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NUCLEAR SUBMARINE PIER, NAVAL STATION
SAN DIEGO, CALIFORNIA

DECLASSIFIED UNDER AUTHORITY OF THE INTERAGENCY
SECURITY CLASSIFICATION APPEALS PANEL.
E.O. 13526, SECTION 5.3(b)(3)
ISCAP No. 2010-081, document 25

Surveys and Investigations Staff

March 1960

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March 23, 1960

MEMORANDUM FOR THE CHAIRMAN

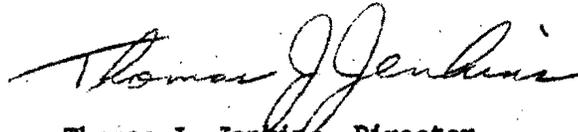
Re: Military Construction Program
for Fiscal Year 1961
Nuclear Submarine Pier, Naval Station
San Diego, California

By directive dated August 19, 1959, the Committee requested that inquiry be made regarding certain items in the Military Construction Program of the Army, Navy and Air Force for fiscal year 1961.

The attached report covers the inquiry into the Nuclear Submarine Pier, Naval Station, San Diego, California. This report has been classified "Confidential" since it contains information regarding the operation of nuclear submarines classified "Confidential" by the Navy.

Additional studies requested under this directive will be made the subject of separate reports.

Respectfully submitted,



Thomas J. Jenkins, Director
Surveys and Investigations
House Appropriations Committee

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NUCLEAR SUBMARINE PIER, NAVAL STATION
SAN DIEGO, CALIFORNIA

I. BACKGROUND

The Navy proposes San Diego, California, as the future home port for one division of nuclear submarines (SSN). To berth these SSNs the Navy is requesting money to build a pier on Point Loma. At the present time, Submarine Flotilla One, consisting of 26 conventional submarines and 2 submarine tenders, is based at San Diego. There are no SSNs in Flotilla One. The only nuclear submarines in the Pacific Fleet are now based at Pearl Harbor. The Office of the Chief of Naval Operations (CNO), Washington, D. C., advised the Staff that 1 SSN will be assigned to Sub Flotilla One when the proposed pier is built and that by 1962, 3 SSNs will be home ported at San Diego. The plan is that conventional submarines will eventually be replaced by SSNs until Sub Flotilla One is composed entirely of SSNs. A map of the San Diego Harbor area is included at the end of this report for ready reference in identifying the areas discussed in the report.

The proposed SSN pier will cost \$1.7 million and consist of a reinforced concrete mooring pier 550 feet by 60 feet and a sheet pile bulkhead. One 2,000-ampere and six 800-ampere, 440-volt, 3-phase AC power outlets as well as telephone and fresh water ship service outlets will be provided on the pier. In addition, a quay wall of 750 linear feet is to be built. A certain amount of dredging will be required at the Point Loma site, costing an estimated \$84,900. The pier is designed to berth 6 nuclear submarines and 1 submarine tender. Since the submarine personnel are to live on board the submarines, no shore billets are being requested by the Navy.

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The site proposed by the Navy is on Point Loma near the San Diego Harbor entrance, within Ballast Point and directly across the channel from North Island (Point "A" on map). All land areas required for the project are Navy-owned. The pier is to be constructed in eight months' time after approval has been received to proceed.

Originally the Navy considered proposing the construction of three piers in the fiscal year 1961 Military Construction Program at a cost of \$3,112,000. These piers were intended to berth conventional submarines of Sub Flotilla One, San Diego. One pier was to be 500 feet by 60 feet and two piers 350 feet by 30 feet. The quay wall was to be 1,455 feet long. The three piers were to be justified on the basis of conservation of battery life of conventional submarines (\$500,000 a year), and the saving of some \$700,000 a year in small boat services required to transport personnel and supplies between tender-nested submarines and the port of San Diego. The site was to be the same as the one now proposed on Point Loma and was described as affording necessary outer-harbor berthing for quick deployment of the submarines.

CNO reduced the scope of the 3-pier request to a 1-pier item to provide berthing only for SSNs and a tender. The reduction of this project was in part an economy measure by the Navy and in part due to a realization that it would be difficult to sell the idea of piers for conventional submarines which have been moored off tenders in the harbor stream for many years. Conventional submarines will continue to be moored off tenders in the stream. CNO pointed out that any piers needed for conventional submarines could probably be found in the six piers at the Naval Station, San Diego, now used for the Naval

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Reserve Ship Group and only 50 per cent occupied.

