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# SELECTED AERIAL OBJECTIVES
## FOR
# RETALIATORY GAS ATTACK
## ON
# FORMOSA



DECEMBER 1944

PREPARED BY
CHIEF OF THE CHEMICAL WARFARE SERVICE
THE AIR CHEMICAL OFFICER
WITH THE ASSISTANCE OF
ASSISTANT CHIEF OF AIR STAFF, INTELLIGENCE
WASHINGTON, D. C.



[redacted]

CHIEF OF THE CHEMICAL WARFARE SERVICE

SECRET

# SELECTED AERIAL OBJECTIVES FOR RETALIATORY GAS ATTACK ON FORMOSA

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## FOREWORD

These target folders were prepared with the view to furnishing chemical officers in the field with suitable general chemical warfare data which can be incorporated in objective folders of permanent key and priority tactical gas targets in Formosa. The material contained herein is based on currently available intelligence which in some cases is of a fragmentary nature. Such material is subject to modification as a result of changing conditions and as more recent and complete intelligence becomes available.

The scope of these folders is limited to (1) the selection of cities in which or near which there are suitable tactical gas targets (2) a brief description of general climatic and weather conditions, of the terrain, of population and built-up areas, and of the location of important objectives, (3) the presentation of maps and photographs of the cities.

Reference is made to "Selected Aerial Objectives for Retaliatory Gas Attack on Japan", April 1944 and WD Technical Bulletin CW-12, dated 24 July 1944, "Gas Munitions Requirements Data for Army Air Forces", for material relative to general capabilities of gas munitions, force requirements, etc.

The targets discussed herein were selected from a relatively large number of potentially suitable target areas. Information concerning additional target areas can be obtained from the references listed in each folder.

These target folders have been prepared jointly by the Chief of the Chemical Warfare Service, the Air Chemical Officer and Assistant Chief of Air Staff, Intelligence.

## TARGET SELECTIONS CONSIDERED

JCS 825/4 provides for strategic and tactical retaliatory gas attacks against appropriate targets in Japan proper, including the Ryukyus and Bonins, and for tactical retaliatory gas attacks against other areas in the Pacific. For obvious reasons, the targets in this study were further limited to permanent tactical installations. Other factors involved in the selection of potential targets for retaliatory gas attacks among the cities in Formosa include:

a. The changing tactical significance to Japan of the various military installations.

b. The relatively large number of potential targets and their widely scattered locations.

c. The size of the areas populated solely by Japanese.

d. The fragmentary nature of the available information concerning appropriate targets.

In general, the cities discussed in this report contain military installations of substantial importance to the Japanese war effort. It is indicated, however, that these cities do not include a decisive aggregate of such installations, and that the neutralization of these installations would probably have only local and temporary results. Each target is currently of primary significance to Japan's war effort but the availability of nearby alternate facilities in several cases would serve to lower considerably the effectiveness of attack.

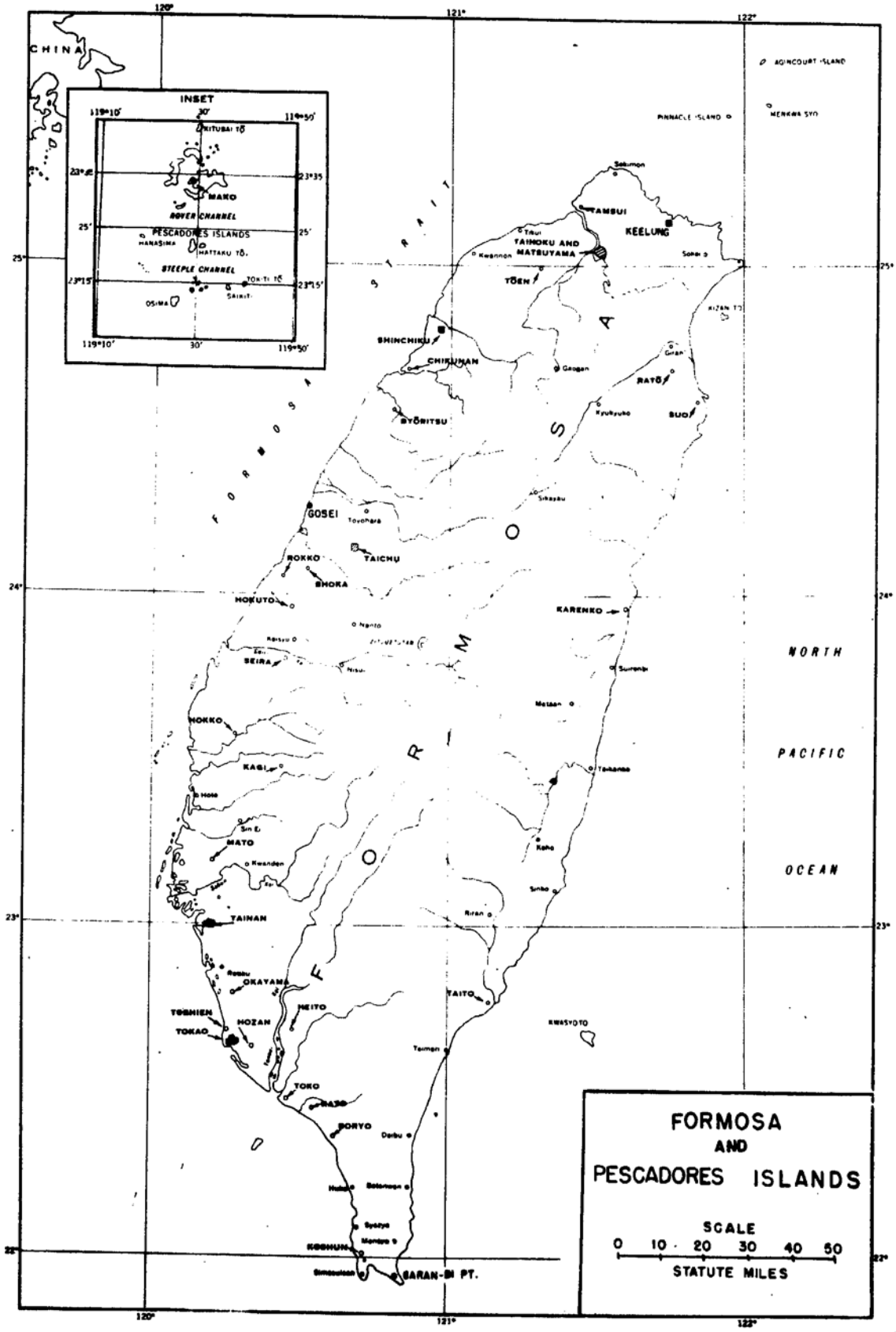
It should be noted that, without exception, important military installations in these cities are located in or adjacent to districts of sparse settlements of native populations. An attempt has been made to describe:

a. The city wide population distribution in relation to specific objectives for possible gas attack.

b. Something of the terrain in the vicinity of these targets in order that some idea will be obtained as to the difficulties that accompany the conduct of operations in these areas.

GENERAL - A EFFECT OF CLIMATE ON TARGET SELECTIONS

Weather conditions at the target are critical factors in determining the success of gas attack and the type of munitions (persistent or nonpersistent) to be used; this subject is discussed fully in Appendix A, "Selected Aerial Objectives for Retaliatory Gas Attack on Japan" dated April 1944, and will not be included herein.


CHINA
INSET
MAKO
RIVER CHANNEL
PESCADORES ISLANDS
HATTAKU TŌ.
STEEPLE CHANNEL
OSIMA
SAKIKI
TOKITI TŌ
KITUBAI TŌ
FORMOSA STRAIT
AGINCOURT ISLAND
PINNACLE ISLAND
MERKWA SYO
KEELUNG
TAMSUI
TAIHOKU AND MATSUYAMA
TŌEN
SHINCHIKU
CHIKUNAN
BYŌRITSU
RATŌ
SUO
GOSEI
TAICHU
ROKKO
SHOKA
HOKUTO
KARENKO
SEIRA
HOKKO
KAGI
MATO
TAINAN
OKAYAMA
TOSHIEN
HOZAN
TOKAO
HEITO
TAITO
KWASYOTO
TOKO
BORYO
KOSHUN
SARAN-SI PT.
FORMOSA STRAIT
NORTH PACIFIC OCEAN
FORMOSA AND PESCADORES ISLANDS
SCALE
0 10 20 30 40 50
STATUTE MILES

GENERAL - B GENERAL CLIMATIC DESCRIPTION

1. Formosa, which is bounded on all sides by warm tropical seas, possesses a climate which is essentially maritime during all seasons; characterized by mild to warm temperatures and moderate to heavy precipitation. In winter, the air flow over the islands is controlled almost exclusively by the great Asiatic anti-cyclone. From October through March the winds over east Asia blow clockwise out of a region of high pressure toward the continent and the resulting air flow over Formosa is predominately (about 87% of the time) from the east and northeast (the northeast monsoon); it is relatively warm and moist.

2. During the early part of the northeast monsoon season, the upper winds over Formosa are northeasterly up to a level lying between 6,000 - 12,000 feet, but this level lowers steadily and in April the northeast current is not more than 2,000 feet thick. Above the northeasterly current the wind becomes westerly. Average wind velocities increase gradually up to 18,000 feet where they average 22 m.p.h. From this level they decrease up to the elevation at which the westerly wind sets in, at approximately 10,000 feet; velocities in the westerly current average approximately 30 m.p.h.

3. During April and May there is a reversal of prevailing air flow from northeast to the quadrant between southwest and southeast; the Asiatic anti-cyclone is replaced by low pressure and Formosa comes under the influence of the clockwise circulation around the Pacific anti-cyclone. This summer flow (southwest monsoon) is not a persistent phenomenon as is the northeast flow of winter. The air during this period is very warm and moist and when heated over land areas during day time, convectional showers and thunder showers result. The southwest monsoon is usually fully established by the beginning of June.

During the southwest monsoon season, the upper winds from 2,400 feet to 10,000 feet are from south to west; above 10,000 feet easterly winds are prevalent. Wind velocities have only a slight tendency to increase with the elevation during the summer months and below 10,000 feet varies between 9 - 20 m.p.h.

During spring and autumn air flows alternate between the east and northeast to southwest to southeast.

The topography of Formosa has a pronounced effect on the local weather. The ridge of mountains trending north-northeast to south-southwest the entire length of the island exerts a powerful influence on the local air flow. As the prevailing northeast or southwest current of air moves up the windward slopes of the mountains, condensation and precipitation occur. The air moving down the leeward slopes is, however, dry and warm. Thus, the north and east slopes of Formosa are cloudy and rainy in winter, while the western slopes have relatively little cloud, and are warmer than the eastern slopes. Conversely, during the southwest monsoon, in summer, the maximum cloudiness and rainfall occur on the western and southern slopes. Along the coasts on both sides of the island December and January have a greater number of days with wind velocities greater than 22 m.p.h. than any other months of the year.

The high precipitation in certain seasons of the year, associated with the warm climate, mean humidities of approximately 80% and low wind speeds results in low rate of evaporation. Experiments indicate that mustard vapor is very effective under such conditions.

Icing conditions constitute a hazard for low level air operations over Formosa only during the colder months under adverse conditions. At these times, the flying level will drop below the higher portions of the mountain range (7,000 - 10,000 feet), particularly over the northern portion of the island. During winter, the upper air temperature over Formosa decreases up to the upper limit of the northeast monsoon current, above which level they either increase with elevation or decrease at a slower rate, icing conditions are not likely to be encountered except when the top of the clouds layer is around 10,000 feet. Icing can always be avoided, however, by flying at low levels.

Below is a table (based on extrapolation of surface temperatures at a lapse rate of 0.6° C. per 100 meters) of the average height (in feet of freezing temperatures over the island:

| | Dec - Mar | April | May | June | Jul-Sep | Oct | Nov |
|---|---|---|---|---|---|---|---|
| Northern Formosa | 7,000 - 8,000 | 10,000 | 12,000 | 13,000 | 13,500 | 11,400 | 9,200 |
| Southern Formosa | 10,000 | 12,000 | 12,500 | 13,500 | 14,000 | 12,000 | 11,000 |

Low cloudiness and low ceilings over Formosa show considerable seasonal as well as aerial variations. In general, days with low cloudiness and low ceilings occur most frequently on the north and northeast coasts and decreases in number southward and westward. With respect to the seasons, the low cloudiness and low ceilings are most frequent on the north and east portions of the island during the winter months while during summer, they are most frequent over the interior mountains and south and southwestern slopes.

As a whole, the lower coastal portions are quite free from fog and other visibility producing factors. Occasionally during the winter, when rain has not fallen on the western slopes for a considerable period dust storms are produced over the western plains region at a time when winter monsoon blows with considerable force. The period of fog over the lowlands, extends from October through March but this is a matter of little concern because of the infrequency of the phenomenon. At higher elevations above 2,000 to 3,000 feet, fog is relatively more frequent.

It is impossible to present data on turbulence data on Formosa because no satisfactory method has been devised for presenting turbulence as a climatic factor other than in qualitative sense. Turbulence at the higher level of atmosphere is almost entirely a function of the degree of convective activity. Turbulence in the lower level of the atmosphere is governed by (1) surface wind speed and roughness of surface and (2) degree of superheating of the soil surface.

GENERAL-6

## TAIHOKU--TANSUI DISTRICT

Easterly winds prevail in the Taihoku-Tansui district during the winter months. These dry winds descend the central mountain range. During June, July and August the direction of the wind is variable but predominantly they are from the east, southeast, west and northwest; from March through May the winds are predominantly from the east and the northeast; from September through November from the east and northeast.

Table I

Surface Wind Frequencies (%)

| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | An. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 3 | 3 | 4 | 5 | 5 | 5 | 6 | 5 | 4 | 2 | 2 | 2 | |
| NE | 16 | 15 | 16 | 17 | 16 | 9 | 9 | 12 | 22 | 22 | 21 | 20 | |
| E | 52 | 49 | 46 | 44 | 39 | 24 | 21 | 25 | 37 | 56 | 61 | 58 | |
| SE | 4 | 5 | 4 | 5 | 9 | 12 | 15 | 16 | 11 | 7 | 4 | 4 | |
| S | 3 | 4 | 3 | 3 | 5 | 8 | 10 | 10 | 7 | 3 | 2 | 2 | |
| SW | 4 | 4 | 4 | 3 | 4 | 9 | 11 | 8 | 4 | 2 | 2 | 2 | |
| W | 5 | 5 | 6 | 6 | 7 | 16 | 13 | 10 | 4 | 2 | 2 | 3 | |
| NW | 8 | 10 | 12 | 12 | 9 | 10 | 10 | 10 | 7 | 3 | 3 | 5 | |
| Calm | 5 | 5 | 5 | 5 | 6 | 7 | 5 | 4 | 4 | 3 | 3 | 4 | |

Table II

Mean Wind Speed (mph)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 7 | 8 | 7 | 7 | 5 | 6 | 7 | 7 | 8 | 9 | 8 | 7 |

Mean relative humidity is rather uniform throughout the year and varies between 77 - 78% in the summer months to 84% in the winter months.

Table III

Mean Relative Humidity

| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec | An. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent | 84 | 84 | 84 | 83 | 82 | 81 | 77 | 78 | 80 | 81 | 81 | 83 | 82 |

A higher number of clear and partly clear days occur in the summer time than at any other time. This phenomenon is despite the fact that the summer months constitute the rainy season in this portion of Formosa.

Table IV

Average Number Clear, Partly Clear and Cloudy Days

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear Day(0.00-0.19) | 2 | 2 | 1 | 1 | 2 | 1 | 3 | 4 | 6 | 4 | 3 | 2 |
| Partly Cloudy (0.20-0.79) | 9 | 7 | 9 | 11 | 13 | 15 | 20 | 18 | 15 | 13 | 10 | 10 |
| Cloudy (0.80-1.00) | 20 | 19 | 21 | 18 | 16 | 14 | 8 | 9 | 9 | 14 | 17 | 19 |

SECRET

Fog occurs very rarely in this area but the greatest number of days occur in the winter time.

