



**US Army Corps
of Engineers**

HUNTSVILLE DIVISION

Defense Environmental Restoration Program
for
Formerly Used Defense Sites

Ordnance and Explosive Waste
Chemical Warfare Materials

ARCHIVES SEARCH REPORT

FT PIERCE NAVAL AMPH BASE

Fort Pierce, Florida
St. Lucie, Indian River, and Martin Counties

Project Number I04FL069801

FINAL – 7 FEBRUARY 2007

Prepared by

**US ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT**



DEPARTMENT OF THE ARMY
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REPLY TO
ATTENTION OF:

CEHNC-OE-CX (200-1c)

07 February 2007

MEMORANDUM FOR US Army Engineer District, St. Louis
(CEMVS-PM-M/Mike Dace), 1222 Spruce Street, St. Louis, MO 63103-2833

SUBJECT: Result of the Technical Advisory Group (TAG) Review of Archives Search Reports (ASR) and Fact Sheets for Defense Environmental Restoration Program Formerly Used Defense Sites (DERP-FUDS)

1. The following enclosed ASRs and Fact Sheets are finalized.

<u>Project Number</u>	<u>Site Name</u>
B08MT030201	Fort Peck Aerial Gunnery Range
B08MT028301	Fort William Henry Harrison Army
B08MT031201	Glasgow Pattern Gunnery Range
B08MT031901	Great Falls Pattern Gunnery Range
B08MT032403	Lewistown Army Air Field
B08MT032601	Lewistown Pattern Gunnery Range
B07NE005802	Kearney Rifle Range
B07NE003705	Nebraska Ordnance Plant (Supplemental ASR)
B07NE006401	Plattsmouth Rifle Range
D01NH000102	Camp Langdon
C02NJ000100	Fort Dix
K06NM033301	Guadalupe Bombing and Gunnery Range
B07MO028402	Vichy Army Airfield
B07MO017800	Weldon Spring Ordnance Works (Weldon Spring Chemical Plant)
B07MO017100	St. Louis Ordnance Sub-Depot
B07MO001000	St. Louis Ordnance Plant
B07MO017000	St. Louis Ordnance Core Plant
A04MS001202	Gulf Ordnance Plant
A04MS001000	Camp Shelby
E05MI011103	Romulus Army Airfield
D01MAT90900	Lawrence Depot (CWS Warehouse)
D01ME052301	Fort George
D01ME043301	U.S. Naval Auxiliary Air Station, Rockland
B07KS028600	Walker Army Air Field
B07KS098200	Kansas Army Ammunition Plant
G05IN008200	Terre Haute Ordnance Depot
G05IN007300	Newport Army Ammunition Plant

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<u>Project Number</u>	<u>Site Name</u>
H09HI033301	Waiakea Forest Reserve
I04GA000300	Atlanta General Depot
I04FL016700	Boca Raton Army Air Field
I04FL106500	Mosquito Lagoon Target Sites
I04FL069800	U.S. Naval Amphibious Training Base, Ft. Pierce
I04FL007800	Withlacoochee Air Field
I04FL010300	Zephyrhills Army Air Field
J09CA082300	Hammer Army Airfield
J09AZ101501	Yuma Proving Grounds (Yuma Test Branch)
F10AK005004	Attu Island Chichagof Harbor
F10AK098404	Gerstle River Expansion Area
J08UT109800	Yellow Jacket Ranges
J08UT109500	Southern Triangle Dugway Proving Ground
J08UT002601	Hurricane Mesa Test Site
B07KS000100	Marysville
B08MT000203	Glasgow Army Air Field
K06TX000900	Camp Bowie
K06TX000600	Camp Bullis
NOT FUDS ELGIBLE	Camp Bullis Training Site
K06TX015700	Former Pantex Ordnance Plant Texas Tech Research Farm Property
K06TX07800	Laguna Madre Gunnery Range (Laguna Atascosa National Refuge)
K06TX063401	Harlingen Air Force Base
K06TX110001	Sabine Pass
K06TX106701	Sabine Pass Temporary Harbor Defense
K06TX003601	San Jacinto Ordnance Depot
B08SD000800	Black Hills Army Depot
I04SC000800	The Charleston Army Depot
G05OH015401	Rossford Army Depot
G05OH001806	Plum Brook Ordnance Works
G05OH001001	Columbus Army Forces Service Depot
I04NCT91200	Carolina Maneuver Area

2. Recommended strategy for future actions to be taken by the Project Manager is included in the enclosed fact sheets. Supporting data for TAG decisions are also included with the fact sheets.

CEHNC-OE-CX (200-1c)

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3. Fact sheets, supporting data and corrected pages, due to prior reviews, are to be distributed with the subject ASRs.

4. Subject ASRs are recommended to be final when enclosed fact sheets, supporting data and corrected pages are included as a part of the project package.

5. The POC is Mr. Danny Mardis, commercial 256-895-1797, DSN 760-1767, and fax 256-895-1798.

FOR THE DIRECTOR:

A handwritten signature in black ink, appearing to read "Danny R. Mardis". The signature is written in a cursive style with a large initial "D".

DANNY R. MARDIS
Archives Search Report Manager
For Ordnance and Explosives Team

Encl

ORDNANCE AND EXPLOSIVE WASTE
CHEMICAL WARFARE MATERIALS
ARCHIVES SEARCH REPORT
FINDINGS

U.S. NAVAL AMPHIBIOUS TRAINING BASE
FORT PIERCE

FORT PIERCE, FLORIDA
ST. LUCIE, MARTIN, AND INDIAN RIVER COUNTIES

DERP-FUDS NO. I04FL069800

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**ORDNANCE AND EXPLOSIVE WASTE
CHEMICAL WARFARE MATERIALS
ARCHIVES SEARCH REPORT
FINDINGS**

**U.S. NAVAL AMPHIBIOUS TRAINING BASE
FORT PIERCE**

**FORT PIERCE, FLORIDA
ST. LUCIE, MARTIN, AND INDIAN RIVER COUNTIES**

DERP-FUDS NO. I04FL069800

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**ORDNANCE AND EXPLOSIVE WASTE
CHEMICAL WARFARE MATERIALS
ARCHIVES SEARCH REPORT
FINDINGS**

**U.S. NAVAL AMPHIBIOUS TRAINING BASE
FORT PIERCE**

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APPENDICES

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1.0 Introduction

1.1 Authority

In 1986, Congress established the Defense Environmental Restoration Program (DERP) at 10 United State Code (USC) 2701 et seq. This program directed the Secretary of Defense to “carry out a program of environmental restoration at facilities under the jurisdiction of the Secretary.”

In March 1990, the Environmental Protection Agency (EPA) issued a revised National Contingency Plan (NCP). Under 40 Code of Federal Regulations (CFR) 300.120, EPA designated the Department of Defense (DoD) to be the removal response authority for incidents involving DoD military weapons and munitions under the jurisdiction, custody and control of DoD.

Since the beginning of this program, the U.S. Army Corps of Engineers acts as the agency responsible for environmental restoration at Formerly Used Defense Sites (FUDS). Beginning in 1990, the U.S. Army Engineering and Support Center, Huntsville (USAESCH) serves as the Center of Expertise (CX) and Design Center for Ordnance and Explosives. In cooperation with the USAESCH, the U.S. Army Corps of Engineers, St. Louis District, prepares Archives Search Reports (ASR) in support of environmental restoration at active DoD installations, Formerly Used Defense Sites (FUDS) and installation transitions under Base Realignment and Closure (BRAC) recommendations.

1.2 Subject

The **U.S. Naval Amphibious Training Base (USNATB), Fort Pierce**, is located near the city of Fort Pierce, Florida in St. Lucie, Martin, and Indian River Counties. The War Department developed the base to train both Army and Navy forces in beach assault techniques. Part of this training involved beaches possibly contaminated with chemical warfare agents. The training also included destruction of fortifications which replicated those used by the Germans and Japanese during World War II.

1.3 Purpose

This Archives Search Report (ASR) compiles information obtained through historical research at various archives and records holding facilities, interviews with individuals associated with the site or its operations, and personal visits to the site. All efforts were directed towards determining possible use or disposal of chemical warfare materials on the site. Particular emphasis was placed on establishing the chemical (agent), the type of munitions or container, quantities and area of disposal. Information obtained during this process was used in developing recommendations for further actions at the site.

1.4 Scope

The entire area of the amphibious training base facility was considered in assessing the potential for chemical warfare material and conventional ordnance contamination. The off-site land and sea bombing ranges identified on Map M-2 were not considered in the evaluation of OEW contamination.

2.0 Previous site investigations

2.1 Environmental assessments

Knight, McGuire and Associates, Inc. has prepared an environmental assessment report, dated 22 June 1992, for a tract of land that was apparently the site of the Naval Demolition Research Facility at Fort Pierce. Additionally a supplemental report was prepared on 25 June 1992. Copies of these reports are included in Appendix C-5.

2.2 Other reports

The three reports listed below have been prepared by the U.S. Army Corps of Engineers, Jacksonville District to establish this site as a Formerly Used Defense Sites (FUDS) under the Defense Environmental Restoration Program.

1. Findings of Fact and Determination of Eligibility, 30 November 1990
2. Inventory Project Report (INPR), dated 8 April 1991
3. Inventory Project Report, dated September 1993 (copy of this INPR is included Appendix C-1)

The Jacksonville District has also prepared a Military Construction Project Data report, dated 4 March 1991, for the removal of 230 horned scullies beach obstacles.

No other engineering or environmental study reports were found for this site.

3.0 Site and site area description

3.1 Location

The USNATB, Fort Pierce was located in Indian River, St. Lucie, and Martin Counties along the eastern coast of Florida approximately centered on the city of Fort Pierce. Most of the base activities took place on North and South Hutchinson Islands, which are barrier islands between the Atlantic Ocean and the Indian River. Figure 3-1 shows the general location of the base and affiliated sites. Figure 3-2 details the immediate site vicinity.

3.2 Past uses

Prior to use by DOD the area had been largely uninhabited. Efforts had been initiated by the local mosquito control agencies to eliminate these insects from the islands but they had not become fully developed. Additionally, roads along the islands had been limited to trails on the dune ridge or the beach. The DOD improvements encouraged increased public use after the base was decommissioned.

3.3 Current uses of site

The area has been intensely subdivided and developed for residential use. Numerous high-rise condominium complexes have been built on both islands. Additionally, hotels and public parks were constructed to attract increased tourist use. There is easy access to the beach areas through the public facilities in addition to the numerous private lots. Future land use maps for St. Lucie and Indian River Counties are available in the COE, St. Louis District office.

3.4 Demographics

3.4.1 Centers of activity

There are no centers of activity in the vicinity of the project site other than the cities of Fort Pierce and Vero Beach.

3.4.2 Population density

Population density figures for the area are summarized below.

FT. PIERCE

AREA: 12.1 sq. mi.

POPULATION: 36,830

POPULATION DENSITY: 2160/sq. mi.

ST. LUCIE COUNTY

AREA: 600 sq. mi.

POPULATION: 150,171

POPULATION DENSITY: 250/sq. mi.

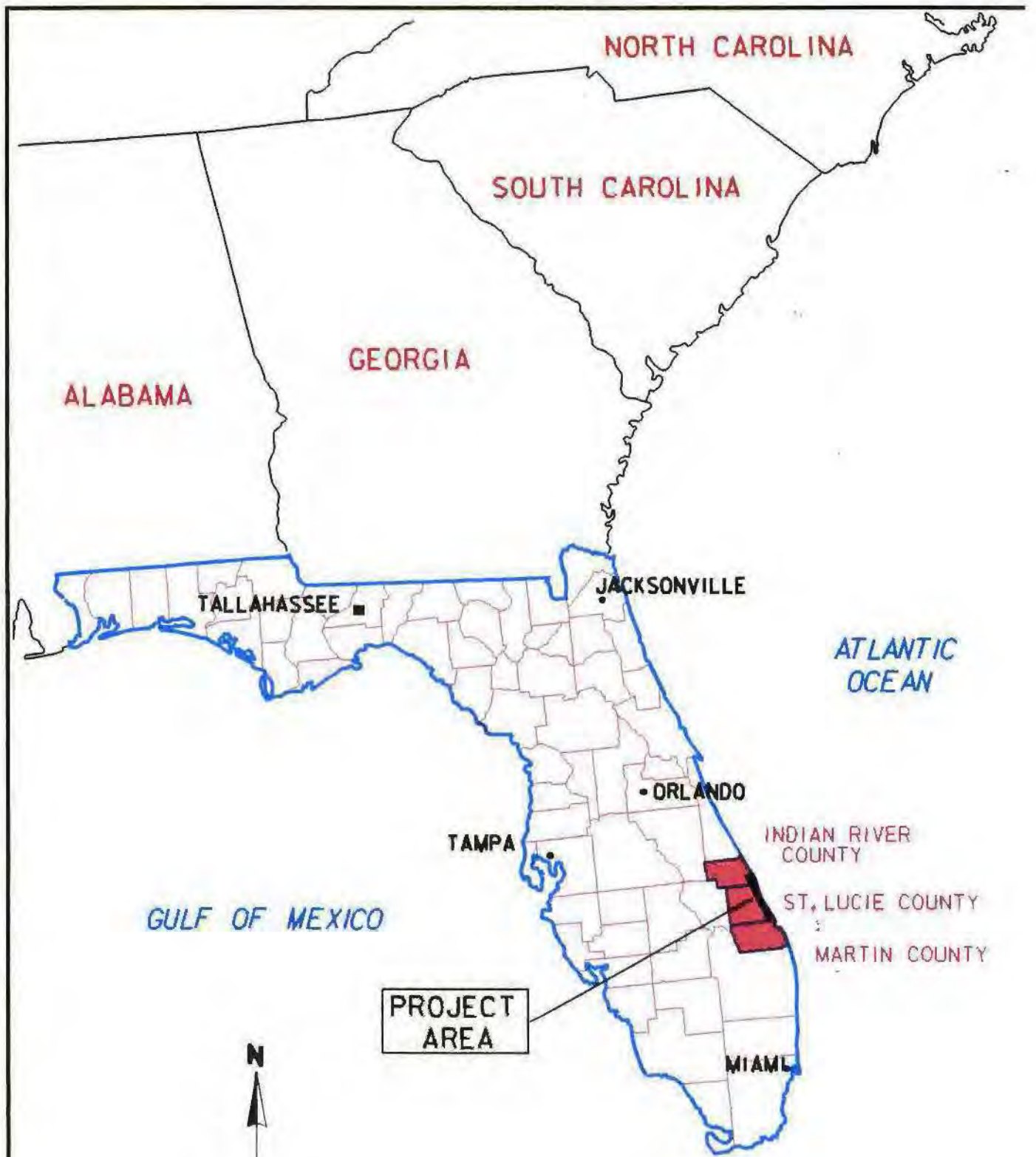


FIGURE 3-1

**FORT PIERCE U.S. NAVAL
 AMPHIBIOUS TRAINING BASE
 DERP-FUDS# 104FL069800
 PROJECT LOCATION MAP**

PROJECT DATE: MAR. 1994

DATE OF MAP: 1994

30-MAR-1994 12:46

/DB/FREEMAN/FTPIERCE/FLORIDA.DGN

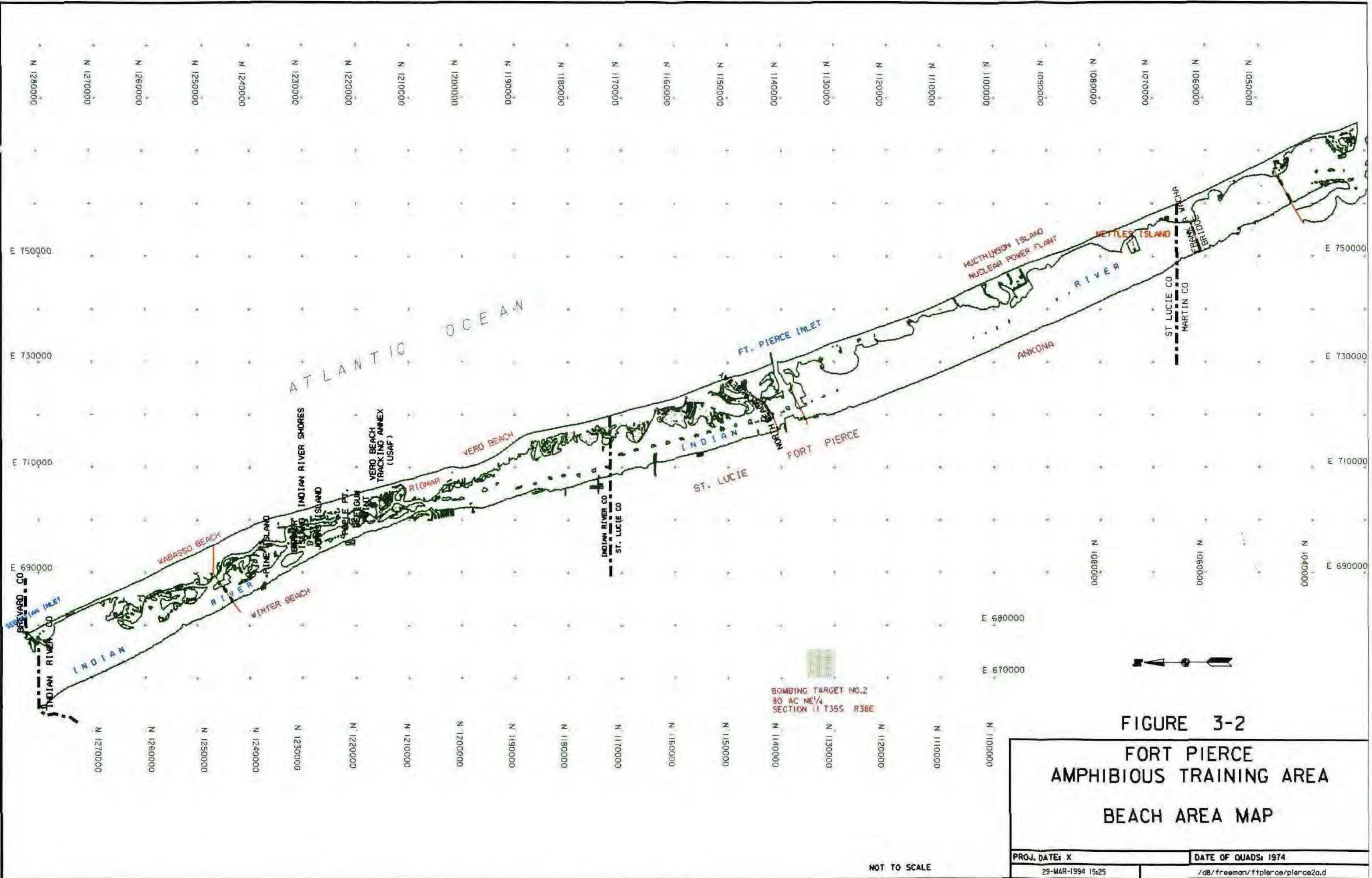


FIGURE 3-2
FORT PIERCE
AMPHIBIOUS TRAINING AREA
BEACH AREA MAP

PROJ. DATE: X	DATE OF QUADS: 1974
29-MAR-1994 15:25	/d8/freeman/ftperce/plierce2a.d

