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THE STRATEGIC AREA
of
THE FORMOSA STRAITS
EAST CHINA AND YELLOW SEA

STAFF PRESENTATION

NAVAL WAR COLLEGE
Newport, R. I.
8 November 1945

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1	45-1806	HYDROGRAPHY	--	---	BLANK

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Abbreviations used are:

C ----- Indicates Confidential.

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B.A. ----- British Admiralty Chart No. _____.

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H.O.P. ----- Hydrographic Office Publication No. _____.

S.O. ----- Sub-Orientation.

W.C.D. ----- War College Drawing No. _____.

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1	B45-1806	W.C.D. 45-36A
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4	B45-1809	W.C.D. 45-36D
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6	B45-1704	W.C.D. 45-36Z
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THE STRATEGIC AREA
OF THE
FORMOSA STRAIT, EAST CHINA AND YELLOW SEAS

PLATE 1

The strategic areas covered by this presentation are the coastlines and waters of FORMOSA STRAIT, the EAST CHINA and YELLOW SEAS which include the large gulfs of POHAI and LIAOTUNG.

The presentation is a condensation of a large mass of material for the assistance of the student in becoming familiar with general characteristics of this area from the point of view of naval operations.

PLATES 2 AND 3

The sea portion of the area amounts to about 320,000 square nautical miles or about one-seventh of the area of the continental UNITED STATES. The principal entrances are the FORMOSA and TSUSHIMA STRAITS together with half a dozen large passages in the NANSEI SHOTO. None of these entrances exceed 150 miles in width. There are no outlying islands or shoals within the area which would have a detrimental influence on the choice of navigational routes.

PLATES 2 AND 4

The area has an unusually large amount of shallow water, approximately 25 per cent being less than 30 fathoms, 75 per cent less than 300 fathoms, 90 per cent less than 500 fathoms,

leaving only 10 per cent of non-mineable depths greater than 500 fathoms. Tides range in height from 35 feet on the western shores of FORMOSA STRAIT to 2 feet at CHINWANGTAO.

Heights of spring tides in the NANSEI SHOTO run from 6 to 9 feet, the higher tides occurring in the northern portion. Most of the water area is favorable to the use of SONAR equipment.

PLATES 2 AND 5

The KURO SHIO, or JAPAN stream, flows through the deep part of the EAST CHINA SEA, just west of NANSEI SHOTO, most of it returning to the PACIFIC OCEAN off the southern end of the main JAPANESE ISLANDS and hugging their coasts to latitude 35° N., about that of YOKOSUKA. The maximum velocity is about 1-3/4 knots, 40 miles per day, which for low speed amphibious craft is a sizeable factor in an overseas movement.

PLATES 2 AND 6

The topography of the coastline is mostly flat and swampy on the western boundary, changing to hilly and mountainous in the northeastern and eastern parts.

Locations for base sites for large naval forces are scarce on the CHINA coast, there being only four natural harbors well suited for this purpose. In the northern portion of the area, there are no good large natural harbors, but in the eastern part, while there are several sizeable anchorages more or less sheltered, they have strong tidal currents in the channels leading to them.

PLATES 7 AND 8

The illustrations represent CLIMATE and WEATHER conditions for winter and summer seasons.

It should be noted that some parts of the area lie within the typhoon belt throughout the year. July is the month when typhoons are most apt to occur while December is the month with the least likelihood of their being encountered.

PLATE 1

DAYLIGHT and DARK periods are of the middle latitudes type and do not present any marked departures from those with which we are most accustomed. The difference in the length of navigational twilight between the southern and northern portion of the area is only about 15 minutes at any time during the year.

PLATE 9

RELATIVE LOCATIONS and DISTANCES in the area are very much like that of the western MEDITERRANEAN. From the northern portion of the area, NEWCHWANG to the OKINAWA GROUP is 950 miles by water. The distance is approximately the same from SWATOW to TSUSHIMA STRAITS.

From NIEROD SOUND to SASEBO is about 475 miles.

The width of FORMOSA STRAIT is about 75 miles, while the two main channels of TSUSHIMA STRAIT each have about 25 miles of navigable width.

Distances between coastlines in the YELLOW SEA are very

nearly the same as those of the EAST CHINA SEA.

In steaming time, at 10 knots, the longest run would be four days. For aircraft flying at 150 miles per hour, the time required to go from the southern to the northern end of the area would be about 6 hours.

PLATE 10

Normal maritime trade routes are as shown in the illustration. LINES of TRANSPORTATION and SUPPLY during the war were very much the same except that there was more shipping between the mainland and JAPAN. Focal points of maritime shipping in the area are to be found in FORMOSA and TSUSHIMA STRAITS, and off SHANGHAI.

Rivers are the principal means of inland transportation in the western portion of the area, but in the northern and eastern portions navigable rivers are relatively few and of only limited value for transportation purposes.

Railroads are very limited in number and extent in most of the area. First class lines are to be found mainly in MANCHUKUO, CHOSEN, and on the JAPANESE main islands.

Highways, like the railroads, are scarce and have been developed in the same parts of the area as the railroad networks.

Aircraft facilities are quite numerous and transportation by air to all parts of the area is possible.

PLATE 11

Port FACILITIES of a modern type and in any sizeable amount are to be found only at the few larger and modernized ports, but even in these cases the size of the facilities and depths of water in the harbors prevent large present day naval vessels from using many of them as major bases.

FORTIFICATIONS and FIXED DEFENSES have not been developed to any appreciable extent in that part of the area which in the past has belonged to CHINA. The most heavily defended localities were to be found at and around the portion of the area which was held by the JAPANESE prior to 1937, such as TAIWAN, DAIREN, SASEBO, and the NANSEI SHOTO.

Airfields could be established in considerable numbers along practically all of the continental coastline as well as on the islands of KYUSHU, NANSEI SHOTO, and TAIWAN. As far as the topography of the area is concerned, it is generally favorable for the operation of aircraft, the more restricted portions being along the coasts of CHOSEN, KYUSHU and in the NANSEI SHOTO where nearby mountains render air turbulence more pronounced than elsewhere and the amount of level areas for airfields more limited.

PLATE 12

With the short transmission distances of the area, complete radio coverage is available. Telegraph networks connect all important ports and harbors, but telephone systems are

confined mostly to the largest cities, and even in these, the facilities are limited and can only afford mediocre services, by our standards.

Submarine cables run between most of the principal commercial ports and between all major and minor naval bases in the area. NAGASAKI is the largest cable center with nine cable lines, SHANGHAI is second with seven, while CHEFOO and FOOCHOW are third with five.

PLATES 13 AND 14

SWATOW

Lat. 23°-21'N. Lo. 116°-41'E.

This port is located in the southwesternmost part of the area on the outer portion of the HAN RIVER delta. A bar at the entrance limits the draft of vessels that can use the port to 20 feet at high and 12 feet at low tides. The sheltered water area of the harbor which can accommodate 20 feet draft is small being only about 3 square miles. Tidal currents in the main, or SUGARLOAF CHANNEL, vary between 2 and 4 knots due to spring tides of 4 to 7 feet.

The surrounding country is low, with some hills as high as 600 feet, but in the regions near the river estuaries there is considerable low flat swampy ground which is sufficient in size for the development of a minor naval base and airfields.

The typhoon belt includes SWATOW during July, August, and September, but in the eastern part of the harbor the holding ground is good enough to provide a safe typhoon anchorage.

The climate is temperate having winter averages of 47° F. Summer temperatures average 72° F., and this is the season of greatest precipitation. Outside of the occurrence of typhoons, there are no elements of weather unfavorable to naval operations; neither are there any handicaps due to unusual daylight and dark periods.

SWATOW is at the southern entrance to FORMOSA STRAIT and only a short distance from the larger and important harbors of HONG KONG and AMOY, as well as being only 160 miles from the west coast of TAIWAN (FORMOSA).

FORMOSA STRAIT, being the focal point of shipping taking the shortest route between the EAST CHINA SEA and SOUTH CHINA SEA ports, places SWATOW at one of the most important points along the lines of transportation and supply between JAPAN and SOUTHEAST ASIA. Only two short narrow gauge railroad lines connect with nearby interior points so most of the freight has to be moved by inland water routes as modern roads do not extend much inland.

One airfield is located at the eastern end of the city and there are five operational airfields within a radius of 200 miles.

Facilities consist of 3000 feet of pontoon piers in 13 to 19 feet of water; two oil piers having 18 to 34-foot depths alongside; and considerable fuel storage capacity, but there are no drydocks and only minor marine repairs can be made.

An airfield with two runways, one hard-surfaced, and revetments provides landplane facilities at the port while on the southern side of the harbor is a seaplane airport having a 210 x 60-foot ramp.

Fixed defenses consist of minefields in entrance channels and medium coast defense batteries together with a light anti-aircraft battery are located around the airfield. A waterfilled tank ditch backed by a few field fortifications were located outside of the city. No net or boom defenses have been reported.

No cable facilities exist in SWATOW, but the port is connected with other points by radio, telephone and telegraph.

With HONG KONG and AMOY offering larger harbors and better ports nearby, SWATOW with its limited water area and shallow entrance depths is of secondary value as a base for large naval forces. However, it could be useful under circumstances which called for a small harbor and port in its location.

PLATES 13 AND 15

TONGSANG

Lat. 23°-47' N. Lo. 117°-37' E.

About two-thirds of the distance from SWATOW to AMOY is an excellent typhoon anchorage 4-1/2 square miles in extent, having depths of from 5 to 15 fathoms with a tidal range of 12 feet at springs.

There are no natural resources or fixed defenses here, but there are a number of operational airfields within 200

miles in CHINA and TAIWAN the use of which would have to be denied to an enemy if this harbor were to be used as a mobile base site. AMOY is only about 50 miles to the northeastward.

PLATES 13, 16 AND 17

AMOY

Lat. 24°-07'N. Lo. 118°-04'E.

AMOY harbor has a total area of 12-1/2 square miles with depths between 5 and 10 fathoms. The main entrance channel is about 3/4 mile wide with a least depth of 11 fathoms. Spring tides in the channel are 15 feet and tidal currents are from 2 to 3 knots.

The outer harbor is well sheltered from swells in all directions except from the southeast, but has no port facilities. These are to be found in the inner harbor in its narrow part between the city of AMOY, located on AMOY ISLAND, and KULANGSU ISLAND.

The inner harbor having depths of 5 fathoms or greater is 3-1/2 square miles in extent.

The surrounding terrain is a mixture of hills, valleys, and swamps which could provide ample area for base facilities. Elevations close to the shoreline are from 300 to 800 feet, but farther inland mountains of 1000 to 2000 feet in height are to be found.

The climate is subtropical - summer temperatures are around 100° F., and humid; winter temperatures are around 40° F. Southwest monsoons prevail from May to September while northeast mon-

soons are experienced from October to April. The average annual rainfall is 48 inches, about that of Newport, R.I. Typhoons occur from June to October, but due to the position of AMOY on the CHINA coast and the proximity of TAIWAN, the intensity of the typhoons is usually much diminished when they reach the port.

Daylight and dark periods are those of the lower latitudes and present no unusual aspects.

AMOY is 260 miles north of HONG KONG, 430 miles south of SHANGHAI and about 125 miles from TAIWAN. It is the nearest sizeable CHINESE port to TAIWAN and could be used as a sizeable operating base for the control of shipping through FORMOSA STRAIT.

The only good lines of transportation and supply in and out of AMOY are by sea. A 20-mile standard gauge railroad line formerly connected the large city of CHUNSCHOW with the harbor, but all other land routes to the harbor area are by inland waterways or by two single lane highways.

There is room in the inner harbor for 19 berths alongside wharves for vessels of varying sizes in length between 600 and 200 feet in depths of 7 to 14 fathoms pending the completion of the new bund. In addition, there are ten jetties on the KULANGSEU side, but these are mostly 100 to 250 feet in length, constructed of large stones and at low water are difficult to approach. A large number of lighters, sampans, and junks are normally used for cargo handling.

Permanent repair facilities are inferior and of small capacity. A 400 x 320 x 18-foot graving drydock which is in poor condition, a machine shop, foundry and plate mill, all of medium to small capacities, constitute the principal repair facilities.

Fuel oil storage for 10,500 tons was available in March of 1944.

An airfield having 4200 and 2660-foot hard surfaced runways is located on the northern shore of AMOY island, about 5-1/2 miles northeast of the city. An air strip and seaplane hangar are situated at the southern end of the island. The terrain and size of the island would permit the building of additional airfields.

The northern and southern coasts of the island had heavy to light gun emplacements and guns of 3-inch to 6-inch caliber were identified in the southern portion during the war. No nets or booms were observed at the entrance.

Cables to HONGKONG and SHANGHAI, and telegraph and telephone connections to the general systems provide communication facilities other than by radio and mail.

* * * * *

The coast of CHINA from AMOY north is very irregular with numerous outlying islands and shoals. Open anchorages are available all along the coast, but there are no sizeable sheltered harbors of much value. FOOCHOW, while an important com-

mercial center, 33 miles up the MIN river, depends on PAGODA anchorage seven miles down the river for its port activities. A 14-foot bar at the entrance of the river precludes its continuous use by large vessels. There are no railroad lines from FOCKHOW, or from any other points along the coast to the north until reaching NINGPO.

PLATES 13 AND 18

SANSA INLET

Lat. 26°-30'N. Lo. 119°-50'E.

This large body of water, some 37 square miles in area, could provide a well sheltered advanced major naval base site for naval forces covering the northern entrance to FORMOSA STRAIT and the southern portion of the EAST CHINA SEA.

Having an entrance about a mile and a half wide with 30 to 32 fathoms of water, the harbor waters offer good anchorage in from 5 to 20 fathoms with many portions sheltered by mountains 1800 to 2000 feet in height. One disadvantage of the harbor is that with easterly winds and strong ebb tides (4 to 7 knots), there are heavy tide rips which inconvenience small vessels. Height of tides range from 14 to 26 feet.

Most of the surrounding terrain is mountainous and rugged with the result that there is little suitable land for airfield construction nearby, although there are a number of seaplane anchorage and seaplane airport sites available. No airfields were reported located around the harbor, but there were four or five within a radius of sixty miles in addition to a great many

within a radius of 300 miles.

For this reason, it would have been necessary to gain very complete control of the air around SAMSA INLET before it could have been developed into a useful advance base during the war.

From June to September SAMSA INLET lies within the typhoon belt but is considered a convenient typhoon refuge with good holding ground for deep draft vessels.

No unusual characteristics of daylight and dark periods occur in this part of the area.

Distances to important nearby ports are small - that to the island of TAIWAN being only about 180 miles, while the straits of TSUSHIMA is only about 700 miles distant.

There are no improved land lines of transportation connecting SAMSA INLET with the interior and all shipments to and from the region must be made by water.

Port facilities are very limited. Those which exist are located on the southwestern shore of SUANTO ISLAND and consist of a 225 x 30-foot masonry pier, a 1700-foot quay and a 36 x 9-foot oiling jetty and constitute all the wharfage available.

There are no fixed defenses or aircraft facilities and no means of rapid communication such as cable, radio, telegraph or telephone facilities.

PLATES 13 AND 19

WENCHOW TO LOTSING BAY

Lat. 28°-02' N. Lo. 121°-07' E.

WENCHOW (or YUNGKAI) is a river port 20 miles up the WU

river, but the maximum draft of vessels which can reach the port is about 11 feet and this amount can be carried only at high tides. The outer bar at the entrance to the river has only seven feet of water at low water. However, the port is important due to the fact that it is connected by a fair first class road to HANGCHOW and second class roads to NINGPO and FUNING - important cities near the coast.

Ten miles north of the entrance of the WU river, LOTSING BAY offers a large sheltered anchorage of about 18 square miles with depths between 5 and 10 fathoms. There are two entrance channels, one having a minimum depth of 5-1/4 fathoms, the other 38 fathoms.

A large naval force could use the bay as an operating base for the covering of supply routes to the CHINA coast or for operations in the EAST CHINA sea out of effective heavy bomber range of shore-based aircraft from the main JAPANESE islands provided air protection over CHINA extended sufficiently far inland.

PLATES 13 AND 20

CHUSAN ARCHIPELAGO

Lat. 29°-50' N. Lo. 122°-10' E.

Between LOTSING BAY and the entrance to the YANGTZE river there is only one good sheltered anchorage area suitable as a large operating base site. This is in the waters to the south of CHUSAN ISLAND, FATU CHANNEL and NIMROD SOUND. These waters, when combined, afford about 75 square miles of anchorage area

with depths of from 4 to 20 fathoms.

South of CHUSAN 20 square miles of sheltered water is available for vessels of any draft during the northeast monsoons. FATU channel will provide another 16 square miles of good anchorage for deep draft vessels except when northeast monsoons are very strong.

This region has no appreciable resources, the nearest city of any size being at NINGPO, 25 miles to the northwest, and it has port facilities for vessels not over 300 feet in length and 17 feet draft. NINGPO is the southern terminus of the TUNGSHAO canal which connects with the GRAND CANAL. There are no heavily fortified positions nearby, but there are 24 airfields within 300 miles.

Being near SHANGHAI, and lying along the important coastal shipping route between JAPAN and SOUTH CHINA, the site could prove very useful in operations around SHANGHAI.

PLATES 15 AND 21

SHANGHAI

Lat.31°-15'N. Lo.121°-30'E.

Located 10 miles south of the confluence of the WHANGPOO and YANGTZE rivers, SHANGHAI is a city of about 3,500,000 population and is the commercial and industrial center of CHINA.

Anchorage areas in the YANGTZE entrance channels, with depths between 5 and 11 fathoms, total about 32 square miles. Limiting charted depths of the entrance channels are 17 to 18

feet at low water. Spring tides vary between 10 to 14 feet. However, the YANGTZE estuary is one of constantly changing channels and depths, requiring local knowledge of existing conditions in order to make full use of these waters. Currents are strong in the flood season, reaching 6 knots at times, and these currents, combined with strong northwest winds, hold up cargo handling in the YANGTZE some 20 per cent of the time.

The topography of the region is that of a low level alluvial plain greatly cut up by numerous canals. The surrounding terrain is of such a nature that there is room for practically an unlimited number of airfields to be constructed.

SHANGHAI harbor extends 20 miles up the WANGPO from its mouth and affords 5-1/2 square miles of water area. It does not afford a good major base site due to lack of sufficient deep water and the narrow width of the WANGPO river, but it could be developed and used as a large minor base quite readily.

The weather is that of a temperate climate having temperatures going below freezing and to above 100° F., accompanied by moderately high humidity in the winter and high humidity in the summer. The probability of a typhoon striking a particular port is rather small as only about two severe typhoons a year are experienced along the coast in the vicinity of SHANGHAI. Fall and early winter are the best parts of the year for all military operations.

Daylight and dark periods are those of middle latitudes and offer no peculiar aspects.

SHANGHAI is the nearest port on the eastern coast of CHINA to both the PHILIPPINES and the MAIN JAPANESE ISLANDS. It is only 463 miles, by water, from NAGASAKI, and about 675 miles from APARRI, in northern LUZON. A radius of 600 miles, by air, takes in all of the inland sea and the southern coast of CHINA. This area included the principal naval bases and shipbuilding centers in JAPAN.

Sea routes to SHANGHAI must pass JAPANESE territory either closely or within moderate distances. Land routes, railroads or highways are relatively poor, but two standard gauge railroads connect SHANGHAI to points in the west and south. Extensive inland waterways in the form of canals and the YANGTZE river carry the greatest part of the inland transportation. Transportation by air is available and could be expanded as much as demands necessitated.

Port facilities at SHANGHAI are the largest of any port in CHINA, having an eight-hour day estimated capacity of 43,650 tons. The total wharfage is approximately 150,000 feet, of which 35,000 have depths of from 20 to 40 feet alongside. 106 berths with depths of from 12 to 30 feet and suitable for vessels between 200 and 600 feet are available. The amount of deep water wharfage is slightly less than that at LE HAVRE, FRANCE, and about the same as that of PEARL HARBOR.

Cargo handling cranes, both on shore and afloat number 36, varying in size between a maximum capacity of 80 tons and a minimum capacity of 1 ton. Railroad clearance for the port is limited to two single track standard gauge lines. Ten dry-docks and two marine railways are located here. The largest drydock is 629' x 80' x 25-1/2' while the smallest is 190' x 40' x 16'. Sheer leg cranes of 75 and 80 tons capacities are located at two of the large docks.

There are six sizeable airfields in the vicinity of SHANGHAI, the nearest being at LUNGHWA on the southern outskirts of the city. These are improved airfields capable of handling planes of all sizes.

The only fixed defenses reported were four heavy anti-aircraft installations around the airfields and at the mouth of the HWANGPOO river. The entrance to the south channel of the YANGTZE river was suspected of being mined.

Radio communication could readily be established from SHANGHAI to any port of the area, but telephone facilities are quite limited, there being only about 8500 lines in the city in 1941. Six submarine cables formerly connected SHANGHAI with points throughout the north PACIFIC, JAPAN, the PHILIPPINES and EAST INDIES. The present condition of these cables is not accurately known, but it is believed they are in good condition.

PLATE 13

From the mouth of the YANGTZE river northward the coast of CHINA is the western shore of the YELLOW (or HWANG) SEA. Shoals and sand banks extend from the shoreline for a distance of 70 to 100 miles. There are no harbors or ports in this 275-mile stretch of coast and ports and harbors are very limited in number on the waters of the YELLOW SEA. The only good natural harbor is located on the western shores, in CHINA, at TSINGTAO.

PLATES 13 AND 22

LAOYAO

Lat. 34°-21' N. Lo. 119°-45' E.

LAOYAO has only a small artificial harbor but is important as it is the first rail terminus on the coast north of SHANGHAI of a line which extends 775 miles inland to the west, connecting with two main north and south rail routes. Port facilities consist of two 1450-foot moles projecting into HAICHOW BAY. The east mole has 2010 feet of breakwater extending out from it. Depths are from 12 to 18 feet at low water, with a tidal range of about 14 feet. Its principal value is in being a shipping point for coal, iron and phosphates, and a receiving point for military supplies for troops in this part of the area.

Water, fuel, electric power, telephone and telegraph facilities are available in limited quantities and a few warehouses have been constructed. A small soft-surface airfield is located ten miles inland but there are no other airfields within a radius

of 90 miles.

No fixed defenses have been reported.

PLATES 13 AND 23

TSINGTAO

Lat. 36°-04' N. Lo. 120°-19' E.

The largest and most important port in CHINA, north of SHANGHAI, is located on KAIIOCHOW BAY which covers 165 square miles, but only about 14-1/2 square miles have depths of 5 fathoms and more. However, there is ample room for a large naval force to anchor and it offers the best naval operating base site in NORTH CHINA. The entrance is 1-1/4 miles wide with depths of from 10 to 19 fathoms. Entrance currents are from 2 to 3 knots; spring tides are from 6 to 8 feet. About a half dozen sandy beaches extend along the southern shoreline of the city and its vicinity, forming the northern part of what is known as the outer harbor.

The surrounding terrain is hilly in parts, the highest elevation being about 500 feet. However, there is ample room for shore-based facilities and airfields.

The climate is temperate, the best weather occurring from September to January. Mean temperatures vary from 25° to 75°; freezing temperatures occur between November and April. Some ice forms in KIAOCHOW BAY, but offers no great difficulty to ocean-going vessels. During the winter, northerly 15-knot winds prevail while summer winds are 10 knots from the south. Winter gales of 40 knots may be expected about twice a month. Annual

precipitation is 30 inches; visibility is usually excellent and thunderstorms occur two to four times a month during the summer. The harbor is outside of the typhoon belt. Except during gales only small swells are experienced along the exposed coast.

Daylight and dark periods present no unusual aspects.

Being located on the SHANTUNG peninsula, TSINGTAO is, with the exception of SHANGHAI, the nearest large CHINESE port and harbor to JAPAN. From TSINGTAO, it is 520 miles by water to NAGASAKI; 280 miles to PORT ARTHUR; 410 miles to SHANGHAI, and from 300 to 400 miles to the principal ports of MANCHURIA and KOREA. A naval force based here could operate to control most of the shipping in the YELLOW SEA and the gulf of CHIHLI, which forms the focal area of maritime trade from northern CHINA, western MANCHUKUO, and western CHOSEN. Inland transportation is available over a single track standard gauge railroad line, but there are no inland water routes.

Facilities are quite large for this part of the area. There are 14,410 feet of berthing space along the wharves of "Great Harbor" having depths of from 3-3/4 to 5 fathoms and 15-foot spring tides. The wharves are all fitted with spur tracks connecting with the main line. Just south of "Great Harbor" is a boat harbor having 2950 feet of quayage, but only a few feet of water at low tide. "Little Harbor" has about 10 feet of water at low tide. A drydock 480' x 60' x 23' in

size, and two marine railways are located here. Mechanical unloading facilities are of small capacity.

Five operational airfields exist within ten miles of the harbor, one being a major air base.

Little accurate information has been available as to the fixed defenses due to limited and poor photographic coverage during the war. Reports of the construction of a submarine base near the southern entrance point were not confirmed by photographs. Coast defense and dual purpose gun positions were indicated in mosaics of the port, but sizes of guns were not given. No reports of minefields or nets at the entrance were received.