Table V-FOG

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | An |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Days | 2 | 2 | 2 | 1 | 1 | 1 | * | * | * | 1 | 1 | 1 | 12 |

*Less than 1/2 day.

Summer is the wet season and during this period the rain falls in rather heavy showers which occur on about half the days of each month.

Table VI

Precipitation

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | An |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Days with (0.004 in.) | 16 | 17 | 17 | 15 | 16 | 15 | 14 | 15 | 14 | 15 | 15 | 16 | 186 |
| Mean precipitation in. | 3.4 | 5.3 | 6.7 | 6.4 | 8.9 | 11.1 | 8.3 | 11.8 | 10.2 | 5.3 | 2.7 | 3.0 | 83.1 |

Freezing temperatures occur rarely in this area. On the whole the temperature is uniform and usually varies from a mean minimum of 53° F in February to a mean maximum of 92° in July.

Table VII

Temperature °F

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | An. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Extreme Max. | 86 | 87 | 91 | 95 | 98 | 99 | 101 | 99 | 97 | 95 | 91 | 88 | 101 |
| Extreme Min. | 37 | 32 | 40 | 46 | 50 | 60 | 57 | 66 | 56 | 51 | 34 | 35 | 32 |

The best method of approaching Taihoku is over the Taihoku landing beach and through the Taihoku-Tansui corridor. For this reason, it is believed pertinent to present the data on the precipitation in the Taihoku landing beach area and this data is contained in the table below:

Table VIII

Rainfall for Tansui Landing Beach

| | An. | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max in. per day | 9.91 | 2.55 | 2.96 | 3.27 | 5.06 | 9.91 | 7.32 | 5.91 | 7.43 | 9.45 | 6.06 | 3.15 | 2. |
| Av. No. rainy days | 165.6 | 16.5 | 16.2 | 18.5 | 12.7 | 12.7 | 10.9 | 8.5 | 10.0 | 10.6 | 12.7 | 14.9 | 16. |

Summer is the most favorable for low level bombing operations whereas autumn is the most favorable for high visual bombing operations. Although chemical warfare can, in general, be conducted effectively throughout the year, summer is the most favorable season.

GENERAL D TAKAO - HOZAN - HEITO

In this area, the north and northeast winds prevail during the winter season. They are dry winds which have crossed the central mountain ranges. The winds during the summer time are variable but are predominantly from the southwest and south. From March to May the winds generally predominate from north to northwest, and from September to November, from the north to northwest.

Table I

Surface Wind Frequencies (%)

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sept | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 67 | 68 | 56 | 44 | 28 | 8 | 8 | 10 | 24 | 42 | 61 | 73 | |
| NE | 13 | 11 | 11 | 11 | 9 | 5 | 7 | 6 | 11 | 13 | 12 | 10 | |
| E | 2 | 1 | 3 | 4 | 7 | 12 | 14 | 14 | 14 | 5 | 2 | 1 | |
| SE | 1 | 2 | 3 | 4 | 10 | 24 | 20 | 21 | 11 | 4 | 1 | 1 | |
| S | 1 | 1 | 3 | 5 | 7 | 20 | 15 | 12 | 6 | 2 | 1 | 0 | |
| SW | 1 | 1 | 4 | 6 | 10 | 15 | 13 | 12 | 6 | 3 | 1 | 0 | |
| W | 2 | 2 | 5 | 9 | 13 | 9 | 11 | 11 | 11 | 8 | 3 | 2 | |
| NW | 12 | 13 | 14 | 14 | 12 | 5 | 9 | 10 | 13 | 18 | 16 | 12 | |
| Calm | 1 | 1 | 1 | 3 | 4 | 2 | 3 | 4 | 4 | 5 | 3 | 1 | |

Table II

Mean Wind Speed (mph)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 9 | 8 | 7 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 8 | 7 | |

During the northeast monsoon there are a greater number of clear days and partly cloudy days than the rest of the year. During months of the northeast monsoon there is an average per month of 5 to 8 clear and of 15 to 17 partly cloudy days.

Table III

Mean Number Clear, Partly Cloudy and Cloudy Days

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear Day (0.00-0.19) | 6 | 5 | 5 | 5 | 5 | 2 | 2 | 2 | 4 | 8 | 7 | 7 | |
| Partly Cloudy (0.20-0.79) | 16 | 17 | 16 | 17 | 15 | 17 | 19 | 16 | 20 | 16 | 16 | 15 | |
| Cloudy (0.80-1.00) | 8 | 8 | 9 | 8 | 10 | 11 | 9 | 12 | 6 | 6 | 7 | 8 | |

The relative humidity is generally higher in summer than in winter.

Table IV

Mean Relative Humidity

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 73 | 73 | 74 | 75 | 77 | 81 | 82 | 83 | 88 | 77 | 75 | 74 | 77 |

S E C R E T

Fog is very rare in this region but occurs more frequently in the winter than any other time of the year.

FOG

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Days | 2 | 2 | 2 | 1 | * | * | * | * | * | 1 | 1 | 1 | 10 |

*Less than 1/2 day.

Summer has the wettest months of the year; winter the dryest. More than 5 inches of rainfall is reeeived during each summer month; this precipitation results from rather heavy showers which occur on about half the days of each month.

Table VI

Precipitation

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Days with (0.004 in) | 3.6 | 3.6 | 4.9 | 5.6 | 9.6 | 12.9 | 14.6 | 17.8 | 10.0 | 4.0 | 2.5 | 2.9 | 91.7 |
| Mean (in) | 0.7 | 0.7 | 1.4 | 1.8 | 6.4 | 11.8 | 13.5 | 16.3 | 5.6 | 1.8 | 0.9 | 0.3 | 61.1 |

Freezing temperatures are rare in this area; the winters are rather mild.

Table VII.

Temperature °F

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Extreme Max. | 90 | 90 | 96 | 94 | 95 | 95 | 98 | 98 | 98 | 94 | 95 | 90 | 98 |
| Extreme Min. | 37 | 36 | 42 | 53 | 58 | 66 | 70 | 70 | 60 | 55 | 37 | 40 | 36 |

Autumn is the most favorable season for all type bombing operations. It is also the most favorable season for conducting chemical warfare. However, in general, it is feasible to conduct gas warfare throughout the balance of the year.

GENERAL - E

TAINAN - OKAYAMA

Northerly winds predominate in this area during the winter season. During the summer, the winds are predominantly from the southeast and south. In the spring and autumn of the year, the winds are predominantly from the north and northwest, with a greater variation during the autumn.

Table I

Surface Wind Frequencies(%)

| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 67 | 68 | 56 | 44 | 28 | 8 | 8 | 10 | 24 | 42 | 61 | 73 |
| NE | 13 | 11 | 11 | 11 | 9 | 5 | 7 | 6 | 11 | 13 | 12 | 10 |
| E | 2 | 1 | 3 | 4 | 7 | 12 | 14 | 14 | 14 | 5 | 2 | 1 |
| SE | 1 | 2 | 3 | 4 | 10 | 24 | 20 | 21 | 11 | 4 | 1 | 1 |
| S | 1 | 1 | 3 | 5 | 7 | 20 | 15 | 12 | 6 | 2 | 1 | 1 |
| SW | 1 | 1 | 4 | 6 | 10 | 15 | 13 | 12 | 6 | 3 | 1 | 0 |
| W | 2 | 2 | 5 | 9 | 13 | 9 | 11 | 11 | 11 | 8 | 3 | 2 |
| NW | 12 | 13 | 14 | 14 | 12 | 5 | 9 | 10 | 13 | 18 | 16 | 12 |
| Calm | 1 | 1 | 1 | 3 | 4 | 2 | 3 | 4 | 4 | 5 | 3 | 1 |

Table II

Mean Wind Speed (m.p.h.)

| Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 9 | 8 | 7 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 8 | 7 |

January and February have a greater average number of days which have wind velocities in excess of 22 m.p.h. than any other months.

There are a greater number of clear and partly cloudy days during the winter time than during the summer.

Table III

Average Number Clear, Partly Clear and Cloudy Days

| | Jan | Feb | Mar | Apr | May | Jun | July | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear Day (0.00-0.19) | 6 | 5 | 5 | 5 | 5 | 2 | 2 | 2 | 4 | 8 | 7 | 7 |
| Partly Cloudy (0.20-0.79) | 17 | 18 | 17 | 18 | 16 | 18 | 20 | 17 | 21 | 17 | 17 | 15 |
| Cloudy (0.80-1.00) | 8 | 8 | 9 | 8 | 10 | 11 | 9 | 12 | 6 | 6 | 7 | 8 |

Fog is rare but is more frequent in the winter than any other time of the year.

Table IV

Fog (No. of Days)

| Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 2 | 2 | 1 | * | * | * | * | * | 1 | 1 | 1 | 10 |

*Less than 1/2 day.

In general the humidity is rarely uniform and the mean humidity varies from 77° in November to 84° in August.

Table V

Mean Relative Humidity (%)

| Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 78 | 79 | 79 | 78 | 80 | 83 | 82 | 84 | 81 | 78 | 77 | 78 | 80 |

Winter is the dry season in this area; summer is the wet. Rain falls in rather heavy showers which occur on about half the days of each month.

Table VI

Precipitation

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Days with (0.004 in). | 5 | 6 | 6 | 8 | 10 | 15 | 16 | 19 | 11 | 5 | 4 | 4 | 107 |
| Mean precipitation in. | 0.9 | 1.5 | 1.6 | 2.5 | 7.4 | 13.5 | 12.7 | 16.8 | 6.5 | 1.4 | 0.7 | 0.5 | 66.1 |

Freezing temperatures in this area are very rare, and, in general, the winters are very mild with mean daily temperatures of 62° F. - 65° F.

Table VII

Temperature °F

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Extreme Max. | 90 | 90 | 96 | 94 | 96 | 95 | 98 | 98 | 98 | 94 | 95 | 90 | 98 |
| Extreme Min. | 37 | 36 | 42 | 53 | 58 | 66 | 70 | 70 | 60 | 55 | 37 | 40 | 36 |

Autumn is the most favorable for all types of air operations; it also is the most feasible season for conducting chemical warfare. However, in general, gas warfare can be effectively conducted throughout the remainder of the season.

GENERAL F — KEELUNG - (KIIRUNG) FORMOSA

Northeasterly and northerly winds prevail at Keelung during the winter time; during the summer months, the winds are variable but predominantly southwesterly and southerly. These winds are dry winds. In the spring and autumn, the winds are predominantly northeasterly, northerly and easterly.

Table I

Surface Wind Frequencies (%)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 25 | 27 | 24 | 22 | 13 | 10 | 8 | 9 | 15 | 15 | 19 | 21 | |
| NE | 30 | 28 | 24 | 22 | 21 | 12 | 8 | 10 | 20 | 39 | 37 | 35 | |
| E | 16 | 13 | 14 | 16 | 20 | 16 | 16 | 19 | 23 | 23 | 23 | 19 | |
| SE | 4 | 5 | 5 | 6 | 8 | 9 | 13 | 13 | 11 | 6 | 6 | 5 | |
| S | 7 | 6 | 8 | 10 | 13 | 17 | 19 | 17 | 11 | 6 | 5 | 6 | |
| SW | 8 | 9 | 9 | 9 | 12 | 22 | 23 | 19 | 9 | 4 | 4 | 6 | |
| W | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 3 | 2 | 1 | 1 | 1 | |
| NW | 6 | 8 | 11 | 8 | 6 | 6 | 5 | 6 | 5 | 3 | 3 | 5 | |
| Calm | 1 | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 2 | 2 | |

Table II

Mean Wind Speed (m.p.h.)

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 9 | 7 | 6 | 6 | 7 | 7 | 8 | 9 | 10 | 10 | 8 |

July, August and September have the greatest average number of clear and partly cloudy days. These months have a minimum of 5 - 6 clear and 14 - 18 cloudy days.

Table III

Average No. Clear, partly clear and cloudy days

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear Day (0.00-0.19 cloud cover. | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 6 | 5 | 5 | 2 | 1 | 1 |
| Partly cloudy(0.20-0.79)cloud cover | 8 | 5 | 7 | 10 | 11 | 14 | 17 | 18 | 14 | 12 | 6 | 6 | |
| Cloudy (0.90-1.00) Cloud cover) | 22 | 22 | 23 | 19 | 18 | 14 | 8 | 8 | 11 | 17 | 23 | 24 | |

Fog is very rare in this area but occurs most frequently during January, February and March.

Table IV

Fog

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Days | 1 | 1 | 2 | 1 | * | * | 0 | 0 | 0 | * | * | * | 5 |

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Mean relative humidity is rather uniform in this area and ranges from a minimum of 82% in July to a maximum of 88% during the month of March.

Table V

Mean Relative Humidity(%)

| Jan | Feb | Mar | Apr | May | Jun | July | Aug | Sept | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 85 | 85 | 88 | 87 | 86 | 84 | 82 | 84 | 84 | 83 | 83 | 84 | 84 |

Summer is the dry season in this area; winter, the wet. The rain falls in small amounts on a high percentage of days giving little opportunity for the drying out of the soil and equipment.

Table VI

Precipitation

| | Jan | Feb | Mar | Apr | May | Jun | July | Aug | Sept | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear - No. days with 0.004 in. | 22 | 21 | 23 | 19 | 19 | 14 | 11 | 14 | 17 | 20 | 22 | 23 | 224 |
| Mean amt. in. | 13.9 | 11.4 | 13.9 | 7.6 | 12.1 | 8.7 | 5.8 | 6.9 | 10.9 | 10.9 | 13.0 | 15.4 | 130.4 |

In fourteen years the lowest reported temperature is 43° F. and the highest, 98°F. Actually these extreme temperatures occur rarely and the temperature is rather uniform and varies from a mean daily maximum of 89° in July to a mean daily minimum of 55° in February.

Table VII

Temperature °F

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Extreme Maximum | 83 | 81 | 85 | 88 | 92 | 97 | 97 | 98 | 95 | 90 | 87 | 82 | 98 |
| Extreme Minimum | 46 | 43 | 46 | 49 | 58 | 64 | 71 | 71 | 60 | 58 | 49 | 47 | 43 |

Autumn is the most favorable for all type air operations. Summer is the most favorable season for chemical warfare operations, in general, they can be conducted effectively during the remainder of the year.

SECRET

GENERAL-"G" KAGI

Northerly winds prevail at Kagi during the winter; variable winds prevail during the summer but they are predominantly southeasterly and southerly. During the spring and autumn the winds are predominantly northerly and northwesterly. December and January have a greater average number of days with wind velocities greater than 22 m.p.h. than any other months.

Table I

Surface Wind Frequencies (%)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 67 | 68 | 55 | 44 | 28 | 8 | 8 | 10 | 24 | 42 | 61 | 73 | |
| NE | 13 | 11 | 11 | 11 | 9 | 5 | 7 | 6 | 11 | 13 | 12 | 10 | |
| E | 2 | 1 | 3 | 4 | 7 | 12 | 14 | 14 | 14 | 5 | 2 | 1 | |
| SE | 1 | 2 | 3 | 4 | 10 | 24 | 20 | 21 | 11 | 4 | 1 | 1 | |
| S | 1 | 1 | 3 | 5 | 7 | 20 | 15 | 12 | 6 | 2 | 1 | 1 | |
| SW | 1 | 1 | 4 | 6 | 10 | 15 | 13 | 12 | 6 | 3 | 1 | 0 | |
| W | 2 | 2 | 5 | 9 | 13 | 9 | 11 | 11 | 11 | 8 | 3 | 2 | |
| NW | 12 | 13 | 14 | 14 | 12 | 5 | 9 | 10 | 13 | 18 | 16 | 12 | |
| Calm | 1 | 1 | 1 | 3 | 4 | 2 | 3 | 4 | 4 | 5 | 3 | 1 | |

Table II

Mean Wind Speed (m.p.h.)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 9 | 8 | 7 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 8 | 7 |

During the northeast monsoon there are a greater number of clear and partly cloudy days than during the southwest monsoon period.

