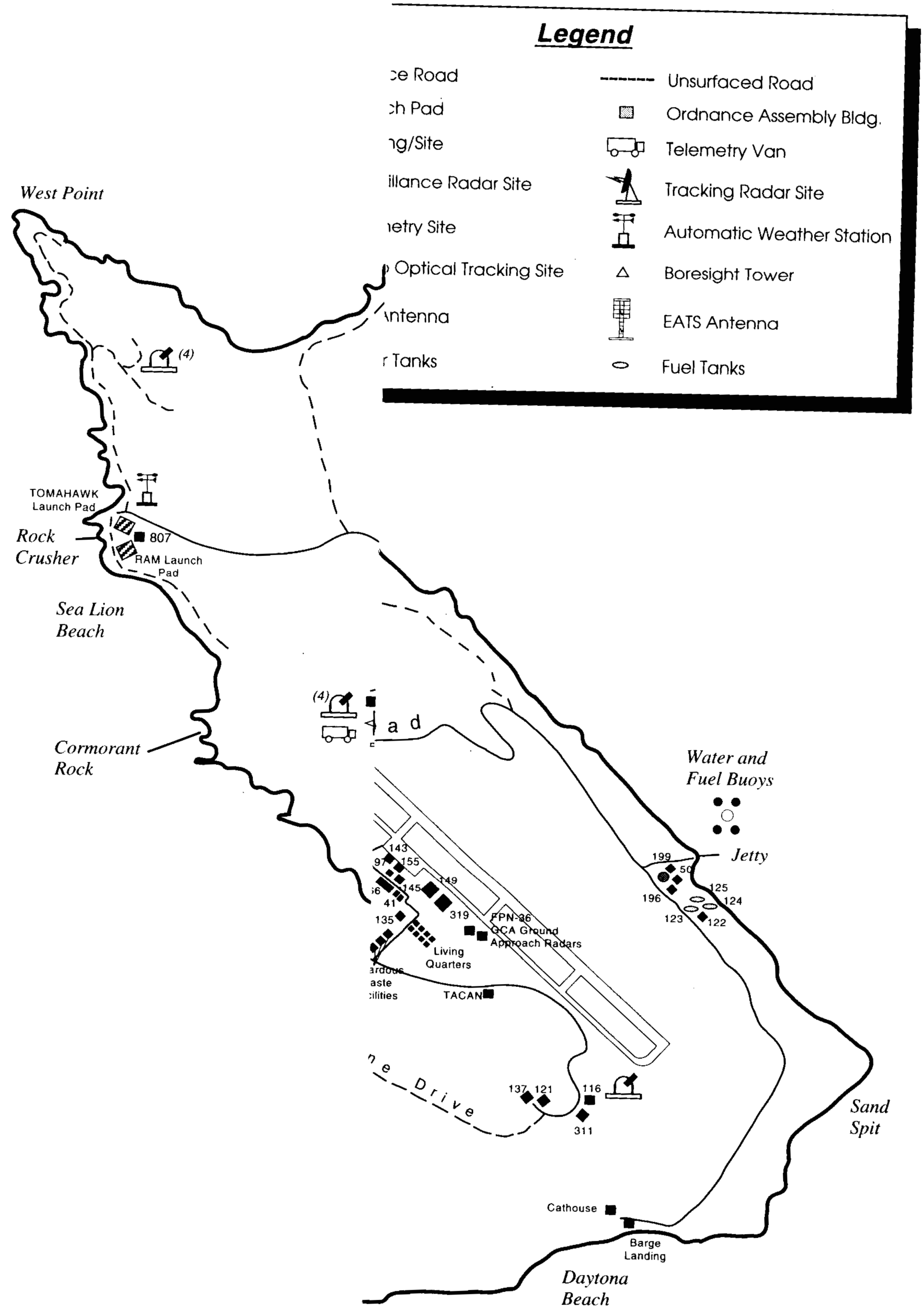


Figure 3-3. SNI Instrumentation Sites, Page 2 of

Facility No.	Description
158	Structural Fire Station
159	Water Pumping Station
160	Water Pumping Station
162	Bunker
163	Photographic Building
164	Cinetheodolite (non-operational) and Cinesextant Station
165	Cinetheodolite and Cinesextant Station near Telemetry Van
167	Metric Radar Instrumentation - AN/FPS-16, #64
169	Metric Radar Instrumentation - AN/FPS-16, #63
171	Metric Radar Instrumentation - AN/FPS-16, #62
173	Metric Radar Instrumentation - non-operational, #61
174A	Radar Boresight Tower
175A	Radar Boresight Tower
176	Surveillance Radar - ARSR-1BE
178	Surveillance Radar Emergency Generator Building
180	Range Operations Warehouse
182	Telemetry Instrumentation Building
186	FIC Communications Building
187	Electronics Maintenance Shop and Calibration Lab
189	Launch Control Blockhouse Alpha
190	Aircraft Targets Assembly Building
196	Water Pumping Station (Beach)
197	R/W Lighting Transformer Vault Building
199	Heavy Equipment Storage Building
200	Water Tank
211	Security/Police Station
212	Telephone Switching Station
220A	Telemetry Boresight Tower
220B	Telemetry Boresight Tower
220C	Telemetry Boresight Tower
265	Antenna Maintenance Shop
273	Surveillance Radar - AN/FPS-114 and Equipment
279	Balloon Inflation Building
280	Water Tank
282	Water Tank
290	Ordnance Assembly Building
305	Communications Probe Building
307	Instrumentation Cable Building
311	Cable Terminal Building
312	Fuel Farm
316	Cable Hut #3
319	Special Projects Hangar
322	Telemetry Antenna Facility - SKR-1
323	Telemetry Antenna Facility - SKR-1
511	Gallery Hut
807	Launch Control Blockhouse
809	Cinetheodolite and Cinesextant Station

Figure 3-3. SNI Instrumentation Sites, Page 3 of 3

RANGE OPERATIONS FUNCTIONS

GENERAL

The initial contact most Range User and Project personnel have with SNI is through the assigned Program Manager. These specialists assist the Range User in obtaining the various support needed for a program. They maintain liaison with various Commands and support agencies, and coordinate internal range activities to satisfy program requirements.

SNI has diversified range support facilities to provide extensive range support in many technological fields. Operational control is also maintained over the ocean area within the Sea Test Range.

RANGE CONTROL, CODE P3514
Building 53 (Pt. Mugu), Extension 7315/8841

Operations, surveillance, clearance and range control are coordinated from the Range Operations Control Center located in Building 53 at Point Mugu. During the final hours of preparation, readiness with regards to clearance of ships, planes and people from the scheduled vicinity of activity are reported. Close liaison is maintained with Range Users during exercises to assure safe conduct of each test and to eliminate interference between range operation participants.

RANGE OPERATIONS PERSONNEL, CODE P351
Building 53 (Pt. Mugu), Extension 8412

Scheduled operations are conducted in one of the Operations Control Rooms (OCR), Alpha, Bravo or Delta, in the Range Operations Control Center located in Building 53 at Point Mugu. Representatives of the Government, Contractor, and Range Users are available in the control center during the operational support period. Overall coordination of a particular operation is the responsibility of the Operations Conductor (OC), assisted by the Range Operations Supervisor (ROS). The ROS controls the instrumentation scheduled for a particular range operation.

RANGE OPERATIONS SUPPORT

The control rooms, coordination centers, data processing, displays and recording facilities are centralized in the Range Operations Control Center, Point Mugu, Building 53. Voice and data communication networks interconnect the SNI resources, as well as project assets, to provide the support capability for range operations.

RANGE DATA PROCESSING, CODE P372
Building 50 (Pt. Mugu), Extension 7077

The Range Data Processing Systems Division provides real-time, interactive, and batch processing of range, scientific, and engineering data utilizing multiple Control Data CYBER Systems. The computer systems accept and process unclassified/classified data.

REAL-TIME PROCESSING, CODE P3724
Building 53 (Pt. Mugu), Extension 7541/8964

Two independent computer systems support real-time processing. Each system uses a Control Data CYBER-175 host computer that accepts range system data from a Telemetry Processing System (TPS). The CYBER merges the telemetry and Range Instrumentation Interface (RII) data, computes requested parameters, and transfers the data via the RII and Real-time Information Distribution Environment (RIDE) to the Operations Control Rooms and the Telemetry Data Center (TDC).

REAL-TIME DISPLAY SYSTEMS, CODE P35231
Building 53 (Pt. Mugu), Extension 8606

The primary use for data to be displayed in real-time is to insure that the objectives of the range user are achieved in a safe and efficient manner. To meet this objective NAWCWPNSDIV provides real-time displays on the Range Operations Display System (RODS) and the General Range Intelligent Display System (GRIDS). The display systems are located in the Operations ControlRooms which provide centralized areas to display range instrumentation data in forms that can be analyzed by the project representatives, Test Conductors, Range Safety personnel, and Aircraft Controllers. Display includes; range boundaries; aircraft/ships geographical positions, altitude, heading and relative bearing to other geographical positions; flight profiles; Range Safety hazard patterns; and target/drone control information.

There are also target control consoles for real-time control of aerial targets, as well as telemetry read-back of target functions. Other equipment includes Naval Tactical Data System (NTDS) consoles for viewing objects being tracked, time-of-day displays, visual count status indicators, command control consoles for monitoring the system, and closed circuit TV cameras and recorders.

OPERATIONS CONTROL ROOMS, CODE P3522
Building 53 (Pt. Mugu), Extension 7432

The Operations Control Rooms are the areas used to control the execution of real-time operations, an operation being "an activity requiring the scheduled use of resources, from a simple fly-by to a missile launch involving multiple targets, ships and aircraft". There are two Operations Control Rooms and one in transition. Each room is capable of supporting multiple operations. Each contains a variety of display devices with a mezzaine viewing area for project sponsors and other VIPs.

RANGE CONTROL OFFICER, CODE P3512
Building 53 (Pt. Mugu), Extension 8280

At the Range Operations Control Center, Building 53, Point Mugu, the Range Control Officer is responsible for providing a safe area in which to conduct operations. The Control Officer is the traffic director of the Range, carrying out his functions by receiving inputs from the ARSR-1BE and the AN/FPS-114 radars in the search mode, and the NTDS/Link 11.

RANGE SAFETY, CODE P03B08
Building 512 (Pt. Mugu), Extension 7607/5678

In order to ensure safety during operations, an analysis is performed to determine the hazards associated with the proposed test. For example, if a missile or weapon firing is planned, a computer study is conducted to determine the maximum impact range for the weapon should it fail to perform as desired. From this study, a hazard area is developed. This hazard area is used to define the area around the actual test operation which must be away from any land mass and cleared of all nonparticipating aircraft and vessels.

In some cases, the anticipated hazard is so large the operation cannot be conducted within range of the NAWCWPNSDIV data collection systems. In those instances, the vehicle is equipped with a flight termination system to reduce the size of the hazard area. This makes it possible to fly the vehicle closer to land-based support systems and other platforms to meet test requirements.

SCHEDULING, CODE P351
Building 53 (Pt. Mugu), Extension 8412

Operations scheduling generally takes place following a weekly scheduling conference at which every project Operations Conductor presents his or her scheduling requirements. These requirements include time frames for the operation, operating constraints which effect scheduling (e.g. day/night requested), communications channels and frequencies, instrumentation, and other resource requirements. With these requirements, the range schedulers prepare and promulgate a weekly range schedule which shows the operation name, number, scheduled resources, and other necessary information. To most efficiently use the range resources, two or more operations may be scheduled at the same time. Also, there are generally one or two back-up operations scheduled for each period in the event an operation is canceled. This schedule is updated continuously during the week in which it applies. Changes are promulgated on a real-time local area network.

TARGETS, CODE P38
Building 311 (Pt. Mugu), Extension 5913

One of the most vital factors in an evaluation exercise is the capability of targets to simulate all possible types of enemy aircraft and vehicles. SNI facilities consist of 1,500 square feet of hangar space and 9,000 square feet utilized for operational support for servicing of aircraft targets.

Surface targets are used to simulate ships and surface vessels. These small target boats, designated seaborne powered target systems (SEPTARS), are equipped with radio controlled guidance and radar augmentation to make them appear as large as full-scaled radar targets. The larger 35-foot, MK-35 SEPTARS are maintained by the Targets Division at Point Mugu and are launched at the nearby boat harbor in Port Hueneme.

Aerial target recoveries are accomplished by helicopters which spot and retrieve expended payloads and targets. They are assisted by two 85-foot weapon recovery boats berthed at Port Hueneme. These twin diesel driven vessels are used for surface support during exercises and recovery.

RANGE OPERATIONS DEPARTMENT, CODE P35
Building 53 (Pt. Mugu), Extension 7650/7576

The Range Operations Department consists of numerous range support facilities and instrumentation sites at Point Mugu and on the offshore islands. The Range support facilities on San Nicolas Island are managed by various groups located at Point Mugu. These groups and a brief description of their responsibilities are listed below.

RANGE OFFSHORE ISLAND SECTIONS

The Offshore Island Sections of SNI are responsible for the facilities on SNI and Santa Cruz Island which basically replicate the instrumentation at Point Mugu.

The primary function of these sections is to provide a highly sophisticated and accurate data collection network for operations scheduled on the STR. They support ninety to a hundred percent of all program tests conducted on the STR for Range users.

Seven Range support sections exist on the offshore islands. They are Range Communications, Geophysics, Surveillance Radars, Launching/Ordnance, Telemetry, the Metric Radars, and the Santa Cruz Island Section. Theses sections and their capabilities are briefly described below and further described in detail throughout the manual.

RANGE COMMUNICATIONS SECTION, CODE P37142
Building 127, Extension 2205/8006

The Range Communications Section provides UHF, VHF, and HF voice communications for the Sea Test Range through transmitter and receiver facilities on SNI. If required, UHF secure voice communication can be provided. The Section operates and maintains a portion of the extensive microwave network between Point Mugu, SNI, Santa Cruz Island, and the Western Space and Missile Center at Vandenberg, California. This range communications section also operates and maintains command control transmitters used for target drone control and range safety flight termination control.

Integrated Target Control System, CODE P76B
Building 127, Extension 2325
Building 53 (Pt. Mugu), Extension 8245

The Integrated Target Control System (ITCS) is used to control various airborne and surface targets so that specific test/threat geometrics can be simulated in support of weapon systems tests and Fleet training. The ITCS is a target control system integrating tracking, telemetry data transmission, and command control capabilities into a single system. There are presently four tracking antennas on SNI that transmit telemetry and other data to Building 53 for further processing.

GEOPHYSICS SECTION, CODE P3541
Buildings 145/98, Extensions 2247, 2371, 4892

The Geophysics Section on SNI supports the Geophysics Division located at Pt. Mugu, which provides weather prediction and measurements throughout the Sea Test Range. The SNI section provides oceanographic and atmospheric measurements from ocean surface to 200,000 feet to assist in these predictions. The section also takes upper air soundings using radiosonde and radar wind sound (combined) (RAWINSONDE) or meteorological rockets, surface weather observations for airfield safety, and provides to range users various geophysical observations and measurements when required.

SURVEILLANCE RADARS SECTION, CODE P35232
Building 176, Extension 2285

SNI Surveillance section provides range clearance for the Naval Air Warfare Center. Critical data is provided for the identification and location of all air and sea traffic to ensure maximum safety in the test range area.

ORDNANCE AND LAUNCHING SECTION, CODE P353
OAB's 110 & 290, Extension 2359
Building 735 (Pt. Mugu), Extension 7986

The Ordnance and Launching Division maintains and operates the launch facilities on San Nicolas Island. Section personnel, who are located at Pt. Mugu and travel to SNI when required, also provide other ancillary services in conjunction with specialized needs. Such services include repair of missiles and components, demolition work, ordnance transportation and storage, operational control of impact and ordnance disposal areas, and operational and maintenance of electro-optical instrumentation sites.

There are two main launch facilities on SNI. The VANDAL Launch Complex near Building 189 and the West End Launch Complex near Building 807. Ground based targets and missiles can be launched from these sites on the island. The VANDAL target launch facility is the main launch complex on the island. The launch complex includes blockhouse facilities, closed circuit television, remote launcher controls, and two missile assembly buildings for build-up and checkout of multi-stage payloads. The West End Launch Complex resembles a shipboard platform suitable for testing in a real-world marine environment. It is a very desirable and premium facility due to its location.

TELEMETRY SECTION, CODE P36223
Building 182, Extension 2245

Telemetry data is collected at SNI by the combination of three 30-foot, two 20-foot and two 8-foot antennas, and a remote TM van. These provide the capability to receive multiple telemetry signals in all authorized frequency bands. Complete facilities are available for receiving, recording, and playback on magnetic tape recorders, and display of all discriminated outputs on oscillographs and pen recorders. Transmission of the telemetry composite signal to Point Mugu over the Fiber Optics Communications Underwater System (FOCUS) is possible for data separation and display at the Range Operations Control Center.

METRIC RADAR SECTION, CODE P36123
Building 167, Extension 2322/2206

Precision location and tracking of aircraft, ships, missiles, satellites, and atmospheric probes is obtained by high-accuracy, digitized radars on San Nicolas Island. SNI has three precision metric tracking radars. Data from these radars are transmitted over FOCUS, received at Point Mugu, and combined with the Point Mugu radar data for display and recording.

Extended Area Test System, CODE P376B
Building 53 (Pt. Mugu), Extension 8489

The Extended Area Test System (EATS) is a multifunction system that provides time, space, tracking position, velocity, direction (state vector), and target control relay capabilities for instrumented test vehicles both within and beyond the line of sight of land-based systems.

SNI is equipped with two types of ground sites. The Ground Interrogation Stations (GIS) and the Ground Reference Stations (GRS). These sites are unmanned consisting of EATS electronics, an antenna, and an AC to DC power system with battery backup.

Photo-Optical Tracking Instrumentation, CODE P36131
Building 148 (SNI), Extension 2364
Building 611 (Pt. Mugu), Extension 8189

The six Cinetheodolite sites at SNI provide information on each of the following: accelerations, velocities, space positioning, attitudes, such as pitch, yaw, and roll data, using high precision instrumentation mounts and the medium of photography.

The four Cinesextant tracking systems found on SNI provide smooth, vibration-free tracking of a target anywhere in the celestial hemisphere which begins eight degrees below the horizontal. It serves as a support system for the mounting of cameras or any electro-optical devices used in target tracking and data acquisition.

SANTA CRUZ ISLAND SECTION, CODE P7143
Building 3, Extension 7680/9759

Santa Cruz Island is primarily a base for a microwave relay station serving the Sea Test Range, Point Mugu, and Vandenberg Air Force Base (VAFB). Other instrumentation on the island include an AN/FPS-114 Sea Surface Surveillance Radar and VHF and UHF communication transmitters and receivers. Also installed on Santa Cruz Island is an EATS Ground Reference Station, an AN/APS-20 Radar which is the backup for the AN/FPS-114 Radar, and an automatic weather station.

HOURS OF OPERATION

All regularly assigned personnel on the island are from NAWCWPNSDIV. Normal tour of duty for civilian personnel is Monday morning through Friday afternoon, with some weekend work required. Transportation is available only via military contract aircraft. There are daily flights to and from Point Mugu. The flight schedule allows anyone to fly in and out daily. Departure on Monday through Thursday is 0700 and return is at 1600. Departure on alternate Fridays is 0700 and return is 1500. A more detailed flight schedule is shown in Section 15 in Table 15-3.

Section 4 Communications and Data Distribution Systems

GENERAL DESCRIPTION

The SNI communication systems provide a link between SNI, Point Mugu, the offshore islands and other military facilities. Nearly all operations conducted on the Sea Test Range require the use of the SNI range communications systems for coordination and transmission of data during operations.

Microwave and fiber optics cables link SNI to Point Mugu and other Sea Test Range sites as shown in Figure 4-1. Cable and fiber optics interconnect the instrumentation facilities on SNI, and radio links provide communications from the island to ships and aircraft on and near the Sea Test Range. The communication systems on SNI provide support to the NAWCWPNSDIV at Point Mugu and China Lake, the 30th Space Wing at Vandenberg AFB, Edwards AFB, and the Utah Test and Training Range.

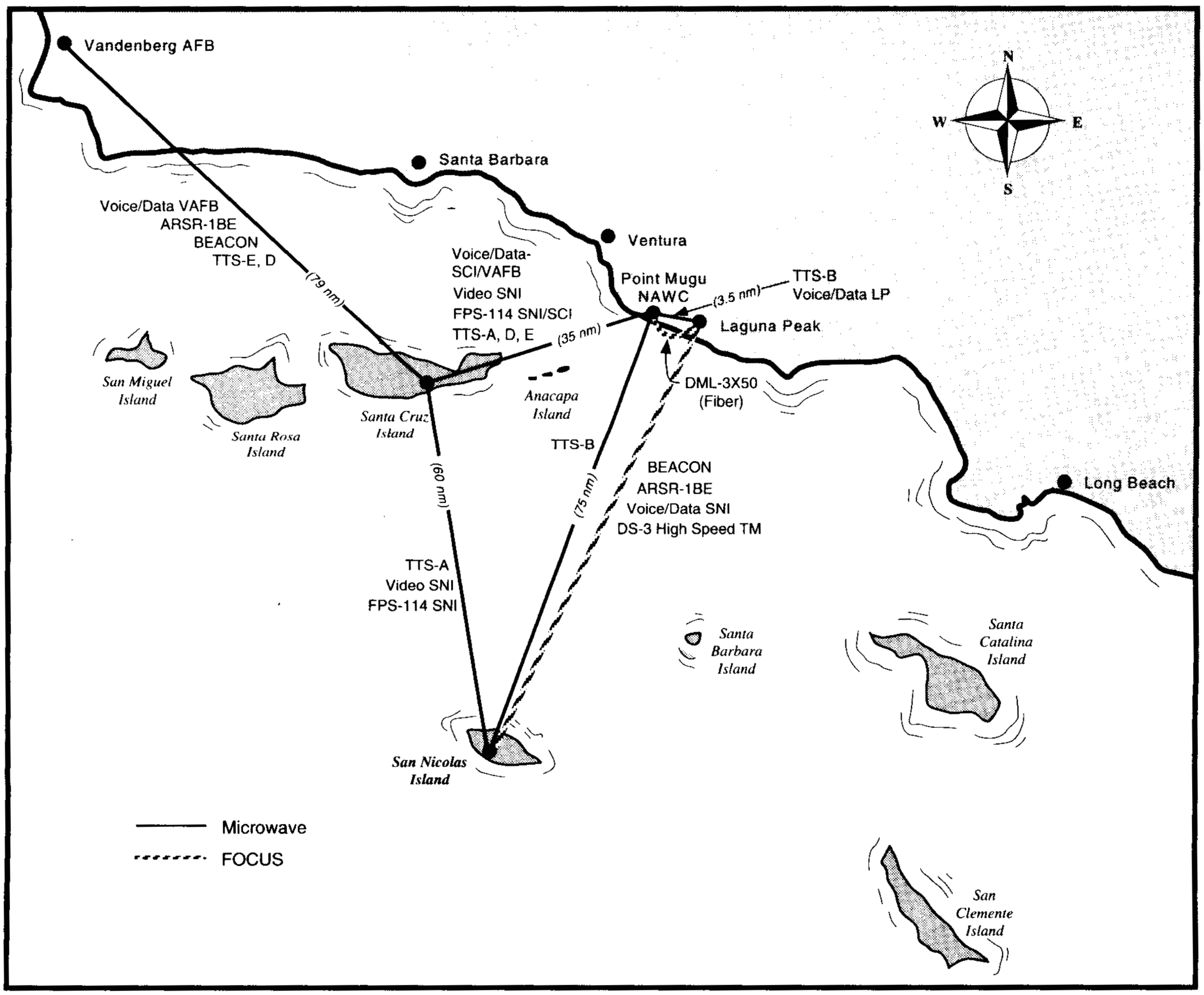


Figure 4-1. Microwave and Fiber Optic Range Communications

The major operational communication systems on SNI provide the capability to transmit various types of information, including secure and non-secure voice, telephone, instrumentation data, telemetry data, and video. The range communication systems on San Nicolas Island are presented in the following sections: Radio Frequency Communications, Microwave System, Fiber Optics, Telecommunications Switching System, Frequency Interference Control, Command Control/Destruct System, and the Timing Center.

RADIO FREQUENCY COMMUNICATIONS

Radio Frequency (RF) Communications link operational ships and aircraft with the range user and operational control personnel via air-to-ground, ship-to-shore, and point-to-point radio circuits for secure and non-secure voice and data. Figure 4-2 shows the radio frequency communication systems within the Sea Test Range.

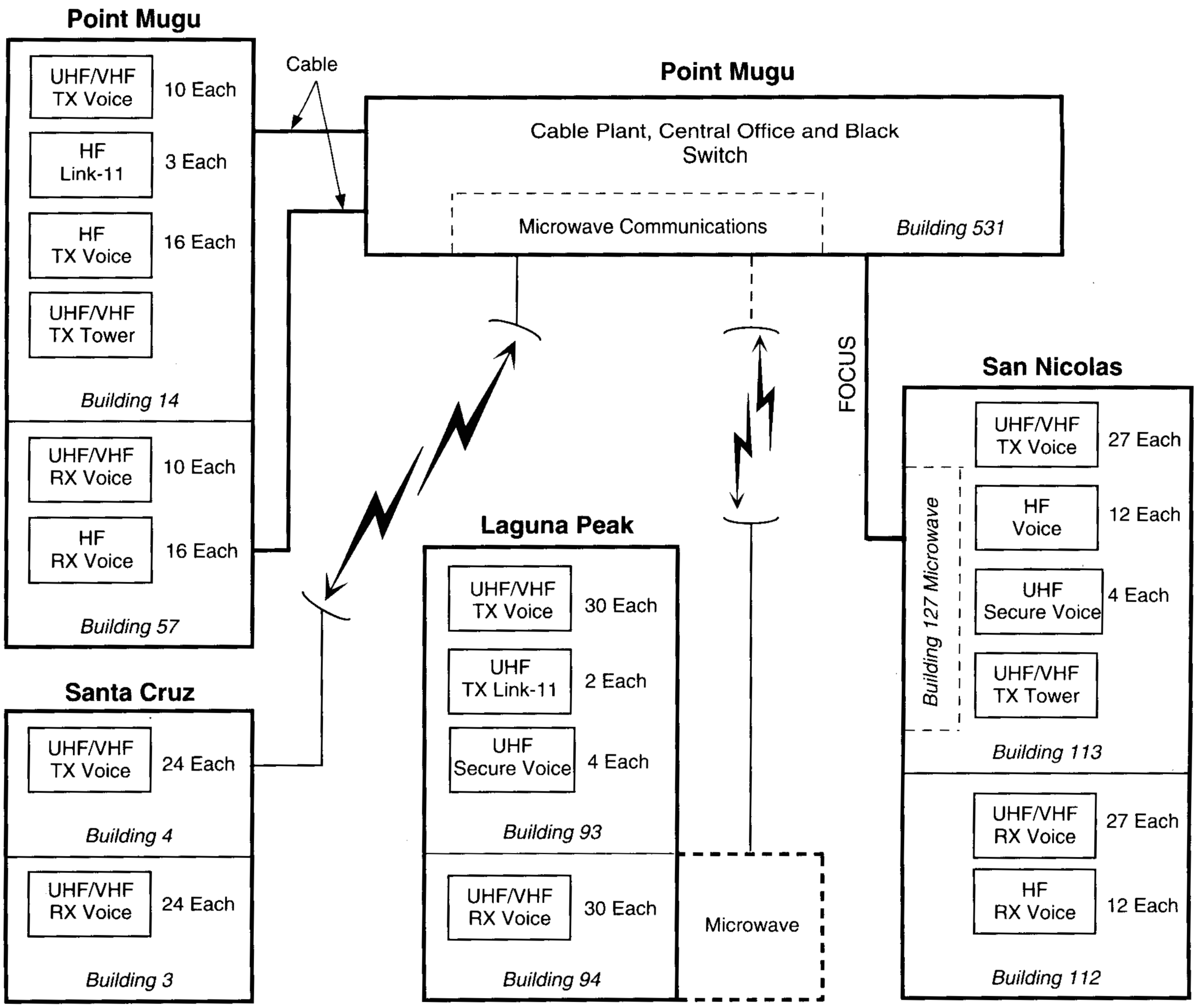
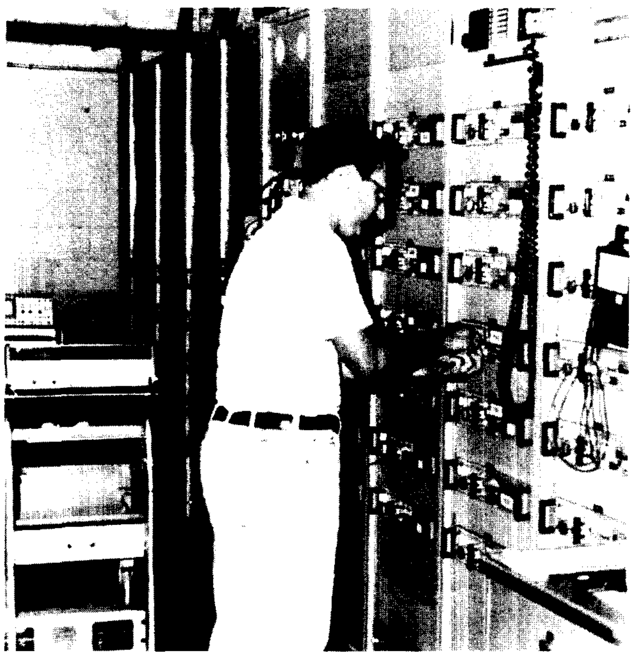


Figure 4-2. Radio Frequency Communications

TRANSMITTERS AND RECEIVERS

The SNI transmitters and receivers in the RF communications systems provide Amplitude Modulation (AM) in the HF, VHF, and UHF bands. In addition they provide Single Side Band Suppressed Carrier (SSBSC), both Upper Side Band (USB), and Lower Side Band (LSB). Continuous Wave (CW), and Frequency Shift Keyed (FSK) transmissions in the HF band.

Customers have access to the transmitter and receiver circuits from the Operations Control Rooms (OCR) in Building 53, at Point Mugu. The capability of remotely controlling the island transmitters and receivers effectively extends the Inner Sea Test Range many miles. Radio circuits at each site are locally available at the site when operational needs so dictate. The Range Communications radio transmitting and receiving network of facilities within the Sea Test Range are shown in Figure 4-3.



The SNI receiving equipment provides the user with VHF and UHF ship-to-shore and ground-to-air communications. The equipment is located on SNI to take advantage of the increased communications ranges available at a site elevation of 905 feet.

SHIP-TO-SHORE and AIR-TO-GROUND EQUIPMENT

Ship-to-shore and air-to-ground radio equipment provides either AM or single sideband (SSB) operation in the HF frequency spectrum with various antenna and power configurations. Secure voice and data capabilities are available for ship-to-shore and air-to-ground communications in the HF and UHF frequency spectrum.

HIGH FREQUENCY

High Frequency (HF) radios operate in the 2 to 30 MHz band on AM, USB, LSB, CW or FSK for over-the-horizon and other long distance communications.

VERY HIGH FREQUENCY

Very High Frequency (VHF) radios operate from 115 to 156 MHz offering low power AM or FM voice for commercial air-to-ground and ship-to-shore circuits.

ULTRA HIGH FREQUENCIES

Ultra High Frequency (UHF) radios operate from 225 to 399 MHz providing AM secure and non-secure voice and data with military ships and aircraft on and near the Sea Test Range.

The SNI transmitting and receiving equipment is listed in Table 4-1. This equipment provides the user with VHF and UHF ship-to-shore and ground-to-air communications. This equipment has been located at SNI to take advantage of the increased communication range at a site elevation of 905 feet. Transmitters are located at Building 113 and the receivers are at Building 112. The SNI UHF coverage is shown in Figure 4-4.

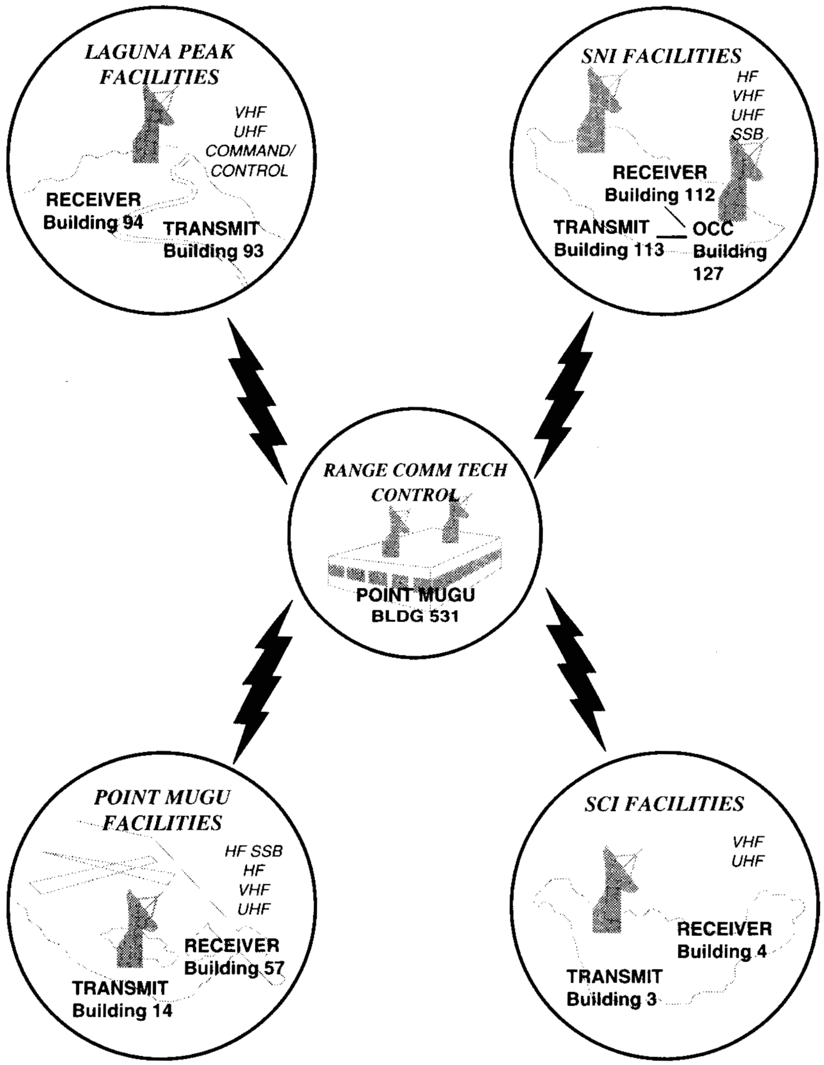


Figure 4-3. Range Communications Radio Transmitting and Receiving Facilities

SPECIAL REFERENCE SIGNALS

Synthesized RF Communications equipment on SNI can be synchronized to standard frequencies derived from Inter-Range Instrumentation Group (IRIG) timing signals. A time code generator is used at SNI to generate time signals for instrumentation systems. The generator is synchronized to the timing reference signal from the Point Mugu Timing Center, Building 53.

ANTENNAS

Various HF, VHF, and UHF antennas are available, both directional and non-directional. Multi-Couplers allow the use of multiple circuits on a single antenna.

RADIO LINES

There are presently 40 Narrow Band and eight UHF Wide Band receiver and transmitter radio

Nomenclature	Specifications	Location	
		Building 112	Building 113
Transmitter (HF) SR-140, Scientific Radio Systems	Freq Range: 1.6 MHz-30 MHz Modulation: SSB Tuning: Continuously Variable Power Output: 1 kw		12
Transmitter (VHF) GRT-21, International Telephone & Telegraph Corporation **Note:** Two have capabilities of 25W and 1 to 50W.	Freq Range: 116 MHz-149.975 MHz Modulation: AM Narrow Band Tuning: Continuously Variable Power Output: 10W		6
Transmitter (UHF) GRT-22, International Telephone & Telegraph Corporation **Note:** Two have capabilities of 25W and 21 to 50W.	Freq Range: 225 MHz-399.95 MHz Modulation: AM Narrow Band Tuning: Tunable in 50 kHz Steps Power Output: 10W		38
Transceiver (VHF) GRC-211, Rockwell International	Freq Range: 116 MHz-151.975 MHz Modulation: AM Wide Band Tuning: Tunable in 25 kHz Steps Power Output: 25W	1	3
Transceiver (UHF) GRC-171 (V), Rockwell International	Freq Range: 225 MHz-399.95 MHz Modulation: AM Wide Band Tuning: Tunable in 25 kHz Steps Power Output: 20W		3
Receiver (VHF) GRT-23, International Telephone & Telegraph Corporation	Freq Range: 116 MHz-149.975 MHz Modulation: AM Narrow Band Tuning: Tunable in 50 kHz Steps	6	
Receiver (UHF) GRT-24, International Telephone & Telegraph Corporation **Note:** 11 have Wideband capabilities.	Freq Range: 225 MHz-399.95 MHz Modulation: AM Narrow Band Tuning: Tunable in 50 kHz Steps	30	
Receiver (UHF) CM540B, Motorola	Freq Range: 225 MHz-399.95 MHz Modulation: AM Narrow Band Tuning: Tunable in 50 kHz Steps	8	
Receiver (HF) RA-6793A, Racal	Freq Range: .5 kHz-30 MHz Modulation: SSB Tuning: Tunable in 50 kHz Steps	10	

Note: At this time, SNI does not have wideband capabilities. The Microwave at Point Mugu and SNI are not equipped with the necessary modifications to the CLIM cards.

Table 4-1. Radio Frequency Communication Equipment Summary

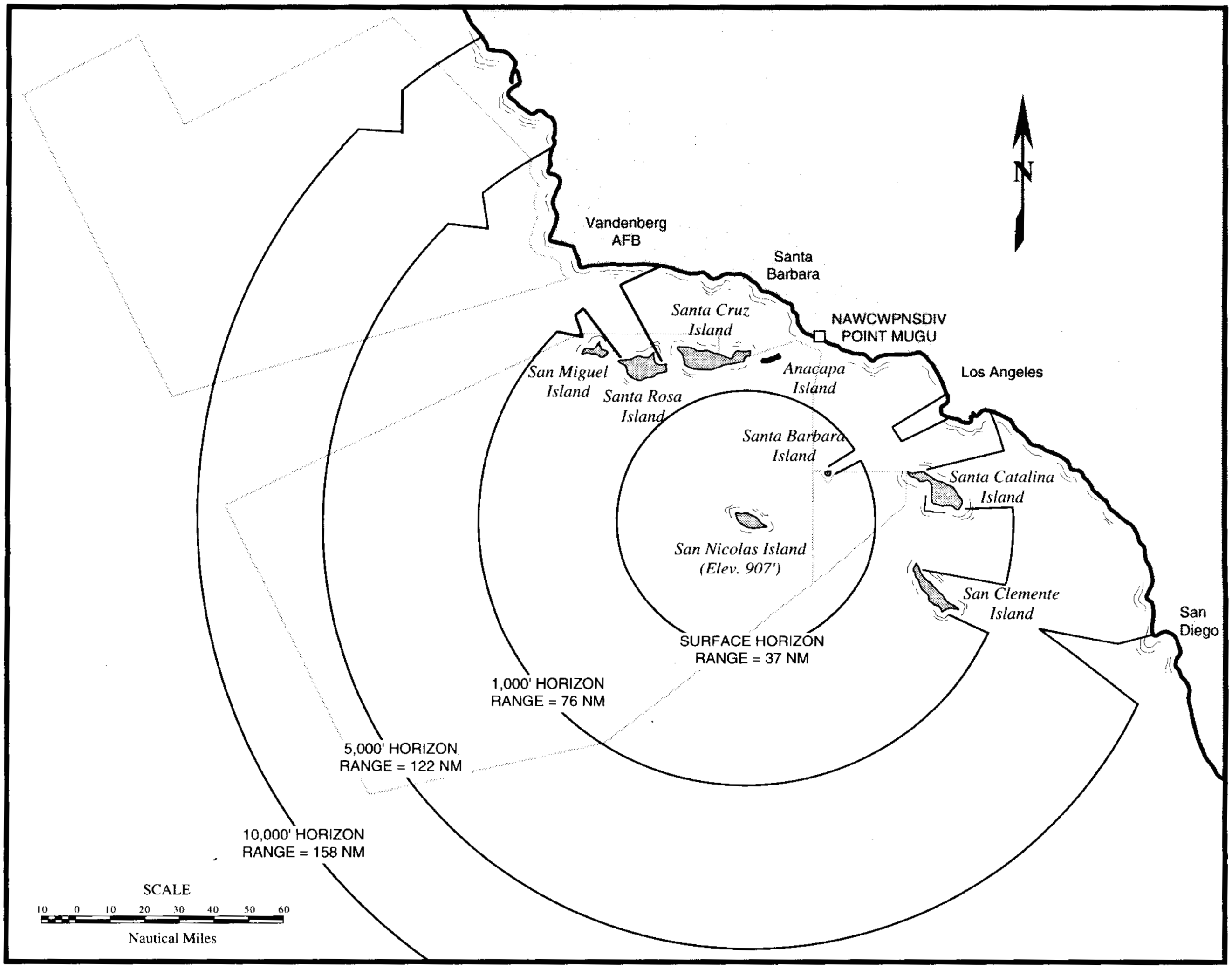


Figure 4-4. San Nicolas Island UHF Coverage

lines in use between San Nicolas Island and Point Mugu. Narrow Band Lines 1-7 and Wide Band Line 1 are presently dedicated as 24-hour standing circuits.

MICROWAVE SYSTEM

The microwave system operates in the 7125 to 8400 MHz band linking SNI with Point Mugu, Vandenberg AFB, and Santa Cruz Island. The SNI microwave system transmits real-time analog telemetry data, video, and surveillance radar data to Point Mugu and Vandenberg AFB. Figure 4-5 shows the Range Communication Interconnect diagram with the microwave and fiber optics systems as they link the various facilities within and around the Sea Test Range together.

The microwave systems are all bi-directional with either space diversity, frequency diversity, or quadruple (both space and frequency) diversity. This ensures 99.9% circuit availability on the long over-water paths in use on the Sea Test Range.

The older analog microwave systems, which provide 8 MHz of analog bandwidth per system, are being replaced with digital microwave systems, each providing a single DS-3 circuit of 44.736 megabits per second.

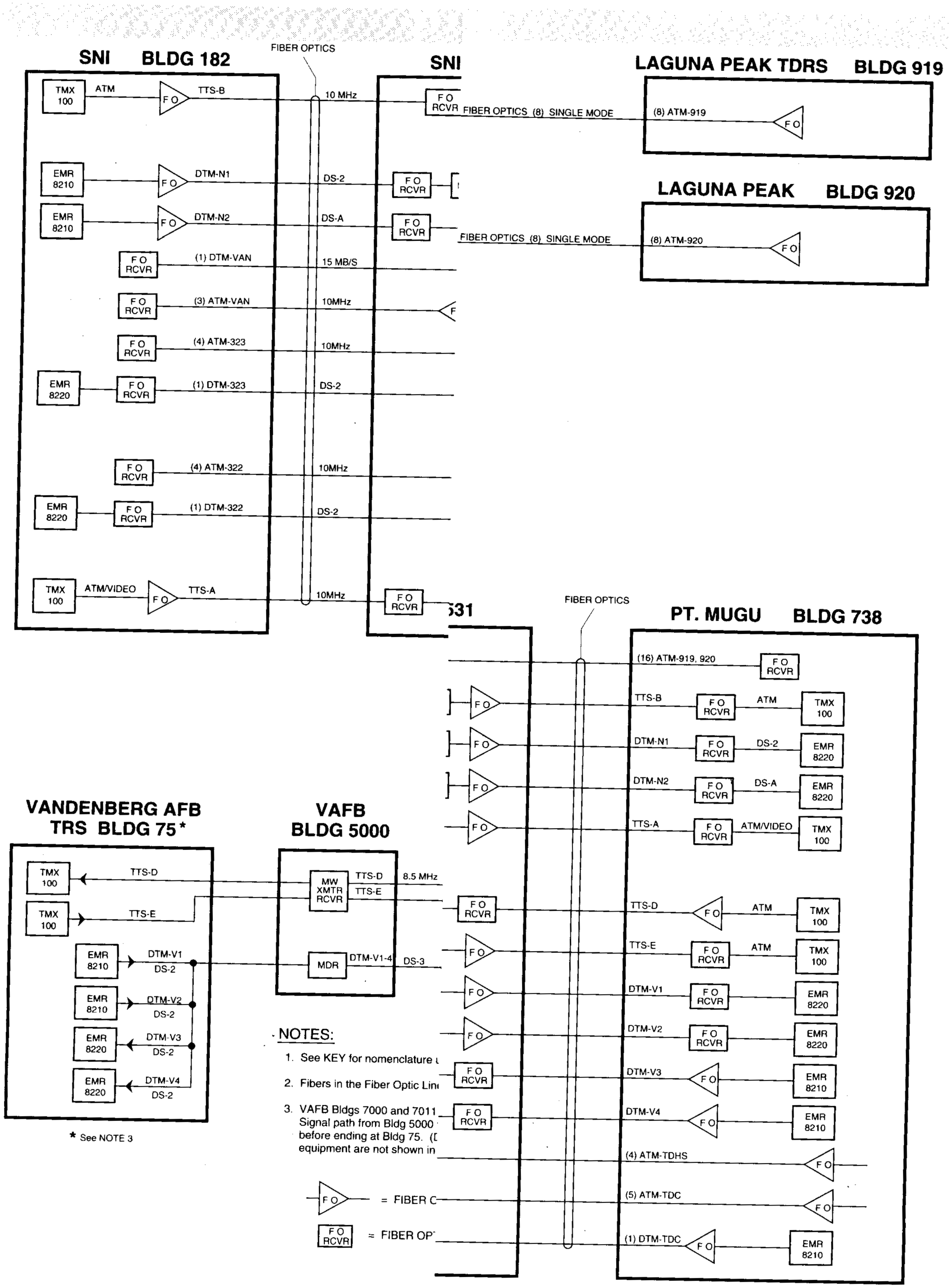


Figure 4-5. Communications Interconnect Di

TELEVISION CAMERA VIDEO SYSTEM

The Microwave section supports and maintains a television camera video system used for range safety during local missile launches. Specific launch activities are visually displayed in the Operations Control Rooms in Building 53 at Point Mugu.

FIBER OPTICS COMMUNICATIONS UNDERWATER SYSTEM

Fiber Optics Communications Underwater System (FOCUS) is an undersea fiber optic cable system using highly-reliable, commercially-available equipment to provide voice and data communications between SNI and Point Mugu. The system provides the capability to transmit multiple channels, high-speed digital data, wideband analog data, and high resolution video data. It is interfaced with telemetry multiplex equipment and the SNI digital microwave system.

The FOCUS shore termination equipment is connected by an underwater, repeaterless, twelve-fiber-optical cable. Each fiber pair provides nine 44.736 mbit/sec (Bell system DS-3 rate) channels that are 1:1 protected for redundancy. The normal operational mode is full duplex with total redundancy. The FOCUS operates at 1.12 Gb/sec with an optical wavelength of 1550 NM. FOCUS allows for a maximum cable plant loss of 42 dB and provides a bit error rate (BER) of less than 1×10^{-9}.

Three NEC 1.12 Gb/sec lightwave terminals will be used at each end of the fiber optic link. Each terminal will be equipped with nine DS-3 channels for a total of 27 DS-3 channels at each end of the link (equivalent to more than 18,000 voice channels). Each terminal will have the capacity to be expanded to 18 channels for a total of 54 by the addition of nine new channel card sets to the basic terminal. There will not be an analog capability. A block diagram of the FOCUS network is shown in Figure 4-6.

FOCUS PERFORMANCE

Fiber optics technology offers stable, long-life performance, extremely high data rates, and protection of information by not radiating through the atmosphere. The optical communications link is immune to the microwave atmospheric propagation problems incurred due to severe ducting conditions. FOCUS provides significantly larger bandwidths capacities for digital signals over microwave technology.

FOCUS RELIABILITY

The reliability of the FOCUS is excellent as there are redundant end equipment and fibers. This redundancy, along with automatic and instantaneous switching of equipment and/or fibers in event of a failure, provides a system with high real-time operational reliability.

FOCUS SUPPORTABILITY/MAINTAINABILITY

Supportability/maintainability is excellent for the FOCUS due to the use of commercially available equipment.

POSSIBLE FOCUS FAILURE

The main type of FOCUS failure that would cause disruption to range operations would be a complete failure of the undersea cable. Such a failure could be caused by boats and ships anchors, fishing nets, ship sinking, airplane or missile crashes, underwater recover efforts, divers, dumping, or submarine earthquakes. There are essentially three different sections to the undersea cable, with each providing a different level of protection to potential damage.

- The first section is the seashore interface area where protection is provided by heavy-wall, high-alloy, steel drill tubing. The tubing extends from on shore to 3300 feet into the ocean.