Communication by all modern methods with the interior of CHINA, and by cable and radio to SASEBO in JAPAN, is available.

PLATES 13 AND 24

WEIHAIWEI HARBOR

Lat. 37°-30' N. Lo. 122°-10' E.

WEIHAIWEI HARBOR is a seven square mile body of water fairly well sheltered from easterly winds and seas by LIUKUNG island where a JAPANESE naval base headquarters was located. Its proximity to TSINGTAO and its lack of facilities makes it of importance only as a minor operating base site having low water depths of from 4 to 12 fathoms with spring tides of six feet.

There are no railroad connections, but a good road leads to CHEFOO and thence to the interior, connecting with the railroad from TSINGTAO.

PLATES 13 AND 25

CHEFOO

Lat.37°-33'N. Lo.121°-24'E.

CHEFOO HARBOR offers a sizeable anchorage exposed to autumn and winter gales. The natural harbor covers an area of about 10-1/2 square miles having minimum depths of from 4 to 9 fathoms, and spring tides of 8 to 9 feet. Of this total, only 4 square miles has depths at low water of 5 fathoms or more, and is near the entrance and exposed to swells from the YELLOW SEA.

The inner harbor, 4/10 square mile (340 acres) in area, has depths of 2 to 3 fathoms, 1150 feet of wharfage with 25 to 2 feet alongside, a 10-ton floating crane, 70-ton marine railway and small machine shops.

There is only one surfaced highway connection to the interior, but telephone and radio communication facilities are available.

CHEFOO is well situated for a minor naval operating base site to control sea routes to north CHINA and the LIAOTUNG peninsula of MANCHURIA.

PLATES 13 AND 26

TAKU

Lat.38°-59'N. Lo.117°-41'E.

In the gulf of POHAI (CHIHLI) there are no large natural harbors. Most are small, or are so shallow that vessels of light draft only can use them. Two ports of importance are TAKU and CHINWANGTAO, as these provide the nearest railroad

terminals from sea routes to TIENTSIN and PEIPING.

TAKU is located at the mouth of the PEI HO. Here vessels of 29 feet draft have to anchor ten miles from the entrance to the river because of shallow waters. The entrance bar has low water depths of 10 to 12 feet, with spring tides of 10 feet.

Considerable cargo handling facilities in the form of river wharves and river steamer drydocks exist, but low water limits the use of the river to vessels of about 14 feet draft. A double track standard gauge railroad connects the port with PEIPING via TIENTSIN and CHINWANGTAO.

During the coldest part of the winter, the port waters have to be kept open by icebreakers.

A number of operational airfields exist within a radius of 150 miles, there being one located at TAKU. Cables connect with CHEFOO, and telegraph lines extend inland.

PLATES 13 AND 27

CHINWANGTAO

Lat. 39°-55'N. Lo. 119°-36'E.

CHINWANGTAO is a very small port of about 3-1/2 acres of water made up of a 2350-foot breakwater and a 1050-foot pier, but it is important as the shipping point for large quantities of coal and for its being the most northern port on the double track portion of the railroad between PEIPING and MUKDEN. The port is open throughout the year and has depths at the berths alongside the pier and breakwater, between 18 and 28 feet. Anchorages are available outside the breakwater, but swells make

cargo handling difficult.

The remainder of the shallow waters of the Gulf of POHAI (or CHIH LI) offers no points of interest to naval operations, except targets, most of which are located fairly well inland, for naval aircraft.

PLATES 28 AND 29

RYOJUN (PORT ARTHUR)

Lat. 38°-48' N. Lo. 121°-15' E.

RYOJUN (or PORT ARTHUR) is a small natural harbor, having only about a 1/3 square mile (280 acres) water area with 18 feet or more depth. It is further limited in its usefulness as a naval base by the fact that it has only 70 acres of water having depths between 30 and 40 feet at low water, and the shape of this deep water being such as to provide no anchorage berths greater than 175 yards in diameter. However, it has two drydocks, some port facilities, a seaplane base and could be used by smaller craft as a minor base.

Aside from its drydocks, one 534' x 83' x 34', and another 260' x 30' x 15', its 5700 feet of wharfage and 100-ton sheer-legs, this port has little to offer except additional base facilities to DAIREN, 30 miles to the eastward.

PLATES 28 AND 30

DAIREN

Lat. 39°-56' N. Lo. 121°-40' E.

DAIREN BAY covers 65 square nautical miles. Of this area about half has depths between 4 and 10 fathoms and 1/3 depths between 5 and 10 fathoms. There are three entrance channels

to the bay, the widest being six miles with a minimum depth of 13 fathoms. Currents in the channels are moderate, having velocities from 1-1/2 to 2-1/2 knots. Spring tides are 8.4 feet with a mean range of 6-1/2 feet.

The coastline is generally bluff and rocky with only a few small beaches. The surrounding terrain is quite hilly, but there is level terrain interspersed between the hills where airfields could be built. The height of the hills averages around 500 to 600 feet, with occasional 1000-foot peaks inland.

The climate at DAIREN is comparatively mild for MANCHURIA. Temperatures range from 0° to 90° F., during the year. In the winter, there is often a succession of bright sunny days without wind. No typhoons are experienced.

Ice occurs between January and March, but with the aid of icebreakers vessels have always been able to proceed to and from the piers.

Daylight and dark periods have no unusual aspects.

Being located on the northern side of the entrance to POHAI' (Gulf of CHIHLI), DAIREN is near sources of supplies from MANCHURIA, KOREA and JAPAN, and is also in an excellent position to provide a naval base for operations in connection with the control of lines of transportation and supply by water from northern CHINA, southern MANCHURIA and western KOREA.

Facilities are fairly extensive, there being two drydocks,

one 497' x 60' x 33' and the other 415' x 51' x 20'; 15,317 feet of wharfage; a number of floating cranes with capacities between 1 and 120 tons; and, quite sizeable machine shops and foundry facilities. Before the war, the port capacity was about 35,000 tons per day and good cargo clearance is possible due to the fact that the wharves have rail connections with the main railroad system of MANCHURIA. Only two airfields and a seaplane station make up the aircraft facilities of the port, but there are about 40 operational airfields within a radius of 200 miles.

Fixed defenses consist of coast defense and anti-aircraft batteries of light to medium caliber. No netting or mining has been reported.

Telephone, telegraph and radio facilities are available, and three cables connect DAIREN with SASEBO, NAGASAKI and CHEFOO.

PLATES 28, 31, 32 AND 33

ANTUNG

Lat. 40°-08' N. Lo. 124°-22' E.

JINSEN

Lat. 37°-28' N. Lo. 26°-36' E.

MOKPO

Lat. 34°-47' N. Lo. 126°-23' E.

ANTUNG, JINSEN and MOKPO are ports for the large inland cities of this part of the area. They have somewhat limited harbors and port facilities and are useful primarily as coastal railroad terminals, but all have airfields and lie within a 200-mile radius of about 40 other operational fields. There

are a number of landing beach sites in this part of the area, but the difficulties attending large tidal ranges - 28 feet in places - would have to be overcome.

PLATE 28

SAISHU ISLAND

Lat.33°-12'N. Lo.126°-16'E.

SAISHU island, 87 miles south of MOKPO is of interest primarily because of its airfield sites; however, there is said to be only one good landing area along the entire coast though there are numerous small beaches backed by heaps of lava and rocks.

There are no ports on the island, all commerce being handled by small fishing craft, and no railroads exist. Only two fighter landing grounds have been reported on the island.

Radio, telegraph and cable facilities are available on the island.

PLATES 28, 34 AND 35

SASEBO

Lat.33°-10'N. Lo.129°-43'E.

NAGASAKI

Lat.32°-45'N. Lo.129°-53'E.

As SASEBO, NAGASAKI, and the gulf of KAGOSHIMA have been treated in the Bering Sea and Northwest Pacific Area presentation, they will not be repeated in this area.

PLATE 28

The NANSEI SHOTO, or southwest island chain, extends 750 miles from JAPAN to the island of FORMOSA. There are eight large islands and twenty smaller ones. The total population

is about 470,000, most of which - 435,000 - are to be found on OKINAWA.

While there are numerous small harbors and partly sheltered anchorages in the islands, the two largest naval base sites are in the AMAMI and OKINAWA groups.

The topography of each island usually varies from hilly volcanic to gentle sloping areas sufficient in size to permit the building of a number of airfields. Estimates of from 40 to 300 potential airfield sites have been made by various agencies, but the lower number seems to be the more reasonable figure. Coastal waters provided sites for ten seaplane stations observed during the war.

The islands are under the influence of the northeast monsoons from October through March, while the southwest monsoons prevail from June to September. Typhoons are apt to occur two to three times a month from April to November and are a serious handicap to naval operations.

Daylight and dark periods are those of the lower middle latitudes.

Being located about the same distance, 650 miles, from the INLAND SEA of JAPAN, as VLADIVOSTOK, SHANGHAI, and IWO island, the chain not only offers excellent airfield sites but also affords good positions for naval operations against shipping in the EAST CHINA SEA. Small quantities of aluminum, iron, copper, coal and sugar are produced in the islands, but they are

not self-sufficient in food production.

The DAITO SHOTO consist of three small islands lying between 350 and 430 miles south of KAGOSHIMA in southern JAPAN. In spite of their small size and poor anchorages, the islands possess some military importance due to their location and as a source of phosphate for JAPAN. MINAMI island had a medium-size airfield and a lookout station. The airfield runways could be extended to the large size group with little extra work. KITA island may be suitable for two 6,000-foot fields. OKINO island affords no good airfield site, but is an important phosphate-producing center and was the location of a lookout station and possibly a radar tower. Limestone cliffs make landings difficult on all three of the DAITO SHOTO.

MINAMI and KITA islands are closer to TOKYO than the islands of the SAKISHIMA and OKINAWA groups, and are closer to the BONIN ISLANDS and the MARIANAS than any other islands in the NANSEI SHOTO. All three of the DAITO SHOTO are relatively isolated except from one another; the nearest of the other NANSEI SHOTO are about 190 miles distant.

PLATES 28 AND 36

ANAMI

Lat. 28°-20'N. Lo. 129°-30'E.

The island of ANAMI is the best naval base site in the northern part of the NANSEI SHOTO although its sheltered berthing capacity is limited. Facilities consist of a few small wharves, a few small coal and oil storage depots, five airfields,

and anchorages for about a dozen capital ships and a corresponding number of cruisers and destroyers. The anchorage waters are quite deep. In O SHIMA strait at the southern end of the island, currents reach velocities of 5 to 6 knots. Rather heavy coastal defense installations were reported.

Radio and cable connect the island with JAPAN, TAIWAN and other islands of the chain. There was a limited telephone network over the island.

PLATES 28, 37, 38 AND 39

BUCKNER BAY

Lat. 26°-15'N. Lo. 127°-50'E.

BUCKNER BAY, on the southeastern coast of the island of OKINAWA, was used often in the past by the JAPANESE fleet as an operating base. The anchorage area is about 25 square miles with depths between 5 and 20 fathoms. The islands and shoals on the eastern side of the bay improve the shelter from that direction. Spring tides are 7-3/4 feet, but currents are not excessive. This bay had no port facilities, but there is room for three 6000-foot runways on the western shore and a 4000-foot runway on a small island at the eastern entrance.

A narrow gauge railroad joined a standard gauge line connecting BUCKNER bay with the much smaller but more fully developed harbor and port of NAHA.

Just to the north KINNU BAY offers 12-1/2 square miles of additional sheltered anchorage in 5 to 15 fathoms of water.

In view of OKINAWA'S position - 340 miles from KIIRUN; 360

miles from KAGOSHIMA; 455 miles from SHANGHAI; 785 miles from CHICHI JIMA, and 1250 miles from GUAM, together with its possible advance base sites and its 6 to 10 potential large airfield sites, it becomes a very important factor in any strategic plans for the EAST CHINA and YELLOW SEAS, either in connection with a locality to be taken or one to be denied an enemy.

PLATES 28 AND 40

KIIRUN

Lat. 25°-08'N. Lo. 121°-45'E.

KIIRUN, at the northern end of TAIWAN, is that island's principal harbor. While not large, this port normally has a cargo handling capacity of 7500 tons daily and is connected by rail and road to other important points on the island.

The water area of the harbor is small - about 7/10 square mile (600 acres) but most of it has been dredged to 30 feet or over. Spring tides are 3 feet, and there is little current in the harbor.

The surrounding terrain is hilly, usually amounting to 300 and 400 feet with one peak reaching 3000 feet.

The climate and weather is of the subtropical type with northwest monsoons prevailing in winter and the doldrum belt together with the southwest monsoons controlling the summer weather. Typhoons may be expected from April to January.

Daylight and dark periods offer no unusual aspects.

Lying on the eastern side of the northern entrance to FORMOSA STRAIT, KIIRUN is at a focal point of shipping between the

EAST CHINA - YELLOW SEAS, and SOUTHEAST ASIA - EAST INDIES ports. In this position it could provide an excellent small naval base for operations for the control of shipping along this route. Facilities are fairly extensive. Wharfage totals 8,640 feet, with depths of from 10 to 36 feet in the berths. Cranes of 9 to 10 tons capacity are located at some of the wharves. A 344' x 47' x 15' drydock and a 500-ton marine railway are located in the port. Oil storage capacity of 65,000 tons and submarine base facilities were reported. No airfields are located near the harbor shores, but TAIWAN had many airfields on it.

Fixed defenses were extensive, it having been estimated that there were 25 to 35 coastal defense batteries ranging from light to heavy in caliber for the defense of the fortified zone surrounding KIIRUN.

Radio, telegraph, telephone and cable connections provide communication facilities of ample capacity.

PLATES 28 AND 41

SUO

Lat. 24°-34' N. Lo. 121°-52' E.

SUO is a fishing port at the terminus of the GIRAN region railroad on the east coast of TAIWAN. Though small, it is the only natural sheltered harbor on the east coast. It has an area of about 8/10 square mile (675 acres) with depths of 5 to 14 fathoms.

The GIRAN plain region offers possibilities as a location

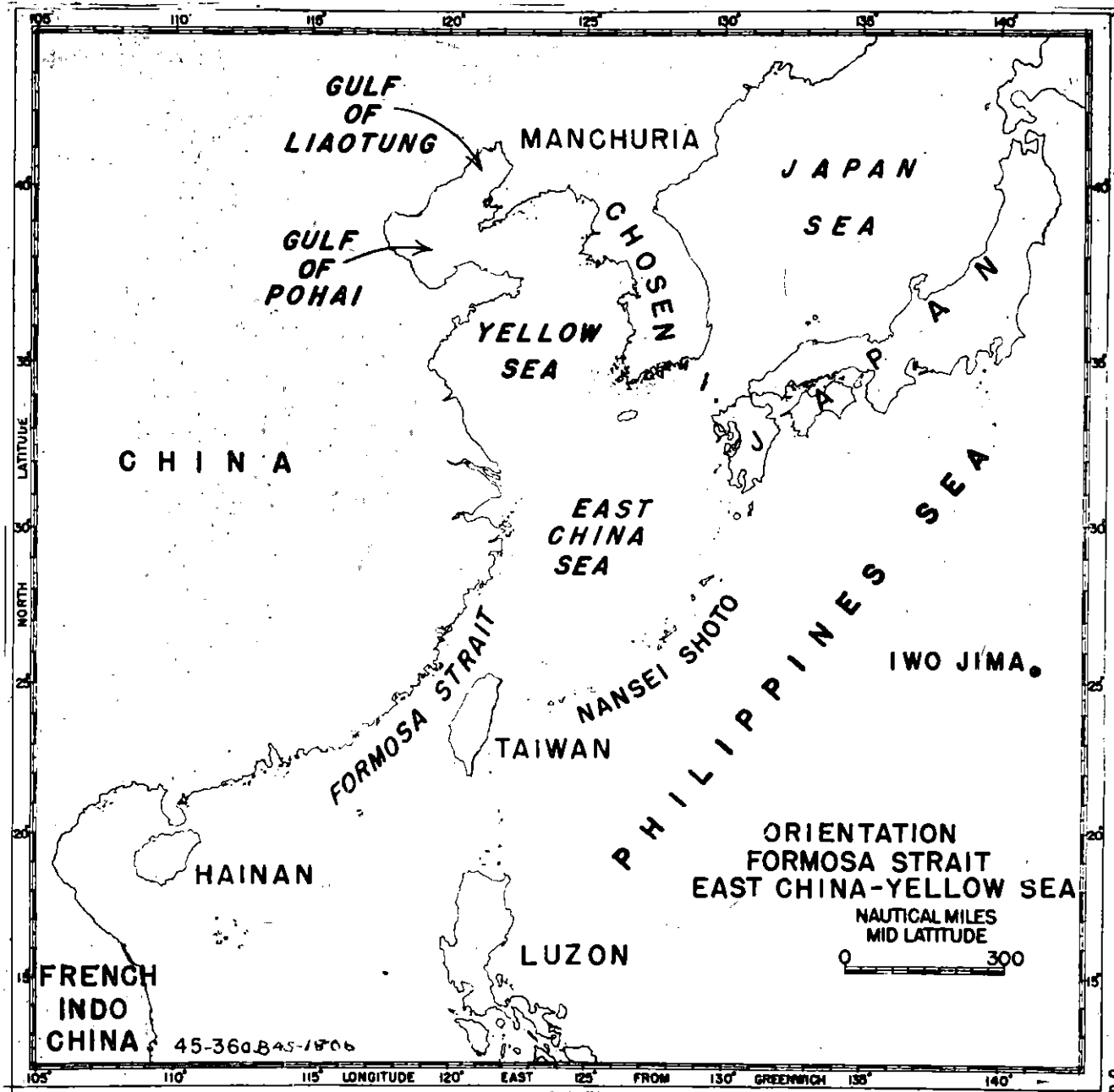
for 8500-foot airfields in large numbers, in which case SUO harbor would be very useful in the logistic support of these airfields. One airfield and a landing ground were situated at GIRAN.

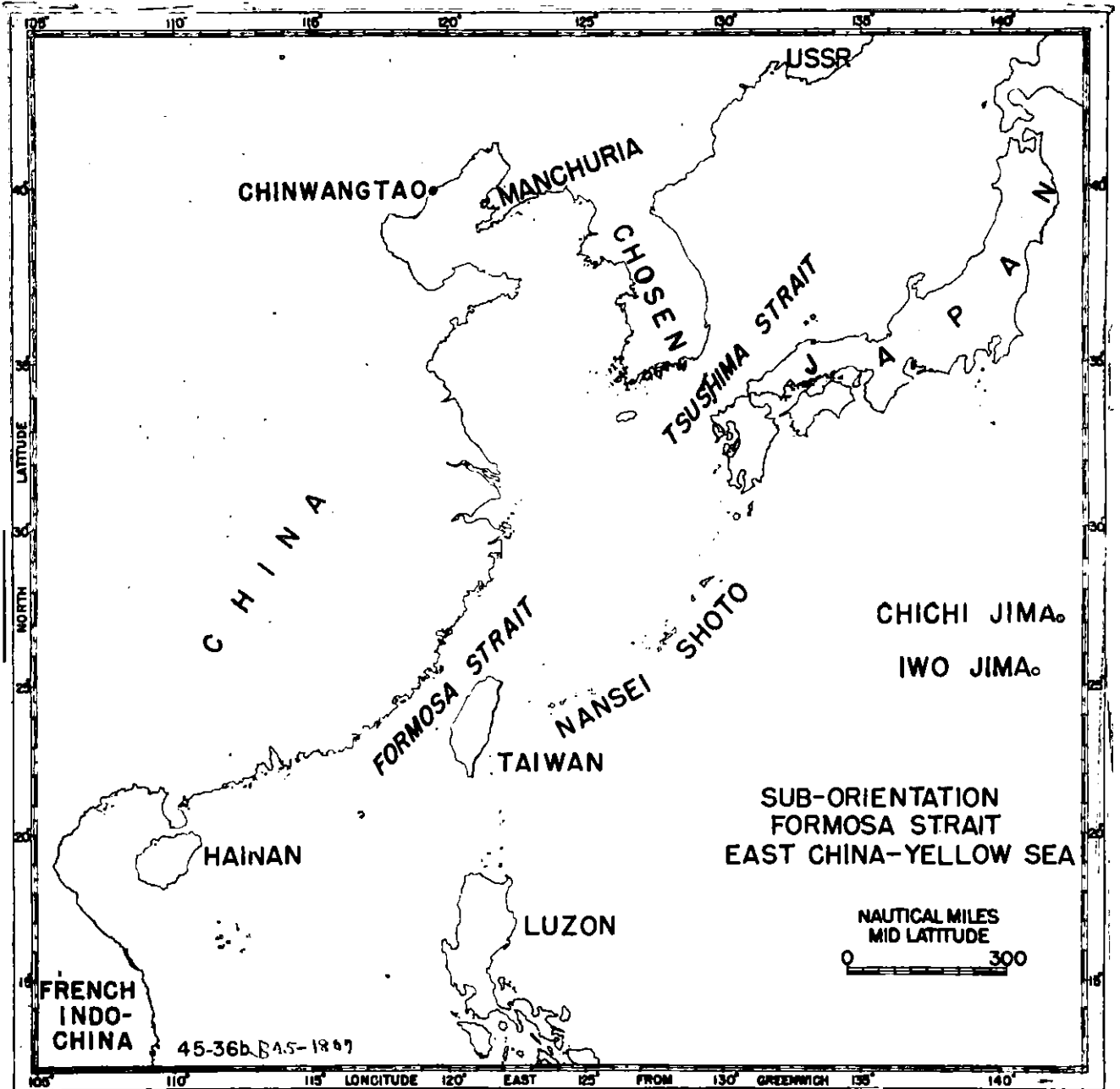
TAKAO, on the southwestern coast of TAIWAN, and BAKO, in the PESCADORES islands, are two other important points in this area which have been treated as a part of the Philippines and East Indian Islands Area presentation. They are not treated here in order to avoid repetition.

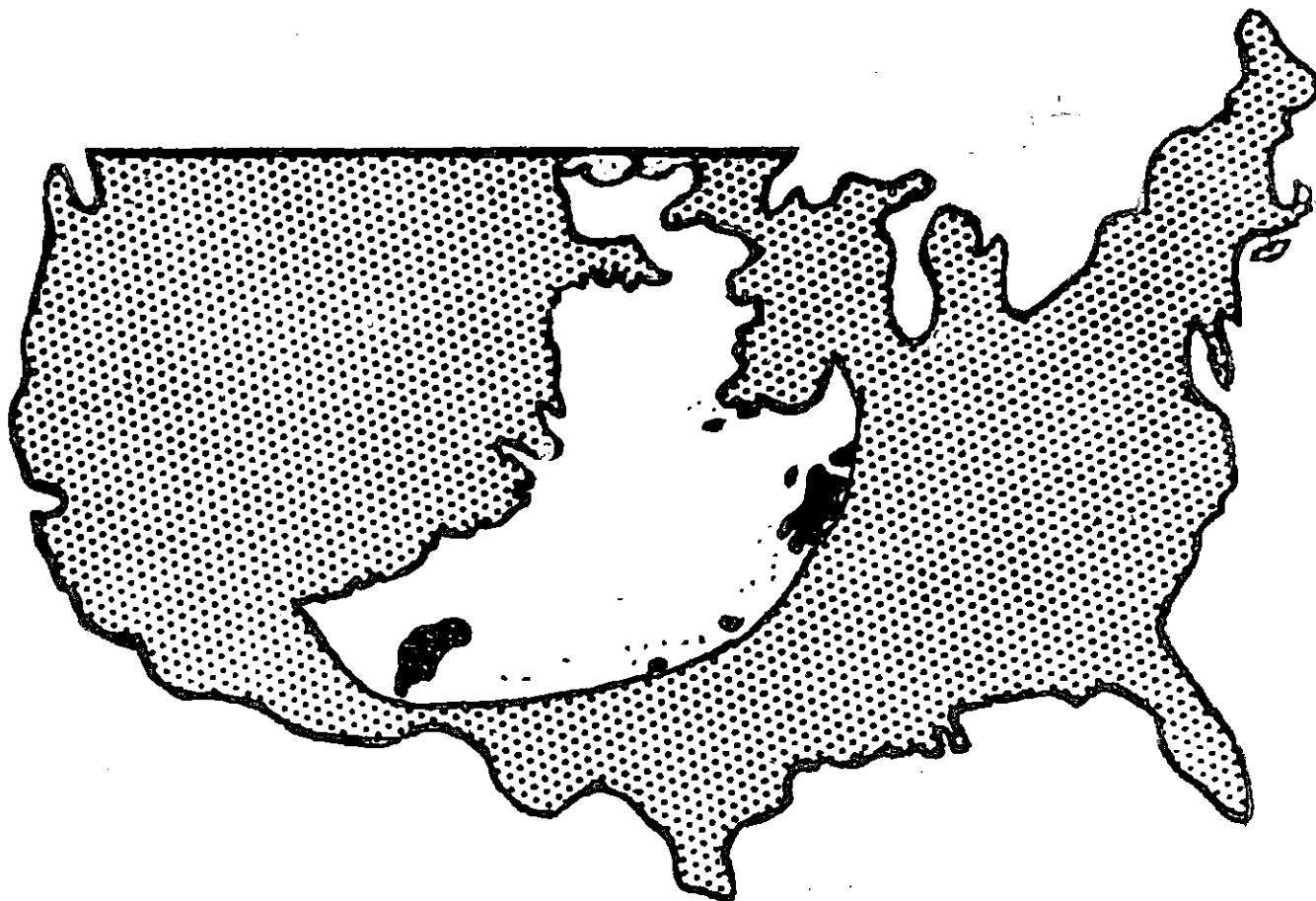
PLATE 1

In conclusion, it will be observed that there are only a few large well developed ports and large fleet anchorages in the area. Most of the coastal and harbor waters of CHINA, MANCHURIA and CHOSSEN limit the draft of vessels which they can accommodate to those of smaller sized vessels. On the other hand, the coasts of JAPAN and the MANSIE SHOTO have a goodly number of large harbors of sufficient depth for sizeable fleets. There are numerous airfields within fighter range of most of the coastline.