The relative humidity is rather uniform throughout the year and is about 80%.

Fog is rare in this area but most frequent during the winter months.

Table III

Fog

| Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 2 | 2 | 1 | * | * | * | * | * | 1 | 1 | 1 | 10 |

*Less than 1/2 day.

Winter in this area is the dry season; summer the wet. Over 14" of rain falls during each summer month. This heavy precipitation results from heavy showers which occur on about half the days of each month.

Table IV

Precipitation

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Days with(0.004 in.) | 5.3 | 4.3 | 7.4 | 6.7 | 10.3 | 13.9 | 16.9 | 17.7 | 11.0 | 4.1 | 2.9 | 3.3 | 103.9 |
| Mean Precipitation (in.) | 1.2 | 1.1 | 2.3 | 3.4 | 7.2 | 14.1 | 16.5 | 17.0 | 8.6 | 1.4 | 0.9 | 0.6 | 74.2 |

SECRET

Freezing temperatures occur very rarely in this area and usually the winters are very mild. The mean daily minimum temperatures vary from 55° F during the winter to about 75° F in the summer; the mean daily maximum temperature varies from about 74° F in the winter to about 89° F in the summer.

Autumn is the most favorable season for all types air operations. Chemical warfare operations, in general, can be conducted effectively throughout the year; autumn is the most favorable season.

Freezing temperatures occur very rarely in this area and usually the winters are very mild. The mean daily minimum temperatures vary from 55° F during the winter to about 75° F in the summer; the mean daily maximum temperature varies from about 74° F in the winter to about 89° F in the summer.

Autumn is the most favorable season for all types air operations. Chemical warfare operations, in general, can be conducted effectively throughout the year; autumn is the most favorable season.

SECRET

GENERAL - H TAICHU-GOSEI-TOYOHARA

From October through March the prevailing winds in this area are from the north. These winds are dry. During the months of June, July and August the winds are variable but predorinate from the south and southwest. During April, May, and September the winds are predominantly from the north and northwest. The winter months have a greater average number of days with a wind velocity in excess of 22 mph than at any other time during the year. This average number of days, however, rarely exceeds 5 days in any one of these months.

Table I

Surface Wind Frequencies (%)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 56 | 58 | 50 | 38 | 25 | 11 | 11 | 11 | 30 | 50 | 54 | 61 | |
| NE | 9 | 7 | 6 | 6 | 5 | 3 | 4 | 6 | 8 | 9 | 12 | 10 | |
| E | 3 | 2 | 2 | 3 | 4 | 4 | 6 | 7 | 7 | 3 | 2 | 2 | |
| SE | 1 | 1 | 1 | 2 | 5 | 9 | 9 | 10 | 5 | 1 | 1 | 1 | |
| S | 1 | 1 | 3 | 6 | 10 | 24 | 21 | 18 | 7 | 2 | 1 | 1 | |
| SW | 2 | 2 | 3 | 5 | 9 | 17 | 13 | 12 | 5 | 3 | 1 | 1 | |
| W | 3 | 3 | 6 | 9 | 10 | 9 | 10 | 9 | 7 | 5 | 3 | 2 | |
| NW | 8 | 10 | 13 | 13 | 13 | 7 | 10 | 11 | 13 | 10 | 9 | 5 | |
| Calm | 17 | 16 | 16 | 17 | 19 | 16 | 16 | 16 | 18 | 17 | 17 | 16 | |

Table II

Mean Wind Speed (m.p.h.)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 5 | 5 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | |

From September through February there are from 5 - 9 clear and from 12 to 20 partly cloudy days.

Table III

Average Number Clear, Partly Clear and Cloudy Days

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear Day (0.00-0.19) | 6 | 5 | 3 | 2 | 2 | 2 | 2 | 2 | 5 | 9 | 9 | 8 |
| Partly Cloudy (0.20-0.79) | 15 | 12 | 15 | 16 | 16 | 16 | 20 | 19 | 20 | 16 | 14 | 16 |
| Cloudy (0.80 - 1.00) | 10 | 11 | 13 | 12 | 13 | 12 | 9 | 10 | 5 | 6 | 7 | 7 |

The mean relative humidity is rather uniform and is approximately 80%. Fog is rather rare in this area and occurs most frequently during the winter. Winter is the dry season, summer is the wet season and the rain falls in rather heavy showers on about one half the days of each month.

Table IV

Precipitation

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. days with (0.004 in.) | 8 | 10 | 12 | 11 | 13 | 16 | 15 | 18 | 9 | 4 | 5 | 7 | 128 |
| Mean Precipitation (in) | 1.4 | 2.6 | 3.9 | 5.1 | 9.5 | 13.4 | 10.5 | 12.9 | 6.2 | 1.0 | 0.8 | 0.9 | 68.1 |

Freezing temperatures occur rarely in this area. There have been a few instances of the temperature going over 100° in the summer time. In general, the temperatures in the area are moderate.

Table V

Temperature °F -

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Extreme Max. | 88 | 88 | 91 | 92 | 95 | 98 | 98 | 103 | 96 | 96 | 92 | 89 | 103 |
| Extreme Min. | 35 | 30 | 41 | 50 | 51 | 62 | 59 | 58 | 58 | 53 | 35 | 35 | 30 |

Summer is the most favorable season for low level bombing operations; autumn, for high level bombing operations. Autumn is the season most favorable for chemical warfare operations; in general, they can be conducted effectively during the remainder of the year.

GENERAL - I SHINCHIKU

Northerly winds prevail at Shinchiku from November through March; there is approximately 16% to 17% of calm during this period. During June, July and August winds are variable but predominantly southerly and southwesterly with about 16% calm. During April, May, September and October the winds are highly variable, but predominantly with about 17 - 19% calm.

Table 1. -- Summary Weather Conditions, Surface Wind Frequencies (%)

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 56 | 58 | 50 | 38 | 25 | 11 | 11 | 11 | 30 | 50 | 54 | 61 |
| NE | 9 | 7 | 6 | 6 | 5 | 3 | 4 | 6 | 8 | 9 | 12 | 10 |
| E | 3 | 2 | 2 | 3 | 4 | 4 | 6 | 7 | 7 | 3 | 2 | 2 |
| SE | 1 | 1 | 1 | 2 | 5 | 9 | 9 | 10 | 5 | 1 | 1 | 1 |
| S | 1 | 1 | 3 | 6 | 10 | 24 | 21 | 18 | 7 | 2 | 1 | 1 |
| SW | 2 | 2 | 3 | 6 | 9 | 17 | 13 | 12 | 5 | 3 | 1 | 1 |
| W | 3 | 3 | 6 | 9 | 10 | 9 | 10 | 9 | 7 | 5 | 3 | 2 |
| NW | 8 | 10 | 13 | 13 | 13 | 7 | 10 | 11 | 13 | 10 | 9 | 6 |
| Calm | 17 | 16 | 16 | 17 | 19 | 16 | 16 | 16 | 18 | 17 | 17 | 16 |

Table 2. -- Mean Wind Speed (m.p.h.)

| An | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5 | 5 | 5 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 |

The amount of cloudiness is much greater in summer than in winter. From October through February there is a mean average of 5 to 9 clear and 12 to 16 partly cloudy days.

Table 3. -- Average Number Clear, Partly Clear and Cloudy Days

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear Day (0.00-0.19) | 6 | 5 | 3 | 2 | 2 | 2 | 2 | 2 | 5 | 9 | 9 | 8 |
| Partly Cloudy (0.20-0.79) | 15 | 12 | 15 | 16 | 16 | 16 | 20 | 19 | 20 | 16 | 14 | 16 |
| Cloudy (0.80-1.00) | 10 | 11 | 13 | 12 | 13 | 12 | 9 | 10 | 5 | 6 | 7 | 7 |

The mean relative humidity is rather uniform in this area throughout the year and averages about 80%. Fog is rare and occurs most frequently from November through March.

Autumn is the driest season of the year; spring, the wettest. The rain falls in rather heavy showers which occur on about 1/3 the days of every month.

Table 4. -- Precipitation

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | An |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. days with (0.004 in.) | 6.9 | 9.3 | 13.6 | 9.8 | 9.6 | 7.7 | 7.0 | 7.9 | 5.3 | 3.4 | 4.7 | 6.0 | 93.2 |
| Mean Precipitation (in.) | 2.9 | 4.7 | 6.1 | 5.2 | 6.7 | 5.2 | 4.9 | 5.9 | 4.0 | 1.8 | 1.6 | 1.8 | 52.6 |

Freezing temperatures are rare in this area and when such periods do occur they are of short duration.

Autumn is the season most favorable for all type of air operations. It is also the most favorable season for the conduct of chemical warfare operations; in general they can be conducted effectively during the remainder of the year.

SECRET

TOKO

GENERAL - J

Northerly winds predominate at Toko from November through March; these are dry winds. Winds are variable during the months of June, July and August but predominantly they are southeasterly, southerly and southwesterly. During April, May, September and October the winds are predominantly northerly and northwesterly.

Table 1. -- Surface Wind Frequencies (%)

| | An | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | | 67 | 66 | 56 | 44 | 28 | 8 | 8 | 10 | 24 | 42 | 61 | 73 |
| NE | | 13 | 11 | 11 | 11 | 9 | 5 | 7 | 6 | 11 | 13 | 12 | 10 |
| E | | 2 | 1 | 3 | 4 | 7 | 12 | 14 | 14 | 14 | 5 | 2 | 1 |
| SE | | 1 | 2 | 3 | 4 | 10 | 24 | 20 | 21 | 11 | 4 | 1 | 1 |
| S | | 1 | 1 | 3 | 5 | 7 | 20 | 15 | 12 | 6 | 2 | 1 | 0 |
| SW | | 1 | 1 | 4 | 6 | 10 | 15 | 13 | 12 | 6 | 3 | 1 | 0 |
| W | | 2 | 2 | 5 | 9 | 13 | 9 | 11 | 11 | 11 | 8 | 3 | 2 |
| NW | | 12 | 13 | 14 | 14 | 12 | 5 | 9 | 10 | 13 | 18 | 16 | 12 |
| Calm | | 1 | 1 | 1 | 3 | 4 | 2 | 3 | 4 | 4 | 5 | 3 | 1 |

Table 2. -- Mean Wind Speed (m.p.h.)

| An | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sept | Oct | Nov | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 9 | 9 | 8 | 7 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 8 |

Amount of cloudiness is much greater during the summer than at any other time of the year; there is a mean monthly average of from 5 to 7 clear and 15 to 17 partly cloudy days during the northeast monsoon.

Table 3. -- Mean Number Clear, Partly Cloudy and Cloudy Days

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear Day (0.00-0.19) | 6 | 5 | 5 | 5 | 5 | 2 | 2 | 2 | 4 | 8 | 7 | 7 |
| Partly Cloudy (0.20-0.79) | 16 | 17 | 16 | 17 | 15 | 17 | 19 | 16 | 20 | 16 | 16 | 15 |
| Cloudy (0.80-1.00) | 8 | 8 | 9 | 8 | 10 | 11 | 9 | 12 | 6 | 6 | 7 | 8 |

The mean relative humidity is uniform throughout the year and varies from about 73 to 86%. Fog is rare in this area but occurs more frequently in months of January, February and March.

At Toko winter is the dry season; summer, the wet. The rain falls during the summer months in rather heavy showers which occur on about half the days of each month.

Table 4. -- Precipitation

| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Days with Precipitation (0.004 in.) | 3.5 | 3.1 | 4.8 | 4.5 | 9.3 | 12.1 | 17.1 | 16.1 | 13.2 | 6.4 | 3.3 | 2.6 | 98.0 |
| Mean Precipitation (in) | 0.9 | 0.9 | 1.7 | 2.2 | 6.2 | 13.0 | 19.4 | 16.7 | 7.5 | 2.7 | 1.0 | 0.4 | 74.2 |

Freezing temperatures rarely occur in this area and when they do they are of short duration. In general, the temperatures are moderate.

Autumn is the most favorable season for all type of air operations and for chemical warfare operations; in general, both can be conducted effectively during the remainder of the year.

SECRET

GENERAL - K KARENKO

Winds in Karenko are variable throughout the year but are predominantly from the north and northeast during the winter months and from the south and southwest during the summer months. There are a greater number of land and sea breezes in the summer than at any other time of the year.

Table 1. -- Surface Wind Frequencies (%)

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 21 | 22 | 31 | 21 | 23 | 14 | 8 | 8 | 18 | 26 | 26 | 21 | |
| NE | 30 | 27 | 22 | 18 | 21 | 13 | 6 | 9 | 17 | 28 | 26 | 33 | |
| E | 4 | 4 | 5 | 6 | 7 | 10 | 14 | 11 | 8 | 5 | 4 | 2 | |
| SE | 1 | 4 | 5 | 11 | 6 | 14 | 16 | 13 | 6 | 2 | 3 | 2 | |
| S | 2 | 4 | 4 | 8 | 4 | 6 | 9 | 8 | 12 | 3 | 3 | 3 | |
| SW | 10 | 11 | 9 | 11 | 8 | 14 | 17 | 19 | 13 | 10 | 16 | 16 | |
| W | 21 | 16 | 14 | 19 | 16 | 17 | 18 | 19 | 15 | 15 | 13 | 11 | |
| NW | 9 | 11 | 10 | 5 | 12 | 10 | 10 | 12 | 10 | 11 | 9 | 9 | |
| Calm | 2 | 1 | 0 | 1 | 3 | 2 | 2 | 1 | 1 | 0 | 0 | 1 | |

Table 2 - Mean Wind Speed (m.p.h.)

| Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 6 | 6 | 5 | 4 | 4 | 5 | 4 | 5 | 6 | 6 | 6 | 5 |

December and January have a greater average number of days with a wind velocity in excess of 22 m.p.h. than any other months of the year. The amount of cloudiness is greater during the winter than in summer. From June through August there is a mean average of 1 to 4 clear and 13 to 16 partly cloudy days.

Table 3. -- Average Number Clear, Partly Clear and Cloudy Days

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear (0.00-0.19) | 0 | 0 | 0 | 1 | 1 | 1 | 4 | 2 | 1 | 1 | 1 | 0 | |
| Partly Cloudy (0.20-0.79) | 5 | 4 | 7 | 6 | 9 | 13 | 16 | 16 | 14 | 12 | 9 | 9 | |
| Cloudy (0.80-1.00) | 26 | 24 | 24 | 23 | 21 | 16 | 11 | 13 | 15 | 18 | 20 | 22 | |

Mean relative humidity varies from about 76% during October, November and December to 84% in May and June. A record has been kept of the weather conditions at this station for about three years and during this period no foggy days have been recorded.

Table 4. -- Mean Relative Humidity

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 78 | 81 | 80 | 82 | 84 | 84 | 81 | 82 | 80 | 76 | 76 | 76 | 80 |

At Karenko winter is the dry season, summer, the wet. The frequency of precipitation during the first six months of the year is greater than the last of the year.

Table 5. -- Precipitation

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. days with (0.004 in.) | 20 | 20 | 19 | 20 | 22 | 19 | 12 | 14 | 17 | 13 | 15 | 15 | 204 |
| Mean Precipitation in. | 2.3 | 4.6 | 4.1 | 7.7 | 10.7 | 7.0 | 10.6 | 8.7 | 12.8 | 8.7 | 3.3 | 2.2 | 826 |

Eight years temperatures have been recorded at this station. The minimum temperature recorded is 44° F whereas the mean daily minimum temperature during this same period is 58° F. In general, the diurnal temperature range is greater in winter than in summer.

Table 6. -- Temperature °F.

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Extreme Max. | 85 | 82 | 84 | 87 | 92 | 92 | 94 | 95 | 94 | 89 | 85 | 83 | 95 |
| Extreme Min. | 49 | 48 | 51 | 54 | 60 | 64 | 69 | 69 | 65 | 54 | 47 | 44 | 44 |

Summer is the best season for all types of air operations, whereas autumn is the most favorable for chemical warfare. Generally, however, chemical warfare operations can be conducted effectively during the remainder of the year.