NOT TO SCALE

3.4.3 Types of business

The predominant types of business in the vicinity of the site are service-oriented businesses, tourism businesses and there is an airport nearby. There is also an institution called the Harbor Branch Oceanographic Research Institute.

3.4.4 Types of industry

The only type of industry in the vicinity of the project site is the Island Hopper Boat Manufacturer located 2 to 3 miles south of the site.

3.4.5 Types of housing

According to the 1990 census St. Lucie county, Florida has 61% of its housing in single level, single family units, 22% in multi-unit apartments and 16% in mobile homes. The median housing value for Fort Pierce, Florida is \$45,000.00.

3.4.6 New development in the area

Most of the new development appears to be construction of additional condominiums and single-family residences close to the beaches.

3.4.7 Information sources for demographics

Fort Pierce-Saint Lucie Chamber of Commerce (407) 461-2700

4.0 Physical characteristics of the site

4.1 Geology/physiography

The site is located on the Floridian Plateau in Indian River and St. Lucie counties, which lies within the Atlantic Coastal Lowlands province. The Atlantic Coastal Lowlands extend inland from the coast for approximately 20 miles. The Lowlands are characterized by monotonously flat, low elevations (< 25 feet above sea level), that are swampy and poorly drained. The lowlands represent the shallow, flat bottoms of ancient seas.

The site is located on the Floridian Plateau in Indian River and St. Lucie counties, which lies within the Atlantic Coastal Lowlands province. The Atlantic Coastal Lowlands extend inland from the coast for approximately 20 miles. The Lowlands are characterized by monotonously flat, low elevations (< 25 feet above sea level), that are swampy and poorly drained. The lowlands represent the shallow, flat bottoms of ancient seas.

The site is located on the Floridian Plateau in Indian River and St. Lucie counties, which lies within the Atlantic Coastal Lowlands province. The Atlantic Coastal Lowlands extend inland from the coast for approximately 20 miles. The Lowlands are characterized by monotonously flat, low elevations (< 25 feet above sea level), that are swampy and poorly drained. The lowlands represent the shallow, flat bottoms of ancient seas.

Thick sequences of sedimentary rocks of marine origin overlie the crystalline basement rocks in this part of the Floridian Plateau. Sediments exposed at the surface range from Miocene age (26 to 12 million years old) through Pleistocene age (3 to 2 million years old) to recent age. Miocene sediments are those associated with the Hawthorn formation and consist of sands and clayey sands. Pleistocene sediments are those associated with the Caloosahatche, Fort Thompson and Anastasia formations, which consist mainly of shell beds (colloquially called marls), clays and clayey sands that crop out in the shallow ditches and streams and along the Atlantic coast. Recent sediments are the deposits of peat, lake deposits, dune sands and alluvial deposits of streams.

Almost all of St. Lucie, and Indian River counties are covered by a veneer of Pleistocene sand. These sediments were laid down by marine processes. During the last two million years of Pleistocene time, sea level rose more than 100 feet above present sea level and fell more than 200 feet below present sea level. These sea level fluctuations occurred several times, alternately covering and exposing parts of the Floridian Plateau. Each significant change in sea level created a different environment of deposition for any given location across the relatively flat Plateau. These sea level changes result in a very complex interbedding and interfingering of heterogeneous lithologies in the subsurface stratigraphy. The present coastal beaches, offshore barrier islands, and back-bay deposits have been designated as shell lithology because of their shell, silt, and clay content. Quite often these shell beds have been changed to a coquina, which is a limestone composed of shells, corals, organic debris, sand or other minerals that have been cemented together. Fragments of these

coquina units are commonly found in spoil piles along the many canals. Exposed sections in canals and borrow pits show evidence that the shell beds originally were thicker. Through geologic time, however, their calcareous shells and debris have been leached away leaving their included quartz sand and other insoluble minerals as residuum. Interfingered and interbedded among the various shell, clay and sand units are thin, discontinuous lenses and stringers of sandy, phosphatic limestones and dolomites (Lane, et.al., 1980).

4.2 Soils

The parent material of the site soils consisted of beds of sandy and clayey materials that were transported by the sea, which often covered the area during the Pleistocene. During the high stands of the sea, Miocene and Pliocene sediments were eroded and redeposited or were reworked on the shallow sea bottom to form terraces.

The site is underlain by marine clastics which consists of unconsolidated, well graded quartz sands. In addition, the site soils are well drained. The surficial site soils are highly susceptible to wind erosion. Also, the soils are moderately to highly susceptible to sheet and rill water erosion. The latest sediments deposited on the site include marine sediments which have accumulated along the shoreline (Vernon and Puri, 1964).

4.3 Hydrology

4.3.1 Groundwater

4.3.1.1 Surficial groundwater aquifer

The surficial aquifer, or water table aquifer, is found where poorly consolidated or unconsolidated clastic rocks overlie the limestones and dolomites of the Floridian aquifer. The thickness of the shallow aquifer is approximately 150 to 200 feet thick in this region and may directly overlie the Floridian aquifer, or they may be separated by confining beds. Water-table varies seasonally from ground surface to about 20 feet deep. Recharge to the water-table aquifer is almost entirely from local rainfall, except in those areas where it is hydraulically connected to the Floridian aquifer. Discharge from the shallow aquifer may be by downward percolation into the Floridian Aquifer, seepage into streams, lakes, sinkholes, and pumpage from wells. Most of the domestic or small-demand water supplies are obtained from the water-table aquifers. In Indian River, St. Lucie, and a few other counties, many large-demand supplies for municipal, irrigation and cattle are also obtained from the shallow water table, since the artesian Floridian aquifer water is too highly mineralized in their area.(Lane, et. al.,1980).

4.3.1.2 Deep groundwater aquifer

The artesian Floridian aquifer underlies the entire region. It is separated from the shallower water-table aquifers by sections of relatively impermeable clays and marls, which may be up

to 500 feet thick. The top of the Floridian aquifer is nearly 800 feet deep just 25 miles south southwest of the site area. The regional direction of ground-water movement in the Floridian Aquifer is from east to west. Recharge of the Floridian aquifer occurs from the overlying water-table aquifer in areas where it is in direct contact with the Floridian or through innumerable sinkholes, permeable sandy units and semi-permeable clayey units between the Floridian and the water-table, as in this location. Water quality deteriorates along the Atlantic coast in Indian River and St. Lucie counties and water from the upper part of the Floridian may be unusable, depending on requirements (Lane, et.al, 1980).

4.3.2 Surface Water

4.3.1 Surface Water

The surface water of the study area drains west into the Indian River, east into the Atlantic Ocean, or is absorbed into the sand. The site is likely to be flooded by hurricane induced surge.

4.4 Weather

The climatic data corrected at Fort Pierce, St. Lucie, Florida in the period of 1931-1992 shows the average annual precipitation at 52 inches. Approximately 70 percent of this amount occurs in May through October. The climate in the study area is subtropical, characterized by mild moderate dry winters and warm, humid summers. Average annual temperature for the area is about 73 degrees Fahrenheit. The extremes vary from 99 to 22 degrees Fahrenheit. Summarized climatic data for Fort Pierce and wind data for Patrick Air Force Base are shown in the following table. Patrick Air Force Base is located about 50 miles north of the study area.

CLIMATOLOGICAL DATA FOR FT PIERCE,--							
AND WIND DATA FOR PATRICK AFB,--							
MONTH	TEMPERATURE		PRECIPITATION			SURFACE WIND	
	MONTHLY MAX	MIN (°F)	MAX	MIN	MEAN (INCHES)	PRV LNG DIR	SPEED MEAN MAX (KNOTS) *
JAN	81	41	8		39		19 2
FEB	82	44	8		21		15 2
MAR	83	51	9		83		27 3
APR	85	52	11		16		17 3
MAY	88	61	12		97		37 4
JUN	92	69	15		84		78 5
JUL	94	70	13		17	1	21 5
AUG	93	71	12		25	1	31 5
SEP	92	70	19		90	1	46 7
OCT	88	63	16		41		66 6
NOV	86	53	9		33		09 2
DEC	81	43	8		21		13 2
YEAR	85	62	77		51	32	66 51

* One knot equals 1.15 miles/hour

4.5 Ecology

Several wading bird rookeries occur in the Intracoastal Waterway near the Fort Pierce site. Federally listed species for Martin and St. Lucie counties include: American alligator (Alligator mississippiensis), Atlantic loggerhead turtle (Caretta caretta caretta), Atlantic green turtle (Chelonia mydas mydas), leatherback turtle (Dermodochelys coriacea), Eastern indigo snake (Drymarchon corais couperi), Atlantic hawksbill turtle (Eretmodochelys imbricata imbricata), Atlantic ridley turtle (Lepidochelys kempii), Atlantic salt marsh snake (Nerodia fasciata taeniata), Florida scrub jay (Aphelocoma coerulescens coerulescens), piping plover (Charadrius melodus), Kirtland's warbler (Dendroica kirtlandii), Arctic peregrine falcon (Falco peregrinus tundrius), bald eagle (Haliaeetus leucocephalus), wood stork (Mycteria americana), Red-cockaded woodpecker (Picoides borealis), Audubon's crested caracara (Polyborus plancus audubonii), snail kite (Rostrhamus sociabilis), Bachman's warbler (Vermivora bachmanii), West Indian manatee (Trichechus manatus latirostris), four-petal pawpaw, (Asimina tetramera), fragrant wool-bearing cereus (Cereus eriophorus var. fragrans), and Lakela's mint (Dicerandra immaculata). Sixteen species that are Federal candidate species also occur in the vicinity. Listing of these Federal species are included in Appendix C-10.

No additional information on the occurrence of rare or endangered species or natural communities is known at this time. This does not mean that other State or Federally-listed species may not be present within the areas of interest. An on site inspection by appropriate state and federal personnel may be necessary to verify the presence, absence or location of listed species, or natural communities if remedial action is recommended as part of the final ASR.

5.0 Real estate

5.1 DOD ownership

Real estate information concerning the DOD ownership of the USNATB, Fort Pierce provided in the USACE Jacksonville District Findings and Determination of Eligibility is presented below.

Between 27 July 1942 and 6 July 1945, the United States acquired 19,280.48 acres (includes 9,936.09 acres in submerged lands) by condemnation for leasehold estates, lease, and permit for a naval amphibious training facility located between the city of Fort Pierce and the Atlantic Ocean in St. Lucie and Martin Counties, Florida. The site was developed and named the U.S. Naval Amphibious Training Base, Fort Pierce, Florida.

The Navy established a complete amphibious training facility at the site by acquisition and construction of approximately 453 buildings and structures along with other miscellaneous improvements (such as water and sewer systems, roads, and several hundred hutments). The Seventh Naval District utilized the site for anti-aircraft, ordnance, and amphibious landing training. The site remained active until 1946 when its functions were no longer needed and/or relocated elsewhere in the United States.

The Navy decommissioned the site on 2 February 1946, and disposed of the entire 19280.48 acres in leasehold and permit by termination notices to the then current owners between February and June 1946. All the improvements were either removed by the Navy, sold or returned to the then current owners. The terms and conditions of the leases, permits, and termination notices or how many restorations were required are unknown as copies of these instruments could not be located. However, correspondence files indicate some restoration claims were made and paid.

During this archives search additional information has been developed from interviews, court documents, and air photo interpretation that indicates that the DOD also utilized lands in Indian River County, which is immediately north of St. Lucie County. The total approximate extent of the USNATB, Fort Pierce is shown on Map M-2.

Besides the contiguous lands used for the base, two other tracts in the vicinity have been identified as being used by the DOD. These are a land range and a sea bombing range. Both are located on Map M-2.

5.2 Present ownership

Since disposition by the DOD, the lands along these barrier islands have greatly subdivided and developed. There are probably hundreds of individual owners involved with the property currently.

6.0 OEW/CWM site analysis

6.1 Historical summary of OEW/CWM activities

6.1.1 Dates of operation

The U.S. Naval Amphibious Training Base at Fort Pierce, Florida was ready for operation by the beginning of 1943. This was the third such large training facility that the Navy constructed for amphibious instruction (Bureau of Yards, 1947). The original complement of men to report for duty was a detachment of Scouts and Raiders arriving on 17 January 1943. Several other Naval units eventually trained at the base. These included the combat demolition research unit, the underwater demolition team, the combat demolition unit, the attack battened landing craft units, rocket and anti-aircraft gunnery units, and the construction battalion.

The USNATB, Fort Pierce consisted of 453 structures, many of them temporary. The majority of the buildings were located at the Fort Pierce Inlet on South Hutchinson Island. Map M-1 is a historical map showing the conditions at that location as of 30 June 1944. Photo D-1 in Appendix D is an oblique air photo of the base during operation. Several other concentrations of buildings were situated along the North Hutchinson Island shore between Fort Pierce and Vero Beach. The locations of these buildings are shown on Map M-2. Buildings on the North Island included the Underwater Demolition Team camp, the Engineer Board complex, and the Naval Demolition Research Unit (NDRU). Oblique air photos of the NDRU, taken during World War II, are included in Appendix D, Photos D-2 and D-3.

The progress of World War II in both the European and Pacific Theaters indicated that beach assaults would be a necessary part of offensive operations. The need for a coordinated effort between the Navy and Army in these beach operations resulted in the formation of the Joint Army-Navy Experimental and Testing Board (JANET) at Fort Pierce by orders of General Marshall, Chief of Staff, U.S. Army and Admiral King, Commander in Chief, U.S. Fleet. On 2 November 1943, JANET was established with the directed mission of experimentation, development, and realistic testing of equipment and technique for the breaching or removal of obstacles both landward and seaward of the normal grounding point of landing craft. An informal demonstration of the methods and equipment developed up to that point was held in the beginning of February 1944. Mid-February 1944 was established as the cut-off point for evaluation of the procedures that could be used in the anticipated invasion of Europe ("The Mock-up", January 1946). A complete report on the results of the February 1944 demonstration is included in Appendix C-3.