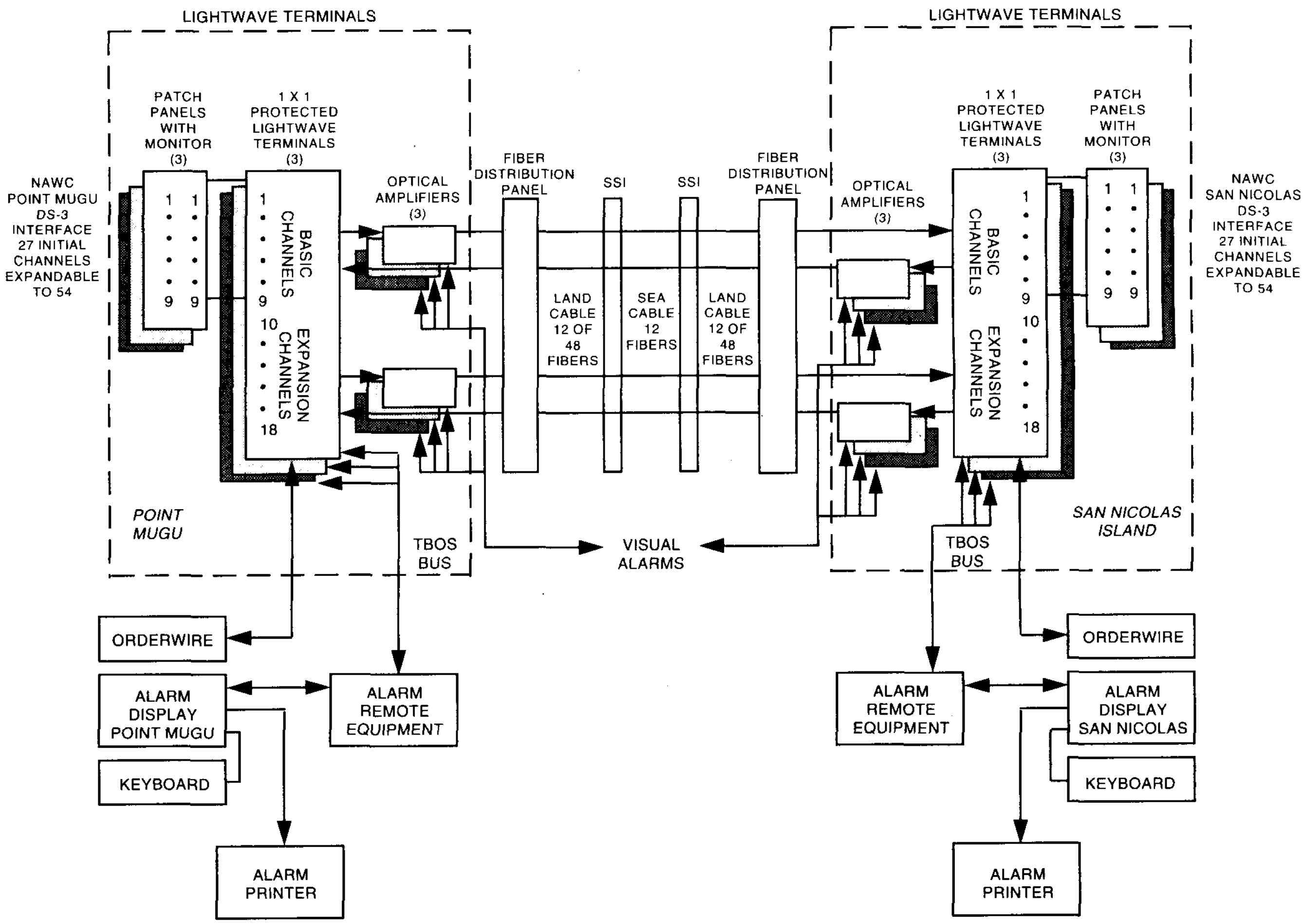


Figure 4-6. FOCUS Block Diagram

This tubing is expected to provide full protection from boats, ships, and their anchors.

- The second section is an armored cable that extends from the steel tubing for 3 nautical miles (NM) at the Mugu end and for 5 NM at the SNI end. Depth at the Mugu end is from 8 to 80 fathoms. Depth at the SNI end is from 5 to 100 fathoms.

- The third section is approximately 52 NM of non-armored cable in depths from 80 fathoms at Point Mugu to 100 fathoms at SNI.

INSTALLATION OF FOCUS

Fiber optics communications exists between the Telemetry Building 182, the Communications Building 127, and the Remote Antenna Site. However, Video Codecs, High Speed Telemetry Multiplexers, M13 multiplexers, and additional ARCATA receivers will be needed to obtain the full benefits available from FOCUS.

FOCUS will eventually carry all digital voice and data, and digital telemetry. Digital voice and data carries all communications between SNI and Point Mugu. This includes telephone, secure voice, transmitters/receivers, low rate data modem, and serial data controllers for remote drone control. Digital telemetry, provides a path for telemetry smart multiplexers.

TELEVISION CAMERA VIDEO SYSTEM

The Microwave section supports and maintains a television camera video system used for range safety during local missile launches.

Normal video, beacon video, radar trigger, and azimuth data are transmitted from the SNI ARSR-1BE radar to Building 127. These signals are received at Point Mugu Technical Control through FOCUS and routed to the desired radar monitors in the selected Operations Control Rooms.

CLOSED CIRCUIT TELEVISION SYSTEM

The Closed Circuit Television System (CCTV) camera and monitor system on SNI visually displays launch pad activities in the Operations Control Rooms at Point Mugu via television monitors.

TELECOMMUNICATIONS SWITCHING SYSTEM

The Telecommunications Switching System (TSS) is located on SNI, Building 127. The system provides voice operational networks in the operational areas. The end station is connected through the cable plant to the central patch-bay in TSS. Patching, mixing and amplifying provisions within TSS allow network configurations to satisfy a wide variety of requirements.

TELECOMMUNICATIONS CAPABILITIES

Communication circuits are connected through SNI TSS to Point Mugu. There are 20 communication tie lines patched at Point Mugu as required.

Radio transfer circuits and switching units at Technical Control are used to interface RF receivers and transmitters with end station circuits. Terminal units can be patched to remotely keyed transmitters located on SNI and the transmitter site. Control consoles can also be configured for RF communications.

The TSS connects and maintains direct voice lines, fixed network and radio trunk circuits at all regularly used support sites on SNI. TSS personnel can establish circuits anywhere on the island within the scope of the existing cable plant (there are some areas on the island where wired communications support is unavailable).

The TSS is responsible for four-wire voice circuits. These circuits are wired on distribution frames, and cable plants and allow reconfiguration of 400 common battery circuits at San Nicolas Island.

The single channel terminal unit, (TA-13) is used for stations requiring one line only. The four channel terminal unit is used for stations requiring four lines. The units are rack mounted (Model 2512 four channel mixer amplifier and interfaced to four channel common battery units). The twenty channel terminal unit is used as a supervisor at the Operation Conductor's console or in consoles requiring a large number of circuits. The unit is rack mounted and has a binaural head set and operational lamps that indicate which channel has been selected.

SECURED VOICE SYSTEM

The Secure Voice System permits interconnection and distribution of classified communications with range users, ships, and aircraft similarly equipped with encryption devices. Encrypted signals are transmitted and received through wideband RF equipment located at Laguna Peak and

SNI. The appropriate transmitting/receiving site is selected according to the area of coverage desired by the range user.

Two encrypted voice circuits are available for communications from the telemetry building at SNI. These circuits are connected via land line to SNI communications where RF communication equipment can be used to transmit and receive encrypted circuits from range participants. This system is used for secured voice communications for range users at the telemetry facility.

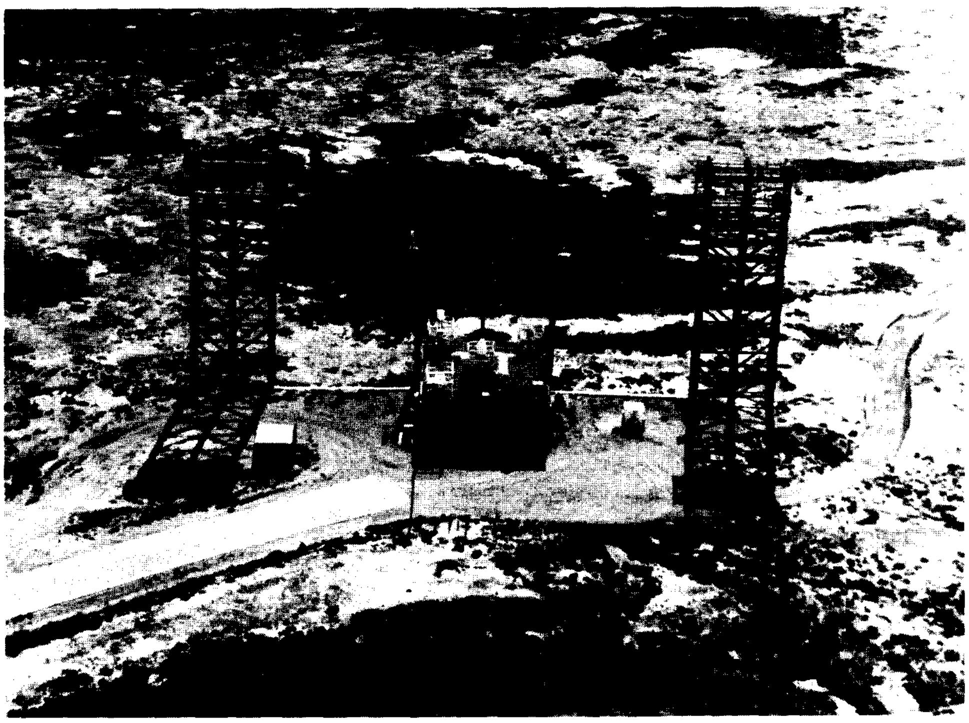
FREQUENCY INTERFERENCE CONTROL

Frequency Interference Control (FIC) on SNI is used for general surveillance, frequency measurement, and carrier deviation measurements of signals. It is used on most operations conducted on the Sea Test Range, and on all operations that use radars, telemetry, or Command Control/Destruct systems. Frequency interference monitoring is required on those weapons system tests conducted in the Southern California area where radio frequencies are a significant factor; e.g., RF-guided weapons.

FIC monitors the entire frequency spectrum for spurious emissions. FIC provides the Sea Test Range and other government and non-government agencies, (within 200 nautical miles of Point Mugu) with controlled and coordinated use of the RF spectrum.

FREQUENCY INTERFERENCE CONTROL EQUIPMENT

The FIC system is equipped with antennas, receivers, spectrum analyzers and patch panels. The Frequency Interference Control Center in Building 186 can monitor a frequency range of 30 MHz to 18 GHz with an average signal sensitivity of -90 dBm. The frequency spectrum is continuously scanned in support of range operations or when any frequency interference is received. The equipment can be manually or automatically operated.



The FIC facility on SNI is equipped with antennas, receivers, spectrum analyzers and patch panels. FIC is used for general frequency surveillance monitoring the entire frequency spectrum for spurious emissions.

SPECTRUM DISPLAY

Spectrum surveillance, frequency measurement, or direction finding is accomplished in the radio frequency group by selecting a suitable antenna, receiver and spectrum display or monitor. The spectrum display unit provides a visual indication of all signals in a band of frequencies centered on the frequency to which the receiver is tuned.

MICROTEL RECEIVER SYSTEM

The microtel monitoring system with its SciComm pulse analyzer is used in pulse rate, pulse width acquisition, pulse repetition interval, and pulse repetition frequency for signal identification.

COMMAND CONTROL/COMMAND DESTRUCT SYSTEM

The Command Control/Command Destruct Transmitter (CDT) is a tunable UHF frequency modulated transmitter designed for ground use in controlling guided missiles, pilotless aircraft and pilotless boats. It delivers a minimum of 500 watts of RF power to the antenna. The RF signal is frequency modulated by selected tones (IRIG 20 tone format) that correspond to particular functions of the missile, aircraft, or boat. A block diagram of The SNI Command Control/Command Destruct System is shown in Figure 4-7.

The CDT systems are located in Building 127 on SNI and are controlled from the Operations Control Rooms at Point Mugu. Monitor receiver outputs are fed to monitoring panels in the control

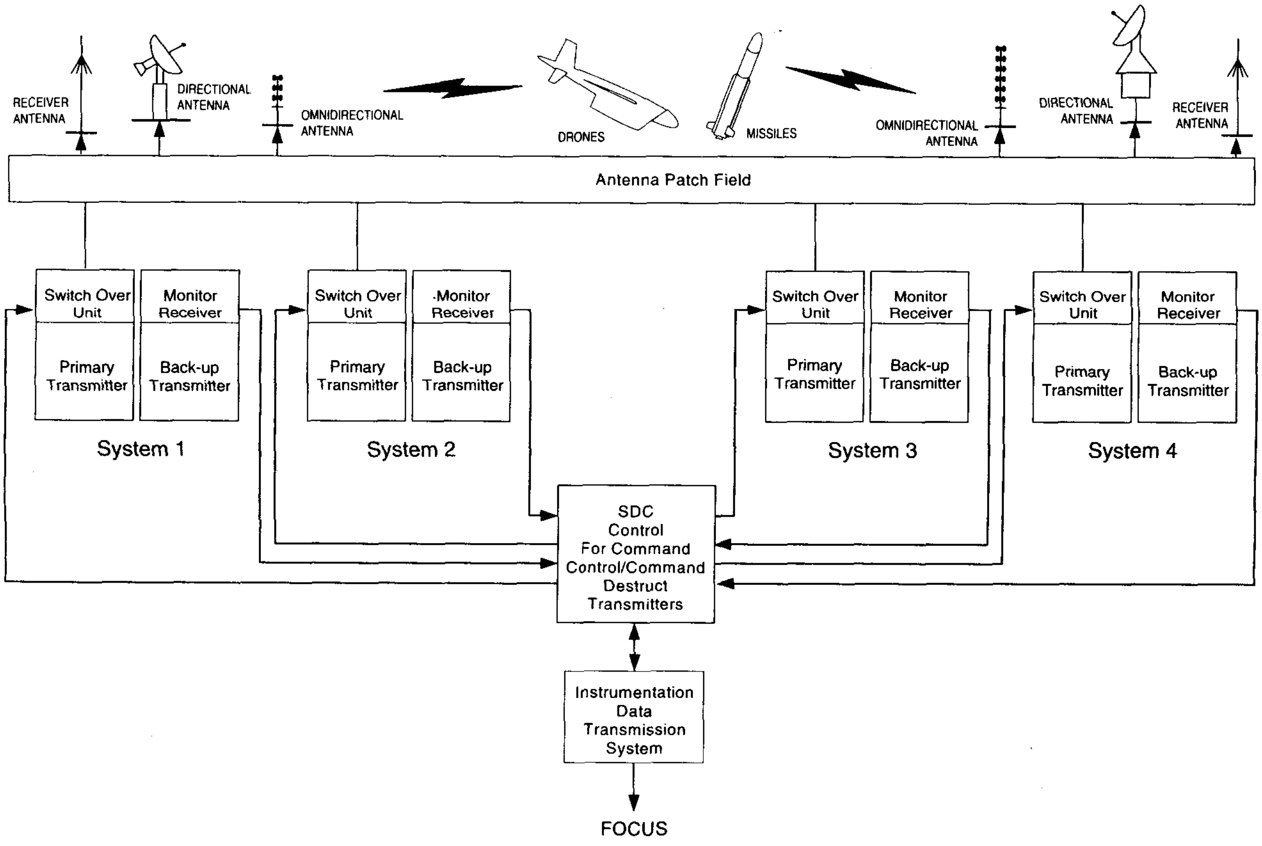


Figure 4-7. Command Control/Command Destruct System Block Diagram

rooms to verify that the correct commands were sent. The transmitters are used solely for controlling either airborne or ship-surface targets. By controlling these targets, specific test or threat geometries can be simulated when performing weapons systems tests or fleet training.

The CDT systems also provide flight termination capability for weapons and targets that are considered too hazardous for flight without independent destruct/flight termination capability. The system is composed of redundant identical transmitters with a fail-over feature that automatically switches from the on-line transmitter to a backup should the on-line unit fail. Two basic systems are covered under this general category. The first is the UHF Command Control/Command Destruct Transmitter system, and the second is the Integrated Target Control System (ITCS). ITCS is discussed in Section 5.

TARGET SYSTEMS

The UHF CDT is used for control of such target systems as VANDAL, AQM-37, aerial tows, and seaborne targets such as the SEPTAR's and DD/DE ship target hulks. Because of shortages in DKW-3 equipment, the MQM-74C is sometimes flown using this system. Flight termination/destruct control is exercised during flight testing of such missiles as TOMAHAWK, HARPOON, and Air Force projects.

Targets are controlled from OCR Alpha where the target control console and control boxes are located. The command signals originating in the target control boxes are translated into a serial digital data stream in the Serial Data Controller. This data is then transmitted to SNI or to Laguna Peak via microwave or fiber-optics. At the transmitter site the serial digital data is converted into the appropriate IRIG 20-tone format. The UHF transmitters at Laguna Peak and SNI, with their height advantage, transmit the command control signals for reception by the targets. The target then responds to the audio tones in accordance with the parameters established for the tones.

The control boxes differ for each target drone. The BQM drone is controlled by direct entry of a code which activates a corresponding control function. The MQM drone control system uses proportional control of some flight functions. In a proportional control system, two channels are on continuously. Increasing one channel and decreasing the other channel proportionally will cause the target drone to turn in one direction. The rate of turn will be proportional to the difference between the two channels. The control box for the targets is equipped with dual controls so that the two targets can be controlled on a common transmitter frequency.

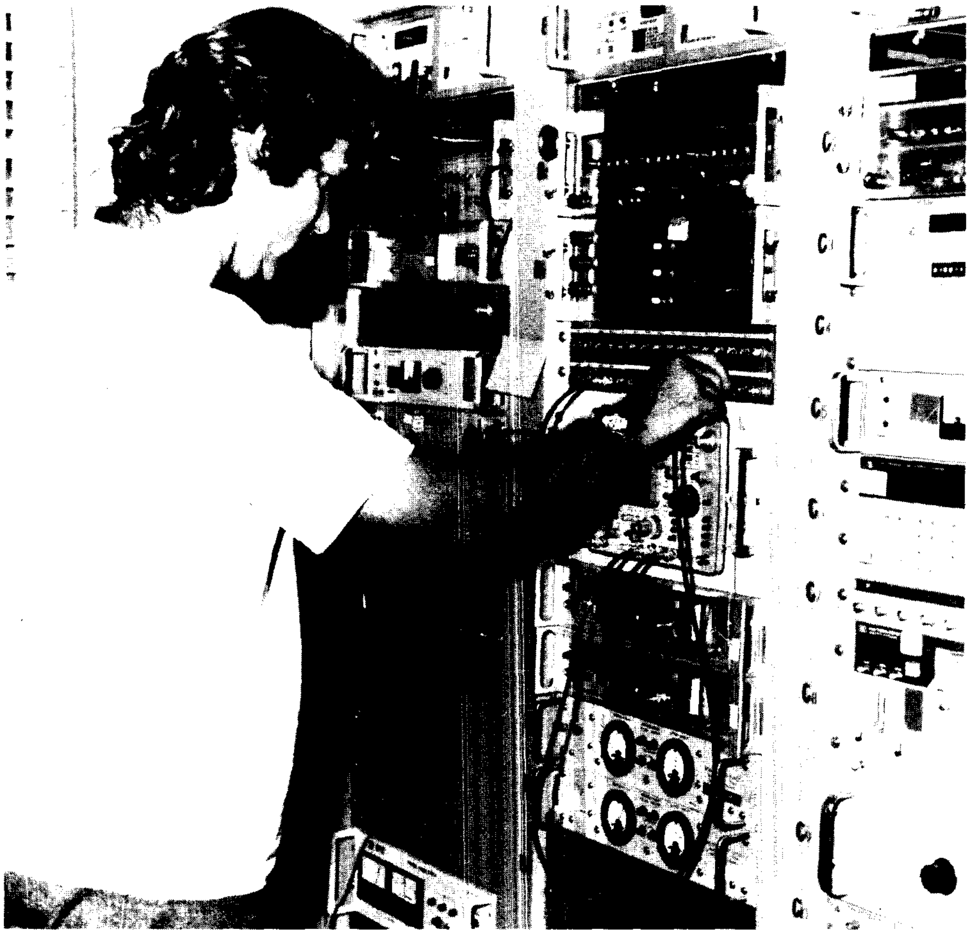
TIMING CENTER

Timing provides synchronized, precise, and stable Time Formats for Range coordination to UTC, (Universal Time Code). Time is referenced to the U.S. Naval Observatory through the Global Positioning System (GPS) satellite system. Daily checks are made to compensate for drift. Stabilization is accomplished through a triple redundancy system that links three cesium clocks and three time code generators together. The system is linked for error correction and automatic switch over should one unit drift off specifications or fail.

Timing distribution amplifiers provide timing signals to facilities in the local areas over copper cable pairs.

Precise timing is of major importance at SNI. Timing data is required to correlate and analyze data collected by the instrumentation systems during local operations when data is collected from geographically separated instrumentation systems. The tracking of satellites especially requires a precise time reference to correlate observed satellite data.

The timing signals used at SNI are generated in the Timing Operations Center, Building 127, SNI. All timing signals are referenced to the time references maintained by the United States Naval



Timing signals used on SNI are generated in the Timing Operations Center, Building 127. Precise timing is of major importance on SNI. It provides synchronized, precise and stable time formats for Range coordination in operation weapon system testing.

Observatory (USNO) and the United States National Institute of Standards and Technology (NIST).

FREQUENCY REFERENCES

The Timing Operations Center on San Nicolas Island uses cesium beam standards and time code generators to provide various timing signals to customers having wire cable communications support. Use of the Global Positioning System as master reference provides an accuracy of not more than 100 nanoseconds difference for UTC2. Standard time codes available are IRIG A, B, D, E, G, and H. A block diagram of the SNI Timing Operations Center is shown in Figure 4-8.

IRIG TIMING SIGNALS

Timing signals in formats IRIG A, B, D, E, H, and Theodolite NULLS are available and used at SNI. These signals are in the carrier format. The carrier resolution of all formats, except A, is 1000 Hz or one millisecond. The carrier resolution of Format A is 10,000 Hz or 0.1 millisecond. All formats contain binary coded decimal expressions with straight binary seconds coded expressions in Formats A and B. The IRIG timing formats are used for programs requiring standardized formats and are suitable for recording on magnetic tape, recording oscillographs, film annotation, and real-time transmissions.

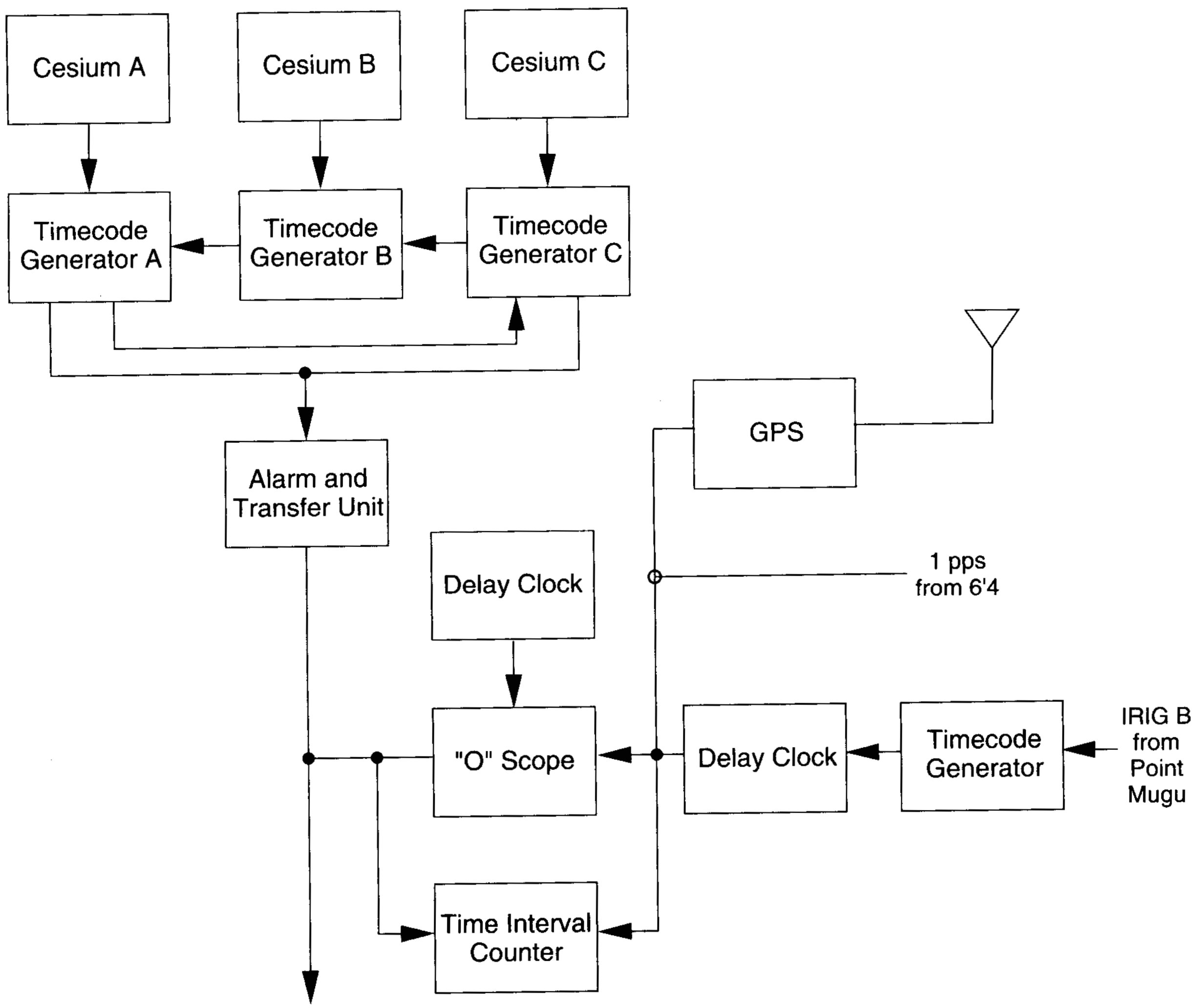


Figure 4-8. SNI Timing Center Block Diagram

Section 5 Integrated Target Control System

GENERAL DESCRIPTION

The Integrated Target Control System (ITCS) is a stand alone target control system with tracking, telemetry data transmission, and command/control integrated into a single system. It is designed for remote or relay control of ground, sea and air target vehicles and pilotless aircraft.

ITCS EQUIPMENT

ITCS equipment includes drone control stations, target vehicle sub-systems and support equipment. Four AN/TSW-10(V)6, Multiple Drone Control Sets provide remote control of up to four randomly spaced aerial or surface target drones. The control sets can transmit command guidance, provide range and angle tracking data, receive telemetered data and display operational information in real-time.

TARGET CONTROL

ITCS target control and telemetry display equipment is located in the Point Mugu Range Operations Building 53. Target tracking and associated transmit/receive equipment is located on SNI. This equipment includes, four ITCS tracking antennas in Buildings 127, 127A, and 127B. Two more tracking antennas located on Laguna Peak are also a part of this system and play a significant role in supporting ITCS Operations. Exchange of data between Range Operations Building and SNI is accomplished via microwave. Digital computers are incorporated into the Range Operations Building for operational software control and interfacing with other SNI data systems.

The ITCS presently controls BQM-34 S/T, BQM-74, and other missile targets. It also provides full scale QF-4 and QF-86 aircraft targets. Surface targets can also be controlled with ITCS such as SEPTARS, full scale DD/DE hulks, and the emitters and cameras etc. on the hulks.

A Close In Weapons System platform ship is controlled by ITCS using EATS to relay the ITCS commands. ITCS control of the AQM-127 SLAT with over-the-horizon relay of commands and down link telemetry through EATS is operational. A block diagram of ITCS with the EATS interface is shown in Figure 5-1.

Built-In-Test-Equipment (BITE) including the TS-37 95/0 Control Station Test Set is incorporated in the system using transponder simulation to provide functional testing and fault isolation of data malfunctions. An Antenna Alignment Test Set at SNI is used for boresight and fault isolation.

SYSTEM HARDWARE

There are two Data General S230 (8597-M) Digital Computers and two Data General S230 (8591-H) Digital Computer in the ITCS Computer Room in Building 53, Point Mugu. Peripheral equipment associated with these computers are two Data General 6045 Megabyte Disc Units, two Data General 6021 Magnetic Tape Transport Systems, one Data General 3300-35 (4327A) printer and three Data General 6053 Keyboard Display Units. The Radar Target Data Computer consists of a local data processor, local control indicator group, and a low speed modem connected to both remote sites. This equipment allows communication and equipment control on SNI, which consists of a Radar Target Data Computer with control indicator and digital data modems.

Six Control Indicator Groups are installed in Operations Control Room Alpha and two are in

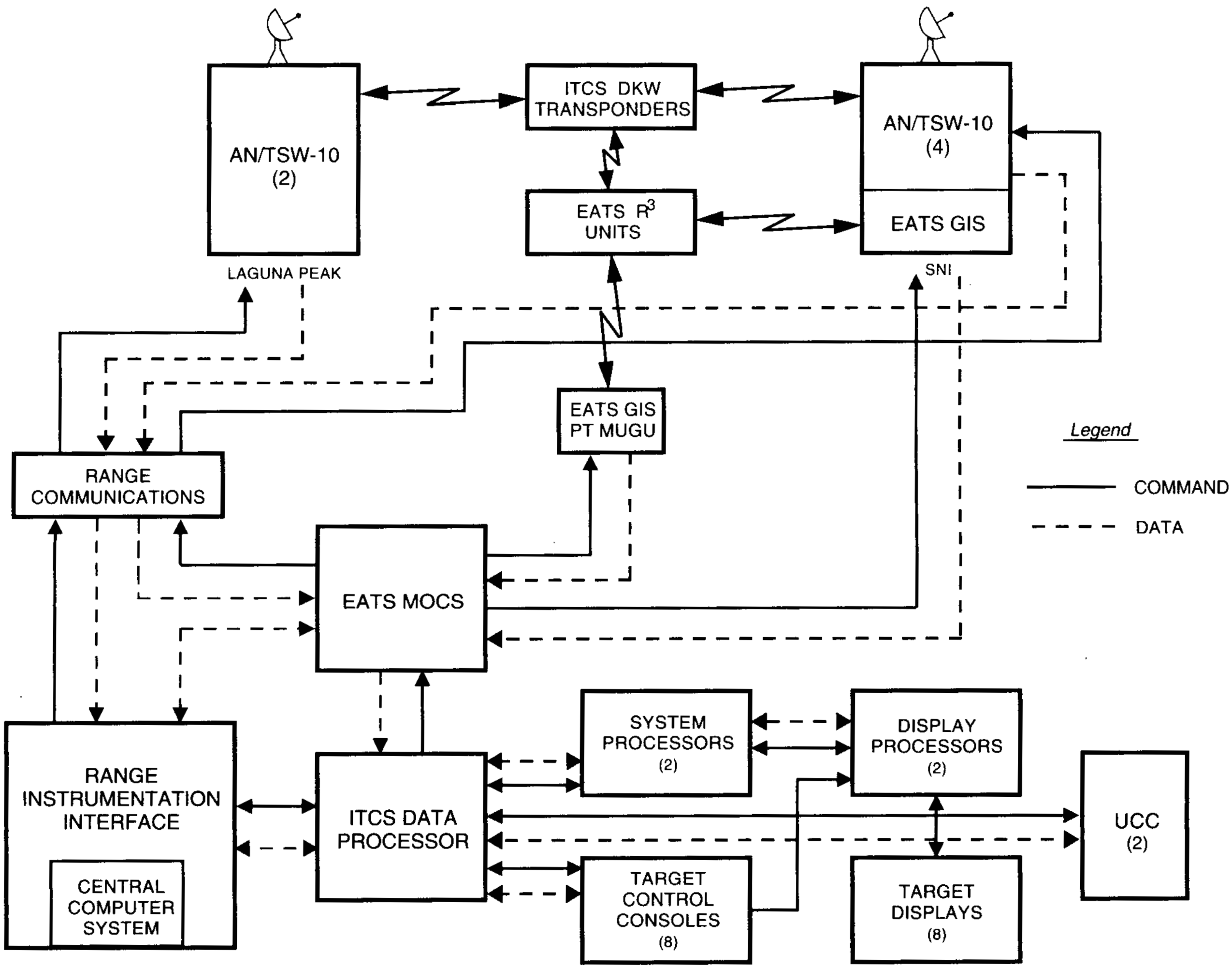


Figure 5-1. Integrated Target Control System (With EATS Interface) Block Diagram

OCRs Bravo and Delta. Each indicator group includes a Target Control Console and Data Display Indicator. These consoles are operating positions for target controlling. The Control Station Test Set (CSTS) antenna is located on the roof of the Range Operations, Building 53. Its test controller is transportable between the control rooms for easy access from the operating positions. Operating characteristics of the ITCS are shown in Table 5-1.

INTEGRATED TARGET CONTROL SYSTEM (ITCS)

System

Frequency	4.4 to 4.8 GHz
Measured Tracking Parameters	Slant range, azimuth and elevation angle.
Data Transfer To/From Target	*Command:* Up to 17 9-bit words plus parity. *Telemetry:* Up to 17 15-bit words plus parity.
Range	0.3 to 250 nautical miles (line-of-sight limited)
Altitude	Surface to 100,000 feet
Command Rates	10, 15, 30 and 45 frames per second
Target Transponder	Must be system compatible

Tracking Antennas

Type	8-foot dish, cassegrain monopulse
Gain	35.5 dB nominal
Beamwidth	2.0 degrees
Polarization	Right hand circular

Receiver

Type	Dual conversion phase lock loop
Bandwidth	450 kHz
Tuning	Five frequency selectable without tuning.
Intermediate Frequencies	190 MHz and 19 MHz
Preamplifier	Parametric amplifier
Noise Figure	3.4 dB

Transmitter

Type	Klystron amplifier
Exciter	Solid state
Tuning Range	Tunable over frequency band with 160 selectable frequencies with minimum retuning.
Bandwidth	15 MHz
Power Out	800 watts minimum
Frequency stability	± 2 ppm

Computer Computations

Barometric Altitude Calibration
Barometric Altitude Smoothing and Rate Estimation
Radar Altitude Smoothing and Rate Estimation
Antenna Search and Acquisition
Antenna Auto Tracking

Table 5-1. Operating Characteristics of the ITCS Table 1 of 2

INTEGRATED TARGET CONTROL SYSTEM (ITCS)

Computer Computations

Slave Elevation to Barometric or Radar Altitude
Position Determination
Coordinate Transformations
XYZ Smoothing
Command/Telemetry Data Scaling
Command/Telemetry Sort
Command Playback
Mission Record, Display, and Playback

Command Data

Modulation	Frequency Shift Keyed
Coding	Manchester
Type	Coded and uncoded, discrete and proportional
Data Bit Rate	25.65 kbps (51.3 kbps coded)
Data Bits per Word	9 plus parity
Command Message Length	17 words plus a preamble

Telemetry Data

Modulation	Phased Shift Keyed/Pulse Modulation
Sub-Carrier Frequency	102.6 kHz
Type	Coded and uncoded, discrete and proportional
Data Bit Rate	51.3 kbps
Data Bit per Word	15 plus parity
Telemetry Message Length	17 words plus a preamble

Tracking

Type	Monopulse
Modes	Standby Auto Azimuth Auto Normal Manual Elevation Slaved to Altitude External (To Radar or Other Tracker) Memory (Angle or Angle Rate) Search Stop
Azimuth Accuracy	Less than 1 milliradian RMS error
Elevation Accuracy	Less than 2 milliradian RMS error
Azimuth Coverage	360 degrees
Elevation Coverage	- 7 to + 85 degrees
Angular Rate	0 to 25°/second (ped. Velocity: 40°/sec maximum)
Angular Acceleration	0 to 25°/second/second (ped. Accel > 200°/sec^2)

Table 5-1. Operating Characteristics of the ITCS Table 2 of 2

Section 6 Geophysics and Climate Data

GENERAL DESCRIPTION

The SNI Weather Station supports marine, missile, satellite, space, and underwater programs through meteorological and oceanographic observations. Geophysics personnel collect geophysical and environmental data Monday through Friday. They prepare the data for computer reduction and dissemination, and then send it to Point Mugu, via modem, for further analysis. Regular and special surface and upper air observation data is collected and disseminated to range users and worldwide weather facilities via an international weather network.

SURFACE OBSERVATIONS

Surface weather observations on SNI are taken between 0600 and 1800 PST from a site 507 feet above mean sea level adjacent to the runway. The monthly frequencies and monthly means reports are based strongly on daytime conditions and may be biased.

A large portion of the island cannot be seen from the observation site. Thus the resulting data does not necessarily portray the weather over the entire island. In fact, one end of the island can be entirely fogged in while the opposite end may be relatively clear. Weather moves in and out of the island at various rates. It is constantly changing and dependent on a variety of atmospheric conditions. It has been known to change completely within one hour or remain unchanged for days.

GEOPHYSICS FACILITIES AND EQUIPMENT

GENERAL

SNI Geophysics instrumentation includes weather satellite receivers and data processors, rocket-boosted probes, balloon soundings, and wave-riders, as well as numerous manned and remote weather stations on and near SNI. The weather station facilities and equipment are delineated below.

UPPER ATMOSPHERIC SYSTEMS
Building 98

The meteorological equipment located in Building 98, is used to process upper air data collected from weather systems on SNI.

The upper air data, collected from balloon and rocket observations, is sent via modem to personal computers at Point Mugu. The upper air data information recorded includes: temperature, dew point, wind direction and speed, pressure, speed of sound, index of refraction, density, dewpoint, and absolute humidity and more. At Point Mugu, the data is formatted, recorded, and distributed to the requestor. This method of data reduction produces a rapid, detailed description of the state of the atmosphere.

METEOROLOGICAL SOUNDING SYSTEM VAISALA MINI-RAWINSONDE SYSTEM

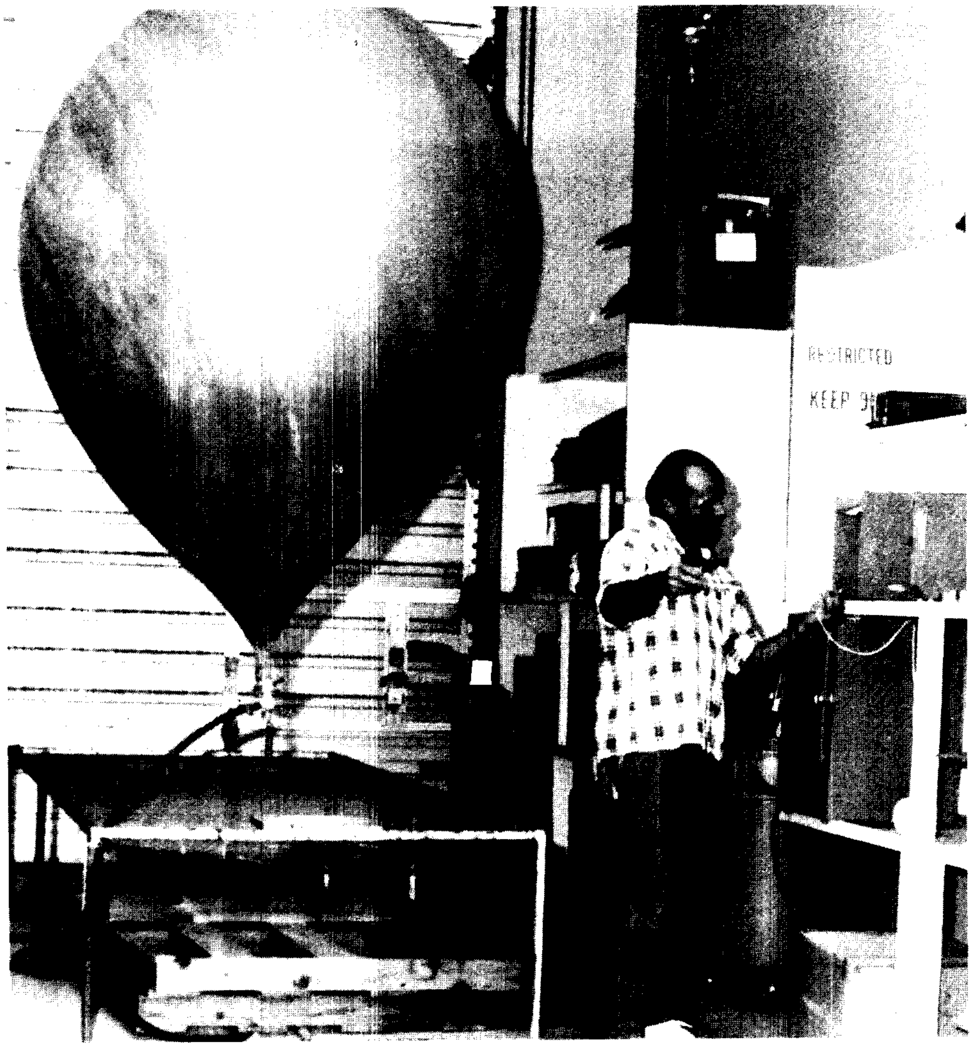
The upper air data systems include a rocketsone and rawinsonde Meteorological Sounding System (MSS) and a Vaisala Mini-Rawinsonde

The Vaisala Mini-Rawinsonde System (MRS) receiver located in Building 279 collects weather data from balloons traveling up to 100,000 feet.

System (MRS). The MSS is used for sounding the atmosphere to 100,000 feet by balloon and 200,000 or 300,000 feet by rocket. The Vaisala MRS upper air system is very similar to the MSS. The MRS is portable and can only collect weather data up to 100,000 feet by balloon.

BALLOON LAUNCH FACILITY
Building 279

Building 279 is manned and equipped for balloon launches. Helium tanks, radiosonde receivers, a meteorological transponder, and other equipment needed for balloon observations are stored in this facility.



Weather balloons with attached radiosonde receivers are released from Building 279 two times a day and can soar to heights of 120,000 feet.

The balloon launch facility is used to prepare radiosonde for release. Weather balloons with attached radiosonde receivers are released two times a day. Additional balloons are released as requested. The released balloons soar to an average height of 80,000 feet with the capability to soar to 120,000 feet.

SURFACE AVIATION WEATHER AND OCEANOGRAPHIC (SURF) Building 145

All flight safety data collected from the automatic weather stations is sent to Building 145 for observation and dissemination. Readouts collected include visibility and cloud height measurements. The data collected at these stations is sent directly to Point Mugu for archiving and further dissemination.

Semi-Automatic Weather Station (GMQ-29)

The surface aviation weather systems include one unmanned Semi-Automatic weather station (GMQ-29) located adjacent to on the runway. The weather station and sensor systems are used to monitor basic weather conditions. Readouts from this weather station are sent to both Building 145 and Point Mugu.

Cloud Height Detectors (GMQ-13)

Other surface aviation weather systems includes two Cloud Height Detectors (GMQ-13) located on either end of the runway. The detectors determine cloud height using a projector detection system. All readouts are sent to Building 145 for further analysis and processing.

Runway Visual Range system (GMQ-32)

A Runway Visual Range system (GMQ-32) is also used to collect surface aviation information. One Visual Range system is located on each end of the runway and is used to gather visibility information which is then sent to Building 145.

HANDAR

One HANDAR remote automatic weather station is located on the northern tip of the island at sea-level. The remote automatic station measures the standard atmospheric parameters such as temperature, wind speed, solar radiation, rain fall, and more. The data, collected at SNI, is sent to Point Mugu for display.

Surface Observation personnel at Building 145 provide basic flight safety information such as, cloud height, wind speed, wind direction, visibility, and altimeter. The island's flight area control zones are observed hourly during the flight hours.

OCEANOGRAPHIC BUOYS AND CURRENT METERS

Oceanographic buoys and current meters are used for measuring sea state and currents. Sound velocimeter and expendable bathythermographs are used for sounding the ocean depths. Two Wave Rider buoy measures are near SNI. One buoy, located 10 miles north of SNI measures the direction of the wind waves and swells and measures the height and period of open water sea and swells. The second buoy, located 500 yards from the south side of the island measures only the height and period of open water sea and swells. A transmitter sends the collected wave information to a receiver on SNI where it is sent to the Point Mugu Weather Station to be included in a surf forecast for the STR area.

GENERAL CLIMATIC DATA

The weather station, at 507 feet mean sea level, is frequently within the subtropical inversion that affects the southern California weather patterns. The weather on SNI as a whole is cold and windy. The weather conditions at San Nicolas Island are similar to those at Point Mugu except for steady northwesterly winds and lower annual rainfall. In this part of the section, the weather information collected by SNI Geophysics is presented.

SKY COVER AND VISIBILITY

The monthly frequency of occurrence and cloud amount at San Nicolas Island in the standard meteorological classes (clear, scattered, broken, and overcast), and also in the lay terms often used in forecast preparation (clear, partly cloudy, and cloudy) is given in Table 6-1.

Table 6-2 shows the monthly frequency of occurrence of horizontal visibility values under one-half mile and under one mile, and greater than or equal to 3, 6, and 10 miles.

In calm weather, especially between early spring and late summer, heavy fog forms over the Channel Islands covering them for days. Often the mainland and the channels will be free of fog while the islands themselves are completely enveloped. This situation often occurs during the daytime. The fog moves onto the mainland during the night.

PRECIPITATION

Precipitation on the island is slight, averaging 7.91 inches per year. The dry season is during the five month period from May to September. Total precipitation during this time amounts to 0.33 of

Month	Sky Conditions						
	Clear	Scattered	Broken	Overcast	Clear*	Partly Cloudy*	Cloudy*
January	23.9	27.2	22.8	26.0	42.7	22.6	34.7
February	25.8	26.8	21.2	26.2	43.9	21.4	35.0
March	25.0	28.5	22.4	24.1	42.8	23.1	34.1
April	30.7	27.7	19.5	22.0	45.3	22.1	32.6
May	23.8	26.3	18.5	31.4	39.0	18.5	42.5
June	23.7	25.9	16.3	34.1	31.6	15.5	45.9
July	23.2	30 .7	16.3	29.7	40.4	17.8	41.8
August	25.7	30.2	16.5	27.7	45.2	18.0	36.8
September	31.4	25.2	15.9	27.5	47.8	15.2	37.0
October	34.7	25.8	18.5	21.0	51.2	17.4	31.4
November	30.4	28.8	21.0	19.9	47.3	20.3	32.4
December	29.6	28.7	20.4	21.2	49.5	20.1	30.4
Year	27.3	27.7	19.1	25.9	44.6	19.3	36.1

Clear: No clouds (0/10 cover)
Scattered: Scattered clouds (1/10 through 5/10 cover)
Broken: Broken clouds (6/10 through 9/10 cover)
Overcast: Overcast clouds (10/10 cover)

Clear: 0/10 through 2/10 cloud cover
Partly Cloudy: 3/10 through 7/10 cloud cover
Cloudy: 8/10 through 10/10 cloud cover

* Lay terms

Table 6-1. Percent Frequency of Given Sky Conditions at San Nicolas Island

Note: All visibility values reported in statute miles.

Month	Visibility Frequency (Percent)				
	< 1/2	< 1 Mile	≥ 3 Miles	≥ 6 Miles	≥ 10 Miles
January	4.9	6.2	90.9	84.5	64.6
February	4.4	5.7	91.3	83.5	63.3
March	2.2	3.1	94.5	86.2	65.6
April	2.0	2.7	94.7	83.8	56.5
May	2.8	4.1	91.4	75.0	43.9
June	3.3	5.2	88.6	69.3	38.0
July	4.5	6.8	87.0	60.6	24.9
August	3.4	5.6	88.2	64.1	27.8
September	2.8	3.9	90.3	69.5	35.7
October	3.0	4.2	92.3	75.8	46.1
November	2.8	3.8	93.0	83.1	59.8
December	4.5	5.7	91.5	83.0	62.6
Year	3.4	4.7	91.1	76.2	48.5

Table 6-2. Percent Frequency of Selected Visibility at San Nicolas Island

an inch. The rainy season is November through February when the island receives approximately 86% of the total rain fall. The heaviest rains fall in January, averaging 1.80 inches.

On the basis of precipitation, San Nicolas Island could almost be called a desert, but the low summer temperatures, high relative humidity, and the high incidence of fog and low clouds make the small amount of rainfall unusually effective. There are several springs on the island with water that is highly mineralized and potable. They are a regular, reliable source of water. A recently completed water desalination plant, produces potable water by reverse osmosis. The system is used for the water supply in conjunction with the springs. The reverse osmosis system was installed due to the drought that depleted most of the island's water from 1984 through 1992.

TEMPERATURE

The average mean monthly temperature is a cool fifty-nine degrees. The difference between the January and July temperatures is only about eight degrees. As to be expected in a Maritime West Coast environment, the coolest month averages 574.3° Fahrenheit. In September, the warmest month, temperatures average 64.8° Fahrenheit.

FLYING WEATHER

The flying weather at San Nicolas Island is above Visual Flight Rules (VFR) minimums (1,000-foot ceiling and 3-mile visibility) 80 percent of the time on a year-round basis, with the best months being March and November (87 percent) and the worst month July (67 percent). Annually, the ceiling and visibility are below the lowest instrument landing minimums (100 feet or one-half mile) 3.4 percent of the time. In summary, March and July are the best and worst months, respectively.

Table 6-3 and Figure 6-1 present the frequency of occurrence of VFR weather and of weather below Tactical Air Navigation (TACAN) and Pre-

Note: Values given in percent.