GENERAL - L. MAKO

From September through May prevailing winds at Mako are from the northeast and the north. From June through August prevailing winds are from south and southwest.

Table 1. -- Surface Wind Frequencies (%)

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 28 | 30 | 24 | 24 | 24 | 9 | 12 | 14 | 30 | 31 | 34 | 31 | |
| NE | 68 | 64 | 60 | 49 | 34 | 15 | 7 | 9 | 38 | 61 | 65 | 68 | |
| E | 1 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | |
| SE | 0 | 1 | 1 | 3 | 2 | 7 | 7 | 8 | 3 | 1 | 0 | 0 | |
| S | 1 | 1 | 4 | 8 | 15 | 38 | 31 | 23 | 8 | 2 | 0 | 0 | |
| SW | 1 | 1 | 4 | 6 | 12 | 22 | 25 | 24 | 6 | 1 | 0 | 0 | |
| W | 0 | 0 | 2 | 3 | 5 | 4 | 8 | 11 | 6 | 1 | 0 | 0 | |
| NW | 1 | 1 | 2 | 3 | 4 | 2 | 7 | 8 | 6 | 2 | 1 | 1 | |
| Calm | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | |

Table 2. -- Mean Wind Speed (m.p.h.)

| Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 19 | 16 | 13 | 11 | 10 | 9 | 10 | 13 | 20 | 22 | 22 | 15 |

From October through March there is a mean average of 20 days or more per month with a wind velocity greater than 22 m.p.h.

Table 3 -- Average Number Clear, Partly Cloudy and Cloudy Days

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear Day (0.00-0.19) | 3 | 2 | 2 | 2 | 4 | 3 | 5 | 4 | 6 | 6 | 4 | 2 | |
| Partly Cloudy (0.20-0.79) | 9 | 9 | 10 | 14 | 15 | 16 | 19 | 18 | 17 | 15 | 13 | 12 | |
| Cloudy (0.80-1.00) | 19 | 17 | 19 | 14 | 12 | 11 | 7 | 9 | 7 | 10 | 13 | 17 | |

The amount of cloudiness is greater during the months of December through April than at any other time of the year. From July through October there is a mean monthly average of 4 to 6 clear and 15 to 19 partly cloudy days.

The mean relative humidity is rather uniform throughout the year. Fog is rare in this area but occurs most frequently during the months of March and April.

Table 4 -- Fog

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Days | * | * | 1 | 1 | * | * | * | * | 0 | 0 | 0 | 0 | 2 |

*Less than 1/2 day.

Table 5. -- Mean Relative Humidity

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 82 | 83 | 84 | 84 | 85 | 86 | 85 | 85 | 82 | 78 | 78 | 79 | 83 |

Winter is the dry season; summer is the wet. The rain fall during the wet season results from heavy showers which occur on less than 1/2 the days of each month. Typhoons may be expected between July and September.

In 33 years the lowest recorded temperature of Mako is 45° F. The maximum 93° F.

The diurnal temperature range is somewhat greater in winter than in summer.

Table 6. -- Temperature °F.

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Extreme Max | 83 | 83 | 87 | 87 | 90 | 92 | 93 | 92 | 92 | 92 | 88 | 84 | 93 |
| Extreme Min. | 47 | 45 | 49 | 54 | 62 | 67 | 71 | 72 | 67 | 65 | 49 | 48 | 45 |

Summer is the most favorable season for low level bombing operations; autumn, for high level visual bombing operations. Summer is the season most favorable for chemical warfare operations. In general spring is also favorable for such operations but autumn or winter are not, due to frequent very strong winds.

GENERAL - M - GARAN-BI (GARAMBI)

Northeasterly and easterly winds predominate at Garanbi from October through March. Variable winds predominate during the summer months; the largest number of these variable winds are westerly and northwesterly. The winds during April, May and September are highly variable but with most of them northeasterly and easterly.

Table 1. -- Surface Wind Frequencies (%)

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 16 | 16 | 12 | 10 | 12 | 8 | 8 | 9 | 12 | 13 | 12 | 12 | |
| NE | 55 | 51 | 41 | 32 | 21 | 7 | 9 | 13 | 30 | 55 | 69 | 70 | |
| E | 17 | 17 | 22 | 27 | 21 | 17 | 22 | 18 | 27 | 20 | 13 | 11 | |
| SE | 2 | 3 | 6 | 8 | 7 | 10 | 13 | 10 | 7 | 3 | 1 | 1 | |
| S | 1 | 1 | 3 | 3 | 4 | 6 | 6 | 7 | 4 | 1 | 0 | 0 | |
| SW | 1 | 1 | 2 | 2 | 3 | 5 | 6 | 7 | 2 | 1 | 0 | 0 | |
| W | 1 | 2 | 3 | 4 | 9 | 21 | 13 | 14 | 4 | 1 | 1 | 1 | |
| NW | 5 | 7 | 8 | 10 | 16 | 20 | 17 | 16 | 7 | 3 | 2 | 3 | |
| Calm | 2 | 2 | 3 | 4 | 7 | 6 | 6 | 6 | 7 | 3 | 2 | 2 | |

Table 2. -- Mean Wind Speed (m.p.h.)

| Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 11 | 11 | 8 | 7 | 7 | 7 | 7 | 7 | 11 | 14 | 14 | 10 |

During the months of November and December there is a mean average of over 20 days per month with wind velocities greater than 22 m.p.h.

The amount of cloudiness is much greater from May through September than at any other time of the year. October, November, December, January, and February have a mean monthly average of 4 to 5 clear and 17 to 21 partly cloudy days.

Table 3. -- Average Number Clear, Partly Cloudy and Cloudy Days.

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear Day (0.00-0.19) | 4 | 4 | 3 | 4 | 2 | 2 | 2 | 2 | 3 | 4 | 5 | 4 | |
| Partly Cloudy (0.20-0.79) | 19 | 18 | 21 | 19 | 19 | 17 | 18 | 15 | 19 | 19 | 17 | 18 | |
| Cloudy (0.80-1.00) | 8 | 6 | 7 | 7 | 10 | 11 | 11 | 14 | 8 | 8 | 8 | 9 | |

The mean relative humidity varies from 73% in December to 86% in August. In over 30 years there have been no days recorded with fog.

Table 4. Mean Relative Humidity (%)

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 74 | 74 | 75 | 77 | 79 | 84 | 84 | 86 | 82 | 77 | 74 | 73 | 78 |

Winter is the dry season at Garanbi; summer the wet. The rain falls during the summer season in rather heavy showers which occur on about half the days of each month.

Table 5. -- Precipitation

| | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sep | Oct |
|---|---|---|---|---|---|---|---|---|---|---|
| No days with precipitation (0.004 in.) | 13.0 | 12.2 | 11.2 | 9.6 | 12.7 | 14.2 | 17.3 | 16.6 | 16.3 | 15.1 |

| Nov | Dec | Ann |
|---|---|---|
| 13.1 | 13.7 | 165.0 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mean Precipitation (in.) | 3.6 | 2.4 | 2.1 | 2.6 | 9.1 | 10.4 | 16.6 | 18.8 | 13.5 | 8.3 |

| Nov | Dec | Ann |
|---|---|---|
| 2.8 | 2.5 | 92.6 |

Freezing temperatures in this area are rare; the diurnal temperature range is rather uniform throughout the year.

Winter is the most favorable season for conducting high level visual bombing operations; autumn, for low level bombing. Spring is the most favorable for chemical warfare operations; in general, they can also be conducted effectively during the summer and the autumn.

During the winter, such operations may be limited by high winds.

## TAIHOKU - TANSUI DISTRICT

Location: In northcentral Formosa, Latitude 25° 03' N, Longitude 121° 31' E.

Population: 340,114 (1939) of which approximately 90,000 are Japanese.

References:

a. Interim Report "Formosa" dated April 1944.

b. JANIS of Formosa, Vols. I, II, and III dated June 1944.

c. "Selected Aerial Objectives for Retaliatory Gas Attack on Japanese Controlled Mainland Installations" dated August 1944.

I. Importance

a. Taihoku is the capital and largest city in Formosa. It is the headquarters of both the military and civil administrations of Spratly Island and Hainan, as well as of Formosa and the Pescadores Islands. These administrative functions support many people, but the city has large and varied commercial interests, and is especially important as the packing and shipping center for most of the tea crop of northern Formosa. Industry is relatively less significant. Matsuyama, an industrial suburb of Taihoku, located about three miles to the east, is the site of Formosa's largest railroad shops as well as small factories and of the large Matsuyama Airport and air depot (including large maintenance facilities).

II. Terrain

a. Taihoku is situated on a low level area near the northern tip of the island at the junction of several tributaries of the Tansui-Ko, is on the east side of the Tansui River. To the north, between the Tansui and Kiirun Rivers and the sea, are mountains with altitudes exceeding 3,500 feet. Foothills of the main Formosan range lie five miles to the southeast. A belt of low, rolling hills separate Taihoku from the western coastal plain to the south and west. Soil in this area is clay; it is not trafficable except in dry weather. Valley floor is cultivated (rice and sugar cane) and slopes negligibly until the mountains are reached.

b. Taihoku comprises several distinctive districts of which "Jonai" is the governmental and Japanese residential section. The "Jonai" district, a rectangular area of some 3/4 by 1/2 miles, is distinctly outlined by a broad roadway and is the site of numerous government and military offices as well as clusters of Japanese houses. This district is surrounded on all sides by the "native city", the total area of which is about 3 1/2 by 2 miles (including the "Jonai" district). The city is unevenly built up, with congested residential districts broken up by school and hospital grounds to the NE and SE and by an open industrial section to the east. The largest barracks area is located just off the SE corner of the Jonai district. Other barracks are located west, north and east of the city and an Allied POW camp is located to the north.

c. Taihoku is in the center of the Tansui-Taihoku-Keelung corridor. Access to the corridor may be across the beach southwest of the Tansui-Ka mouth, and through the narrow valley southeastward to Taihoku. Large scale operations are possible through this corridor. Near Taihoku, the Kiirun-Ka is about 200 yards wide and the Shinten-Kei is about 300 yards wide. Stream banks are steep and are about 20 feet high. Fording or bridging would be least difficult from November through January, and very difficult at other times. Existing bridges are built 20 to 30 feet above ordinary water levels to avoid being flooded. A shifting sand bar at the entrance to the Tansui-Ka has a depth of 6 feet at low level, but inside the bar the river is 9 to 12 feet deep and is navigable for light craft, nearly to Taihoku. The Tansui-Ko or the Shinten-Kei will have high water from June through August, and less water in November and December.

d. Taihoku is about 11 miles from the mouth of the Tansui River (Tansui-Ko). Landing beaches extend about 11 miles east of Tansui-ko but fringing barrier reefs about 100 feet wide parallel most of them; about 2 1/4 miles of beaches are suitable for landing operations. West of Tansui-Ko; the beach is excellent for landing operations and it extends to Hakushaton (approximately 23 miles). It is 100 feet or more in width, except between Kakoshi and Karyoshi, where it narrows to 50 feet or less. The beach is composed of gently sloping non-coral sand with little gravel or coarser material. Several suitable exits are available from the beaches on either side of Tansui-Ko.

III. Tactical Gas Targets*

| Target No. | Name | Coordinates | Comment | Estimated Gas Target Area Square Yards |
|---|---|---|---|---|
| Taihoku Area (91.3) | | | | |
| 52 | Matsuyama Airport | 25° 04' N 121° 33' E | Aircraft assembly plant reported adjoining major airport** | 1,300,000 |
| 28 | Shinten River RR Bridge | 25° 02' N 121° 29' E | Bridge on only RR connecting Keelung-Taihoku with S Formosa** | 31,000 |
| 47 | Jonai District of Taihoku | 25° 03' N 121° 31' E | Civil and military administrative center; many public buildings** | 990,000 |
| Military Storage Area** | | | | 87,000 |
| Barracks (Military)** | | | | 75,000 |
| Landing Beaches*** | | | | 1,555,000 |

*Limited to tactical targets only by JCS 825/3.
**To be a ttacked with HE then with persistent gas.
***To be attacked with persistent and nonpersistent gas.

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FORMOSA CITY PLANS 1:8,000

*For use by War and Navy Department Agencies only*
*Not for sale or distribution*

# TANSUI

*FIRST EDITION - AMS 1*

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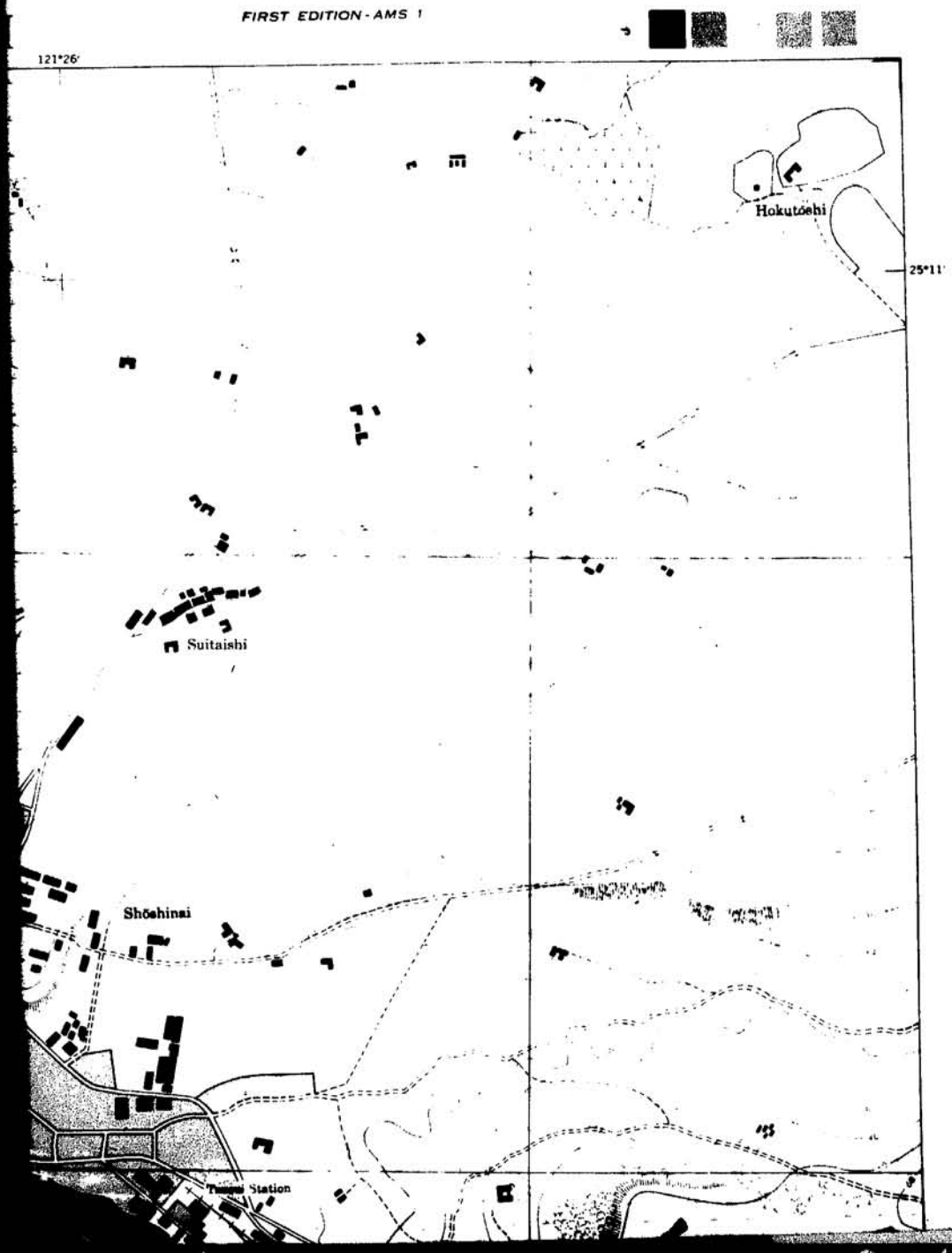