However, fully developed major naval bases are quite lacking in the area and any extensive naval operations in this area would require large advance mobile base facilities and a great deal of air coverage for their protection.





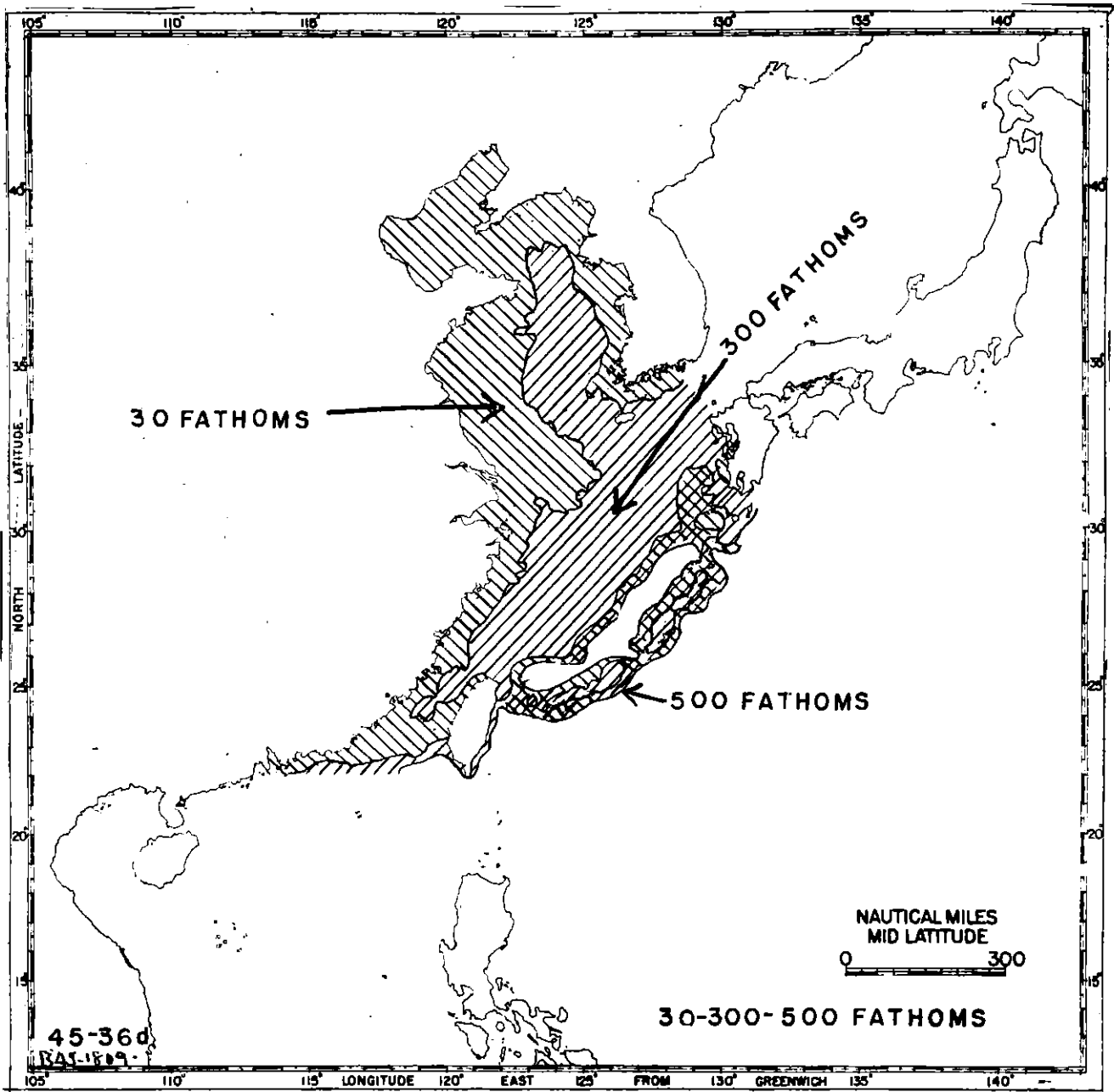


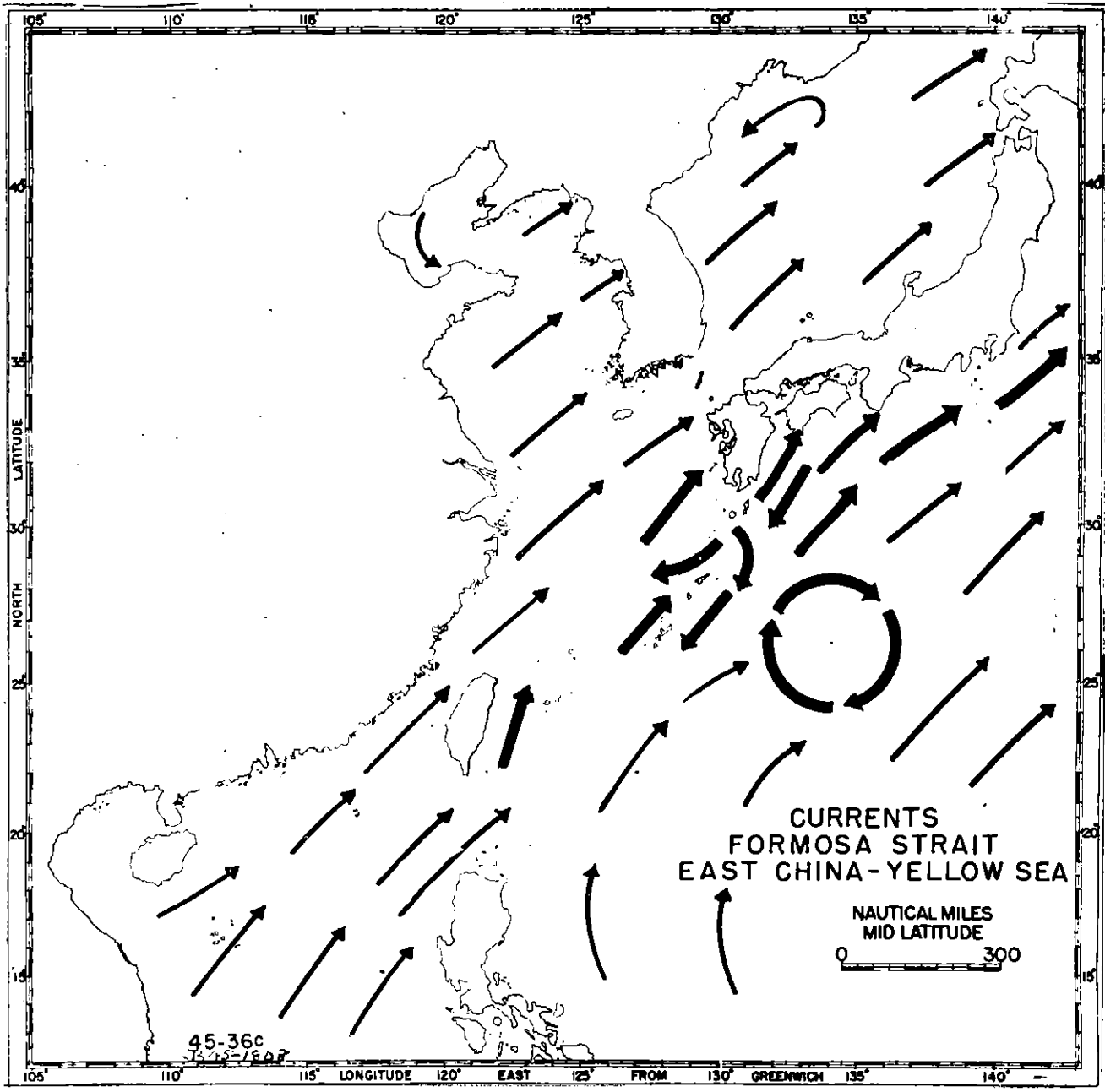
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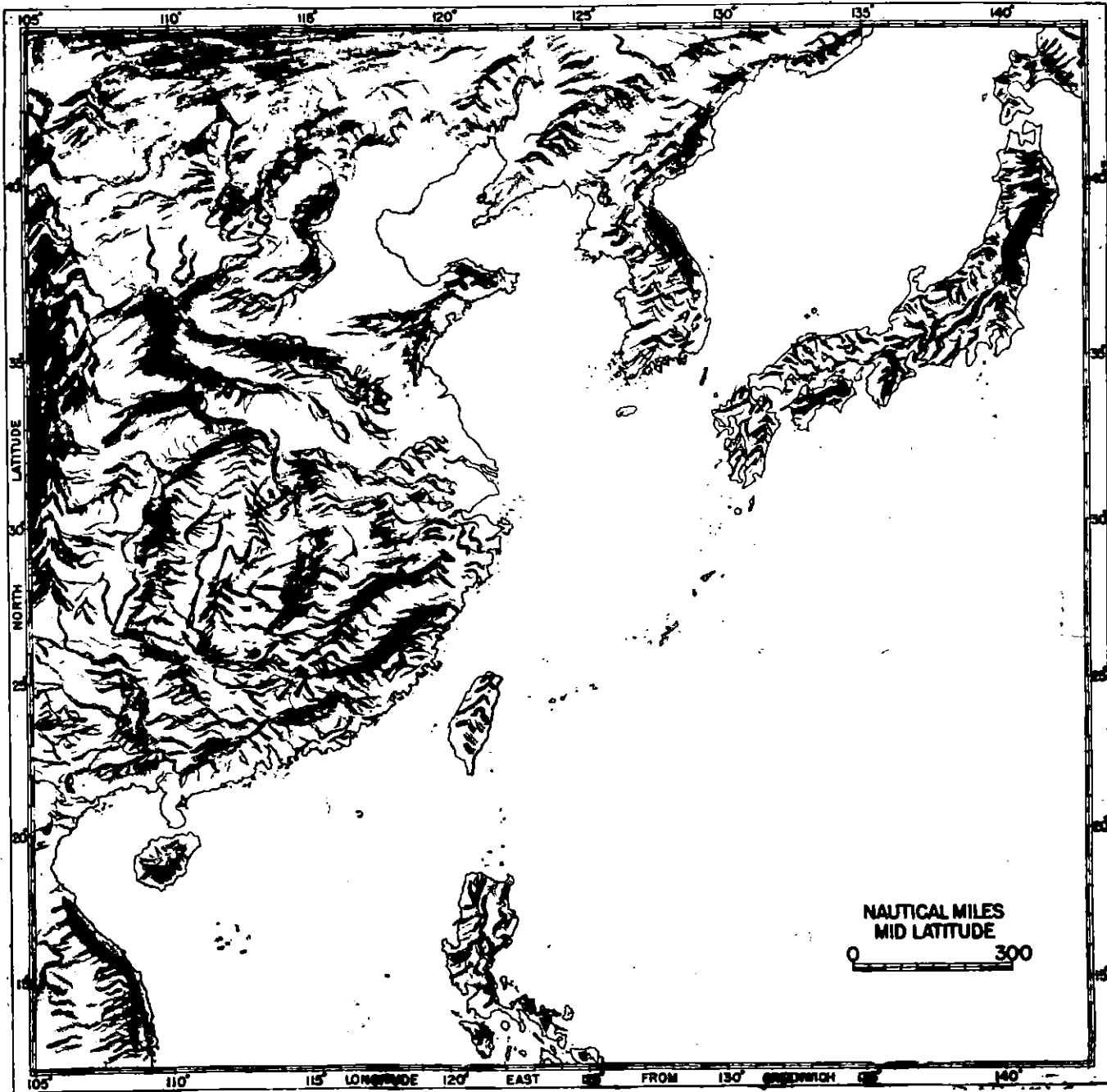
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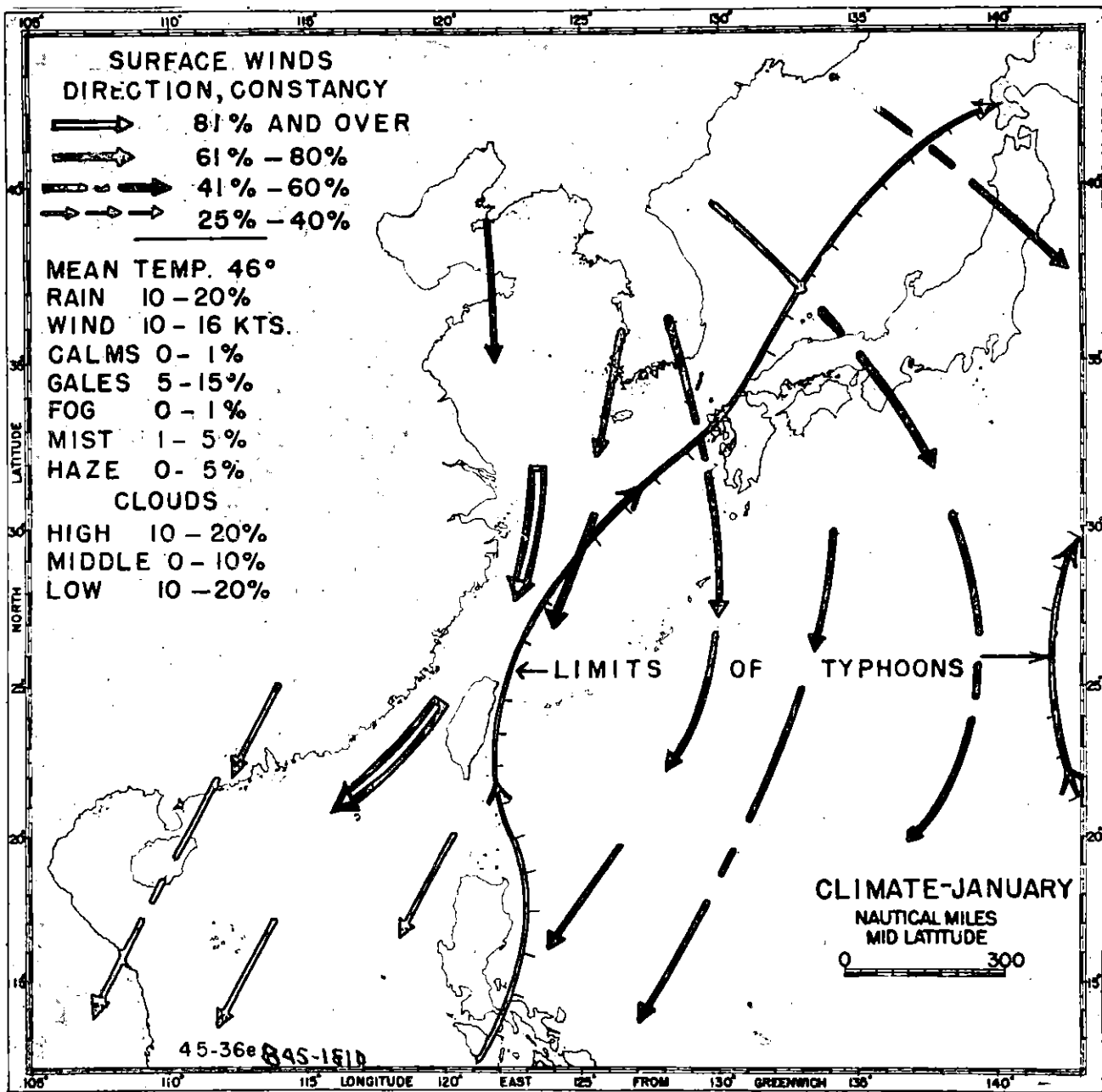
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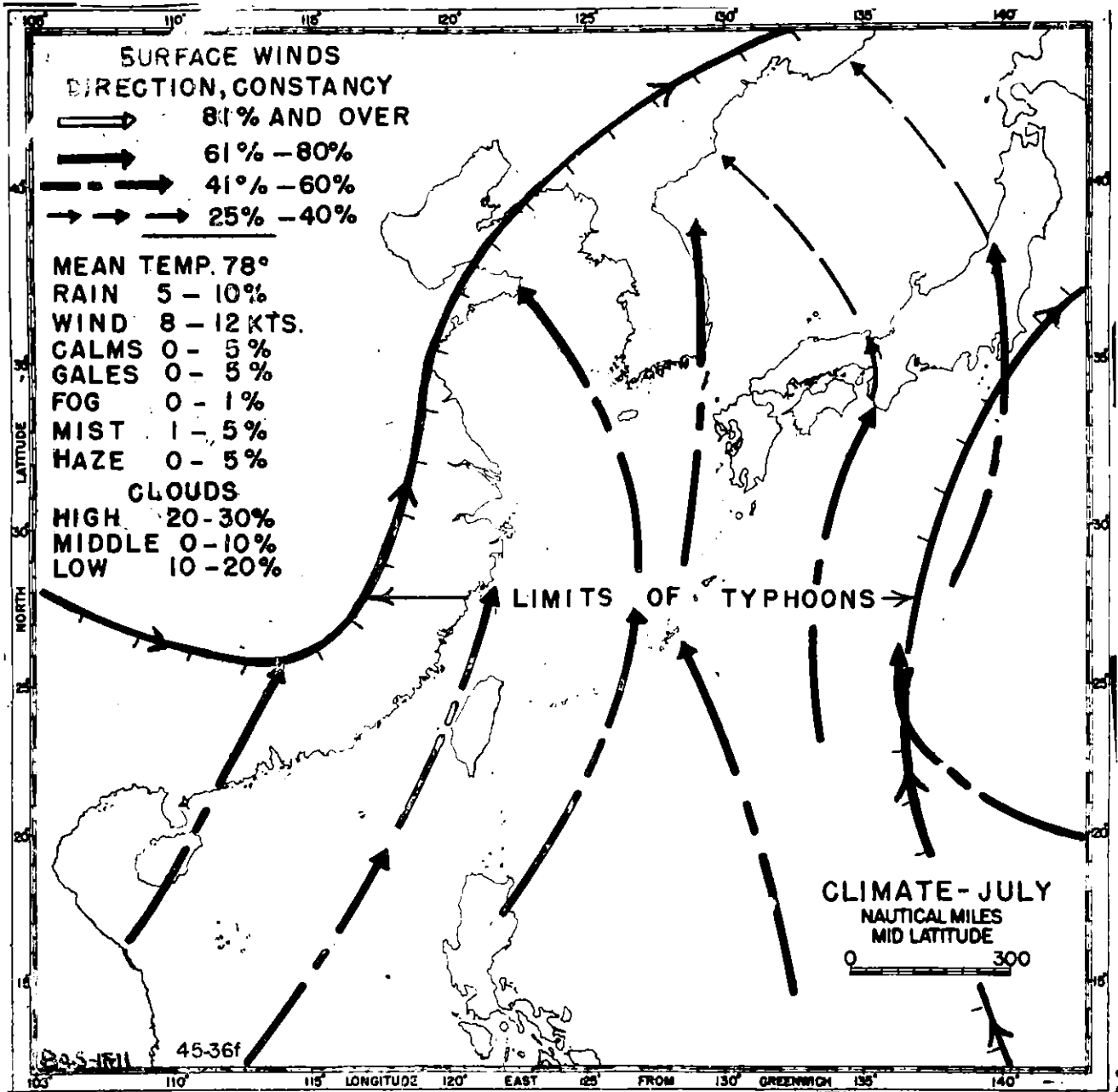
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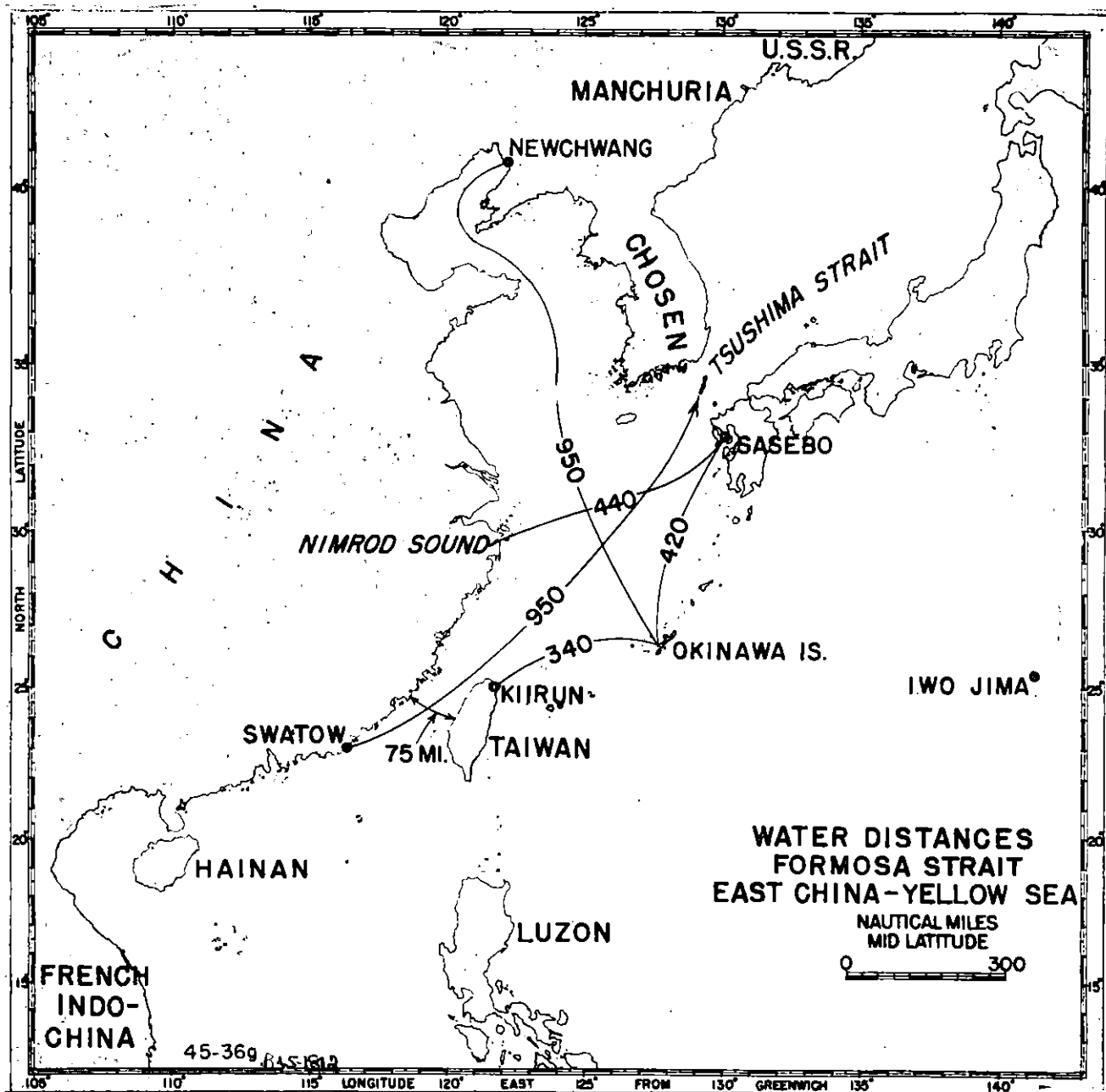