The demonstration included the following methods of attacking beach fortifications:

--Reddy Fox (10" diameter metal tubes, loaded with explosives, in lengths up to 100', towed by landing craft) attacks against man-made water obstacles and sand bars

- Remotely-controlled or remotely-detonated landing craft loaded with explosives directed against land and water obstacles
- Mechanical equipment for detonating underwater mines
- Aerial bombardment against beach obstacles
- Tank rocket launcher attacks against beach obstacles
- Tank dozer operations
- Demolition rockets fired from a variety of landing craft
- Smoke laying operations from unmanned watercraft
- Placing of steel rails by jetting

Prior and subsequent to the February JANET demonstration numerous operations were carried out along the North Hutchinson Island shores developing and testing these procedures. Equipment and methods used during the demonstration had been developed by the NDRU and the Engineer Board, Fort Pierce Project. In addition to these two groups and personnel assigned directly to the JANET Board the following organizations were available for JANET use at all times:

- An Engineer Combat Battalion
- An Army Ordnance Detachment
- Naval Combat Demolition Unit
- Naval Construction Battalion Units
- Naval Training Film Unit (JANET)
- Naval Underwater Demolition Teams
- A squadron of TBM's (Navy aircraft)
- A Research and Development sub-office
- Other support units of the USNATB

Most of these units were stationed at the Fort Pierce Base except for the TBM's. The JANET unit was still in operation in late 1945 (JANET Historical Sketch, undated).

Historical photographs D-4 through D-8 show the beach and the explosions and destruction that occurred during the demonstration.

Concurrent with the JANET operations, normal amphibious training base activities were carried out at Fort Pierce. Historical Photos D-9 and D-10 show typical training activities. Map M-1 shows that in addition to the units training at the base there was the usual complement of base support groups.

6.1.2 Use of chemical warfare materials

6.1.2.1 Customary base CWM training activities

As part of the training at Fort Pierce many of the personnel were required to receive the basic chemical warfare agent identification and gas mask use instructions. Training at the base was handled through the Central Chemical Warfare School. The School consisted of 4 officers and 6 enlisted men, who taught six hours of classroom instruction and three hours of field work and demonstration to all training programs on the base. Classroom work included: identification of agents, effects of agents, first aid for chemical agents, decontamination of boats and equipment, and a knowledge of screening smoke. In the field the trainees were given a thorough gas mask drill, ending with a taste of tear gas. They also did practice identifications and saw demonstrations of incendiaries and smokes (History of USNATB, Fort Pierce, undated). Photographs of the School facilities and training are included in Appendix D, Photos D-11 through D-14 .

6.1.2.2 Mustard agent beach contamination study

Besides the normal CWM training at the Fort Pierce base, the U.S. Army Chemical Warfare Service Medical and Technical Divisions operated there in conjunction with the National Defense Research Committee (NDRC) and the CMR (?) groups (Cochrane, 1944). This group may have been operating under the auspices of the JANET Board. This organization was charged with the task of studying the contamination and decontamination problems of ship-to-shore landings on mustardized sands. Land mines containing MR (mustard stimulant) were exploded on the beach and in the jungle behind the dune line to test dispersal effectiveness on sands. Live mustard agent (H) was also used in limited amounts. Gas masks and protective clothing were not considered necessary for the testing program (Project Report 414 of the Chemical Warfare Board, 1944). The CWS Project at Fort Pierce was housed in temporary facilities on the South Hutchinson Island. The structures included a medical officer's tent, a decontamination center, a munitions warehouse, a supply tent, a headquarters tent, and rabbit cages. The testing of the effectiveness of the mustard agent spread on the sand involved placing depilated rabbits attached to testing boards in contact with the contaminated sand. The rabbits were then observed for the development of lesions or other effects (Goddard, 1944). Additional biological and toxicological studies conducted in conjunction with Project 414 proposed using human test subjects after safe test procedures could be established from the animal testing program. The location of the CWS experiment area was listed as being on old Beach No. 11 (Shown on Hydrographic Chart #1247 in Lat 27° 18' to 27° 19' 30" N and Long. 80° 14' W) (Thompson, 1944). This location is shown on Maps M-2 and M-7.

The beach contamination studies originating at Fort Pierce were continued in large scale field experiments carried out by the Chemical Warfare Board and the CWS at the Dry Tortugas Keys, west of Key West, Florida in March 1944 (Sherman, 1961).

The exact total time that the CWS operated this special laboratory at Fort Pierce could not be established from available documents. However, it appears that CWS probably arrived in late 1943. Personnel rosters for the entire base list CWS officers there in February 1944 but not in March 1944. In February 1945, Major Lockwood travelled to Fort Pierce to attend a meeting with the National Inventors Council (NIC) as the Chemical Warfare Service Liaison officer. In his trip report he mentions the JANET Board and meeting with members of the NIC and their liaison officers and the officers of the USNATB, Fort Pierce. There is no mention made of any contact or coordination with any CWS personnel stationed there.

Copies of all correspondence relating to the use of chemical warfare agents at the Fort Pierce site are included in Appendix C-4.

6.1.2.3 Chemical rocket use

One CWS document found during the archives search concerns testing and evaluating the 7.2" chemical rocket and 24-rail launcher. Ten tests were to be undertaken on this rocket filled with both chemical agents and high explosives. The document infers that the chemical testing was to be done at Dugway Proving Ground, at the Bushnell, Florida and San Jose experiment areas. One of the prescribed tests was to determine its suitability for use in conjunction with amphibious operations. It suggests that the amphibious operations be conducted at some suitable location in conjunction with the Navy (Project Program, 7.2" Chemical Rockets, c.1944). The February 1944 JANET demonstration at Fort Pierce involved several 7.2" rocket experiments.

6.1.2.4 CWS smoke bomb test

The CWS at Edgewood Arsenal sent four special smoke bombs to the JANET Board for testing in July 1945 in conjunction with Project #112, Aerial Bombing. Although the bombs were identified as water bombs in one piece of correspondence, they were dropped from a height of 200 feet onto the beach and dunes north of Jensen, Florida. Jensen is approximately 16 miles south of Fort Pierce. A memorandum (Keehn, 1945) dated 16 July 1945 infers that these bombs were part of a larger aerial bombing program. The bombs are listed as being non-toxic.

6.1.2.4 Biological field testing

A document obtained from the Historical Office at Edgewood Arsenal indicates that during 1956 and 1957 anti-crop pathogenic rice blast agent was used on areas not involving public domain near Belleglade and Fort Pierce, Florida. Belleglade is located about 25 miles west of West Palm Beach and 55 miles south-southwest of Fort Pierce. A 1977 newspaper article indicates the exact location of the testing at Belleglade, but does not identify the Fort Pierce location. No subsequent information was discovered concerning the extent or results of this testing.

6.1.3 Conventional weapons usage

6.1.3.1 Land-based operations

6.1.3.1.1 Fort Pierce Base operations

Various types of munitions and explosives were used at the USNATB, Fort Pierce by both the JANET group and the regular Navy personnel. The regular Navy training at the base included exercises with bulk high explosives, high explosive rockets, bombs, anti-aircraft guns up to 3-inch, and numerous small arms up to .50 caliber. Archives information has established that several ammunition storage areas were set up on the Fort Pierce Base. The most significant ordnance storage area was built on the South Island near the anti-aircraft and rifle ranges. Map M-1 shows the layout of the ranges and the storage bunkers. Structure #75 is the magazine complex in the firing range area. Historical photo D-15 is an oblique air photo of this area.

The USNATB, Fort Pierce provided training with the explosive rockets in the Central Rocket School. The Rocket School also conducted instruction for smoke screening. Rockets were fired from landing crafts as well as other support vessels. Photos D-16 through D-18 in Appendix D show some of the types of equipment and 4.5" rockets used.

Ammunition was stored at one time in the Headquarters building of the Scouts and Raiders on the South Island until the new magazines were constructed (U.S. Naval Administration in World War II, c.1946). One building (Structure #92) is identified on Map M-1 as the Army ordnance garage. It is believed that this was a repair shop for vehicles.

Several areas have been identified on the North Island where considerable quantities of conventional munitions were stored and used. These include the Naval Combat Demolition Unit area, the Naval Demolition Research area, and the Engineer Board area. All of these areas are marked on Map M-2. Beach areas around these installations were subjected to numerous explosive attacks from the land, the sea, and the air. Much of the beach from south of the city of Vero Beach to the Fort Pierce Inlet was used in some fashion for the obstacle removal exercises.

6.1.3.1.2 Off-base operations

Historical real estate documents from the Jacksonville District of the Corps of Engineers indicate that there was a bombing range, approximately 9 miles west of the city of Fort Pierce, consisting of 80 acres in the NE ¼ of Section 11, T35, R38. This range was acquired in April 1943 and released in April 1946.

Additionally there was a danger area established over the Atlantic Ocean for use as an aerial gunnery target range by the U.S. Army Air Corps. The corner coordinates of this range are as listed below.

	Latitude N.	Longitude W.
NE Corner	27° 35'	80° 02'
NW Corner	27° 32'	80° 11'
SE Corner	27° 04'	79° 46'
SW Corner	27° 00'	79° 56'

Both these off-base ranges are located on Map M-8.

6.1.4 Previous ordnance and debris removal operations

Corps of Engineers correspondence indicates that in 1949, local residents reported finding mines along the North Island beach. Efforts were made to contact all residents in this area, but no additional information concerning munitions was found (Lone 1949).

Beginning in 1952, operations were undertaken to identify and remove military obstacles and debris in the area of the former Engineer Board facility. The location is shown on Map M-3. Five horned scullies were removed from the surf in April 1952. Ten others were located but not removed until July 1952. As part of the this latter operation the beach near the Engineer Board was scraped with a bulldozer at the water's edge to check for additional debris, but none was encountered (Campbell 1952). Photos of the operation are included in the memorandum in Appendix C-5. Subsequent correspondence indicates that more obstacles were known to exist south of the Engineer Board in the Navy's Demolition Research Unit area.

A series of correspondence between the Corps of Engineers and Vero Beach authorities was initiated in March 1954 which detailed concerns over possible explosives remaining in the salt marshes on the east side of the Indian River near the Engineer Board and the Demolition Research Unit installations. The authorities wanted to construct mosquito control trenches and dikes but feared finding unexploded munitions. A December 1956 memorandum, included in Appendix C-6, from the Jacksonville District, COE, to the South Atlantic Division, COE states:

"The area was given surface inspections and letter Certificates of Clearance were issued on 16 January 1946 and, again, on 19 October 1946. Since that time, however, there have been found in the area high explosives which have come to light by erosion or otherwise."

In March 1957 an AN-MK, 17 M-1 depth bomb was found west of the Engineer Board area and detonated in place. Additional details and photos are included in Appendix C-7. The detonation caused damage to homes in the vicinity. During the subsequent inspection of homes in the area, information was found that indicated that 50 sticks of dynamite and blasting caps were discovered 4 feet in the ground during a foundation excavation for a nearby home. These explosives were disposed of by the local police.

Additional COE correspondence starting in June 1968, included in Appendix C-8, indicates that more range clearance operations were being considered at that time. Details of any further clearance were not available.

6.2 Records review

Documents have been reviewed at or obtained from the sources listed below. Specific records researched or documents copied are noted for each location.

**National Personnel Records Center
Military Records
9700 Page Avenue**

no author

Bushnell File: Project Program 7.2" Chemical Rockets; Location 08-18-50-1-3 338-52-4-3078, c.1944

Peyton, J.R.

Memorandum, Subject: Danger Area, Atlantic Ocean, between Jupiter Inlet and Fort Pierce, Florida; Location 04-35-73-7-3 342-54-19-6073, 26 July 1949

Goddard, Lt. Roy

Informal Report of TDY Tour to CWS Project Fort Pierce, Florida; Location 08-18-50-1-3 338-612-L3078, January 1944

**Chemical and Biological Defense Agency Historical Office
AMSCB-CIH
Aberdeen Proving Ground, MD 21010**

Cochrane, Rexmond

Report on Medical Research in Chemical Warfare, Cabinet 63, Drawer 3-Biological

Davis, Sherman L.

Interview with Dr. Jake T. Nolen, 15 November 1961

No author

Agenda, Demonstration of Hazards and Disposal of Persistent Chemical Agents on Beaches (Chemical Warfare Board Project 414), February 1944

Watson, Col. George L.

Memorandum, Subject: Summary of Demonstration at Fort Pierce, 29 February 1944

No author

Report, Subject: "U.S. Army Activity in the U.S. Biological Warfare Programs, Volume II (draft)", 15 February 1977

**Ft. Pierce Chamber of Commerce
Ft. Pierce, FL**

The Chamber of Commerce sent demographic information on Fort Pierce and the surrounding area.

**University of Florida Libraries
P.K. Yonge Library of Florida History
441 Library West
Gainesville, FL 32611**

The library did not have information on Fort Pierce.

**University of South Florida
Tampa Campus Library
Special Collections
Tampa, FL 33620**

The University did not have specific information on Fort Pierce.

**The Florida Division of Archives
History and Records Management
Florida State Archives
Department of State, The Capitol
Tallahassee, FL 32304**

The state archives did not have information on Fort Pierce.

**Florida State University
State Photographic Archives
Room 66, Strozier Library
Tallahassee, FL 32306**

Ms. Joan Morris stated that the archives had no photographs or information on Fort Pierce.

**National Archives and Federal Records Center-Southeast Branch
1557 St. Joseph Avenue
East Point, GA 30344**

No specific boxes were found at the archives on Fort Pierce.

**Maxwell Air Force Base
Historical Research Agency
Montgomery, AL 36112**

Numerous records were reviewed at Maxwell Air Force Base but no pertinent information on Fort Pierce was obtained.

**National Archive-Suitland Branch
4205 Suitland Road
Suitland, MD 21010**

Pertinent portions of the following record groups were reviewed and appropriate information was copied.

RG 77 Records of the Chief of Engineers
RG 92 Records of the Quartermaster
RG 156 Records of the Chief of Ordnance
RG 175 Records of the Chemical Warfare Service

Entry 4C, Box 181, File 471.6 - Fort Pierce, Three memoranda concerning test of Mk 3, 100-pound smoke bomb.

Entry 4B, Box 170

RG 407 Records of the Adjutant General

Report on Demonstration of Various Weapons against Obstacles to Landing Operations at U.S. Naval Amphibious Training Base, Fort Pierce, Florida; Pre-invasion File 647, Box 24376

**National Archives
8th and Pennsylvania
Washington, D.C. 20408**

Two records groups were reviewed at this facility. Record group 165, the Records of the War Department General and Special Staffs, and Record group 71, Photographs of Construction Projects 1879-1943, were reviewed but no information pertaining to Fort Pierce was found.

**Indian River Mosquito Control District
5655 41st Street
PO Box 670
Vero Beach, FL 32961-0670**

Several aerial photographs of the portion of the Fort Pierce site situated in Indian River County were obtained and copies were made.

**Knight, McGuire & Associates, Inc.
Consulting Engineers and Planners
830 Azalea Lane, Suite 204
Vero, Beach, FL 32963**

This consulting firm produced a report on part of the Fort Pierce site. Their full report was obtained.

**UDT-Seal Museum
3300 N. A1A
North Hutchinson Island
Ft. Pierce, FL 34949**

Two people were interviewed and pertinent photographs were photocopied.

no author

Report on Naval Combat Demolition in the Central Pacific, c.1946

Museum Files contained histories of the combat demolition teams that had trained at Fort Pierce.

**St. Lucie County Historical Museum
414 Seaway Drive
Fort Pierce, FL 34949**

This museum had the following documents with information about the USNATB, Fort Pierce.

The Joint Army Navy Experimental and Testing Board Final Report, c.1946

Copies of the USNATB magazine, "The Mock-up"

U.S. Naval Administration in World War II, Commander-in-Chief Atlantic Fleet,

"Amphibious Training Command" Volume II, Chapter 12

**Fort Pierce Public Library
Fort Pierce, FL 34949**

The library had the following information available on the military involvement with Fort Pierce.

Miley, Charles S.

1980 "Miley's Memos", published by Indian river Community Historical Data Center. Brief history of the base.

Newspaper article from the Palm Beach Post, 10 March 1977, "Glades, Fort Pierce Germ Warfare Sites"

Microfilm rolls containing selected base personnel rosters and copies of the base magazine, "The Mock-up".

**Indian River County Appraiser's Office
Vero Beach, FL 32963**

Various historical aerial photographs were obtained.

**Indian River County Sheriff's Office
4055 41st Avenue
Vero Beach, FL 32960**

The Sheriff's Office has had incidents in the Fort Pierce area. The reports are not indexed and cannot be obtained without intensive research by their records manager.

**Harbor Branch Oceanographic Institute, Inc.
5600 U.S.1 North
Fort Pierce, FL 34946**

Tim Askew of the Harbor Branch Oceanographic Institute contacted public affairs and stated that no ordnance has been found by submersibles in the Fort Pierce area for the last 20 years.

**Press-Journal
Indian River Counter
28 May 1993**

There was one newspaper article detailing the piece of ordnance the team members from the St. Louis District found during the initial site survey.