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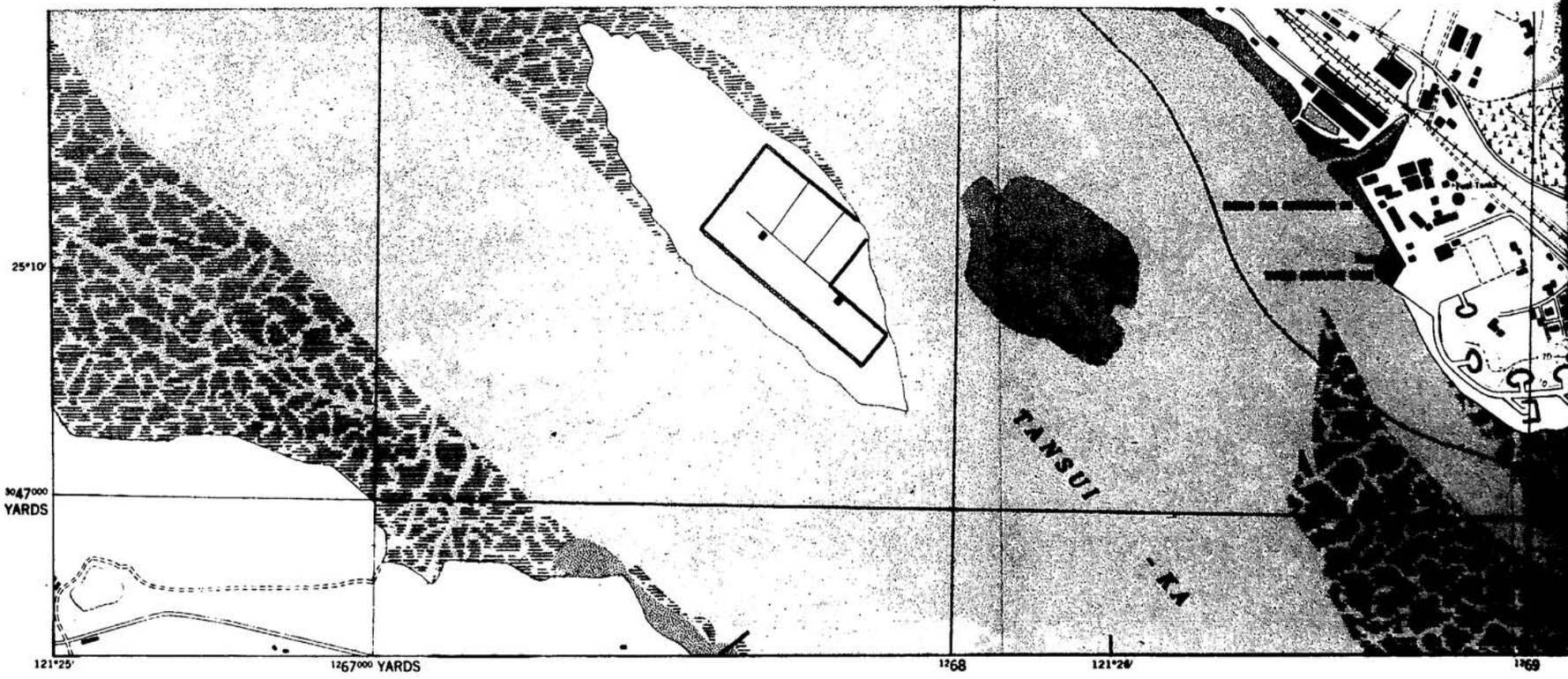


A.M.S. L991 First Edition (AMS 1), 1945.

Prepared under the direction of the Chief of Engineers by the Army Map Service (AMS), U. S. Army, Washington, D. C., 1945
Compiled from aerial photography dated September 1944 by photo-planimetric method and by reference to Formosa 1: 50,000, Japanese Imperial Land Survey, Tansui, 1928; Tansui 1:18,400, G.S.G.S. No. 134, 1944, Formosa 1: 25,000, A.M.S. Sheet 2322-I SE, 1944.
Additional information from intelligence data Place names are transcribed according to the Modified Hepburn (Romaji) System

Scale 1:8,000

½ 0 ½ Mile
500 0 500 Meters
500 0 500 Yards

CONTOUR INTERVAL 10 METERS

POLYCONIC PROJECTION

ONE THOUSAND YARD WORLD POLYCONIC GRID BAND IIIN ZONE "B"
THE LAST THREE DIGITS OF THE GRID NUMBERS ARE OMITTED

NOTE: OFFICERS USING THIS MAP WILL MARK HEREON CORRECTIONS AND ADDITIONS WHICH CODE TO THEIR ATTENTION AND MAIL DIRECT TO THE CHIEF OF ENGINEERS WASHINGTON D C

## LEGEND

- Areas densely built up
- Areas moderately built up
- National or Prefectural Road, generally metalled, over 4 m wide
- Road, 2-4 meters wide
- Track or Trail
- Railroads
  - 3'6" gauge, Single track, with Station
  - 3'6" gauge, Double track
  - Narrow, Light, or Special gauge, Single track
  - In street, labeled with gauge
- Boundaries:
  - Prefectural (Chō or Shū)
  - Gun or Shi
  - Ku or Shō
- Temple, Shrine, Pagoda
- Church, Monument or Statue, Dam
- School, Chimney
- Prison, Radio mast, Mine
- Ship Anchorage, Fence, Cemetery
- Water wheel or mill, Mineral spring, Fumarole
- Control point, Bench mark, Spot elevation
- Generally Rice or Sugar Cane
- Orchard or Vineyard, Bamboo
- Mud or Tidal Flat
- High tension line
- Masonry retaining wall or Revetment, Falls

## GLOSSARY

| | | | |
|---|---|---|---|
| gun | county | -kō | harbor |
| -ka | river | -shō | township |
| -kai | township | -shū | prefecture |

3°00' or 53 MILS
1°02' or 18 MILS
MAGNETIC NORTH

APPROXIMATE MEAN DECLINATION 1944
FOR CENTER OF SHEET
ANNUAL MAGNETIC CHANGE 1° DECREASE

Use diagram only to obtain numerical values

INDEX

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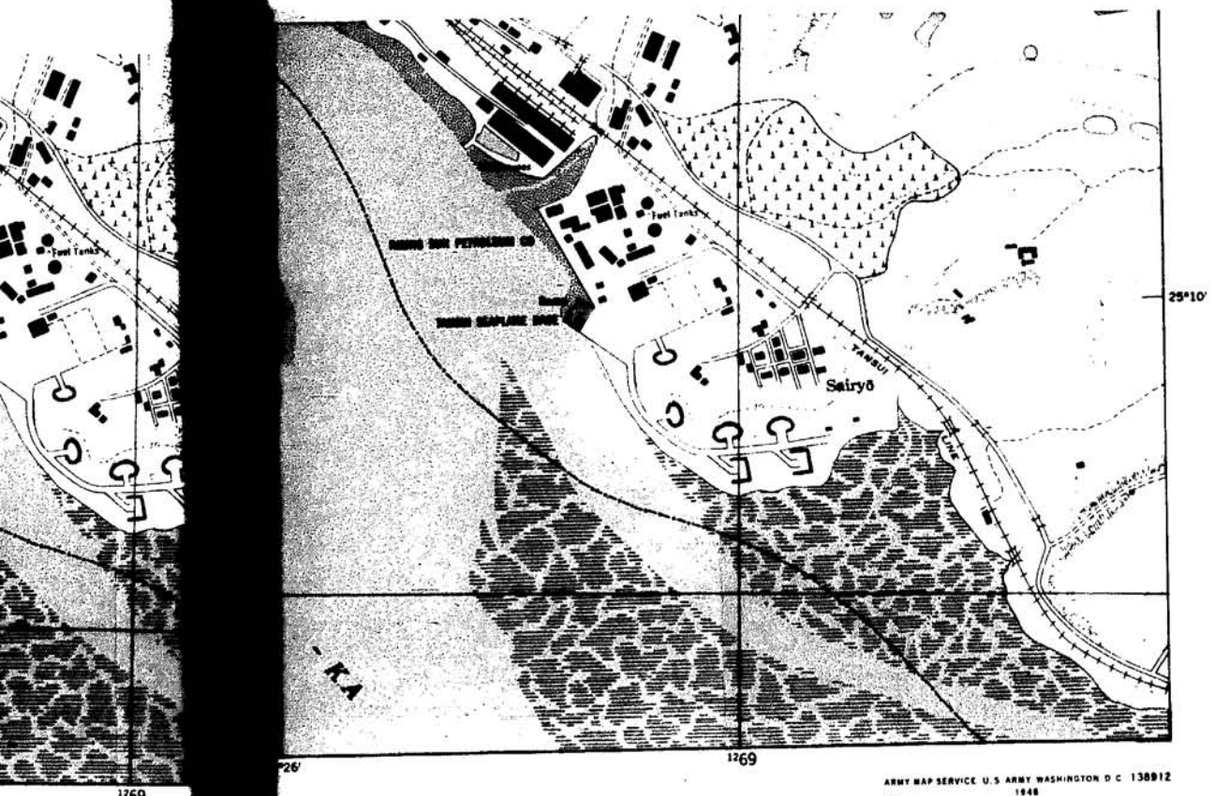
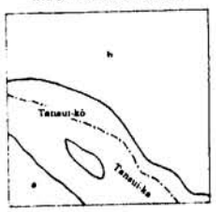



ARMY MAP SERVICE U.S ARMY WASHINGTON D C 138912
1945 1948

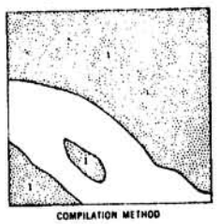
1 Mile
500 Meters
500 Yards

INDEX TO BOUNDARIES




Taihoku-shu
Tansui-gun
a Hachiri-shō
b Tansui-kai

COVERAGE DIAGRAM



COMPILATION METHOD

PHOTO PLANIMETRIC

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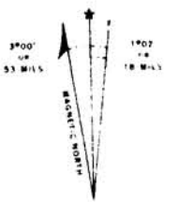
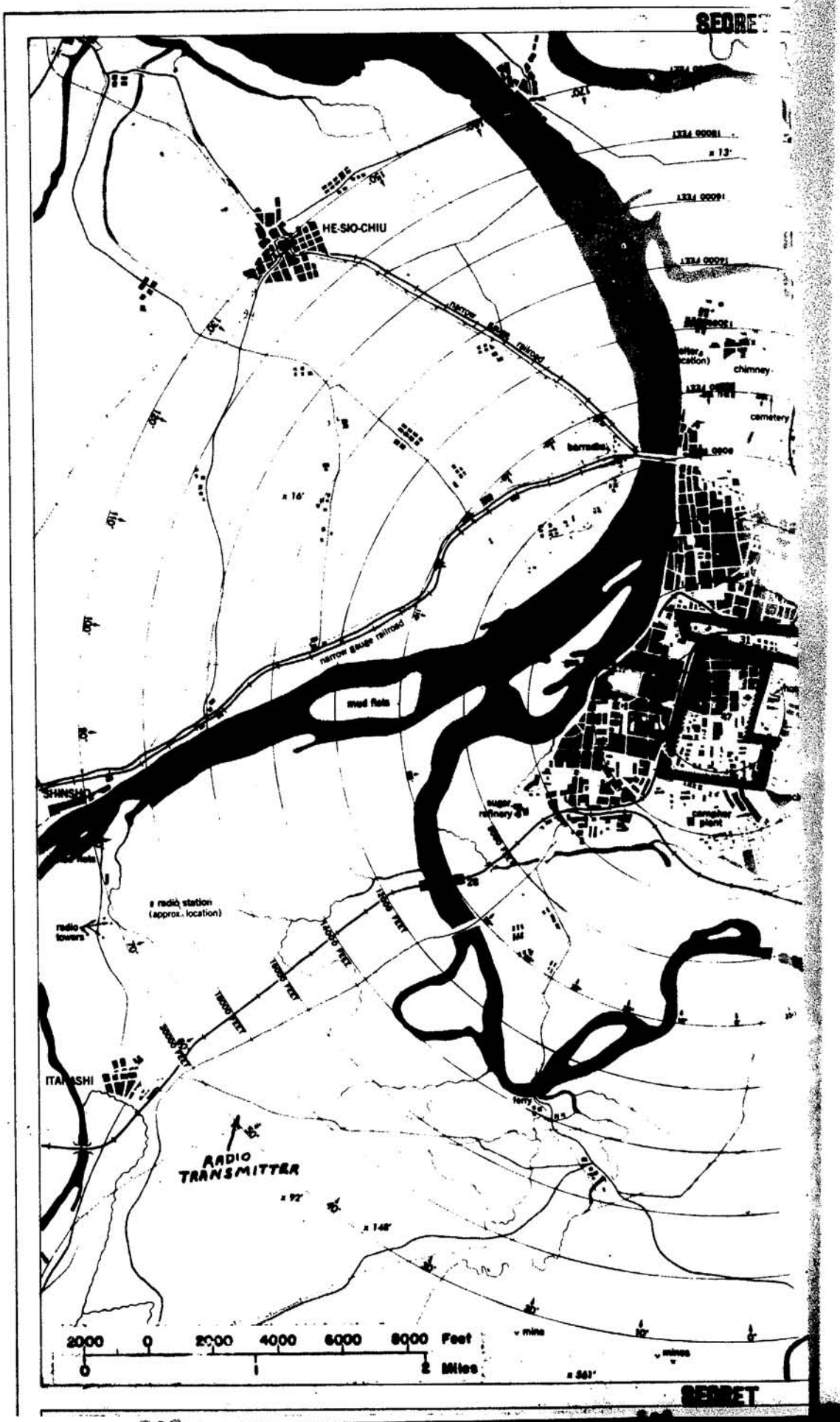


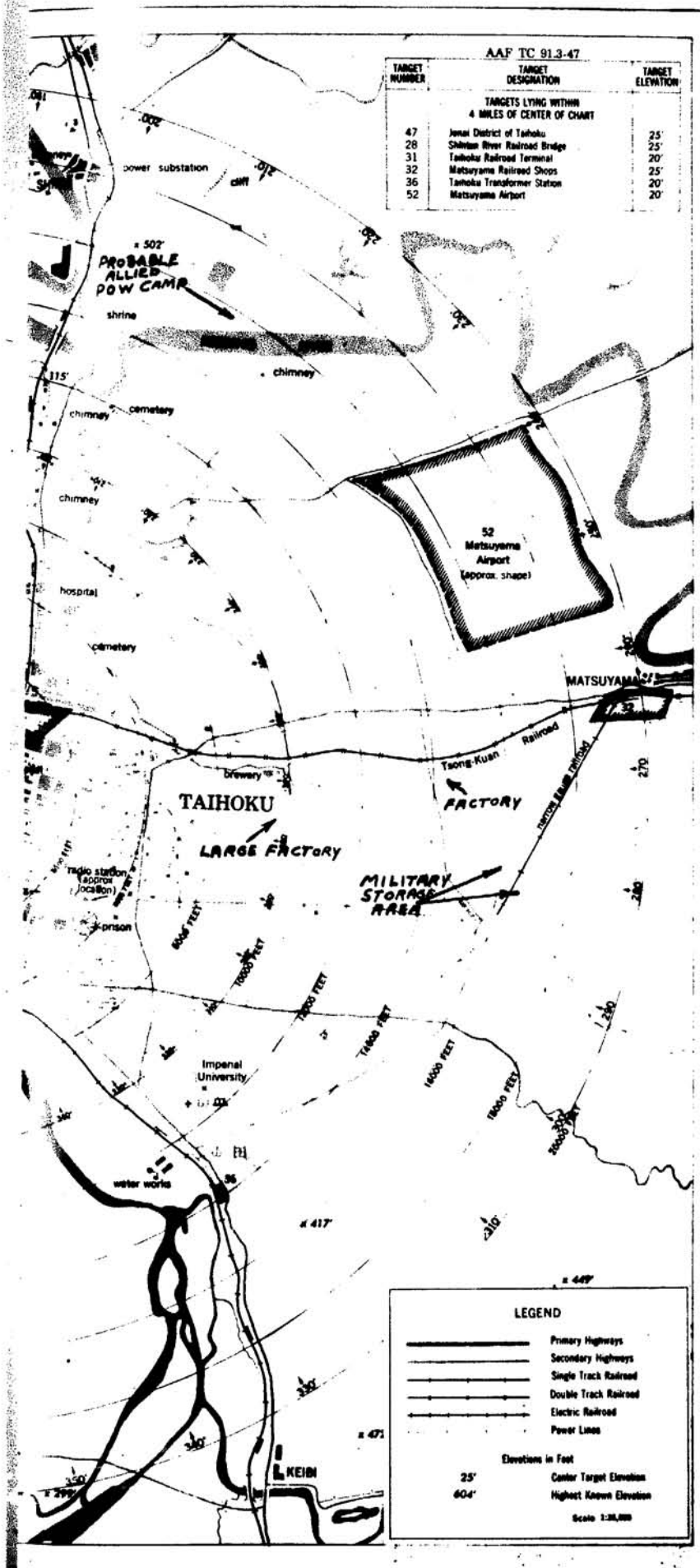

APPROXIMATE MEAN DECLINATION 1944
FOR CENTER OF SHEET
ANNUAL MAGNETIC CHANGE 1 DECREASE

Use diagram only to obtain numerical values

# TANSUI, FORMOSA (TAIWAN)
## TAIHOKU-SHU


SECRET
HE-SIO-CHIU
narrow gauge railroad
chimney
cemetery
barracks
narrow gauge railroad
mud flats
SHINSHO
sugar refinery
camphor plant
radio station (approx. location)
radio towers
ITAMASHI
RADIO TRANSMITTER
2000 0 2000 4000 6000 8000 Feet
0 1 2 Miles
SECRET