The description of the project was changed and the Navy claimed the new pier was mandatory for SSN.

II. NEED FOR THE FACILITY

The Navy claims the construction of a pier at Point Loma is a military necessity to provide berthing space for nuclear-powered submarines; that for purposes of safety SSNs must be berthed clear of traffic lanes and in the outer harbor near the open sea. Conventional submarines at San Diego for years have been moored in the harbor stream alongside tenders. A tender is for all practical purposes a floating pier with full facilities for repair and servicing of conventional submarines. The Navy contends the same "nesting" process is not practical for SSNs as they are larger and less maneuverable in the nest than conventional submarines and would block the harbor channel and increase the dangers of collision. SSNs, according to Navy representatives at Mare Island, the major repair base for SSNs on the west coast, require repairs or maintenance checks in port about one fourth of the time. To accomplish many of these repairs the reactor power plant of the SSN must be shut off, leaving the SSN on its diesel power. The diesel power in SSNs that were built after the NAUTILUS permits the submarine to maneuver at only about 3.5 knots, hardly enough at times to overcome adverse currents in the harbor. In addition to the repair needs, SSN Commanders at Mare Island point out that core conservation demands the reactor be shut off when the SSN is in port. A reactor costs a minimum of \$3.5 million and has an operational life of some 2 1/2 years at present. Running the reactor in port wastes the operational

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life of the reactor.

Once the reactor of the SSN is shut off, it can be brought to "criticality" again only by the diesel power plant of the submarine. The time required to do this varies from 2 to 8 hours. With adequate shore power to supply the light, water, telephones, etc., the SSN requires, the submarine can bring its reactor to life in two hours. The Navy contends conventional piers and tenders do not supply the 440-volt, 3-phase AC current needed for the SSN auxiliary service load. Using conventional piers and tenders would increase the time needed to "light off" the reactor to 8, 10 or even 12 hours.

The conventional tender NEREUS is now being modified to serve SSNs in the Pacific. When completed sometime in the Summer of 1960, the NEREUS will be able to service 6 SSNs simultaneously and will have the necessary electric power to insure the minimum 2-hour light-off time for these 6 vessels. The Navy, however, claims a pier is still necessary since a tender is not designed to act merely as a berth for SSNs. A pier can berth a tender on one side of its length and 6 SSNs on the other; a tender in the stream on the other hand must always keep one side free to receive supplies. In addition, there are times when the NEREUS will be deployed apart from its SSNs which will then need shore berthing and power from a pier. A tender is designed to deploy into advanced areas where there are no pier facilities. Pier loading of supplies cuts down the double haul from shore to tender to SSN. The proposed pier costs only a fraction of the \$60 million replacement cost of a tender.

The most important factor to the Navy appears to be the safety factor which a harbor pier affords when compared with tender nesting of SSNs in the stream.

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III. THE PROPOSED PIER SITE

CNO advised the Staff the Navy has gone to great pains to approve San Diego Harbor for the operation of nuclear submarines. Whenever SSNs are to come into the proximity of areas of dense population, CNO must approve the operation in view of nuclear hazards possibly involved. The Point Loma site, inland of Ballast Point, has been approved by CNO as suitable for pier or tender berthing of SSNs.

An examination of the proposed site by the Staff disclosed an ideal harbor location (Point "A" on map). Ballast Point breaks the ocean swells and forms a natural cove. The port authority of the city of San Diego and the chamber of commerce of San Diego have approved the Point Loma site. The site fits into the over-all Navy development plan for Point Loma. The over-all development plan foresees five piers to be built in the Point Loma area near the SSN pier site. However, the Staff became aware that a problem of landslides exists in the area of the proposed site.

A study of the landslide problem is presently under way for the Naval Experimental Laboratory (NEL) on Point Loma. The Navy geologist conducting the study advised this Staff that a definite landslide problem exists in the Point Loma area and that the road at Fort Rosecrans, in the vicinity of the Point Loma site, has buckled and any further movement will affect the NEL pier, located within a short distance of the proposed site. He expressed the opinion that it would not be wise to build the pier proposed for SSNs on Point Loma in view of the strong likelihood that future disturbances, such as a minor earthquake or heavy rains, would cause the pier to buckle and perhaps

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be washed into the sea. A Navy engineer also assigned to the landslide study believes additional study is needed before definite location of the SSN pier at the proposed site. He pointed out that already numerous pipelines have broken at Point Loma and similar damage to pier facilities might be reasonably expected if the landslide problem continues.