**U.S. Army Corps of Engineers
Jacksonville District
Jacksonville, Florida**

The following documents were obtained from the Jacksonville District:

- FDE (Findings and Determination of Eligibility) for a DERP-FUDS project
- INPR w/o Encls (Inventory Project Report) for a DERP-FUDS project
- Amphibious training base land acquisition and disposal
- Amphibious training base costs
- Memorandum from Navy at Port Hueneme sending 1945 map above to Jacksonville District
- 4 Mar 91-Military Construction Project Data--Removal of 230 horned scullies
- 1947-"Building the Navy's Bases in World War II" History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946
- Series of 1947 Navy letters re: lease termination
- Series of 1990 Jacksonville District memos to U.S. Representative Lewis on horned scullies
- Historical sketch of JANET (Joint Army-Navy Experimental and Testing Board)
- Series of correspondence, listed below, relating to ordnance and debris removal
 1. Letter, "Report on Investigation of Explosives at Fort Pierce, Florida, 14 Apr 49.
 2. Memorandum, "Estimate for Removal of Obstructions of Formerly Leased Land in Vero Beach Area, 7 Jan 52.

3. Memorandum, "Clearance of Obstacles on premises under Lease W-2287-Eng-16768", 18 Mar 52.
4. Memorandum, "Clearance of Obstacles on Formerly Leased Land, Vero Beach, Florida", 29 Apr 52.
5. Cross Reference Form, "M-602 (Vero Beach) Underwater Obs. Course Lease 16768", 10 Jun 52.
6. Letter, "Removal of Underwater Obstruction", 11 Jun 52 with 1st Indorsement, 17 Jun 52.
7. Letter Orders No. 7-4, "Orders", 2 Jul 52.
8. Memorandum, "Removal of Underwater Obstructions", 17 Jul 52, with photos attached.
9. Letter, Joseph W. Walton Realtor Insuror to Mr. Morris A. Spooner, 28 Jul 52, no subject (with copy of letter, Mr. Morris A. Spooner, 18 Jul 52).
10. Letter, "Removal of Underwater Obstruction", 18 Jul 52.
11. Correspondence copies, "Claim of Joseph W. Walton, Lease 2287-ENG-16768, Tract A 8, Engineer Board Field Station, Fort Pierce, Florida", listed:
 - 4th Indorsement signed by Mr. Morris A. Spooner, 31 Jul 52.
 - 3rd Indorsement signed by B. A. McKinley, 14 Jan 52.
 - 2nd Indorsement signed by Mr. Morris a. Spooner, 10 Jan 52.
 - 1st Indorsement signed by B. A. McKinley, 8 Nov 51.
 - Original letter, 1 Nov 51, with enclosure, Joseph W. Walton Realtor Insurance letter, 11 Sep 51.
12. Cross Reference Sheet, "Re: Lease W-2287-ENG-16768", 4 Mar 54.
13. Cross Reference Sheet, "602 (Vero Beach) Lease W-2287-Eng-16768", 22 Nov 55.
14. Letter, "SAKRM 602 Vero Beach, Florida, Underwater Obstacle Course (Lease W-2287-ENG-16766)", 15 Aug 56. Also included:

- Copy of letter signed by Morris A. Spooner, 9 Aug 56
- Copy of letter, The South Island Association, signed by John G. Beadle, 31 Jul 56.

15. Letter, Mr. E. J. Beidler, no subject, 3 Oct 56.
16. Letter, "Decontamination, Engineer Board Field Station, Vero Beach, Florida", 4 Dec 56.
17. Joint Messageform, no subject, 5 Mar 57.
18. Letter, "Dedudding-Engineer Board Field Station, Vero Beach, Florida", 5 Mar 57.
19. Letter, "Report of Detonation of High Explosive Bomb-Engineer Board Field Station, Vero Beach, Florida", with Damage Report inclosure, 14 Mar 57.
 - 1st Indorsement, 18 Mar 57.
20. Note, Mrs. William E. Hicks, 13 Mar 57.
21. Letter, re: George Fry, Explosion of depth bomb 2/27/57, Boston Insurance Co. Policy No. SP-303743, 25 Apr 57.
22. Correspondence, "Range Clearance, Engineer Field Board Station and Underwater Obstacle Course, Vero Beach, Florida", listed:
 - 2nd Indorsement, 31 Jul 68.
 - 1st Indorsement, 25 Jul 68.
 - Original letter, not available.
23. Drawing, Acquisition Tract Register, RE-D, 10 Apr 42, 2 pages. (Attachment to item 8 above)

6.3 Summary of interviews

6.3.1 Mr. Al Stankie
 Fort Pierce
 407-465-0137

Mr. Al Stankie had been a member of the Navy Underwater Demolition Team (UDT)#14 that had trained at Fort Pierce. He returned to Fort Pierce as a seamen at the end of the war to help shut down the base. He was part of a group that disposed of unwanted items. They buried many different items but he does not recall any munitions. Most of the buried items were retrieved by local people because of the shortages of supplies and equipment in effect at

that time. He does remember disposing of a considerable amount of ammunition. His group went to the various ordnance storage bunkers, removed the remaining munitions, and placed them on sea-going barges. The barges were pushed about 15 miles out to sea and the munitions were dumped into 1500-foot deep water. Some of the bunkers he recalls in particular cleaning out were in the area of the UDT training area on the river side of the road. These bunkers were quonset-type structures covered with concrete and sand.

Mr. Stankie is also a director of the Seal/UDT Museum in Fort Pierce and an organizer for yearly reunion events held there. He is very familiar with the area and the people who served there. Mr. Stankie invited the SLD to the reunion held in November 1993 which included the dedication of a new wing to the museum. Former servicemen from all over the United States attended the event. Mr. Stankie provided contact with numerous individuals. Interviews with some of these men are included in this section. The general consensus among the others interviewed was that there was no long term CWS activity at Fort Pierce involving live CW agents. None of these Naval veterans had any contact with CWS personnel while they were stationed at Fort Pierce. Many of these veterans did not recall even having any tear gas training while there.

6.3.2 Mr. Jim Watson
 Director Seal/UDT Museum, Fort Pierce
 407-489-3597

Mr. Watson, the current director of the Seal Museum, was a former Navy Frogman during the Vietnam era. He had not been stationed at Fort Pierce, but has written a book on the development of the Frogman program from its inception at Fort Pierce. He reported that most of the UDT training at Fort Pierce was done with Tetratol, a bulk explosive, carried in 20-pound haversacks. He allowed us access to the Museum files where the histories of the units that trained at Fort Pierce were kept. Excerpts from these histories are included below:

"Memories of UDT 9" by N.A. Olson, undated
--used TNT and C-2 to make shape charges
--used TNT in rubber hoses about in 2" in diameter and 15' long with brass threads on both ends so that they be could coupled together. Pulled rubber hose with AMTRACKS over beach to make a channel for landing craft.

"Memories of UDT 7" by Wm. J. Domath, undated
--taken by trucks to a place called North Island which was designated as a Naval Combat Demolition Training and Experimental Base.

"Memories of UDT 22" no author, undated
--9 weeks of training at Fort Pierce
 2 weeks of basic demolition work
 2 weeks of small boat training
 2 weeks of reconnaissance

1 week at St. Lucie Inlet at Jensen (channel and reef blasting & shore survey)
2 weeks of standard and payoff courses

"UDT 24" by J. Ray Aschom, 10 May 1990

--ferried north for about 2 hours...whole beach blew up.

--at Jensen-Stuart, Florida worked on blowing a deeper channel from the ocean to the Indian River, called Jen-Stu-Fu.

Mr. Watson later called the COE office and reported that he had been contacted by a local citizen (Ms. Kelly Firth, 407-231-0492) who reported seeing a bomb looking object adjacent to some of the horned scullies about 3-4 miles north of the Seal Museum. The object was a steel cylinder about 2-1/2 feet long with 3 fins and a reel device. The horned scullies are concrete beach obstruction blocks constructed by the military to simulate fortified beach conditions.

6.3.3 Mr. Kevin Dockery
 Author
 810-749-9386

Mr. Kevin Dockery, author and military history researcher, had some information on munitions. He had co-authored a book on the Seals with Jim Watson of the Seal Museum in Fort Pierce. He had interviewed numerous people concerning the operations of the USNATB. He had heard 4 stories of munitions disposal around Fort Pierce.

--Munitions were reportedly carried 15 to 20 miles off-shore and dumped in the ocean.

--Munitions were dumped in the ocean directly east of the South Island jetty about one-half mile off-shore.

--Munitions were buried on the South Island near the old rifle range. As soon as they were buried, locals removed them.

--Munitions were buried in a trench along one of the beaches. The dozer that buried the munitions was placed over the top of them and left there with its oil plug removed. Some time during the 1960's the dozer was removed from the site. Mr. Dockery had gotten information on this incident from Jim Alderman at Reed-Knight, a local explosives manufacturer.

6.3.4 Mr. Jim O'Dell
 Military Historian
 704-295-7156

Mr. O'Dell had attended the 1993 Fort Pierce Reunion as a military historian. He has

prepared a masters degree thesis concerning the Naval Combat Demolition Units and has become very familiar with the Fort Pierce operations. He indicated that he had a document detailing the JANET demonstration operations in February 1944. Mr. O'Dell provided a portion of the report detailing beach demolition activities at Fort Pierce during 8-12 February 1944 (Citation for document: Adjutant's General Office RG, Pre-invasion File 647, Box 24376, NARA Suitland Reference Branch).

6.3.5 Mr. Jim Alderman
 Vero Beach
 407-562-5697 (Work # for Reed-Knight Manufacturing)

Mr. Alderman confirmed the information concerning the burial reported by Mr. Dockery. He had heard the story from Mr. Krueger, a plumber in Fort Pierce, who's father had been stationed at the base. Mr. Alderman could not remember the location of the supposed burial. He did indicate that his family had owned a ranch about 10 miles in-land from Fort Pierce where an armored unit had trained. Reportedly during the 1950's live rounds had been found there but were removed by the military. He indicated that there are still the periodic reports of bombs washing up on the beaches along the Hutchinson Islands.

6.3.6 Mr. Roy Krueger
 Fort Pierce
 407-461-6083

Spoke with Mr. Roy R. Krueger concerning activities at base. His father had been stationed there near the end of the war and moved back after he left the military. Mr. Roy Krueger was a young boy then. The family lived on South Hutchinson Island, near the Fort Pierce Inlet. He remembers camping out on the South Island in the area of the firing ranges during the 1950's and finding ammunition storage boxes and casings. He did recall that an old bulldozer used to sit on the beach of the North Island. He was told that the military had buried several trucks there and pulled the dozer over the top of them. There was hardly any population on this part of the island. He could not pinpoint the exact location of the old dozer but recalls that it was south of the Seal Museum near the Sands Condominiums. He was not sure of the contents of the vehicles.

6.3.7 Mr. John Biedler
 Indian River County Mosquito Control Director

Mr. John Biedler has been involved with the mosquito control program in Indian River County since the early 1950's. The program entails disrupting the breeding locations and conditions of the insects to control the population. Part of the program involves constructing drainage trenches through the swamp areas on North Hutchinson Island. Several items of ordnance have been found during this trench. Mr. Biedler was able to locate on the 1944 air photos of the area two specific locations where ordnance had been found. These locations are marked on Map M-2. At the first site, a large bomb was discovered in the early 1950's.

Ordnance personnel disposed of the bomb by on-site detonation. Even though the surrounding area was sparsely populated at that time, damage was done to residences some distance from the blast. Mr. Biedler reported that bundles of explosives buried in the sand and attached to primacord have also been located on several occasions to the east of this bomb. This area is now part of the Moorings residential development. He did not have any recent reports of ordnance finds because most of the mosquito control trenches are completed.

6.3.8 Mr. Frank Evans
 St. Lucie County Mosquito Control Board Director

Mr. Evans has been involved with the mosquito control program for a number of years. His crews have not found any ordnance recently. He did state that the area of the artillery range and bunkers has grown back over with vegetation.

6.3.9 Mrs. Hilve Evans
 St. Lucie County Mosquito Control Board Entomologist

Mrs. Evans has been a longtime resident of the area and is very familiar with the Fort Pierce area. She remembers the islands before there were any paved roads there. She had spent a good deal of time doing scientific exploration there with her family. She indicated, and Mr. Evans confirmed, that there are several areas in the northern part of St. Lucie County extending into Indian River County between Highway A1A and the Indian River that have unusual crater formations in the swamps. The areas she outlined are marked on Map M-2.

6.3.10 Mr. George Seay
 Real Estate Agent

Mr. Seay had written letters concerning the Gilbert Property, south of Vero Beach, which had resulted in a Congressional inquiry being sent to the Jacksonville District. In the letters Mr. Seay had cited debris and building remnants apparently left behind by the DOD after use in World War II. He is trying to sell this property and concern has been raised over the liability of these remains. This area was above the northern boundary of the project identified in the original Government real estate documents. The Headquarters for the USNATB had been in the town of Fort Pierce and activities had taken place both north and south of there. At the meeting with Mr. Seay he informed us that about 20 years ago incendiary bombs had been uncovered during the construction of the Seagrove Subdivision, north of the Gilbert property. Additionally, dud bombs were discovered when the Moorings (riverside properties) were constructed. Locations of all properties are shown on Map M-2. Mr. Seay indicated that the Indian River County Mosquito Control Agency has discovered munitions when constructing drainage control trenches. These munitions have included bundles of dynamite with the blasting wires still attached. Mr. Seay indicated that he thought all munitions had been disposed of through proper channels.

Mr. Seay provided a copy of a report prepared by Knight-McGuire, 830 Azalea, Vero Beach, Florida (407) 231-2533 which indicates that the Naval Demolition Research Unit had used the Gilbert property and constructed numerous facilities there, as shown in the Joint Army Navy Experimental and Testing Board (JANET) report. A copy of the lease indicating the DOD use had been found in the County Courthouse. The Knight-McGuire report (see Appendix C-9) outlined the various buildings and debris left on the site. We met briefly with Mr. Knight to discuss details of his report and seek possible sources for air photos. Mr. Knight indicated that the north 100' of the Gilbert property had recently been sold and that there might be ongoing clearing operation there. The entire entourage left Mr. Knight and travelled to the property. Three men were clearing the underbrush and smaller trees with chain saws, a front-end loader, and a dump truck. At the site, Mr. Seay indicated that the mound of debris along the north edge of the property had been pushed there when the adjacent property had been developed.

6.3.11 Mr. Wally Rushing
 St. Lucie County Parks Director

Mr. Rushing did not have any knowledge of bombs or other ordnance items being found in any of the county's parks along the islands.

6.3.12 Mr. Tom Kindred
 St. Lucie County Commissioner

Mr. Kindred has been a longtime resident of the Fort Pierce area and involved with several different government positions. He does recall various ordnance finds over the years, but remembers that almost all were bombs that washed up on the beach. He was able to verify the report of a bomb washing ashore on the northern part of South Hutchinson Island behind some of the new condominiums. The EOD had removed the bomb from the beach.

6.3.13 Deputy Steve Nichols
 Indian River County Sheriffs Department

Deputy Nichols reported that at least 3 years ago when the Windemere Subdivision was being cleared some sort of munitions canisters were found. The Windemere Subdivision is immediately adjacent to the Gilbert property as shown on Map M-2. An EOD unit had removed those canisters.

6.3.14 Mr. Alan King
 St. Lucie County Historical Museum Curator

Mr. Allan King reported that the Museum had just hosted a 50th anniversary celebration for servicemen stationed at the USNATB. Mr. King indicated that before DOD involvement there were only 4 buildings on South Hutchinson Island. The mosquitoes were so bad nobody wanted to live there. The Headquarters and related facilities were located on the

south island. Most of the actual military operations took place on North Hutchinson Island. The Museum currently has an extensive photograph display of the USNATB operations. Some of the photos showed men in toxic gas training. Other photos showed extensive explosions and destruction on the beaches.

6.3.15 Mr. Howard Moore
 (Contacted at 1993 Reunion)

Mr. Moore had been an officer with the Scouts and Raiders stationed at Fort Pierce and had considerable contact with the JANET Board. He was unaware of any special CWS projects undertaken while he was there.

6.3.16 Mr. Wally Scheid
 (Contacted at 1993 Reunion)

Mr. Scheid had been a Navy lieutenant (j.g.) stationed at Fort Pierce between August and December 1943, and then after January 1945. He did not know of any CWS units operating there during his stay. He recalled that he did not even have the basic gas training before being shipped overseas. The Navy used bulk explosives in the operations he was involved with and they blew up everything that they took out with them.

6.4 Site inspection

6.4.1 Site inspection #1--May 1993

St. Louis District (SLD), Corps of Engineers performed a site inspection of portions of the Fort Pierce USNATB during May 1993. Site inspection team members included:

Mr. Tom Freeman, Project Manager
Mr. Pat O'Donnell, Site Safety Officer
Ms. Shelia Thomas

27 May 1993

All SLD personnel accompanied by the following met with Mr. George Seay of Dick Bird Realty Co., Vero Beach, Florida.