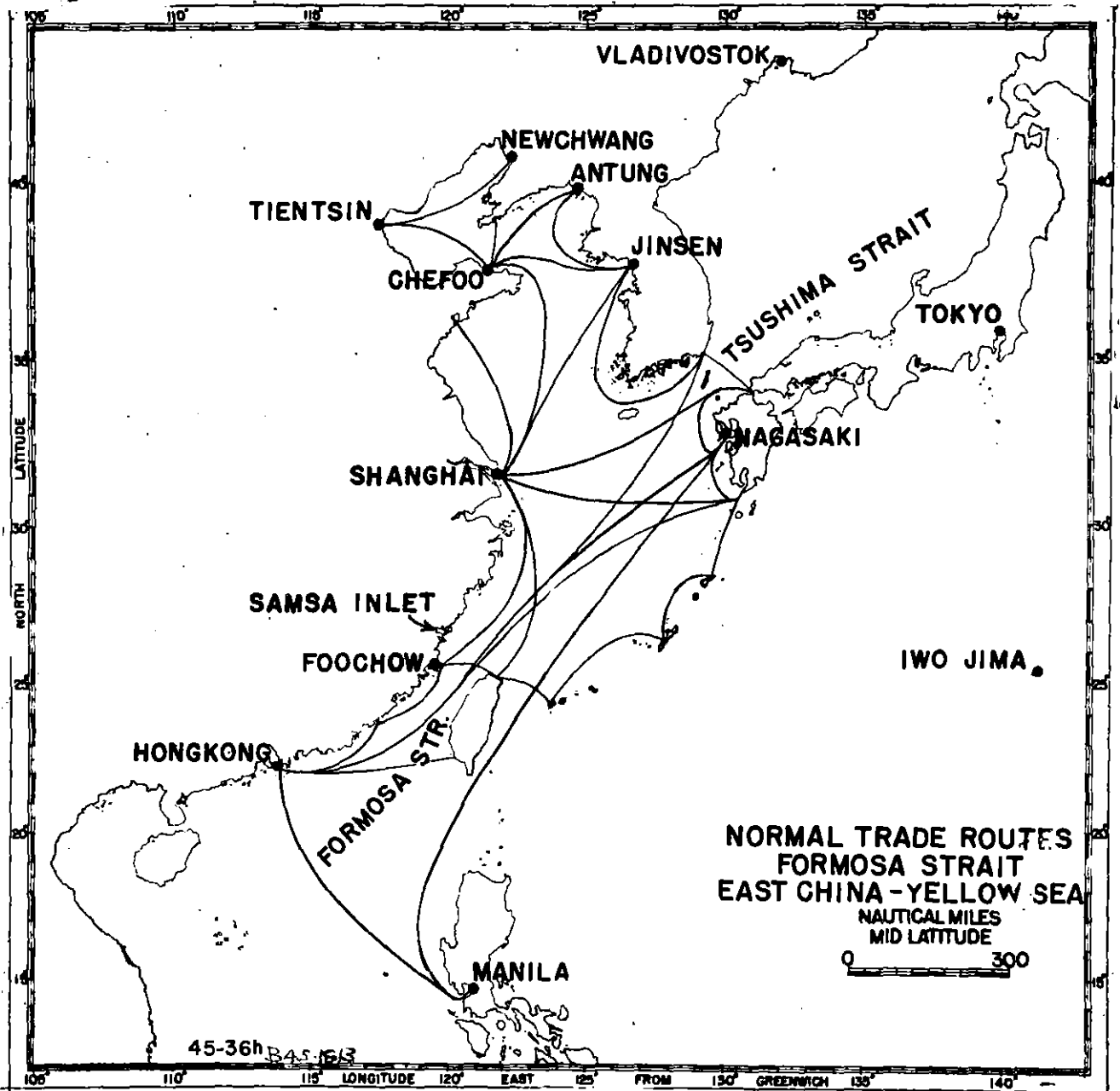


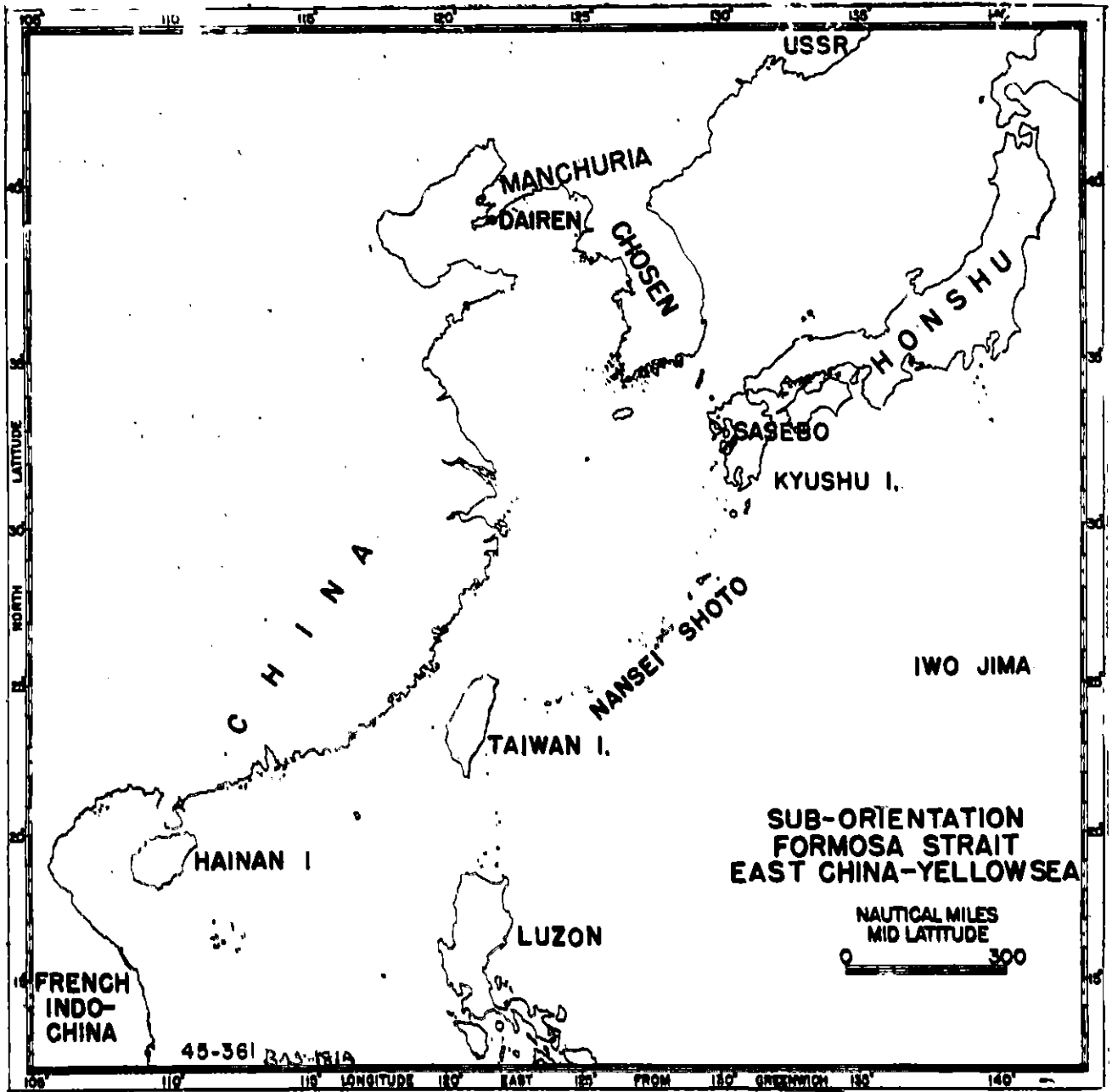


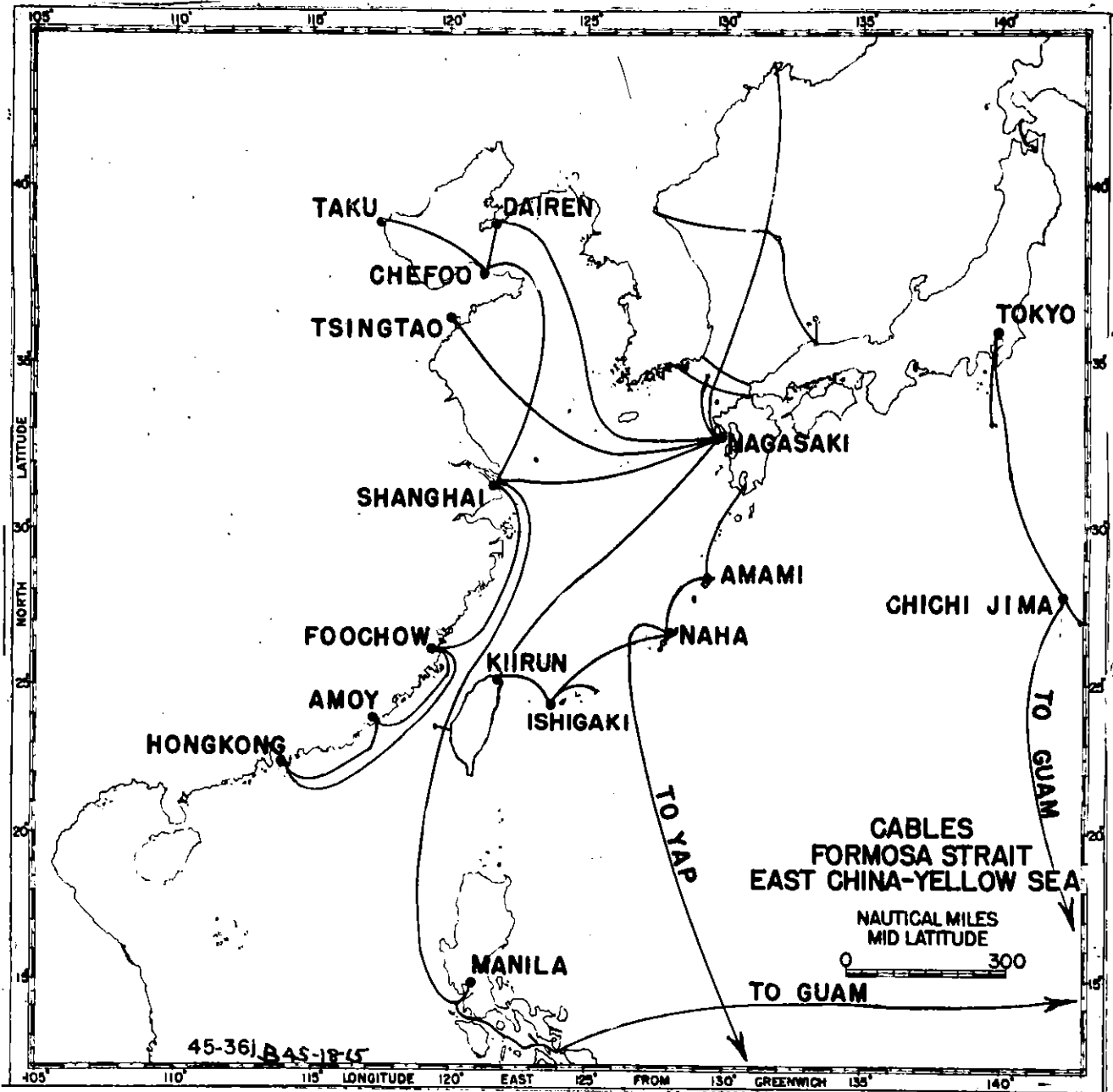


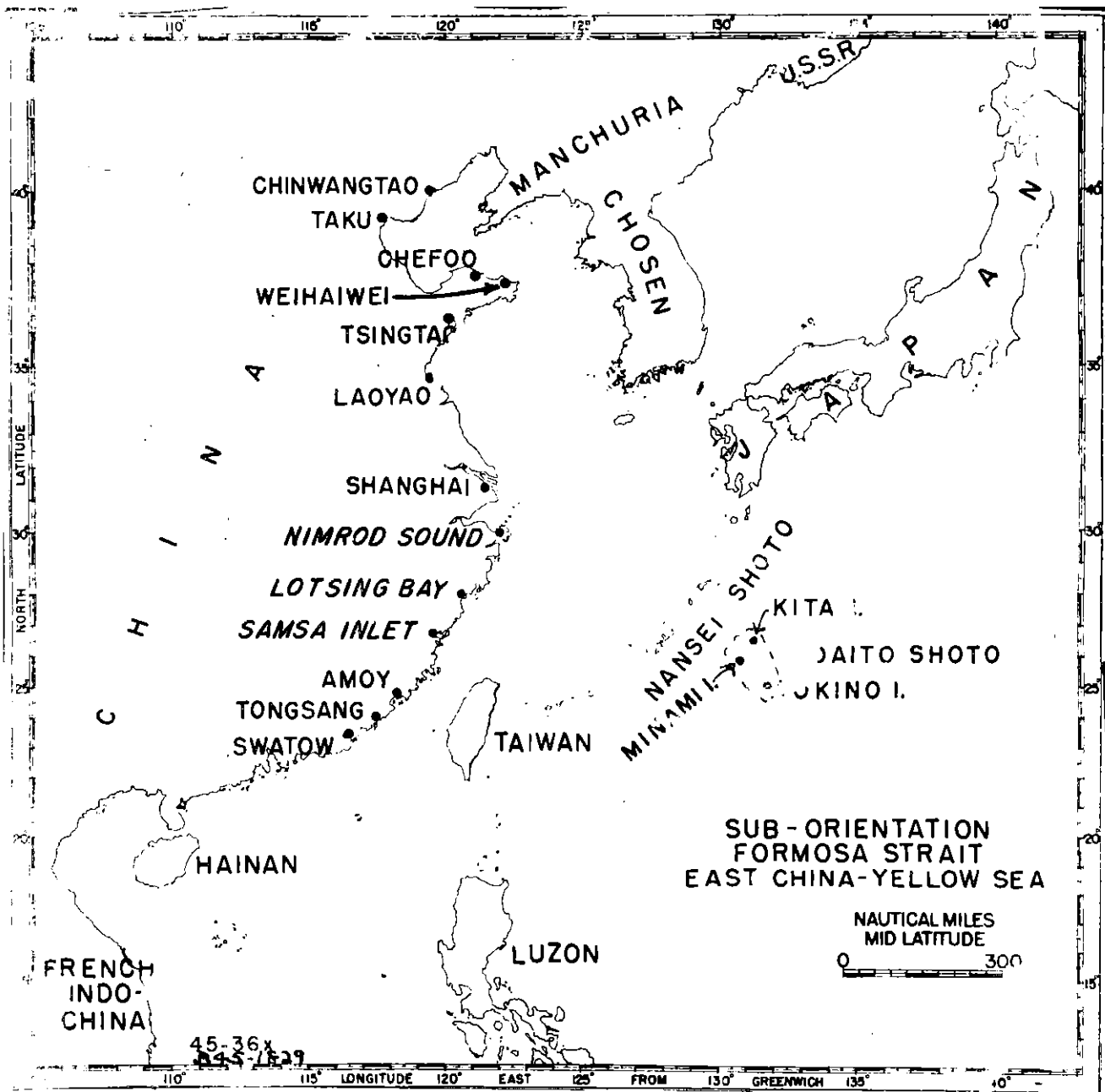




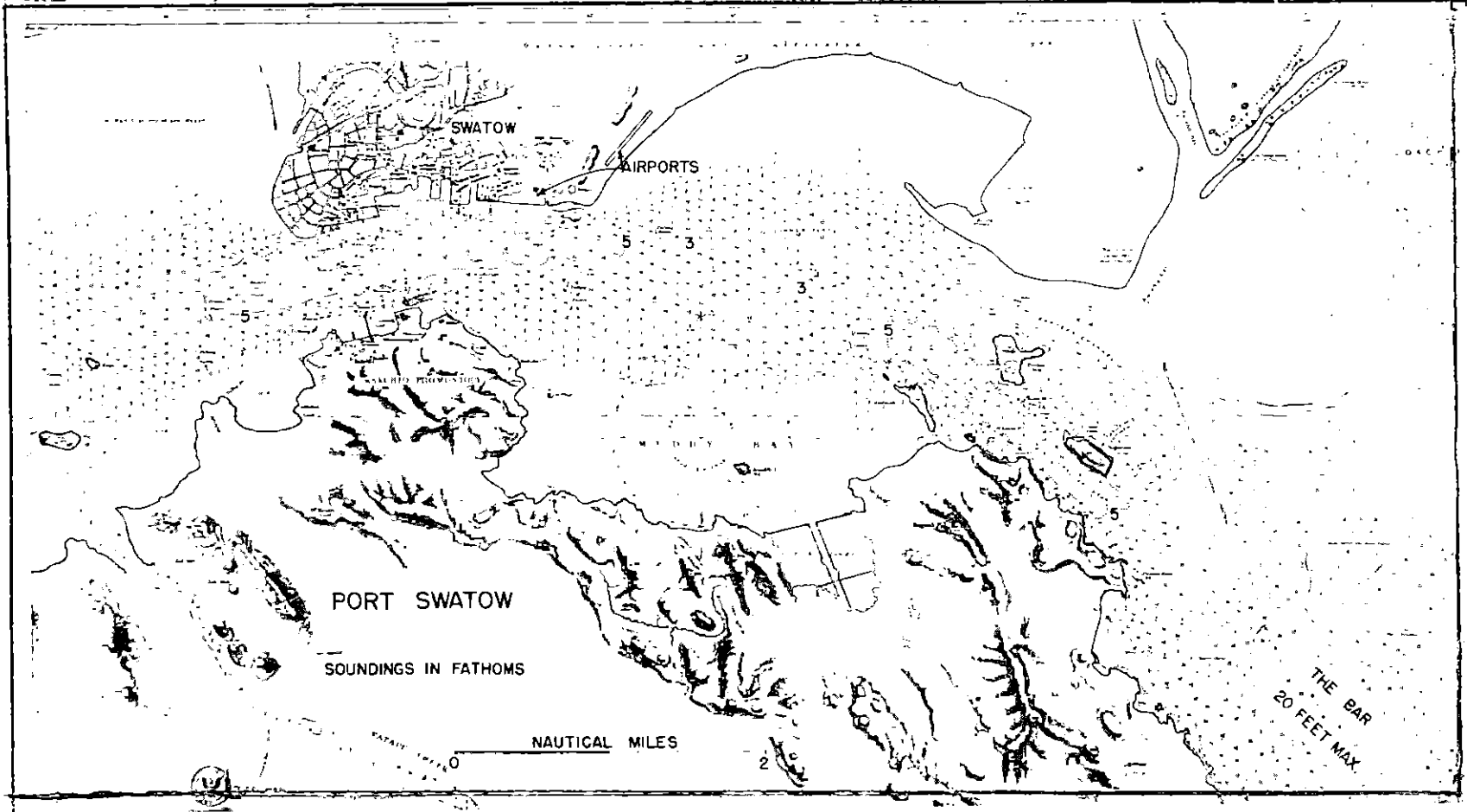








No 71202



TONGSANG HARBOR

SOUNDINGS IN FATHOMS

BASIN

TANGSOAN HARBOR
(TONGSANG)

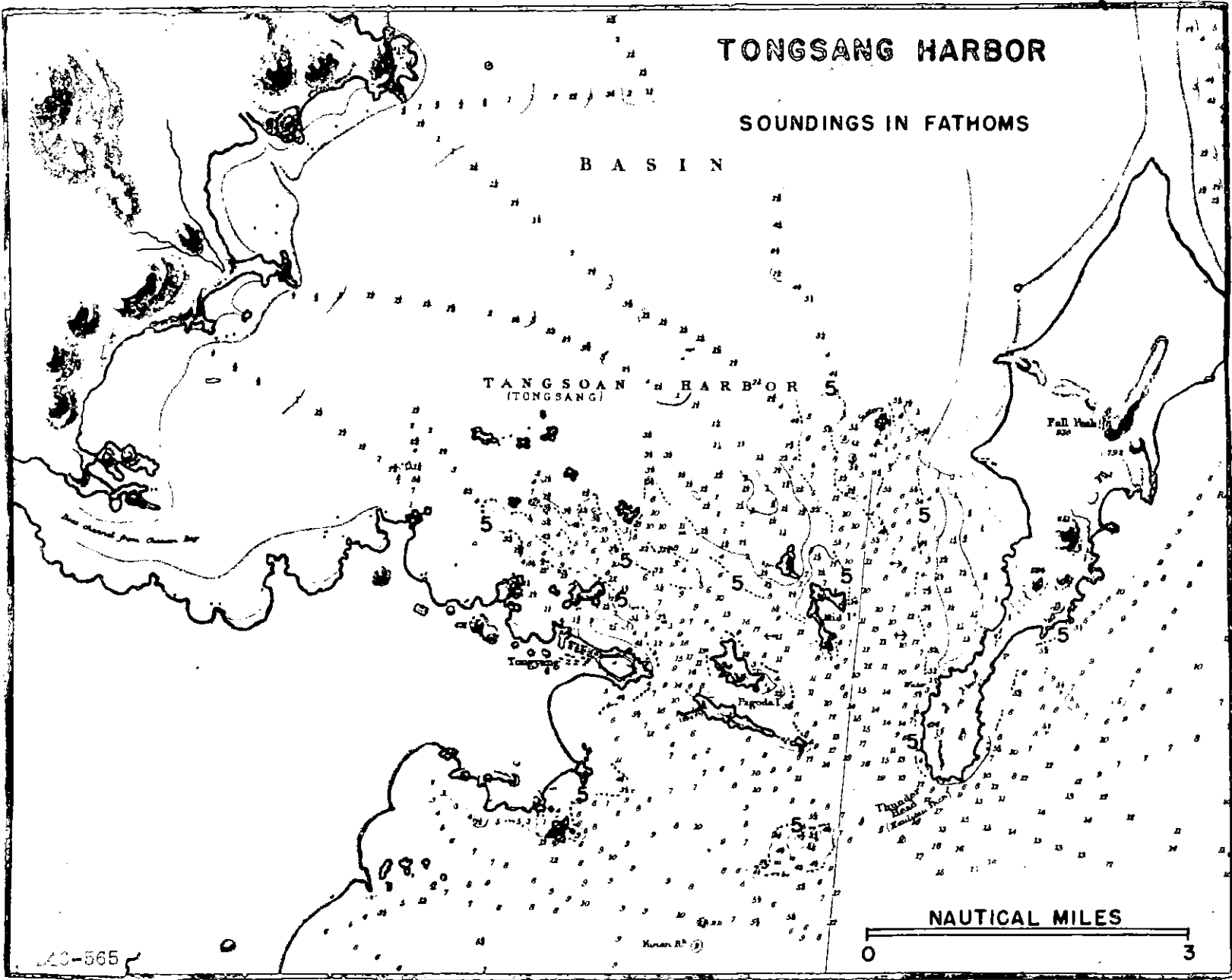
Fall Point
520

NAUTICAL MILES



23-565

CONFIDENTIAL

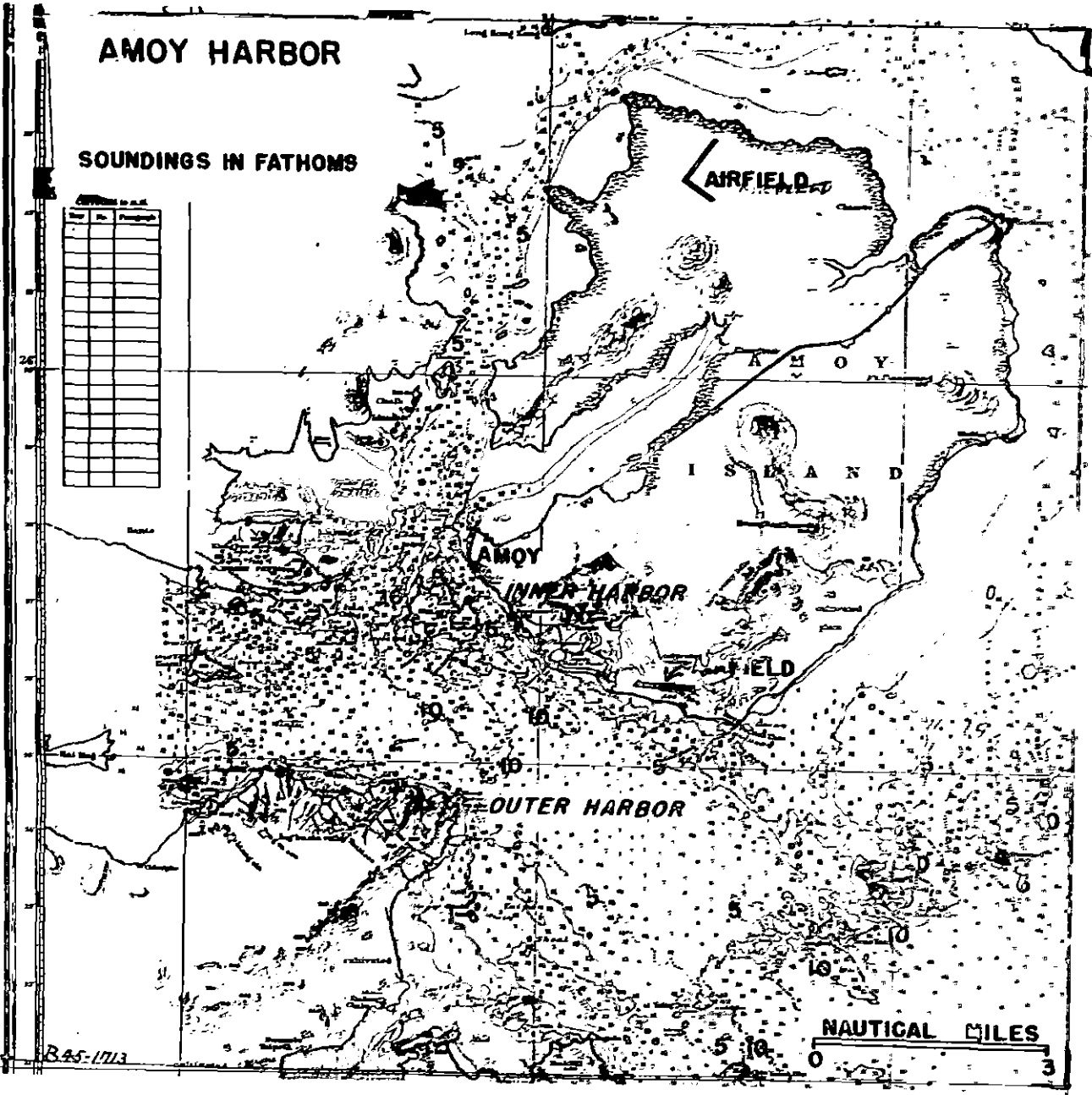


AMOY HARBOR

SOUNDINGS IN FATHOMS

CONVERSION TABLE

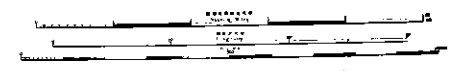
Feet	Fathoms	Meters
1	1/2	0.3
2	1	0.6
3	1 1/2	0.9
4	2	1.2
5	2 1/2	1.5
6	3	1.8
7	3 1/2	2.1
8	4	2.4
9	4 1/2	2.7
10	5	3.0
11	5 1/2	3.3
12	6	3.6
13	6 1/2	3.9
14	7	4.2
15	7 1/2	4.5
16	8	4.8
17	8 1/2	5.1
18	9	5.4
19	9 1/2	5.7
20	10	6.0
21	10 1/2	6.3
22	11	6.6
23	11 1/2	6.9
24	12	7.2
25	12 1/2	7.5
26	13	7.8
27	13 1/2	8.1
28	14	8.4
29	14 1/2	8.7
30	15	9.0
31	15 1/2	9.3
32	16	9.6
33	16 1/2	9.9
34	17	10.2
35	17 1/2	10.5
36	18	10.8
37	18 1/2	11.1
38	19	11.4
39	19 1/2	11.7
40	20	12.0
41	20 1/2	12.3
42	21	12.6
43	21 1/2	12.9
44	22	13.2
45	22 1/2	13.5
46	23	13.8
47	23 1/2	14.1
48	24	14.4
49	24 1/2	14.7
50	25	15.0



NOTE NO. 1
 This chart is a reproduction of the
 original chart of the same name
 published by the Hydrographic Office,
 Washington, D. C., in 1917.