0548


AAF TC 91.3-47
TARGET NUMBER
TARGET DESIGNATION
TARGET ELEVATION
TARGETS LYING WITHIN 4 MILES OF CENTER OF CHART
47 Ionai District of Taihoku 25'
28 Shinten River Railroad Bridge 25'
31 Taihoku Railroad Terminal 20'
32 Matsuyama Railroad Shops 25'
36 Taihoku Transformer Station 20'
52 Matsuyama Airport 20'
power substation
cliff
x 502'
PROBABLE ALLIED POW CAMP
shrine
chimney
cemetery
52 Matsuyama Airport (approx. shape)
hospital
MATSUYAMA
Tsong-Kuan Railroad
brewery
TAIHOKU
FACTORY
LARGE FACTORY
MILITARY STORAGE AREA
radio station (approx location)
prison
10000 FEET
14000 FEET
18000 FEET
20000 FEET
Imperial University
water works
x 417'
x 449'
KEIJO
LEGEND
Primary Highways
Secondary Highways
Single Track Railroad
Double Track Railroad
Electric Railroad
Power Lines
Elevations in Feet
25' Center Target Elevation
604' Highest Known Elevation
Scale 1:31,680

TAKAO—HOZAN

TAKAO - HOZAN

Location: On southwestern coast of Formosa. Latitude 22° 36' N, Longitude 120° 16' E. Hozan - Latitude 22° 37' N, Longitude 120° 23' E.

Population: 152,265 (1939) including 28,336 Japanese. Hozan - 19,837 (1935) including 831 Japanese.

References:

a. Interim Report "Formosa" dated April 1944, prepared by AC/AS Intelligence.

b. JANIS 87 "Formosa" (Vols. I, II, and III) dated June 1944.

c. Civil Affairs Handbook Taiwan (Formosa) Takao Province, OPNAV 13-22, Office, Chief of Naval Operations, Navy Department, 1 October 1944.

I. Importance

a. Takao is the second largest city in Formosa and is now probably the chief port of the island. Due to its strategic location it is a natural concentration point for traffic to and from Japan and the western and southwestern Pacific. It has, therefore, become a major military and naval base. In addition, Takao is the leading industrial area in Formosa. Industrial products include heavy machinery, aluminum, magnesium, alcohol, refined sugar, cement, fertilizers, and ships. This area contains two complete Naval Bases, (one at Toshien and one at Takao proper), two seaplane stations (one at Takao and one at Toshien) and one landing ground at Koigaryo. At Takao several repair facilities are located and a very large number of warehouses and large oil storage capacity. Hozan is important as a military storage area and a concentration point for troops to be embarked from Takao. Hozan is also the location of one of the most powerful radio transmitters in the Japanese Empire.

II. Terrain

a. Takao is situated near the southern end of the western lowlands. The city is built on flat land at the mouth of the Takao River (a small stream) and at the northern end of a narrow eight mile long lagoon. A sand spit completely encloses the lagoon except at the extreme northwest, where a channel less than 500 feet wide forms the entrance to Takao harbor. To the northwest of the city rises an isolated coral hill known as Takao-San or Ape Hill. This hill and particularly a 298 ft. high spur that projects southward from it commands the entrance to the harbor and separates Takao from the open sea. The rugged terrain of Ape Hill extends along the coast for about 3 1/2 miles and rises to a height of nearly 1200 feet. At its northern end are the harbor and town of Toshien. To the north, east, and south of Takao the terrain is flat and low and extensively cultivated. The southern end of the western foothills begin to rise about 8 miles to the northeast of the city while

about 20 miles to the east the Central Mountain Barrier begins to rise. The soil to the northeast and east of Takao is fine clay while to the south of the city medium-textured loam appears. Generally the soils in Takao are suitable for cross-country movement, except in wet weather. The vegetation around Takao consists chiefly of cultivated fields (rice and sugar cane) and grassland with some bamboo planted around farm buildings. Ape hill is the only wooded area in the Vicinity of Takao.

b. The older portion of Takao is a compact area, roughly triangular in shape, with a projection at the southwest corner; it is bounded on the east by the river, on the south by the harbor, and on the west by Ape Hill. This is the main commercial section of the city, and also the chief Japanese residential district. The newer residential sections, mostly east of the river, are less compact. The city proper, which is characterized by a continuous network of closely spaced streets, does not extend more than 2 1/2 miles in any direction. Beyond this central core, there is a broad, outer zone in which are located most of the newly constructed industrial plants, military barracks, and storehouses of the area. The main concentration of industrial plants is on reclaimed land in the Reigaryo area, about 2 miles southeast of the center of Takao.

Takao has been well laid out on a rectangular pattern, with numerous secondary fire breaks, but it lacks the broad diagonal avenues built by the Japanese in other Formosan cities. Some main streets are 45 feet or more in width and are paved; less important ones are perhaps half as wide and have improved surfaces.

Takao is accessible by the west coast railroad, the west coast highway and by the sea.

Within a radius of 5 miles of the center of Takao there are more than 500 barrack-type buildings and military quarters and others appear to be under construction.

There are landing beaches extending about 15 miles from Ape Hill to the north side of the Ka-tansui-Kei. The only break in the beach is the harbor entrance at Takao. The bottom slopes imperceptibly to the beach, with 30 foot depths about a mile offshore. The mean range of the tides is 1.2 feet; waves approach the shore directly from the south and southwest during the summer season; in winter the area is relatively sheltered from the southward moving waves along the west coast of Formosa.

The main beach bordering the shore of the Takao area for 15 miles southward from the town narrows from 200 to 100 feet in this northern half, then narrows rapidly so that the southern half is generally 15 - 20 feet wide. It is composed of uniform grained sand and in its wider portions is backed by low dunes. The foreshore area is firm with a moderate slope, while the backshore is soft and gently sloping. The north half is backed by a lagoon 7 1/2 miles long; the lagoon outlet at the north end forms the entrance to Takao harbor. South of the lagoon a swampy area lies directly behind the beach. A rocky point crosses the beach 5 miles from the south end. The surf is generally moderate, with 2 or 3 lines of breakers parallel to the shore line. The beach, 0.3 mile long north of the Takao harbor entrance, is used for bathing.

A broad, intensively cultivated plain, with a few scattered hills, lies back of the beach area. A trail runs along the spit that forms the coast along the north half of the area; the east side of the spit, along the lagoon shore, is thickly built up. Southeast of the lagoon an improved road loops close to the shore, lying near and parallel to the beach between the villages of Dairinho and Kako. Southeastward an unimproved road runs inland from small villages on the beach.

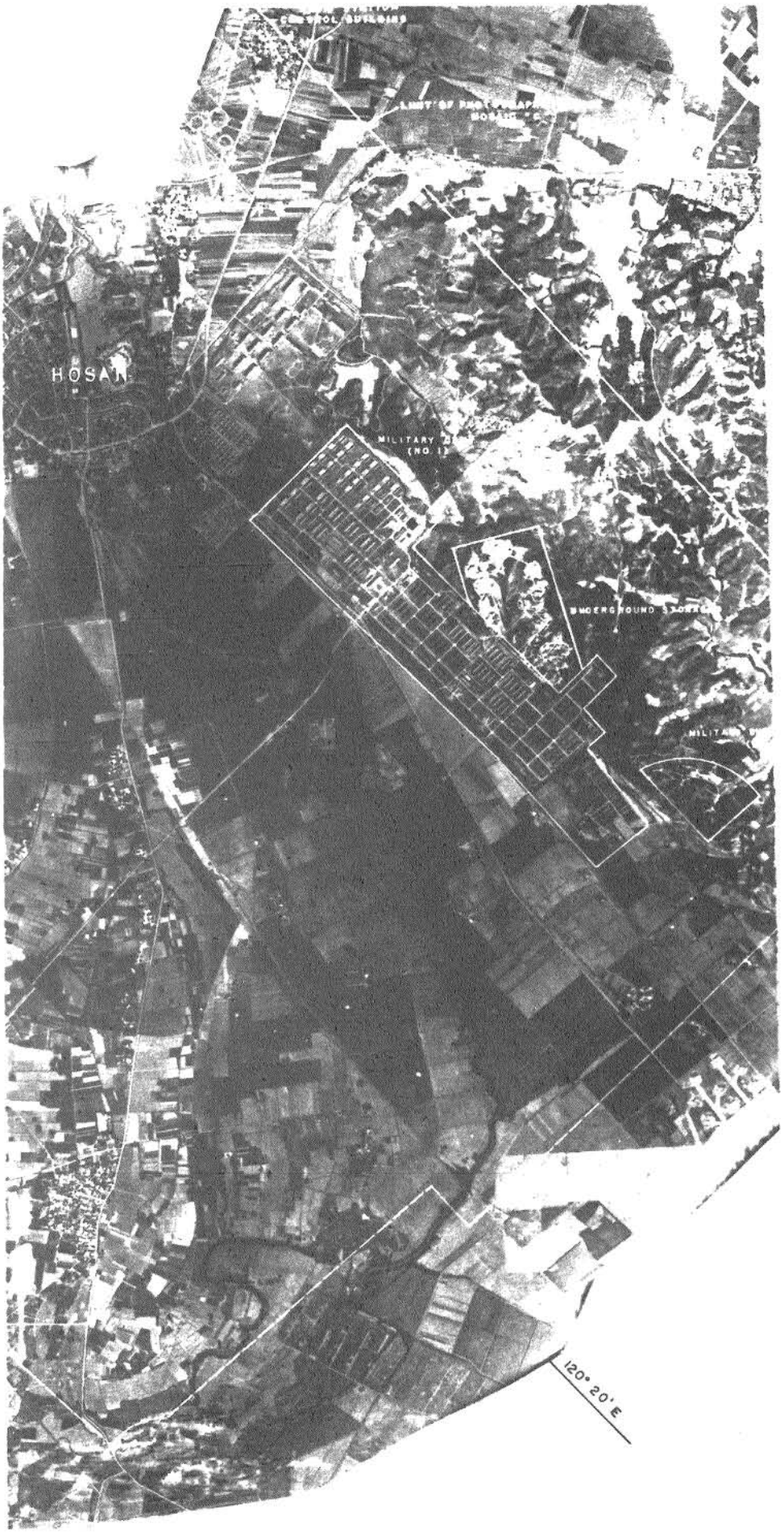
III. Gas Targets*

| Target No. | Name | Coordinates | Comment | Estimated Gas Target Area Square Yards |
|---|---|---|---|---|
| | Barracks** | | These barracks are at 5 different locations in the Takao Hozan Area. | 317,940 |
| 179 | Hozan** | 22° 37' N 120° 21' E | Large military camp. Probably a staging area. | 1,626,700 |
| 8a | Military Storehouses & main wharf (Takao)** | 22° 37' N 120° 17' E | Complete wharfage and warehouse facilities. Most buildings are sheet metal over steel frame; a few are wood or concrete | 504,450 |
| 176 | Reigaryo Military Stores (Takao)** | 22° 36' N 120° 19' E | Three groups of military supply warehouses and munitions stores; over 230 buildings. | 1,154,450 |
| | Military Supply Depots** | | 7 military supply installations scattered throughout the Takao, Toshien, Hozan Area. | 2,156,700 |
| 8b | Takao River Wharves** | 22° 37' N 120° 19' E | 7 warehouses and 200 ft. of wharf included in area. | 203,900 |
| 7 | Kigo Naval Dockyard (Takao)** | 22° 37' N 120° 16' E | Former Naval dockyard, now probably building patrol vessels. May still be utilized as a naval establishment. | 466,670 |

| Target No. | Name | Coordinates | Comment | Estimated Gas Target Area Square Yards |
|---|---|---|---|---|
| 175 | Reigaryo Shipyard (Takao)** | 22° 37' N 120° 18' E | New shipyard, with 8 ship ways, probably builds standardized cargo vessels. Probably includes Marine engine works. | 215,450 |
| 56 | Toshien Dockyard (Toshien) | 22° 41' N 120° 16' E | Naval dockyard under construction. | 190,000 |
| | Gun Positions ** | | 5 gun positions scattered throughout Takao Hozan district. | 229,000 |
| | Reigaryo Seaplane Station ***(Takao) | | Buildings & Installations only. | 2,920 |
| | Reigaryo Landing Ground (Takao) *** | 22° 35' N 120° 21' E | Buildings & Installations only. | 123,000 |

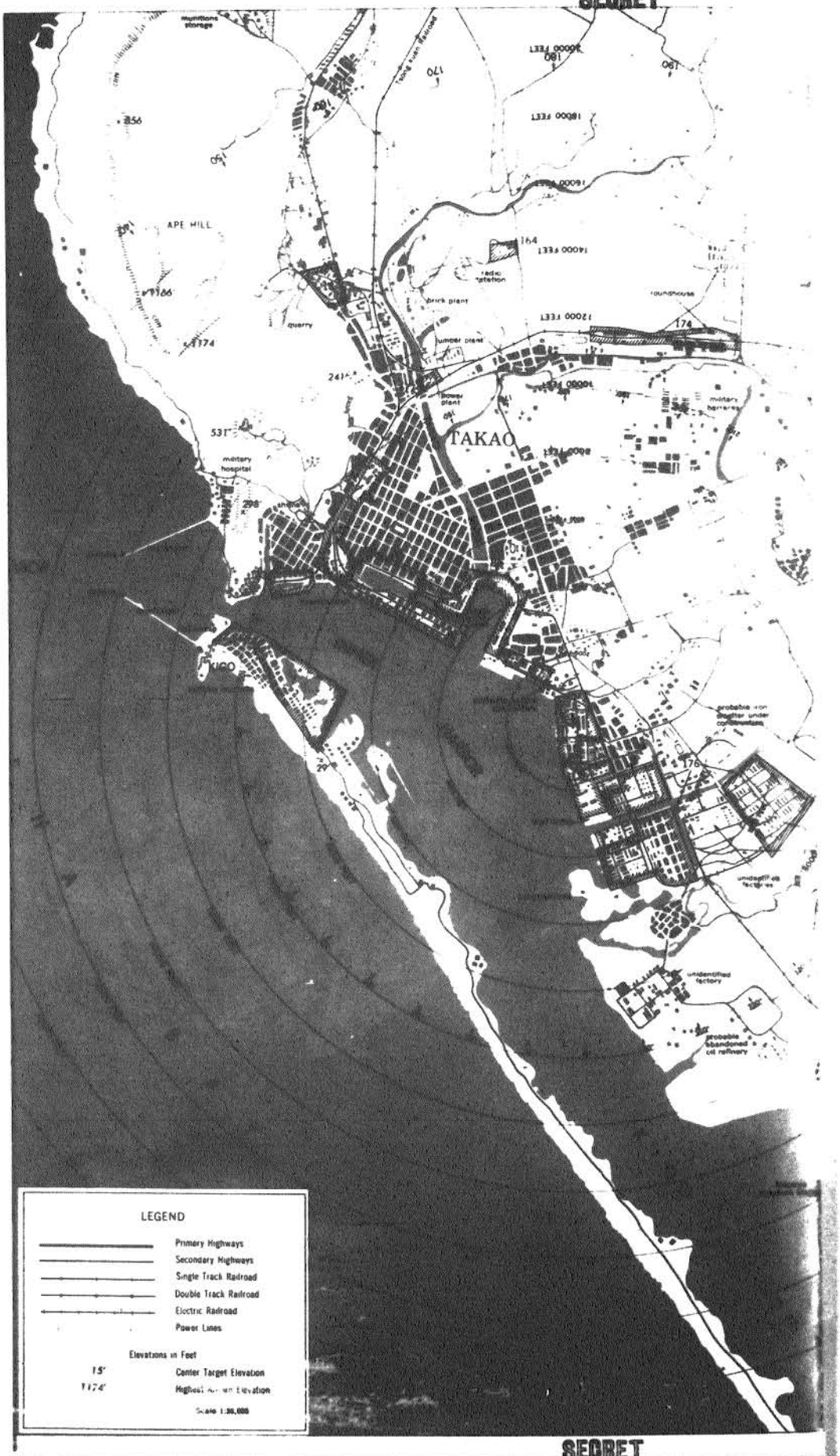
*Limited to tactical targets only by JCS 825/3.
**To be attacked with HE then with persistent gas.
***To be attacked with either nonpersistent or persistent gas.