Mr. Robert Bridgers, Jacksonville District
Mr. Jack Herrington, Dynamac Corp., 404-681-0933
Mr. Chip Love

Mr. Seay had written letters concerning the Gilbert Property, south of Vero Beach, which had resulted in a Congressional inquiry being sent to the Jacksonville District. In the letters Mr. Seay had cited debris and building remnants apparently left behind by the DOD after use

in World War II. He is trying to sell this property and concern has been raised over the liability of these remains. The U.S. Chemical Material Destruction Agency had already identified the Fort Pierce Amphibious Training Base (USNATB) as a potential CWS site. Corps of Engineers real estate data has not been able to accurately define the total extent of lands used during the training operations. We knew that the Headquarters for the ATB had been in the town of Fort Pierce and that activities had taken place both north and south of there. Since Mr. Seay had definite information that DOD operations had taken place on this particular piece of property, we decided to begin our investigations for CWM in this area rather than at Fort Pierce. At the meeting with Mr. Seay he informed us that about 20 years ago incendiary bombs had been uncovered during the construction of the Seagrove Subdivision, north of the Gilbert property. Additionally, dud bombs were discovered when the Moorings (riverside properties) were constructed. Locations of all properties are shown on Map M-2. Local reports are also that the Indian River County Mosquito Control Agency have discovered munitions when they have constructed drainage control trenches. These munitions have included bundles of dynamite with the blasting wires still attached. Mr. Seay indicated that he thought all munitions had been disposed of through proper channels.

Mr. Seay provided a copy of a report prepared by Knight-McGuire, 830 Azalea, Vero Beach, Florida (407)231-2533 which indicates that the Naval Demolition Research Unit had used the Gilbert property and constructed numerous facilities there, as shown in the Joint Army Navy Experimental and Testing Board report. A copy of lease indicating the DOD use had been found in the County Courthouse. The Knight-McGuire report outlined the various buildings and debris left on the site. We met briefly with Mr. Knight to discuss details of his report and seek possible sources for air photos. Mr. Knight indicated that the north 100' of the Gilbert property had recently been sold and that there might be ongoing clearing operation there. The entire entourage left Mr. Knight and travelled to the property. Three men were clearing the underbrush and smaller trees with chain saws, a front-end loader, and a dump truck. At the site, Mr. Seay indicated that the mound of debris along the north edge of the property had been pushed there when the adjacent property had been developed. Considering the urgency of seeing some of this debris before it was removed, we began our site inspection immediately after the appropriate safety briefing. The foundations of several old structures were evident in the underbrush. Additionally, several piles of miscellaneous metal and wood debris were scattered along the north property line. A 3 inch diameter steel pipe protruded about 1 foot out of the ground. In the area of greatest debris concentration, a cylinder approximately 7.5 inches in diameter and 20 inches long was found next to one of the trees partially hidden by some palmetto plants. There appeared to be a fuze device in the one end and the other end, conical in shape, had an eye ring screwed into it. It appeared to be some sort of munitions. A quick check of the Knight-McGuire report indicated that this item had been there during their inspection in 1990, but they had tentatively identified as a metal-sheathed buoy. Mr. O'Donnell, SLD Safety Officer, advised everyone to move back from the object. Mr. Freeman informed the clearing contractor that an unknown piece of ordnance had been found and he should proceed only with great caution. The contractor ceased operations. The area was marked off with survey flagging tape. Mr. Freeman returned to Vero Beach where he contacted the appropriate emergency

response agencies, who in turn contacted the 66th EOD unit at Cape Canaveral. Mr. Ernest McCloud, (407) 562-2028, Battalion Chief, and a squad of men from the Indian River County fire department and Deputy Stephen Nichols, (407) 569-6700, of the Indian River County sheriff's office reported to the site to cordon off the suspected munitions. Mr. Nathan McCollum, County Emergency Analyst, (407) 567-8000, extension 533, also responded. Deputy Nichols reported that at least 3 years ago when the Windemere Subdivision was being cleared some sort of munitions canisters were found. The Windemere Subdivision is immediately adjacent to the Gilbert property. An EOD unit had removed those canisters. Mr. Freeman and Mr. Bridgers waited at the site with the emergency response group for the Army bomb disposal unit. Sgt. Hess of the 66th EOD unit from Cape Canaveral arrived to recover the "object". By this time there were also several reporters and a news helicopter in the area. Mr. Seay had also returned to the property. He reported that property had been cleared twice since the DOD left in the 1940's. The first time was in 1952.

Sgt. Hess approached the object with extreme caution. After determining that it was not armed, there were no fuses present, Sgt. Hess lifted the object from the ground and brought it out into the open area where Mr. Freeman and Mr. Bridgers were waiting. The object was unusual and not readily identifiable. Sgt. Hess' first reaction was that it might be a rocket head. Without certain identification the Sergeant decided to call it some sort of phosphorous device. He broke a hole in the side of the object. Inside we could see a cylinder about 2" in diameter projecting approximately 7" into the center from the flat end. We brought the object back to area where the remainder of the group was assembled and Sgt. Hess loaded it into his disposal vehicle. Mr. Bridgers, the geographic Corps District representative, responded to the media inquiries. Everyone left the site. We assumed the contractor was going to continue with the clearing.

While Mr. Freeman and Mr. Bridgers had waited at the site, Mr. O'Donnell and Ms. Thomas went to the Indian River County Sheriff's office to see if they had any incident reports indicating any previous OEW/CWM incidents. They were told by records custodian Sgt. Carol Stowe (407) 569-6700, extension 415, that it would be very costly and time consuming to find such a report among thousands of other miscellaneous incident reports. They were also told that such a search would be unlikely to reveal any reports of finding OEW, since she could not recall anything of that nature in the 20 years she has lived in Vero Beach.

From there Ms. Thomas and Mr. O'Donnell went to the Indian River County Mosquito Control District to see if they had any aerial photographs of the area from the 1940's and 1950's. They had some good quality aerial photos of the coastal area in Indian River County. They talked with the Director, Mr. E. J. Beidler, (407) 562-2393 who remembered some ordnance being uncovered near the Indian River when the Moorings subdivision site was being prepared. Ms. Thomas and Mr. O'Donnell left to meet with Mr. Freeman and Mr. Bridgers at the possible OEW site.

28 May 1993

Mr. O'Donnell and Ms. Thomas returned to the Indian River Mosquito Control District and picked up aerial photographs.

Mr. Freeman, accompanied by Messrs. Bridgers, Herrington, and Love, travelled to Fort Pierce, Florida to inspect the Headquarters area of the USNATB. The first stop was at the current Coast Guard facility, which is a part of the much larger former Navy facility. Coast Guard personnel did not have any knowledge of munitions or CWM being found in the area.

The group next proceeded to the St. Lucie County Museum located on the former USNATB facility and met with Mr. Allan King. The Museum had just hosted a 50th anniversary celebration for servicemen stationed at the USNATB. Mr. King indicated that before DOD involvement there were only 4 buildings on South Hutchinson Island. The mosquitoes were so bad nobody wanted to live there. The Headquarters and related facilities were located on the south island. Most of the actual military operations took place on North Hutchinson Island. The Museum currently has an extensive photograph display of the ATB operations. Some of the photos showed men in toxic gas training. Other photos showed extensive explosions and destruction on the beaches.

The group then went to the Underwater Demolition Team/SEAL Museum joined by Ms. Thomas and Mr. O'Donnell. Mr. Jim Watson, Curator, (407) 595-1570, was not in that day. Mrs. Patricia White, Assistant Curator, indicated that information on the actual operations was limited. The Museum does have extensive personnel listings of people who had been involved with underwater demolition, not necessarily at Fort Pierce. Fort Pierce was the "birthplace" of underwater demolition. We will contact Mr. Watson at a later date.

Personnel from SLD were required to return to Orlando for the flight back to St. Louis. Mr. Bridgers and the Dynamac personnel were going to continue to research the extent of the property used in the USNATB operations.

6.4.2 Site inspection #2--February 1994

The following personnel from SLD made a second site inspection of the USNATB, Fort Pierce in February 1994:

Mr. Mike Dace
Mr. Tom Freeman
Ms. Shelia Thomas

Information had been obtained during the archives search that indicated the JANET operations involving the removal of beach obstacles had been carried out on the North Hutchinson Island. Numerous explosive methods were used. Correspondence from the

COE, Jacksonville District discussed ordnance finds in the area starting in the late 1940's and culminating in 1957 with the detonation of a 350-pound bomb found near the marshes. Most of these activities occurred in the vicinity of the Engineer Board and Naval Demolition Research Unit facilities. This second site visit was undertaken to investigate these 2 military facilities, the marsh lands that had been located riverward of them, and additional sites located on the South Hutchinson Island. The South Island sites were the ordnance magazine area associated with the artillery range and an area shown on air photos as having numerous pock marks. Historical documents indicate that special CWS smoke bombs had been possibly dropped near this pock-marked area.

All photographs taken during this second site inspection are included in Appendix G of the Findings volume of the archives search report.

24 February 1994

Site A--Engineer Board Area

Personnel from SLD began the site inspection at the former Engineer Board compound. Historical air photos show that numerous buildings had been constructed on the dunes behind the beach. Activities on the nearby beaches included demolition of various beach obstacles and fortifications. Old topographic maps indicate that a trailer park was subsequently put on the Engineer Board area. High-rise condominiums and a county park presently occupy the site. There is a strip of land, approximately 100' to 150' wide, between the beach and the buildings that has not been developed. Walking through this vacant land with a metal detector, SLD personnel obtained numerous positive readings. The 350-pound bomb found in 1957 had been located riverward of this site. Local mosquito board personnel reportedly have uncovered bundles of dynamite and primacord nearby.

Site B--Naval Demolition Research Unit Area (NDRU)

The next site visited was the NDRU. This area had been inspected during the previous COE inspection in May 1993, when a possible 7.2" rocket head had been found. Numerous rockets of this kind had been used in the area. Since that inspection construction has begun on another house on the northern part of the NDRU site. "Munitions canisters" had been found on this part of the site during previous construction, according to the sheriff's office.

Again the metal detector showed some positive readings across this tract. A considerable amount of debris has been pushed along the southern edge of this property. Several sections of galvanized ¾" diameter pipe were noticed in the debris.

Towards the river from the NDRU site is the Round Island area. Mosquito control personnel had reported seeing several round holes in the swampy area. Comparison of the 1945 air photos with current site conditions seems to indicate that there has been more water intrusion. There do not seem to be as many dry areas there now. Parts of the area that had

been previously barren are now heavily overgrown with vegetation. Inspection of the site revealed much of it to be covered with water. Recent construction activities have included development of a county park and boat launching ramp. The park was built up with dredged materials. Several homes have been constructed along the highway in this area. There were no indications of previous military activities evident in this area.

Site C--Naval Combat Demolition Unit (NCDU) and Underwater Demolition Team (UDT) Area

The site inspection next investigated the NCDU area. Reports from local residents stated that materials were supposedly buried on the North Island. After burial the bulldozer that dug the trench was abandoned in-place. The bulldozer was removed sometime during the 1960's. These reports placed the bulldozer near the present-day Sands Condominiums. Comparison with 1945 air photos indicates that this area was the site of the NCDU training facility. Inspection of the undeveloped area between the beach and the condominiums with a metal detector revealed several positive readings. Reportedly there was a separate ammunition storage bunker across the road from the NCDU area. The 1945 air photo shows two possible buildings, one north and one south of the NCDU. Both of these areas have been developed. The north one has been covered with a large two story house and the south one is the site of sewage holding pond.

Site D--Magazine Area

The second South site inspected was the magazine area.. The artillery range facility contained a three bunker storage area. This area was located on the western edge of the facility. Analysis of current site conditions revealed that Highway A1A runs through the bunker area, although a small part of the area may still remain between the highway and the beach. The area is almost impenetrably overgrown with vegetation.

Site E--Possible Bombing Area

The final South Island site visited was the area that had possibly been used during the JANET bombing exercises. The area is now extensively developed with high-rise condominiums and commercial businesses. There was no evidence of previous military activities in the area.

6.5 Air photo interpretation and map analysis

6.5.1 Interpretation of aerial photography

Photo analysis and land use interpretation were performed for the site with the use of aerial photography from 1944, 1943, and 1945. The Fort Pierce, Indrio, Riomar and Eden, Florida, USGS quadrangle maps were used as a reference for the photography. The approximate negative scale of the photography is as follows:

Photography Date	Scale	Source	Identifier(s) Frame(s)
1 May 1943	1" = 1,667'	National Archives	1C-3
29 Oct 1944	1" = 1,667'	National Archives	2C-3 thru 9 2C-32 thru 42
10 Oct 1945	1" = 1,800'	National Archives	229 thru 267
Undated	Oblique	St. Lucie Co., Florida Historical Museum	Engineer Board
Undated	Oblique	St. Lucie Co. Florida Historical Museum	Naval Demolition Research Unit

The aerial photography follows the beach north and south of the Fort Pierce U.S. Naval Boat Facilities located on the south side of the Fort Pierce Inlet. The beach is running north northwest to south southeast. Unidentified buildings (photo #250) with possible outside storage area are noted two miles north of the Inlet. Linear structures are noted on the beach at points five miles (photo #247) and eight miles (photo #244) north of the Inlet. Buildings with outside storage are also noted 10 miles north of the inlet (photo #243). Buildings identified as the Naval Demolition Research Unit (NDRU) are noted on photo #246 approximately six miles north of the Inlet. Circular depressions that may be possible bomb craters can also be seen on photo #246, 1,500' due south of the NDRU. A group of buildings identified as the Engineer Board are noted on photo #242 approximately eleven miles north of the Inlet.

The location of the CWS test area is shown on the 1945 photos #260 through #262. There are several sections that appear disturbed. One section near the center of the area is covered with numerous circular patches. Another section near the south end of the area is disturbed on both sides of the then existing road.

South of the Fort Pierce an array of craters can be noted on photo #263 approximately four miles south of the Inlet. An unidentified building complex and possible storage area can be seen on photo #258 approximately three miles south of the Inlet. No direct evidence of Chemical Warfare Material or ordnance storage or disposal can be noted from the photographs.

Current Assessors' air photos (scale 1" = 200') have been obtained for the USNATB in both St. Lucie and Indian River Counties. Maps M-3 through M-7 show the 1945 and 1992 site conditions at the Engineer Board, Naval Demolition Research Unit, Naval Combat Demolition Unit, artillery range, and suspected South Island bombing range areas. The 1992 air photos show that considerable development has taken place in these areas.

6.5.2 Map analysis

The site was analyzed by referencing the USGS 7.5 minute quadrangle sheets for Fort Pierce 1949, photo revised 1983, Indrio 1948, photo revised 1983, Riomar 1948, photo revised 1983, Florida and Eden 1948, photo revised 1983. The Fort Pierce Inlet is located at 27° 28' North Latitude by 80° 17' 30" West Longitude. The Inlet is in St. Lucie County but the site spans north along the beach into Indian River County and south into the north end of Martin County.

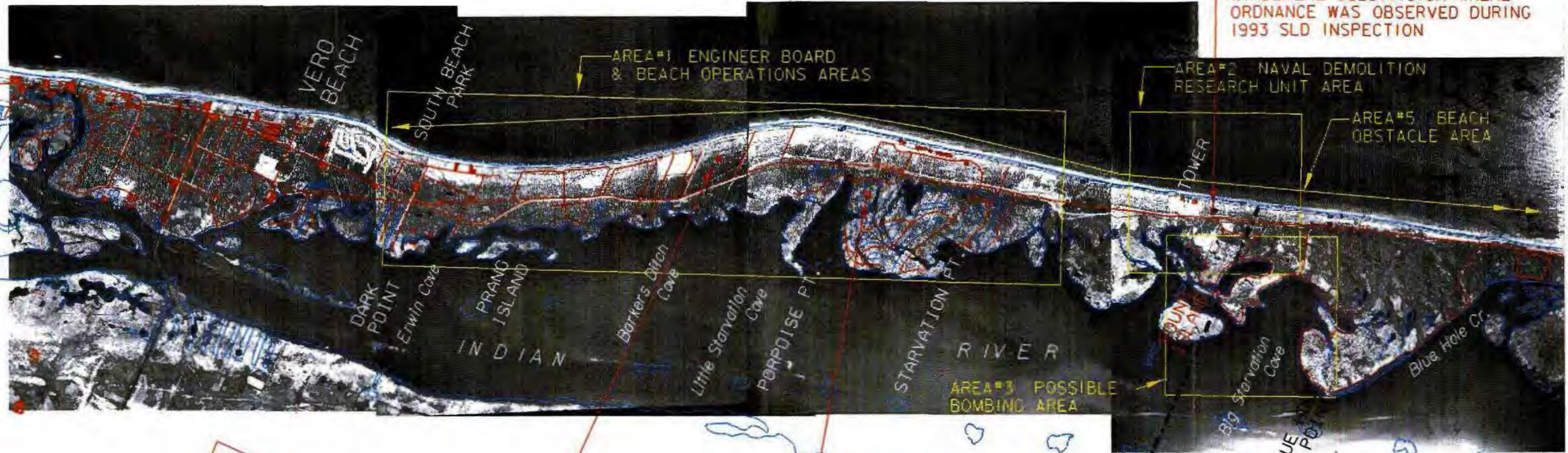
The quadrangles indicate that one large building may still be intact in the NDRU area and the possibility exists that buildings may also be intact at the Engineer Board area. Other items noted on the photographs cannot be identified on the quadrangles. The site has undergone extensive development as noted by the photo revisions. No direct evidence of Chemical Warfare Material (CWM) or ordnance storage or disposal can be noted from the quadrangle maps.