Time (PST)	VFR	Below TACAN	Below PAR	VFR	Below TACAN	Below PAR	VFR	Below TACAN	Below PAR	VFR	Below TACAN	Below PAR
	January			February			March			April		
0600 to 0800	83.0	9.0	5.7	80.5	11.0	7.8	80.3	7.7	5.2	74.6	8.8	5.7
0900 to 1100	85.2	5.9	4.0	81.0	7.7	4.1	87.8	3.4	1.9	84.8	3.1	1.7
1200 to 1400	87.1	5.5	4.0	87.0	4.1	2.8	90.8	2.2	0.3	91.6	0.9	0.3
1500 to 1700	87.8	5.0	3.5	87.3	5.0	2.9	92.3	1.9	1.0	91.0	1.0	0.3
All Hours	85.3	7.1	5.0	84.5	7.0	4.5	87.4	4.0	2.3	85.7	3.4	2.0
	May			June			July			August		
0600 to 0800	60.2	12.9	7.5	47.2	20.6	11.4	37.3	25.0	14.0	39.0	23.4	11.2
0900 to 1100	74.1	3.7	1.3	67.7	3.6	1.1	65.4	4.5	1.1	68.1	2.8	1.1
1200 to 1400	87.7	0.5	0.1	85.1	0.3	0.0	86.7	0.5	0.1	88.7	0.2	0.0
1500 to 1700	87.5	0.6	0.0	86.4	0.8	0.1	90.1	0.1	0.0	89.9	0.6	0.1
All Hours	76.3	5.6	2.8	69.9	7.3	3.3	67.1	9.4	4.6	69.8	8.1	3.5
	September			October			November			December		
0600 to 0800	57.9	15.1	8.4	70.3	13.8	8.7	80.2	7.8	5.1	81.6	8.1	6.9
0900 to 1100	74.6	3.3	1.3	81.6	2.9	0.9	86.3	3.2	1.9	85.5	6.5	4.2
1200 to 1400	88.6	0.7	0.3	91.2	0.7	0.3	90.5	2.6	1.7	89.1	4.6	2.3
1500 to 1700	87.5	1.3	0.4	89.8	1.8	0.4	90.3	2.7	1.5	88.8	4.2	2.5
All Hours	75.1	6.0	3.0	82.7	5.6	3.0	86.5	4.8	2.9	86.2	6.5	4.6

VFR = ≥ 1,000-foot ceiling and 3-mile visibility
TACAN minimums = 300-foot ceiling and 1-mile visibility
PAR minimums = 100-foot ceiling and 1/2 mile visibility

Year VFR = 79.5
< TACAN = 6.4
< PAR = 3.4

Table 6-3. Frequency of Occurrence of Ceiling and Visibility Values Critical to Aircraft Operations at San Nicolas Island

cision Approach Radar (PAR) minima at San Nicolas Island in the same manner as presented for Point Mugu. However, PAR minima at San Nicolas Island are 100 feet and one-half mile (the other criteria remain the same).

WINDS

Winds on San Nicolas are prevailingly northwest and are strong most of the year. The average wind speed is 14 knots. The windiest month is May when surface wind speeds average 16 knots. The least windy are October through January when wind speeds average 12 knots. The incidence of high seas and swells is greater during the winter months.

The island does present an obstruction to the prevailing wind flow. Thus, if stratus clouds are present over the adjacent waters, the northern slopes may be covered by these low clouds, while the southern portions of the island may be clear. Small vortices may also develop in the airflow, creating occasional clear spots within the clouds downwind of the island. A brief climatic summary for SNI which includes wind speeds is shown in Table 6-4.

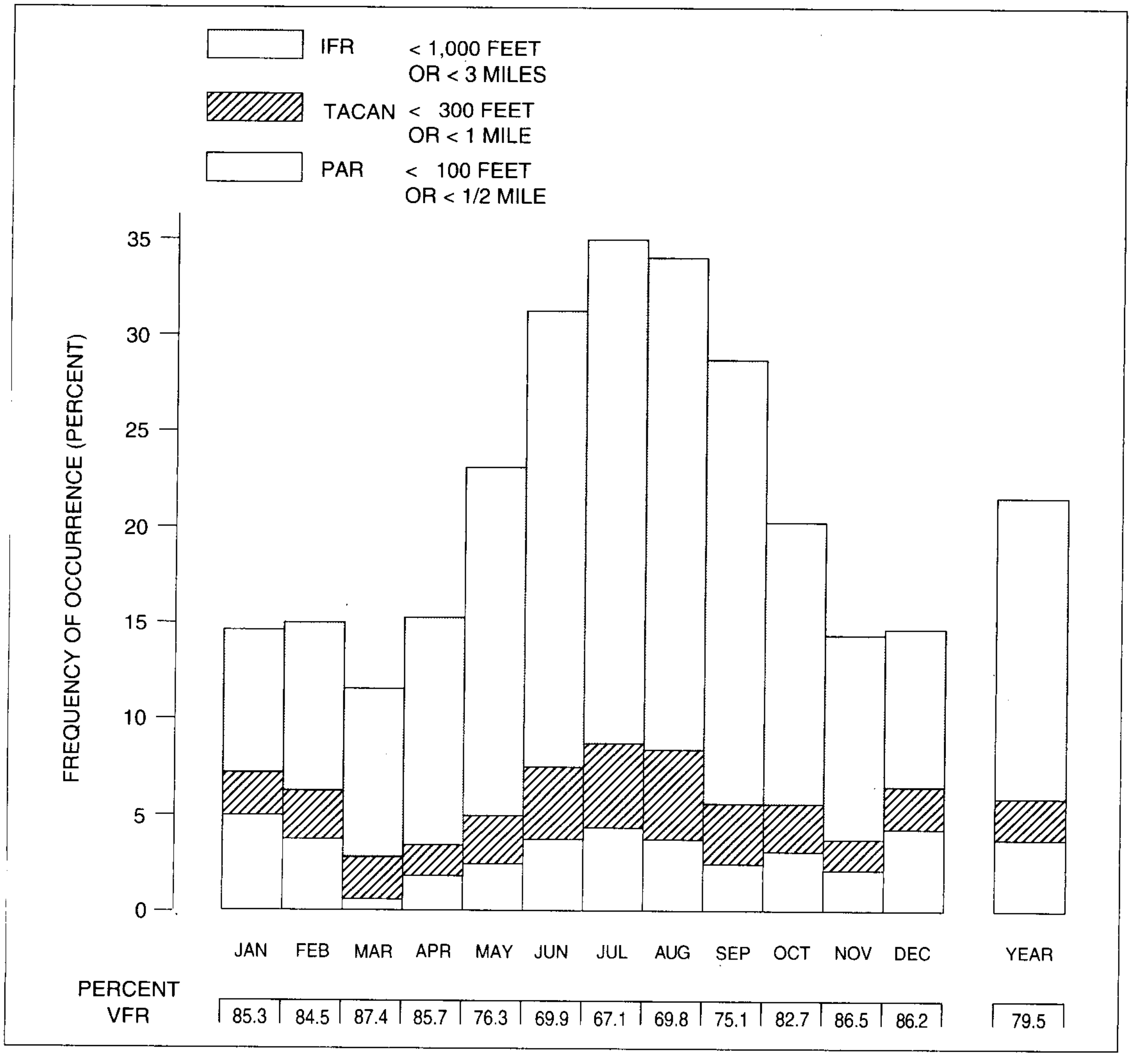


Figure 6-1. Frequency of Ceiling and Visibility Values

Month	Temperature (°F)						Precipitation (Inches)					Humidity (Percent)				Surface Winds (Knots)				Mean Sky Cover (Tenths)
	Average		Extreme				Average Amount	Extreme				Average		Extreme		Prevailing Direction	Average Speed Knots	Peak Direction	Gust Speed Knots	
	Max	Min	Max	Year	Min	Year		Max	Year	Min	Year	0700 LST	1300 LST	Min	Year					
January	60.6	48.0	84	1962	33	1949	1.80	7.40	1979	0.00	1976	76	63	15	1969*	NW	12	WNW	52	5.2
February	61.2	48.5	83	1971	33	1990	1.58	6.15	1978	Trace	1961	82	67	15	1974	NW	13	NNW	48	5.2
March	61.2	48.5	89	1988	34	1951	1.26	4.62	1983	0.00	1959	81	66	10	1955	NW	15	WNW	52	5.1
April	63.3	49.7	98	1989	38	1948	0.53	2.68	1965	0.00	1993	80	63	10	1955	NW	15	WNW	48	4.5
May	64.3	51.3	100	1970	38	1959	0.09	1.63	1977	0.00	1984*	82	65	12	1956	NW	15	WNW	45	5.5
June	66.6	53.6	100	1973	41	1948	0.03	0.25	1993	0.00	1991*	82	63	11	1957	NW	14	WNW	45	5.3
July	70.1	55.9	98	1985	44	1951	0.01	0.14	1992	0.00	1989*	89	67	14	1968*	NW	13	NW	45	5.1
August	71.2	57.2	95	1967	47	1969	0.05	1.01	1983	0.00	1992*	89	68	12	1967	NW	12	WNW	41	5.1
September	71.7	57.8	105	1955	46	1948	0.15	2.21	1976	0.00	1992*	85	65	8	1970*	NW	12	WNW	39	5.2
October	69.5	55.7	102	1991	40	1971	0.26	2.88	1987	0.00	1986*	82	60	10	1970*	NW	12	NW	41	4.4
November	65.6	52.1	89	1949	37	1958	0.97	5.63	1965	Trace	1992*	75	59	8	1959	NW	12	WNW	44	4.4
December	61.8	49.0	87	1980	35	1972	1.18	5.96	1984	0.00	1989*	73	60	8	1958*	NW	12	NNW	45	4.5
Year	65.6	52.3	105	9/55	33	2/90*	7.91	19.53	77-78	2.63	60-61	81	64	8	11/59*	NW	13	WNW	52	5.0

* Also occurred in earlier year or years.

NOTE: Periods of record are as follows:

Temperature: Averages, January 1948 to June 1992; Extremes, January 1948 to June 1993.

Precipitation: Averages, July 1949 to June 1993; Extremes, January 1949 to June 1993.
A *trace* is an amount too small to measure (<0.01 inch).

Humidity: Averages, January 1973 to December 1982; Extremes, January 1955 to July 1975.

Surface Wind: Averages, January 1945 to August 1986; Extremes, July 1963 to June 1993.
Prevailing wind direction and average wind speed are the most frequently observed wind direction and the average speed from that direction.

Sky Cover: January 1960 to December 1969; January 1973 to December 1982.
Zero-tenths is clear; ten-tenths is overcast.

Table 6-4. San Nicolas Island Surface Climatic Summary

Section 7 Air and Surface Surveillance Radar Systems

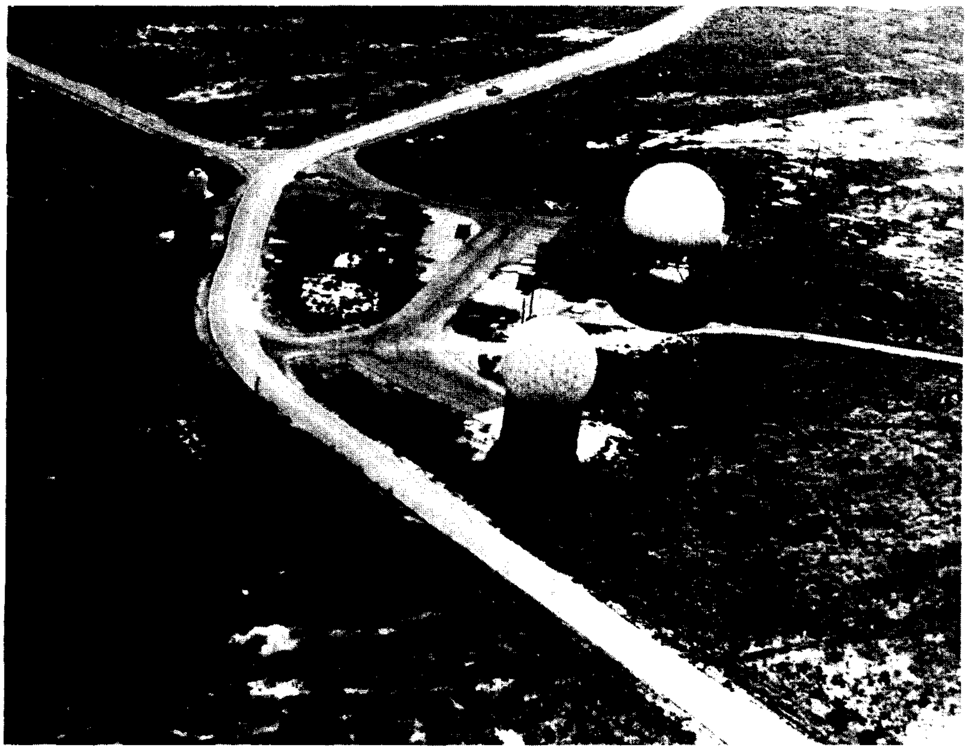
GENERAL DESCRIPTION

The surveillance radars and display systems on SNI are used to detect and track all aircraft and surface vessels in or approaching the 36,000 square nautical miles of the Sea Test Range. This surveillance ensures that hazardous operational tests involving aircraft and missile flights, ordnance expenditures, and drone recoveries are all conducted in a safe manner. Air and sea surveillance radars on SNI and used within the STR are listed in Table 7-1.

Radar	ARSR-IBE	AN/FPS-114	AN/APS-20C
Quantity	1	1	1
Function	Air Search	Surface Search	Surface Search
Range	200 NM	200 NM	200 NM
Location	near Bldg 176	near Bldg 273	near Bldg 138

Table 7-1. Air and Sea Surveillance Radars

The SNI surveillance radars rotate (typically five to fifteen times per minute) sending signals in all directions. They track to ranges of up to 200 miles and have an accuracy of one or two miles. Surveillance radars have the advantage over other tracking systems in that they provide a complete picture of all of the participants and non-participants in the Sea Test Range. This information is required to provide overall control of the conduct of test operations.



The surveillance radars and display systems are located on Jackson Hill, SNI at an elevation of 907 feet. The ARSR-1BE Air Surveillance Radar provides long range coverage up to 80,000 feet. The AN/FPS-114 surface search radar provide coverage for the Sea Test Range up to 120 nautical miles.

ARSR-1BE AIR ROUTE SURVEILLANCE RADAR

The SNI ARSR-1BE is the range's primary air search radar. Its central location within the inner STR offers excellent air surveillance coverage up to 200 nautical miles during operations and while commercial air traffic traverses the STR. The ARSR-1BE Air Route Surveillance Radar Coverage is shown in Figure 7-1.

The ARSR-1BE is a high gain, high power, air surveillance radar. In its track mode, it provides long range coverage at altitudes up to 80,000 feet.

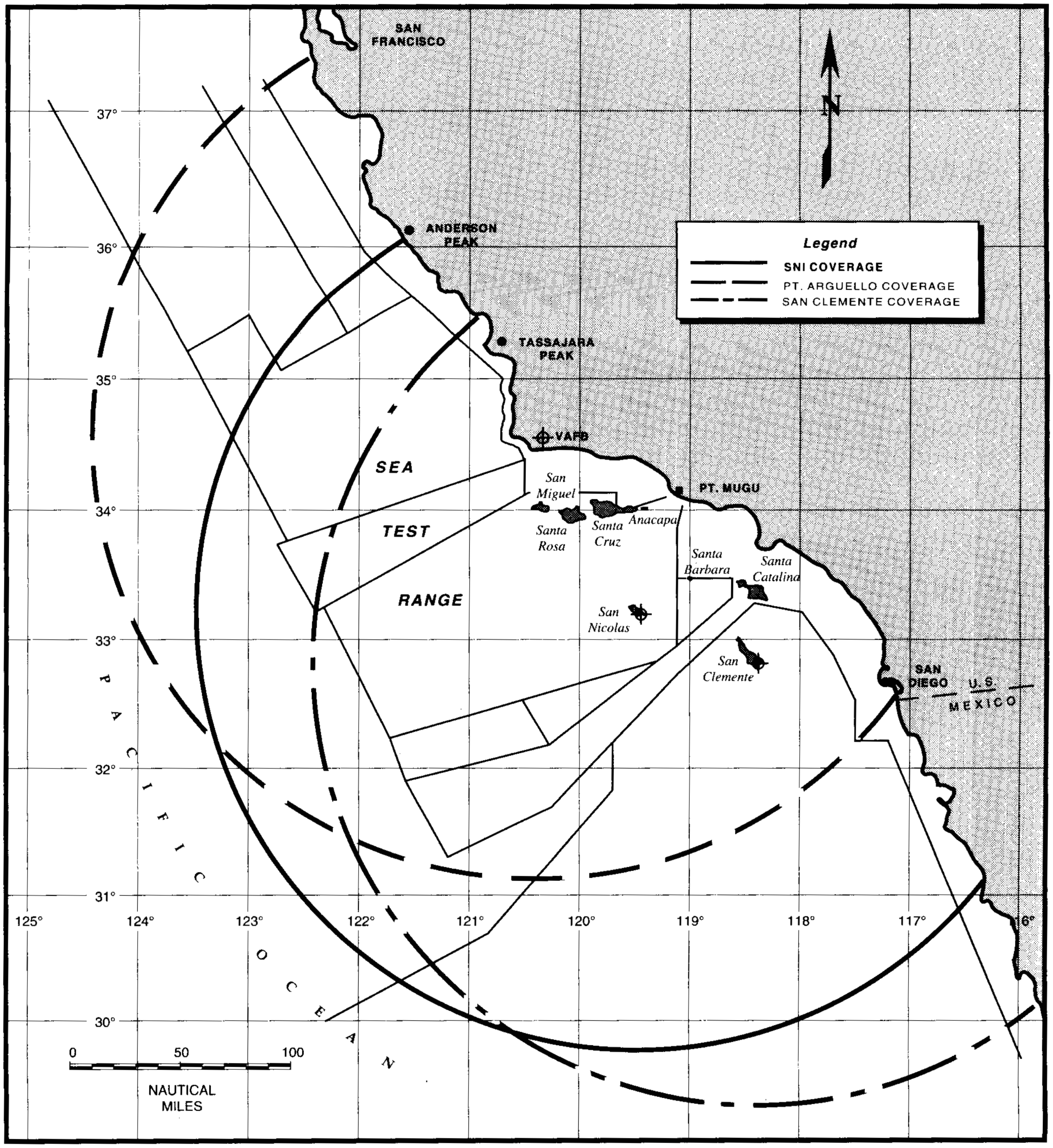


Figure 7-1. ARSR-1BE Air Route Surveillance Radar Coverage

This radar is a Federal Aviation Administration (FAA) type radar incorporating hybrid solid state and tube type circuits necessary to develop high power. Equipped with an Identify Friend or Foe (IFF) interrogator, the ARSR-1BE radar is able to detect air and surface targets with IFF transponders.

The ARSR-1BE radar is equipped with a Norden solid state moving target indicator (MTI). The MTI locates aircraft and ships that do not respond to IFF interrogations in clouds or sea clutter.

The ARSR-1BE radar and the other SNI surveillance radar characteristics are shown below in Table 7-2.

MARK 12 IFF SYSTEM

The Mark 12 IFF system is used to identify air and surface craft during operations on the Sea Test Range. The system is comprised of a UPX-27 Beacon interrogator set, air or surface craft-mounted transponders, and UPA-59 IFF decoders.

The interrogator set is located at the ARSR-1BE site. It is this system component that prompts the transponder to respond with a preset code.

The craft-mounted transponder sends a coded signal back to the interrogator set only when the ARSR-1BE antenna beam sweeps in the direction of the aircraft, thereby "triggering" the transpon-

Surveillance Radar Characteristics

ARSR-1BE Radar	
Frequency	1289 MHz
Transmitter Peak Power	4 MW
Transmitter Pulse Width	2.0 µsec
Receiver Bandwidth	1 MHz
Minimum Discernible Signal	-112 dBm
Antenna Gain	34 dB
Antenna Beamwidth	Horizontal 1.20 ±1°, Vertical 3.75°
AN/FPS-114 Radar	
Frequency	2900 to 3100 MHz
Transmitter Peak Power	1 MW
Transmitter Pulse Width	0.1 µsec @ 3dB
Receiver Bandwidth	10 MHz @ 3dB
Antenna Gain	41.5 dB
Antenna Beamwidth	0.9°
AN/APS-20C Radar	
Frequency	3000 MHz
Transmitter Peak Power	1 MW
Transmitter Pulse Width	1.0 µsec
Receiver Bandwidth	1.2 MHz
Minimum Discernible Signal	-102 dBm
Antenna Beamwidth	Horizontal 3.5°, Vertical 8°

Table 7-2. SNI Surveillance Radar Characteristics

der. This response signal is fed into a Radar Beacon Digitizer (RBD) via the interrogator set. The RBD is also located at the ARSR-1BE site. After the coded signal is conditioned by the RBD, it is transmitted to the range operations displays in Building 53.

The displays include the AN/UPA-59 IFF decoders, which are mounted on NTDS consoles. The decoders display the coded identity signal that originated at the transponder. Altitude information also is displayed.

This information is used for tracking and control of the Sea Test Range, air intercept control, and air traffic control.

AN/FPS-114 SEA SURFACE SURVEILLANCE RADAR

The AN/FPS-114 Sea Surface Surveillance Radar on SNI is located on the outer boundaries of the inner Sea Test Range and provides excellent coverage of this area to 120 nautical miles. The AN/FPS-114 has difficulty detecting small craft in high sea clutter because of the short transmitted pulse which is necessary to give high resolution. The surface coverage area of the AN/FPS-114 radar is shown in Figure 7-2.

This radar can operate unmanned with remote control capabilities from Point Mugu. A digital processor in the electronics compartment

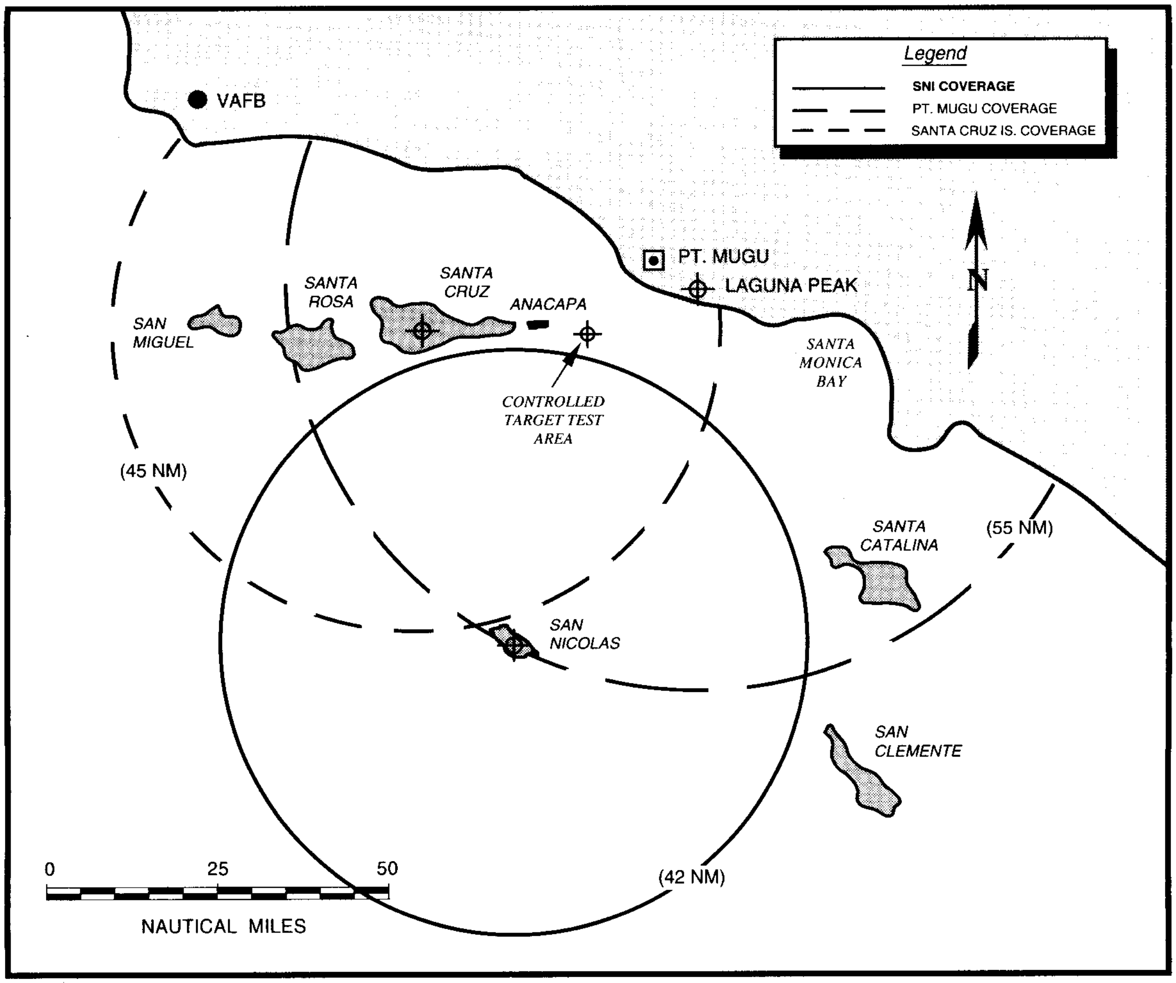


Figure 7-2. AN/FPS-114 Sea Surface Surveillance Radar Coverage

of radar AN/FPS-114 is connected so collected track data can be transmitted to NTDS and the Automated Range Surveillance System terminals.

AN/APS-20C SEA SURFACE SURVEILLANCE RADAR

The AN/APS-20C radar serves as a back up to the AN/FPS-114 radar. It can provide adequate coverage of some Sea Test Range areas during calm seas if one of the corresponding AN/FPS-114 radars fails or is shut down for routine maintenance.

RADAR DATA DISPLAY MEDIA

Once digitized data is collected in Building 127, it is transmitted directly to Laguna Peak. From Laguna Peak, it is sent to Point Mugu for display.

Analog data collected from the ARSR-1BE and the AN/FPS-114 radar is sent via microwave to Santa Cruz where it is then relayed to Point Mugu. A block diagram of the data network process is shown in Figure 7-3.

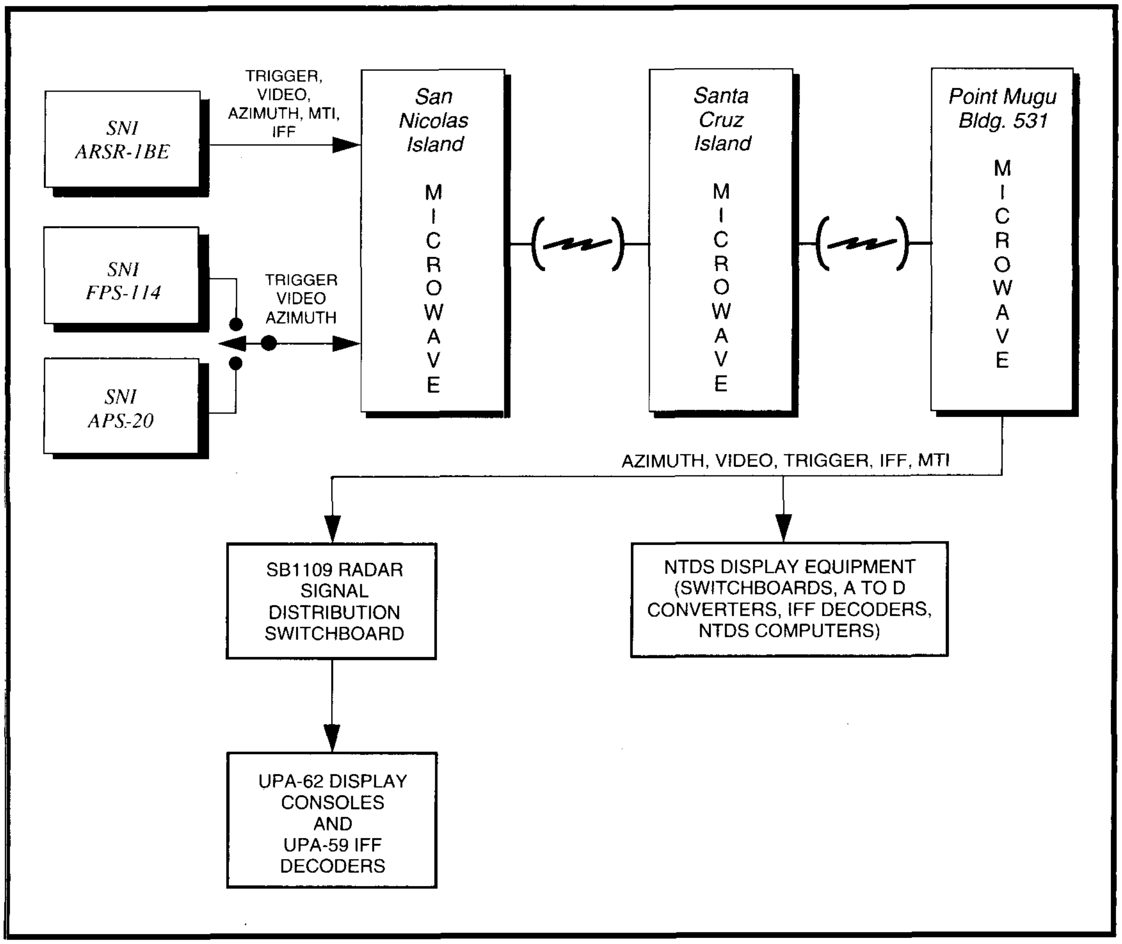


Figure 7-3. SNI Surveillance Radar Analog Data Network

SURVEILLANCE RADAR DATA DISPLAY

Surveillance radar data is displayed on three systems located in Building 53: The Naval Tactical Data System (NTDS); The AN/UPA-62 range/azimuth indicators; and the Automated Range Surveillance System (ARSS) terminals. The IFF digital data from the air surveillance radars is displayed on AN/UPA-59 decoders and digital data indicators (DDI) mounted on each NTDS console. Each of the display systems are described below. The SNI digital air track data flow is shown in Figure 7-4.

Surveillance radar data are displayed on NTDS consoles located in Building 53. The information displayed on the consoles includes radar sweep, land masses, and air/surface contacts.

The air surveillance data from SNI is relayed either through the Data Receive Group (DRG) equipment cabinet or through the ARSS to the

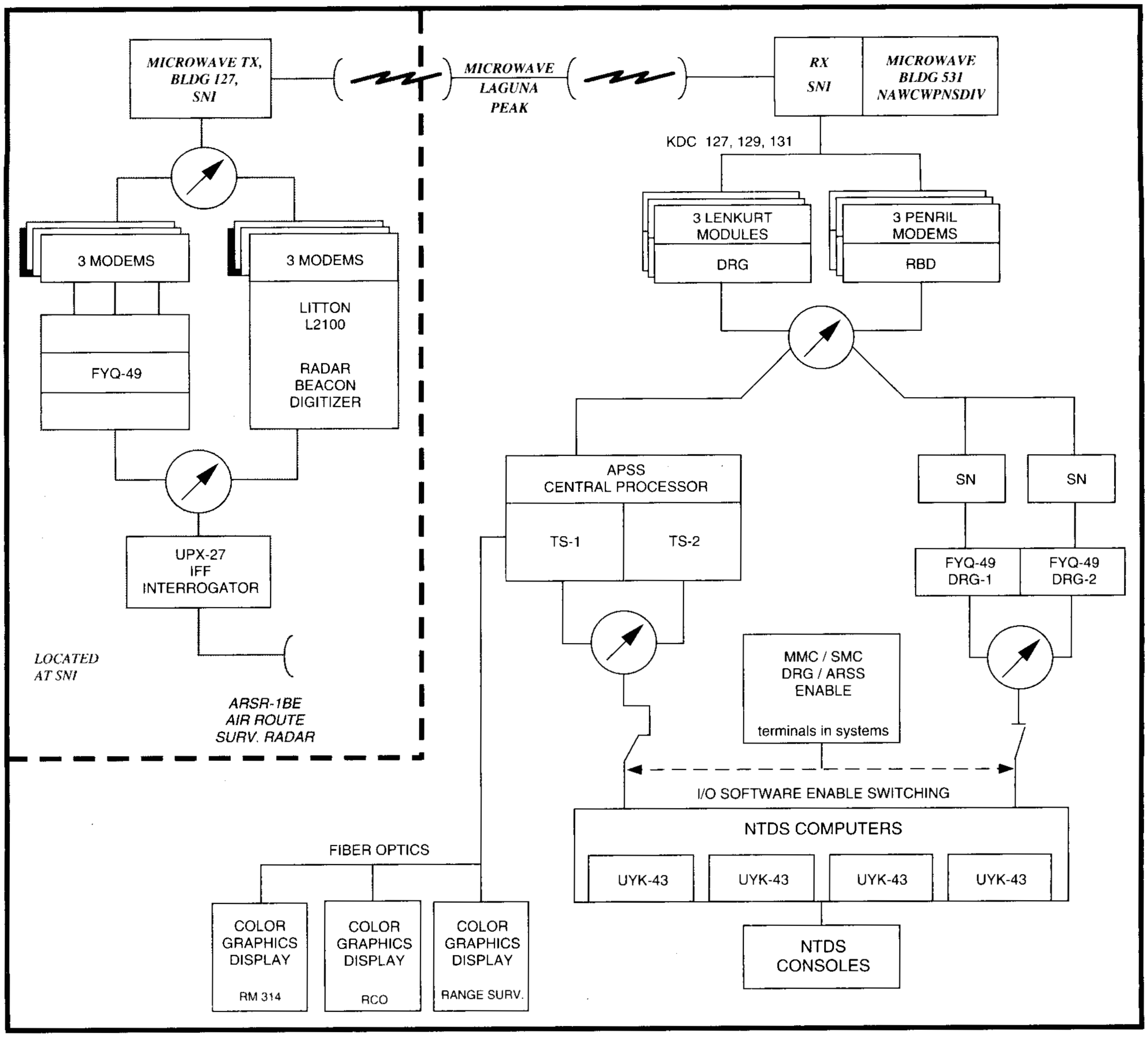


Figure 7-4. SNI Digital Air Track Data Flowchart

NTDS computers. Tracks are displayed on the NTDS consoles as automatically hooked symbols.

Radar data are also displayed on the ARSS terminals. The ARSS provides full redundancy in the Central Site Processor. Kennedy model 9600 tape recording units have expanded the sphere of potential ARSS data users. A block diagram of the ARSS is shown in Figure 7-5.

One advantage of the ARSS output is that it provides air data to NTDS even if two of the three air surveillance inputs become disrupted. Another advantage is that its Track Priority Select Processor will output only the contact data from the most accurate of the three sensors. With the DRG's on line, beacon data source must be manually selected when an air radar is disrupted.

RANGE SURVEILLANCE CENTER

The Range Surveillance Center (RSC) is under the control of the NAWS. The main duty of the RSC is to control aircraft that are involved in range operations (such as surveillance aircraft, test bed aircraft, chase aircraft, and target launch aircraft).

The center also monitors all vessels which transit the Sea Test Range and surrounding areas

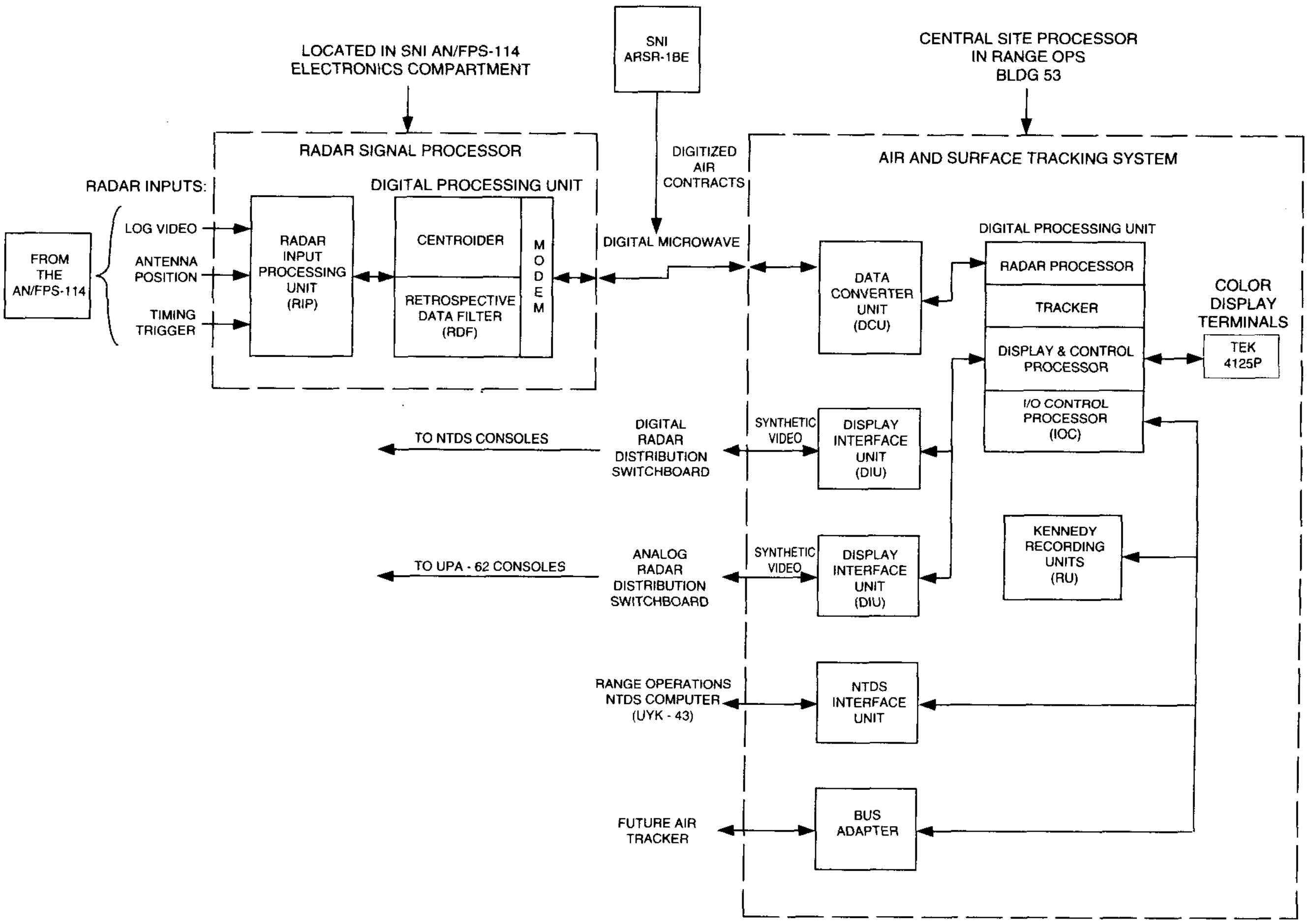


Figure 7-5. Automated Range Surveillance System (ARSS)

for possible emergencies. The center is open 24 hours a day, seven days a week.

Data can be fed from this center to the specific Operations Control Room (OCR) and to the Range Operations Display System (RODS). NTDS display consoles are used in the OCR's for control of aircraft, display of hazard and other areas, and for control of operations.

RANGE SURVEILLANCE CENTER EQUIPMENT

The RSC is equipped with five NTDS consoles, a Tektronix 4125 display system and RODS. The AN/UPA-62 console provides analog video from one radar as selected and the Tektronix 4125 console provides symbol data of all aircraft and surface tracks detected. The consoles are on standby should the NTDS system malfunction. Other equipment includes the NTDS computers, radar azimuth converters, radar data distribution switchboards, symbol generators and the various equipment associated with range safety and aircraft/ ship tracking and control.

CLOSED CIRCUIT TELEVISION SYSTEM

A closed circuit television system is used in conjunction with the ground based radars. The television cameras are essential to assure that personnel do not inadvertently stray into hazardous areas. The cameras are also used to display weather information when requested.

SURVEILLANCE USE

The ground based radars and the television cameras are operated continuously any time an operation is conducted on the range. Some radars are used during off hours for monitoring emergencies. The display systems are used continuously whenever the radars are being used. The airborne radars are used any time it is necessary to clear areas outside the range of the ground based radars or if there is a desire to provide overlapping coverage for more potentially dangerous operations.

Section 8

SNI Ordnance and Launching Facilities

GENERAL DESCRIPTION

The Ordnance and Launch facilities on SNI provide a launching capability for a variety of missiles and targets. The facilities are unique because of their location and ability to provide launching of missiles and targets in the outer Sea Test Range considered too hazardous for testing at Point Mugu or any U.S. mainland site.

Launch pad supervisors and launch control officers conduct launch site operations. The ordnance and launch support services and facilities include missile assembly, explosive storage, aircraft loading, and surface launching.

The Ordnance and Launching facilities on SNI are listed in Table 8-1 and the geographic locations of the facilities on SNI are shown in Figure 8-1.

LAUNCH COMPLEX

The Ordnance and Launching facilities on SNI consist of two launch areas, the Alpha Launch Complex and Building 807 Launch Complex. Each is equipped with a dual control system blockhouse used to support different types of missiles.

ALPHA LAUNCH COMPLEX AND BLOCKHOUSE

The Alpha Launch Complex is the second largest launch facility at the NAWCWPNSDIV. It contains blockhouse, Building 189, and a number of launch pads. The main launch pads at this site consist of an upper and a lower launch pad located on a cliff on the West end of the island. The lower launch pad, located at 500 feet, is fitted with a dual arm launcher and is primarily used for launching VANDAL. The upper launch pad, at 550 feet, is

BUILDING	PHYSICAL SIZE	POWER
Magazine 3ACX3 Building 105	25′ x 40′	110V
Magazine 3ACX2 Building 106	25′ x 40′	110V
Magazine 3ACX1 Building 107	10′ x 14′	110V
Ordnance Assembly Building 110 10 ton hoist Swl 7.5 ton	60′ x 32′	AC 440/220/120 DC 28
Ordnance Assembly Building 290 10 ton hoist Swl 7.5 ton	60′ x 32′	AC 440/220/120 DC 28
Blockhouse Building 189	51′ x 57′	60 Hz/3 Phase Power Room AC 440/220/120 DC 28
Upper Launch Pad	40′ x 50′	Cable Huts
Lower Launch Pads	100′ x 100′	AC 440/220/120 DC 28
Blockhouse Building 807	50′ x 20′	60 Hz/3 Phase Power Room
(Has three launch pads located around the bldg.)	(1) 10′ x 2′ (2) 20′ x 20′	AC 440/220/120 DC 28
Disassembled Meteorological Rocket Launch Pad (Southwest of Bldg. 189)	40′ x 50′	
Warehouse Building 108	15′ x 15′	110V
Aircraft Target Assembly Building 190	60′ x 30′	110V

Table 8-1. SNI Launch and Ordnance Facilities

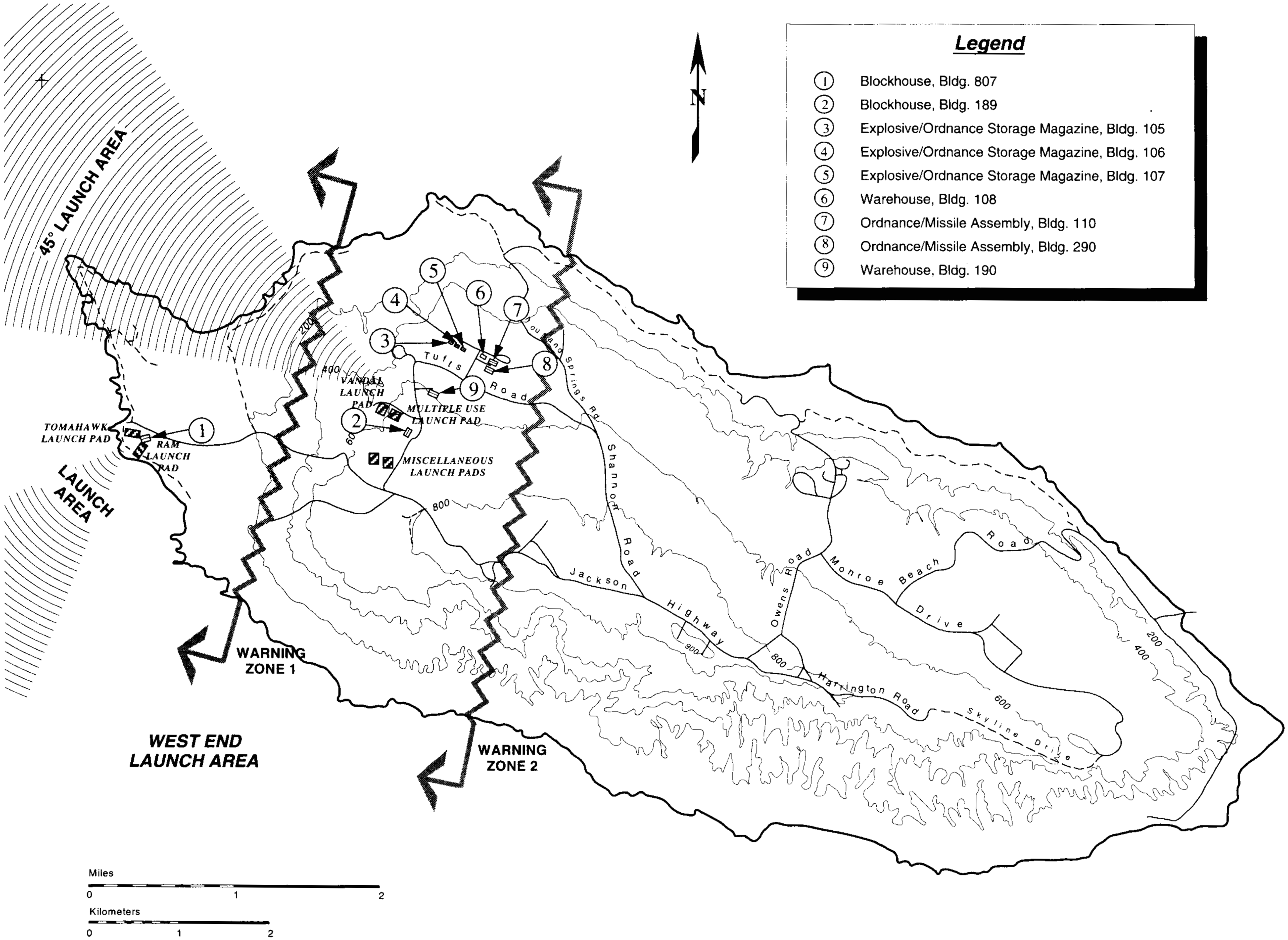
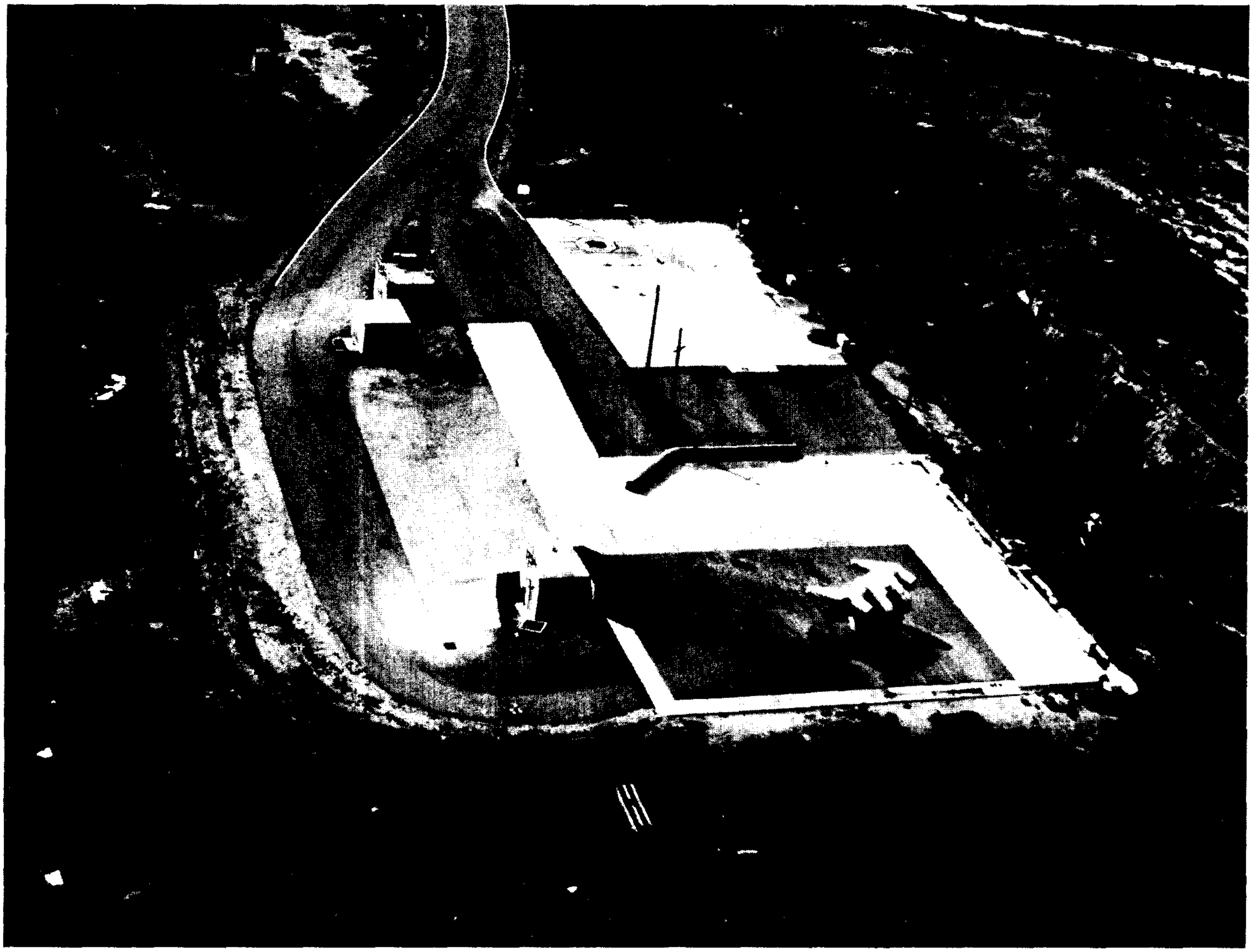


Figure 8-1. SNI Ordnance and Launching Facilities



The Alpha Launch Complex launch pads consist of an upper and a lower pad. The lower pad is fitted with a dual arm launcher and is used primarily for launching VANDAL targets. The upper pad is used for launching missile drone targets.

used for launching BQM-74 C/E target launches. The other three launch pads are unoccupied and are available for installation of range user launch equipment.