120° 20' E


HOSAN
MILITARY
(NO. 1)
120° 20' E

TAKAO
PHOTO INTELLIGENCE REPORT NO 405A
DATE OF PHOTOGRAPHY 20 DEC 1943
1000 0 1000
U.S.-CONFIDENTIAL
ASST C/AS, INTELLIGENCE
CFL No 729 486 MOSAIC D

SECRET

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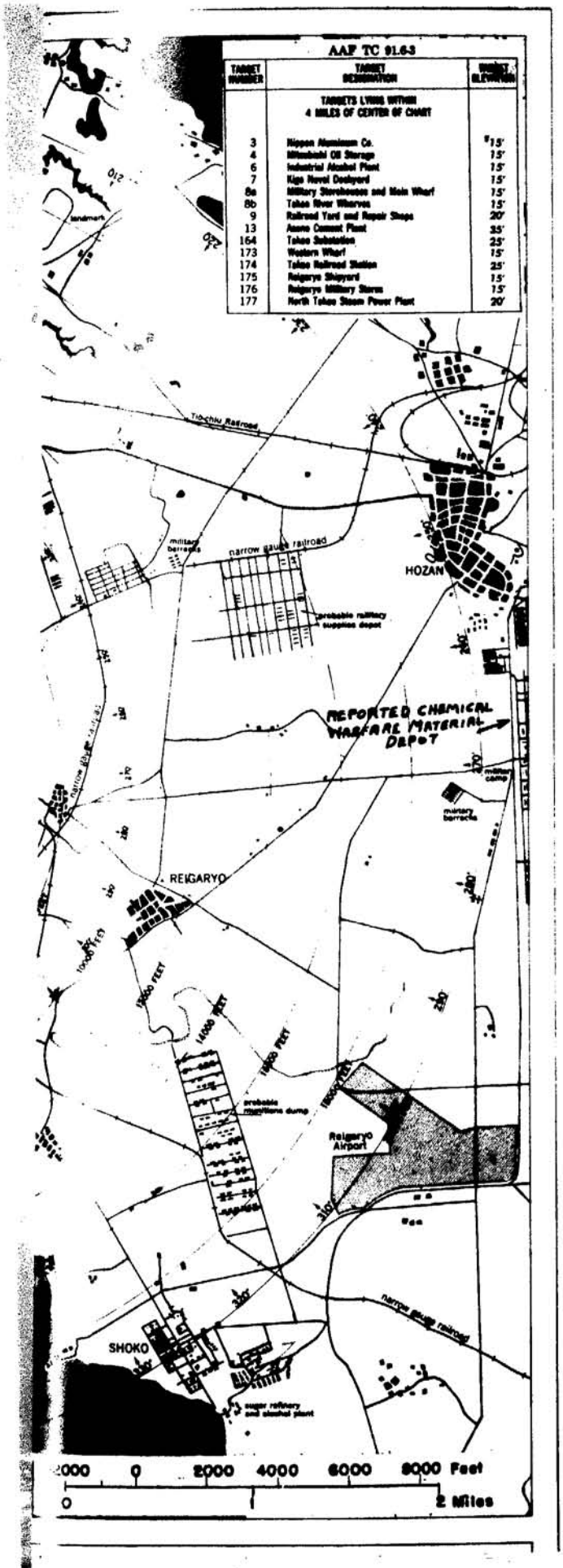

AAF TC 91-63
TARGET NUMBER
TARGET DESIGNATION
TARGETS LYING WITHIN 4 MILES OF CENTER OF CHART
3 Nippon Aluminum Co. 15'
4 Mitsubishi Oil Storage 15'
6 Industrial Alcohol Plant 15'
7 Kiga Naval Dockyard 15'
8a Military Storehouses and Main Wharf 15'
8b Takao River Wharves 15'
9 Railroad Yard and Repair Shops 20'
13 Asano Cement Plant 35'
164 Takao Substation 25'
173 Western Wharf 15'
174 Takao Railroad Station 25'
175 Reigaryo Shipyard 15'
176 Reigaryo Military Stores 15'
177 North Takao Steam Power Plant 20'
Tsochiu Railroad
narrow gauge railroad
HOZAN
probable military supplies depot
REPORTED CHEMICAL WARFARE MATERIAL DEPOT
REIGARYO
10000 FEET
probable munitions dump
Reigaryo Airport
SHOKO
sugar refinery and alcohol plant
2000 0 2000 4000 6000 8000 Feet
0 2 Miles

TAINAN

TAINAN

Locality: On southwestern coast of Formosa. Latitude 23° 00' N, Longitude 120° 12' E.

Population (1939): 142,133 of which 16,653 are Japanese

References:

a. Interim Report "Formosa", dated April 1944, prepared by AC/AS Intelligence.

b. JANIS 87 "Formosa" dated June 1944

c. Civil Affairs Handbook, Tainan (Formosa), OPNAV 50 E-12, Office of the Chief of Naval Operations, Navy Department, dated 12 June 1944.

I. Importance

a. Tainan is the third largest city in Formosa and the seat of the Tainan provincial government. The city is noted for its schools and commercial houses, but has fewer industries than most cities of comparable size. It is an important military center with an extensive barracks development and two airfields. The town of Ampin, which is the port for Tainan, is located 2 1/2 miles west of the city. The port is only satisfactory for small shallow draft vessels. Industrial installations include a salt works, a magnesium factory, a sugar refinery, and an alcohol plant.

II. Terrain

a. Tainan is in the southern part of the western coastal plain, 2 miles inland from Formosa Strait, and about 25 miles north of Takao. This region is a flat and poorly drained plain. To the north, east, and south of the city the plain is highly cultivated (rice and sugar cane) while to the west are found swamps and tidal flats. This flat plain extends many miles to the north and south of Tainan. Foothills begin to rise about 10 miles to the east of the city. The soil in this area consisting of clays and gravel, is only trafficable during dry weather.

b. Tainan is an irregularly shaped city, 2 to 2 1/2 miles across in any direction. The principle streets form a generally rectangular plan except in the central area, where a wheel pattern predominates. Secondary streets make an irregular pattern.

c. The central portion of the city is compact, but the margins contain open areas.

d. Most of the Japanese part of the town is located on a broad, well joined avenue connecting the railroad station and the central circle. The principle streets of Tainan are wide, well graded all weather roads capable of sustaining heavy traffic. Some of them are paved.

e. Tainan is served by the trunk line of the Taihoku to Takao railroad and by the west coast highway of Formosa.

f. There are landing beaches extending from the Sobun-Kei 33 miles south to Takao. The beaches are composed of sand and generally firm. The beach slope is moderate in the foreshore and becomes gentle in the back shore to the foot of the dunes. There are no barrier reefs and the moderate surf breaks directly and parallel to the beach. The beach has a fairly uniform width of 100 feet or more. A sand dune belt, wooded in places, lies behind the beach for a width of 100 to 450 feet. The beach is interrupted by three lagoon outlets at and north of Tainan and by four stream mouths south of Tainan.

III. Gas Targets*

| Target No. | Name | Coordinates | Comments | Estimated Gas Target Area - Sq.Yds. |
|---|---|---|---|---|
| 112 | Tainan Barracks** | 23° 00' N 120° 12' E | Barracks are scattered through city; permanent tactical installations | 150,000 |
| | Emansho Airport** | 22° 58' N 120° 12' E | Estimated area for gas attack occupied by maintenance & communication installations. | 880,000 |
| | Landing Beaches*** | | | 16 1/2 sq. mi. |

* Limited to tactical targets only by JCS 825/3
**To be attacked with HE then persistent gas
***To be attacked with either nonpersistent or persistent gas.

PROVISIONAL EDITION

# TOWN PLAN OF T

IDENTIFIED BUILDING

IDENTIFIED BUILDING (LOCATION APPROXIMATE)

BUILT-UP AREA

PARK AREA

ATHLETIC FIELD

ARMY BARRACKS AREA

RAILROAD - 3'6" GAUGE

0 250 500 1000 YARDS

0 250 500 1000 METERS

BASE MAP 328 PARTIALLY CORRECTED WITH AERIAL PHOTOGRAPHS NOV 1943

Reliability Code: 2B-2B-2

120°11'30"

To Kori

120° 121° 122°

FORMOSA (TAIWAN)

25°

24°

23°

22°

Tainan

MILES

KILOMETERS

23° 00' 00"

Hospital

Small Boat Yard

School

To Ampin

TAINAN CANAL

N

Area

Warehouse

## TOWN PLAN OF AMPIN

(SCALE UNKNOWN)

22° 59' 30"

Hospital

120°11'30"

Mitsui Company

Monopoly Factory

Salt Refinery

N

School

Textile Pl

AMPIN - TAINAN

MILES

KILOMETERS

AMPIN

Canal

TAINAN

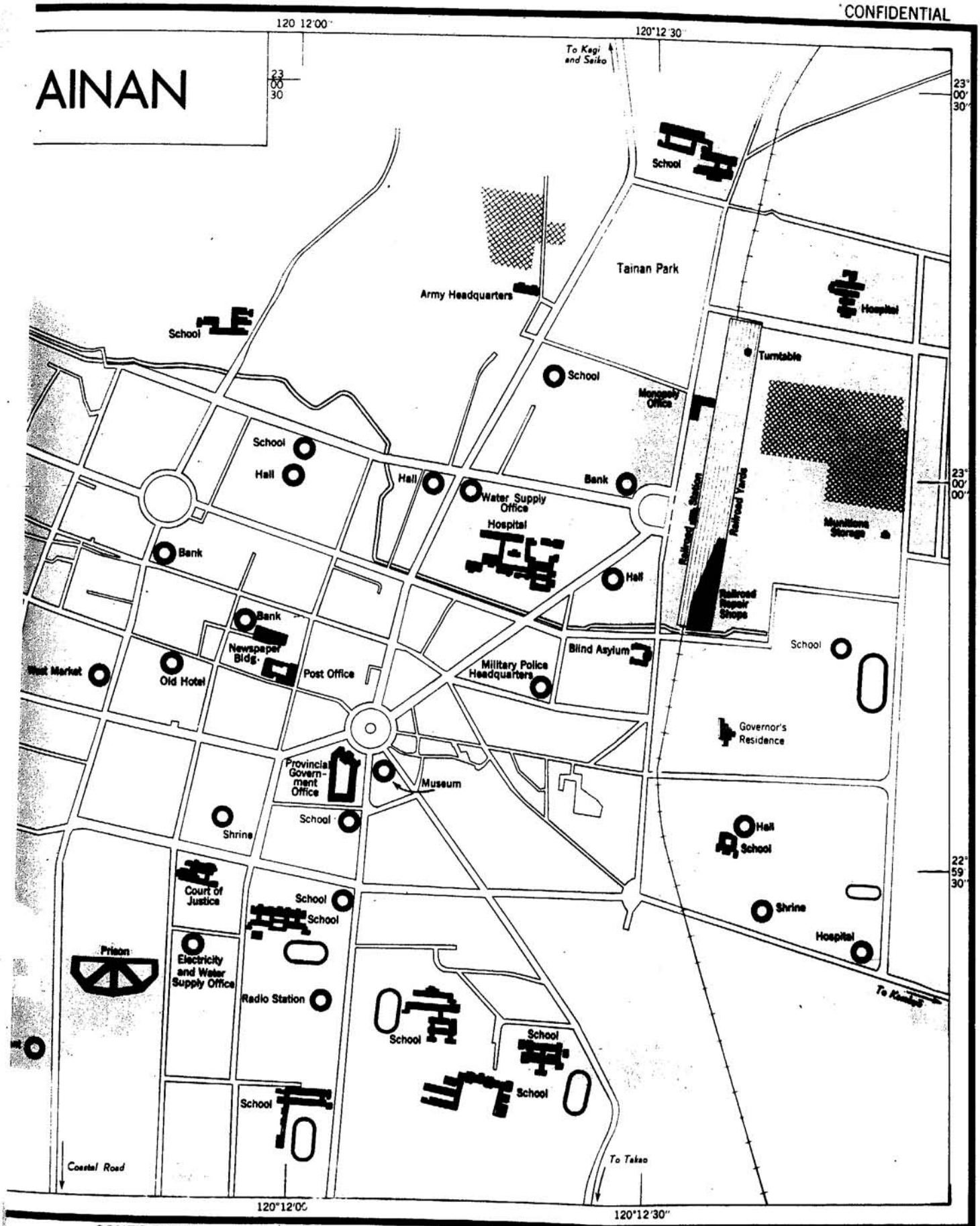
N

TAINAN CANAL

(SAME BASE MAP AS TAINAN)

NO. 3333
24 MAY 1944

CONFIDENTIAL

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LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

0962

KEELUNG

KEELUNG - (KIIRUNG) FORMOSA

Location: Latitude 25° 08' N, Longitude 121° 44' E. Northeast coast of Formosa.

Population: 1939 - 100,511 including 24,815 Japanese.

References:

a. Interim Report "Formosa" dated April 1944, prepared by AC/AS Intelligence.

b. JANIS of Formosa, Vols. I, II and III, dated June 1944.

c. "Selected Aerial Objectives for Retaliatory Gas Attack on Japanese Controlled Mainland Installations" dated August 1944.

I. Importance

a. Keelung, the fourth largest city in Formosa, is a leading port and the northern gateway not only to Formosa, but to mose of the Japanese controlled territory in South China and Southeastern Asia. It is the center of a highly developed military and naval zone, and its port facilities are being steadily improved. The district surrounding it is an important industrial area, and also contains valuable coal mines. Keelung is the northern terminus of the chief railroad on the island.