MAPS/DRAWINGS

HISTORICAL MAP
M-1

(FURNISHED IN POCKET)

ATLANTIC OCEAN



SEE SHEET 2 OF 5 FOR CONT.

SEAGROVE SUBDIVISION WHERE INCENDIARY BOMBS WERE REPORTEDLY FOUND

LOCATION OF BOMB DETONATED IN 1954 (BURIED DYNAMITE FOUND IN ONE OF THE ADJACENT SUBDIVISIONS.)

FLORIDA



NOT TO SCALE

MAP M-2
SHEET 1 OF 5

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP-FUDS# 104FL069800
FORT PIERCE, FLORIDA

PROJ. DATE: MAR 1994 DATE OF PHOTO: 10 OCT 1945
16-MAR-1994 10:00 DB/FREEMAN/FTPIERCE/PIERCE2C.DGN & FT241(43,45,47).EXT

ATLANTIC OCEAN

SEE SHEET 1 OF 5 FOR CONT.



FLORIDA



NOT TO SCALE

MAP M-2
SHEET 2 OF 5

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP-FUDS* 104FL069800
FORT PIERCE, FLORIDA

PROJ. DATE: MAR 1994	DATE OF PHOTO: 10 OCT 1945
16-MAR-1994 14:16	D8/FREEMAN/FTPPIERCE/PIERCE2E.DGN & FT248(50,51).WRP

PEPPER BEACH
STATE RECREATION AREA

AREA #8
OCEAN AREA

Ft. Pierce
Inlet

HUTCHINSON ISLAND

BOOT JOE
POINT

THUMB
POINT

JAYCEE PAR
HOOK POINT

BEAR
POINT

Bear Point Cove

Pete Stones C

Middle Cove

INDIAN RIVER

NORTH BEACH

U S ROUTE 1

FORT
PIERCE

US COAST GUARD
CAUSEWAY
ISLAND

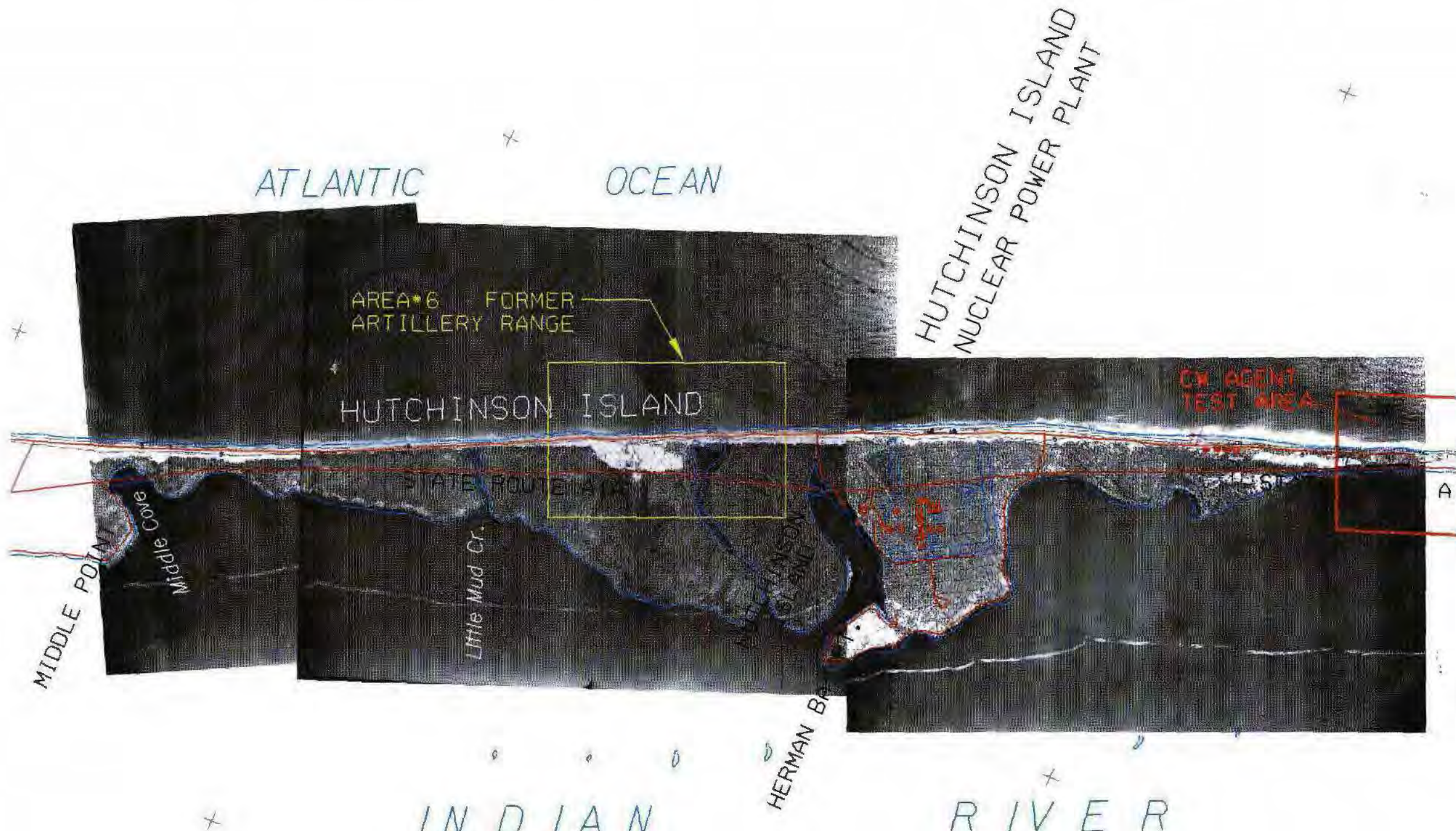


MAP M-2
SHEET 3 OF 5

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP-FUDS #104FL069800
FORT PIERCE, FLORIDA

NOT TO SCALE

PROJ. DATE: MAR 1994	DATE OF PHOTO: 10 OCT 1945
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F L O R I D A



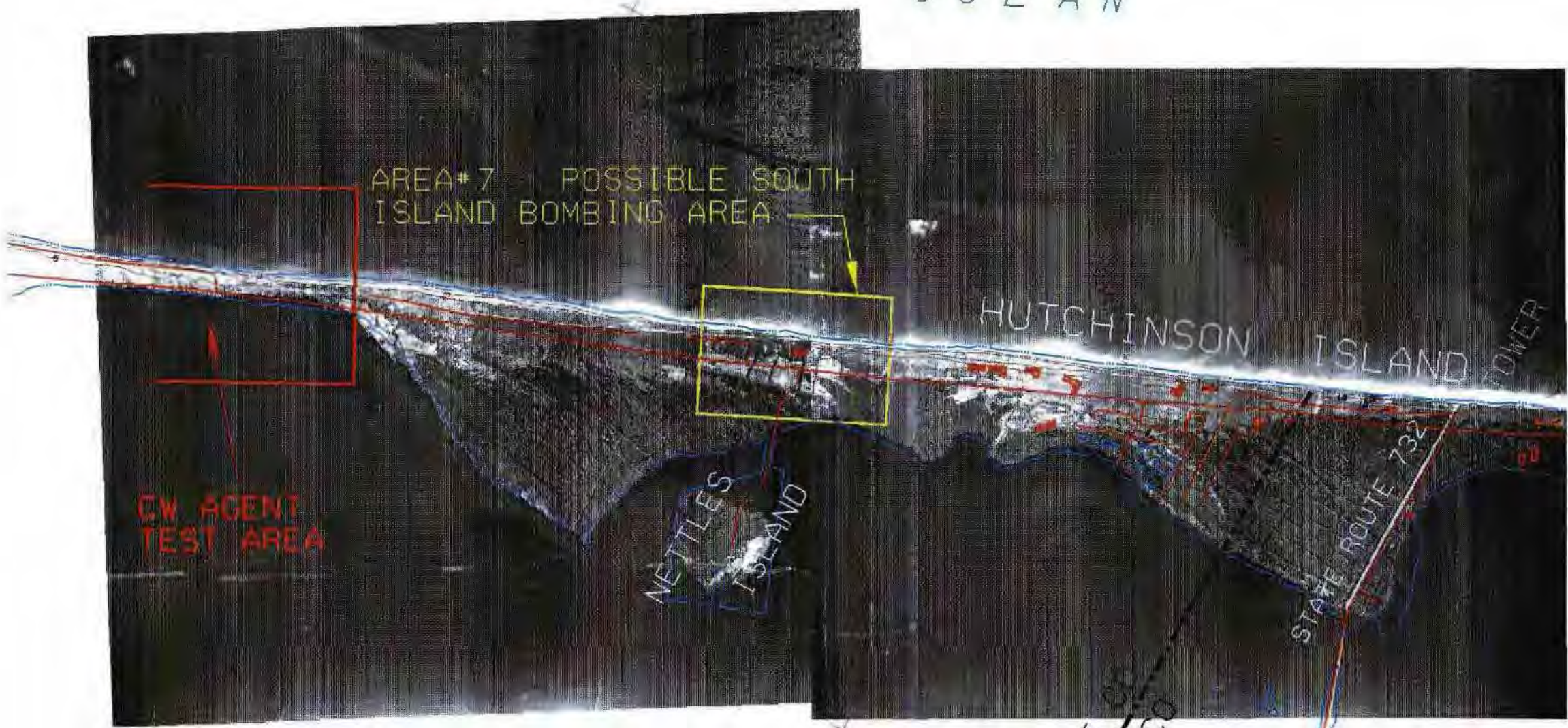
MAP M-2
SHEET 4 OF 5

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP-FUDS #104FLO69800
FORT PIERCE, FLORIDA

NOT TO SCALE

PROJ. DATE: MAR 1994	DATE OF PHOTO: 10 OCT 1945
04-APR-1994 14:14	D8/FREEMAN/PIERCE2F.DGN & FT257(258,260).EXT

ATLANTIC OCEAN



INDIAN

ST LUCIE
MARTIN CO

FRANK A WACHA
BRIDGE

RIVER

FLORIDA



MAP M-2
SHEET 5 OF 5

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP-FUDS #104FL069800
FORT PIERCE, FLORIDA

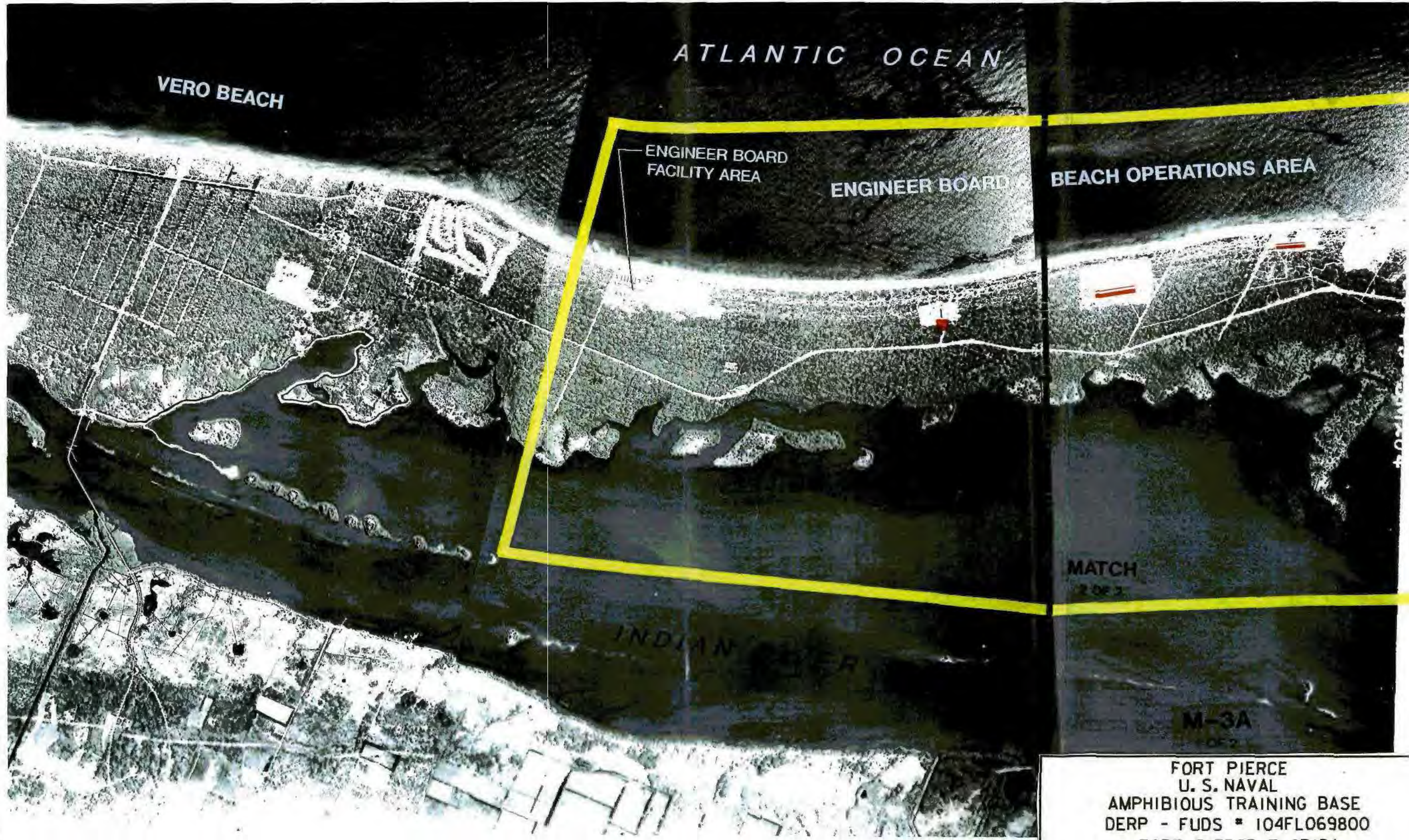
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PROJ. DATE: MAR 1994

DATE OF PHOTO: 10 OCT 1945

04-APR-1994 14:37

D8/FREEMAN/FTP/PIERCE/PIERCE2H.DGN & FP26212641.EXT



VERO BEACH

ATLANTIC OCEAN

ENGINEER BOARD FACILITY AREA

ENGINEER BOARD

BEACH OPERATIONS AREA

INDIAN RIVER

MATCH
2 OF 3

M-3A

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS # 104FL069800
FORT PIERCE, FLORIDA