Blockhouse 189

Blockhouse 189 is a reinforced concrete buildings approximately 51′ x 57′. Personnel in the Blockhouse is protected by 18″ concrete walls and overhead protection which consists of 5/8″ steel plates covered by 18″ of concrete. Two blast resistant windows provide line-of-site viewing of the launch pads.

Blockhouse 189 has a dual control system configured for firing, timing, video, and communications. Equipment in the building consists of a launch sequencer console, Launch Control Officer console, range talker console, two Drone Control Officer consoles, two TV monitor cabinets and a recorder cabinet. Communications between the launch pads and Range Operations is provided via a common battery telephone system and special telephone trunks. The common batteries are located at the launchers and in the blockhouse.

BUILDING 807 LAUNCH COMPLEX AND BLOCKHOUSE

The Building 807 Launch Complex consists of a blockhouse, Building 807, and three launch pads. It is located at seal level on the far west end of the island. The first sea level launch pad is fitted for testing TOMAHAWK, while the second is used for testing Rolling Airframe Missile (RAM), and the third for testing Special Engineering Test Targets (SETT). Range user's must furnish all launch control or support equipment at this site.

Blockhouse 807

Blockhouse 807 is configured with communication equipment, a telephone system and a launch communication net to the mainland. The blockhouse is used primarily to simulate weapon system testing in a real world marine environment. It is a very unique and valuable asset for the Sea Test Range. A variety of programs use the facility and so it is in high demand all year long.

ORDNANCE/MISSILE ASSEMBLY FACILITIES

Building 110, 290

Two Ordnance Assembly Buildings (OAB) are located on the northern end of the island's main plateau adjacent to the Alpha launch facility. The 32' x 60' buildings are each equipped with seven, one-half ton pneumatic hoists used for missile and bomb assembly. Both buildings have conductive, reinforced concrete floors and walls, frangible roofs, and fire sprinkler systems.

The OABs are used primarily for assembly, disassembly, and checkout of experimental and operational explosives, missiles, targets, and ordnance items. Other functions include mate/load/download from launchers and the modification of rocket and missile systems to accept recording, guidance, or destruct equipment.

The MQM-8G VANDAL missile target is a surface launched, remote controlled, nonrecoverable vehicle. It is one of a family of VANDAL targets designed to realistically simulate the mid-course phase of an attacking anti-ship cruise missile. The Alpha Launch Complex on SNI is a main launch platform for the VANDAL target.

EXPLOSIVES/ORDNANCE STORAGE MAGAZINES

Buildings 105, 106, 107

Ordnance storage facilities consist of three magazines and two ready service lockers (RSLs). The magazines are a special type steel-arch, earth covered and unbarricaded buildings. Two of the magazines are 25′ x 40′ and the other is 10′ x 14′.

The ordnance storage magazines are used for receiving, storing, and/or issue of ordnance materials. Storage items consists of rocket components, ammunition, booster components, live warheads, fuses, pyrotechnics, and plastic explosive.

Explosive devices at SNI are usually identified and transported to safe location by Ordnance personnel. In some cases, the U.S. Navy Explosive Ordnance Disposal (EOD) team is dispatched to remove or destroy the device.

WAREHOUSES

Buildings 108, 190

The warehouses are used for storage of nonexplosive missile and target components. Building 108 is a 15′ x 15′ shed used primarily for parking forklifts. Building 190 is used for target build-up and assembly.

AIR SURFACE TARGET LAUNCHES

The subsonic surface-launched BQM-74C targets are radio-controlled drones used to simulate medium performance aircraft. Surface launches of the target drones are accomplished from the upper pad of the Alpha Launch area on SNI.

Section 9 SNI Telemetry Systems

GENERAL DESCRIPTION

The Telemetry Division on SNI provides ground and airborne stations for real-time reception, recording, processing, and display of standard and non-standard telemetry transmission systems. The telemetry data from real-time operations is received at SNI, recorded on magnetic tape and simultaneously transmitted by microwave via Laguna Peak to Point Mugu where the data is separated, processed, and displayed. A basic flow diagram of the telemetry process is shown below in Figure 9-1.

The capability to record and display "Miss Distance Measurement", (MDM) in the high "L" band and video Doppler data is also available.

The location of the SNI telemetry facilities is ideal for supporting operations throughout the Sea Test Range as well as space launches from the Western Space and Missile Center, Vandenberg. Nearly all major users of the Sea Test Range rely on telemetry support from SNI. A block diagram of the telemetry network as it is integrated within the Sea Test Range is shown in Figure 9-2.

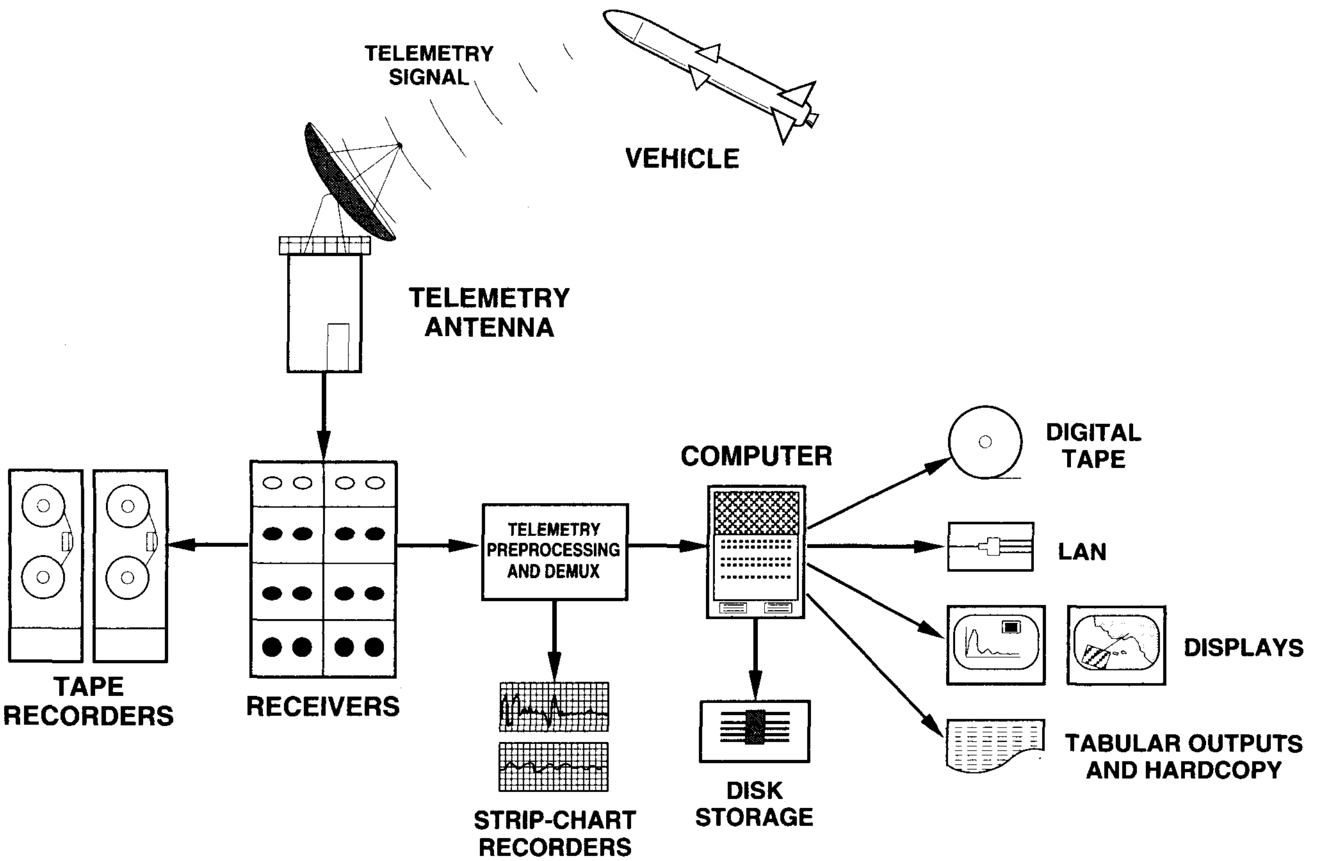


Figure 9-1. Basic Telemetry Process

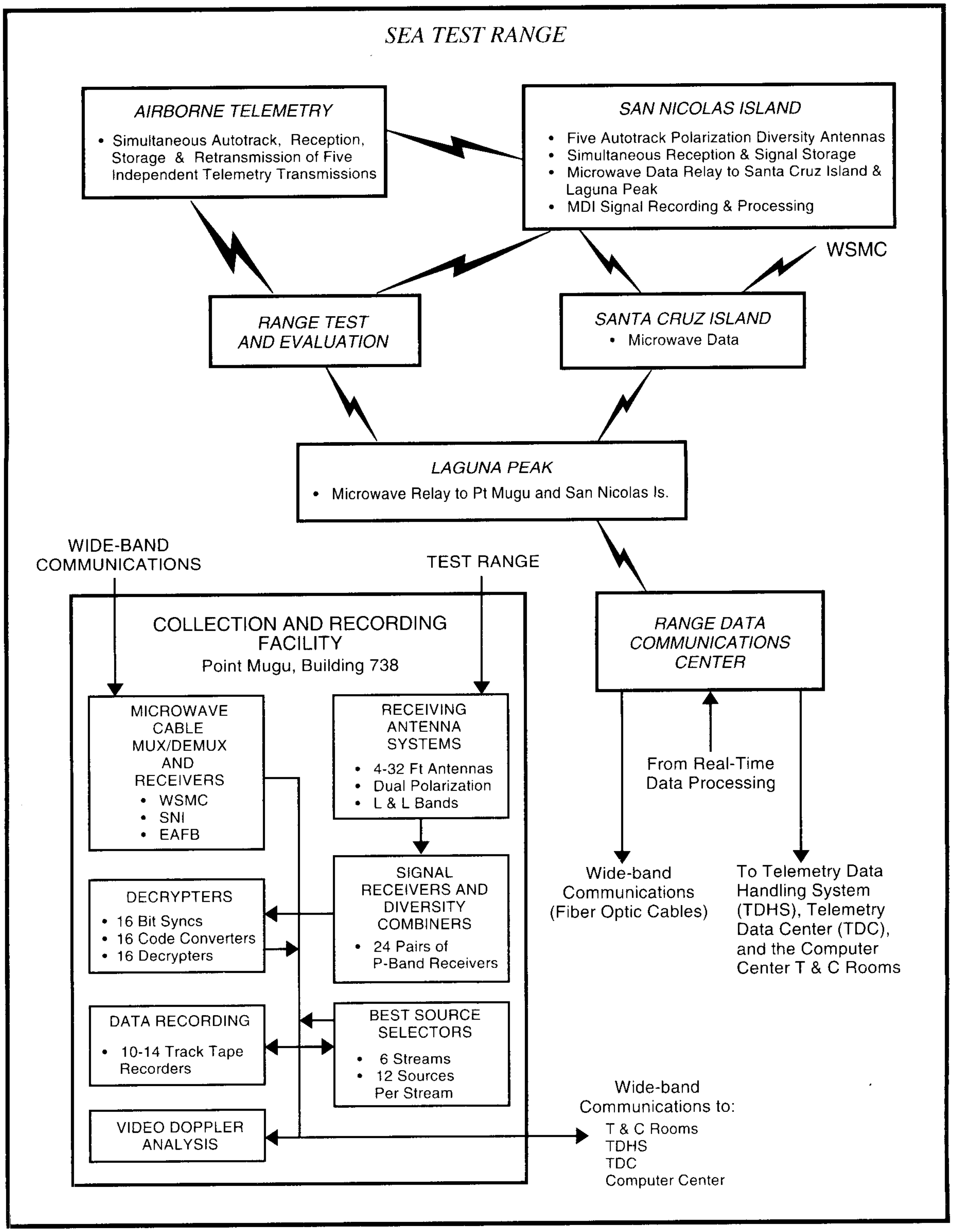


Figure 9-2. Telemetry Network Within the Sea Test Range

The SNI telemetry facilities are located at approximately 800 feet in elevation. The location of the telemetry antennas is excellent for tracking missiles, aircraft and any other vehicles equipped with a telemetry package and tracking system.

TELEMETRY FUNCTIONS

The telemetry system provides the means by which various functions measured aboard a vehicle can be radio transmitted to a range reporting system. This allows the functions to be monitored in real-time and allows for the postflight analysis of the total test operation. Typical functions which are telemetered from the vehicle are thrust, control commands, yaw/pitch/roll rates, seeker track returns, and battery power voltages. With today's sophisticated systems, literally thousands of functions can be monitored aboard a vehicle. The SNI systems can monitor telemetry data rates up to 10 million bits per second from several simultaneous data streams.

SNI Telemetry Functions

The SNI telemetry section supplies information to the Telemetry Branch at Point Mugu for decommutation at the real-time stations. When telemetry is supporting Range Operations, the telemetry signal is received through land-based antennas located at San Nicolas Island. Usually several antennas are scheduled to track a single object to insure data coverage throughout the entire flight profile. After signals are received from these several tracking systems, the "best source" or strongest signal is determined. This is the signal that will be processed for the real-time displays. (After the operation, a final determination of "best source" is made to produce the composite best source telemetry data tape.) The telemetry data stream is then passed through a series of equipment which records it, then separates the various channels of data, processes that data into various functions, and then displays it. Table 9-1 and Figure 9-3 show a flow diagram and the specifications of the basic telemetry equipment.

TRANSMISSION AND PROCESSING

The telemetry signals which originate from the participant platforms are transmitted to either the telemetry building on San Nicolas Island or to the telemetry Building 738 at Point Mugu depending on which is within range of the platform. Signals received at SNI, are bulk encrypted for microwave transmission to Building 738 via Point Mugu Range Communications Building 531. This encryption for transmission only (EFTO) is in addition to any encryption provided by the source. The SNI telemetry site does not have decryption capability but records, as a backup source, the telemetry data.

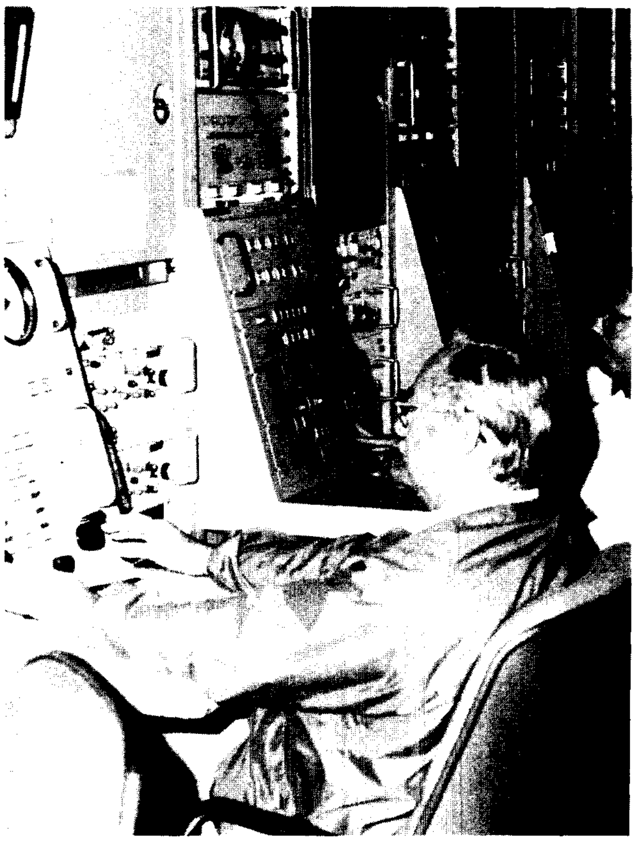
All data transmission is controlled via switches in Building 531 which are set up in accordance with a specific operation communication plan. Once an operation has been approved and initiated, the various steps in the communication plan are followed on cue from the operation conductor. No changes to the communication plan are permitted unless approved by the operation conductor.

TELEMETRY DATA DISPLAY

Data is typically displayed on pen and oscillograph strip charts and CRT displays located at Point Mugu. For test support involving classified telemetry, the data is encrypted at its source and it is passed through the system to be decrypted prior to processing and display.

SNI TELEMETRY STATIONS

SNI telemetry system includes four receiver/recording stations that are installed in Building 182. A remote tracking antenna and a receiver/record/display van are on the West - Southwest end of the Island. Two SKR-1 antenna systems which overlook an impact area, and the ship motion simulator are also located on the Southwest end. In this section the SNI telemetry hardware systems and capabilities are described and outlined.



Usually several antennas are scheduled to track a single object. Typical functions which are telemetered from the object are thrust, yaw, pitch, roll rates, seeker track returns, and more.

Equipment Nomenclature	Specifications	Location		
		Building 182	Remote TM Van	SKR-1 Site
Multicoupler 1129, Symetrics Industries, Inc.	Input: 1 Output: 8 Gain: Unity Noise Figure: 6 dB	Located at each Antenna Site. Part of each Antenna System.		
Data Receiver 1200MRA (Dual-Channel), Microdyne	Freq Range: 215 MHz-320 MHz Video B/W: 12 kHz-8.5 MHz IF B/W: 500 kHz-10 MHz Pre-detection: Single Channel or Combined - Output Freq: 900 kHz, 600 kHz, 450 kHz, 225 kHz, 112.5 kHz	24		6
Data Receiver TR-109B (Dual-Channel), Defense Electronics, Inc.	Freq Range: 215 MHz-320 MHz Video B/W: 12.5 kHz-1.5 kHz IF B/W: 100 kHz-3.3 MHz Pre-detection: Single Channel or Combined - Output Freq: 450 kHz, 600 kHz, 900 kHz, 1.2 MHz, 1.8 MHz, 2.4 MHz	8	6	
Data Insertion Converter DIC-1B, Defense Electronics, Inc.	Input: 15 VCO Channels 3 Direct Channels Output: 3 Composite Outputs	4	1	1
Magnetic Tape Recorder FR-1900, Ampex	7 Tracks, Analog Tape Speeds: 15/16, 1 7/8, 3 3/4, 7 1/2, 15, 30, 60, 120 ips Freq Response: 400 Hz-1.5 MHz	4	2	
Magnetic Tape Recorder Sabre-10, Sangamo	14 Tracks, Analog Tape Speeds: 3 3/4, 7 1/2, 15, 30, 60, 120, 240 ips Freq Response: 300 Hz-4.0 MHz	6		
PBW Discriminator 287, Electro-Mechanical Research, Inc.	Band Pass Filters and Low Pass Filters are available for IRIG Subcarrier Channels 1-21, A-H	6	18	
PBW Discriminator 4140, Electro Mechanical Research PBW Discriminator 4142, Electro Mechanical Research	Tunable select frequency Tunable to 1 1/2 MHz	3 10		

Table 9-1. Telemetry System Equipment Summary Table 1 of 2

Equipment Nomenclature	Specifications	Location		
		Building 182	Remote TM Van	SKR-1 Site
PBW Discriminator GFD-3 Data Control System	Band Pass Filters and Low Pass Filters are available for IRIG Subcarrier Channels 1-20, A-H	18		
PAM/PDM Decommutator AN/UK03 (XN-1) (V), Defense Electronics, Inc.	Rates Fixed Frame Length: 130 Channels Analog Data Output: 30 Channels	2		
PAM/PDM Decommutator AN/UK03 (XN-1) (V), Defense Electronics, Inc.	Rates Fixed Frame Length: 130 Channels Analog Data Output: 20 Channels		2	
PCM Demodulator 1501, Monitor Systems, Inc.	Codes: NRZ-L, M, and S RZ Bi-Phase L, M, and S Bit Rates: Up to 1.5×10^6 b/s Word Length: 512 Words Subframe Length: 128 Frames Maximum Subframes: 3 Digital-to-Analog Converters: 40 Digital Event Markers: 20	1	1	
PCM Demodulator Electro Mechanical Research	Digital-to-Analog Converters: 1 Digital Event Markers: 8	1		
Oscillograph Recorder 5-133, Consolidated Electrodynamic Corp.	Input: 18 Channels Chart Speeds: .1, .4, .8, 1, 1.6, 4, 8, 10, 16, 40, 80, 160 IPS	2		
Oscillograph Recorder 1912, Honeywell	Input: 18 Channels Chart Speeds: .1, .2, .4, .8, 1, 1.6, 2, 4, 8, 10, 16, 20, 40, 80, 160 IPS	2		
Thermal Array Recorder Astro-Med	Input: 8 Channels Chart Speeds: 1, 2.5, 5, 10, 25, 50, 100 IPS Freq Response: DC to 5 kHz	4		

Table 9-1. Telemetry System Equipment Summary Table 2 of 2

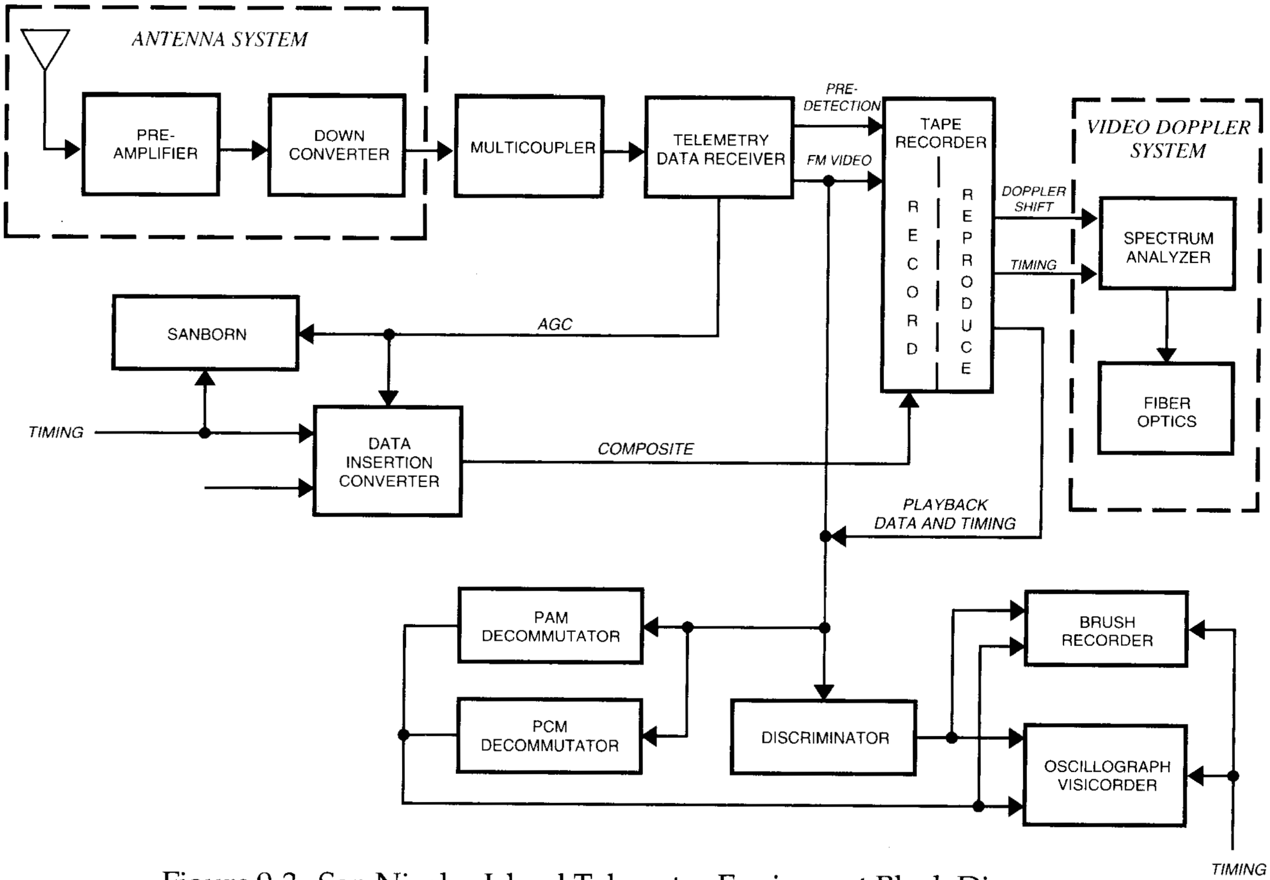


Figure 9-3. San Nicolas Island Telemetry Equipment Block Diagram

TELEMETRY ANTENNA STATIONS

General

The antennas located on SNI are used to track missiles, aircraft and any other vehicles equipped with a telemetry package and a missile tracking system. A general specification table with the SNI telemetry antennas is shown in Table 9-2.

ANTENNA STATIONS - BUILDING 182

The antennas located near Building 182 include the following:

- Two GKR-8A 30 feet
- One GKR-12 30 feet
- One GKR-9 7 feet
- One GKR-9A 8 feet

The two GKR-8A antennas and the one GKR-12 monopulse antenna are medium gain parabolic antennas. The GKR-9, and the GKR-9A are low gain parabolic antennas. All the antennas employ conical scan feeds with either linear or simultaneous right and left hand circular polarized reception in the "Low L", "High L", "P", and "S" bands.

Antenna	Specifications	Location		
		Building 182	Remote TM Van	SKR-1 Site
Antenna GKR-8A, Symetrics industries, Inc.	Gain: "S" Band 40 dB "HL" Band 38 dB "L" Band 38 dB Dish: 30 feet Parabolic Auto Track: All Bands Polarization: Circular Gain/Temp: 18°K/dB	1 017B01		
	Gain: "S" Band 40 dB "HL" Band 38 dB "L" Band 38 dB Dish: 30 feet Parabolic Auto Track: All Bands Polarization: Circular Gain/Temp: 18°K/dB	1 017B03		
Antenna GKR-12, Symetrics industries, Inc.	Gain: "S" Band 40 dB "HL" Band 38 dB "L" Band 38 dB Dish: 30 feet Parabolic Auto Track: All Bands Polarization: Circular Gain/Temp: 18°K/dB	1 017B02		
Antenna GKR-9, Symetrics industries, Inc.	Gain: "S" Band 30 dB "HL" Band 26 dB "L" Band 26 dB "P" Band 12 dB Dish: 7 feet Parabolic Auto Track: "L" and "S" Bands Polarization: Circular Gain/Temp: 0°K/dB	1 017C01		
Antenna GKR-9A, Symetrics industries, Inc.	Gain: "S" Band 30 dB "HL" Band 28 dB "L" Band 28 dB "P" Band 12 dB Dish: 8 feet Parabolic Auto Track: "L" and "S" Bands Polarization: Circular Gain/Temp: 0°K/dB	1 017C02	1 017E03	

Table 9-2. Telemetry Antenna Specification Table 1 of 2

Antenna	Specifications	Location		
		Building 182	Remote TM Van	SKR-1 Site
Antenna SKR-1, Symetrics Industries, Inc.	Gain: "HL" Band 35 dB "S" Band 38.5 dB "L" Band 35 dB Dish: 20 feet Parabolic Auto Track: "HL", "L" and "S" Bands Polarization: Circular Gain/Temp: 14°K/dB			2 01GF01 and 01GF02

Table 9-2. Telemetry Antenna Specification Table 2 of 2

The antenna systems house duplexers, preamplifiers, down converters, the servo drive velocity loop electronics, and associated drive components. The antenna control consoles, tracking receivers, and servo position loop electronics are located within Building 182.

The maximum tracking rate of the larger dished antennas on SNI is fifteen degrees per second. The approximate beamwidths of these antennas are:

"L" Band: 1.5°
"S" Band: 1°

The maximum tracking rate of the smaller dished antennas is 20 degrees per second. The approximate beamwidths of these smaller antennas are:

"P" Band: 50°
"L" Band: 7°
"S" Band: 5°

The smaller antennas are not rated for automatic tracking in the P-Band due to relatively broad beamwidths at the lower frequencies.

ANTENNA STATION - REMOTE TM VAN

The telemetry van, near Site 165, is on a small site on the west-end of the Island which supports the missile launches and fleet operations. The van site is designed to support programs when low altitude coverage below 500 feet is needed or when targets are launched from the lower launch pad.

The remote telemetry van houses one GKR-9A, eight foot antenna mounted on a 25' tower. The autotrack antenna is capable of tracking "L" and "S" bands and can receive "P" band while tracking manually. The specifications of the antenna are the same as the GKR-9A in Building 182.

ANTENNA STATION - SKR-1

Two SKR-1, 20-foot diameter telemetry antennas are installed on Building 322 and 323 on a bluff overlooking the West - Southwest end of SNI. These parabolic antennas will support operations in the impact area and special operations as required. The two mid gain antennas can receive all frequencies within the beamwidth of the "L" and "S" bands.

All received frequencies are relayed to Building 182 via the fiber optic cable system where they are recorded or retransmitted to Point Mugu via Microwave. A block diagram of the fiber optics cable system as it is integrated into the telemetry transmission is shown in Figure 9-4.

The maximum tracking rate of the SKR-1 antenna is 25 degrees per second. The beamwidths are:

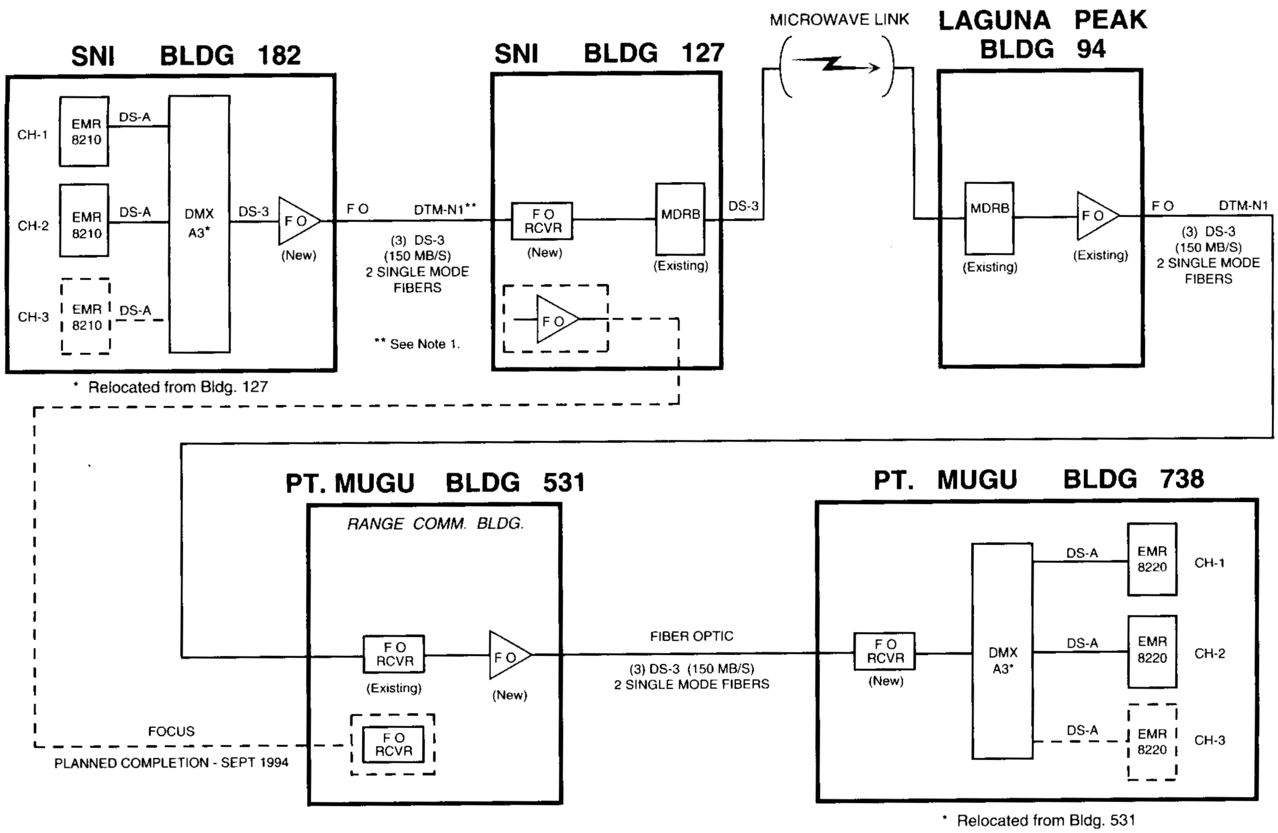
"S" Band: 1.3°
"L" Band: 2.0°

RECEIVE AND RECORD STATIONS

General

The antenna outputs are connected to an RF patch panel where they may be patched to multicouplers and receiver inputs. The outputs may be patched to any one, or a combination of antennas.

The 24 dual-channel receivers, in a configuration of integrated units, accept RF signals from the antenna or multicoupler systems, or previously



NOTES:

1. Combine present DTM-N1 and DTM-N2.

F O = Fiber Optic Driver

F O RCVR = Fiber Optic Receiver

KEY:

DS-A 12.928 MB/S
DS-3 44.736 MB/S
DTM -- Digital Telemetry
DMX A3 -- Digital Multiplexer
F O -- Fiber Optic
MDRS -- Microwave Digital Radio
FOCUS -- Fiber Optic Communications Underwater System

Figure 9-4. Telemetry Data Transmission Path recorded pre-detection signals from tape recorders. The receivers provide pre-detection and post-detection output signals for analog tape recorders and the separation and display stations. Pre-detection signals recorded on analog tape units are played back after an operation, processed by the playback units, and used to produce the original video signals for data analysis. The SNI Receiving Station Block Diagram is shown below in Figure 9-5.

RECEIVE AND RECORD STATIONS - BUILDING 182

Building 182 contains four receiving stations. Each station is equipped with six Microdyne 1200-MRA programmable telemetry receivers and six Microdyne 3200 pre-detection and post-detection, PCA Programmable Converters. Any of ten analog recorders may be configured to record data from the receiver stations.

Two MDM extraction systems are available at each station and have the capability of multiplexing all four outputs of one system on a single track of a tape recorder.

The input of any or all of these receivers may be connected to any of the antennas listed previously via a local patch panel.

RECEIVE AND RECORD STATION - REMOTE TM VAN

The telemetry van has one receiving station with six Defense Electronics, TR-109B dual channel receivers and two analog recorders that support the GKR-9A antenna.

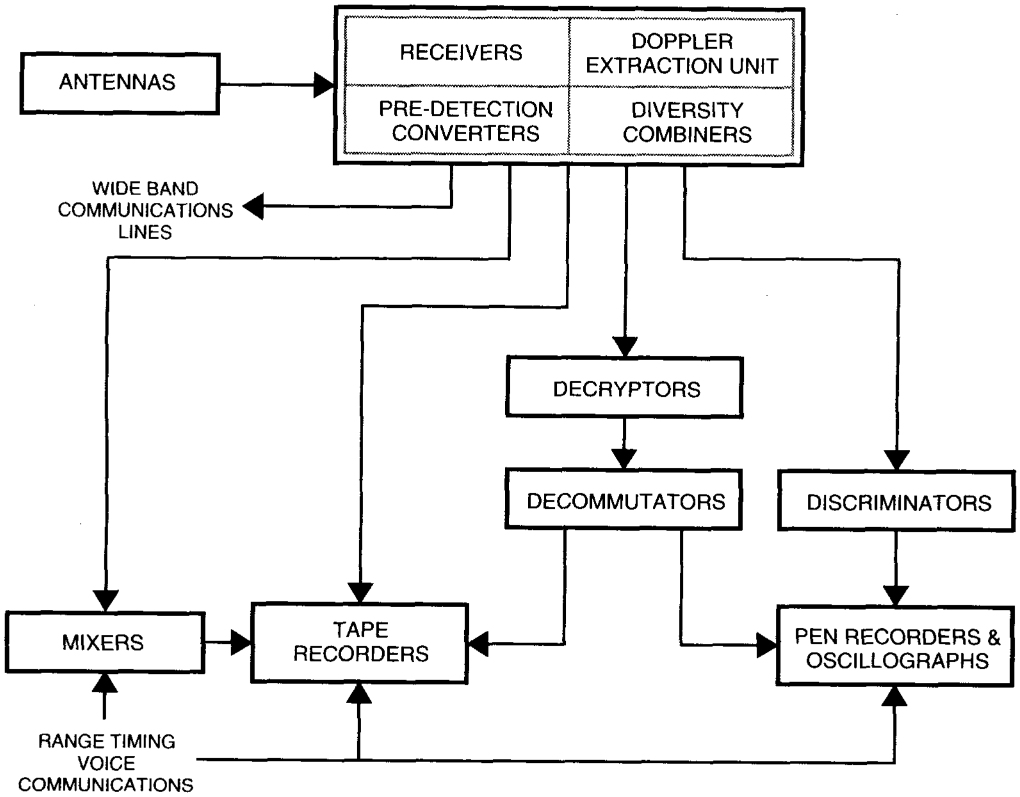


Figure 9-5. San Nicolas Island Receiving Station Block Diagram

The van also has two miss distance measurement extraction systems at the receiver station.

RECEIVE AND RECORD STATION - SKR-1

One receive and record station supports the SKR-1 antenna. The receiving station has six Microdyne 1200-MRA programmable telemetry receivers and six Microdyne 3200 pre-detection and post-detection, PCA Programmable Converters.

MAGNETIC TAPE RECORDERS

General

Telemetry signals received at San Nicolas Island are simultaneously recorded during microwave transmission. Eight wideband microwave channels transmit data to Building 738 from either Building 182 or the van. Up to four channels may originate from the van and up to eight channels from Building 182.

Data insertion converters provide a means for recording several channels of low frequency data signals on a single track of the magnetic tape recorder. A maximum of 15 signals may be used to modulate voltage controlled oscillators whose outputs are mixed and recorded on one track. Reference signals are recorded for tape speed compensation during playback. A data retrieval converter permits a recovery of timing and voice signals from the multiple output of the tape recorder. The tape recorder/reproducer units may be operated from 400 Hz to 1.5 MHz in the direct mode and DC to 900 kHz in the FM mode. These units may be employed for post-detection and pre-detection recording/reproducing of pulse code modulation (PCM), pulse amplitude modulation (PAM), pulse Doppler modulation (PDM), frequency modulation (FM) multiples, time code, communications modes, and video developed signals.

MAGNETIC TAPE RECORDER STATIONS - BUILDING 182

There are 10 wide band recorders, four of which are seven track Ampex FR-1900's utilizing one-half inch tape and operating up to 120 inches per second. The remaining six, manufactured by Sangamo Western, Sabre 10, are 14-track and have tape speeds up to 240 inches per second on one inch tape. All recorders may be run concurrently or sequentially and data may be patched to any recorder from any receiver station via video patch bay.

MAGNETIC TAPE RECORDER STATIONS - REMOTE TM VAN

The remote telemetry van has one Defense Electronics data insertion converter which provides a means for recording data on two Ampex analog magnetic tape recorders with seven tracks each.

MAGNETIC TAPE RECORDER STATIONS - SKR-1

One Defense Electronics data insertion converter is at the SKR-1 antenna site.

SEPARATION AND RECORDING

General

The discriminator units receive the frequency-multiplexed composite signal from a telemetry receiver or a magnetic tape recorder/reproducer. This composite signal contains up to 18 IRIG subcarrier frequencies. The signals are discriminated by frequency and are available at a patch panel for distribution to decommutation or display units.

Two PAM/PDM decommutator systems are capable of decoding PAM return-to-zero (RZ), PDM or PAM non-return-to-zero (NRZ) data from either the FM section, an external magnetic tape recorder/reproducer, or the PAM/PDM simulator with thirty outputs per system. Many standard rates are available and non-standard rates can be utilized with short lead time notification.

The PCM separation system is capable of decoding and displaying PCM telemetry data and produces any PCM configuration or format in seven primary codes. The simulator provides dynamic testing for the PCM system. The decommutator units are designed to receive input signals from either the bit error rate simulator and external magnetic tape recorder/reproducer or the FM subcarrier discriminator section.

The bit rates may vary from 0.8 to 1,200,000 bits per second for non-return-to-zero space (NRZ-S) and non-return-to-zero mark (NRZ-M) codes, and from 1 to 600,000 bits per second for return-to-zero, bi-phase-space (BIØ-S) and bi-phase-mark (BIØ-M) codes. The word, frame, and subframe synchronization patterns are identified, and selected channels are outputted for display in analog, decimal and binary form.

SEPARATION AND RECORDING - BUILDING 182

There is one separation and recording station located in Building 182. The station contains one PCM decommutator and four strip chart recorders.

The PCM decommutator, manufactured by Monitor, has 40 digital to analog converters, (DACs) and 20 discrete digital event markers, (DEMs) outputs and accommodates an input of PCM streams and PAM streams.

Two PAM/PDM decommutators by DEI each have 30 gates for decoding data.

SEPARATION AND RECORDING - REMOTE TM VAN

The van has one EMR, model 4140, tunable frequency FM demodulator with tunable band pass filters for the IRIG proportional bandwidth (PBW). There are also 18 EMR, model 287, fixed frequency FM discriminators with two band pass filters for IRIG constant bandwidth (CBW) 1 through 21 and A through H.

One PCM decommutator, manufactured by Monitor, with 40 analog DACs and 20 discrete DEMs outputs will accommodate an input of PCM streams and PAM streams. The system decommutates all standard formats and bit rates including sub-frames.

Two DEI PAM/PDM decommutators, with 20 gates, have a frame length of 130 channels.

RECORDING AND DISPLAY

General

For display, there are four, eight-channel recorders with IRIG "H" timing markers.

Two CEC direct write oscillographs with up to 18 galvanometers in each, have various frequency responses up to 3000 Hz. The oscillographs are each capable of recording 18 channels.

There are two 8-channel direct-writing stylus recorder units. These are high precision systems which incorporate a vertical oscillograph with a closed-loop pen position feedback and direct-coupled amplifying system. The oscillograph and stylus recorders may be used for quick look data during missions as well as a permanent data record. Provisions to incorporate pre- and post-operation calibrations on the recorder data records are available.

RECORDING AND DISPLAY - BUILDING 182

Building 182 houses four oscillographs each capable of recording up to 18 channels. Two of the oscillographs are CEC model 5-133 chart recorders and two are Honeywell, model 1912, direct-write recorders.

Four Astro-Med thermal array recorders in Building 182 are heat-type with no stylus and a speed integer from 1-100 inch/mm/second. The recorders create heat on paper.

RECORDING AND DISPLAY - REMOTE TM VAN

The recorders at the van are no longer operable.

UHF MISS DISTANCE MEASUREMENT (DRQ-4) SNI

General

The UHF Miss Distance Measurements, (MDM) system at SNI is collocated in the SNI Telemetry facility, Building 182. The system utilizes various basic telemetry equipment to collect, process and record its data. The system is used to score results of a missile attack against a drone target. The score is an expression of the closest approach from the attacking missile to the target. A simplified block diagram of the MDM system is shown below in Figure 9-6.

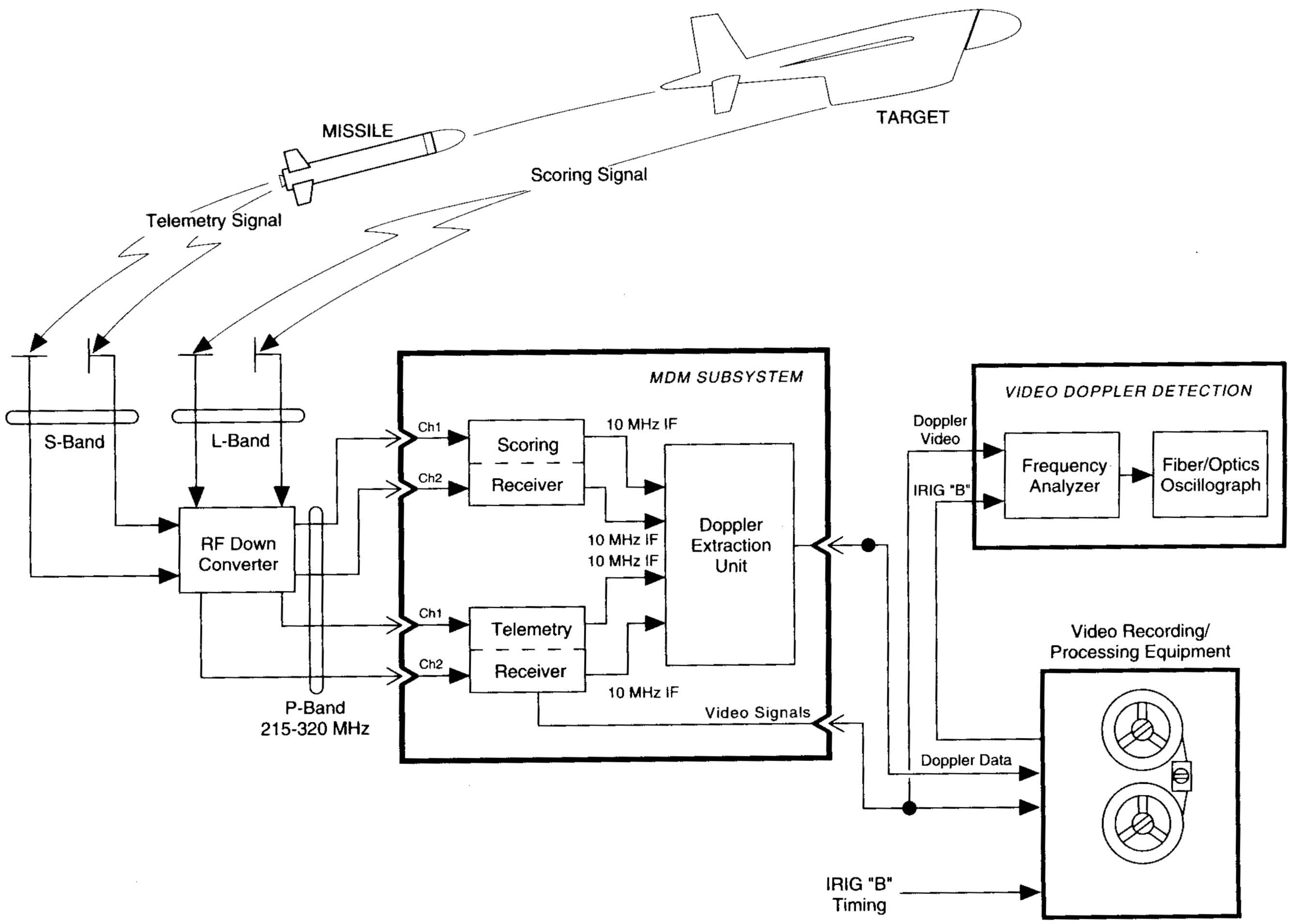


Figure 9-6. SNI MDM System Block Diagram

SCORING

The MDM system uses the Doppler scoring effect to develop its measure of closest approach. The system is an active system as a radiating source in the missile and a transponder in the target is required. The radiating source in the missile is the received "S" band telemetry transmitter. An "L" band signal is transmitted from the target whose frequency is shifted as a function of the "S" band signal strength. The Doppler difference in the received "S" and "L" band frequencies as the missile approaches and passes the target is the measure of closest approach.

MDM SUBSYSTEM

The UHF MDM facility has the capability to provide cooperative Doppler Miss Distance Measuring at selected Naval Air Warfare Center sites. The telemetry and scoring UHF signals are down-converted at the antenna system into a VHF band compatible with the receiver. The 10 MHz outputs from the receivers are routed to the Doppler extraction unit where they are processed to provide miss distance data for each polarization combination. (124 kHz Doppler outputs are provided for recording and/or demodulated real-time Separation and Display systems.)

Several major pieces of equipment in the telemetry and associated video Doppler detection system are used with the MDM receiving equipment to complete the MDM system. Some of this equipment is shown below in Table 9-3. Because of the close inter-relationship with the telemetry equipment, the MDM receiving equipment is installed in the telemetry building at SNI.