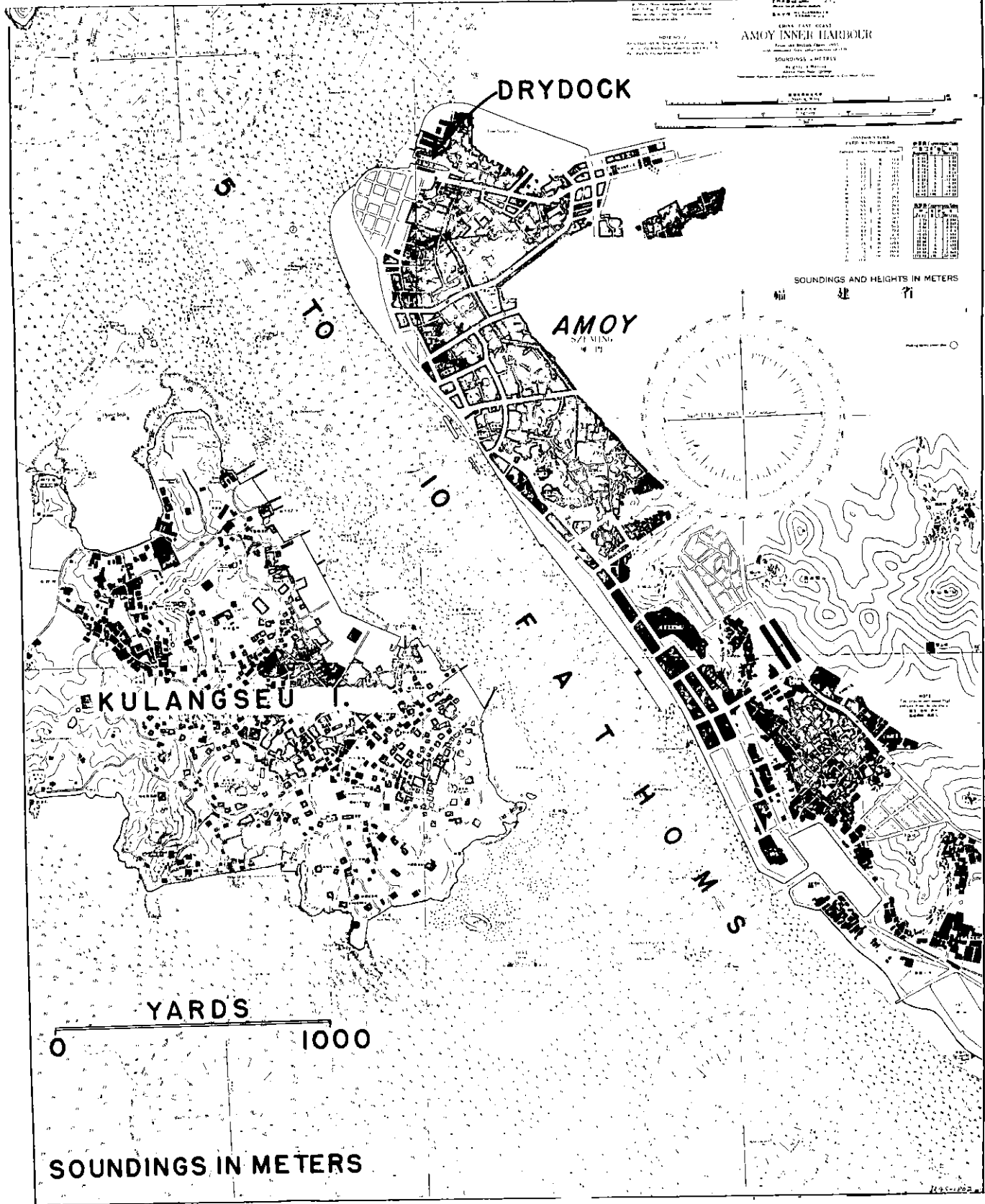
NOTE NO. 2
 This chart is a reproduction of the
 original chart of the same name
 published by the Hydrographic Office,
 Washington, D. C., in 1917.

CHINA - EAST COAST
AMOY INNER HARBOUR
 From the British Admiralty
 Hydrographic Office, London
 SOUNDINGS - METERS
 Height of Mean Low Water
 Mean High Water



CONVERSION TABLE		METERS TO FEET	
Meters	Feet	Meters	Feet
1	3.28	10	32.8
2	6.56	20	65.6
3	9.84	30	98.4
4	13.12	40	131.2
5	16.40	50	164.0
6	19.68	60	196.8
7	22.96	70	229.6
8	26.24	80	262.4
9	29.52	90	295.2
10	32.80	100	328.0
15	49.20	150	492.0
20	65.60	200	656.0
25	82.00	250	820.0
30	98.40	300	984.0
35	114.80	350	1148.0
40	131.20	400	1312.0
45	147.60	450	1476.0
50	164.00	500	1640.0
55	180.40	550	1804.0
60	196.80	600	1968.0
65	213.20	650	2132.0
70	229.60	700	2296.0
75	246.00	750	2460.0
80	262.40	800	2624.0
85	278.80	850	2788.0
90	295.20	900	2952.0
95	311.60	950	3116.0
100	328.00	1000	3280.0

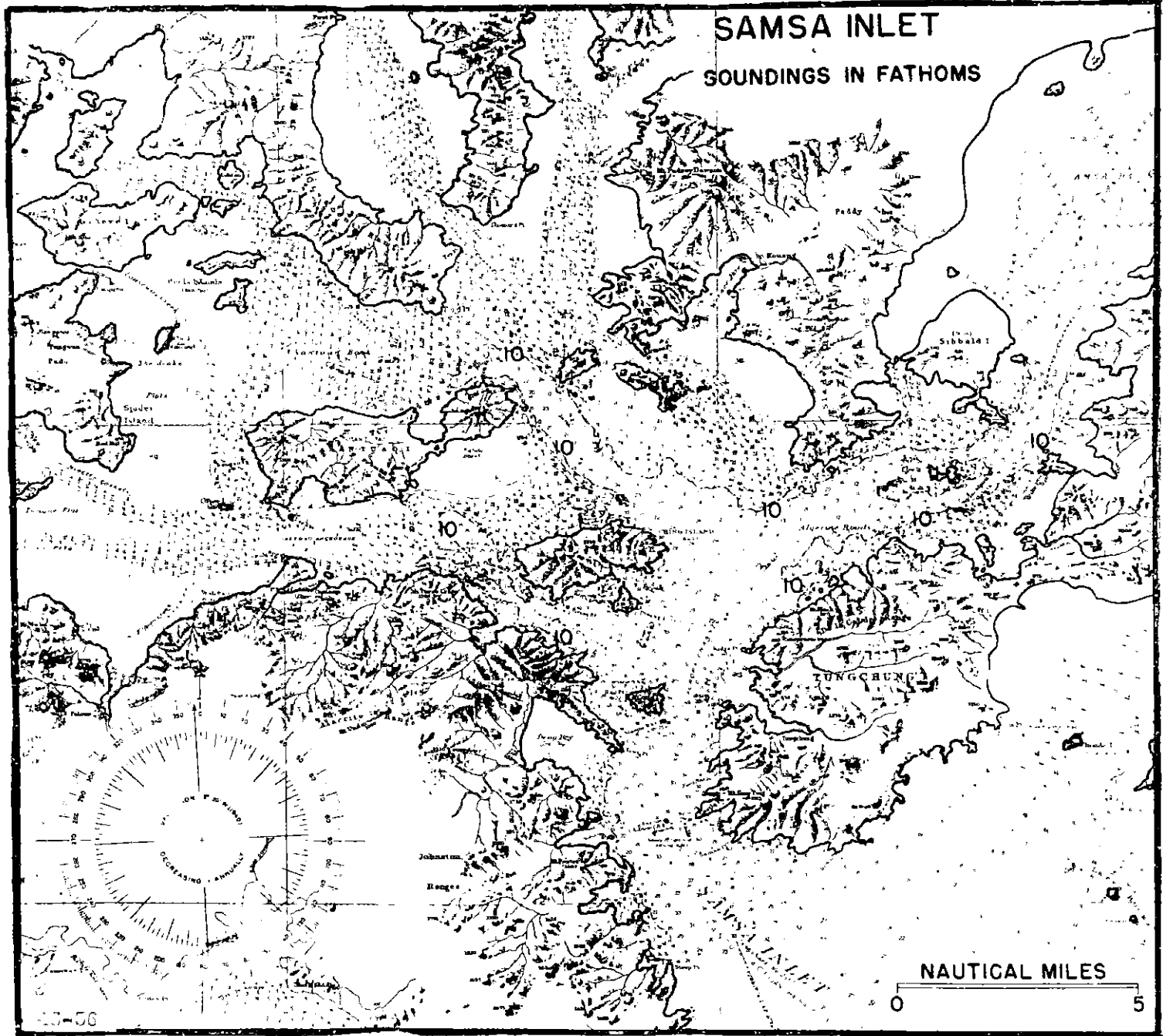
SOUNDINGS AND HEIGHTS IN METERS
 福建省



SOUNDINGS IN METERS

SAMSA INLET

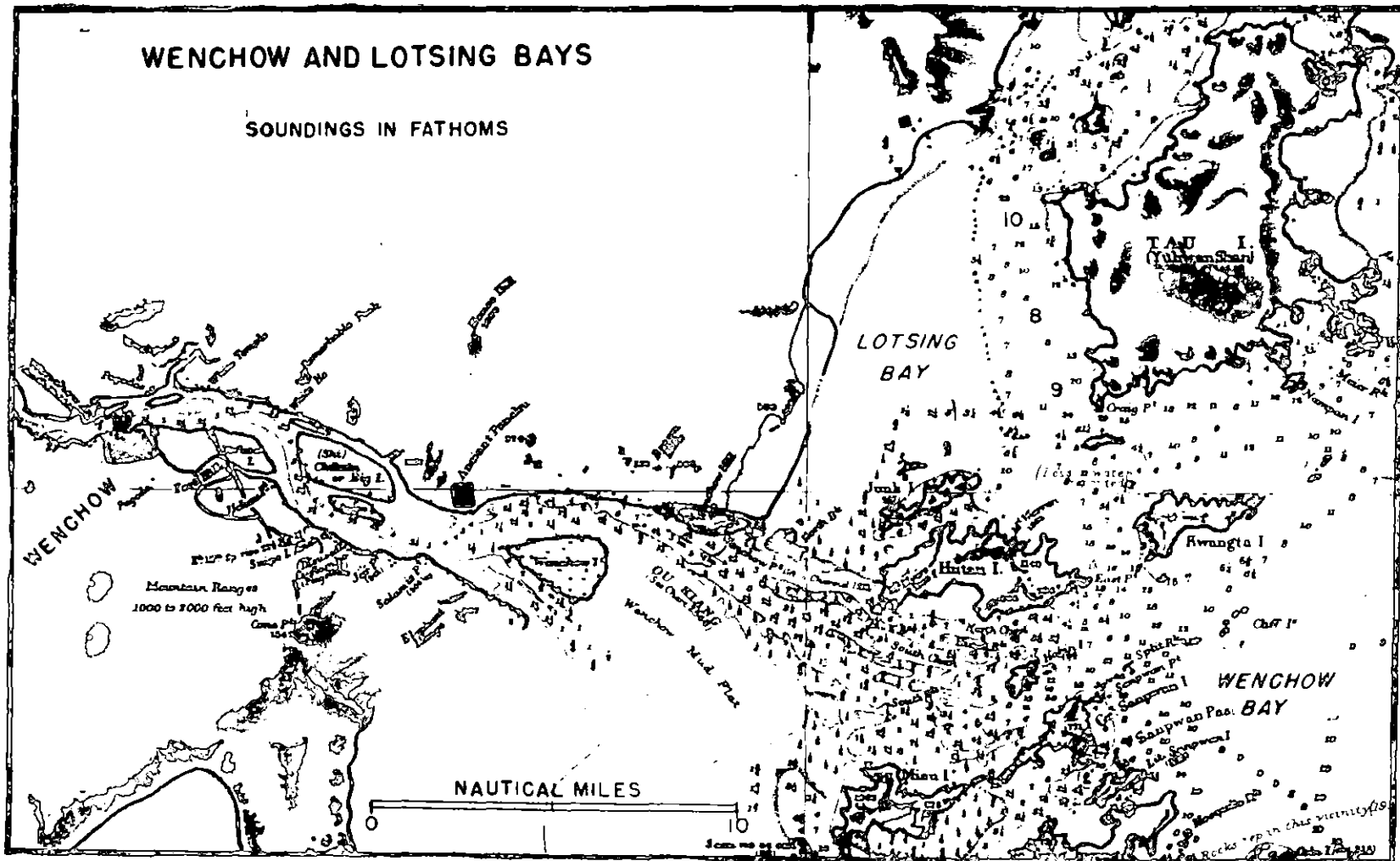
SOUNDINGS IN FATHOMS



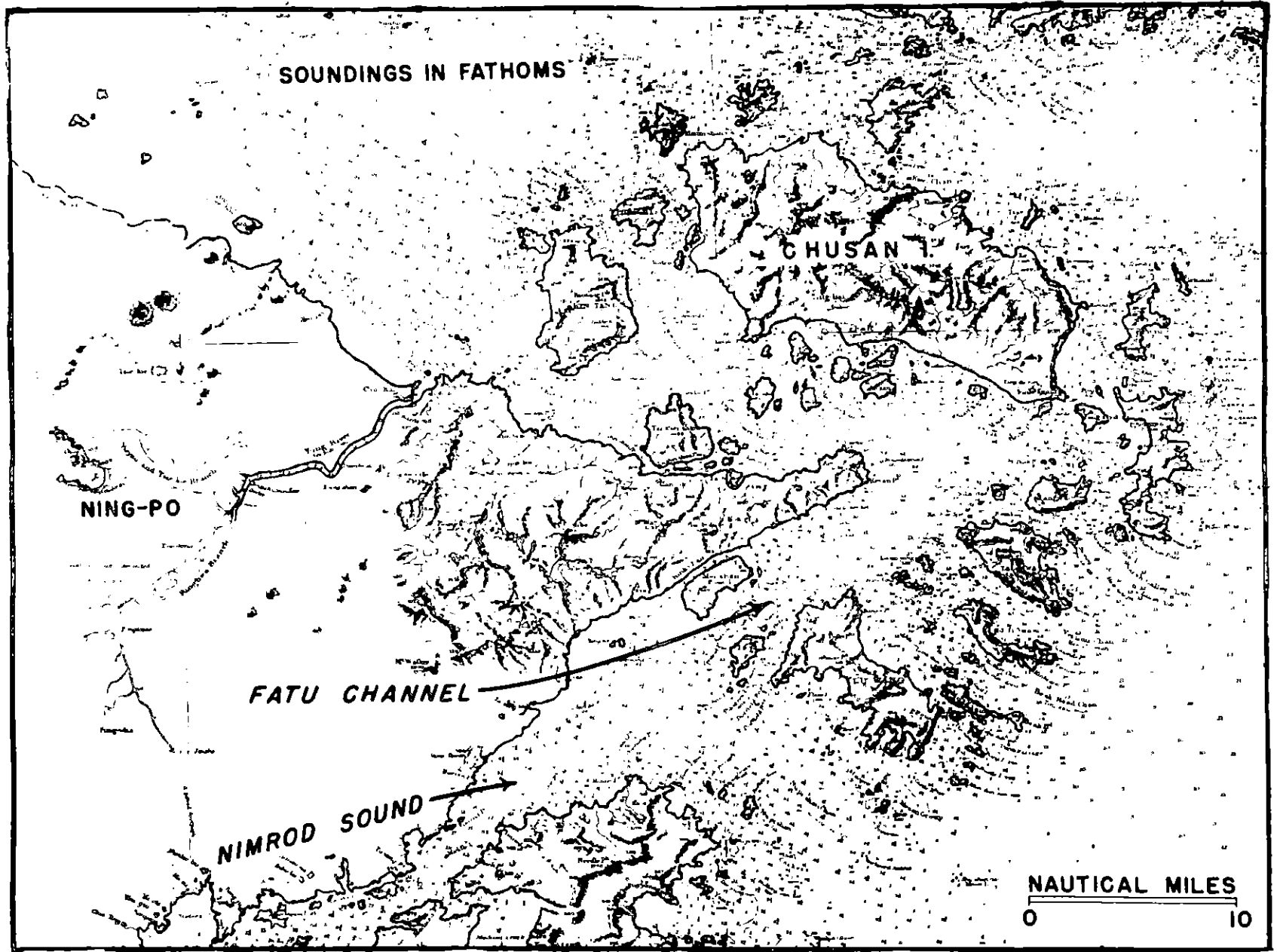
13-56

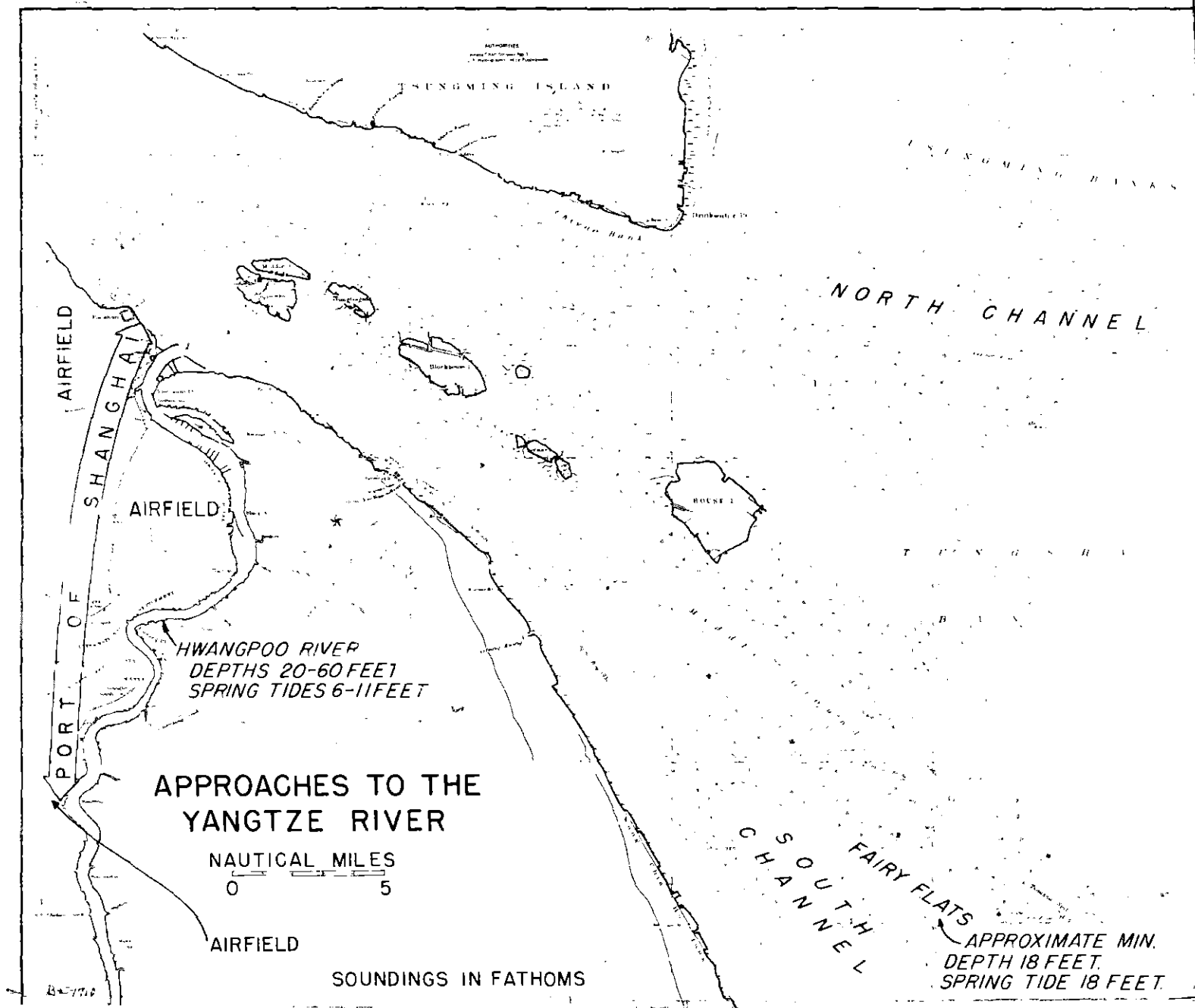
WENCHOW AND LOTSING BAYS

SOUNDINGS IN FATHOMS



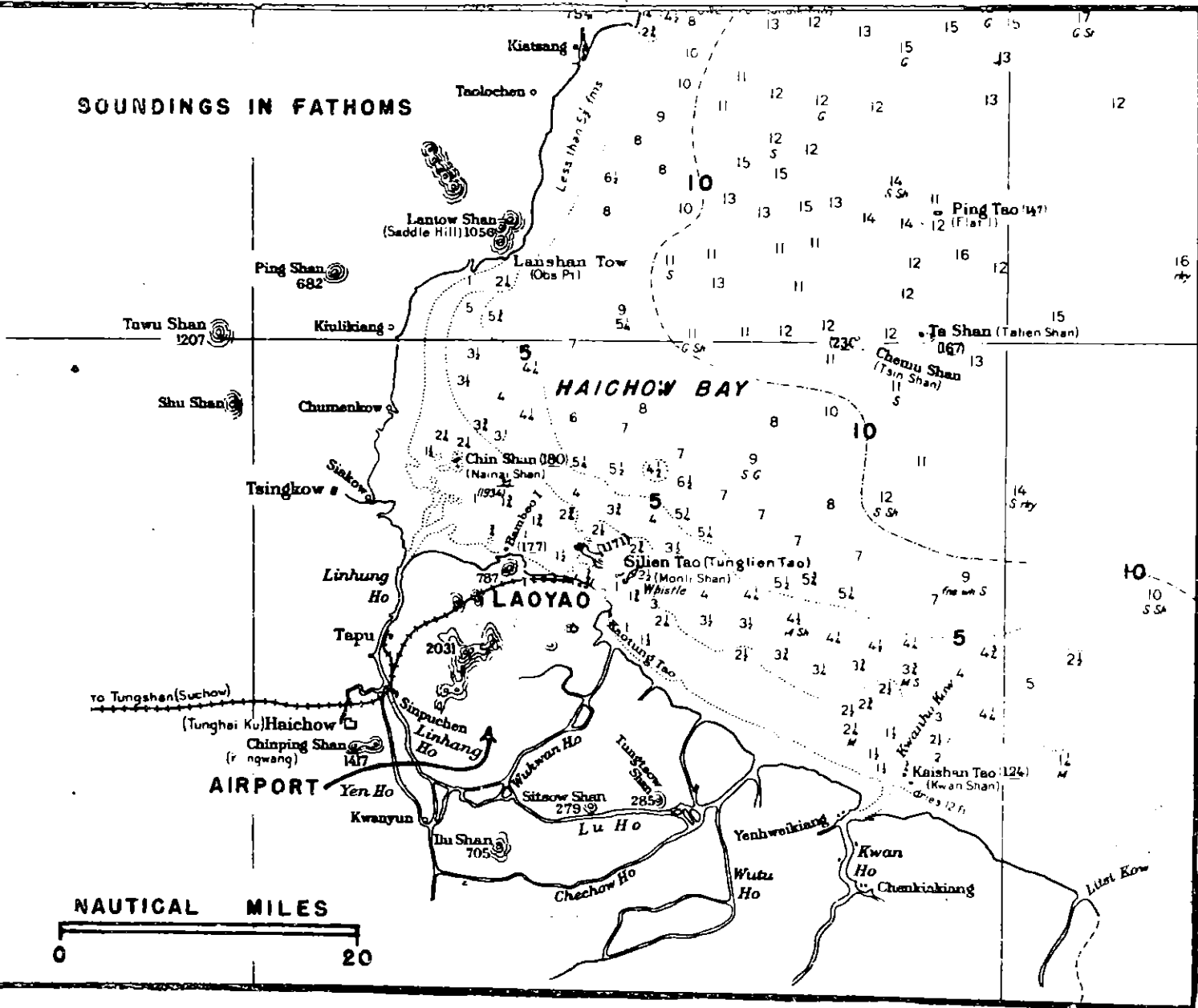
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SOUNDINGS IN FATHOMS