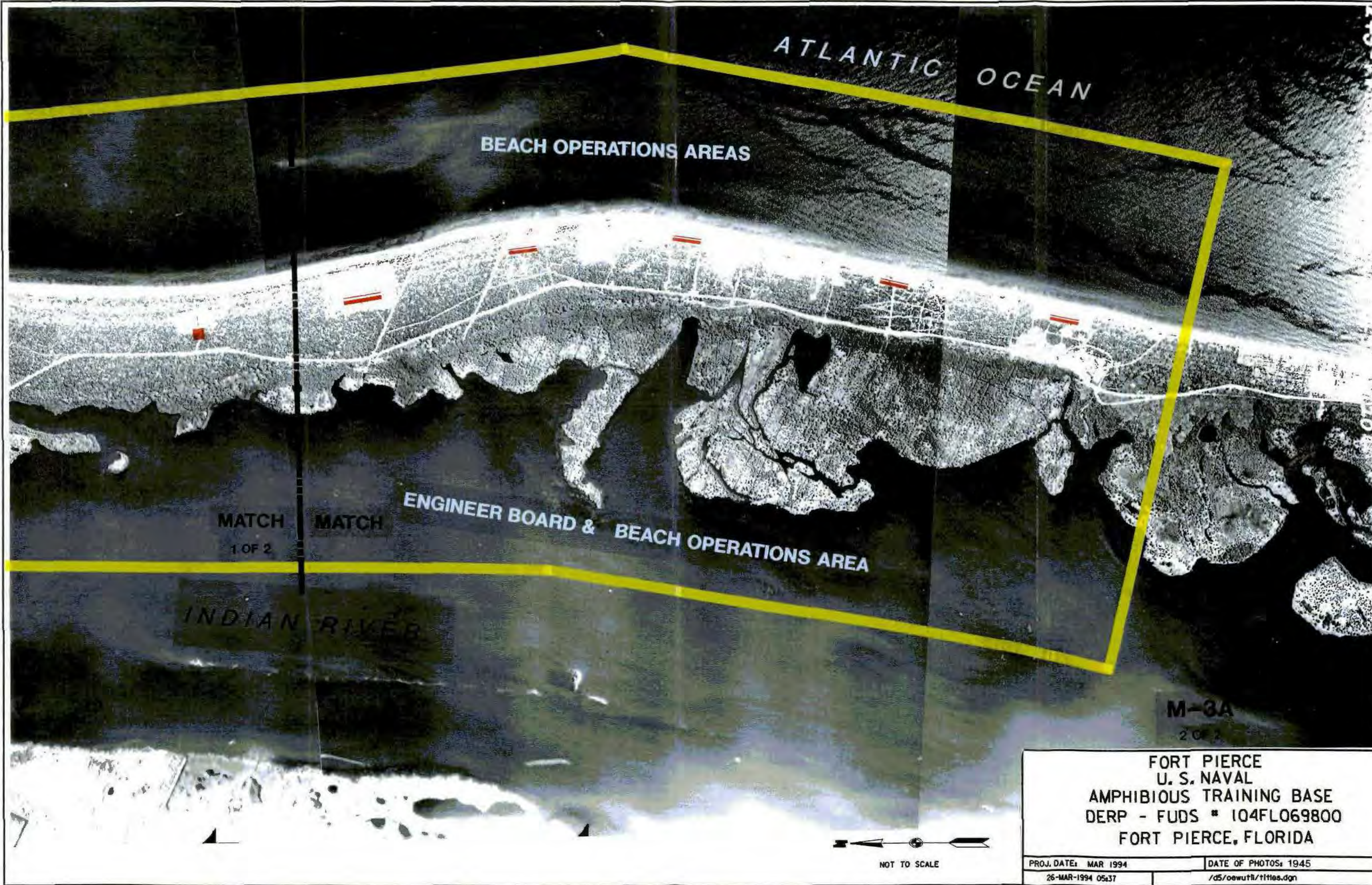
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PROJ. DATE: MAR 1994

DATE OF PHOTOS: 1945

25-MAR-1994 05:40

/05/05wut8/titles.dgn



ATLANTIC OCEAN

BEACH OPERATIONS AREAS

ENGINEER BOARD & BEACH OPERATIONS AREA

MATCH
1 OF 2

INDIAN RIVER

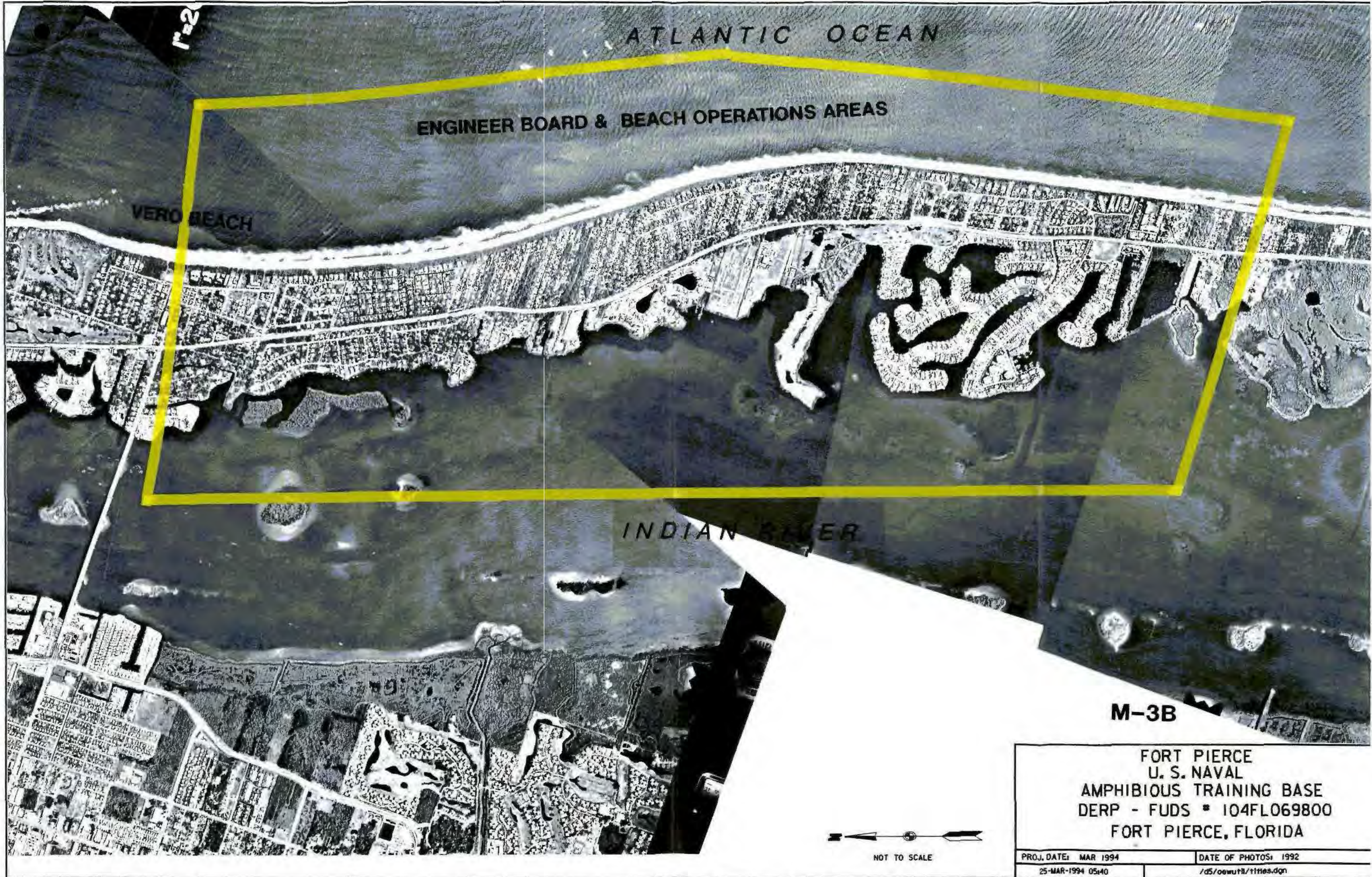
M-3A
2 OF 2

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS # 104FLO69800
FORT PIERCE, FLORIDA



NOT TO SCALE

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1945
26-MAR-1994 05:37	/d5/oeuutb/titles.dgn



ATLANTIC OCEAN

ENGINEER BOARD & BEACH OPERATIONS AREAS

VERO BEACH

INDIAN RIVER

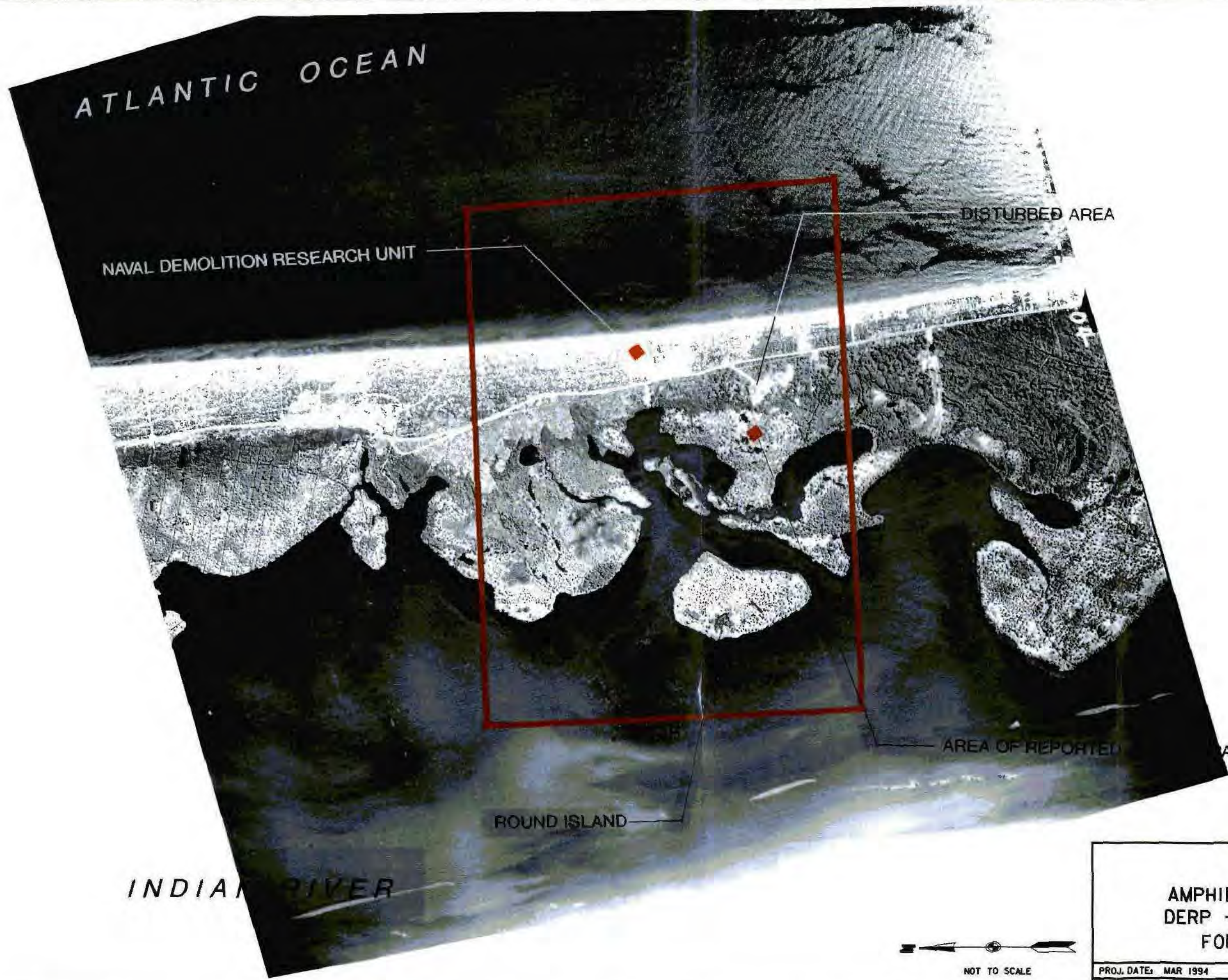
M-3B

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS # 104FLO69800
FORT PIERCE, FLORIDA



NOT TO SCALE

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1992
25-MAR-1994 05:40	/d5/oeu13/titles.dgn



ATLANTIC OCEAN

NAVAL DEMOLITION RESEARCH UNIT

DISTURBED AREA

AREA OF REPORTED ... WATERS

ROUND ISLAND

INDIAN RIVER

M-4A



NOT TO SCALE

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS * 104FLO69800
FORT PIERCE, FLORIDA

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1945
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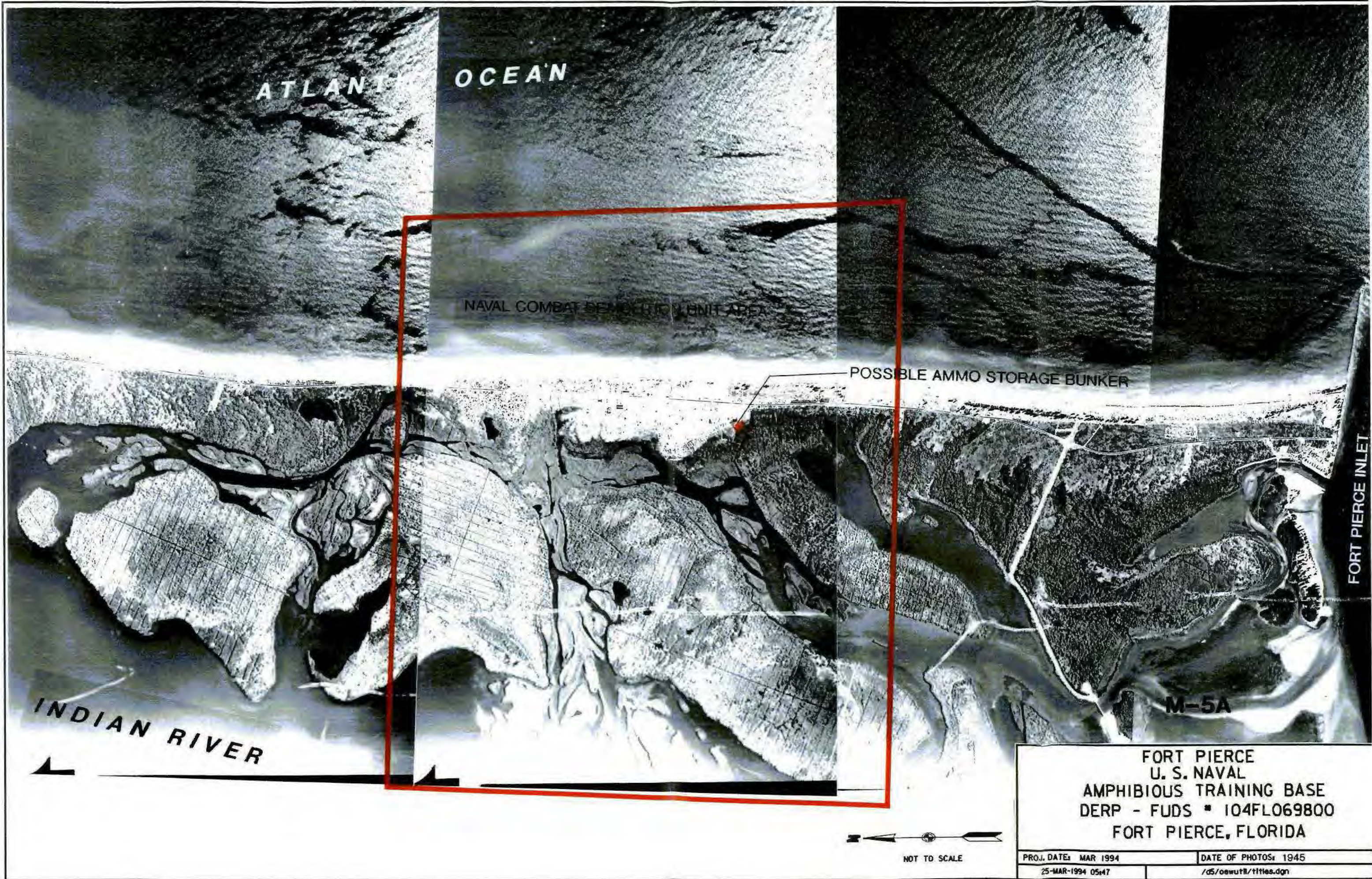
M-4B

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS # 104FL069800
FORT PIERCE, FLORIDA



NOT TO SCALE

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1992
25-MAR-1994 05:45	/d5/oeuwfll/titles.dgn



ATLANTIC OCEAN

NAVAL COMBAT DEMONSTRATION UNIT AREA

POSSIBLE AMMO STORAGE BUNKER

INDIAN RIVER

M-5A

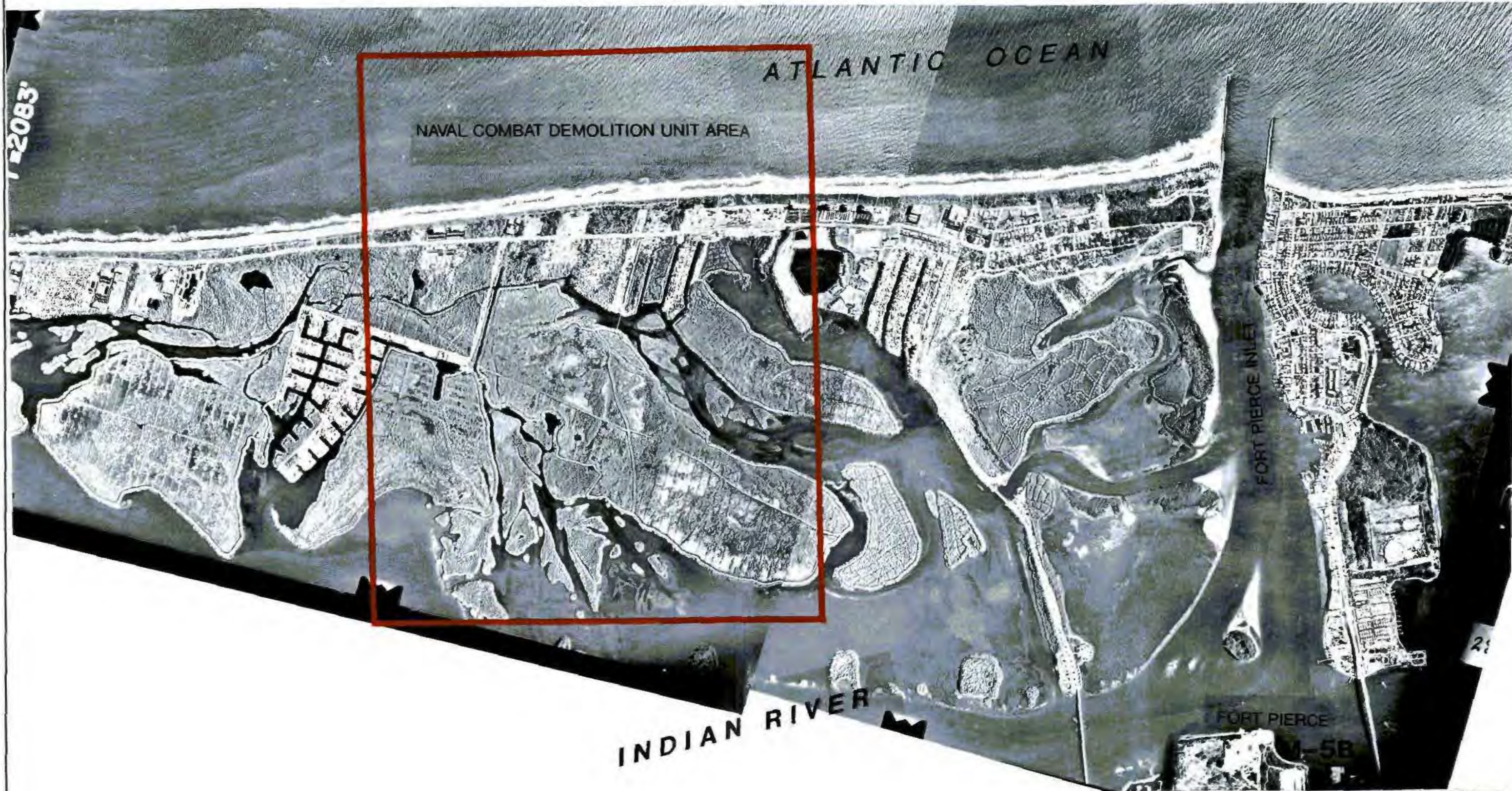
FORT PIERCE INLET

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS ■ 104FLO69800
FORT PIERCE, FLORIDA