MODEL	MANUFACTURER	SPECIFICATIONS	QUANTITY
Multicoupler MDP-1134	MU-DEL Electronics, Inc.	Freq. 110-340 MHz Gain 2 dB	4
Fiber-optics Oscillograph Model 1806A	Honeywell	Speeds: .25, .5, 1, 2.5, 5, 10, 25, 50 100, 250 cm/sec.	2
Data Multiplexer DMU-101	EON Instrumentation	Freq. 74 kHz to 174 kHz output .35 vrms to 3.5 vrms level, number of output 4 ea.	10
Data Demultiplexer DD4-101	EON Instrumentation	(same as item 3)	4
Doppler Extractor Unit DEU-2	DEI	Output 124 kHz	6

Table 9-3. MDM System Equipment

UHF MDM RECEIVING PROCESS

The UHF MDM receiving equipment is a configuration of integrated units to receive the "L" and "S" Band signals with the telemetry antenna system. These signals are conditional for magnetic tape recording of the video signal or for real-time discrimination and recording of the miss distance. The receiver is designed for the MDM application and includes a built-in discriminator unit to operate with specific "S" and "L" band frequencies after down converting.

UHF MDM analog data can be displayed at Building 182 or the van and miss distance can be figured from the direct write oscillograph read out. The receivers designated for Miss Distance Measurements are part of the regulatory telemetry receivers in the basic stations and are patchable to the basic telemetry station antennas. The output MDM data is patchable to the basic telemetry station tapes and oscillograph recorders.

The resulting graphs from an oscillograph record of the discriminator output will show a gradual rate of change on a more distant miss, and a rapid rate of change on a near miss. In addition to the real-time record, the MDM receiver demodulated subcarrier frequency can be recorded on magnetic tape for playback through the discriminator and recording on the oscillograph.

Section 10 Metric Radar Systems

GENERAL DESCRIPTION

A radar works on the principle of transmitting a high-powered radio frequency signal from an antenna. When this signal reaches a target, a portion of the signal bounces back or returns from the object to the radar antenna. This return is received by the radar antenna. The radar's electronics then determine which direction the signal has come from and the length of return time. From this data the position of the object can be determined. This operating concept of a radar is shown in Figure 10-1.

For a precision metric radar, the signal sent out is very narrow and powerful and is intended to hit one object. If the object is hit by the signal, the return is very accurately measured. This permits the very accurate determination of the object's position, e.g., within 100 feet even though the object may be 100 miles away. Usually, to insure that the return signal is strong, an instrumentation package called a beacon or transponder is installed on the object. This beacon listens for the radar signal and then transmits its own signal back to the radar. Using this approach, accurate track can be accomplished over hundreds and even thousands of miles.

SNI RADAR SYSTEMS

The SNI metric radar system is composed of three, operational C-band automatic tracking radars. The radars provide precision tracking data in digital, synchro and potentiometer form for aircraft, ships, small target boats, and missiles of all types within the NAWCWPNSDIV Sea Test Range. The three metric radars collocated on SNI consist of two AN/FPS-16's and one Super "16". The general specifications of the radars are listed by site number in Table 10-1.

The metric systems are high-accuracy (angular accuracies of 0.1 milliradian), C-band (5.4 to 5.9 GHz), monopulse radars. They provide tracking of cooperative and noncooperative vehicles within line-of-sight from a range of 4,000 nautical miles to 32,000 nautical miles depending on the antenna size. One radar system, a "Super 16", has a high precision range Doppler capability with a three megawatt transmitter and a 32,000 nautical mile range. The other basic radars have 1-megawatt tunable transmitters and 12-foot parabolic antennas and track up to 4,000 nautical miles.

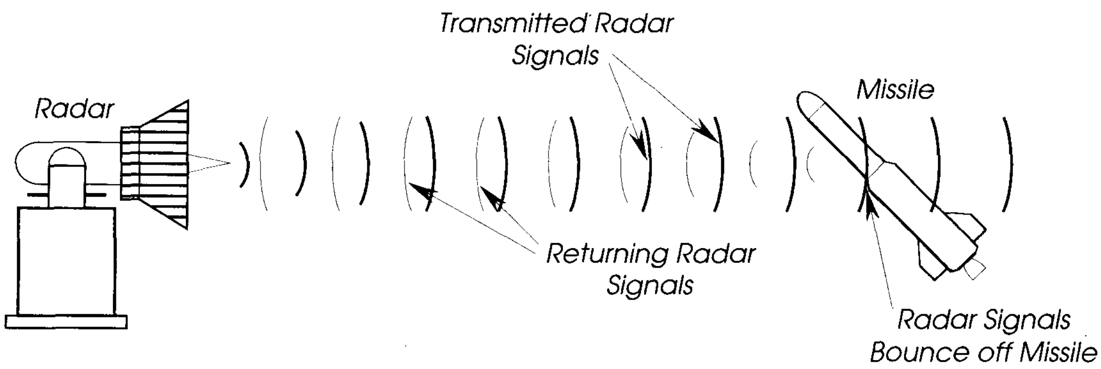


Figure 10-1. Operating Concept of a Radar

Instrument No.	013002	013003	013004
Type	AN/FPS-16 (62)	AN/FPS-16 (63)	AN/FPS-16 (64)
Building No.	171	169	167
Serial No.	7	13	15
Antenna Size	12-ft diameter	16-ft diameter	12-ft diameter
Range Unit	4000 NM	32000 NM	4000 NM
Antenna Gain	43 dB over Isotropic	46 dB over Isotropic	43 dB over Isotropic
Power Peak	1 MW	3 MW	1 MW
Frequency	5450-5850 MHz (tunable)	5450-5850 MHz (tunable)	5450-5850 MHz (tunable)
Pulsewidth	0.25, 0.5, 1.0 μsec	0.25, 0.5, 1.0, 2.5 μsec	0.25, 0.5, 1.0 μsec
Beamwidth	1.2 deg	0.8 deg	1.2 deg
Pulse Repetition Frequency	160, 320, 640 pps	160, 320, 640 pps	160, 320, 640 pps

Table 10-1. San Nicolas Island Radars Reference Table

The radars track in either skin or beacon modes using two-pulse coding and manual phasing control and provide spherical coordinate position data (range, azimuth, and elevation) in real-time. A diagram of the data flow collected by radars 62, 63, and 64 is shown in Figure 10-2 and Figure 10-3. The nominal skin echo tracking capability is 112 miles on a one square meter target. (Cameras are available to provide film records of target tracking characteristics.)

The tracking radars use 81.96427 kHz as a timing standard to synchronize the Range Sub-Systems. Tracking data from SNI radars are transmitted, via microwave, to the Real-time Computer Center (RTCC), Point Mugu, for real-time processing, display and recording. This SNI tracking data network is shown in a block diagram in Figure 10-4.

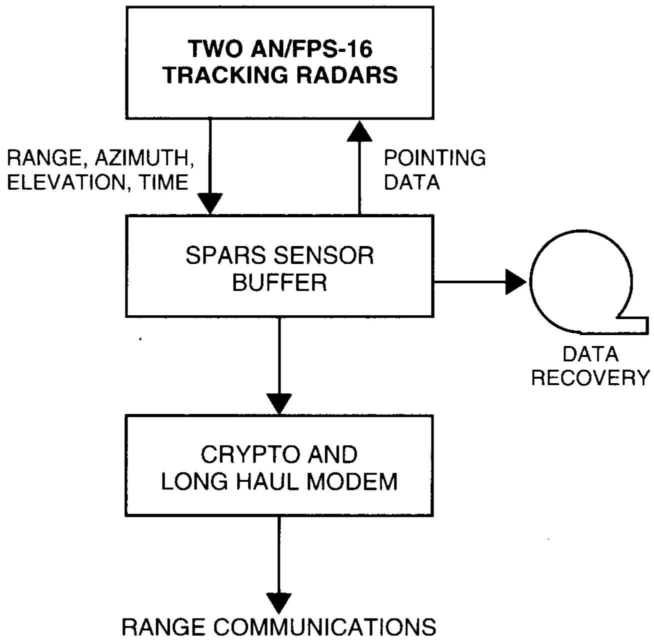


Figure 10-2. San Nicolas Island Radars 62 and 64 Data Flow

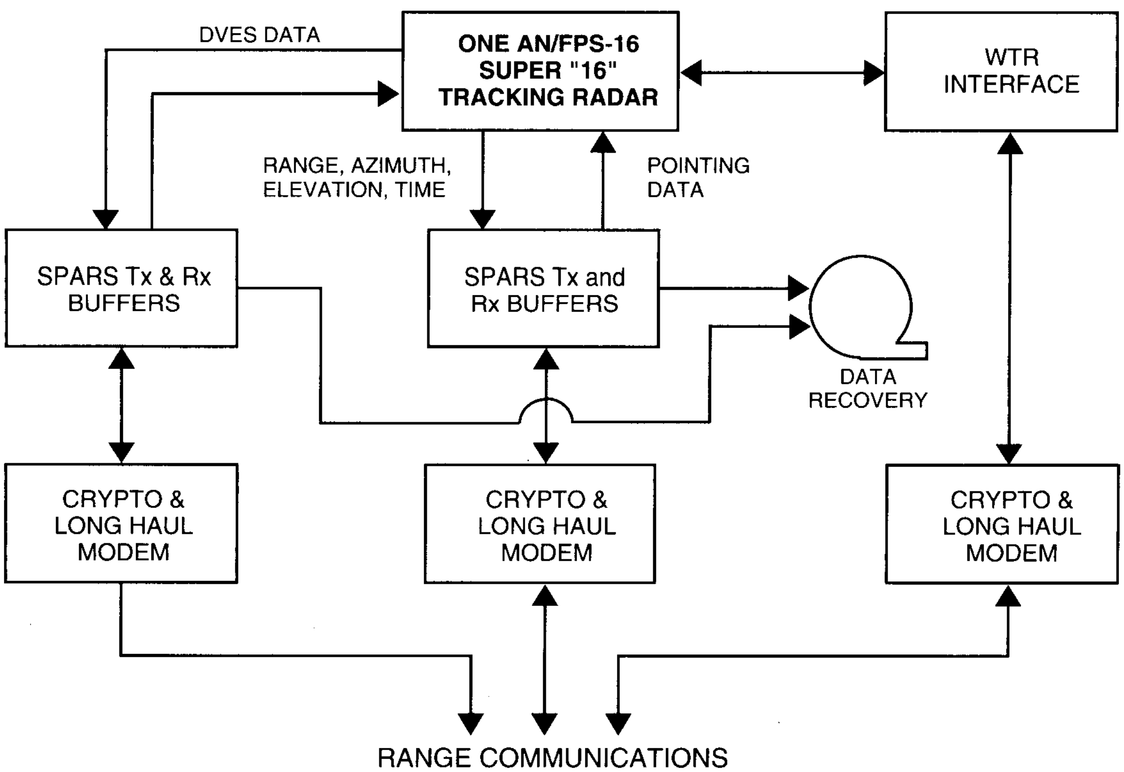


Figure 10-3. San Nicolas Island Radars 63 Data Flow

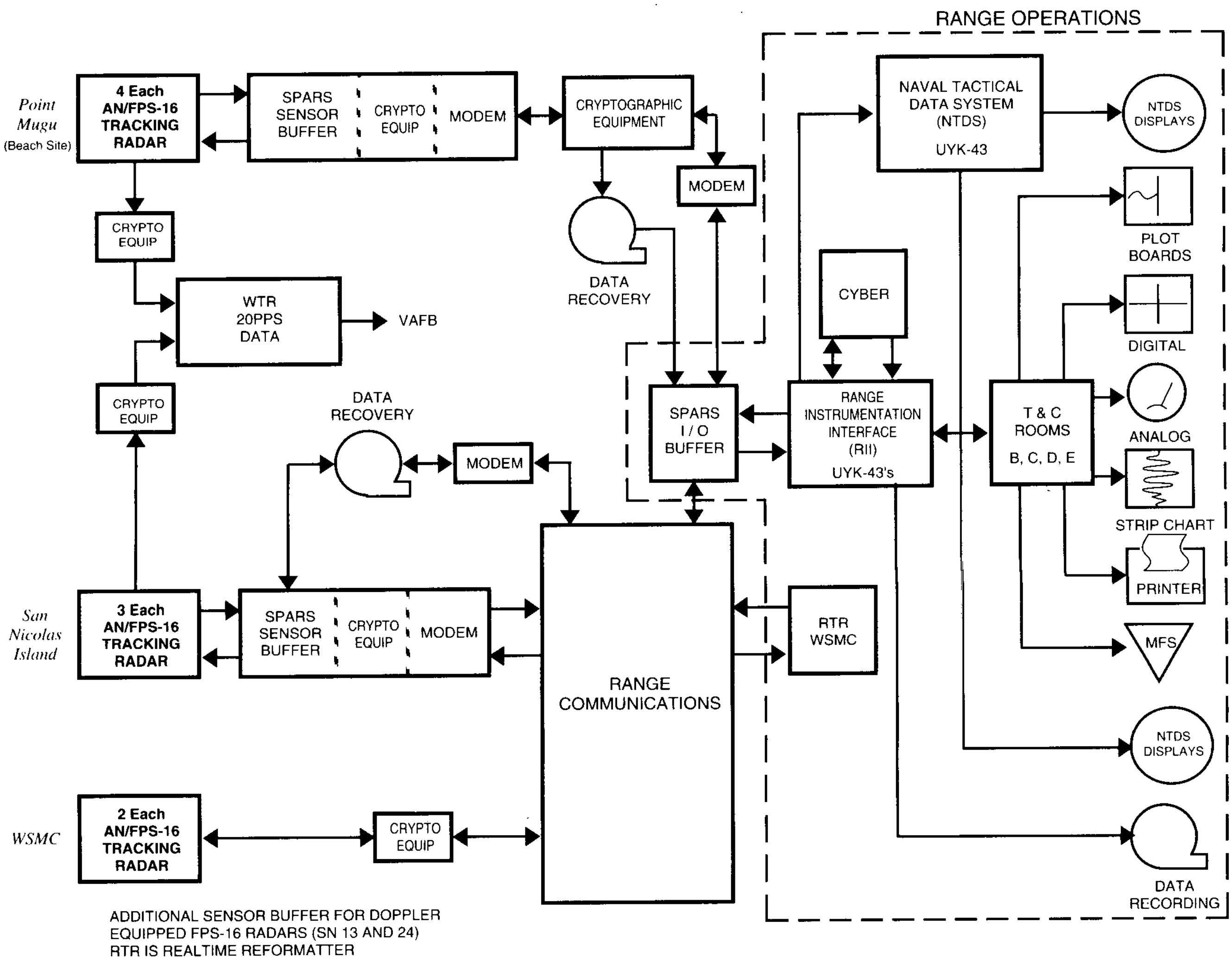


Figure 10-4. SNI Tracking Radar Network Block Diagram

AN/FPS-16 METRIC RADAR
(Serial Number 7 and 15)

Two of the AN/FPS-16(V) radars, (radars 62 and 64) are C-band, high-accuracy, long-range, monopulse tracking radars. They are capable of manual or automatic acquisition and tracking of objects in flight or orbit. The operator can select single pulse output for target echo (skin) tracking or a coded pulse group for beacon tracking. A block diagram of the AN/FPS-16(V) radar is shown in Figure 10-5. Each radar system consists of the antenna, a video sensor, a video system, the pedestal, an electronics equipment and maintenance building, an emergency power generator and a boresight tower. Table 10-2 lists general specifications of all the AN/FPS-16 radars including the "Super 16".

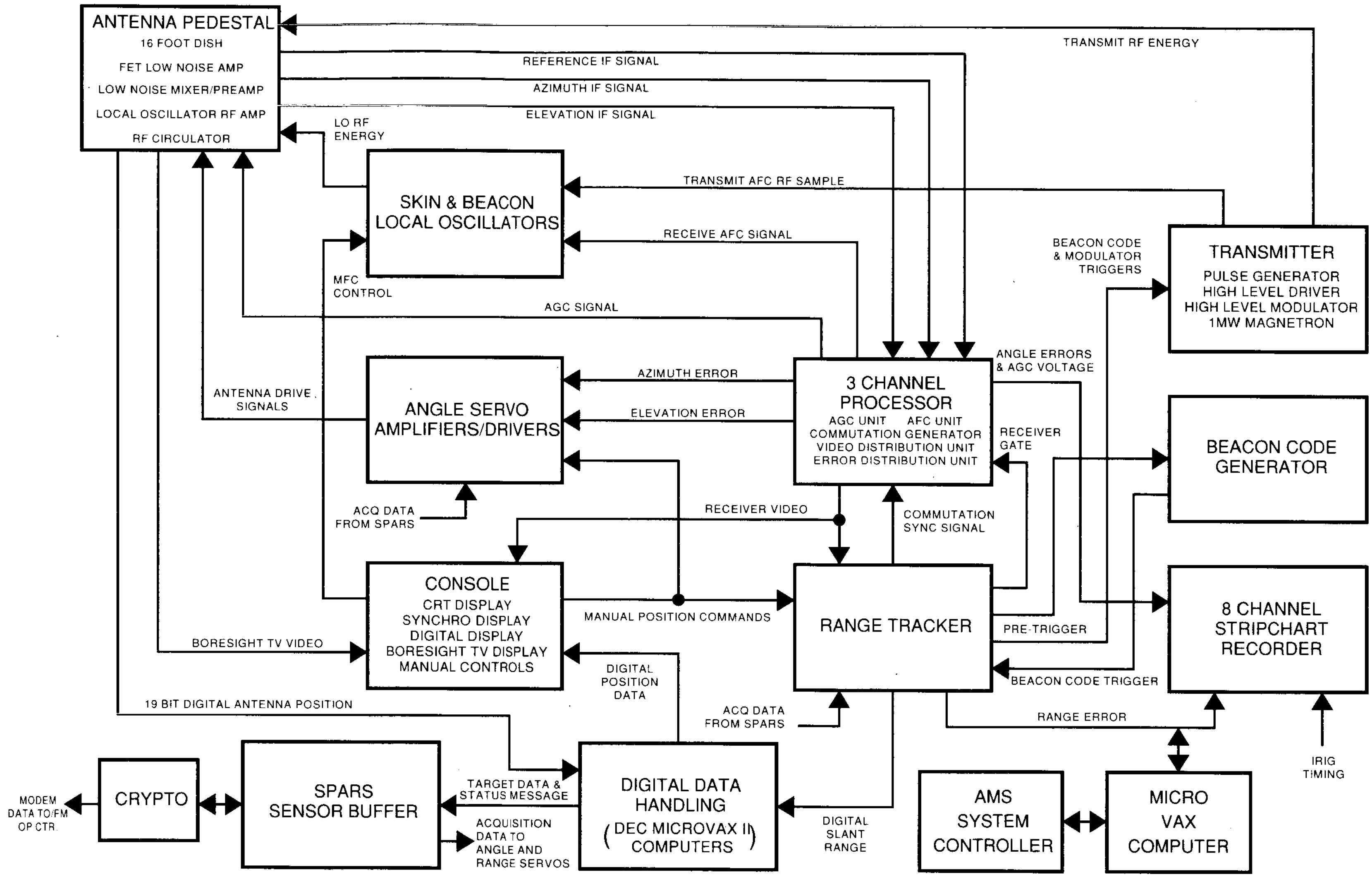


Figure 10-5. San Nicolas Island AN/FPS-16 Radar

AN/FPS-16 METRIC RADAR SPECIFICATION

Transmitter:	
Magnetron	1 MW peak power
Frequency	5400 to 5900 MHz (tunable)
High-power magnetron	1.0 MW +/- 2 dB, peak
Pulse duration	0.25, 0.5, 1.0 µsec
Pulse repetition rates	160, 320, 640 pps
Beacon interrogation codes	Up to two pulses spaced from 1 to 20 µsec apart (0.1 µsec steps) within DC limits.
Power programming	Programmed as a function of target range.
Phasing and Master Synch	Equipped with Automatic Phase Control system (APS) and synchronized to Cesium time
Receiver:	
Type	Single conversion either above or below signal echo frequency
Noise Figure	2 dB, max, low noise amplifiers on
Intermediate frequency	30 MHz
Bandwidths	24 to 4.8 MHz
Dynamic range of gain control	73 dB
Gate widths	0.5 thru 2.5 Track and 1.0 thru 1.75 Acquisition
Servo Bandwidth	
(a) Range	1 to 10 CPS
(b) Angles	0.25 to 5 CPS
Antenna:	
Size	12 or 16 feet depending on configuration
Gain	43dB or 46 dB depending on configuration
Beamwidth	1.2° or 0.8° depending on configuration
Polarization	Vertical
Feed	Monopulse, 4 horn
Range:	
Maximum Tracking Range	4000 or 32,000 nautical miles depending on configuration. Nth-time-around unambiguous range
Tracking Rate	20,000 yards per second
Precision	3 yards RMS
Pulse repetition rates	160, 320, or 640 pps
Target Acquisition	Full range and + 10,000 yards
Tracking:	
Tracking Rate, Azimuth	42° per second
Tracking Rate, Elevation	22.5° per second
Azimuth Coverage	360°
Elevation Coverage	-10° to 190°
Tracking Accuracy	0.1 mil
Resolution	.027°
Servo	Hydraulic Drive

Table 10-2. AN/FPS-16 and "Super 16" Metric Radar Specification Table 1 of 2

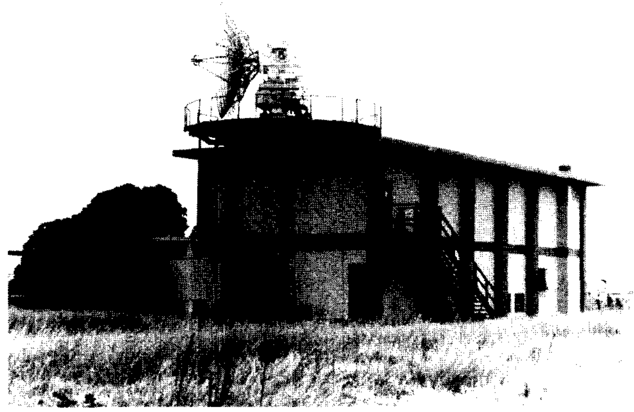
AN/FPS-16 METRIC RADAR SPECIFICATION (Cont.)

Data System:	
Output rate	SPARS 10 pps, WTR 20 pps
Range word	26 bits LSB equals 0. 9765625 yards (computer corrected to 1 yard)
Azimuth and Elevation Data	19 bit encoders, LSB equals 0.00668666°
Identification word	Includes pulse repetition rate, DVES status, Range lock Y/N, Simulate Y/N, Record On/Off, BST, digitized A-E-R errors and AGC
Data recording	All data can be recorded on VAX-780 tape
Playback	Output can be made to the radar system or off-line Plots
Television:	
Camera	COHU Color Antenna Mounted, low light NTS
VCR Recorder	Panasonic AG-2500, VHS
Track Acquisition:	
SPARS System	Real-time corrected RAE data bus for NAWCWPNSDIV and off-range tracked vehicles

Table 10-2. AN/FPS-16 and "Super 16" Metric Radar Specifications Table 2 of 2

AN/FPS-16 "SUPER 16" METRIC RADAR
(Serial Number 13)

The third AN/FPS-16 radar, (Radar 63) located on San Nicolas Island is a "Super 16". This radar system, shown in Figure 10-6, is a highly modified RCA manufactured AN/FPS-16, and provides complete Pulse Doppler capability, including a coherent transmitter and receiver, an integrated-circuit digital range tracking subsystem, a Doppler velocity extraction subsystem (DVES), a control subsystem, a data handling subsystem and a Doppler Simulator. It can provide a Radial Velocity output to be triangulated with the mainland "Super 16" to produce a Target Velocity output. Radar 63 also produces a magnetic tape of selected targets for additional refinement of velocity data for post-operation analysis.



Radar 63, a "Super 16", is a highly modified RCA AN/FPS-16 radar. It is used on most space shuttle tracking operations and on most operations at the Western Space and Missile Center VAFB. It is the most valuable radar of NAWCWPNSDIV.

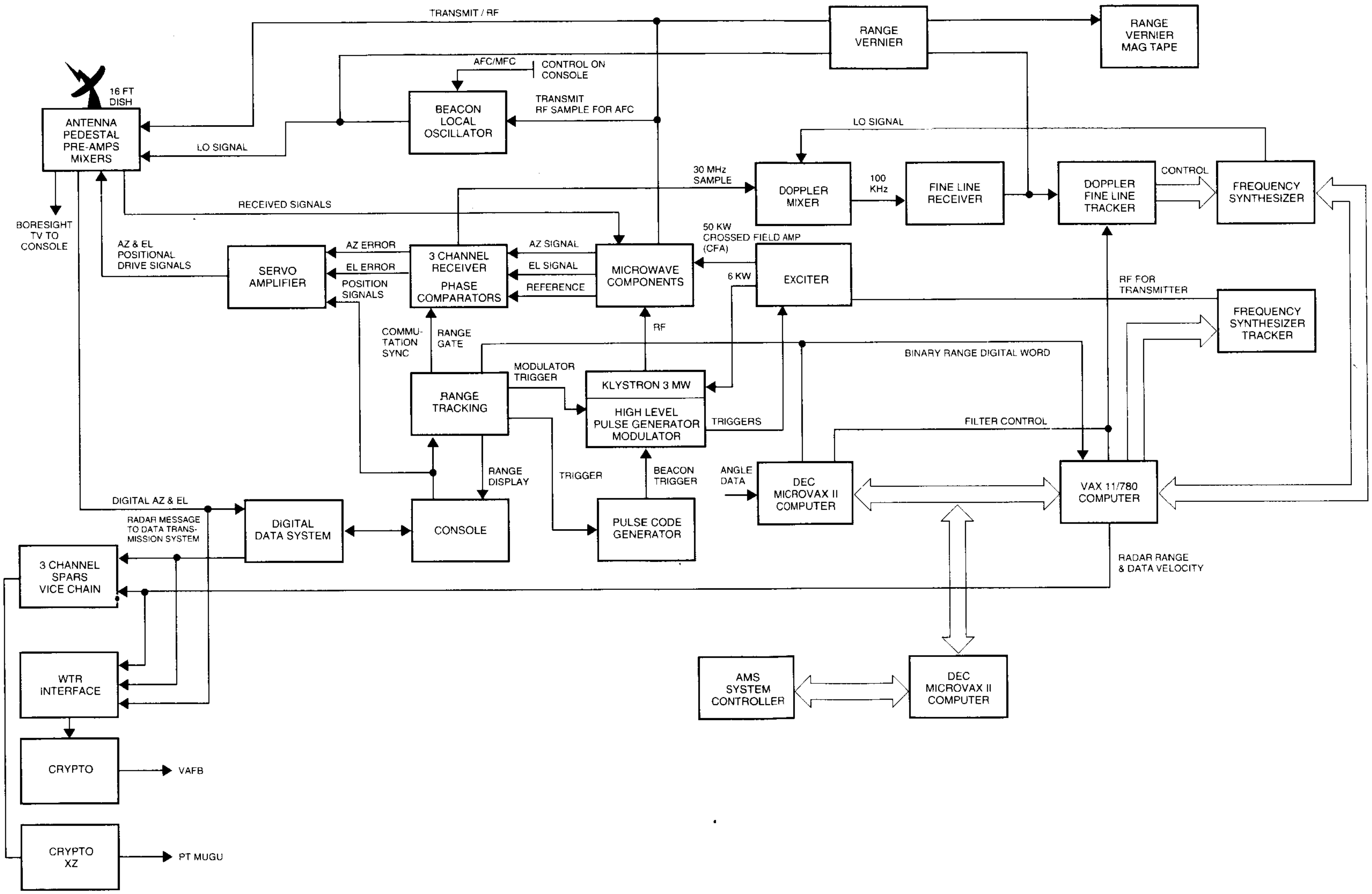


Figure 10-6. SNI "Super 16" Radar With Coherent Signal

METRIC RADAR TRANSMITTER

The AN/FPS-16 transmitter is equipped with a tunable, 1-megawatt magnetron. The modulator is triggered by the range sub-system and, when operator selected, can be coded to interrogate coded beacons.

METRIC RADAR ANTENNAS

The antennas on Radars 62 and 64 consist of a 12-foot parabolic with a 4-horn monopulse comparator mounted at the focal point. Radar 63 has a 16-foot parabolic dish. On all the radars, the RF signals are amplified by three Fleet Effect Transistor Low Noise Amplifiers (FET LNA), down converted to 30 MHz IF by low noise mixer-preamps and fed to solid state IF amplifiers, all located in the RF compartment of the antenna. These signals are fed via slip rings to a three-channel video detector/processor located in the radar electronics van.

METRIC RADAR VIDEO DETECTOR/PROCESSOR

The video detector/processor extracts the video from the IF, processes it, and distributes it to various subsystems in order to control receiver gain, phase, and frequency. This video is also sent to the console for display to the range tracking subsystem via the angle gating unit to the angle servo subsystem.

METRIC RADAR RANGE TRACKING SUBSYSTEM

The Integrated Digital Ranger (IDRAN) in the AN/FPS-16 radars is the range tracking subsystem located on SNI. It consists of all electronic range trackers whose performance is not restricted by the physical inertia or limited range capabilities of an electromechanical range unit. These subsystems are high resolution rangers and depending on configuration, can be tracked to a range of over 32,000 nautical miles with a qualified accuracy of plus or minus three yards root-mean square (RMS).

The SNI metric tracking radars provide precision tracking data in digital, synchro, and potentiometer form for aircraft, ships, small target boats, and all types of missiles. They are capable of manual or automatic acquisition and tracking of objects in flight or orbit. The operator can select pulse output for target echo (skin) tracking or coded pulse group for beacon tracking. It takes highly experienced technicians to be metric radar operators.

METRIC RADARS AND SENSOR POSITION AND READBACK SYSTEM

Sensor Position and Readback System (SPARS) is a digital intercommunication system between the radar and the RTCC. The sensor buffer, a microprocessor controlled interface unit, receives acquisition data from the RTCC. The buffer then reformats and compares the received data with the position data from the radar. It then generates a correction signal to position the radar system to the proper coordinates. This buffer also takes the radar position data along with certain status indications and transmits these data to the RTCC.

The radar antenna position information is generated by one speed, on-shaft, 19-bit optical encoders in the AN/FPS "Super 16" system (17-bit in the AN/FPS-16 systems). This position data, in addition to the range data, is sent to a radar digital buffer where data pick-offs provide this information to the operator consoles and to SPARS.

SENSOR POSITION AND READBACK SYSTEM

The radar acquisition aids consist of optical, electrical, and computer systems, along with a computer driven Sensor Positioning and Readback System (SPARS), allowing mutual positioning with telemetry receivers.

Each tracking radar system (including the Track-While-Scan) and Telemetry Station has its own sensor buffer which communicates via limited distance modem with a dedicated input-output buffer in the RTCC. Every buffer is microprocessor controlled. The primary function of the buffer is to receive and reformat digital data for use at the radar or processing at the RTCC. The sensor buffer is also programmed to perform sensor diagnostics.

SPARS allows any individual radar to slave to the data from another radar, instrumentation system, or a computer generated range, azimuth, elevation position. All data is transmitted through either the central computer system at Point Mugu or from off-range systems at Vandenberg or Edwards Air Force Bases.

Section 11 Extended Area Test System

GENERAL DESCRIPTION

The Extended Area Test System (EATS) was designed to extend the Sea Test Range instrumentation functions 250 nautical miles or more seaward from SNI. EATS provides TSPI (time, space, position information) data and target control to Range users. EATS is a multilateration, multioperational, multiparticipant, over-the-horizon, cooperative tracking system; capable of providing data simultaneously for numerous vehicles involved in independent operations. An example of an EATS multiparticipant over-the-horizon operation is shown in Figure 11-1.

EATS has been modified to include Global Position System (GPS) satellite based multilateration track solutions in addition to the ground based multilateration solutions. This added capability will be operational in the near future.

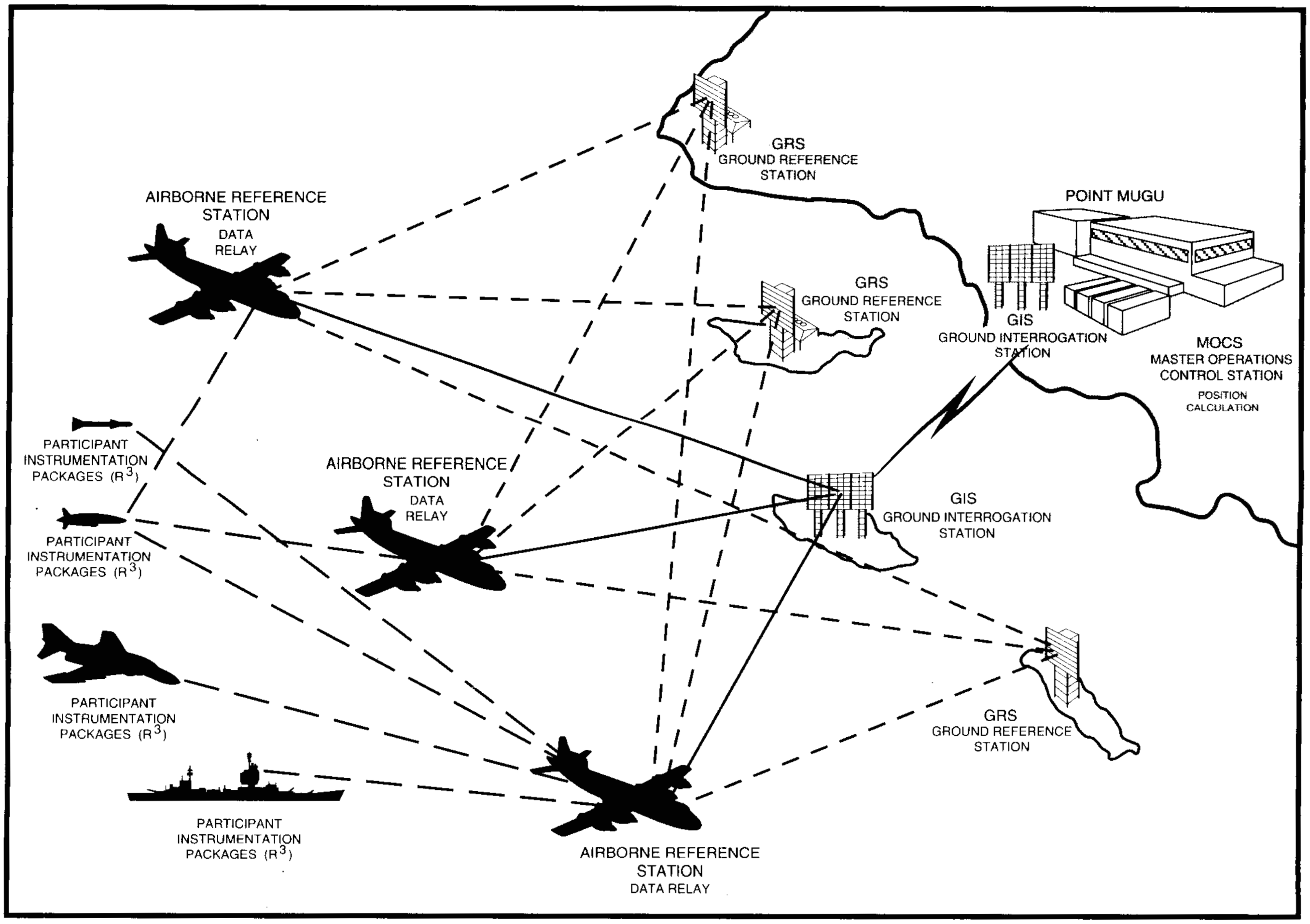


Figure 11-1. EATS Multiparticipant Over-The-Horizon Operation

The EATS system provides high accuracy data both real-time and for post-operational data analysis for instrumented vehicles both within and beyond the line of sight of land-based systems. The EATS Master Operations Control Station (MOCS) is located in Building 53 at Point Mugu and houses the EATS computer system and operational display area. EATS maintains a network of unmanned, ground based instrumentation sites located along the coast and on offshore islands. Five key sites are located on SNI and 90% of all EATS tracking messages originate from the SNI sites.

EXTENDED AREA TEST SYSTEM FUNCTION

The cooperative nature of the EATS system requires that any vehicle to be tracked, called a participant, must be equipped with an EATS transponder, known as a R-cubed unit or R^3. The R^3 unit has both transmit and receive modes and operates at 141 plus or minus 2 MHz with 100 watt peak to peak power. Each unit is referenced by a unique address, a three digit number between 001 and 255.

The EATS multilateration system works on a different principle than the precision metric radar systems. Unlike a Radar, EATS cannot skin track, that is track a vehicle by signal reflection off the surface or skin of the object. EATS does not collect nor use elevation or azimuth data in the manner that Radar tracking is accomplished. Rather it collects range data only, but from multiple sources verses the one range value collected with Radar tracking.

The R^3 has three functions, it RESPONDS to a range request, it REPORTS range data, and RELAYS messages. EATS accomplishes tracking by collecting multiple values of range information for each vehicle, and sending these ranges back to the central computer system for a positional solution. The multilateration algorithm used requires a minimum of three range values and an altitude measurement to establish participant location. EATS collects and uses up to eight range values per participant to help refine the accuracy of the solution. These range measurements come from other R^3 units, either ground based, or participant, within line-of-sight radio frequency link with the vehicle being tracked.

For GPS satellite based tracking, the R^3 acts solely as a data transmission link, bringing back the positional data from the GPS receiver on board the tracked vehicle.

EATS was designed to provide target control functions via the R^3 and this function has been operationally demonstrated on a limited number of targets. Presently, the BQM-34S target and the ex-USS Stoddard hulk target have this capability. The Supersonic Low Altitude Target (SLAT), which was under Developmental Test and Evaluation, also had an EATS target control interface.

The following provides a summary of the EATS support hardware located at SNI.

GROUND SITE FUNCTIONS

SNI has two types of EATS ground sites, the Ground Reference Stations (GRS) and the Ground Interrogation Stations (GIS). The sites consist of the EATS electronics (including an R^3), an antenna, and an AC to DC power system with battery backup. Each site operates unmanned and is on a surveyed location. There are two GIS units at San Nicolas Island, which serve as an extension of MOCS, transmitting commands and receiving replies over radio frequencies. Figure 11-2 shows the location of the MOCS and the EATS ground stations. The SNI GISs augment the two similar GIS stations at Point Mugu and are linked directly to the MOCS, currently by digital microwave, but in the near future by fiber optics. Currently, three GRS units are activated and located at known surveyed points on SNI.

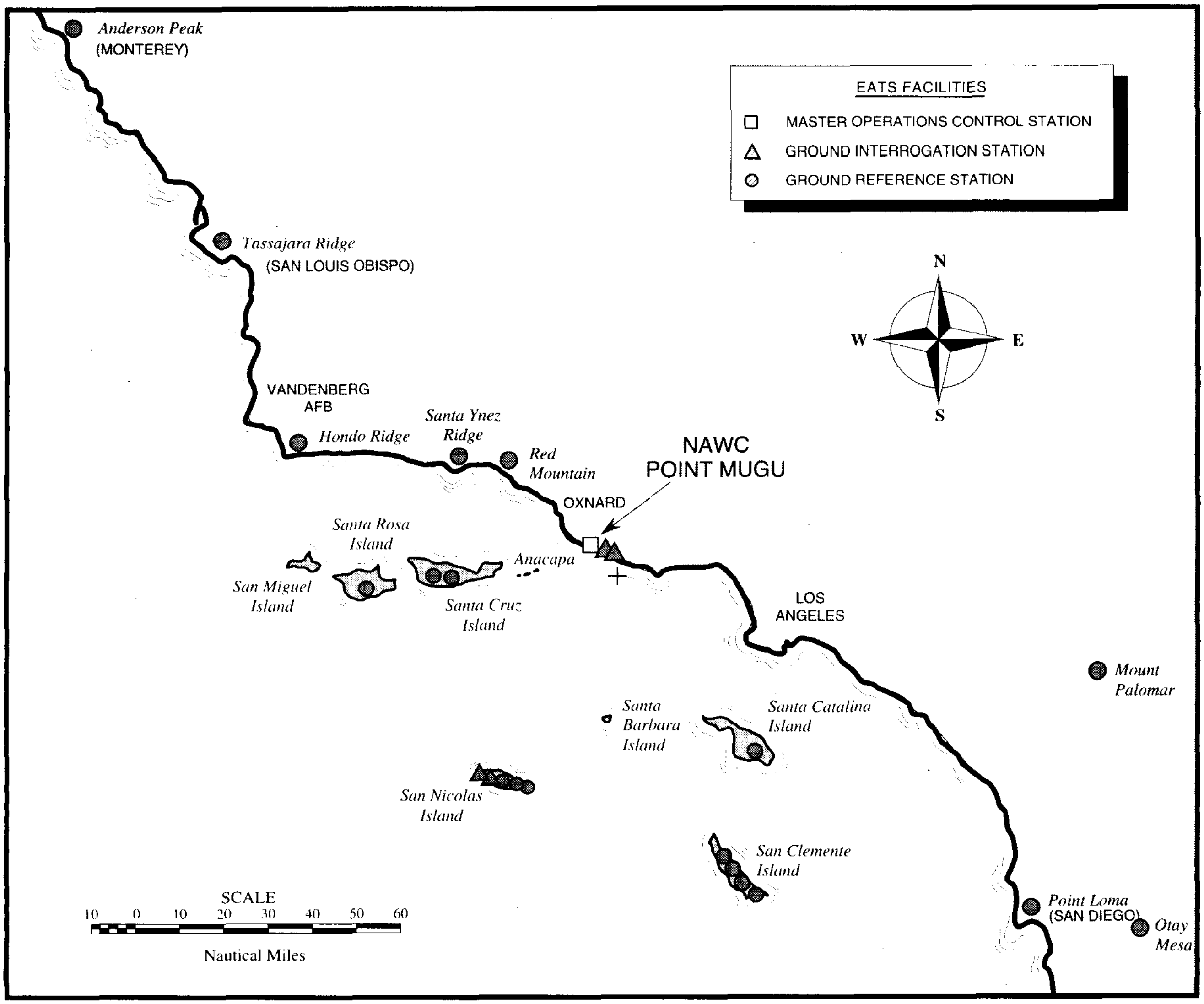


Figure 11-2. EATS Tracking Subsystem Location

GROUND REFERENCE STATION (GRS)

Two GRS sites (SNI GRS 1 and 2) are co-located on the northern end of the island. Like the GIS, this site consists of two directive antennas mounted on scaffolding towers, both facing NNE at 20 degrees (true North). The electronics are in weather proof containers mounted on the towers, with the batteries sitting at the base. SNI GRS 3 is more centrally located on SNI, on a antenna tower near Building 175. In this application the electronics and batteries are inside of the small building at the base of the tower, with an EATS type omni antenna mounted atop this tower. GRS functions include:

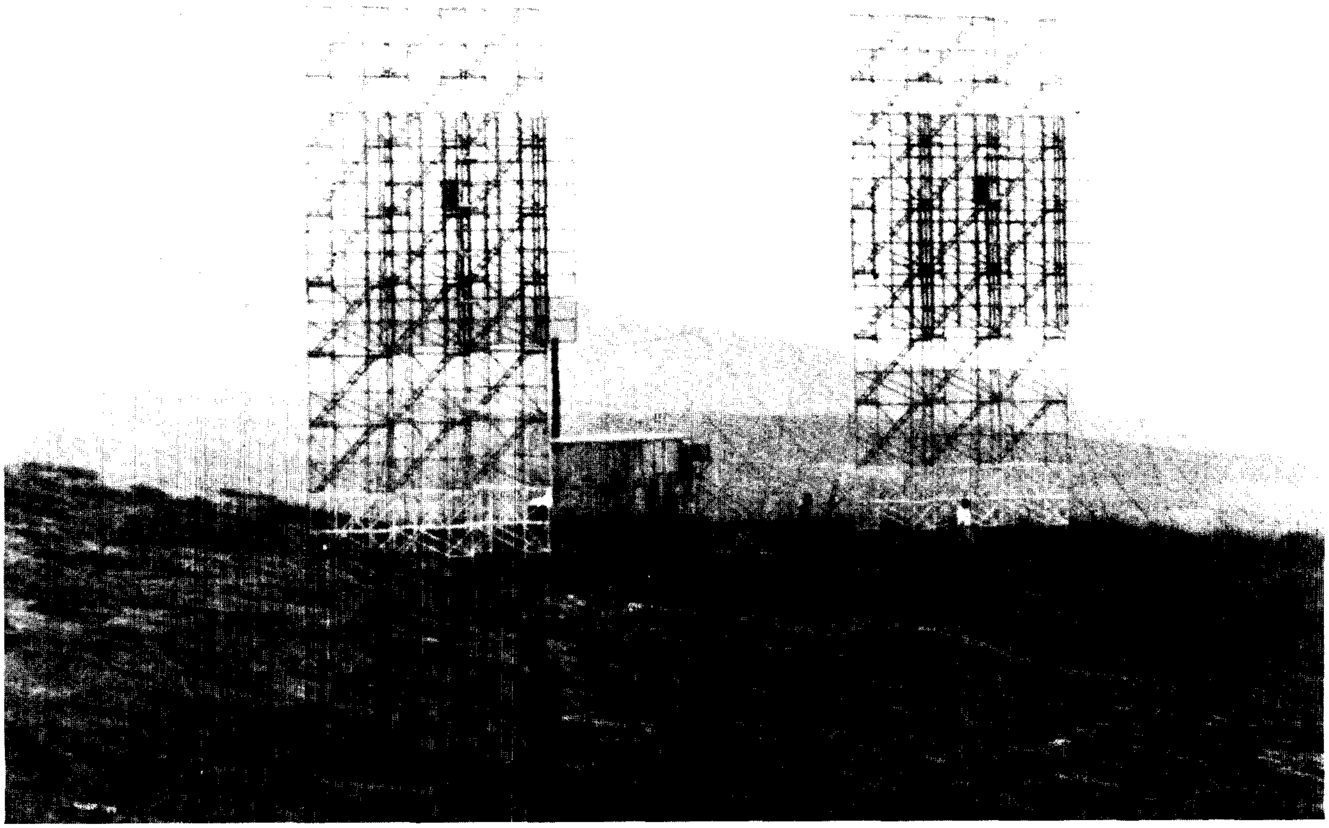
- Responding to ranging interrogations from participant R^3 units.
- Responding to self status requests.
- Relay functions of receiving data streams from any other

GRS, GIS, or participant R^3 unit and retransmitting to the next designated R^3 unit.

GROUND INTERROGATION STATION (GIS)

The GIS is located near Building 127, just below the ARSR-1BE radar. The site consists of two directive antennas mounted on scaffolding towers. These dipole arrays, with backscreens, have a 180 degree beam width and face Southwest at 235 degrees (true North). Located near the antennas and connected by RF cables, is the GIS equipment shelter. The equipment shelter houses the power conversion subsystem, the battery backup subsystem, a meteorological sensing system, modems, time code generators, and the RF subsystems. The GIS perform the input and output (I/O) functions in origination of all RF. Detail functions include:

- Initiating RF signals for communication with participant R^3 units to perform ranging requests.
- Collecting status data from self or other ground stations
- Collecting meteorological data.
- Responding to ranging interrogations from participant R^3 units.
- Sending responses, ranging data, meteorological data, and GRS/GIS status information back to the MOCS computers via dedicated communication lines.



SNI GIS 1 and 2 are located on the backside of Jackson Hill just below the ARSR-1BE surveillance radar.

Section 12 Photo-Optical Tracking Instrumentation

GENERAL DESCRIPTION

Photo-optical instrumentation systems use high-speed film recordings of an object to provide an extremely accurate position measurement. After development, the film is reviewed frame by frame and the distance between the center of the frame and the center of the object is marked. The computer then compares these very accurate positions read on each frame from at least two instrumentation systems and computes the position of the object to within two to five feet accuracy. While this information is very valuable, it can only be determined for objects within five to six miles of the various photo-optical stations. For most weapon systems with large range capabilities and hazard areas, this is not possible.

Another aspect of photo-optical instrumentation is the purely engineering sequential filming of various events, particularly the launch phase and the intercept. This provides a visual record of the critical events for the test operation. Camera pods have been built to hang on launch aircraft, target platforms, and range aircraft to capture various events.

CINETHEODOLITES

General

Cinetheodolites are designed to measure target motion in the x, y, and z axis. They provide information on each of the following trajectories: acceleration, velocities, space positioning, and attitudes, such as pitch, yaw, and roll data, using high precision instrumentation mounts and the medium of photography. Accuracies of the systems range from ±20 to ±30 arc seconds of processed data. Differences in the accuracies stem from numbers of stations or equipment used and test configurations of available sites.

The principal instruments used are the KTH-58E Askania cinetheodolites which have a maximum frame rate of 10 frames-per-second, and the Mobile Optical Tracking Units which have 100-frame-per-second capability.

Range limitation for optimum accuracy of the tracking instruments varies depending on target size and weather conditions. Generally, limitations are 5 to 10 miles.

SAN NICOLAS ISLAND CINETHEODOLITES

Currently, there are six Askania tracking stations on San Nicolas Island. The three Mobile Tracking Units available to the Range may be positioned at the six sites on SNI. Each station and its location are listed below by site number.

Station 010102 - Building 115, Station 2
Station 010104 - Building 116, Station 4
Station 010106 - Building 148, Station 6
Station 010109 - Building 164, is non-operational at this time. Station 9
Station 010110 - Building 165, Station 10
Station 010111 - Building 809, Station 11

Station 010102 is equipped with an Askania, model KTH-61E Cinetheodolite Optical Instrument. The lens focal length is 300 cm with apertures of 12 and 17. The Azimuth angular field is 0.707° while elevation is 0.420°. The frame rate is 1/8 to 10 frames per second with 8 frames/foot and a film capacity of 160 feet. A quick summary table of the SNI Cinetheodolites is shown in Table 12-1.