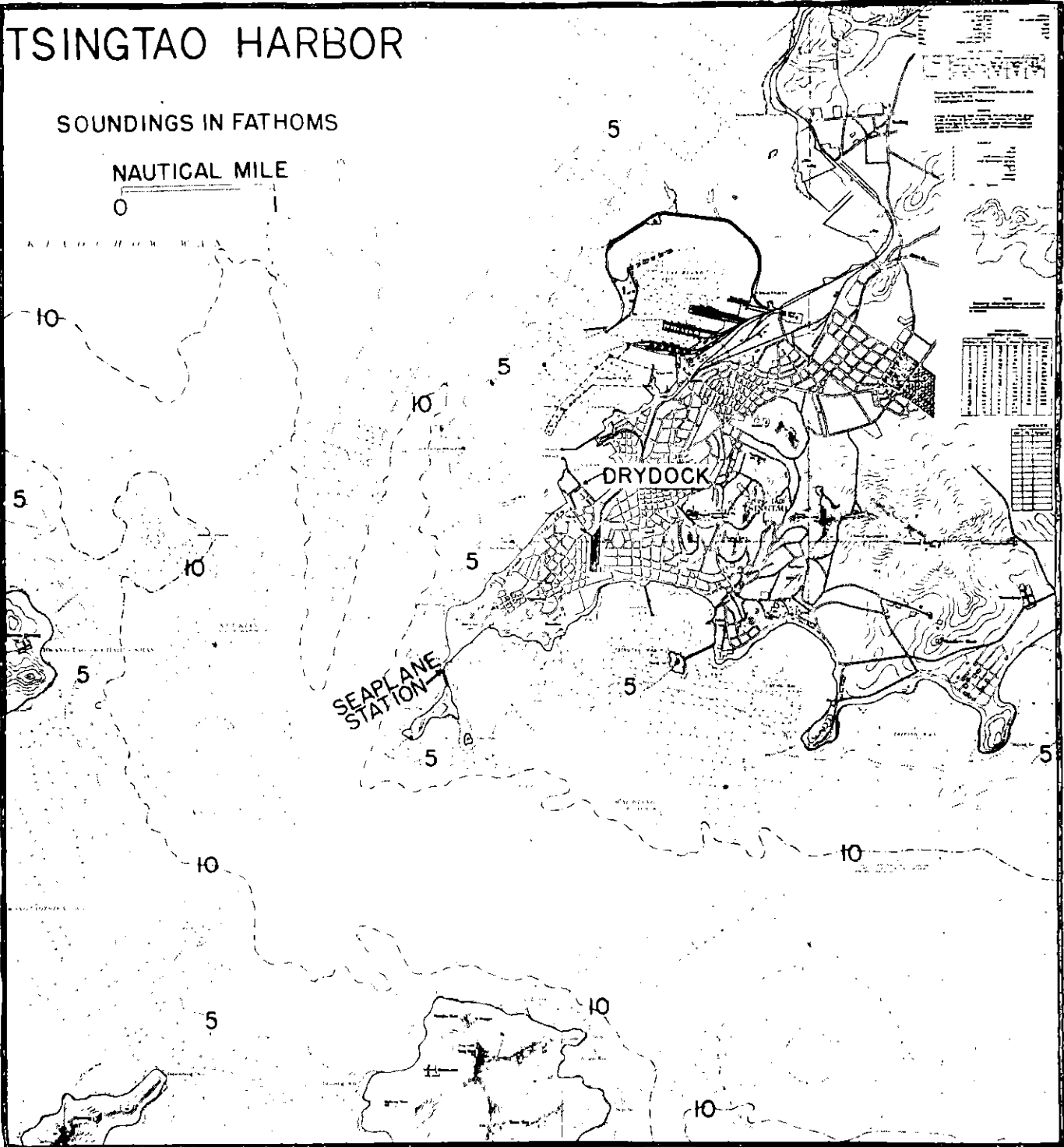
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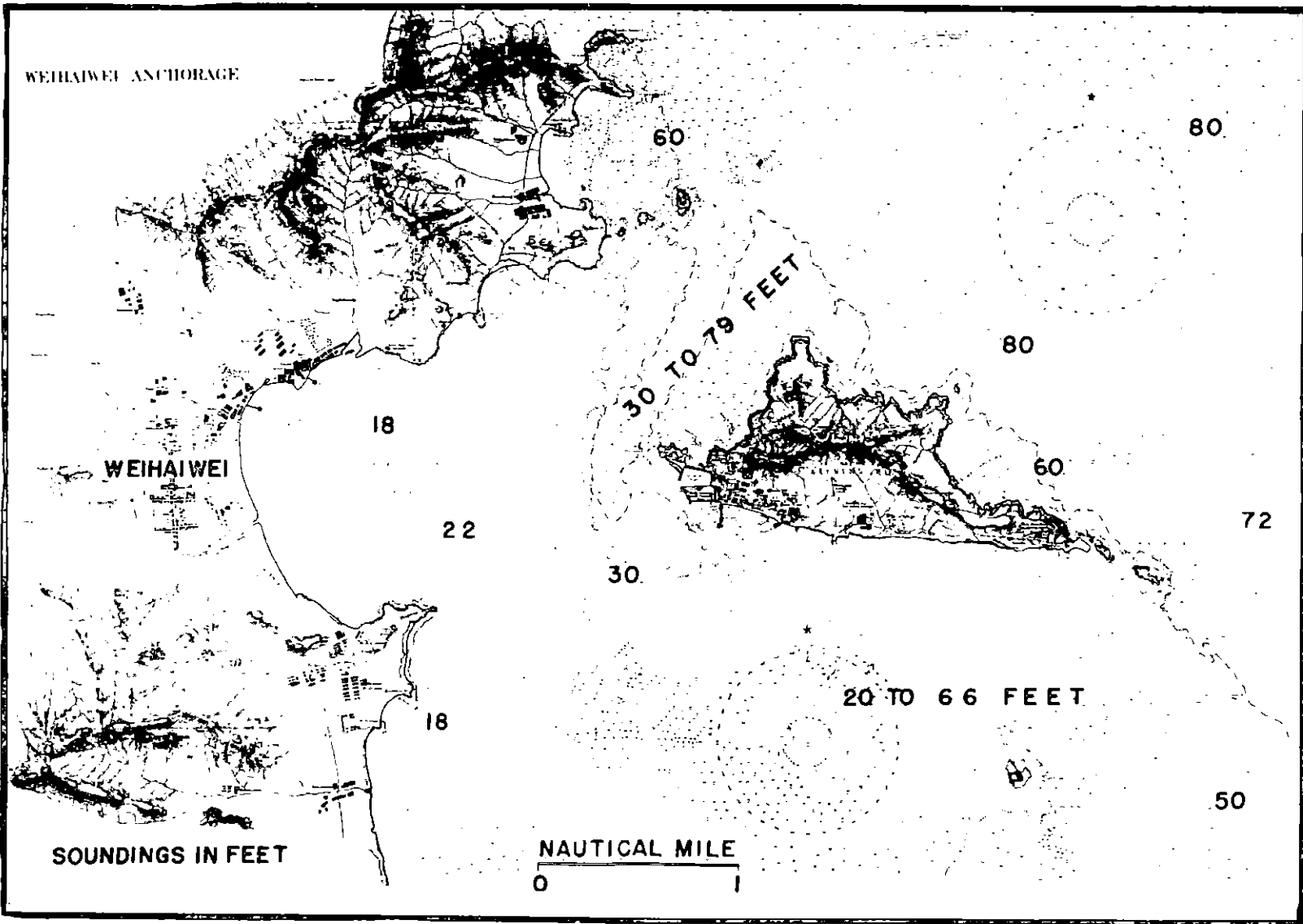
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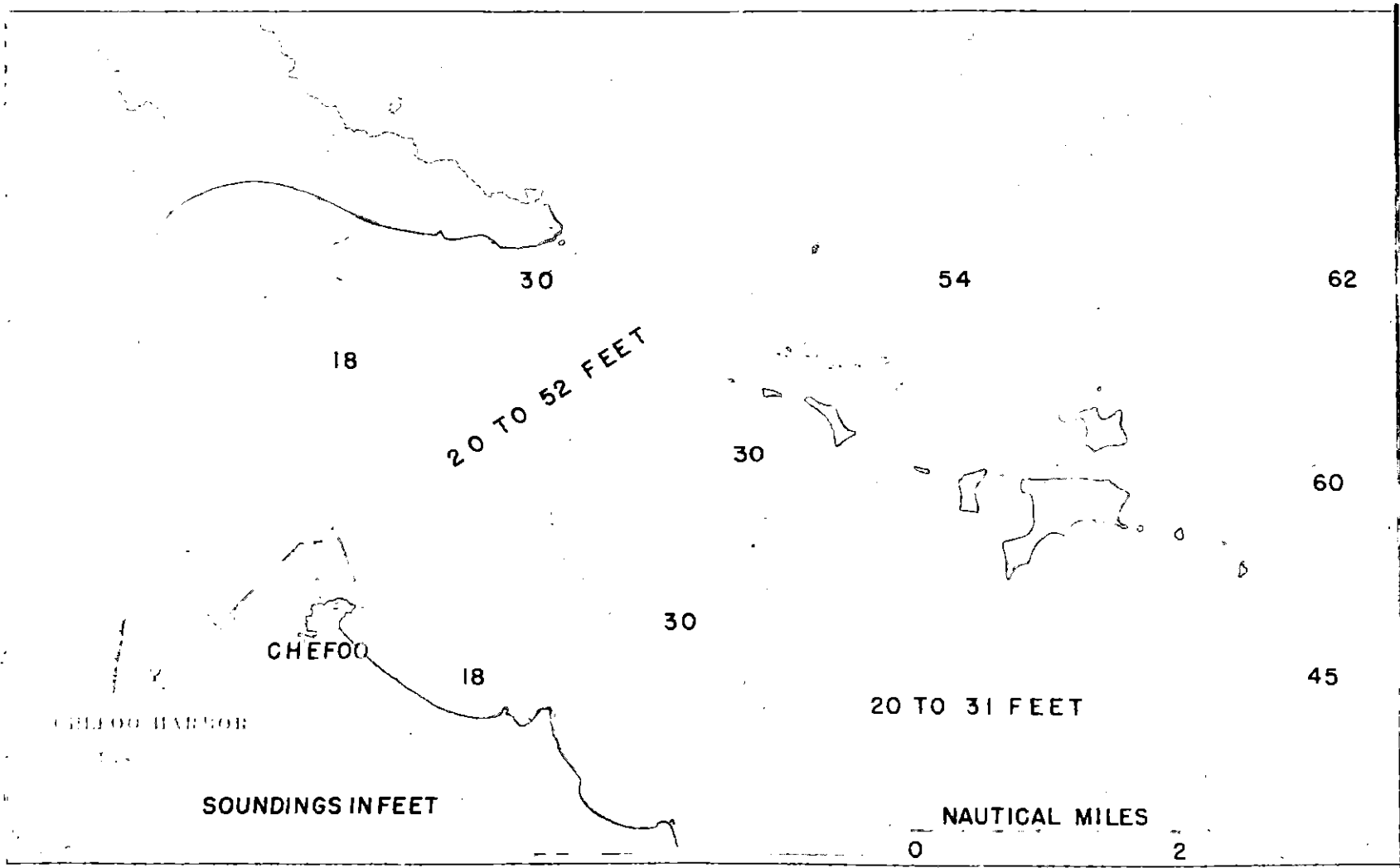
SOUNDINGS IN FATHOMS