This landslide problem is not new to the Navy at San Diego. The Preliminary Engineering Report (PER) written for the Navy on the proposed SSN pier considered only sites at the harbor entrance. In reviewing this PER, the Chief of the Bureau of Yards and Docks (BUDOCKS) criticized the report on the grounds that no other sites were considered. He pointed out that a major slide area existed in the proposed pier site and wanted to know why the Naval Station piers in San Diego Harbor were not considered. BUDOCKS requested that a site study be made of the entire San Diego Harbor area before the Point Loma site was settled upon. BUDOCKS was told by the Department of Public Works, 11th Naval District, that a CNO decision precluded consideration of other sites. BUDOCKS expressed lack of knowledge of such a decision, and the request for a site study is being held in abeyance at San Diego pending clarification of the CNO decision.

There is considerable confusion among various Navy commands as to whether nuclear submarines can be brought into the inner harbor. Navy officials at San Diego and Washington cited to the Staff an "opinion" of the Reactor Safeguards Division of the Atomic Energy Commission (AEC) that SSNs were not to be brought into the inner harbor. This cited "opinion" has been used by the Navy at San Diego and at some levels in Washington as a bar to use of any pier site other than the one at Ballast Point.

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The Staff found that the AEC has rendered no decision or opinion in this matter. Dr. Clifford Beck, Chief of the Nuclear Reactor Hazards Evaluation Board, Division of Licensing and Regulation, AEC, and Dr. Howard Price, the head of that Division, advised the Staff that their office, the logical one to pass on reactor hazard problems, has not issued any decision or opinion on this matter. They explained that, by mutual agreement with the Department of Defense, AEC has allowed such evaluations to be made by the various military services. They declined to render an official or unofficial opinion relative to the use of the San Diego inner harbor by nuclear submarines. They stated no study of this problem had been made by AEC.

Captain F. T. Cooper, U. S. Navy, Head of the Technical Assistance Branch of the Atomic Energy Division of CNO, advised the Staff that CNO made the decision to locate the submarine pier at the proposed site. He explained that the Ballast Point site was proposed by CNO and that problems of nuclear hazards were discussed with respect to the site. The Advisory Committee on Reactor Safeguards of the AEC was advised by CNO of its intention to locate SSNs near Ballast Point but the actual decision was made by CNO. The CNO decision is contained in a confidential memorandum by CNO dated January 13, 1959.

This memorandum states "...it has been determined that operation of nuclear submarines from either a tender or piers at the Ballast Point area is acceptable from a reactor hazard viewpoint." The memorandum also states "There are no objections from a reactor hazard viewpoint of designating San Diego as a home port for nuclear submarines so long as it is understood that

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operations will be limited to the Ballast Point area." Captain Cooper advised the Staff that it is a basic policy of CNO to limit the times SSNs come into contact with areas of dense population.

A representative of the Nuclear Propulsion Division of the Bureau of Ships advised the Staff the Navy's choice of the Point Loma site was presented to a joint group of Navy and AEC representatives in early 1959. The only site discussed was Point Loma and no other sites were considered. AEC representatives raised no objection to the site. The final decision was made by CNO in the memorandum quoted above. This representative stated that no sites in the inner harbor were discussed. It is his opinion that the Navy, for tactical reasons, selected the Ballast Point site as an operational base for SSNs and then approved the site from a nuclear hazard standpoint.

The CNO decision of January 13, 1959, bars the berthing of nuclear submarines in the inner harbor at San Diego. As the discussion above points out, the approval of the Point Loma site did not take into consideration the nuclear hazards as they would apply as a bar to inner harbor sites. The Staff determined the Navy has brought nuclear submarines into the San Diego inner harbor in the past. Nuclear submarines are operating at the present time from a pier at Pearl Harbor and go into the inner harbor at Mare Island and at New London, Connecticut.