The remaining stations each have an Askania, model KTH-58E Cinetheodolite Optical Instrument. The lens focal length is 300 cm with aper-

SAN NICOLAS ISLAND CINETHEODOLITES						
Instrument No.	010102	010104	010106	010109 (non-opn'l at this time)	010110	010111
Type	Askania KTH-61E	Askania KTH-58E	Askania KTH-58E	Askania KTH-58E	Askania KTH-58E	Askania KTH-58E
Location	Bldg. 115 Station 2	Bldg. 116 Station 4	Bldg. 148 Station 6	Bldg. 164 Station 9	Bldg. 165 Station 10	Bldg. 809 Station 11
Lens Focal Length	300cm	300cm	300cm		300cm	300cm
Aperture	f12, f17	f12, f17	f12, f17		f12, f17	f12, f17
Angular Field Azimuth Elevation	0.707 deg 0.420 deg	0.707 deg 0.420 deg	0.707 deg 0.420 deg		0.707 deg 0.420 deg	0.707 deg 0.420 deg
Frame Rate	1/8 to 10	1/8 to 10	1/8 to 10		1/8 to 10	1/8 to 10

Number	Focal Length	Aperture	Angular Field	
			Azimuth	Elevation
1	30cm			
2	60cm	f4.5	3.53 deg	2.10 deg
2	100cm	f6.3 to f11	2.12 deg	1.26 deg
1	300cm	f12 and f17	0.707 deg	0.420 deg

Table 12-1. SNI Cinetheodolite Summary

tures of 12 and 17. The Azimuth angular field is 0.707° while elevation is 0.420°. The frame rate is 1/8 to 10 frames per second with eight frames/ foot and a film capacity of 160 feet.

The timing generator rate for the cinetheodolite optical instruments is as follows:

1 frame per 8 seconds
1 frame per 4 seconds
1 frame per 2 seconds
1 frame per 1 second
5 frames per 1 second
10 frames per 1 second on 02/04/06/09/10

Additional lenses are available for the Askanias. One lense has a 30 cm focal length and two lenses have a 60 cm focal length, and an aperture of 4.5. The angular field is 3.53° azimuth and 2.10° elevation. Also available are two lenses with a 100 cm focal length, an apertures of 6.3 to 11 with an angular field of 2.12° azimuth and 1.26° elevation. The lenses with a focal length of 300 cm, have an aperture of 12 and 17 and an angular field of 0.707° to 0.420°.

CINETHEODOLITE FUNCTIONS

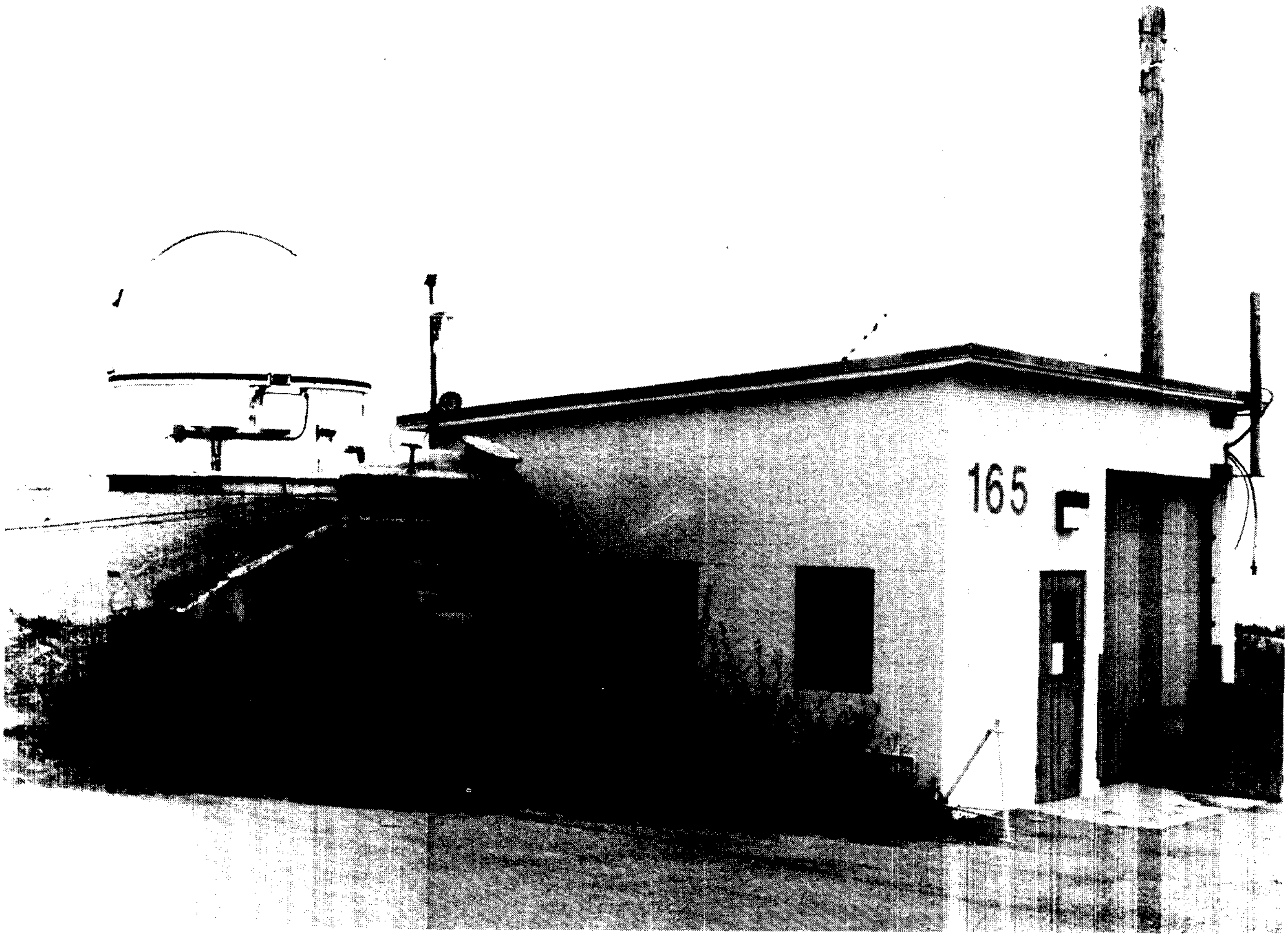
The Askania model KTH-58E tracking cinetheodolites can simultaneously photograph both a missile in flight and the horizontal (azimuth) and vertical (elevation) angular scales of the theodolite at a maximum rate of ten times per second. All the cinetheodolites are housed in power-driven rotating astrodomes and are equipped with telescopic lenses of 10-foot focal length; other shorter focal lengths being optional.

Acquisition and tracking are usually accomplished with 20-power trackers guiding the telescopes.

Each of the instruments installed have been surveyed as first-order survey points and calibrated to achieve the maximum accuracy of the data gathered. Because of this accuracy, these instruments are used to calibrate the tracking radars, EATS, and GPS and have become the standard of measurement at Point Mugu.

The principle of measurement is that at least two or more cinetheodolites are located at stations whose position are accurately determined (base lengths b), and the azimuths and elevations of the lines of sight of each cinetheodolite directed to the moving target are measured simultaneously.

From the known distances between the cinetheodolites and the angles measured, the spatial coordinates of the target can readily be computed by simple mathematics, and this computation may considerably be accelerated and simplified by optical mechanical means.



The Cinetheodolite located at Building 165 on the Northwestern end of SNI is part of the most intense launch and impact area on the island.

The camera with its objective lens is capable of being rotated around two mutually perpendicular axes, one of them vertical, and it may therefore be directed to any point in the sky.

Fixed to the camera is a sighting telescope whose axes are parallel to the axis of the photographic objective lens. A remote target imaged on the center of the field of view (reticle) of the sighting telescope is then also on the optical axis (line of sight) of the photographic lens.

The rotary motions are produced by two electric motor drives, one each for azimuth and elevation, and they are operated from handwheels. The original instruments were operated by two operators but, at Point Mugu, the two wheel system has been modified thereby allowing the instrument to be operated by a single operator.

The cameras of the cinetheodolites take pictures of the target simultaneously either at certain instants of time selected at will, or at predetermined regular time intervals.

The measured data would be in error by considerable amounts, especially with fast moving targets, if the camera shutters were not precisely synchronized.

In order to ensure that such errors be avoided with certainty, the camera shutters of all the cinetheodolites organized into the measuring system are released jointly from a master station. The master station is linked with the cinetheodolite by cable.

For these reasons, the photographic method of recording is superior to other methods providing for angle recording by mechanical means.

Two cinetheodolites suffice for a measuring system. However, the use of three or more cinetheodolites has the advantage of greater independence of the prevailing visibility conditions and the direction of motion of the target. It is possible to dispense with frames taken in such directions where the lines of sight of two cinetheodolites intersect at very acute angles which yield less inaccurate results.

Furthermore, the use of more than two cinetheodolites allows enhanced data accuracy through multiple solutions and decreases the possibility of loss of data caused by equipment failure.

CINESEXTANTS

General

The Cinesextant tracking system provides smooth, vibration-free tracking of a target anywhere in the celestial hemisphere which begins eight degrees below the horizontal. It serves as a support system for the mounting of cameras or any electro-optical devices used in target tracking and data acquisition. This mounts four platform mounting surfaces can carry up to 250 pounds each with no loss of performance.

The Cinesextant tracking mounts are either fixed or mobile. These mounts are basically the same instrument, having a 1000-pound payload capability, two platforms, with four basic lenses and camera stations. They can accommodated combinations of 16 mm, 35 mm, and 70 mm cameras with lenses from 6-inch to 200-inch focal lengths. These same stations will accommodate a ranging radar station.

The tracking mount consists of a base assembly which contains three leveling screws, the azimuth drive motor, tape cables, and the azimuth carriage assembly. The azimuth carriage assembly carries the control stick and the operator's seat, and also supports the elevation axis assembly. The elevation axis assembly is comprised of the elevation drive motors and the payload carrying platforms.

Complete power and control systems are located in the trailer of the mobile system and a working platform is naturally provided by the trailer deck.

The azimuth and elevation drive systems use an electronic servo control system to control directly coupled hydraulic actuators which rotate the instrumentation platforms.

Target acquisition is accomplished through the means of a sighting telescope used by the operator located in a seat between the azimuth carriage uprights.

Cinesextant auxiliary equipment provides metric data output in digital and analog form for real-time transmission and on-site digital data-on-film recording. The output of the radar is an analog voltage, one volt per 1000-foot range. This voltage is fed into a camera auto-focus servo table to keep the camera focused. The radar voltage is also fed through an analog to digital (A/D) converter and into a film data recording system to record range on the film at the time the picture is being taken. If a laser-ranging device is mounted on one of the four stations, that range information can also be recorded on film.

SAN NICOLAS ISLAND CINESEXTANTS

There are presently two tracking mounts on SNI fixed and placed on pads surveyed and aligned for data analysis. Real-time television can be relayed from SNI to NAWCWPNSDIV via microwave transmission for immediate receiving by project personnel. The location and site number of each cinesextant station at SNI is listed below.

Station 010504 - Building 164
Station 010507 - Building 165
Station 010508 - Building 809
Station 010509 - Building 115

Each station may be equipped with a photosonic cinesextant. A summary table with these Cinesextants specifications and others is shown in Table 12-2. The lenses varying in focal lengths up to a maximum of a 200 inches are available. The

SAN NICOLAS ISLAND CINESEXTANTS				
Instrument No.	(mobile) **010504**	(fixed) **010507** (non-opn'l at this time)	(fixed) **010508** (non-opn'l at this time)	(mobile) **010509**
Type	Photosonics	Photosonics	Photosonics	Photosonics
Location	Bldg. 164	Bldg. 165	Bldg. 809	Bldg. 115
Lens Focal Length	Lenses vary in focal length - up to a maximum of 200 inch capability for each tracking mount.			
Aperture	Interchangeable - depending on choice of lense and camera used.			
Angular Field Azimuth Elevation	Field of view variable - dependent upon film format and focal length of lens for each camera.			
Frame Rate	Variable - depending on choice of cameras, the frame rates are from 20 to 400 frames per second.			

Table 12-2. SNI Cinesextant Summary

angular field of view is variable dependent upon the film format and the focal length of the lens. The frame rate varies depending on the choice of cameras. Rates are from 20 to 400 frames per second.

The timing generator provides IRIG "B" range timing. Each mount has the capability of providing film sizes of 16 mm, 35 mm, and 70 mm motion picture format. Television is now available including microwave transmission. 70 mm still sequential and color video recording and transmission is also available.

ENGINEERING CAMERAS

General

The film inventory includes; 48 - 16 mm high speed locams, 5100 series by Redlake Corporation and 37 - 16 mm high speed DBM's, 55 series by DB Milliken Company. The engineering cameras are designed for use in the optical recording of on-board and support applications for the military and private industry. General applications provide an extended time base for observation of short term phenomena.

Typical uses include recording weapon deployment, strike documentation, and target damage assessment. Film camera systems are installed on land and ships to record live missile firings and subsequent target impact. In addition our inventory includes video cameras and transmitter/receiver systems to send real-time secure video from launch/impact sites to operation control centers.

TRACKING MOUNT FILM/VIDEO DOCUMENTATION

Tracking mount services are provided by cinesextant and M-45 tracking mounts. Two M-45's are provide high speed sequential engineering and can be shipped to the islands. While all of these mounts are designed to accommodate various configurations of film/video cameras and lenses, the M-45 mounts are ideal for photo assignments requiring air shipment. The cinesextant/M-45 tracking mounts are capable of tracking fast moving/accelerating targets.

Camera equipment includes 16 mm, 35 mm, and 70 mm formats which are designed to operate at various frame rates from 25 to 500 frames per second. 16 mm cameras include Millikens, locams and Photosonics 1P's. The 35 mm line-up includes Photosonics 4E and 4B.

The 4E is a high speed intermittent pin registration camera with frame rates from 25 to 360 fpm. The 4B is a rotary prism camera with frame rates of 500, 1000, 1500, 2000, and 3250 fps. The 70 mm camera, a Photosonic 10A, offers high speed Hycam camera with frame rates from 10 to 11,000 fps. All of these cameras are able to provide IRIG timing for data analysis.

The camera count is as follows:

40 - 16 mm dBm (Millikens)
20 - 16 mm Locam (Redlake)
01 - 16 mm 1-P
13 - 35 mm 4-E
04 - 35 mm 4-B
02 - 70 mm 10-A
05 - 16 mm Hycam

Section 13 NAWS Outlying Landing Field San Nicolas Island

GENERAL DESCRIPTION

San Nicolas Island is part of the Naval Air Weapons Station (NAWS), Point Mugu, California and is considered an Outlying Landing Field (OLF) by the military. NAWS OLF is the military administrative authority on SNI. The OLF SNI Administrative Division is headed by the Officer in Charge (OIC) who is supported by an Assistant Officer in Charge (AOIC), senior Enlisted Advisors and an Administrative Staff. The OIC is responsible for all functions on the island including the airfield, all airfield facilities and all services supporting aircraft operations and NAWCWP-NSDIV Range Operations. The OIC is also responsible for providing all personnel (permanent and visitors) with housing, food, water, utilities, security, medical, recreations facilities and any other support needed by SNI personnel.

Most of the facilities and services on SNI are located in Nicktown and are operated by military personnel but are open to all island residents and visitors. A map of Nicktown is shown in Figure 13-1 to help you locate all facilities. A brief description of all facilities, with service hours, codes, building numbers and phone numbers of the OLF facilities, services and departments is following.

ADMINISTRATIVE DIVISION, CODE P791

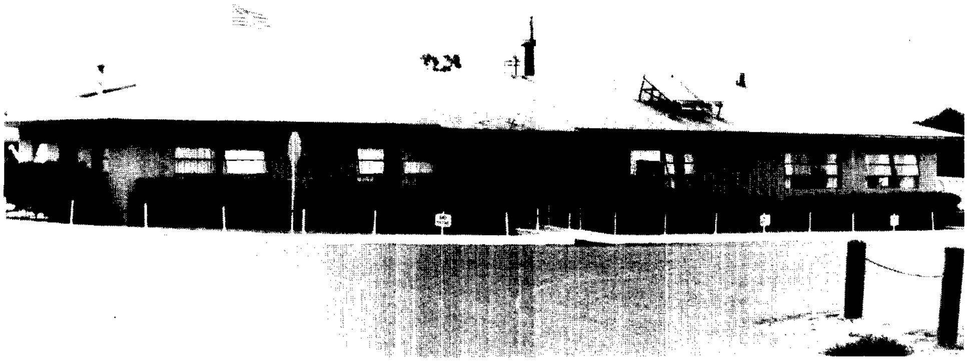
Building 152, Extension 2370

The Administrative Division support staff responsibilities include reports, correspondence, legal assistance military education and training, daily mail-handling and processing, directives filing, Plan-of-the-Day, and normal military and certain civilian personnel matters. The Administration Building is located in the center of Nicktown across from the Dining Facility.

SECURITY, CODE P792

Building 211, Extension 2292

The Security Division is responsible for the overall security of SNI including: clearing and securing the weapons impact areas, providing escort services throughout the island for the movement of weapons and / or explosives, responding and assisting to all island emergencies, motor vehicle accidents, fires, aircraft mishaps, personal injury accidents, Search and Rescue (SAR), personnel disturbances and Medical Emergency Evacuation (MEDEVAC).



NAWS OLF Headquarters, located in Building 152, is headed by the Officer-In-Charge (OIC) and is the central location for the Administrative Division Staff

The Security Division enforces state fish and game laws, the Department of the Interior regulations, Navy laws, and state environmental laws.

Security ensures the safety and integrity of all island buildings and vehicles, assists all official visitors, and implements all phases of the islands disaster preparedness.

Security enforces the standing Federal Regulations governing the restricted waters surrounding SNI. Security will take actions as necessary to locate, identify, report, and when possible, direct the egress of violators from these sensitive waters.

MEDICAL DISPENSARY, CODE P7903

Building 58, Extension 2357

Three Independent Duty Corpsmen (IDC) operate a limited-services dispensary at SNI. IDCs furnish medical care and administrative services to commands too small to have a medical officer. Generally, the IDC will be a Hospitalman (HM) First Class (HM-1). Presently there are three IDCs stationed on board. MEDEVAC procedures and arrangements are established. A Helicopter/Fixed Wing can be called in the event of an emergency that requires extensive care. Saint John's Hospital in Oxnard, California is staffed to accept island emergencies as necessary.

The pharmacy is limited to medications frequently used for colds and some of the commonly used antibiotics for eye and ear medications.

The three IDC's provide limited laboratory services, health record maintenance, immunizations, food service/sanitation inspections and training on various topics.

Sick Call hours are as follows:

Monday-Friday
0800-0900 and 1300-1400

Weekends, Holidays
0900-1030

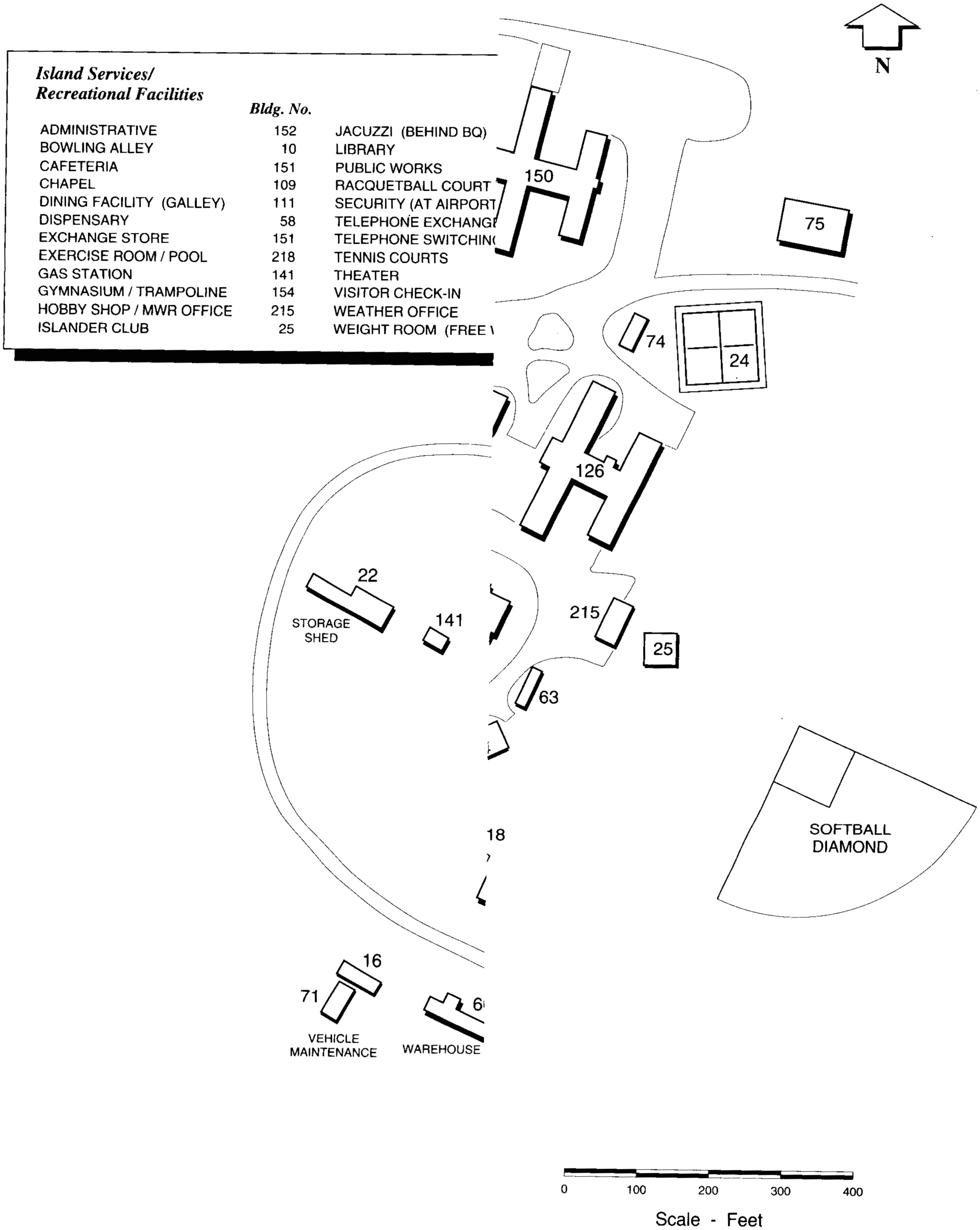
DINING FACILITIES, CODE P795

Building 111, Extension 2358

The SNI Dining Facility, the "Galley" serves meals on a fixed schedule and charges a flat rate for all Island personnel. A Navy-mandated surcharge may be charged depending on your travel status. Galley hours of operation:

Breakfast	
Monday - Thursday, Saturday	0600-0730
Friday	0545-0730
Sunday, Holidays	0700-0830
Brunch	
Sunday, Holidays	1030-1230
Lunch	
Monday - Saturday	1100-1230
Dinner	
Monday - Thursday	1600-1730
Friday - Sunday, Holidays	1600-1700

The SNI Dining Facility, the "Galley", is open to all personnel visiting or stationed on SNI.



Island Services/ Recreational Facilities

	Bldg. No.	
ADMINISTRATIVE	152	JACUZZI (BEHIND BQ)
BOWLING ALLEY	10	LIBRARY
CAFETERIA	151	PUBLIC WORKS
CHAPEL	109	RACQUETBALL COURT
DINING FACILITY (GALLEY)	111	SECURITY (AT AIRPORT
DISPENSARY	58	TELEPHONE EXCHANG
EXCHANGE STORE	151	TELEPHONE SWITCHIN
EXERCISE ROOM / POOL	218	TENNIS COURTS
GAS STATION	141	THEATER
GYMNASIUM / TRAMPOLINE	154	VISITOR CHECK-IN
HOBBY SHOP / MWR OFFICE	215	WEATHER OFFICE
ISLANDER CLUB	25	WEIGHT ROOM (FREE

Figure 13-1. Map of Nicktown

Billeting, located in Building 152, is manned by military personnel. All visitors check in here for housing on SNI.

BACHELOR QUARTERS, CODE P794

Check in - Building 152, Ext. 2370, FAX 4819

Bachelor Quarters (BQ), are provided for resident military officers, enlisted personnel, civil service, and transient personnel. A total of seven barracks, containing 255 rooms, have a capacity of 417 people. Stay at the BQ is free and cleaning materials and linens are supplied. All personnel are expected to keep their rooms clean and up to military standards. When checking out, all rooms are to be clean, left orderly, and trash free.

MORALE, WELFARE AND RECREATION, CODE P795A

Building 215, Extension 2224

Morale, Welfare and Recreational (MWR) provides and maintains Island recreational services listed below.

Bowling Alley

Building 10, Extension 2360

The bowling alley has four lanes and costs $.50 per game. Summer and winter leagues are available. Bowling is available Fridays and weekends when prior arrangements are made with MWR. Hours of operation are:

Monday - Thursday	1700-2100

Fishing Boats

Hobby Shop, Building 215

Fishing boat rental is available from the MWR Office. The Boat training and Coast Guard navigation course is required prior to boat check-out authorization. The cost is $15.00 per day.

Gymnasium

Building 154

The gym has a full-size basketball court and a 20-foot in diameter trampoline. Sport equipment is available for check-out at no cost from MWR and Duty Offices. The gym is open 24 hours a day.

Hobby Shop

Building 215

The Hobby Shop is located at the MWR Office. Woodworking equipment and recreational equipment is available for check out or rental. Fishing equipment, bait and licenses may also be purchased here. Hours are:

Monday - Thursday	1100-1300 1600-1700
Tuesday - Friday	0800-0900

Racquetball/Tennis Court

Building 75

Equipment check-out is available at MWR and the Duty Office. Check out the key to the free courts at the Duty Office before 2200 hours. The courts are open 24 hours a day.

Jacuzzi

Behind the BQ, Building 126

The jacuzzi door is normally open during operating hours. The key can be obtained from the Duty Office if necessary. For safety, a minimum of two persons must be in the jacuzzi when in use. Hours:

Monday - Thursday	1600-2200
Friday - Sunday	0800-2400

"Nicktown" is home to approximately 250 military, civilian, and contractor employees on SNI. All services and facilities are located within the compound.

Weight/Fitness Room

Building 74

Free weight, Nautilus equipment, stair-climbers, rowing machines, stationary bicycles and a Sauna are available free of charge 24 hours a day.

Library

Building 151, Extension 2254

Books and magazines are available for check-out. Hours are:

Monday - Thursday	1630-1900
Fridays	Closed
Saturday, Sunday	1600-1830

Exercise Room/Pool

Building 218

Open 24 hours a day.

Chapel

Building

Call x2370 for hours.

Movie Channel (Channel 3)

A wide variety of first-run movies can be viewed in your room on Channel 3. Weekly movie schedules are available at the MWR and Duty offices. Show times are:

Monday - Friday	1700, 1900, 2100
Saturday and Sunday	1300, 1500

NAVY EXCHANGE, CODE P7906

Building 151

The Navy Exchange system serves all personnel on SNI. Facilities on the Island include a Retail

Store, Cafeteria, Bar and Grill, and vending machines. They are open to all island residents and visitors.

The Islander Club/Bar

Extension 2216

Pool table, ping pong, foosball, darts, and big screen TV are among the activities available. Beer and liquor are available for those 21 or more years of age. Everyone is welcome. Hours of operation:

Monday - Thursday	1700-2300
Friday - Sunday	1700
(When Bartender is available)	

Retail Store

Building 151, Extension 2208

Merchandise consists of clothing, toiletries, snacks, beer, soda, milk, cold cuts, fishing equipment, magazines, and some stationery supplies. All personnel are welcome. Supplies are limited. Hours of operation:

Monday - Thursday	1100-1300 1600-1900
Friday - Sunday, Holidays	1530-1730

The Retail Store, located in Building 151, is centrally located and open to all personnel stationed or visiting SNI.

Cafeteria/Grill

Building 151, Extension 2354

Open to general public. Take-out by phone is offered. Hours of operation:

Monday - Thursday	1100-1230 1700-2000
Friday - Sunday	1700-1900
Closed Holidays	

Section 14 NAWS Public Works and NAWS Environmental Division

GENERAL DESCRIPTION

SNI Public works is under NAWS direction and administered by personnel from Point Mugu.

The NAWS Point Mugu Public Works Island Division, Code P737F, has a head foreman and a permanent detachment of approximately nine civilian personnel assigned to SNI. The division provides repair shop services such as carpentry, plumbing, heating, air conditioning, power, telephone, etc. The division, located in Building 147, can be reached at (805) 989-2353.

Public Works is comprised of two divisions, the Utilities Division and the Maintenance Division that are further described below.

UTILITIES DIVISION

The Utilities Division is responsible for managing the utility plants, the distribution systems, and the energy program. The division oversees the operation of the sewage and water plants, high and low compressed air systems, and the electrical generation system at the Point Mugu complex.

MAINTENANCE DIVISION

The Maintenance Division is responsible for maintaining all station structures, streets, parking lots, roads, and grounds. The division also maintains utility facilities for the water, sewage, and air systems throughout the station, including San Nicolas and Santa Cruz Islands, and occasionally performing alterations and construction incidental to maintenance. Within the Maintenance Division is the Mechanical Branch responsible for providing pipe fitting and plumbing services, maintaining heating, ventilation, and air conditioning equipment, maintenance and repair of equipment and facilities on San Nicolas and Santa Cruz Islands as assigned.

The facilities and equipment operated and maintained by Public Works personnel are described further in this section.

WATER COLLECTION AND DISTRIBUTION

In general, water is pumped, by a submersible pump, from a water source (well, catchment or the Reverse Osmosis Plant) to an adjacent "local" storage tank. From the "local" tank, the water is then pumped by a booster pump in a small pumphouse to an "intermediate" tank or to a "main tank."

Water is distributed from the main tanks to the different areas on the island. Pressure reducing stations on the water mains serve the low elevation areas (Main Compound and Naval Facility area). For these areas, the water pressure for building service is regulated to approximately 60 psig. Water is pressurized for the high elevation areas (Jackson Hill buildings). Water is pumped from the main tanks to the Jackson Ridge storage tanks near Building N160. Building N160 houses the pumps that pressurizes (to 80 psig) the water distribution system serving the Jackson Hill Buildings.

WELLS AND CATCHMENTS

Numerous fresh water wells and catchments have been installed at various locations to provide the major portion of fresh water for San Nicolas Island.

Wells 1, 6, and 9 are housed in small buildings. A log book is kept in each of these buildings to record well output (total gallons).

There are various types of water catchments on the island designed to capture underground water seepage and spring water. This water is not separately metered.

One type of catchment, found at Thousand Springs, is a concrete barrier/wall type, similar to a small dam or retaining wall. Water from this catchment flows through an above ground pipe, by gravity, to a nearby storage tank. Similarly, a shallow underground perforated pipe (Windmill Springs) collects and directs, by gravity, subsurface water to a storage tank at a lower elevation.

The other types of catchment are underground sumps (Zitnic Springs, Thousand Springs) and underground perforated tanks (Humphrey Sump). The underground sumps and perforated tank have submersible pumps that pump the collected subsurface water to a nearby storage tank. Control of these pumps are similar to the well pumps.

REVERSE OSMOSIS DESALINIZATION

Two reverse osmosis desalination units were recently installed at the Harbor Area, Building N50. Each has a nominal output capacity of 600 gallons per hour (gph). The raw water source for the units is seawater pumped from two locations (used one at a time) on the beach. The two locations are manually alternated during winter and spring. Each location has six shallow seawater well points. Water is pumped from the well points to a holding tank (WT01E) behind Building N199. Brine (highly mineralized waste water) discharge from the reverse osmosis unit is pumped to a second holding tank (WT01D) next to the seawater tank (WT01E). When the waste water tank (WT01D) is full, the brine is discharged to a brine pit approximately 200 yards from the reverse osmosis unit located near the beach. The brine is also pumped into the reverse osmosis unit during the backwash cycle. Fresh water produced from the reverse osmosis units flows to three storage tanks adjacent to pumphouse Building N196. One tank holds 50,000 gallons (WT01C) and two can hold up to 10,000 gallons (WT01A, WT01B).

OFFSHORE DELIVERY

There are two methods for delivering fresh water from offshore. A 400,000 gallon barge can be moored near the harbor. The water is then offloaded through a submarine water line to a storage tank near Building N196. The second method is to deliver water tankers (trailers) on the freight barge. These two methods are very expensive and are used only as a last resort.

SANITARY SEWAGE COLLECTION AND DISPOSAL

The San Nicolas Island Sanitary Sewer Systems collects and treats the wastewater which is generated by the compound facilities. The sanitary sewer system components are:

- *Gravity Sewer Lines*
- Septic Tanks and Leachfields
- Wastewater Treatment Facilities (Oxidation Ponds)

GRAVITY SEWER LINES

There are approximately 4,700 linear feet of sewer lines with appurtenant manholes, cleanouts, and laterals.

SEPTIC TANKS AND LEACHFIELDS

Two septic tanks and leachfields dispose of the wastewater generated by the facilities located at the airfield. Thirty-six septic tanks and leachfields serve the facilities in the outlying areas.

WASTEWATER TREATMENT FACILITY

The wastewater treatment facility components consist of three concrete lined aeration ponds, a chlorination well, a concrete-lined conic surcharge pond, an aeration and pumping equipment.

The chlorinated effluent discharges into a conic concrete lined surcharge pond. The suction line of the spray pumps takes effluent from this pond. The final disposal of the treated wastewater is by spraying. The spray disposal system elements are:

- Spray Pumps
- Main and Distribution Lines
- Spray Heads

The spray pump station was designed for two pumps (one operational and one standby).

The operating Peabody - Barnes horizontal end suction centrifugal pump, Serial Number 101 CU - 1/889/339/33762, is driven by a General Electric five horsepower 115/230v 3-phase 60 Hz motor.

There is a Hershey flow meter on the 2" manifolded spray pump discharge line, but it is non-operational.

ELECTRICITY GENERATION

The electricity used on the Island is generated in Building N114 on Owens Road. There are five, three-phase, 4160v diesel generators with the ratings given in the table following.

The total capacity, 3500 kw, adequately meets the present peak demand of 1050 kw.

Generator Number	Nameplate kw	Nameplate kva	Navy-Rated kw
1	825	1030	750
2	750	938	500
3	500	625	500
4	830	1038	750
5	1000	1000	1000
Total	3905	4881	3500

Each generator is driven by a reciprocating diesel engine. JP-5 fuel is stored in a 10,000 gallon above ground tank located to the south of Building N114. Fuel flows by gravity from this tank to pumps which fill the day tanks located just outside Building N114. From the day tanks fuel flows by gravity to each operating engine's driven fuel pump. There is a plan to replace the outdoor day tanks located inside the building. The 10,000 gallon fuel tank is refilled via trucks on an as needed basis.

A 3,000 gallon lube oil tank is located within a double containment wall, adjacent to Building N114. A 5,000 gallon truck trailer is parked adjacent to the lube oil tank. A quick disconnect hose from the truck is connected to the pipe serving the permanently installed lube oil tank. A pump, mounted next to the lube oil tank, allows transfer of oil to the engines as needed.

The plant is also provided with a waste oil collection system. This system consists of two 3,000 gallon holding tanks, two 500 gallon sump tanks, and two sump pumps. All are located immediately outside the power plant and equipped with secondary containment interconnecting piping.

The control room has been recently upgraded and is enclosed by sound reducing insulation and double doors leading to the engine room.

The plant is manned 24 hours per day. Operators observe equipment operation, make hourly log entries, and start and stop the generators as required.

The station auxiliary equipment includes one 150kva, three-phase, 4160-120/208v station service transformers, a 120/208v distribution panelboard, a 125v DC station battery, and two 225kva, three-phase, grounded-wye-delta-connected grounding transformers, one for each bus in the switchgear to provide a neutral for single-phase, 2400v loads.

The power plant switchgear, installed in 1990, has two buses with a vacuum circuit breaker tie. The circuit breaker tie will trip automatically in the event of a fault on either bus.

In addition to the 4160v generators, critical loads in some buildings have back-up power from local emergency generators. The power is generated at utilization voltage (120/208 or 480v) and is applied to the load through manual or automatic transfer switches.

OVERHEAD ELECTRICITY DISTRIBUTION

Electricity is distributed throughout the island by three 4160v feeders. Feeders #2 and #3 are mostly overhead. Feeder #2 serves the north-central area of the island, including the personnel living facilities, administration and recreational facilities, and the public works buildings. Part of Feeder #3 serves the air terminal and associated hangars and maintenance facilities. The distribution, except for short sections described in the following paragraph, is by means of wood poles supporting bare copper conductors.

UNDERGROUND DISTRIBUTION

The western half of the island is served mainly by Feeder #1, with a couple of loads served by Feeder #3. This part of the distribution is now completely underground, the last sections, those adjacent to the power plant, have been converted from overhead.

ENVIRONMENTAL DIVISION

The Environmental Division on SNI is part of NAWS. Personnel in the division are employed by NAWS to oversee that missions and operations of NAWS and NAWCWPNSDIV are accomplished without causing damage to the environment or harm to animal or plant species on SNI and in the surrounding waters.

The NAWS Environmental Division has an unparalleled reputation for protecting natural and cultural resources on the island in harmony with the active military mission. NAWS is responsible for the protection and management of the natural and cultural resources on SNI. Division biologists and archaeologists inventory and monitor sensitive resources, coordinate scientific research, provide protection to critical resources and review land use plans and activities. Part of the Environmental Division effort is to advise and assist program sponsors on what environmental documentation is required and what might cause environmental concerns.

ENVIRONMENTAL CONCERNS AND REQUIREMENTS

The Department of Defense is directed by the National Environmental Policy Act (NEPA) and the Counsel on Environmental Quality (CEQ) to consider environmental consequences when authorizing or approving weapon system testing. In some cases that requires an Environmental Impact Statement (EIS) to be generated. An EIS analyzes the potential environmental consequences of conducting weapon system testing and operational test flights and/or launches. The EIS identifies and addresses potential environmental impacts to specific test areas. The potential environmental impacts can result from construction requirements at launch and other support locations, sensor test operations, launch preparation, missile flight tests, and intercept test scenarios.

The CEQ regulations implementing the NEPA require an early and open process for determining the scope of issues related to the proposed action. In accordance with CEQ regulations, public scoping meetings are conducted. A wide range of issues relating to the physical and social environment and safety concerns are identified through this scoping process.

Comments and questions received as a result of this process are used to assist the Department of Defense (DOD) agency (conducting the testing) in identifying potential impacts to the quality of the human and natural environment. Upon complete analysis of potential impacts to the quality of the human and natural environment, a decision is made whether to proceed at the designated site or proceed to alternative test sites. The no-action alternative is also analyzed.

Environmental personnel live and work out of Building 156. They are constantly doing field work and may be difficult to contact. A message may be left on a telephone answering machine at 989-2319.

Section 15 OLF San Nicolas Island Air Transportation Information

AIRFIELD

The SNI airfield is located near the southeastern edge of the mesa. The landing area consists of one 10,003 feet long by 200 feet wide concrete and asphalt runway at 504 feet above mean sea level. The runway is designated 12-30. Lighted runway distance markers are located at 1,000-foot intervals on both sides of the runway. No approach lighting system is presently installed. The ramp area and taxiways have operating taxiway lighting. The SNI runway is shown in Figure 15-1.

A standard military single green, split white rotating beacon is operational when the field is open at night and to indicate suspension of VFR during daylight. A displaced, identification beacon is installed on top of the Tower.

Normal operating hours for the airfield are from 0730 to 1600, Monday through Friday. Specific requests must be approved by the Commanding Officer to have the field open at other times.

AIRCRAFT WEIGHT LIMITATIONS

Normal use of the airfield is limited to aircraft meeting the gross load limitations that are shown in Table 15-1. Up to 50 percent overloading is permissible for infrequent operations. At the present time, all aircraft exceeding published landing weights, as stipulated in the Instrumented Flight Rules (IFR) supplement shall specifically obtain prior permission to do so from the Commanding Officer, NAWS Point Mugu (Phone Number-AUTOVON 351-8521 or commercial (805) 989-8521). Infrequent use of the airfield by C-5 aircraft is permissible, but operations must be restricted to the runway only.

The following arresting gear is available on Runway 12-30 at SNI:

TYPE	LOCATION
E-28 (Bidirectional)	3250 Ft. From Approach End (30)
E-28 (Bidirectional)	2980 Ft. From Approach End (12)

Paved Area Designation	Type of surface	Allowable Gross Aircraft Load (lbs.) For Aircraft With *				
		Single - Wheel Gear 150 psi tires (F-14)	Dual - Wheel Gear 400 psi tires (F-14)	Dual - Tandum Gear (P-3)	Single - Tandum Gear (C-130)	Dual - Tandum Gear (C-141)
Runway 12-30	AC	45,000	41,000	68,000	95,000	**
Taxiway 12-30	AC	69,000	65,000	95,000	121,000	**
Parking Apron	AC	49,000	45,000	75,000	104,000	**
Parking Apron	PCC	58,000	46,000	**	105,000	**

* Assumes solo traffic is 1000 passes of aircraft indicated, i.e., no other heavier traffic operates on airfield.
** Allowable load is less than minimum operating weight of the aircraft.
PCC - Portland Cement Concrete
AC - Asphaltic Concrete

Table 15-1. Load Ratings for OLF-San Nicolas Island, California

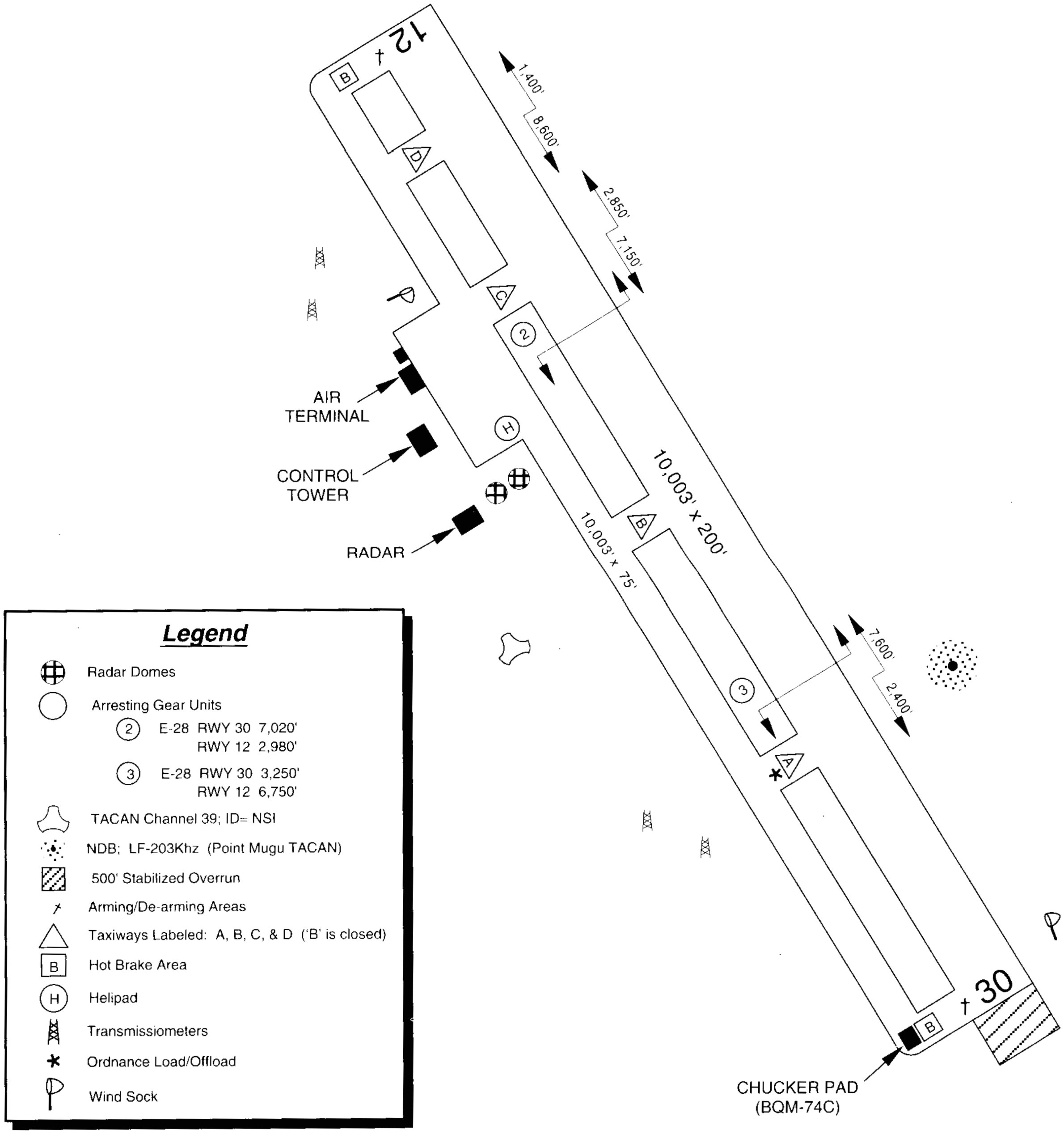


Figure 15-1. SNI Airfield Diagram

NAVIGATIONAL AIDS

All operations utilizing aircraft require the use of navigational aids (NAVAIDS). SNI NAVAIDS consist of Ground Controlled Approach (GCA), TACAN, and a low frequency (LF) Non-directional Beacon (NDB). In the Point Mugu area, NAVAIDS, listed in Table 15-2 are used frequently.

TACTICAL AIR NAVIGATION SYSTEM

A Tactical Air Navigation System (TACAN) is associated with the control tower operations. The system enables properly equipped aircraft to determine its position relative to the radiating antenna of the ground system.

NAVAIDS	Identification	Channel	Frequency
Point Mugu TACAN	NTD	43	
Instrumented Landing System (ILS)	ILS	30	109.3 MHz
Ventura VORTAC	VTU	19	108.2 MHz
San Nicolas TACAN/NDB	NSI	39	203 kHz
Vandenberg TACAN	VBG	59	
San Clemente TACAN/NDB	NUC	123	350 kHz
Santa Catalina VORTAC	SXC	51	111.4 MHz

VORTAC - Ventura VHF Omni-Directional Range/Tactical Air Navigation Station

Table 15-2. Point Mugu NAVAID Frequencies

The AN/URN-25 TACAN antenna is located is located 3800 feet from the approach end (30) and 3000 feet south of the control tower. It is certified by the FAA and operates 24 hours daily.

GROUND CONTROLLED APPROACH

The Ground Control Approach (GCA) radar (FPN-36), is located off the side of the runway 5000 feet down between Bravo and Charlie Taxiway. The FPN-36 radar is maintained by the Ground Electronics and operates at aircraft approach. It is used to detect surveillance and precision (with azimuth and elevation) instrumentation. Typical GCA radar patterns are shown in Figure 15-2.

NON-DIRECTIONAL BEACON

The LF Homer/Class CL (ID NSI) is a non-directional beacon, (NDB) located 2000 feet from the approach end runway (30) and approximately 4000 feet from control tower. It is certified by the FAA and operates 24 hours daily.

AIR TRAFFIC CONTROL TOWER

Building 145, Phone 989-2353

The SNI Control Tower is the hub for collecting flight data and ground control information. This information is disseminated through the airfield operations complex.

The SNI Air Traffic Control tower, located in Building 145, is 41 feet from the ground.