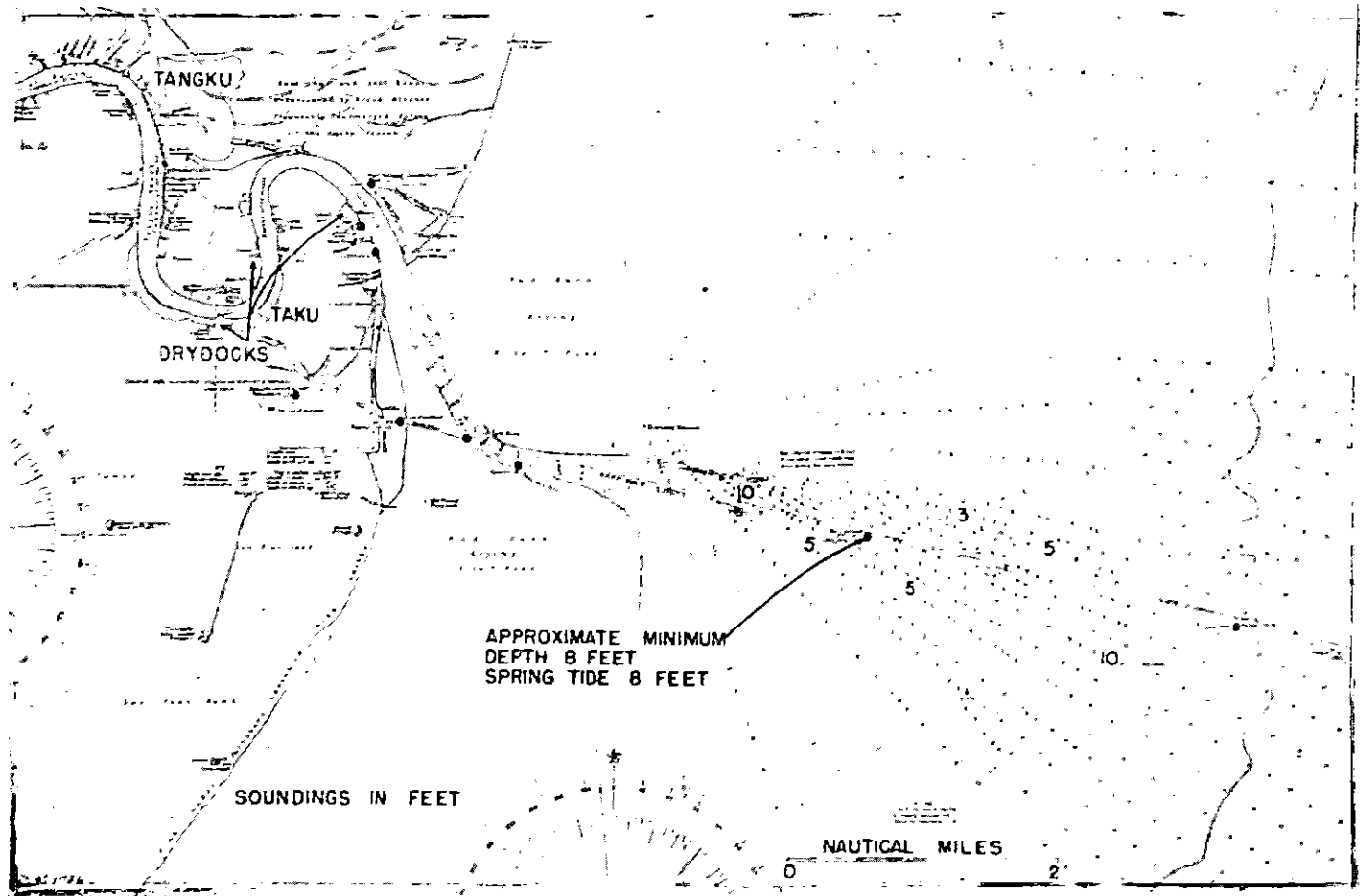
NAUTICAL MILE

0 1

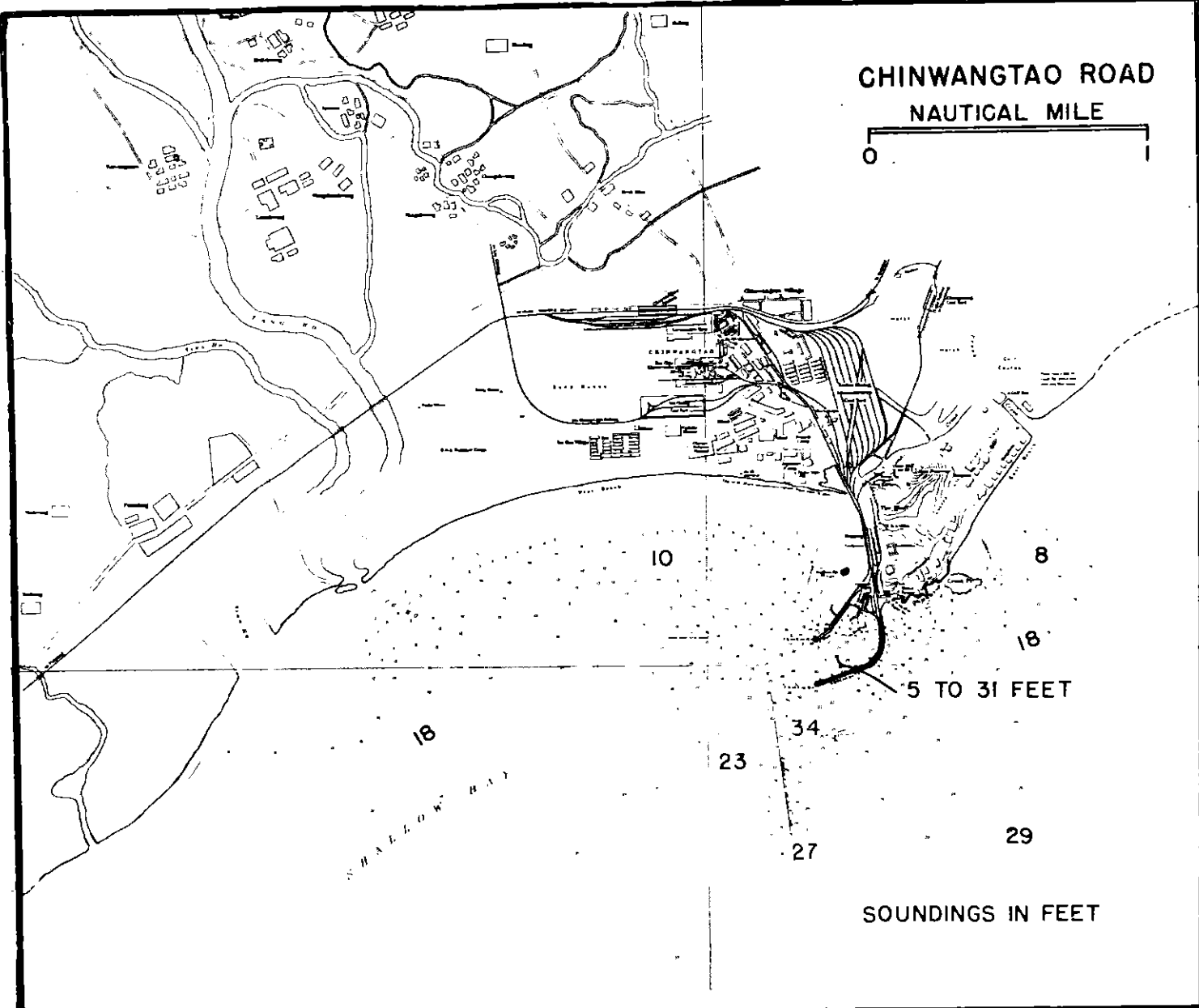






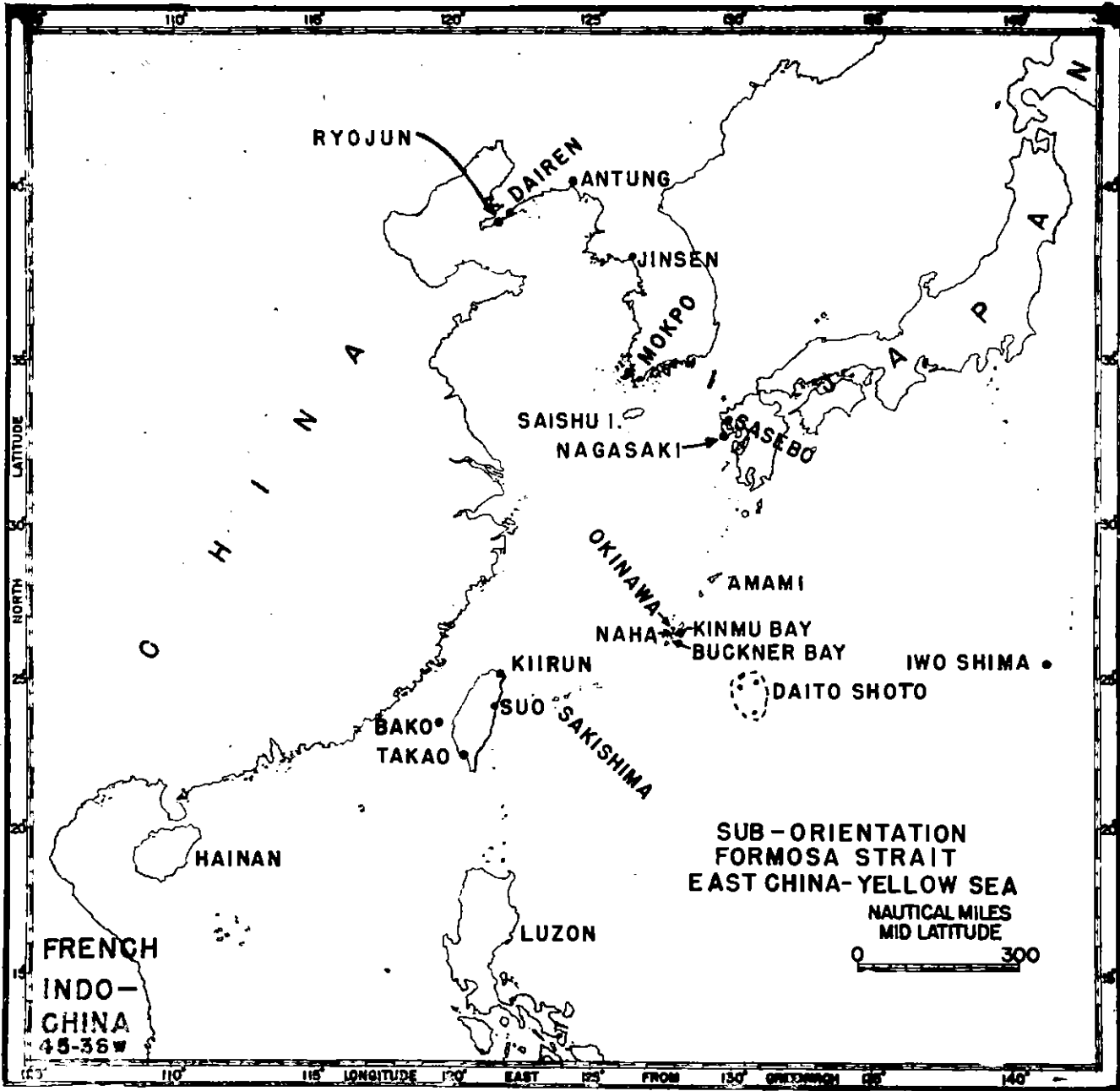


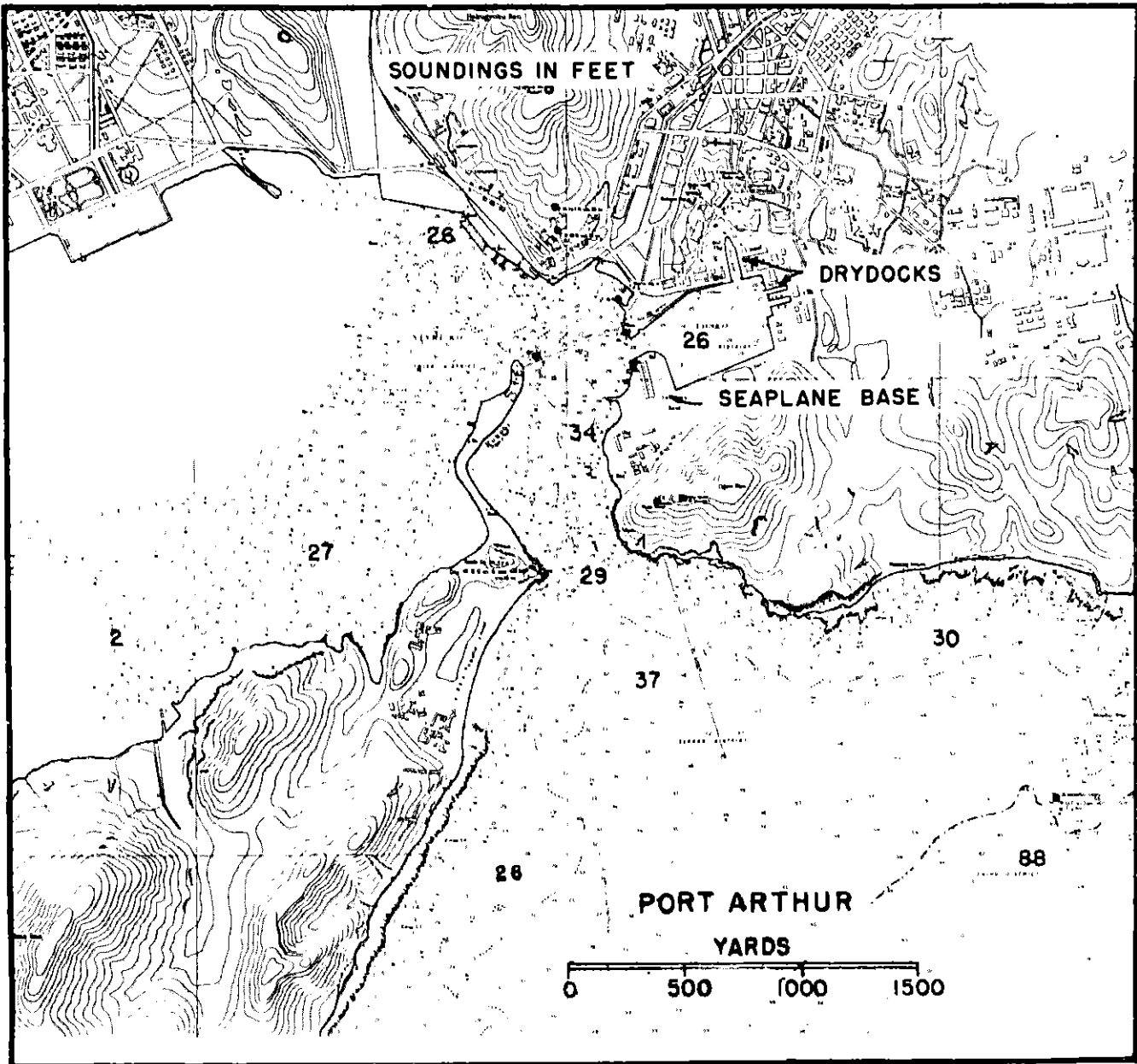
CHINWANGTAO ROAD
NAUTICAL MILE



SOUNDINGS IN FEET

CONFIDENTIAL

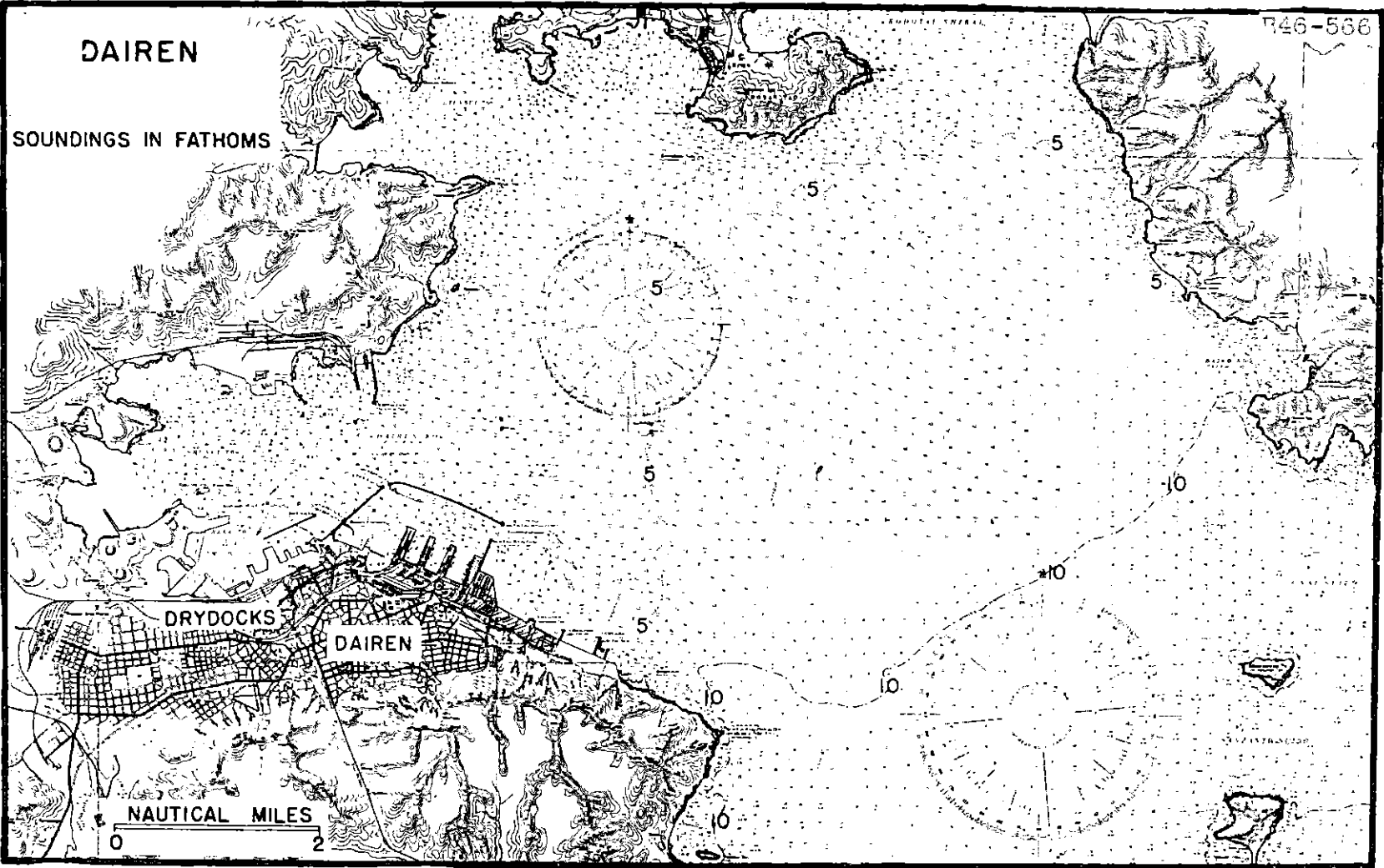




746-586

DAIREN

SOUNDINGS IN FATHOMS



30

B45-15783

NAUTICAL MILES



SOUNDINGS IN FATHOMS

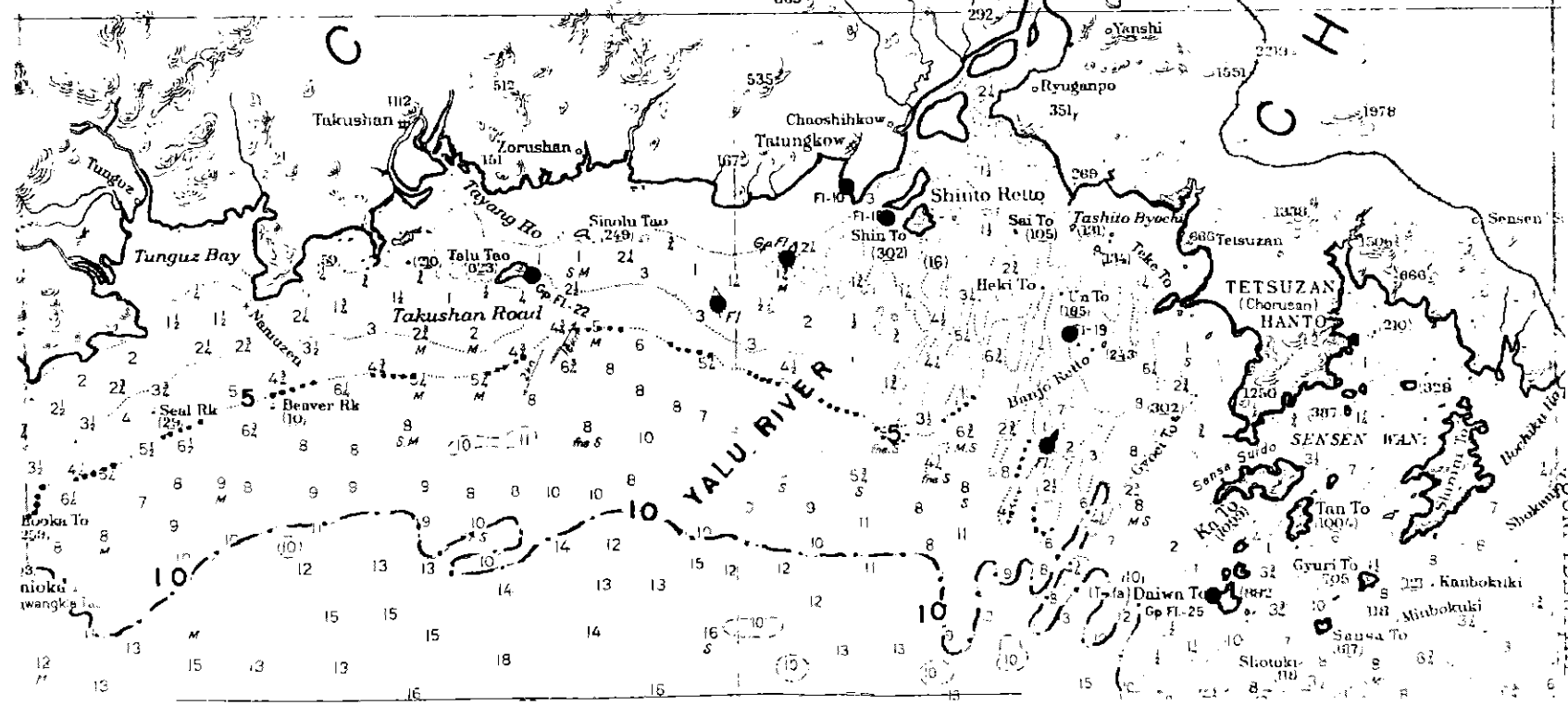


H I N A

BOUNDARY BETWEEN CHINA AND CHOSSEN (AGPEA)

ANTUNG

C H O S E N



31

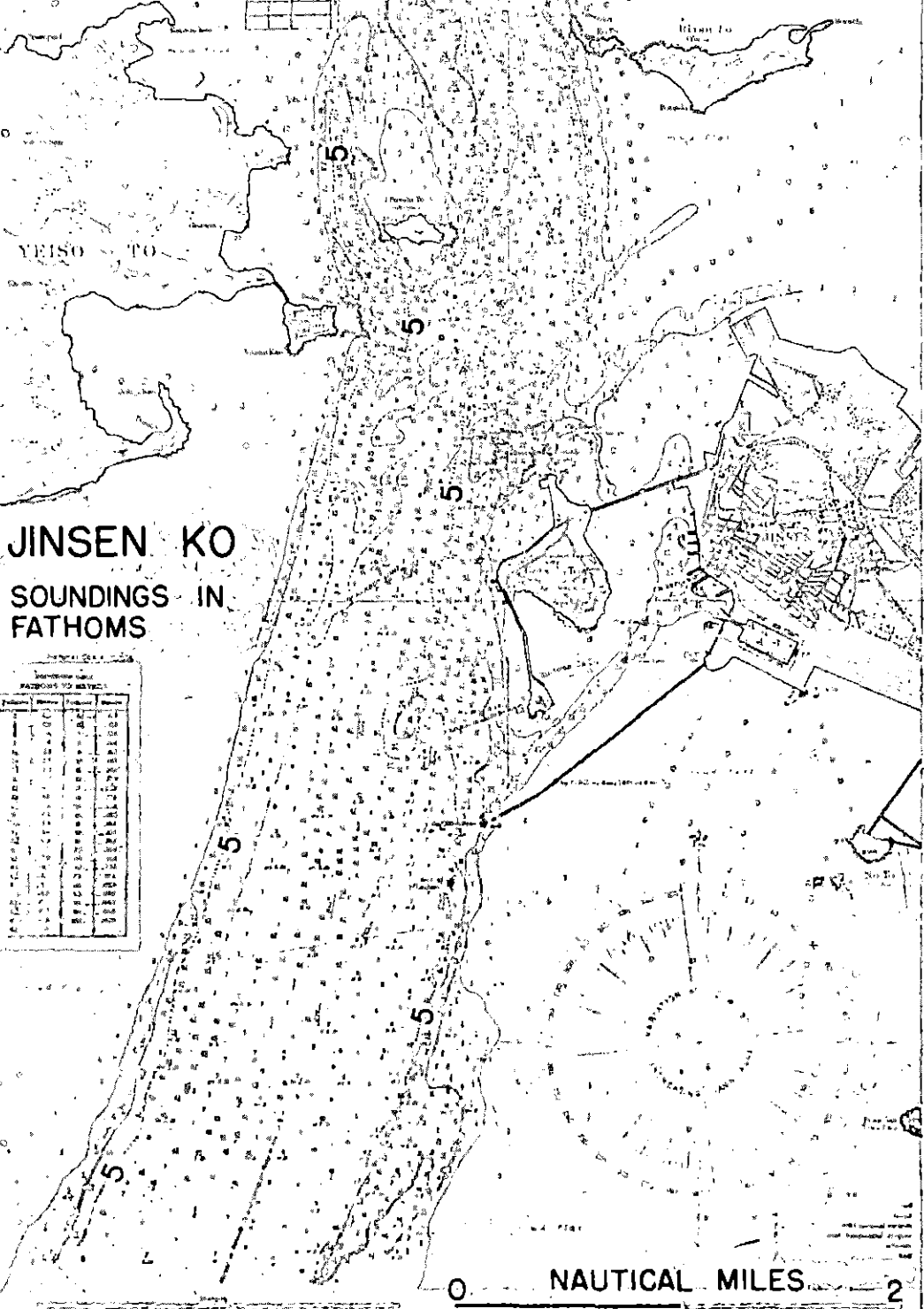
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Scale of Soundings and Contours. For information on printing in scale of soundings, see note on page 1 of this publication. Soundings are shown in fathoms unless otherwise indicated.

Contour	Color	Symbol
1	Blue	.....
2	Green	.....
3	Yellow	.....
4	Orange	.....
5	Red	.....
6	Black	.....
7	Black	.....
8	Black	.....
9	Black	.....
10	Black	.....
11	Black	.....
12	Black	.....
13	Black	.....
14	Black	.....
15	Black	.....
16	Black	.....
17	Black	.....
18	Black	.....
19	Black	.....
20	Black	.....

Symbol	Meaning
.....	Shoals
.....	Reefs
.....	Islands
.....	Breakers
.....	Light
.....	Beacon
.....	Daymark
.....	Obstruction
.....	Other



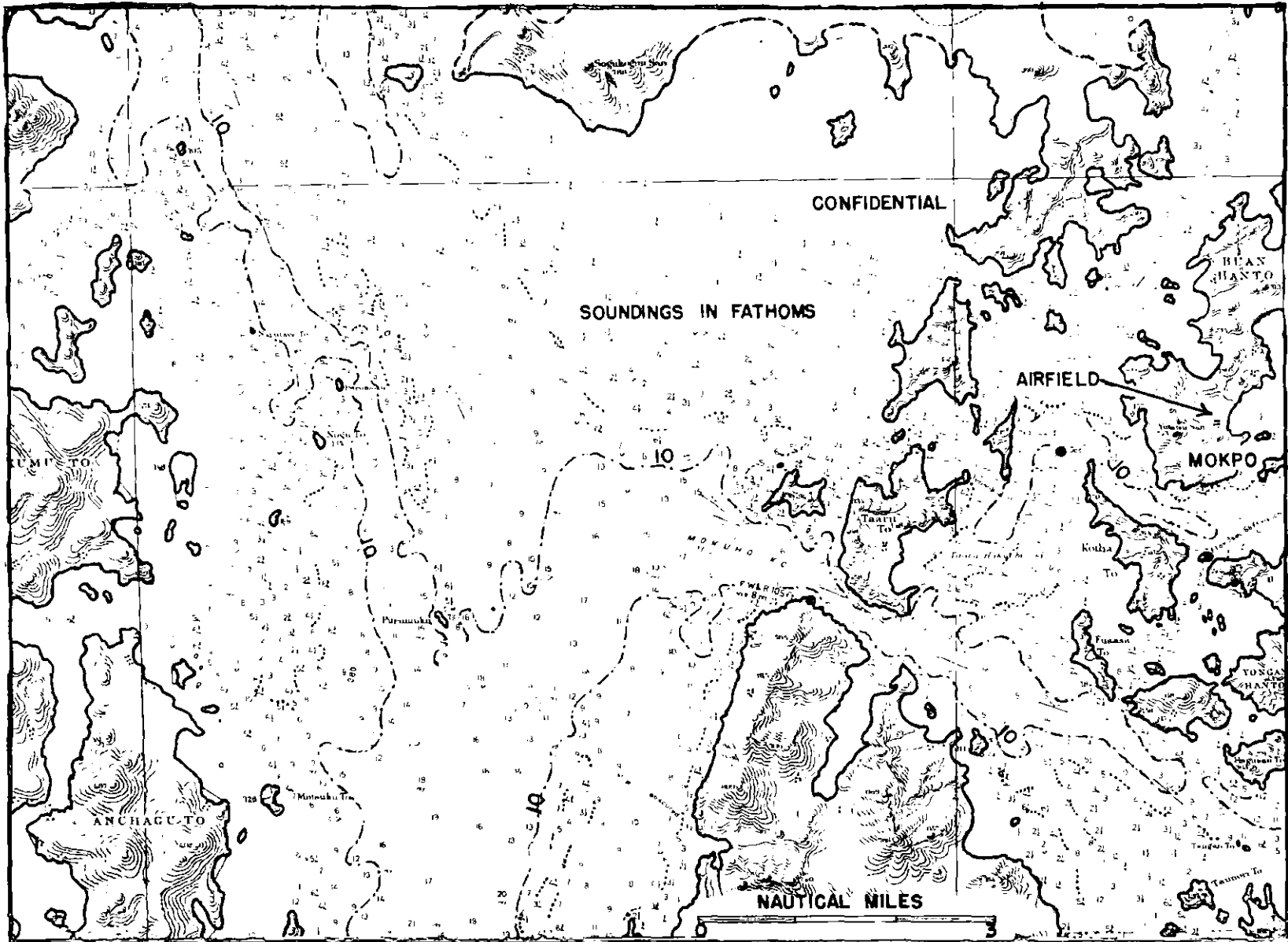
YEISO TO

JINSEN KO SOUNDINGS IN FATHOMS

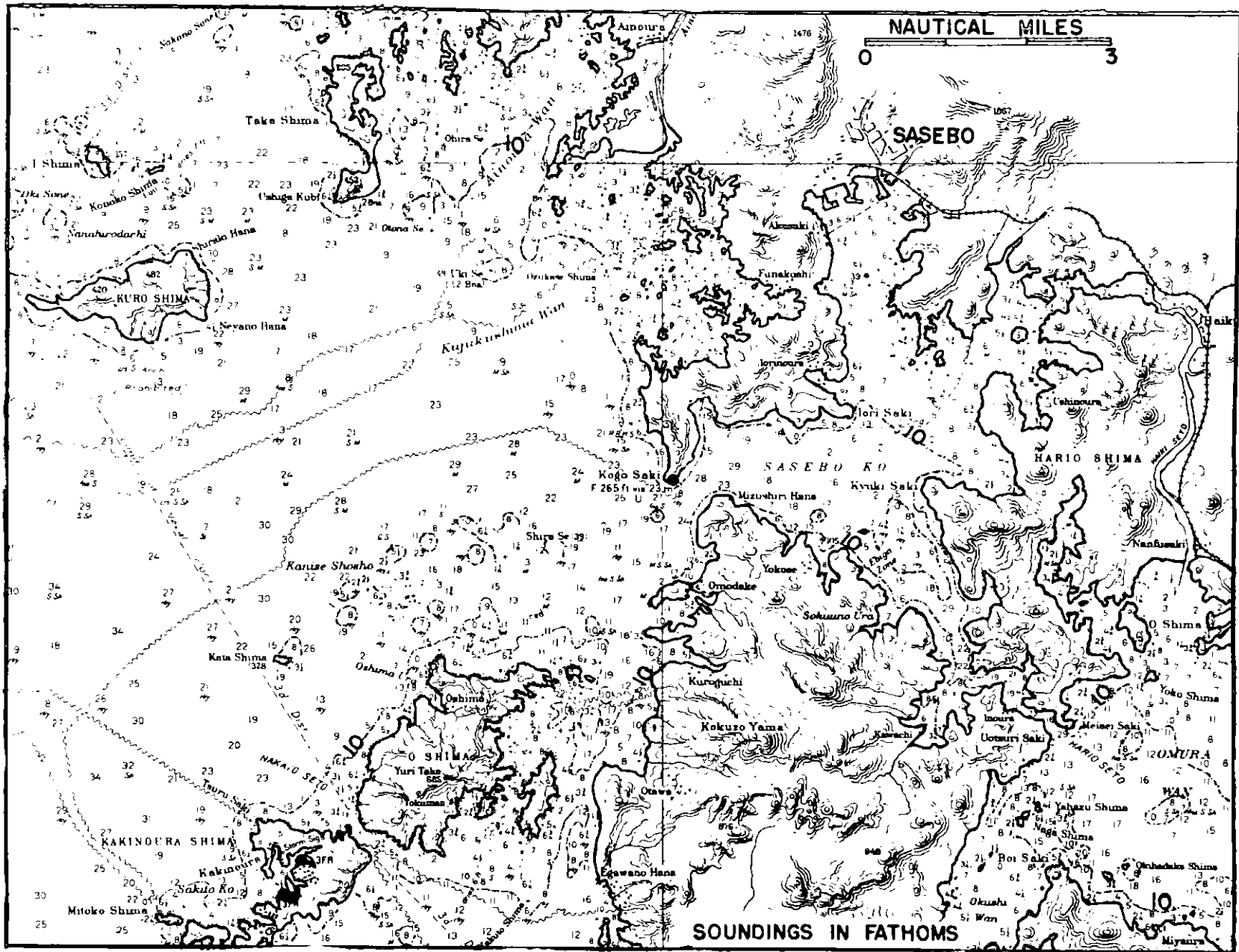
SYMBOLS FOR PATTERNS TO BE USED

Pattern	Meaning
.....	Shoals
.....	Reefs
.....	Islands
.....	Breakers
.....	Light
.....	Beacon
.....	Daymark
.....	Obstruction
.....	Other