The Staff pointed out to the Navy that should the Point Loma site be found unacceptable it would appear the CNO decision excluded the San Diego Harbor area as a home port for SSNs. A Navy representative advised that in this event the CNO decision would probably be re-evaluated. This representative pointed out that considerations as to sites for SSN operations change

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from time to time. He stated the CNO decision "at the present time" barred other sites in the San Diego area and indicated future considerations might alter this decision.

IV. ALTERNATE SITES

If the CNO decision approving the Point Loma site is to continue to be considered a bar to sites in the inner harbor, then there are alternate sites on North Island. These sites extend from the Marginal Wharf (Point "B" on map) around North Island to Zuniga Point (Point "C" on map) at the tip of North Island. The area near the tip of Zuniga Point was rejected as a possible site for the pier on the grounds that ocean currents and winds make mooring impossible. The chief pilot of the port of San Diego advised the Staff that severe ground swells at Zuniga Point are a constant problem and would make pier mooring inadvisable for all ships.

Sites just inside of Zuniga Point on North Island were rejected by the Navy for basically the same reasons and because of the interference ships would present to the air traffic pattern of Naval Air Station, North Island. A site at the Marginal Wharf itself was rejected as being in the inner harbor and barred by CNO policy. Selection of any of these sites would also have to include consideration of the site chosen for berthing of the new super carriers of the Midway Class. The Navy is proposing either the Marginal Wharf on North Island or a site near Zuniga Point as a carrier wharf site. Berthing of carriers at either site would affect the choice of an alternate site for the submarine pier in view of the large area needed to turn carriers. In connection with the carrier wharf, a channel and turning basin would have to

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be dredged. The cost of dredging for the carrier wharf varies from an estimated \$1,770,000, if at Zuniga Point, to \$2,905,000, if at the Marginal Wharf. The channel depth of 42 feet for the carriers would facilitate SSN movement to any possible site on North Island up to the Marginal Wharf.

Between the Marginal Wharf and Zuniga Point on North Island are located four "T-shaped" piers (Points "D" on map). Three of these piers are condemned; the fourth pier, Pier "India" (I) is now used by the Navy to berth, supply and repair ships. The pier is operated under a special waiver from the air station since it interferes somewhat with the air traffic pattern. This pier, according to the Navy, would have to be completely rebuilt to service SSNs. The water depth at these piers is such that a minimum of dredging would be needed to berth SSNs. The ground swell making Zuniga Point undesirable dissipates itself on the curve of North Island so that its force is diminished at the area of Pier "India." If the carrier wharf is to be at the Marginal Wharf, it would seem the SSN pier could be located at Pier "India" at no greater cost than the proposed pier and in a position to take advantage of dredging done for the carrier channel.

Possible sites in the inner harbor do not appear to have been sufficiently considered by the Navy since it was believed that the nuclear hazard barred them. If the CNO decision does not continue to be considered a bar, then there are existing piers in the inner harbor which appear to warrant consideration. SSNs, according to operational and maintenance personnel at Mare Island, can be berthed at any pier having sufficient water depth and electrical power. When the Navy changed its original three-pier request to a single pier for nuclear submarines, it was suggested that the Naval Reserve

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Piers at the Naval Station, San Diego, could be used to berth conventional submarines. These are Piers 6, 8, and 10 through 13 at the Naval Repair Base in the inner harbor (Points "E" on map).

These piers are used by the Naval Reserve and to berth the "mothball fleet." It is intended these piers will be turned over to the Navy one by one for operational use as the mothball fleet is phased out. In five years all the piers will revert to operational use. Pier 6, for example, reverts to operational use on July 1, 1960. This pier is constructed of reinforced concrete, 1,377 feet long and 60 feet wide. Berthing figures as of January 1, 1960, show the pier then berthed only one ship. Officials at the Naval Station believe this pier is unsuitable for SSNs since it is in the inner harbor and does not have the electrical supply load necessary for SSNs. In addition, it would require considerable dredging to handle SSNs. The Staff ascertained that future plans of the Naval Station provide for dredging Pier 4, located just above Pier 6, at an estimated cost of \$1.5 million. With this dredging completed and electric power lines reworked, Pier 4 could berth SSNs. The ships now berthed at Pier 4 could be berthed at Pier 6. The cost of adding sufficient electrical power to handle SSNs would be an item of inquiry in a comprehensive site study of these piers. According to submarine officers of the Navy, conventional berthing facilities at Pearl Harbor were revamped to provide an increased electrical load for docking SSNs at an approximate cost of \$50,000 per SSN. No cost study has been made by the Navy at San Diego on the remodeling of existing inner harbor pier facilities.