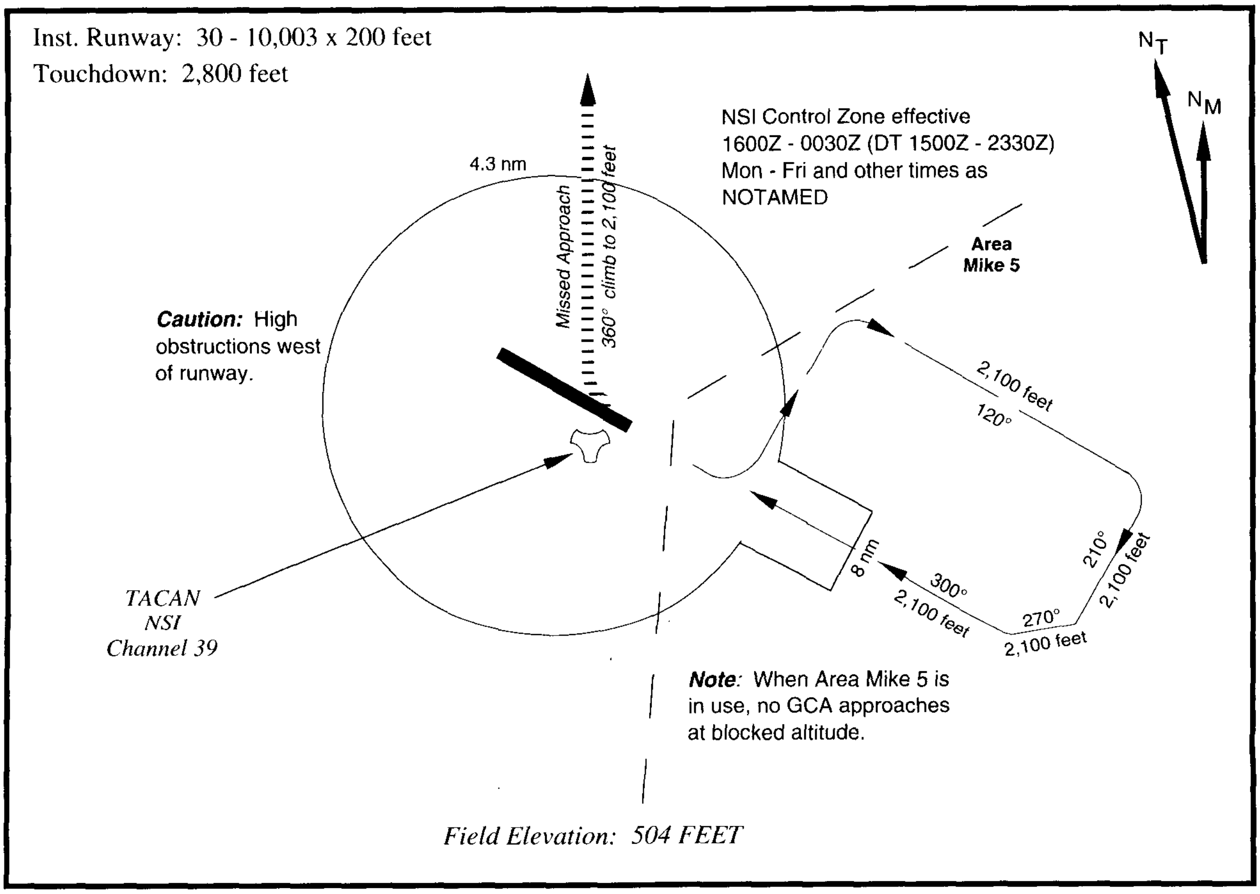


Figure 15-2. SNI GCA Pattern and Control Zone

The Control Tower has an Airport Traffic area of five statute miles surrounding the TACAN and up to an altitude of 3,000 feet designated M-3. This area is released to the SNI Tower when not required for operations.

The SNI Control Tower has a 4.3 nautical mile radius control zone from the SNI Radio Beacon. Departure and arrival extension is southeast to 8.8 nautical miles. The control zone is released to SNI Control Tower when not required for operations.

During periods of normal operations in the STR, the SNI Tower will handle only aircraft under GCA control or traffic routed to SNI by the Range Surveillance Center (PLEAD CONTROL).

Field hours during normal operation are from 0730-1600 Monday through Friday. The tower is closed Saturdays, Sundays, holidays and alternating Fridays.

The Control Tower Facility is maintained and operated in accordance with FAA, and Naval and local directives. The tower is located in the Air Operations Building 145. Elevated two levels, the total height including a 10-foot antenna is 41 feet.

Both VHF and UHF communications networks are used to control aircraft. VHF and UHF frequencies of 121.5 MHz 126.85 MHz, 243.0 MHz, and 374.8 MHz are used. Control tower communication equipment is located within the tower complex. Two RD-379 Motorola tape recorders are used to record all frequencies and landlines between the SNI tower and radar, Point Mugu, PLEAD, the Range Control Officer (RCO), and the aircraft.

The Control Tower has direct communications to the Fire Department, Air Operations, and Flight Line through FM radio and direct landline. Direct telephone communications exist between the Control Tower, the Weather Branch, the Air Terminal, and the Air Traffic Control (ATC) Office.

AIR OPERATIONS

Air Operations, located in Building 145, are responsible for air safety procedures, enforcement and overall supervision of the airfield complex. A current file of flight planning publications are available in Building 145 from the ATC division and typical air routes between Point Mugu and SNI are shown below in Figure 15-3.

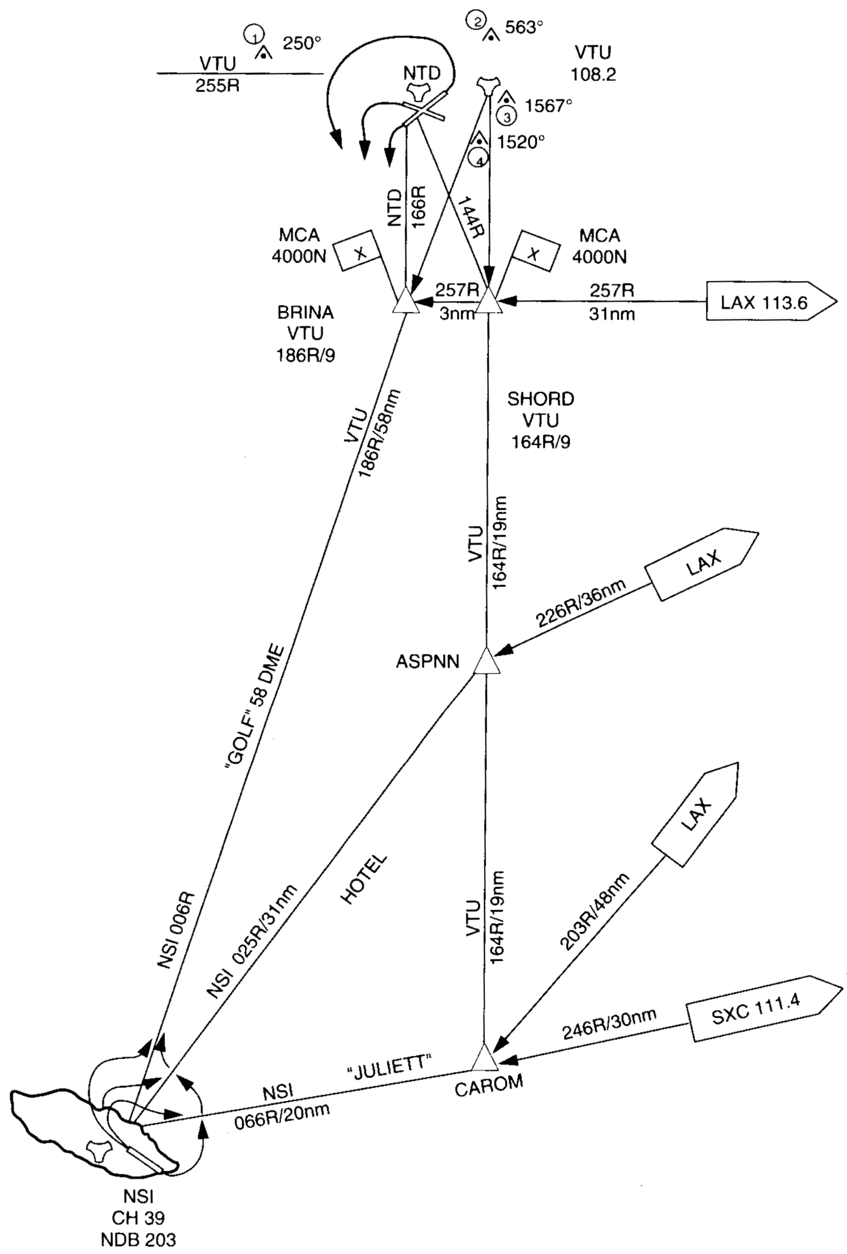


Figure 15-3. Published Air Routings Between Point Mugu and SNI

NAWS Point Mugu Departure Route Description

GOLF

Runway 03 - Turn left immediately to 210°, cross Ventura VORTAC 255° radial, then turn left heading 160°.
Runway 21 - Turn left heading 160°.
Runway 27 - Turn left heading 160°.
For radar vectors to BRINA Intersection, then via Route GOLF to OLF San Nicolas Island.
MEA 3,000 feet

HOTEL/ JULIETT

Runway 03 - Turn left immediately to 210°, cross Ventura VORTAC 255° radial, then turn left heading 140°.
Runway 21 - Turn left heading 140°.
Runway 27 - Turn left heading 140°.
For radar vectors to SHORD Intersection, then via Route HOTEL, or Route JULIETT, as assigned, to OLF San Nicolas Island.
MEA is 3,000 feet.

OLF San Nicolas Island Departure Route Description

GOLF

Runway 12 - Turn left.
Runway 30 - Turn right.
Climb via NSI 006° radial and proceed via Route GOLF to NAWS Point Mugu or to Ventura VORTAC.
MEA 3,000 feet.

HOTEL/ JULIETT

Runway 12 - Turn left.
Runway 30 -
Route HOTEL: Climb via NSI 025° radial and proceed via Route HOTEL to NAWS Point Mugu or to Ventura VORTAC.
Route JULIETT: Climb via NSI 066° radial and proceed via Route Juliett to NAWS Point Mugu or to Ventura VORTAC.
MEA 3,000 feet.

Lost Communications Procedures

Per FAR 91, except:

OLF San Nicolas Island - Proceed via last assigned routing and execute a TACAN or NDB approach, Runway 30, to OLF San Nicolas Island.

NAWS Point Mugu - Non-TACAN equipped aircraft shall proceed to the Ventura VORTAC via last assigned routing and execute a VOR Approach, Runway 7 to the Oxnard Airport.

Figure 15-4. Published Air Routings Reference

SUPPORT AIRFIELD SERVICES

Military and contractor personnel perform flight line servicing for station and transient aircraft landing at SNI. Service to transient aircraft is limited to parking, refueling, and transportation of personnel. Parking spaces and tie-downs are available for transient aircraft up to P-3 size and weight.

One NC-8A, one GTC-85, and one NCPP-105 aircraft starting units are available.

The fuel farm is located two miles north of the control tower. Above ground storage capacity is as follows:

JP-5 - 219,592 gallons
JP-4 - 19,970 gallons

Heavy cargo, aviation fuel, motor gasoline, motor oil, and diesel fuel are transported to SNI by barge. The fuel is piped ashore from the barges to holding tanks. Fuel is delivered from the storage area to the flight line in 5,000 gallon refuelers.

The SNI airfield, air terminal, air traffic control tower, ground support equipment storage building, aircraft target hangar, supply warehouse and hazardous waste stations are all part of the SNI airfield complex. The Convair 440 used for shuttling passengers to/from Point Mugu is also seen here with the smaller C-12 Range Operations aircraft.

Limited quantities of motor gasoline, diesel fuel, and JP-5 and JP-4 fuels are available from 0730-1700 Monday through Friday. At other times, fuels and oil can be attained by contacting "Maytag" at extension 2331.

Weather service information is available from the SNI Geophysics Station (Extension 2371) with advance notice to insure timely preparation of station weather. The flying weather at San Nicolas Island is above Visual Flight Rule (VFR) minimums (1,000-foot ceiling and 3-mile visibility) 78% of the time on a year-round basis.

Three crash trucks and two ambulances are available for crash/fire rescue purposes. General fire fighting equipment is composed of two 1,000 gpm Pumpers. The crash/fire crew is composed of 21 civilian personnel, consisting of two shifts. Their crash/fire fighting capability is Category 2 (Convair-type aircraft ONLY).

FLIGHT SCHEDULE INFORMATION

Flights will depart SNI within stated limits. At the discretion of island duty officer, flights departing SNI may be delayed for 30 minutes when good cause exists.

Flights can be scheduled if required at a reimbursable cost. Flights supporting operations will depart SNI at the completion of the operations. A schedule of all SNI flights is shown in Table 15-3.

Note:

1. Flights may be deleted or added at the discretion of the NAWS Point Mugu air terminal officer, as coordinated with the officer in charge, SNI.
2. Passenger check-in time is 30 minutes prior to departure of flight.
3. When more personnel are manifested that seats available, permanently assigned personnel will have first priority. If all personnel cannot get on the schedule flight, such as 5 p.m. on Fridays, from SNI, another plane will be ordered.
4. Allotted seats on Mondays and Fridays will be reserved until 45 minutes before scheduled flight.

AIRLIFT SCHEDULE

1 February 1993

Week One

Day	Depart Pt Mugu	Pass Cap	Arrive SNI	Depart SNI	Pass Cap	Arrive Pt Mugu
Mon (or first working day)						(1) 0645 (P)
						(2) 0710 (P)
(1)	0700	50	0730	0800	50	0830
(2)	0730	50	0800	0900	50	0930 (T)
(1)	0900	50	0930	1030	50	1100
(1)	1500	50	1530	1600	50	1630 (T)
Tue						0645 (P)
	0700	50	0730	0830	50	0900
	1500	50	1530	1600	50	1630 (T)
						1000 (P)
	1130	Cargo	1200	1330	Cargo	1400 (T)
Wed						
						0654 (P)
	0700	50	0730	0830	50	0900
	1030	50	1100	1130	50	1200
	1500	50	1530	1600	50	1630 (T)
Thu						0645 (P)
(1)	0700	50	0730	1130	50	1200
(1)	1500	50	1530	1600	50	1630 (T)
(2)	1600	50	1630	#1700	50	1730 (T)
*(1)	1700	50	1730	*1800		
						1000 (P)
	0930	Cargo	1000	1200	Cargo	1400 (T)

(P) = Position Aircraft

(T) = Terminate Aircraft

All temporary assigned and transient personnel will be manifested on space available basis if prior arrangements have not been made.

Week Two

Day	Depart Pt Mugu	Pass Cap	Arrive SNI	Depart SNI	Pass Cap	Arrive Pt Mugu
Mon (or first working day)						(1) 0645 (P)
						(2) 0710 (P)
(1)	0700	50	0730	0800	50	0830
(2)	0730	50	0800	0900	50	0930 (T)
(1)	0900	50	0930	1030	50	1100
(1)	1500	50	1530	1600	50	1630 (T)
Tue						0645 (P)
	0700	50	0730	0830	50	0900
	1500	50	1530	1600	50	1630 (T)
						1000 (P)
	1130	Cargo	1200	1330	Cargo	1400 (T)
Wed						
						0654 (P)
	0700	50	0730	0830	50	0900
	1030	50	1100	1130	50	1200
	1500	50	1530	1700	50	1630 (T)
Thu						0645 (P)
(1)	0700	50	0730	1130	50	0900
(1)	1500	50	1530	1600	50	1630 (T)
						1000 (P)
	1130	Cargo	1200	1330	Cargo	1400 (T)

* Monday through Thursday (of the second week) flights, civil servants and civilian transients for operational support on SNI will have seating priority on return flights at the discretion of the air terminal officer/officer in charge, SNI. Twenty seats for permanent SNI personnel will be reserved on contract flights from and to SNI.

Friday (8-hour day)

Day	Depart Pt Mugu	Pass Cap	Arrive SNI	Depart SNI	Pass Cap	Arrive Pt Mugu
						0645 (P)
(1)	0700	50	0730	1130	50	1200
(1)	1400	50	1430	1500	50	1530
(2)	1430	50	1500	#1600	50	1630 (T)
*	1600	50	*1630	*1700	50	*1730 (T)

Friday (9-hour day)

Day	Depart Pt Mugu	Pass Cap	Arrive SNI	Depart SNI	Pass Cap	Arrive Pt Mugu
						0645 (P)
(1)	0700	50	0730	1130	50	1200
(1)	1500	50	1530	1600	50	1630
(2)	1600	50	1630	#1700	50	1730 (T)
	*1700	50	*1730	*1800	50	*1830 (T)

Table 15-3. San Nicolas Island Daily Flight Schedule

Section 16 San Nicolas Island Telephone Directory

GENERAL DESCRIPTION

This telephone directory lists emergency telephone numbers, OLF department and office numbers, all OLF support service numbers and the Range Operations Section numbers. Telephone listings of individuals by name can be found in the San Nicolas Island Telephone Directory or the NAWCWPNSDIV Telephone Directory.

POLICY

All long distance calls shall be made using the Defense Switched Network (previously AUTOVON). Department of Defense telephone communications systems are for the transmission of official Government information only and are subject to telephone communications security monitoring. Emergency and other phone numbers for SNI personnel are listed in Table 16-1 and Table 16-2.

HOW TO DIAL SNI PHONES

1. To dial SNI numbers, dial only the four digit number.

2. To call Mugu, if the telephone number of the telephone you are using begins with:

   7xxx - only dial the four digit number
   2xxx - dial 7, then the four digit number.

3. To call off-base, if the telephone number of the telephone you are using begins with:

   7xxx, dial 99 and the local number.
   2xxx, then dial 7, then 12 and the local number.

4. Autovon can only be dialed from a 7xxx telephone. Dial 55, then the telephone number. The SNI autovon prefix is 351-xxxx.

EMERGENCY PHONE NUMBERS

Function	Extension
SNI Duty Office	2239/2339
NAWS Duty Office	7209
NAWS Officer of the Day (Emergency)	8257
Fire Department (Emergency)	2333
(Non-Emergency)	2373/2388
Medical	2357
Security	2394
Public Works (after hours)	2266
Officer in Charge, SNI. BQ	2177
Assistant Officer in Charge, SNI. BQ	2355
Senior Enlisted Advisor	2386
Operations Duty Officer	8521
Range Surveillance Watch Center (24-hour watch)	8841

Table 16-1. SNI Emergency Phone Number Listings

SAN NICOLAS ISLAND OLF NAWS			
Code	**Function**	**Building**	**Extension**
P79	Officer-In-Charge	152	7259
P7901	Assistant Officer-In-Charge, SNI	152	2370
P79011	Duty Officer-OOD	152	2239/2339
P7902	LCPO	152	2370
P791	Administration Division	152	7259/2370/2335
P792	Security Division	211	2292
P7903	Medical Dispensary	58	2357
P7642	Fire Department	144	2373
P793	Supply	66	2237/2372
P796	Air Operations	145	2253
P7961	Air Traffic Control Tower	145	2253
P797	Ground Electronics Airfield	145	2219
P7962	Air Terminal	155	2270/2368
P794	Barracks (Female/Male)	126	2356/2214
	Bachelor Enlisted Quarters	126	2143
P795	"Galley"/Dining Facility	111	2369/2358
P7906	NEX Cafeteria/Grill	151	2354
P7906	**Navy Exchange (NEX) Retail Store**	**151**	**2208**
P795A	**Morale, Welfare, and Recreation (MWR)**	**215**	**2224**
P7903	Theater	151	2208
P7905	Bowling Alley	10	2360
P7905	Hobby Shop	215	2224
P7905	Pool	218	2370
P7905	Chapel	109	2370
P7905	Recreation Center, Islander Club	25	2216
P7906	Library	151	2254

Table 16-2. SNI Phone Number Listings by Code

OFFSHORE ISLAND RANGE OPERATIONS

Code	Function	Building	Extension
P37142	Communications	127	2205/8006
P37142	Radio Frequency Receivers	112	2249/2377
P37142	Radio Frequency Transmitters	113	2249/2377
P37142	Fiber Optics and Microwave	127	2341
P37142	Command/Control/Destruct	127	2128
P37142	Telecommunications Switching System	127	2277/2307
P37142	Operations Control Console	127	2243/5000
P37142	Frequency Interference Control Center	186	2220/2201
P37142	Timing	127	2380
P76B	Integrated Target Console System	127	2325
P3541	Geophysics/Weather Observations	98/145	2371/2247
P35232	Surveillance Radars	176	2285/2385
P35232	Ordnance Assembly Buildings	110/290	2359/Mugu 7986
P35232	Blockhouse	189	0069
P35232	Blockhouse	807	1045
P36223	Telemetry	182	2244/2245
P36223	Telemetry Van - West End	Near 165	2362
P36223	Telemetry SKR-1 Antennas - West End	322, 323	2132
P36123	Metric Tracking Radars	167,169,171	2206/2276/2287
P36131	Photoptics	148	2364/Mugu 8189
P376B	Extended Area Test System (EATS)	53 Mugu	8489
P37143	Santa Cruz Island	3	7680/9723/9759

SAN NICOLAS ISLAND PUBLIC WORKS NAWS

Code	Function	Building	Extension
P737F	Public Works	147	2353/2361
P736	Fuels (Mercury)/"Maytag"	41	2331
P737F	Heavy Duty Maintenance	51	2295
DROICC	Resident Officer In Charge of Construction	19	2221/Mugu 7551
P6313	Telephone Shop	128	2399
P737F	Power House And Utilities	114	2154/2264
P737F	Barge Landing	Daytona Bch	2159
Contractor	Ameriko Janitorial Services	181	2246
	U.S. Fish & Wildlife Service	19	2283
P732	Environmental, SNI	156	2319, 2210
P732	Environmental, Point Mugu	TR10073	Mugu 7412

Table 16-2. SNI Phone Number Listings by Code (Cont.)

Section 17

Santa Cruz Island Introduction

GENERAL DESCRIPTION

Santa Cruz Island (SCI) is located approximately 25 miles west off the coast of Oxnard, California. It is the largest and most topographically diverse of the eight Channel Islands. The island covers nearly 98 square miles and stretches approximately 24 miles in length. It is from two to seven miles wide and encompasses an area of about 62,000 acres.

The entire island is part of the Channel Islands National Park, but the United States Park Service is trying to buy the 10% owned by the Gherini family. At the eastern end of the island there is a high north-south ridge. This ridge divides the island into two ownership parcels. The western 90% of the island, including the portion leased to the Navy, is privately owned and administered by The Nature Conservancy. The Nature Conservancy is a private organization that purchases land to restore and preserve it to its natural state. The smaller parcel to the east, about ten percent in area, is co-owned by the Park Service and private individuals who use it for recreation and business. Visitor access is allowed but is limited to escorted groups.

ACCESSIBILITY

Transportation to and from SCI for personnel and supplies is provided by boat, plane and helicopter and is strictly limited. Surface transportation by boat is provided by the NAWCWPNSDIV Surface Craft Division and takes approximately 90 minutes to get to the island. Air transportation must be scheduled through NAWCWPNSDIV Range Clearance Officer. Fixed wing aircraft and helicopter are contracted by the Government to provide air transportation which takes approximately 30 minutes to get to the island. Travel to and from SCI is discussed further in Section 19.

No paved roads exist on Santa Cruz Island. The western nine-tenths of the island has dirt roads which allows access to the entire length of the central valley, the length of the southern mountain ridge, and out to the island's west end, Fraser Point. In general, all the road conditions require a 4-wheel drive vehicle.

SANTA CRUZ ISLAND GEOGRAPHY

The terrain on Santa Cruz Island varies from sea-level valleys to sharp, sloped peaks which exceed 2,000 feet in elevation. The highest peak on the island is Picacho Diablo at 2,434 feet. The topographic make-up of Santa Cruz Island is shown in Figure 17-1.

Santa Cruz Island is rough and mountainous with deep canyons. Large areas of flat land are limited. Much of the northern shore is bold and rugged, with cliffs dropping to the sea and interspersed with small pocket beaches at the mouths of canyons. Longer stretches of beach are found along the western and southern shores. A large central valley is nestled between two mountain ranges for much of the island's length. Access into this valley is through a narrow, winding, stream-filled canyon, three miles long.

GENERAL CLIMATIC DATA

The entire island has a Mediterranean climate which is cool, rainy winters and warm, dry summers. Due to the island's large size and varied topography, a number of microclimates exist. The coastal areas are mild throughout the year with little or no frost.

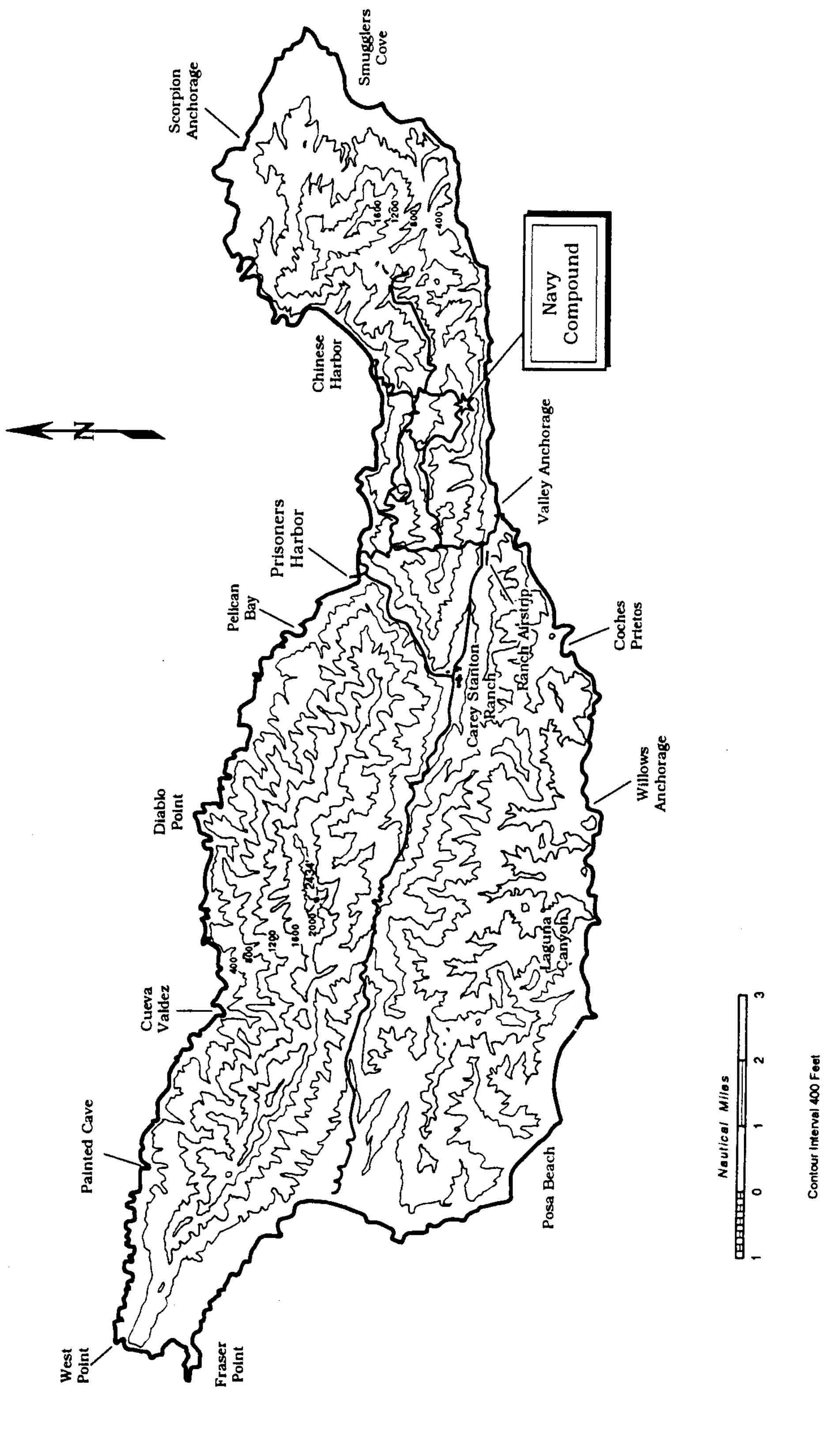


Figure 17-1. Topographic Make-up of SCI

TEMPERATURE

Temperature records, which have been kept for over 80 consecutive years on Santa Cruz Island, show that coastal areas rarely have temperatures above 85° F or below 35° F, while the central valley may reach over 100° F during the summer. Winter in the central valley brings temperature of 20° F or less. Often, while the coastal areas of the island are shrouded in fog, the central valley will have bright sunshine.

PRECIPITATION

Rainfall records for Santa Cruz Island have also been kept for over 80 years. The average annual rainfall is about 20 inches at the main ranch headquarters in the central valley. Extreme years vary between 6.5 inches and 60 inches of rain. Occasionally snow will fall on the northern mountain range of the island, particularly around the Picacho Diablo area. Snowfall at lower elevations, however, is extremely rare.

Santa Cruz Island has many permanent springs and a few permanent streams, though most of the water courses are dry much of the year. Both springs and wells have been developed for use at the various ranches and other island facilities.

SANTA CRUZ ISLAND NATURAL AND CULTURAL RESOURCES

Santa Cruz Island is a unique repository of many endemic animals and plants found nowhere else on earth, including such notable species as the Santa Cruz Island Ironwood and the Island Fox. Some of these species are rare but with stable, viable populations. Other species are severely reduced in numbers and could be threatened with extinction if competing species were introduced into their environment or if their habitat were altered or destroyed. Several of these rare or endangered species are specifically protected by law.

ANIMAL LIFE

Over 130 species of land birds have been identified on the island, however, the Santa Cruz Island Scrub Jay is the only bird representative of island endemism. It has never been found on the mainland and its bright blue color, larger size and heavier bill distinguish it from its mainland counterpart. This bird represents a case of island gigantism. Lack of competition and predators has allowed this island species to utilize resources generally unavailable to mainland jays.

Of the 13 species of terrestrial mammals on Santa Cruz, the island fox is a well-known endemic animal characterized by its small size, daytime foraging habits and docile nature. There are only four native terrestrial mammals which occur on Santa Cruz Island: the island fox, the spotted skunk, the deer mouse, and the western harvest mouse.

Occasionally, harbor seals and California sea lions find refuge in the island's protected coves or hauled out on rocky ledges. Elephant seals have also been sighted near the island. The 77 miles of shoreline cliffs, beaches, offshore rocks and tidepools provide an important breeding habitat for colonies of nesting sea birds and support a wide variety of crustaceans, mollusks, and other shoreline animals and plants.

PLANT SPECIES

The island is semi-arid and vegetation is generally sparse, but the island does support a remarkable flora and fauna. Over 600 species of plants are found on the island in ten different plant communities. Coastal strand, coastal bluffs, valley and foothill grasslands, coastal sage scrub, chaparral, island and oak woodlands, pine forest, southern riparian woodlands, and marsh communities are all found on the island. Of the 40 plant species restricted to the Channel Islands, eight are endemic to Santa Cruz. These plants include the island lace pod, live-forever, island manzanitas, silver lotus, island mallow, gooseberry, and the monkey flower.

All species of the manzanita are fully protected in the state of California and it is unlawful to cut, destroy, or remove them from Santa Cruz Island (this also applies to any dead material on the ground).

ARCHEOLOGICAL EVIDENCE

Approximately 3,000 archeological sites have been found on Santa Cruz Island. Many of these sites were temporary. At least a dozen well developed village sites existed at the time of Spanish contact.

There are a few rock art sites on Santa Cruz Island, however, none are well developed. Most of the art in rock shelters consists of ocher or hematite blobs or spots in no apparent pattern or design. Only one cave has more developed art, containing both pictographs ant petroglyphs. These take the form of lines, dots, and rake figures.

PROTECTION OF SANTA CRUZ ISLAND RESOURCES

Collecting of Indian or other artifacts, fossils, bird nests or eggs, plants or animal parts is prohibited. Cutting or collecting of wood or other removal of native vegetation is also prohibited. Plants and animals on the island are protected by state and federal laws, as are historic or prehistoric sites and artifacts.

Section 18

Santa Cruz Island History

HISTORY

Juan Rodriguez Cabrillo discovered Santa Cruz Island in 1542. At this time the island was inhabited by two to three thousand Chumash Indians. The Indians were thought to have lived on the island as long ago as 8000 B.C.

The last of the Chumash Indians were moved to missions in 1839. Twenty-five years later, the island was granted to Andres Castillero by the Governor of California. In 1857, Castillero sold the island to Englishman, William E. Barron, who in 1869 sold to a group of San Francisco businessmen who formed the Santa Cruz Island Company. In 1880, Justinian Caire became the principal owner and established a colony of mostly French and Italian immigrants on the island. Their early ranching operations produced walnuts, olives, cattle, sheep, honey, almonds and some of the finest early California wines under the Santa Cruz label.

In 1937, Edwin L. Stanton of Los Angeles acquired the western nine-tenths of the island and concentrated on cattle ranching. In 1957, Edwin's son, Dr. Carey Stanton, returned to Santa Cruz Island and managed the ranch. Dr. Stanton ran a "functioning nineteenth century cattle ranch". In 1975, Dr. Stanton approached The Nature Conservancy about a possible joint conservation effort to ensure preservation of the island. Through a generous arrangement with Dr. Stanton, The Nature Conservatory was able to acquire an interest in the Santa Cruz Island Company property. In 1987, when Carey Stanton died, his part of the island became the Conservancy's. On April 10, 1988, 51 years to the day after Edwin L. Stanton purchased the western nine-tenths of the island, the last of the cattle were shipped off the island by the Nature Conservancy.

The remaining one-tenth of the island, on the eastern end, is presently co-owned by the Park Service and descendents of the Justinian Caire family. The Park Service now owns one-fourth of the denuded eastern tip and is negotiating with three great-grandchildren of the Caire family to purchase the other three-fourths.

Today, a conservation partnership exists between The Nature Conservancy and the Santa Cruz Island Company. The Santa Cruz Island Project of The Nature Conservancy will provide continued protection, research, and educational use of the privately-owned land.

The Station Ranch, built by Edwin L. Stanton in the early 1940's, is presently owned by the Nature Conservancy. It is used for offices, equipment storage and housing for employees and guests of the Nature Conservancy.

U.S. NAVY PRESENCE

In 1949 the Navy established an instrumentation site on SCI and leased land to support missile testing at Point Mugu. Historically, the lease has been limited and has restricted Navy personnel from traveling to and/or using portions of the island not specifically leased to the Navy. The Nature Conservancy has responded to the desire of Navy personnel for increased recreational opportunities on the island by agreeing to expand access for Navy personnel for recreational purposes only.

U.S. NAVY LEASE

NAWCWPNSDIV leases portions of SCI from the Nature Conservancy and the Santa Cruz Island Company for its exclusive use, such as the "main Navy Compound" where most of the equipment under study is located. Non-exclusive use of several areas - aircraft landing strip, wharf, boat landing site, and others - is also included in the lease. The current lease began 1 October 1991 and, at NAWCWPNSDIV option "may be renewed from year to year for fifteen (15) successive one-year terms..."

In conjunction with the lease agreement is an operating agreement which states that NAWCWPNSDIV will provide certain benefits to the Nature Conservancy on an "as available basis". These benefits include use of NAWCWPNSDIV telephone system, radio communications, excess electric power and water, surface transportation, fire protection, maintenance of three roadways, and protection against unauthorized entry. No guarantees as to availability of these benefits are made.

The lease between NAWCWPNSDIV and the Conservancy is currently discounted in consideration of these benefits.

Section 19 Santa Cruz Island and Range Operations

GENERAL DESCRIPTION

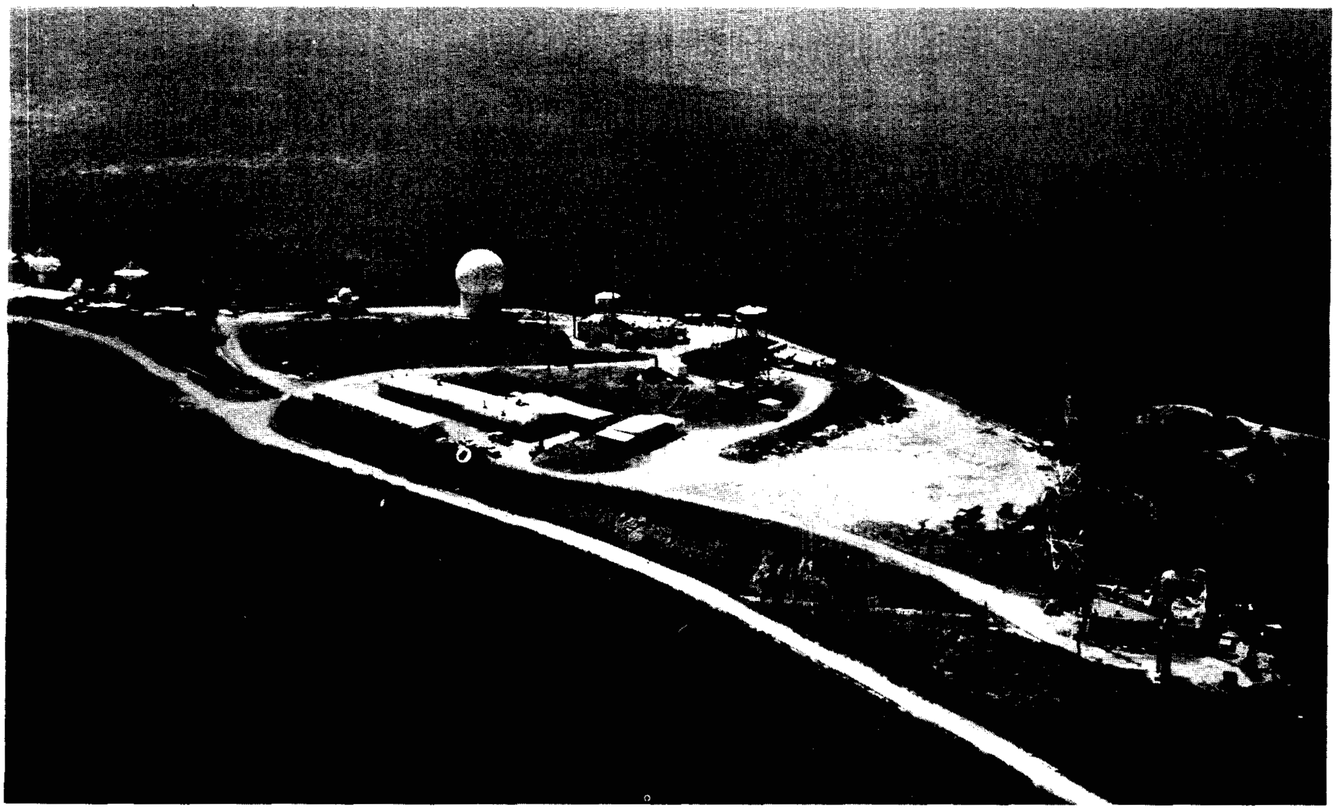
The Naval Air Warfare Center Weapons Division (NAWCWPNSDIV) Sea Range Directorate operates and maintains a remote site on Santa Cruz Island. NAWCWPNSDIV leases this 10.8 acre remote site from the Nature Conservancy. It is located on a mountain top southwest of the middle of the island. A U.S. Navy contractor, David Taylor Research Center (DTRC), in cooperation with NAWCWPNSDIV also conducts testing and operates from the mountain top site and a lower cliff site. A map of the Santa Cruz Island mountain top Navy Compound is shown in Figure 19-1.

RANGE INSTRUMENTATION

Range instrumentation on SCI consists of a Sea surface surveillance radar, microwave systems (part of the Instrumentation Data Transmission System), and UHF/VHF communications equipment. The following sections describe this instrumentation including current modes of operation, support requirements, and existing plans.

SANTA CRUZ ISLAND FACILITIES

Major facilities on the island include the housing and messing facility, Building 1, Radio Trans-



NAWCWPNSDIV leases this 10.8 acre remote instrumentation site from the Nature Conservancy. The site consists of a sea surveillance radar, microwave systems, UHF/VHF communications, EATS GRS, a radar imaging facility, a heliport, personnel housing, messing, a power plant, and public works facilities.

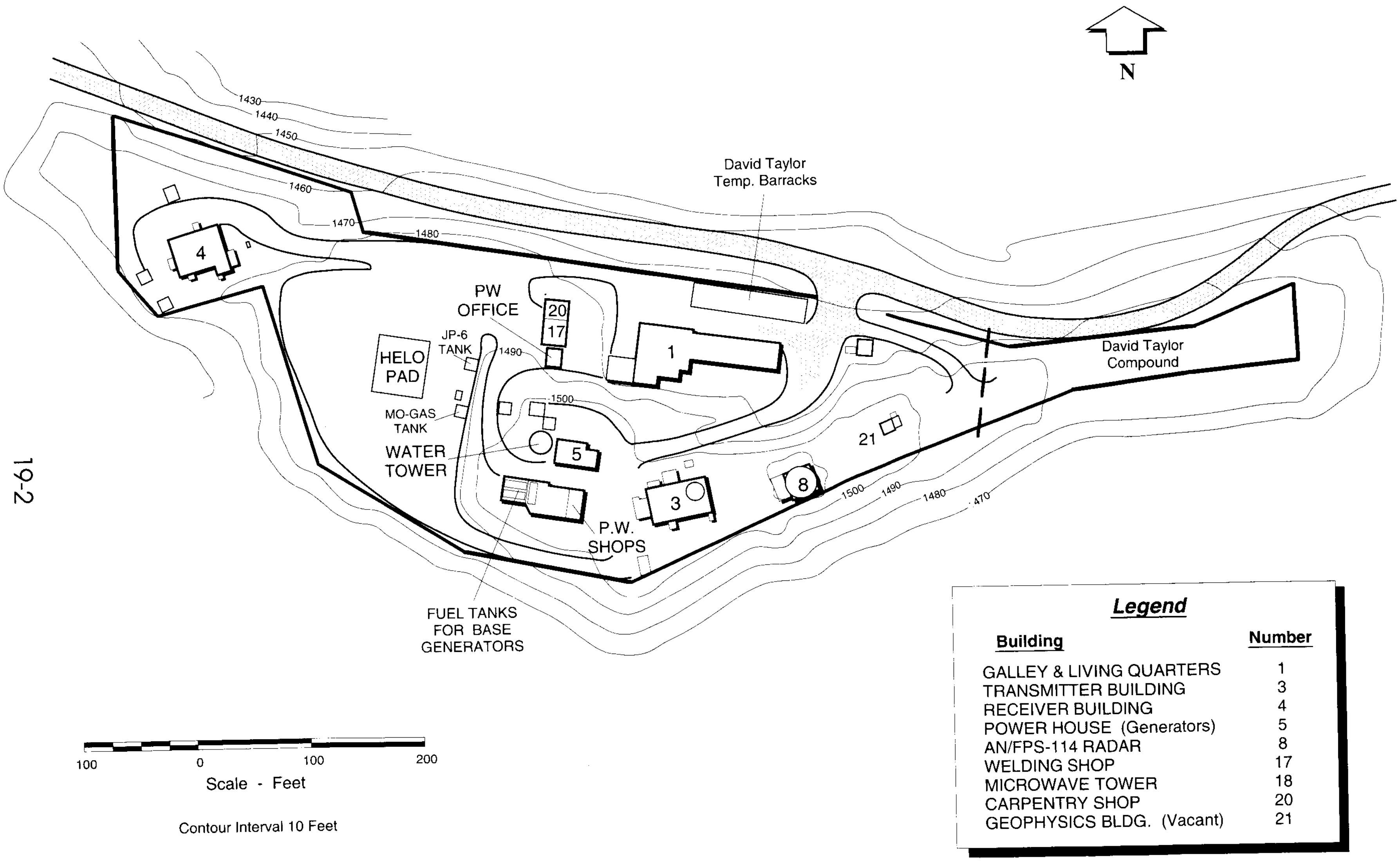


Figure 19-1. Santa Cruz Island Mountain Top Navy Compound

mitter Building 3, Radio Receiver and Microwave, Building 4, Sea Surface Surveillance Radar, Building 8, and a power plant. Additional facilities include backup generators, equipment sheds, work shops, storage facilities, and a water well. The Navy has use of a pier, a landing strip, and a heliport on the island. The island's food, fuel, and equipment is supplied by boat/barge.

GENERAL SUPPORT

The NAWCWPNSDIV site on SCI is supported by several Point Mugu organizations. Primary support, however, is provided by the Range Communications Department and Naval Air Weapons Station (NAWS), Point Mugu Public Works Department. These two primary support sources can be grouped into three broad categories: personnel, logistics, and maintenance/utilities. These categories are defined and discussed in this section and the next.

PERSONNEL SUPPORT

Currently, Range Operations has three electronic technicians who live and work on the island Monday through Friday. Normally, they go to Santa Cruz on Monday morning via boat and return to the mainland on Friday afternoon. If support is required during the weekend, they either remain on the island or are shuttled back and forth by commercial helicopter. Naval Air

The pier at Prisoner's Harbor has always been and still is the main artery for supplies, equipment, fuel, food, and business for the island.

Weapons Station Public Works mans the island 24 hours a day, 365 days a year. Normal manning is two people during the week and one person on weekends.

In addition to the six civil service personnel, four contractor personnel provide food service (cooks and dishwashers) on SCI. Laundry services is also available.

Additional personnel may be on-site at any time for a variety of reasons such as supporting specific operations, inspections (county, state, or federal), contractors required for public works' projects, or DTRC personnel. However, the current "core" population of SCI is ten; three Range Operations technicians, three Public Works personnel, and four contractor employees.

Living quarters for 20 personnel exist inside the main building (Building 1) at the compound. In addition to berthing, this building houses the messing facilities, lounge, and common head facilities. DTRC has built quarters for forty people adjacent to this main building for its personnel. It is used intermittently as DTRC does not permanently assign personnel to the island.

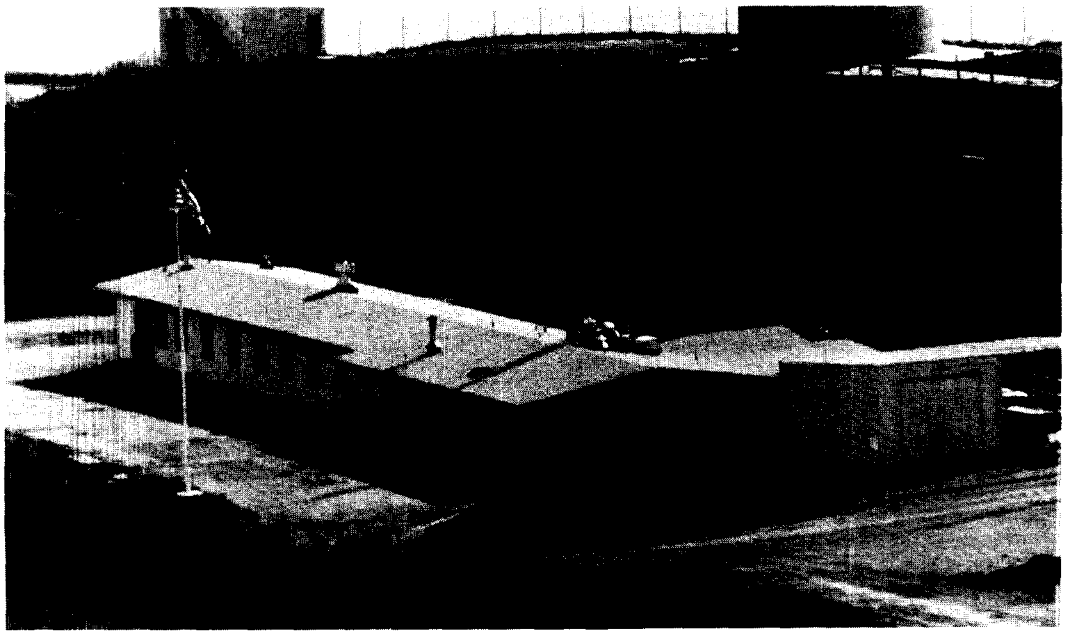
LOGISTIC SUPPORT

Contractors and military provide logistics support to SCI via air and surface transportation. Contractor air support is provided by Aspen Helicopter of Oxnard and Channel Islands Aviation. Aspen has two sizes of helicopter. The smaller helicopter carries three passengers and cargo for a total of 750 pounds with a fixed cost per hour. The larger helicopter carries five passengers and cargo to 1000 pounds with a fixed cost per hour. The average one way trip to SCI in either helicopter takes approximately half an hour.

Fixed-wing support is provided by Channel Island Aviation which has an exclusive operating agreement with the Nature Conservancy. Channel Island Aviation has two sizes of aircraft. Its smaller five passenger plane has a total lift limit of 1000 pounds and has a fixed cost per round trip. Its larger, nine passenger plane has a total lift limit of 1700 pounds and also has a cost per round trip.

SURFACE TRANSPORTATION

All surface transportation, contractor and military, is scheduled through Range Operations Sur-



Main living quarters, a dining facility, and a lounge for personnel working on Santa Cruz Island are found in Building 1.

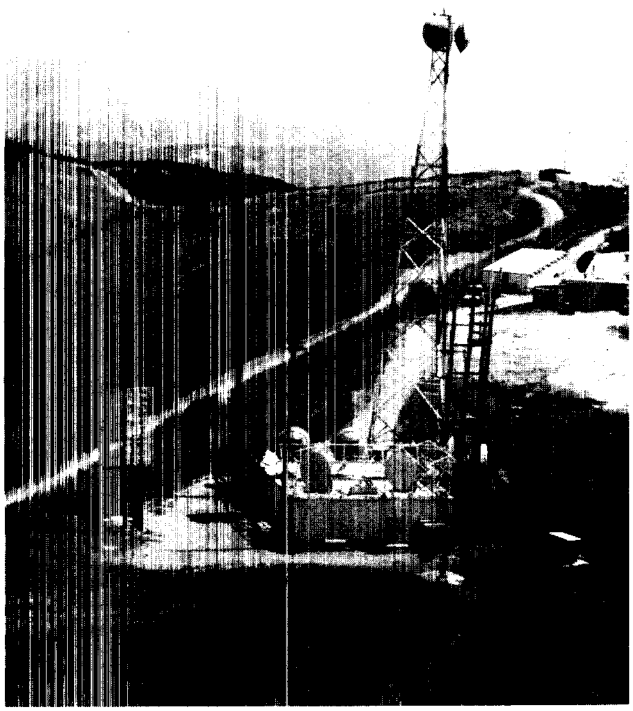
face Craft Division. Surface Craft Division's aviation rescue vessels (AVRs) provide regularly scheduled transportation on Mondays and Fridays. The AVRs carry a maximum of 20 passengers and a total cargo of 3500 pounds. The AVR's are 82 feet in length and travel at an average speed of 15 knots. These boats cost are fixed per hour with the average round trip taking five hours. The AVRs transport approximately 1700 passengers and 350,000 pounds of cargo a year. Passengers and cargo transported to and from SCI are not limited to Range support personnel. An operating agreement with the Nature Conservancy provides that surface transportation will be available to the Conservancy on a "space available basis." This agreement markedly increases the personnel and cargo transported by the AVR's. This agreement also contributes to the very reasonable lease between the Navy and the Conservancy for the 10.8 acre site.