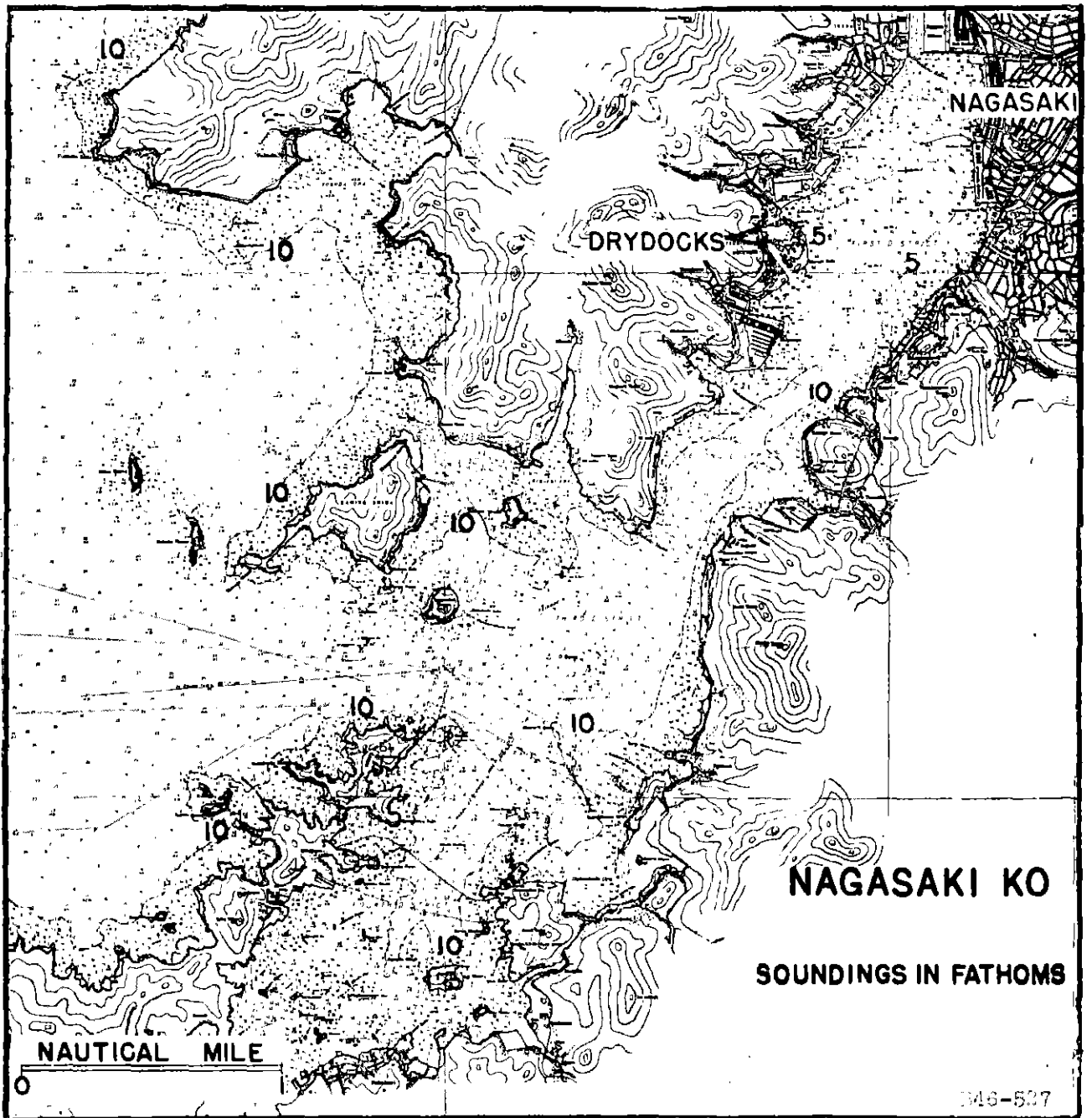
0 NAUTICAL MILES 2

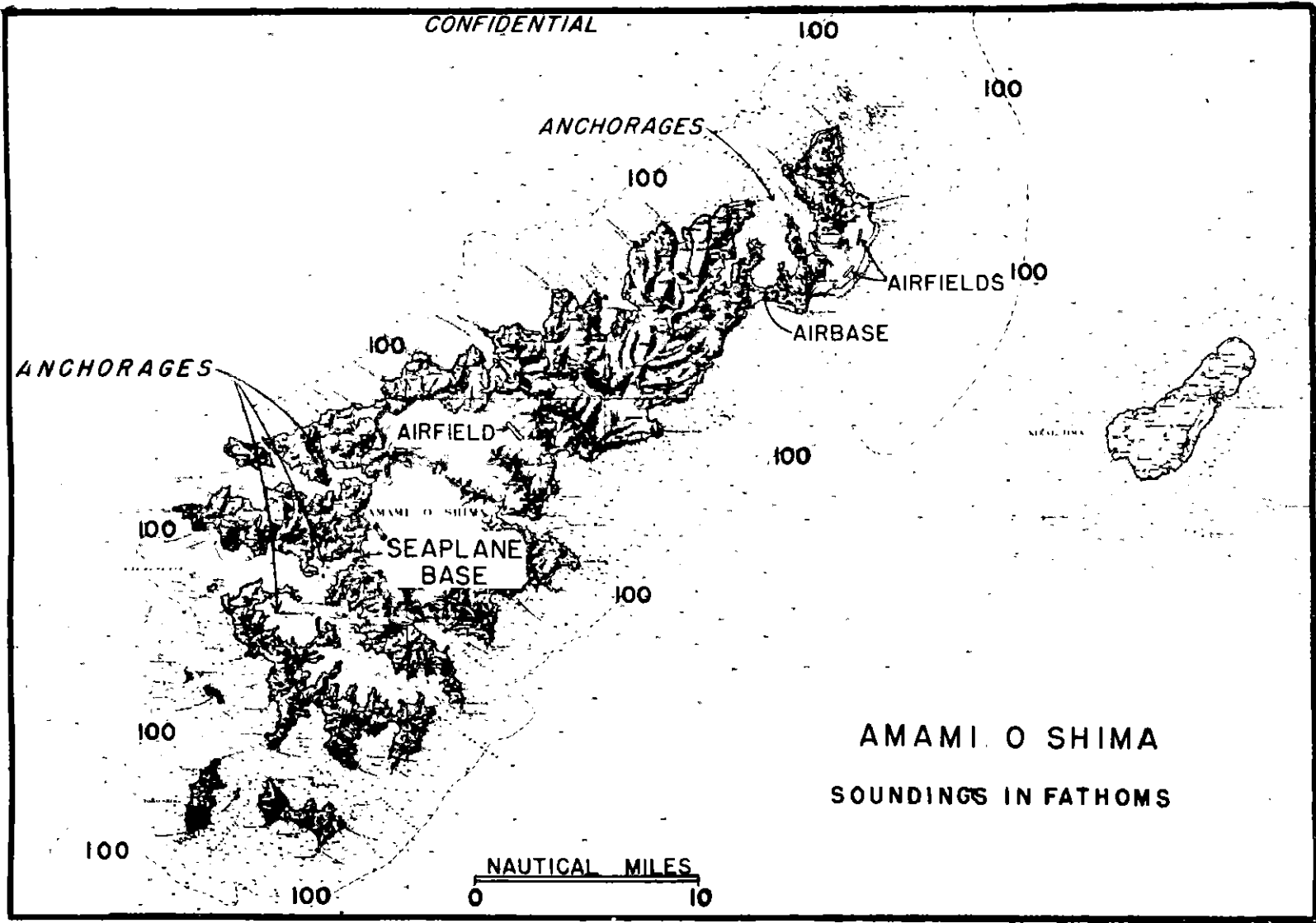


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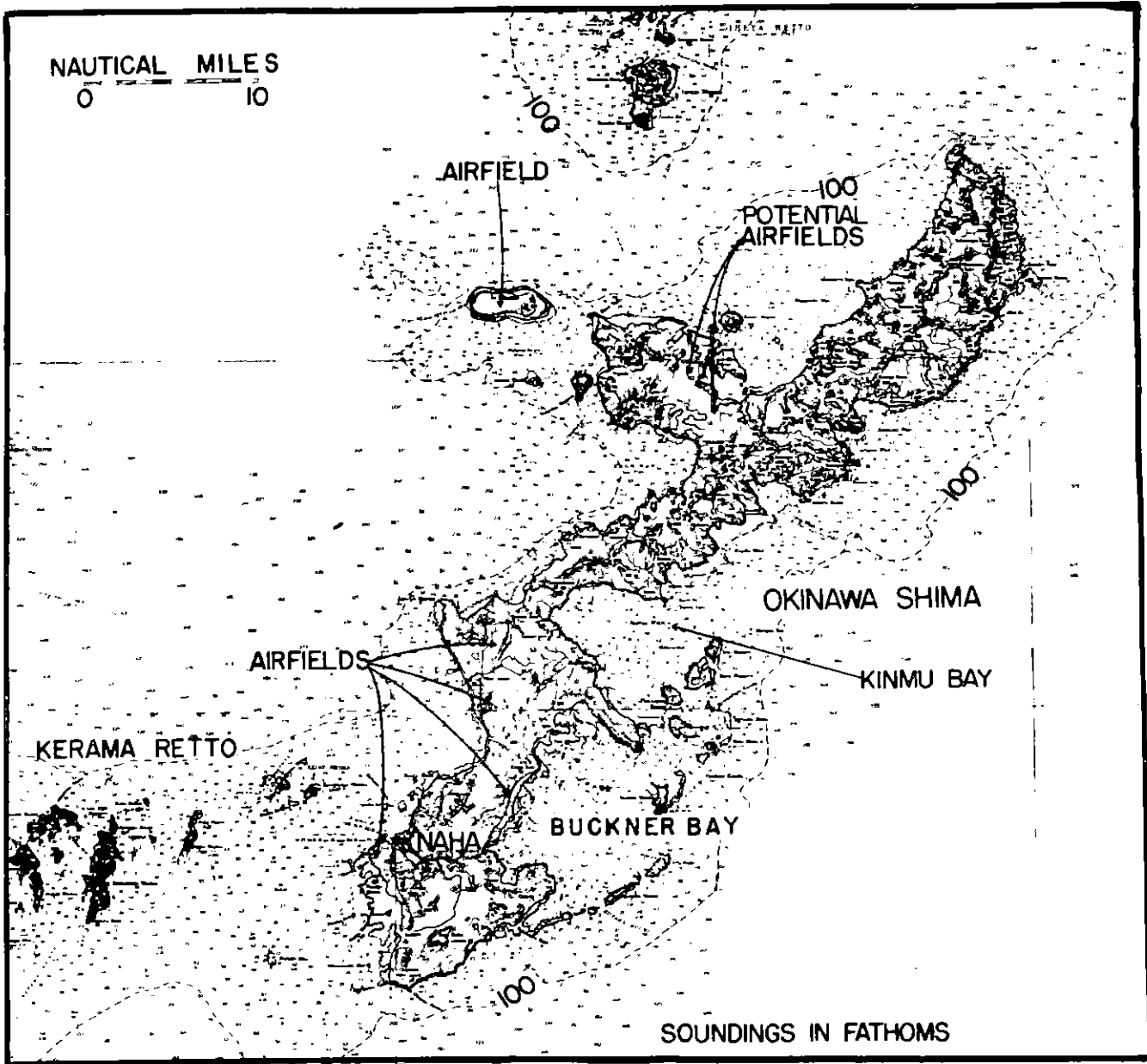


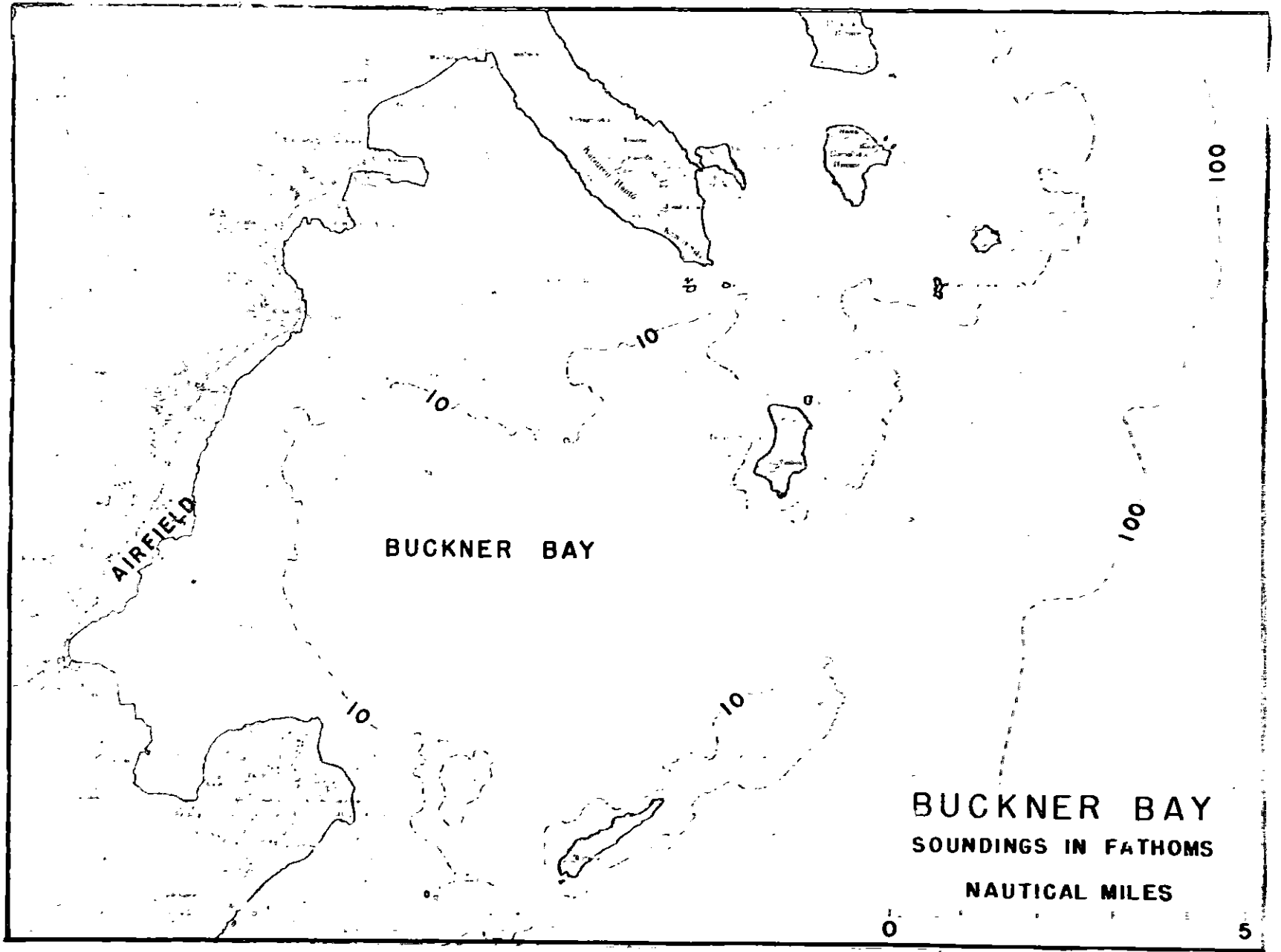


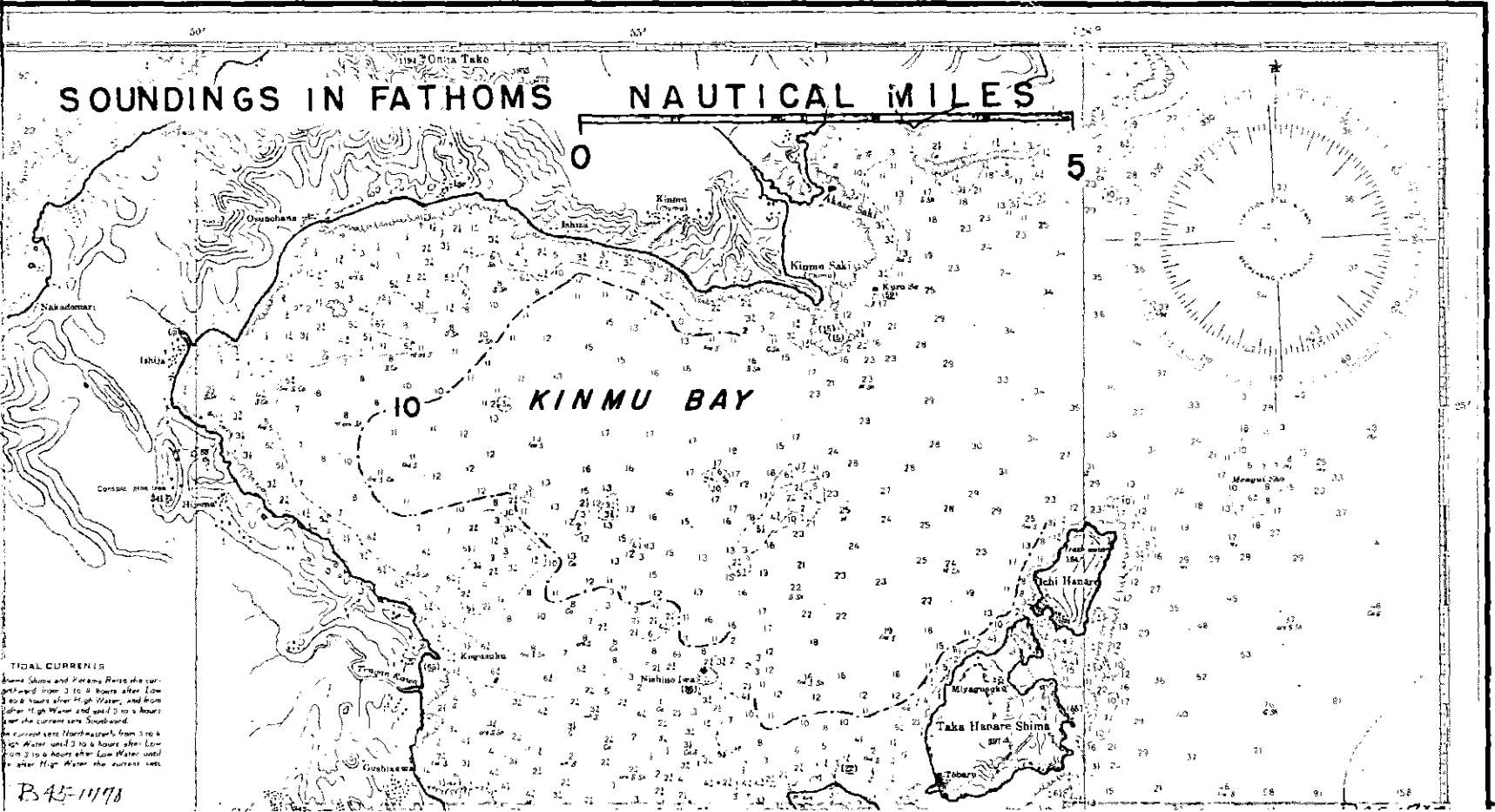
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AMAMI O SHIMA
SOUNDINGS IN FATHOMS

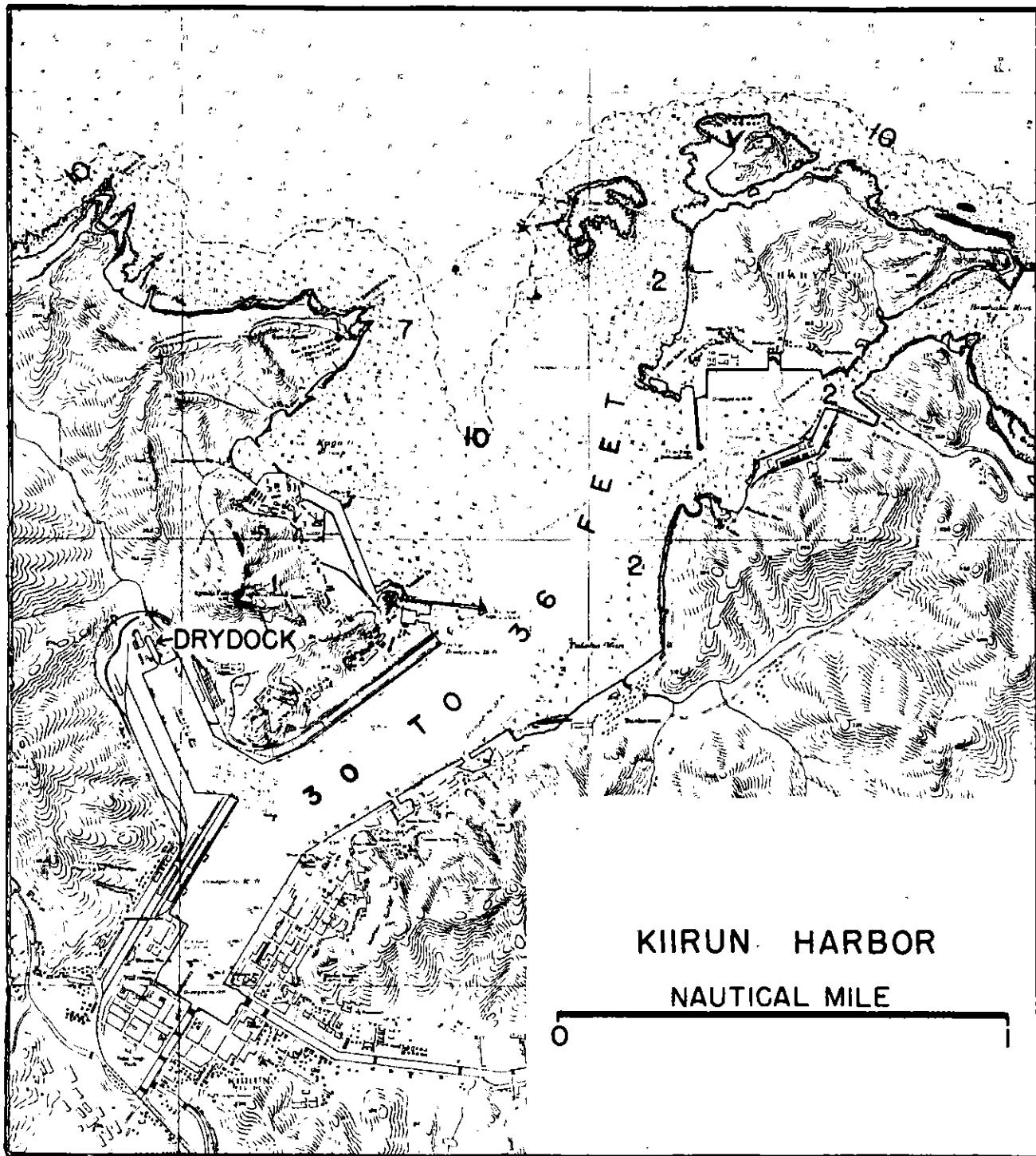
NAUTICAL MILES
0 10

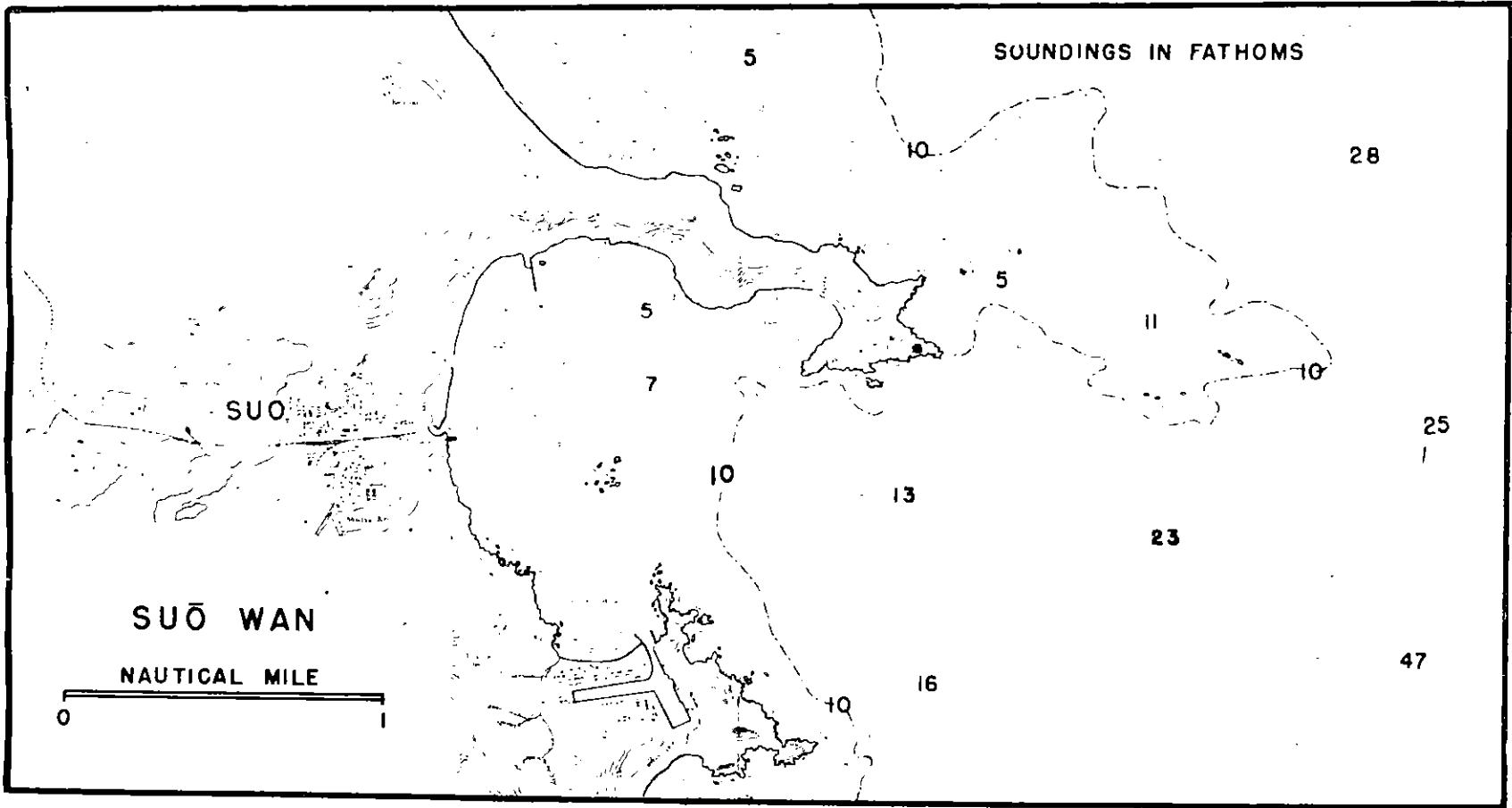






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