Existing Navy pier facilities at the Naval Supply Pier near the Naval Supply Depot in San Diego (Point "F" on map) were considered undesirable by

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the Navy because the pier is located in the inner harbor. Water depths at this pier are such that little or no dredging would be required to berth SSNs. Electrical power supplies would have to be revamped, however, and the use of these facilities by SSNs would disrupt current commercial business at the pier.

The Navy Supply Pier is 980 feet long and 250 feet wide with a minimum depth of 40 feet, according to the civilian pier superintendent. The proposed SSN pier requires 35 feet of water. It is used as a supply pier devoted one third to commercial cargo ships, one third to Navy ships and one third to Military Sea Transportation Service ships. At the present time it operates at about 60 per cent of berthing capacity. The superintendent believes that four conventional submarines with a tender could be berthed at the pier but he believes this would disrupt the main mission of the pier as a supply depot. SSNs would need electric power not now available at the pier.

Officials of the port of San Diego and the local chamber of commerce voiced no objection to the Staff as to any inner harbor site for the SSNs. The Navy at San Diego has not conducted a comprehensive site study of inner harbor sites based on a higher-level decision which they believe bars inner harbor sites.

V. STAFF OBSERVATIONS

The Staff believes that definite location of the proposed pier at the Point Loma site is premature in view of the problem of landslides in the area and in view of the lack of a comprehensive site study of other locations for the pier. The over-all Navy plan for the development of Point Loma

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provides for five piers to be built in the area and before such an extensive project gets a foothold the landslide study now in progress should be resolved. The Staff also believes that the CNO decision approving the Ballast Point site from a nuclear hazard viewpoint needs clarification as it is applied to other sites in the harbor area. Presumably, in the future all types of nuclear-powered craft will appear in the harbor and it is not likely they will all be berthed in the outer harbor. Existing pier facilities in the inner harbor both on the San Diego side and the North Island side represent a considerable past investment. It hardly seems wise to bar their use for nuclear-powered craft without a complete study of the nuclear hazard and all other considerations.

Until such time as the factors mentioned above are resolved, it appears that a converted tender such as the NEREUS affords adequate support for any SSNs which may be assigned to San Diego. Four SSNs are now assigned to Pearl Harbor. The three SSNs planned for assignment at San Diego by fiscal year 1963 can be serviced by the NEREUS. Conventional submarines will continue to form the nucleus of Sub Flotilla One for some years to come. The Navy's original proposal to explore the use of the Naval Reserve piers at San Diego should be followed. The Naval Station affords adequate "backup" items such as shore transportation, billets, supply shops and repair shops not available at the Point Loma site. The criticism of the Preliminary Engineering Report on the Point Loma pier by the Chief of BUDOCKS pointed out the lack of these facilities at Point Loma. Even if personnel are berthed on board the SSNs it seems likely many of these shore backup items will be needed eventually

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and will be the subject of future appropriations once the basic pier is furnished. An over-all revamping of existing pier space might, in the long run, afford more economical berthing for SSNs. If CNO does not preclude the use of the inner harbor, modification of existing pier facilities may be feasible and then the need for a new pier is not apparent.

In addition, the Staff believes that the selection of the carrier berthing site should be closely tied to the selection of any SSN pier site so that extensive dredging will be fully utilized by both. If the carrier wharf is to be located at the Marginal Wharf on North Island this would facilitate location of an SSN pier at Pier "India" where no landslide or subsidence problem exists.