In addition to AVR support, a larger landing craft utility (LCU) also provides surface transportation. This contract craft carries larger cargo, such as fuel trucks, which cannot be carried on the AVRs. The LCU is 130 feet in length and travels at an average speed of 7 to 10 knots.

Section 20 Microwave Communications

GENERAL DESCRIPTION

The NAWCWPNSDIV Santa Cruz Island site is primarily a base for a microwave relay station serving the Sea Test Range, Point Mugu, and Vandenberg Air Force Base (VAFB). Both digital and analog microwave systems are used on SCI. All the SCI microwave systems are designed to operate continuously 24 hours a day. Of the seven analog systems on SCI, five systems are relays between San Nicolas Island (SNI), Point Mugu, and Vandenberg Air Force Base or between VAFB and Point Mugu; only two analog systems (for TV/Video and the SCI AN/FPS-114) originate on SCI. One digital microwave system links Point Mugu and SCI; the second system is a relay between VAFB and Point Mugu. The existing systems can be operated unattended.



Microwave/Receiver building 4 on SCI is the primary relay station serving the Sea Test Range, Point Mugu, and Vandenberg Airforce Base.

INSTRUMENTATION DATA TRANSMISSION SYSTEM

The inter-site portion of the Instrumentation Data Transmission System (IDTS) is composed primarily of microwave communications systems, analog (MVR-8, MW508D, and MW518) radios and digital (MDR-8) radios. These radios operate in the U.S. Government band between 7.125 and 8.4 GHz. The transmit power varies between 1 and 5 watts depending upon the radio model, the receiver sensitivity, and the link distance. The microwave equipment includes multiplexers (time division and frequency division) for transmission of several signals over a common radio link.

SANTA CRUZ ISLAND AND MICROWAVE LINKS

The microwave links provide multi-channel voice and data communications, wideband radar, television video, and high speed telemetry data transmission for a variety of programs and operations at NAWCWPNSDIV, Point Mugu. SCI is a microwave terminal and relay station and has 40 microwave receivers and 38 microwave transmitters.

The SCI microwave repeaters are necessary for the surveillance radar data from SNI. The repeaters at SCI are also used for metric and surveillance radars and high speed telemetry data links to/from VAFB. From VAFB these links can be, and routinely are, relayed to Edwards AFB, NAWCWPNSDIV China Lake, and Hill AFB, Utah. Microwave link distances are listed below.

SCI to Point Mugu - 31 miles
SCI to Point Arguello (VAFB) - 69 miles
SNI to SCI - 52 miles
SNI to Laguna Peak - 65 miles.

The functionality of the microwave equipment located on SCI is depicted by Figure 20-1. It should be kept in mind that this figure has been simplified to convey the signal flow through SCI. Each of the microwave links depicted have frequency and/or space diversity as well as "hot-standby" or hitless switching. There are between two and four microwave transmitters/receivers for each link shown. The microwave links on SCI are described below. Except where noted, the links are 20 to 25 years old and difficult to maintain.

VAFB to/from Point Mugu Digital Microwave Link

The VAFB to/from Point Mugu 45 mbps (DS-3) digital microwave link is relayed through SCI with no drop or insert. This system is ten years old and the equipment is very reliable. This system provides voice and low speed data (utilizing WESCOM D4 channel banks), and high-speed digital telemetry data (up to 5.6 mbps using EMR 8200 multiplex equipment) between Point Mugu and VAFB. The link is subject to fading due to weather related phenomenon.

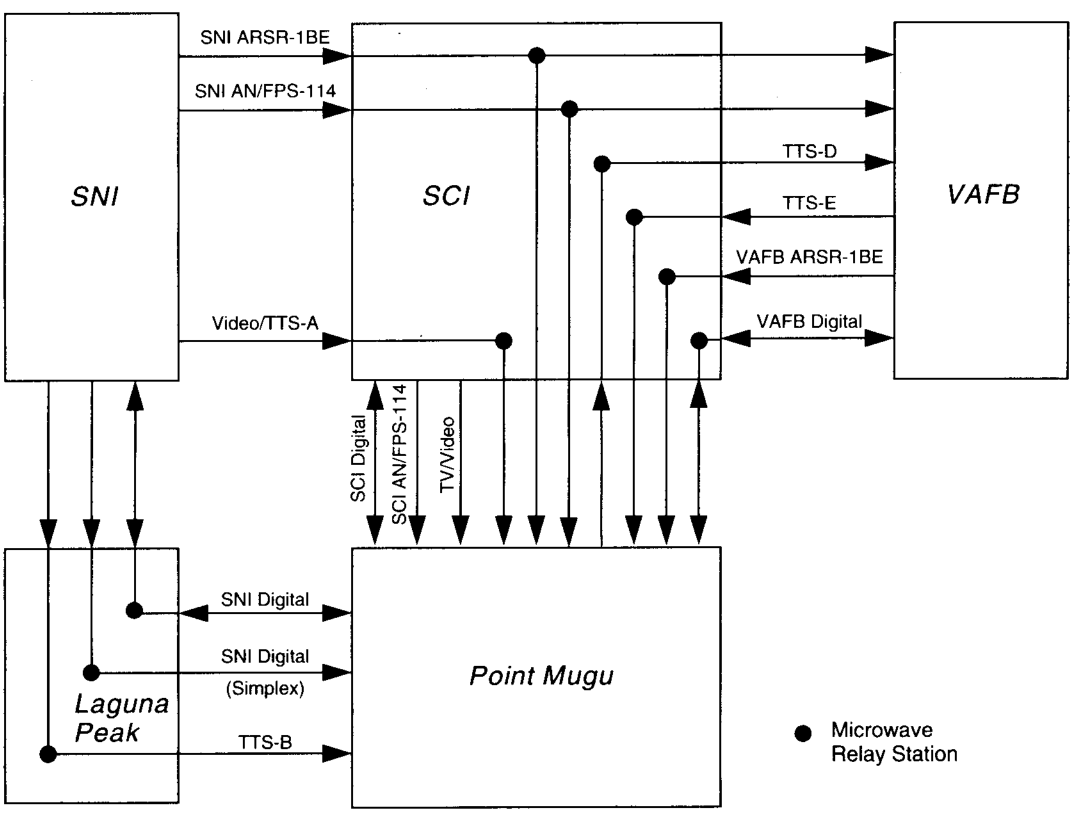


Figure 20-1. Current Inter-Site Instrumentation Data Transmission System

SCI to/from Point Mugu Digital Microwave Link

The SCI to/from Point Mugu 12.928 mbps (DS-A) digital microwave link is used for voice and low speed data (up to 64 kbps). This system is ten years old and reasonably reliable.

VAFB to/from Point Mugu ARSR-1BE Microwave Link

The VAFB ARSR-1BE link is used to relay VAFB's ARSR-1BE video and IFF beacon data to Point Mugu. This link uses analog microwave radios with a RMX-106 radar multiplexer.

Telemetry Transmission System to/from Alpha Analog Microwave Link

The Telemtry Transmission System (TTS) to/from Alpha analog microwave link is used to relay QF-86 and QF-4 target video from the telemetry receiving station on SNI to Point Mugu via SCI.

The TTS-Alpha link can also be used to transmit wide band telemetry data using a TMX-100 analog multiplexer.

SNI to VAFB to/from Point Mugu ARSR-1BE Microwave Link

The SNI ARSR-1BE link is used to distribute SNI's ARSR-1BE video and IFF beacon data to/from Point Mugu and VAFB. The baseband is split at SCI (one path to Point Mugu and one path to VAFB). This link uses analog microwave radios in conjunction with RMX-106 radar multiplexers.

SNI AN/FPS-114 Microwave Link

The SNI AN/FPS-114 link is used to provide SNI's sea surveillance radar video to Point Mugu and to VAFB via SCI. This link also uses an analog microwave radio and an RMX-106 radar multiplexer. The SCI to VAFB portion of this link is not currently used.

SCI AN/FPS-114 Microwave Link

The SCI AN/FPS-114 link is used to provide SCI's sea surveillance radar video to Point Mugu using frequency diversity analog microwave radios and one RMX-106 radar multiplexer.

VAFB to/from Point Mugu TTS-Delta and TTS-Echo Analog Microwave Links

The VAFB to/from Point Mugu TTS-Delta and TTS-Echo analog microwave links are used for telemetry data. The systems use TMX-100 multiplexers and provide wide band telemetry data links between Point Mugu and VAFB via SCI.

Other SCI to/from Point Mugu Microwave Links

The other two SCI to Point Mugu microwave links are used for Television Video. These links use General Telephone Equipment (GTE) analog microwave radios, and there is no diversity. This equipment is about six years old and is very reliable.

SANTA CRUZ ISLAND MICROWAVE EQUIPMENT

There are a total of nine microwave dish antennas on SCI. The SCI to/from Point Mugu analog links are frequency stacked and share common antennas. The TTS links between SCI and SNI and between SCI and VAFB use space and frequency diversity (quad diversity), which requires two antennas (upper and lower). All other links, except the GTE video links, use frequency diversity only.

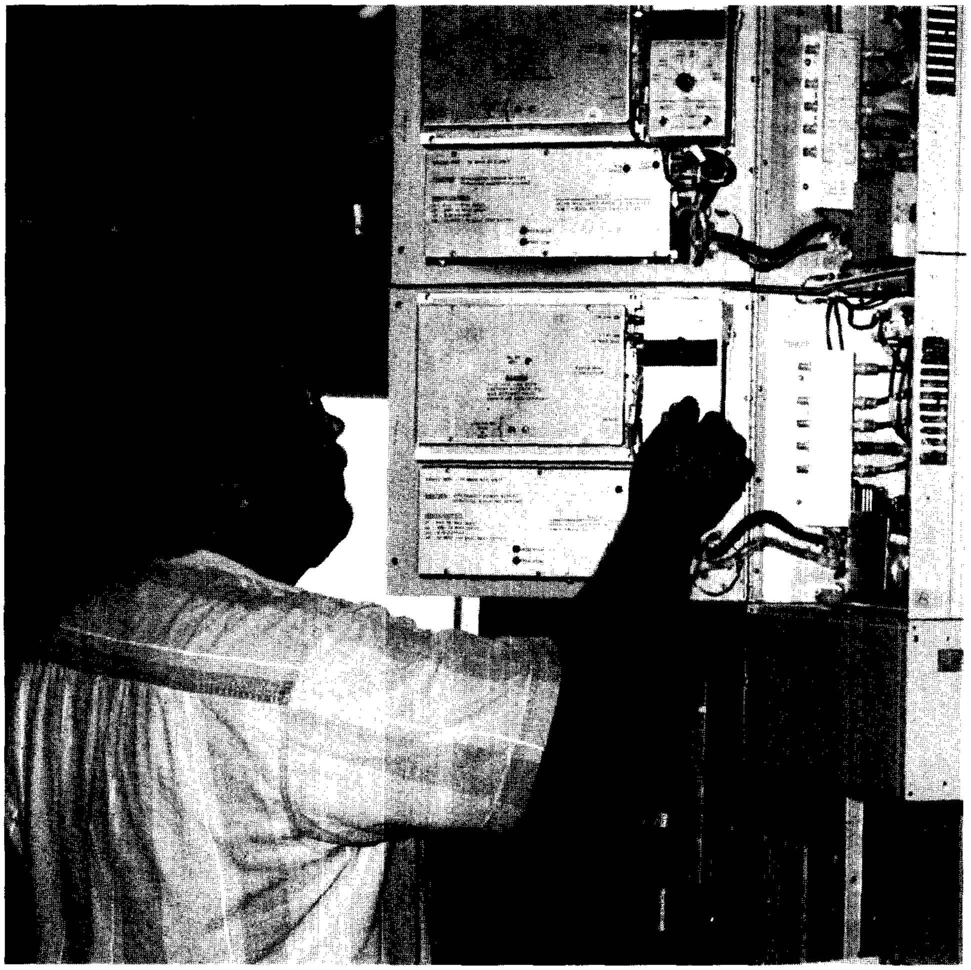
The microwave radios were designed to operate 24 hours a day, 365 days a year. All of the microwave equipment can be operated unattended. The links are dedicated and rerouting to other links is done only in response to outages or equipment failures.

The total power consumption of the microwave equipment on SCI is approximately 250 amps at 24 vdc. The two newer digital systems consume roughly 50 amps of this total.

The analog microwave equipment has no built-in remote alarm or diagnostic functions. The newer digital equipment contains built-in remote status and alarm monitoring functions as well as the capability to remotely command loop backs for diagnostic testing. Also, these newer microwave systems are fully redundant with "hot-standby" automatic switch over in the event a primary module fails.

None of the analog links are encrypted since analog signals cannot be encrypted. This is one reason all the newer links are digital. The SCI-Point Mugu digital microwave link is Encrypted For Transmission Only (EFTO). The VAFB-Point Mugu digital microwave link was designed for EFTO but EFTO is not implemented since VAFB has no crypto devices for this link.

In early 1993 the battery plant on SCI was replaced. The batteries and battery chargers were damaged as a result of a lightning strike in February 1992. Gel-filled batteries and redundant chargers for the microwave radios and associated equipment were installed.



The MW518 Collins microwave radio provides multi-channel encrypted voice and data communications and digitized radar rotation data for a variety of programs and operations at Point Mugu.

Section 21

UHF/VHF Radio Equipment

GENERAL DESCRIPTION

The radio systems at SCI consist of UHF and VHF transmitters and receivers plus their associated multicouplers and antennas. The transmitters are located in Building 3 and the receivers are located in Building 4. The primary frequencies used at SCI are UHF (225-400 MHz). VHF (115-149 MHz) is used for air traffic control of military aircraft and occasionally for range users with only VHF capability.

The UHF radios are used primarily for air to ground communications. They are used by Range Operations personnel to communicate with ships and aircraft involved in operations. Voice and data transmission back to Point Mugu is via the SCI microwave system.

There are 37 UHF transmitters (predominately GRT-22s) and six VHF transmitters in the transmitter building, and 28 UHF receivers (predominately GRR-24s) and six VHF receivers in the receiver building. Many of these transmitters and receivers are not currently used on a regular basis. There are also two AN/GRC-171 UHF transceivers and two AN/GRC-211 VHF transceivers at the site which are not installed. Maintenance is performed by on-site personnel.

The number of assigned frequencies for the Range is 21 standing frequencies including two VHF, and 23 operational frequencies including one VHF. Normal operational requirements are for six standing and six operation-specific frequencies at SCI. The standing circuits are fixed frequencies and operate 24 hours a day. They provide a civilian aircraft guard (emergency) channel, both military and civilian air traffic control channels, and one channel used by the Range Surveillance Center (PLEAD). The operation-specific circuits are shut down daily at the completion of operations. Partial redundancy with other NAWCWPNSDIV sites is maintained so that the same frequencies are normally used at Laguna Peak, San Nicolas Island, and Santa Cruz Island.

Prior to an operation, a maximum of six frequencies are assigned for use during the operation. These six operation-specific frequencies (one of which may be VHF) are used in conjunction with the six standing frequencies (four UHF and two VHF). Of the operation-specific frequencies, one is usually assigned to a wide band (digitized) secure voice signal. However, SCI currently does not have the capability to support wide band secure voice.

Transmitter and receiver frequency settings, before and during operations, are done by on-site personnel including the site supervisor. Personnel usually receive the required frequency settings one day prior to the operation from Technical Control in Building 531 at Point Mugu. Except for the four GRC type transceivers which are not installed, tuning the existing radios is manual and requires computing thumbwheel and capacitor settings based on frequency, setting front panel thumbwheel switches, and adjusting an internal capacitor. The radios are also powered on and off daily by on-site personnel. Once powered on, the radios do not require continuous monitoring and can be left unattended.

EXISTING PLANS

There is an existing modernization plan to configure all transmitters and receivers for transceiver operation and collocate the equipment in the receiver building on SCI. This project includes replacing wiring, upgrading patch panels, and installing new monitoring and test equipment.

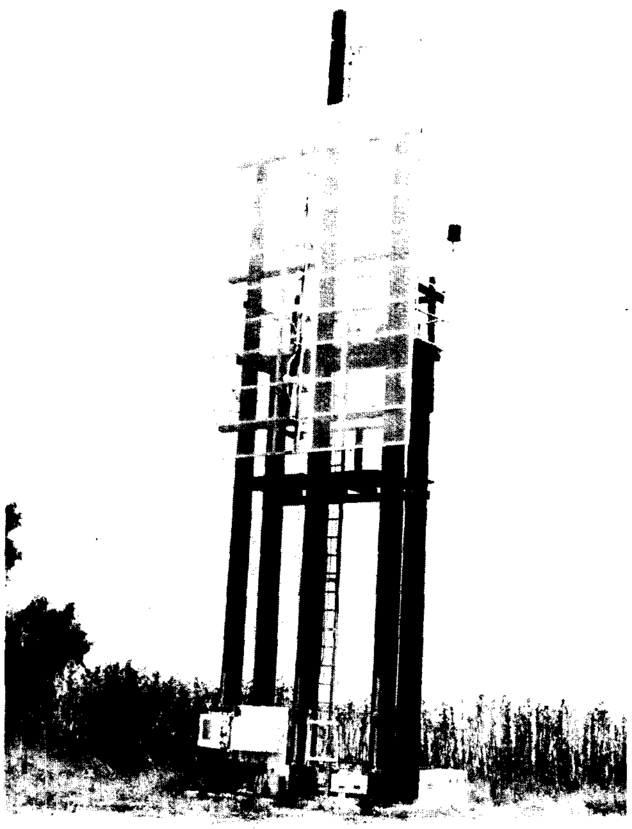
Section 22 Other Instrumentation/ Equipment

GENERAL DESCRIPTION

Other NAWCWPNSDIV instrumentation/ equipment on SCI is briefly discussed below. None of this equipment requires manning by on-site personnel.

EXTENDED AREA TEST SYSTEM GROUND REFERENCE STATION

The Extended Are Test System (EATS) Ground Reference Station (GRS) on SCI is one of many such sites used to perform EATS tracking. These sites are unmanned. They require minimal repair and are maintained by the EATS support contractor. The GRS on SCI is heavily used by the tracking system and is dependent on the power plant to keep the batteries charged. Some EATS remote sites use solar panels to charge the batteries and the SCI site could be converted to solar power if external power was not available.



EATS GRS on SCI is just one of many unmanned EATS antennas within the NAWCWPNSDIV Sea Test Range.

METEOROLOGY: HANDAR-AUTOMATIC WEATHER STATION

This equipment performs general climatology functions. It is part of a network of HANDARs that provide general climatology data for operations support. These systems are used by the Geophysics Division to verify and update their climatology models. These systems also support search and rescue operations.

The data from the SCI HANDAR is brought back to Point Mugu via the microwave system. There is also a radio receiver located at the SCI HANDAR which relays the data from the San Miguel HANDAR to Point Mugu via the microwave system.

The HANDAR on SCI uses AC power and is fully remote controlled. All operation of this system is performed from Point Mugu. This system requires servicing from the Geophysics Division approximately once every six months. The life expectancy of this system is several years.

Section 23 Surveillance Radars

GENERAL DESCRIPTION

Surveillance instrumentation on the island includes an AN/FPS-114 Sea Surface Surveillance Radar and back-up AN/APS-20 Radar.

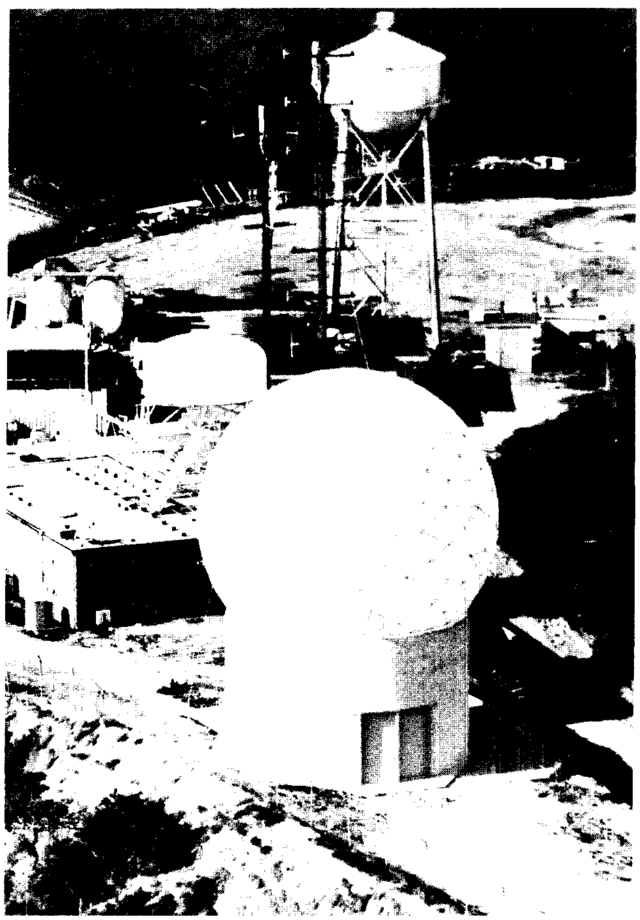
SURFACE SURVEILLANCE RADARS

There are two Sea Surface Surveillance Radars located on SCI. An AN/APS-20 radar was installed in the mid-1950's and then an AN/FPS-114 was installed in 1975 to replace the AN/APS-20 radar. The AN/APS-20 until recently was used only as a emergency back-up for the AN/FPS-114. The AN/APS-20 is now inoperative and will not be reactivated. There is also an Automated Range Surveillance System (ARSS) digital processing unit collocated with the AN/FPS-114 radar which compresses the radar video into a 9600 bps digital data stream for transmission over digital microwave links.

There is also one AN/FPS-114 radar located on Laguna Peak and one on SNI. The radars were installed to provide coverage of the Inner Sea Test Range. They have a maximum range of 120 miles although surface coverage is limited by line of sight to between 42 and 55 miles depending on site altitude. The AN/FPS-114 radars are used primarily for range clearance prior to live firings. The radars are invaluable for surface coverage of the Inner Sea Test Range. Operations involving live firings require the use of up to three radars simultaneously.

The only alternative to the AN/FPS-114 radars at this time is visual clearance by various aircraft such as the P-3 range aircraft. The Air Route Surveillance Radars (ARSRs), also used for range clearance, do not provide coverage of small surface craft.

The SCI AN/FPS-114 is the most heavily utilized of the three AN/FPS-114 radars on the Range. This radar provides surface coverage of major portions of the Inner Sea Test Range. It also provides the best surface coverage of areas used by the DTRC radar imaging facility and an acoustics range located just south of SCI. The two other AN/FPS-114 radars also provide coverage in these areas, but their coverage is limited at low altitudes due to the earth's curvature.



The SCI AN/FPS-114 radar, one of only three in the Sea Test Range, is the most heavily utilized on the Range. The AN/FPS-114 radars were built specifically for the Sea Test Range are found no where else in the world.

AN/FPS-114 video is transmitted from SCI via analog microwave to the mainland and displayed in Building 53 at Point Mugu for use by the Range Clearance group and the various test conductors.

The AN/FPS-114 radar is remotely controlled and monitored by Surveillance Radar personnel in Building 53 at Point Mugu. Remote functions and indicators include: transmitter status, receiver gain, receiver sensitivity control, pedestal oil pressure indicator, power supply monitor, wave guide pressure indicator, and antenna Voltage Standing Wave Ratio (VSWR). These status monitors are limited to "on/off" or "OK" lights. The ARSS processor is also remotely operated, however it is not recyclable (power on/off) from Point Mugu, although that function has been implemented for the Laguna Peak system.

Routine maintenance is performed by the on-site island Range Operations Technicians. Major maintenance and refurbishments are done by Range Operation Technicians from Point Mugu with occasional assistance from contractors. Except for weekly pedestal lubrication, the AN/FPS-114 radars require maintenance/repair approximately once per month.

Section 24 NAWS Public Works

GENERAL DESCRIPTION

SCI Public Works is under NAWS direction and administered by personnel form Point Mugu.

The NAWS Point Mugu Public Works Island Division P736C, has a head foreman and a permanent detachment of two electronic power controllers assigned to SCI. The division provides repair shop services such as carpentry, plumbing, heating, air conditioning, power, telephone, fuel, water purification, and off-loading of the LCU cargo and supplies. The Public Works office can be reached at (805) 989-9756.

Public Works is comprised of two divisions; Maintenance and Utilities that are further described below.

MAINTENANCE AND UTILITIES

Maintenance support on SCI is provided by NAWS Public Works Department, Point Mugu. Facility repairs are performed after a service call and/or work requests has been submitted.

The SCI power plant provides electrical power to instrumentation, equipment, and facilities within the NAWCWPNSDIV compound. The power plant operates continuously 24 hours a day, 365 days a year and Public Works personnel are on-site continuously to support operation of the plant.

MATERIAL SUPPORT

Public Works material support such items as fuel filters, oil, and chemicals for the boilers or chlorine for the water system. There are fuel storage tanks with a total capacity of 35,000 gallons at the main compound. A fuel truck, which is ferried to the Island, by the LCU, carries 3,500 gallons of fuel.

ROADS

Public Works personnel also maintain several roads as required by the lease agreement with the Nature Conservancy. A bulldozer and grader are permanently located at SCI to assist in meeting this requirement. Public Works also maintains a 7-ton fork-lift. Other government vehicles on-site include a 6-passenger 4-wheel drive truck, a 9-passenger 4-wheel drive Suburban, a cart, a 5-ton 4-wheel drive truck, and a 1800 gallon water truck used for fire fighting. These vehicles are maintained under a contract administered by Public Works.

In addition to maintaining designated roadways on SCI, the government is required to maintain Prisoners' Harbor Wharf.

UTILITIES

Utilities support, provided by NAWS Public Works, includes power, water, and septic. The power plant provides utility power for NAWCWPNSDIV and tenant facilities and equipment within the compound. Utility power is also provided for the County Sheriff's microwave repeater. Water is provided by a well at no cost other than fuel and maintaining the pump house and water pipeline. Water is pumped from the pump house to a storage tank in the compound every 7 to 10 days or as required. The main compound is on a leach field septic system which requires little maintenance other than using degreaser in the messing facilities. Telephone support including the Private Automatic Branch Exchange (PABX), telephones, and lines was recently transferred to the Information Resources Management Office.

POWER PLANT

The SCI electric power plant provides 480 volt utility power to all facilities and various tenants' equipment within the compound. Each building/facility has its own step down transformer. Reliable power is essential to all range systems for supporting missions and programs. The major facilities include:

- Range Operations: Radio Transmitter Building 3, Radio Receiver and Microwave Building 4, and Sea Surface Surveillance Radar Building 8.
- Range Instrumentation Systems: Extended Area Test System (EATS) Antenna Facility 24.
- Public Works: Housing Building 1, Fuel Farm, Pumps, Work Shops, and Storage Buildings.
- DTRC: Project Facilities and Housing Building 1-1.

The minimum SCI site power requirement is 100 kilowatts when there are no operations. During periods of operational support, power demand increases up to 200 kw.

POWER PLANT EQUIPMENT

Existing Power Plant Equipment consists of:

Prime Generator	Standby	Manufacturer/ Model
#1: 210 kw	230 kw	Cummings NT-855-G54
#2: 210 kw	230 kw	Cummings NT-855-G34
#3: 200 kw	205 kw	Caterpillar 3306

- Three diesel engine-generator sets. 480 Volt, 3 Phase, 60 Hz, 1800 rpm, 0.8 power factor, delta winding, rated at:
- Three switch gears, one for each generator. The switch gears consist of 800 Amp Frame - 400 Amp Trip breakers, control panels, 480 Volt - 1600 Amp - 3 phase busses, master control panels and distribution panels.
- Alarms: Over crank, low oil pressure, high water temperature, over speed, circuit breaker lock out, reverse power, under voltage, under frequency, ground fault, loss of field, pre-low oil pressure, pre-high water temperature, battery charger malfunction, failed to parallel, control switch not in auto, unit available, generator running, and low water level.
- Instrumentation: Frequency meter, voltmeter, ammeter, kilowatt meter, kilowatt hour meter, and synchroscope.
- Devices: Protective relays, transducers, and engine shutdown safety switches.

POWER PLANT OPERATION

The electric power plant is operated continuously, providing power for the surveillance radar, microwave systems, and UHF/VHF radio communications equipment at all times: 24 hours per day, seven days per week, 365 days per year. Continuous operation of the power plant requires frequent monitoring, inspections, and maintenance. One generator is running at all times. Two other generators are on standby. These generators are switched over for maintenance, repair, and/or overhaul.

The power plant requires an average of 1500 gallons of diesel fuel per week. The fuel is transported from Point Mugu to SCI by tanker trucks via Port Hueneme on the LCU. There are three (a

15,000 gallon, a 10,000 gallon, and a 4,000 gallon) fuel storage tanks and three (one for each generator) 2,000 gallon day tanks all adjacent to the power plant. The fuel is transferred from the storage tanks to the day tanks for power generation.

Whenever power plant personnel operate or maintain high voltage equipment, two people must be present for safety reasons. Similarly, periodic and on-call maintenance from the mainland would also require two people for safety reasons.

Daily maintenance checks are conducted to verify satisfactory operating conditions including: coolant, oil and fuel levels, pressure, temperature, filters, batteries, chargers, switch gears, instrumentation meters and gauges, over crank, over speed, vibration, and leaks for water, oil and fuel. Corrective actions are taken as necessary and maintenance records are logged.

Scheduled preventive maintenance and inspection (PMI) is performed monthly, semi-annually, and annually in accordance with the Public Works Preventive Maintenance System. PMI intervals are determined by the total accumulated hours of engine-generator operations. Spares such as fan belts, minor electrical parts, and filters for oil, air, fuel, coolant and crankcase are kept on-site.

EXISTING PLANS

The power plant was upgraded recently. This upgrade included new generators and switch gears and replacing the battery plant and chargers used for the microwave systems.

FIRE DETECTION AND PROTECTION

Fire detection and protection at an unmanned site is a major concern. In the case of SCI, this concern is amplified since the response time could range from one or two hours to one or more days depending upon the availability of transportation and the weather. Existing fire detection and protection systems on SCI consist of:

Building	Facility/ Equipment	Types of System
1	Living Quarters	Sprinklers
2	Power Plant	None
3	RF radio transmitters	Halon APS-20 radar, PABX
4	Microwave systems	Halon RF radio receivers
8	AN/FPS-114 radar	Halon

None of the existing fire alarm systems on Santa Cruz Island are connected to a central fire alarm station. There is no fire detection or protection system for the main power plant or the fuel farm.

Additionally, the risk of brush fires on the island is high. When the Nature Conservancy acquired SCI they stopped all ranching with the result that natural vegetation has become tall and dry. Any brush fire near the NAWCWPNSDIV site could require significant outside effort to control and could also result in significant damage to the site.

PHYSICAL SECURITY

SCI is considered a communication station and subject to minimum security requirements set forth in OPNAVINST 5530. 14B. (Section 3 Level Two and Appendix IX - Communications Stations).

Presently a 10 foot security fence surrounds the 10.8 acre site.

Section 25 David Taylor Research Center

GENERAL DESCRIPTION

The David Taylor Research Center (DTRC) operates a radar imaging facility (Santa Cruz Radar Imaging Facility - SCRIF) within the NAWCWPNSDIV Santa Cruz complex. This facility is usually manned three or four days a week by two or three DTRC (or DTRC contractor) personnel. However, during SCRIF operations which are conducted five to ten times a year, 20 to 40 personnel may be on-site continuously for up to six days. DTRC provides their own secure communications and is responsible for the security of the SCRIF facility during operations. DTRC also provides support to a contractor operated offshore acoustic range (Santa Cruz Acoustic Range Facility - SCARF) which is not directly supported by NAWCWPNSDIV.

DTRC has their own quarters for up to 40 personnel within the NAWCWPNSDIV compound. NAWCWPNSDIV provides water, telephone service via microwave, messing, laundry, and septic for these quarters and the DTRC facility itself. NAWCWPNSDIV also provides power for the SCRIF although the SCRIF does have its own generators and battery plant for backup and to meet their "clean" power requirements. NAWCWPNSDIV also provides AVR transportation to and from the island for DTRC personnel, material, supplies, and equipment on a space available basis. A 1988 support agreement (apparently never signed or implemented) indicates that DTRC is to reimburse NAWCWPNSDIV for most of these support services. The agreement also indicates that NAWCWPNSDIV/NAWS has (or will have) responsibility for providing support such as SCI site security and fire protection on a non reimbursable basis.

Currently NAWCWPNSDIV provides geophysics data and AN/FPS-114 radar data to the SCRIF. Additionally, DTRC has identified a need to pass unclassified narrow band audio to Tracking and Control rooms at Point Mugu, to receive precision radar data, and to link with NAWCWPNSDIV radios via SCI microwave links.

DTRC funds direct support through the Range Program Management Division. Also, DTRC is assessed 20% of the SCI lease costs for land leased by NAWCWPNSDIV specifically for DTRC.

Section 26 Santa Cruz Island Telephone Directory

GENERAL DESCRIPTION

Listed below are the telephone numbers for all facilities and services on Santa Cruz Island. Telephone listings of individuals by name can be found in the NAWCWPNSDIV Telephone Directory. Emergency numbers are also listed below. **Note:** Some emergency response teams are located at Point Mugu.

POLICY

All long distance calls shall be made using the Defense Switched Network (previously AUTOVON). Department of Defense telephone communications systems are for the transmission of official Government information only and are subject to telephone communications security monitoring. Emergency and other phone numbers for SCI personnel are listed in Table 26-1 and Table 26-2.

HOW TO DIAL SCI PHONES

1. To dial SCI numbers, dial only the four digit number.

2. To call Mugu, if the telephone number of the telephone you are using begins with:

   7xxx - only dial the four digit number
   2xxx - dial 7, then the four digit number.

3. To call off-base, if the telephone number of the telephone you are using begins with:

   7xxx, dial 99 and the local number.
   2xxx, then dial 7, then 12 and the local number.

4. Autovon can only be dialed from a 7xxx telephone. Dial 55, then the telephone number. The SCI autovon prefix is 351-xxxx.

EMERGENCY PHONE NUMBERS

Function	Extension
Emergency (Fire Department)	911
NAWS Officer of the Day	7209/7294
NAWS Officer of the Day (Emergency)	8257
Medical	7393
Security	7907
Public Works (after hours)	7777/8888
Operations Duty Officer	8521
Range Surveillance Watch Center (24-hour watch)	8841

Table 26-1. SCI Emergency Phone Number Listings

SANTA CRUZ ISLAND FACILITIES

Function	Building	Number
Range Operations Communications	3 and 4	989-9759
	4	989-7689
Public Works Shops		989-9756
Barracks	1	989-9745
Cooks	1	989-9737
Pier		989-9752
Airstrip		989-9751
University Of California Santa Barbara -	Ranch Location	989-9751
David Taylor Research Center		989-1477

Table 26-2. SCI Facilities and Services Phone Number Listings

Section 27 Acronyms and Abbreviations

A	Alpha
AC	Alternating Current/Asphaltic Concrete
A/D	Analog to Digital
AFB	Airforce Base
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
AM	Amplitude Modulation
AN/APS-20	Army Navy Airborne Pulse System
AN/FPS-114	Army Navy/Fixed Pulse System
AN/GRC	Army Navy/Ground Radio Transceiver
AN/SPS	Army Navy/Shipborne Pulse System
AN/UK	Army Navy/Utility Telemetry
ANSI	American National Standard Institute
AOIC	Assistant Officer in Charge
APS	Automatic Phase Control System
ARSR-1BE	Air Route Surveillance Radar-1 Antenna Echo
ARSS	Automated Range Surveillance System
Asph	asphalt
ASR	Airborne Surveillance Radar
ATC	Air Traffic Control
ATS	Air Tracking System
AUTOVON	Automatic Voice Network
AVR	Aviation Rescue Vessel
Az	Azimuth
B	Bravo
B.C.	Before Christ
B/W	Black/White
BER	bit error rate
BIØ-M	Bi-Phase-Mark
BIØ-S	Bi-Phase-Space
BITE	Built-in Test Equipment
Bldg	Building
BPI	Bits Per Inch
bps	bits per second
BQ	Bachelor Quarters
BQM	Air or Ground-Launched Target Designator
BQM-74 C/E	Air or Ground-Launched Target Designator-74
BST	Boresight Tower
C	Charlie
Cap	Capacity
CBW	Constant Bandwidth
CCTV	Closed Circuit Television Monitors
CDC	Control Data Corporation
CDT	Command Control/Command Destruct Transmitter
CEC	Consolidated Engineering Corporation

Acronyms and Abbreviations

CEQ	Council on Environmental Quality
CH	Channel
CLIM	COMSEC (Crypto) Line Interface Module
cm	Centimeter
COMM	Communications
COMNAWC	Commander Naval Air Warfare Center
CONAS	Commander Naval Air Station
Conc	Concrete
CPS	Cycles per Second
CPU	Central Processing Unit
CRT	Cathode Ray Tube
CSTS	Control Station Test Set
CW	Continuous Wave
D	Delta
DAC	Digital To Analog Converter
dB	Decibel
DBM	Data Based Management
dBm	Decibel Above one Millowatt
DC	Direct Current
DD	Data Demultiplexer
DD/DE	Destroy/Destroy Escort
DDI	Digital Display Indicator
DEC	Digital Equipment Corporation
deg	degree
DEI	Defense Electronics Incorporated
DEM	Digital Event Marker
DEMUX	Demultiplexer
DEU	Doppler Extractor Unit
DMU	Data Multiplexer
DMX	Digital Multiplexer
DOD	Department of Defense
DPSK	Differential Phase Shift Keying
DRG	Data Receiver Group
DS-3	Digital Signal Level 3
DS-A	Digital Signal Level A
DSA	Defense Security Agency
DSI	Data Systems, Inc.
DSN	Defense Sewitched Network
DT	Deadtime
DTB	Data Transmission Buffer
DTM	Digital Telemetry
DTRC	David Taylor Research Center
DU	Digital Unit
DVES	Doppler Velocity Extraction System
E	Echo
EAFB	Edwards Air Force Base

Acronyms and Abbreviations

EATS	Extended Area Test System
EFTO	Encryption For Transmission Only
EIS	Environment Impact Statement
EMR	Electromechanical Research
EOD	Explosive Ordnance Disposal
F	Fahrenheit
FAA	Federal Aviation Administration
FET LNA	Fleet Effect Transistor Low Noise Amplifier
FIC	Frequency Interference Control
FM	Frequency Modulation
FO	Fiber Optic
FOCUS	Fiber Optics Communications Underwater System
fpm	Frames Per Minute
fps	Frames Per Second
Freq.	Frequency
FSK	Frequency Shiftkeyed
ft	feet/foot
FY	Fiscal Year
G/T	Gain-to-Temperature Ratio
GCA	Ground Control Approach
GHz	Gigahertz
GIS	Ground Interrogation Station
GKR	Ground Based Telemetry Receiver
GMQ	Ground Meteorological Equipment
gph	gallon per hour
gpm	gallon per minute
GPS	Global Positioning System
GRR	Ground Radio Receiver
GRS	Ground Reference Station
GRT	Ground Radio Transmitter
GTC	Gas Turbine Compressor
GTE	General Telephone Equipment
HF	High Frequency
HM	Hospital Man
HP	Hewlett-Packard
Hycam	High Camera
Hz	Hertz (Measured in Cycles per Second)
I/O	Input/Output
ID	Identification
IDC	Independent Duty Corpsmen
IDRAN	Integrated Digital Ranger
IDTS	Instrumentation Data Transmission System
IEC	Interstate Electronics Corporation
IF	Intermediate Frequency

Acronyms and Abbreviations

IFF	Identification Friend or Foe
IFR	Instrumented Flight Rules
ILS	Instrumented Landed System
ips	inch per second
IRIG	Inter-Range Instrumentation Group
ITCS	Integrated Target Control System
JP-4	Jet Propellant-fuel number 4
JP-5	Jet Propellant-fuel number 5
°K	degree Kelvin
kbps	kilobits per second
kHz	Kilohertz
kva	Kilovolts Amp
kw	Kilowatt
LAX	Los Angeles International Airport
lbs.	pounds
LCU	Landing Craft Utility
LF	Low Frequency
Locam	Low Camera
lpm	lines per minute
LRS	Local Ranging Station
LSB	Lower Sideband
max	maximum
MB	Megabyte
MB/S	Megabyte per Second
mbps	Magabits per second
MCA	Minimum Crossing Altitude
MCC	Maintenance Control Center
MDI	Miss-Distance Indicator
MDM	Miss Distance Measurement
MDP	Multicoupler
MDRB	Microwave Digital Radio
MEDEVAC	Medical Emergency Evacuation
MFB	Multi-Function Buffer
MFSA	Missile Flight Safety Analyst
MFSO	Missile Flight Safety Officer
MHz	Megahertz
mil	million
mm	Millimeter
MOCS	Master Operations Control Station
MOTU	Mobile Optical Tracking Unit
MPS	Miles Per Second
MQM	Ground only-Launched Target Designator
MRA	Microdyne Receiver Airborne

Acronyms and Abbreviations

MRS	Mini-Rawinsonde System
MSS	Meteorological Sounding System
MTI	Moving Target Indicator
MUX	Multiplexer
MVR-8	Microwave Video Radio-8 GHz
MW	Megawatt, Microwave
MW	Microwave Analog Radio
MWR	Morale, Welfare, Recreation
NAVAID	Navigational Aids
NAVFAC	Naval Facility
NAVSTAR	Navstar Satellites
NAWCWPNSDIV	Naval Air Warfare Center - Weapons Division
NAWS	Naval Air Weapons Station
NBS	National Bureau of Standards
NC	Mobile Electric Power Unit
NCPP	Mobile Electric Power Plant
NDB	Non-directional Beacon
NEC	Nipon Equipment Corporation
NEPA	National Environmental Policy Act
NEX	Navy Exchange
NIST	National Institute of Standards and Technology
NM	Nautical Mile
NNE	North - Northeast
NOSC	Naval Oceans Systems Center
NRZ	Non-Return-to-Zero
NRZ-M	Non-Return-to-Zero-Mark
NRZ-S	Non-Return-to-Zero-Space
NSI	San Nicolas Island TACAN
NTD	Point Mugu TACAN
NTDS	Naval Tactical Data System
NTS	National Television Standard
OAB	Ordnance Assembly Building
OC	Operations Conductor
OCC	Operation Control Center
OCR	Operations Control Room
ODG	Operations Display Group
OIC	Officer-In-Charge
OLF	Outlying Landing Field
Op	Operation
OPNAVINST	Operational Naval Instruction
PABX	Private Automatic Branch Exchange
PAM	Pulse Amplitude Modulation
PAR	Precision Approach Radar
PBS	Postflight Batch System

Acronyms and Abbreviations

PBW	Proportional Bandwidth
PBX	Private Branch Exchange
PCA	Programmable Converters
PCC	Portland Cement Concrete
PCM	Pulse Code Modulation
PDM	Pulse Duration Modulation
ped	pedestal
PLEAD	Radio call sign for Range Clearance
PM	Pulse Modulation
PMI	Preventative Maintenance and Inspection
PPI	Plot Parameter Indicator
ppm	pulse per minute
pps	pulse per second
PRN	Pseudo random Noise
psi	pound per square inch
psig	pound per square inch gauge
PSK/PM	Phased Shiftkeyed
QF	Aircraft Target Designator
R3	EATS intelligent transponder (Report/Respond/Relay)
Radar/RADAR	Radio Detection and Ranging
RAE	Range, Azimuth, Elevation
RAM	Rolling Airframe Missile
RAWINSONDE	Radiosonde and Radar Wind Sound (combined)
RBD	Radar Beacon Digitizer
RCA	Radio Corporation of America
RCC	Range Controller Console
RD	Radarman
RF	Radio Frequency
RFCO	Range Facilities Control Office
RIDE	Real-time Information Distribution Environment
RII	Range Instrumentation Interface
RM	Room
RMS	Root-Mean Square
RMX	Radar Multiplexer
RO	Range Operations
ROC	Range Operations Center
ROCS	Range Operations Control System
RODS	Range Operations Display System
ROICC	Resident Officer-In-Charge of Construction
ROS	Range Operations Supervisor
rpm	rate per minute
RSC	Range Surveillance Center
RSL	Ready Service Locker, Received Signal Level
RTCC	Real-time Computer Center
RTCIC	Real-time Computer Interface Center

Acronyms and Abbreviations

RTR	Real-time Reformatter
RVCS	Radar Video Compression System
RX	Receiver
RZ	Return-to-Zero
SAR	Sea Air Rescue
SCARF	Santa Cruz Acoustic Range Facility
SCI	San Clemente Island or Santa Cruz Island
SciComm	Science Communications
SCRIF	Santa Cruz Radar Imaging Facility
SDC	Serial Data Controller
sec	second
SEPTAR	Seaborne Power Target
SEPTARS	Seaborne Powered Target Systems
SETT	Special Engineer Test Target
SKR-1	Shipborne Telemetry Receiver-1
SLAT	Supersonic Low Altitude Target
SNI	San Nicolas Island
SPARS	Sensor Positioning and Readback System
sps	samples per second
SR-140	Scientific Radio-140
SSB	Single SideBand
SSBSC	Single SideBand Suppressed Carrier Mode
SSI	Seashore Interface
STR	Sea Test Range
SV-2	Secure Voice
Swl	Swivel
SXC	Santa Catalina Island VORTAC
T & C	Track and Control
TA-13	Transportable Radio-13
TACAN	Tactical Air Navigation
TBOS	Telemetry Bite Oriented Serial
TCG	Time Code Generator
TDC	Telemetry Data Center
TDHS	Telemetry Data Handling System
TDP	Telemetry Data Processor
TDS	Telemetry Data System
Temp.	Temperature
TM	Telemetry
TMX	Telemetry Multiplexer
TPS	Telemetry Processing System
TR	Trailer, Telemetry Receiver
TSPI	Time, Space, Position Information
TSS	Telecommunications Switching System
TTS	Telemetry Transmission System
TTY	Teletype

Acronyms and Abbreviations

TV	Television
TX	Transmitter
UCC	Universal Code Cockpit
UHF	Ultrahigh Frequency
U.S.	United States
USB	Upper SideBand
USNO	United States Naval Observatory
UTC	Universal Time Code
UTS	Underwater Tracking System
UYK-43	Utility Data Processing Computer
v	Velocity
VAFB	Vandenberg Air Force Base
VAX-780	Virtual Addressing Extended Computer-1978
VFR	Visual Flight Rule
VHF	Very High Frequency
VHS	Video Home System
VIP	Very Important Person
VOR	Very High Frequency Omni-directional Range
VORTAC	Very High Frequency Omni-Range and Tactical Air Navigation
vrms	volts root mean square
VSWR	Voltage Standing Wave Ratio
VTU	Ventura VORTAC
W	Watt
WESCOM	Western Communications
WSMC	Western Space and Missile Center
WT	Water Tank
WTR	Western Test Range (VAFB)
Y/N	Yes/No
μsec	Microsecond

Document Separator

IMPACTS TO F-14 WSSA LAB TEST ENVIRONMENT*

POINT MUGU SITE	CHINA LAKE SITE
NUMEROUS AND VARIED TARGETS OF OPPORTUNITY FOR SENSOR TESTING LA - SAN FRANCISCO TRAFFIC	LARGE RESTRICTED AIRSPACE SCHEDULED TARGETS, LOSS OF VARIETY; FEWER
LONG RANGE MISSILE LAUNCH LARGE SEA TEST RANGE	SMALL RANGE DEPLOY TO SEA TEST RANGE
OPERATIONAL ENVIRONMENT TESTING OF IR AND RADAR SENSORS IR BACKGROUND COOL RADAR CLUTTER FREE	IR BACKGROUND HOT LARGE RADAR GROUND CLUTTER FEWER LAB TESTS; WOULD REQUIRE MORE EXPENSIVE FLIGHT TESTS
AIRCRAFT TO SHIP COMMUNICATION TESTS	HARD LINE DATA TRANSFER LOSS OF TEST DYNAMICS

*THESE CHANGES WILL RESULT IN A DIFFERENT TEST PROCESS THAT CANNOT BE QUANTIFIED; THE EFFECTS WOULD NOT BE FULLY KNOWN UNTIL AFTER RELOCATION OF WORK

POINT OF CONTACT: BRAD GILMER, (805) 989-8515 (DSN 351-8515)

F-14 WSSA

- Impacts of Move:
  - To support the block upgrade schedule, full duplication and certification of current facilities would have to be done prior to relocation of the WSSA function.
  - Relocation to a site away from the Sea Test Range would require additional expensive flight tests due to the loss of "look out over water" lab tests
  - The size of the Sea Test Range is required to test long range capabilities of the F-14 sensors and missiles
  - Relocation to China Lake significantly increases the cost of each flight test because of transit time and fuel consumption getting to the Sea Test Range
  - Increase contract costs to relocate essential contractors to China lake
  - Interruption of support to re-build expertise that is lost in the move