NOT TO SCALE

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1945
25-MAR-1994 05:47	/c5/oeutfl/titles.dgn



NAVAL COMBAT DEMOLITION UNIT AREA

ATLANTIC OCEAN

INDIAN RIVER

FORT PIERCE INLET

FORT PIERCE
1-5B

2083

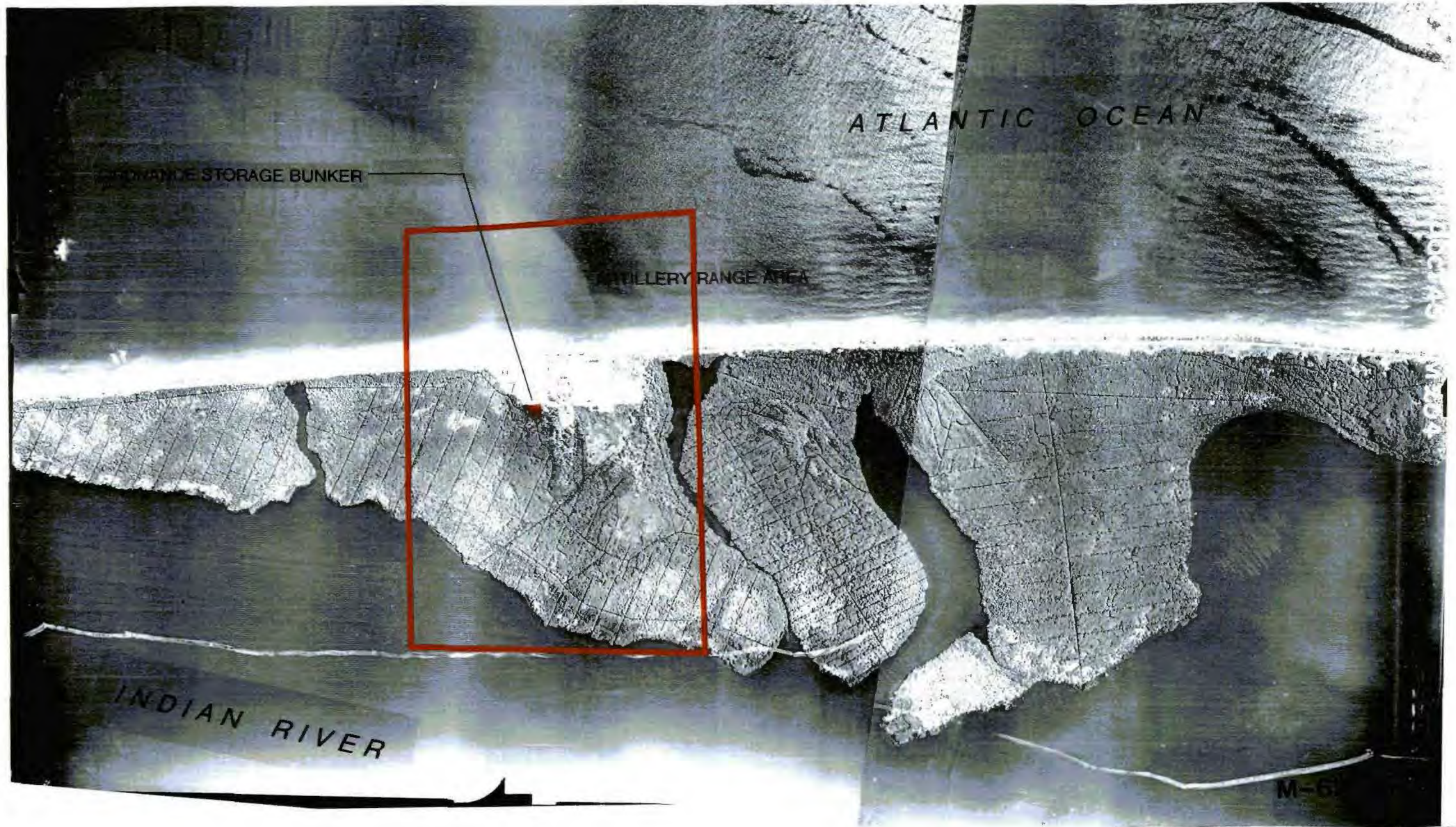
28

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS # 104FLO69800
FORT PIERCE, FLORIDA



NOT TO SCALE

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1992
25-MAR-1994 05:56	/d5/coewu18/11tea.dgn



ATLANTIC OCEAN

STORAGE BUNKER

ARTILLERY RANGE AREA

INDIAN RIVER

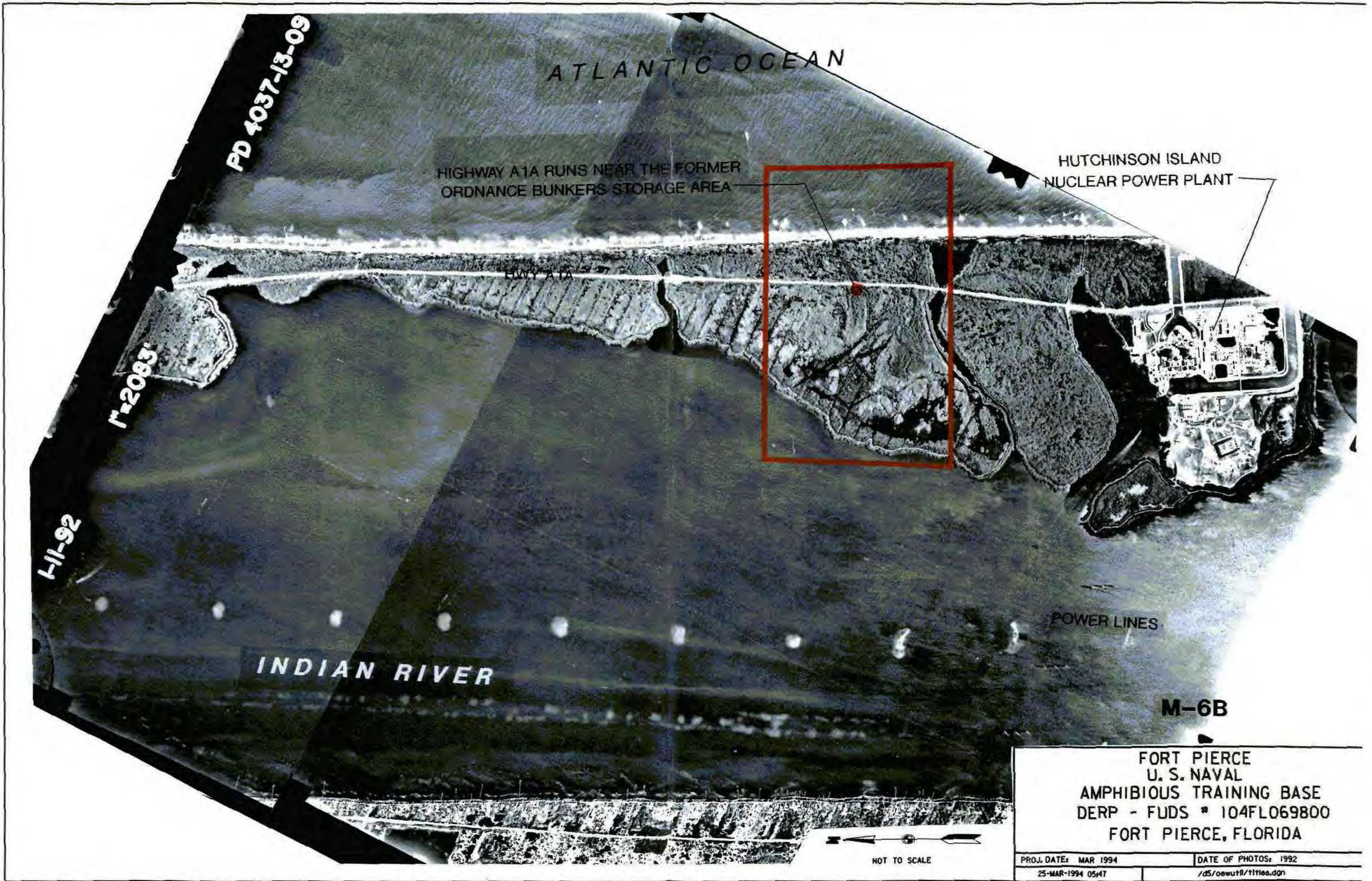
M-6



NOT TO SCALE

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS # 104FLO69800
FORT PIERCE, FLORIDA

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1945
25-MAR-1994 05:56	/d5/oeutil/titles.dgn



ATLANTIC OCEAN

PD 4037-13-09

HIGHWAY A1A RUNS NEAR THE FORMER
ORDNANCE BUNKERS STORAGE AREA

HUTCHINSON ISLAND
NUCLEAR POWER PLANT

I-2083

I-11-92

INDIAN RIVER

POWER LINES

M-6B

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS * 104FLO69800
FORT PIERCE, FLORIDA

NOT TO SCALE

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1992
25-MAR-1994 05:47	/d5/oeufl/tites.dgn

3-VV16PL-M-1-145-1000145-5M2D4

ATLANTIC OCEAN

POSSIBLE SOUTH ISLAND BOMBING AREA

CW AGENT TEST AREA

NETTLES ISLAND

INDIAN RIVER



NOT TO SCALE

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS * 104FLO69800
FORT PIERCE, FLORIDA

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1945
25-MAR-1994 05:45	/d5/oeutll/titles.dgn

ATLANTIC OCEAN

AREA OF POSSIBLE SOUTH ISLAND BOMBING AREA

HUTCHINSON ISLAND

NETTLES ISLAND

NETTLES ISLAND

INDIAN RIVER

INDIAN RIVER

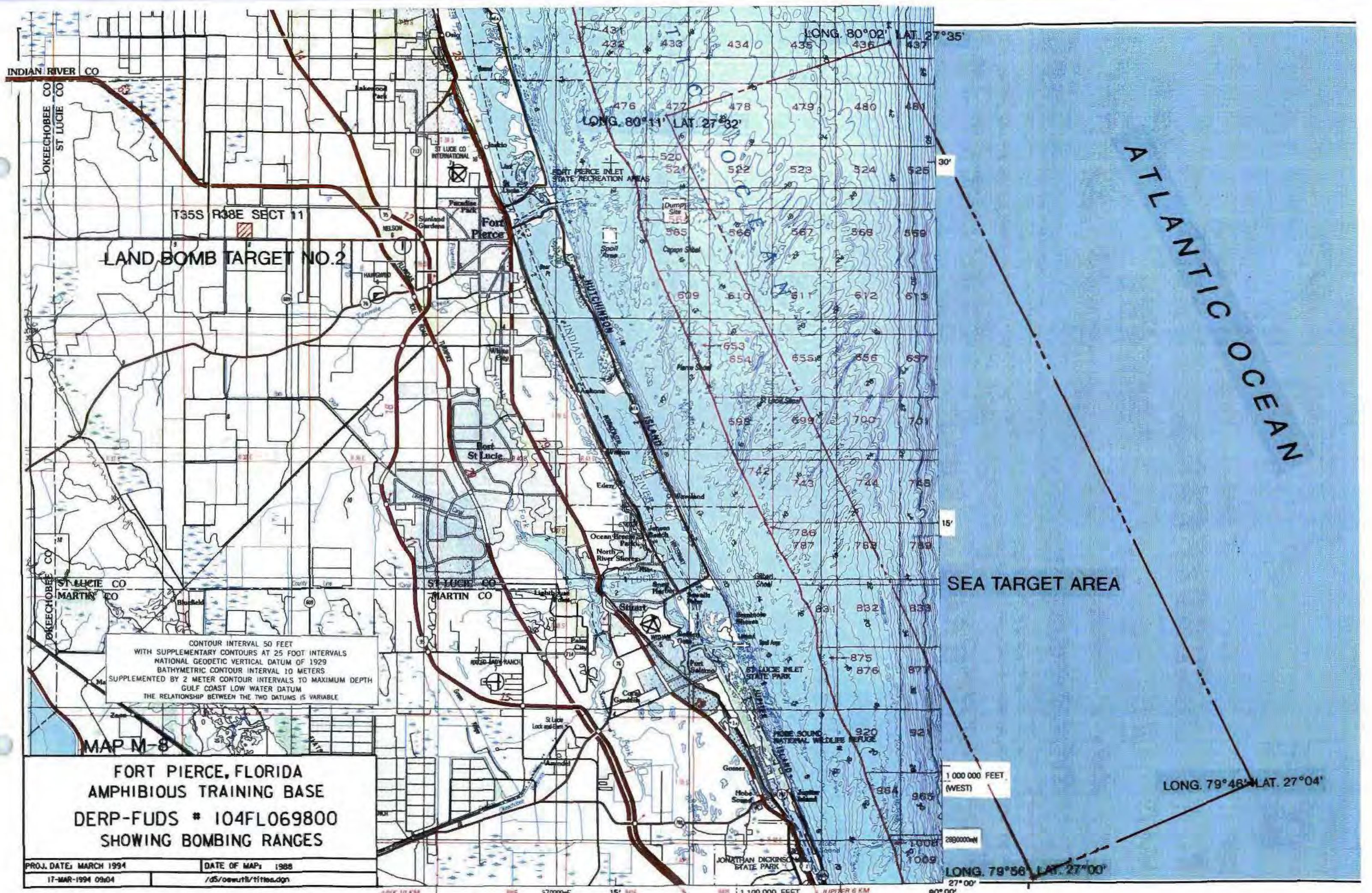
M-7B

FORT PIERCE
U. S. NAVAL
AMPHIBIOUS TRAINING BASE
DERP - FUDS # 104FL069800
FORT PIERCE, FLORIDA



NOT TO SCALE

PROJ. DATE: MAR 1994	DATE OF PHOTOS: 1992
29-MAR-1994 13:35	/d5/oeu7ll/111ea.dgn



LAND BOMB TARGET NO.2

SEA TARGET AREA

ATLANTIC OCEAN

CONTOUR INTERVAL 50 FEET
 WITH SUPPLEMENTARY CONTOURS AT 25 FOOT INTERVALS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929
 BATHYMETRIC CONTOUR INTERVAL 10 METERS
 SUPPLEMENTED BY 2 METER CONTOUR INTERVALS TO MAXIMUM DEPTH
 GULF COAST LOW WATER DATUM
 THE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE

MAP M-8
FORT PIERCE, FLORIDA
AMPHIBIOUS TRAINING BASE
DERP-FUDS # 104FL069800
SHOWING BOMBING RANGES

PROJ. DATE: MARCH 1994	DATE OF MAP: 1988
17-MAR-1994 09:04	/d5/ocwrtb/titles.dgn

1 000 000 FEET
(WEST)

2800000W

LONG. 79°56' LAT. 27°00'

LONG. 79°46' LAT. 27°04'

4000 10 KM 570000E 15' 1 100 000 FEET JUPITER 6 KM 80°00'