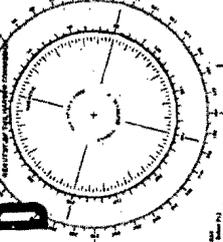
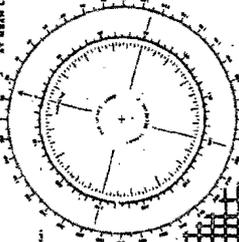
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UNITED STATES - WEST COAST
CALIFORNIA

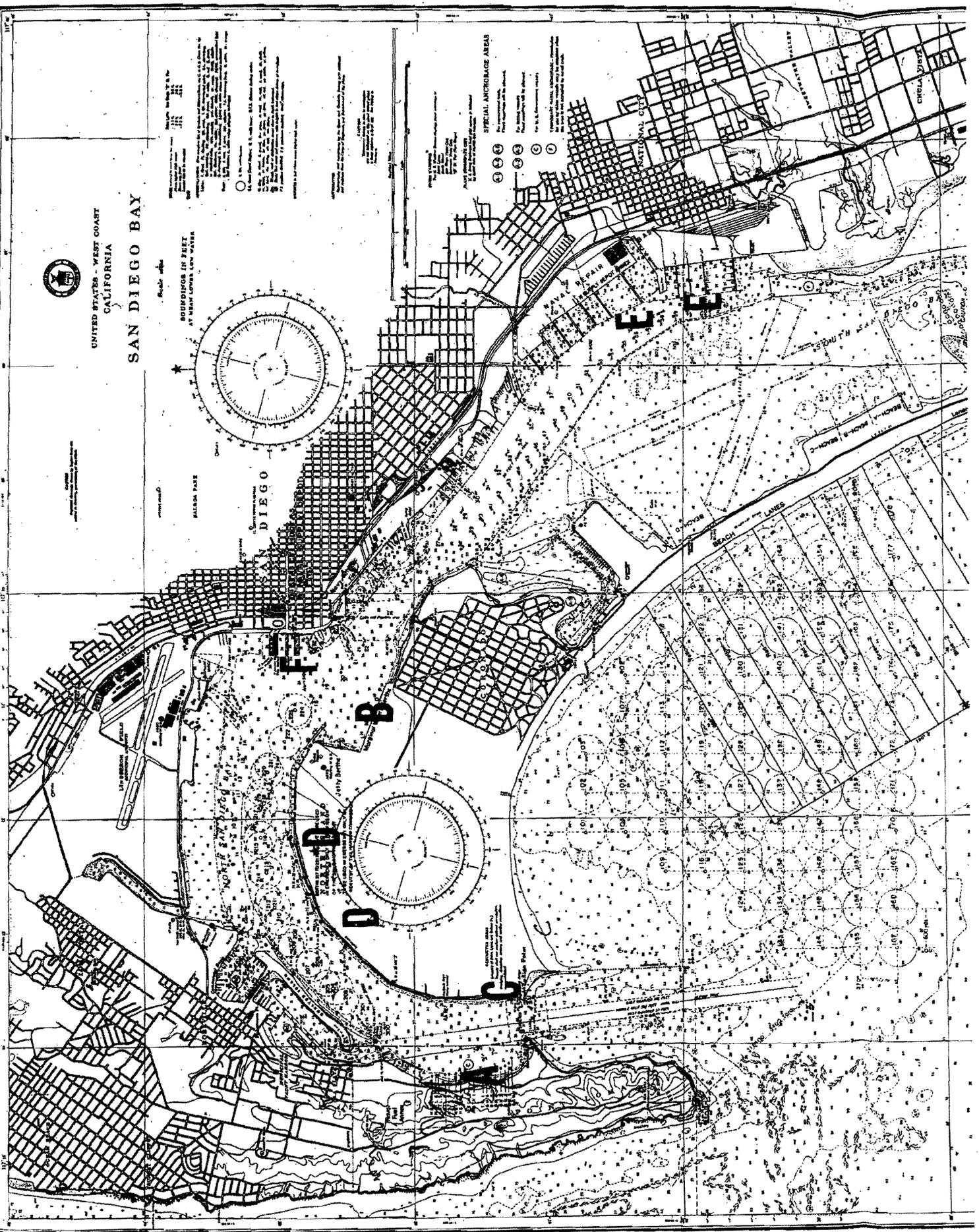
SAN DIEGO BAY

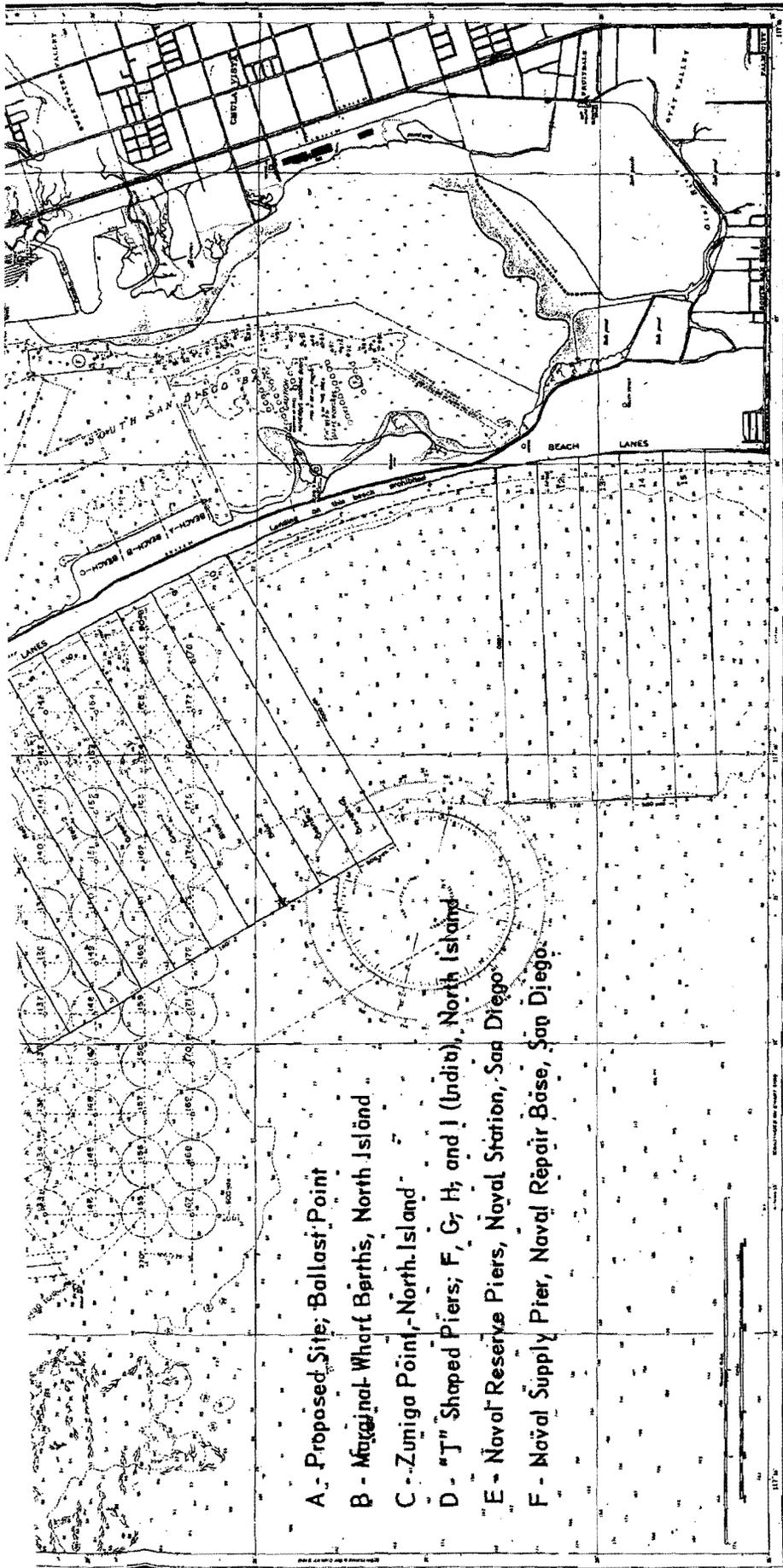
BOUNDRIES IN FEET
AT MEAN LOWER LOW WATER



SPECIAL ANCHORAGE AREAS

- ① For U.S. Navy
- ② For U.S. Coast and Geodetic Survey
- ③ For U.S. Fish and Wildlife Service
- ④ For U.S. Army
- ⑤ For U.S. Air Force
- ⑥ For U.S. Marine Corps
- ⑦ For U.S. Navy (Special)





- A - Proposed Site, Ballast Point
- B - Marginal Wharf Berths, North Island
- C - Zumiga Point, North Island
- D - "J" Shaped Piers, F, G, H, and I (India), North Island
- E - Naval Reserve Piers, Naval Station, San Diego
- F - Naval Supply Pier, Naval Repair Base, San Diego

(San Diego Bay)
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