II. Terrain

a. The city of Keelung is in the temperate zone; it is situated on a narrow beach shelf at the south end of the harbor. Rolling, wooded hills reaching an elevation of 300-600 feet, surround the city and harbor and permit easy passage only along the narrow beach or through a steep narrow valley west of the city. The harbor is a long, narrow dredged basin, originally a small estuary. Soils in this area are predominantly medium textured loams (clays in paddy land areas); it is trafficable except during and immediately after precipitation (paddy land clays non-trafficable except when dry). Rice cultivation predominates in low land around the city; leaves are usually green; crops are in all stages of growth throughout the year.

b. The city proper occupies a very small "L" shaped site along the south and southeast sides of the harbor; it covers an area of about 1/2 by 1 mile and averages about 1/2 mile in width; it is congested with one and two story houses and has few large buildings (which are located near the waterfront). A small built-up area, about 3/4 x 1/4 miles, projects eastward from

the southeast end of the harbor area. The main barracks area is located at the foot of a hill, directly south of the city proper. Extensive wharves and warehouses line the western sides of the harbor, in two groups separated by an inlet. They cover an area of some 1 x 1/4 miles. The shipyards are located at the west and northeast ends of the harbor; electro-chemical plants are located to the northwest of the city.

c. A corridor, extending from Keelung to Taihoku, (approximately 17 miles) is nearly flat and mostly planted to rice (terraced). The corridor is from 3 to 7 miles wide and commanded on each side by steep-sided, tree-covered hills from 500 to 2,000 feet in height. About two miles south of Keelung there is a forested ridge less than 300 feet high; it is the roughest, steepest and narrowest part of the corridor, having a width of less than a mile for suitable operations. All drinking water should be purified. Fording or bridging the Kiirun-Ka would be least difficult from November through January and very difficult at other times. Existing bridges are built 20 to 30 feet above ordinary water levels to avoid being flooded. Near Taihoku, this corridor is joined with the Tamsui-Taihoku corridor. Through these two would be the best approach to attacking Keelung and the control of these corridors would dominate the northern coast of Formosa.

d. A good all weather highway connects Taihoku and Keelung. Keelung has no airfield but is serviced by the one at Taihoku.

III. Tactical Gas Targets*

a. To be attacked with persistent gas.

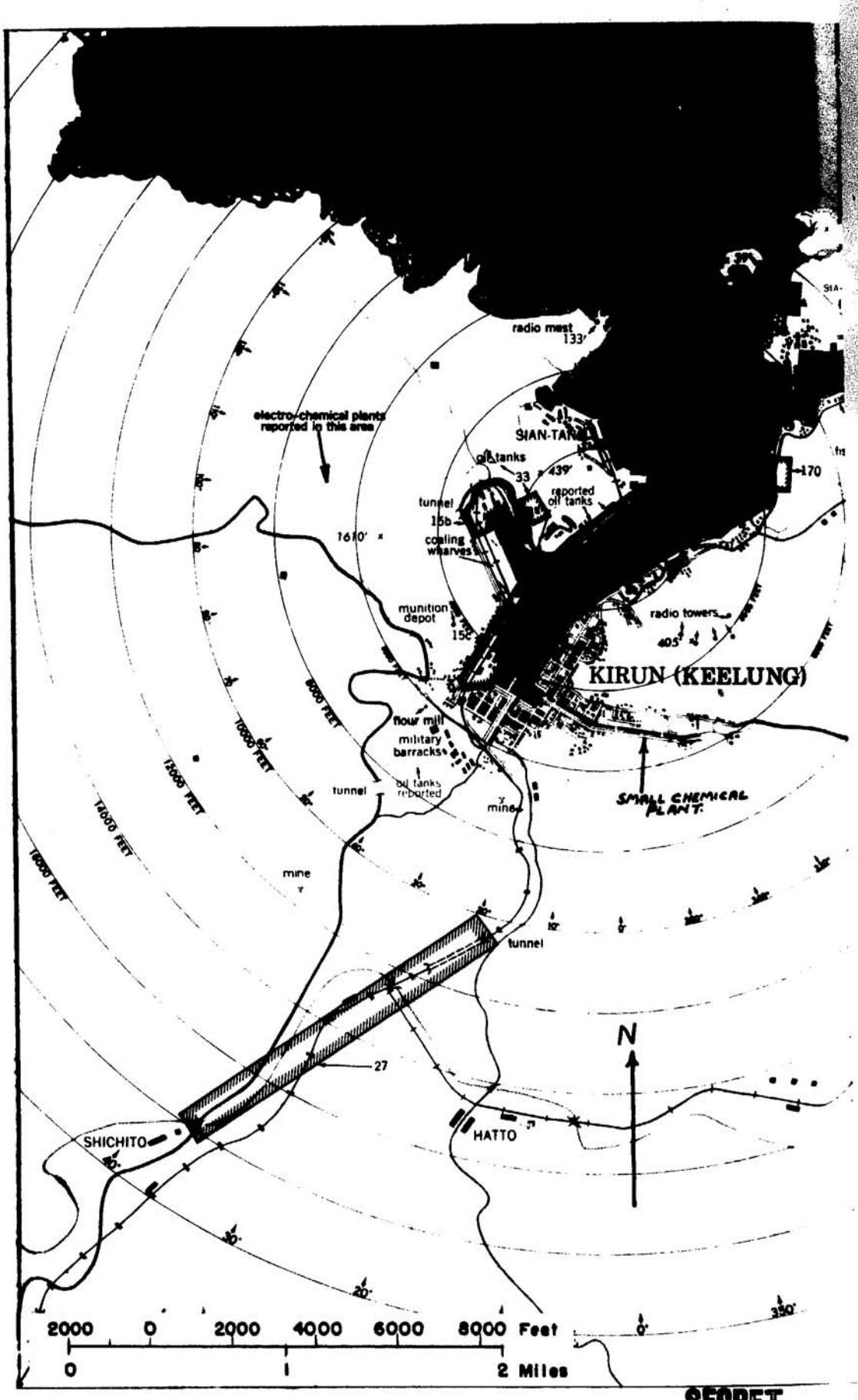
| Target Number | Name | Sq. Yds. | Approximate Coordinates | Significance and Description |
|---|---|---|---|---|
| 15a | NW Keelung Wharves** | 242,000 | 25° 09' N<br>121° 44' E | Probable military storage, 5-7 three story concrete warehouses with fixed cranes on roofs. Ten 3-ton cranes on wharves. |

| Target No. | Name | Sq. Yds. | Approximate Coordinates | Significance and Description |
|---|---|---|---|---|
| 15b | SW Keelung Wharves** | 217,000 | 25° 08' N 121° 44' E | General cargo wharves for RR trans-shipment 6 concrete warehouses and several storage sheds. Keelung RR Station & Yards, small repair shops at S end. Several heavy duty cranes. Small factory district near RR Station. |
| | Gun Positions | 156,000 | | Anti-aircraft and coastal. |

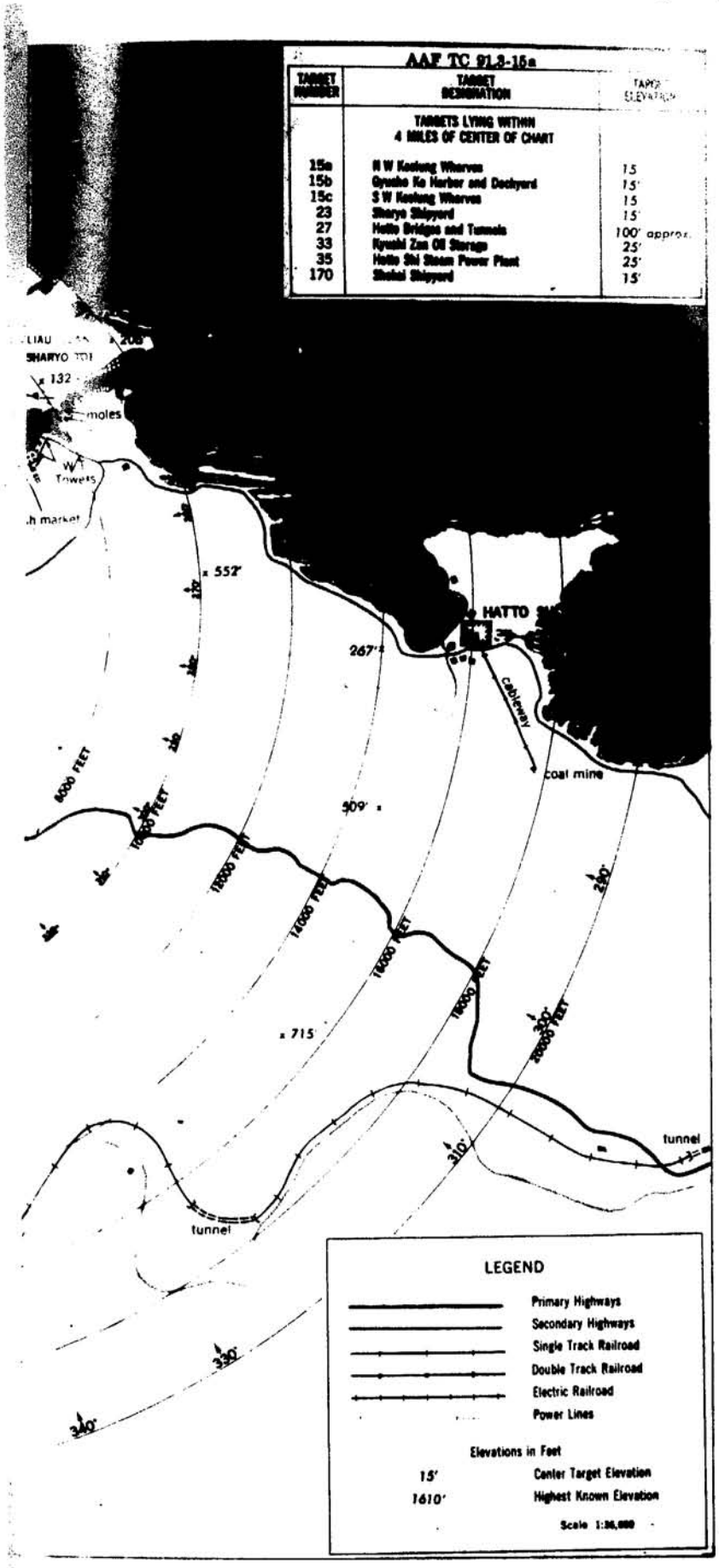
b. To be attacked with either persistent or nonpersistent gas.

| | | | |
|---|---|---|---|
| Barracks and prepared Infantry positions | 240,000 | | Permanent tactical installations. |
| Taihoku-Keelung Corridor | 7,750,000 | | Estimated area attacked with gas munitions during operations |

* Limited to tactical targets only by JCS 825/3.
** It is assumed that all buildings, bridges, etc., will be attacked with HE and then with persistent gas.


radio mast
133'
electro-chemical plants reported in this area
SIAN-TAN
oil tanks
33
439'
170
reported oil tanks
tunnel
156
1610'
coaling wharves
munition depot
156
radio towers
405'
KIRUN (KEELUNG)
8000 FEET
10000 FEET
12000 FEET
14000 FEET
16000 FEET
flour mill
military barracks
tunnel
oil tanks reported
mine
SMALL CHEMICAL PLANT
mine
tunnel
N
27
SHICHITO
HATTO
2000 0 2000 4000 6000 8000 Feet
0 1 2 Miles

SECRET


AAF TC 91-3-15a
TARGET NUMBER
TARGET DESIGNATION
TARGETS LYING WITHIN 4 MILES OF CENTER OF CHART
15a NW Kaotung Wharves 15
15b Gyusho Ko Harbor and Dockyard 15'
15c SW Kaotung Wharves 15
23 Sharyo Shipyard 15'
27 Hatto Bridges and Tunnels 100' approx.
33 Kyushi Zin Oil Storage 25'
35 Hatto Shi Steam Power Plant 25'
170 Shokai Shipyard 15'
HATTO
coal mine
cableway
tunnel
tunnel
x 552'
x 715'
267'
309'
310'
330'
340'
8000 FEET
10000 FEET
12000 FEET
14000 FEET
16000 FEET
18000 FEET
20000 FEET
LEGEND
Primary Highways
Secondary Highways
Single Track Railroad
Double Track Railroad
Electric Railroad
Power Lines
Elevations in Feet
15' Center Target Elevation
1610' Highest Known Elevation
Scale 1:36,000

KAGI

Location: Kagi is about 130 miles south-southwest of Taihoku. Latitude, 23° 29' N, Longitude, 120° 27' E.

Population (1939): 92,428, including 9,960 Japanese.

References:

a. Interim Report "Formosa", dated April 1944.

b. JANIS of Formosa, Vols. I, II and III dated June 1944.

c. "Selected Aerial Objectives for Retaliatory Gas Attack on Japanese Controlled Mainland Installations" dated August 1944.

d. "Formosa" pages 3329 - 3341 inclusive, Vol. III No. 42 (dated 18 October 44), Office Naval Intelligence Weekly.

e. Strategic Engineering Study No. 100, Summary Formosa (Taiwan) Terrain Intelligence, Office, Chief of Engineers, U.S. Army, dated July 1944.

I. Importance

a. Kagi is the fifth largest city in Formosa and is an important market for lumber from the Ari-San district in the mountains and is a center for the distribution of alcohol from sugar cane and sweet potatoes in the surrounding area. It has one of the most important airfields in Formosa. Before 1941, large scale maneuvers were held periodically near Kagi. Major troop concentrations of troops are believed to be in this area.

II. Terrain

a. Kagi is 18 miles from Formosa Strait and is 7 miles from the foothills of the central mountain range; it is on a comparatively broad stretch of the western coastal plain. It lies between two streams, the Bakushi-Kei on the north and the Hassho-Kei on the south; it is commanded by the low rugged hills on the east. It is a hub for secondary railways and roads and is on the main west coast road and railroad. Rice and sugar cane are grown on the country on all except the eastern side of the city; bamboo clusters surround the farm buildings. To the east there is a narrow belt of grassland which merges into a broad leaf forest of camphor, oak, fig, bamboo palms, banyan, and cork trees. There are scattered clumps of trees along the river banks. Medium textured alluvial (loams; clays in paddy land areas) soils predominate but to the east there is some fine textured (clay and stony clay) soils developed on gravels of terraces and table lands, and

some thin stony soils of foothills and other rough terrain generally below 1600 feet. The thin stony soils are generally non-trafficable regardless of weather or soil conditions; the other soils are trafficable except during and immediately after precipitation.

b. Kagi is shaped like a right triangle, with an east-west long side, a north-south short side and northeast-southwest hypotenuse marked by railroad lines; this built-up area has an area of approximately 1-5/8 square miles. A first-class military airfield, located three miles to the southwest, is reached by connections with the main railroad and highway. This airfield has extensive maintenance and repair facilities.

c. Two miles north of the city, the west-coast main highway crosses the Bokushi-Kei, about 150 yards wide. Thirteen miles further north, the route crosses the Hokko-Kei, about 100 yards wide. Seven miles southwest of the city, the route crosses the Hassho-Kei. Low rugged hills to the east command the road through this region. East-west movement across this region tends to be parallel to, but at a distance from, the streams (which generally flow westward). These streams have low but steep banks; the bottoms are generally flat; stream flows vary greatly, from a trickle in winter, to a flood in summer. Currents are swift. Fording or bridging operations would be difficult; by-passing them would likewise be difficult.

III. Gas Targets*

| AAF Target Number | Name | Approximate Location | Significance and Description | Estimated Area Sq. Yards |
|---|---|---|---|---|
| | Barracks** | 23° 29' N<br>120° 27' E | Permanent barracks at military camp | 20,000 |
| | Airfield** | 23° 28' N<br>120° 23' E | Includes shops and warehouses | 410,000 |

* Limited to tactical targets only by JCS 825/3.
** To be attacked with HE then with persistent gas.

PROVISIONAL EDITION

# TOWN PLAN OF KAGI

3'6" GAUGE RAILROAD

2'6" GAUGE RAILROAD

IMPORTANT BUILDING

GROUP OF IMPORTANT BUILDINGS

Approximate Scale

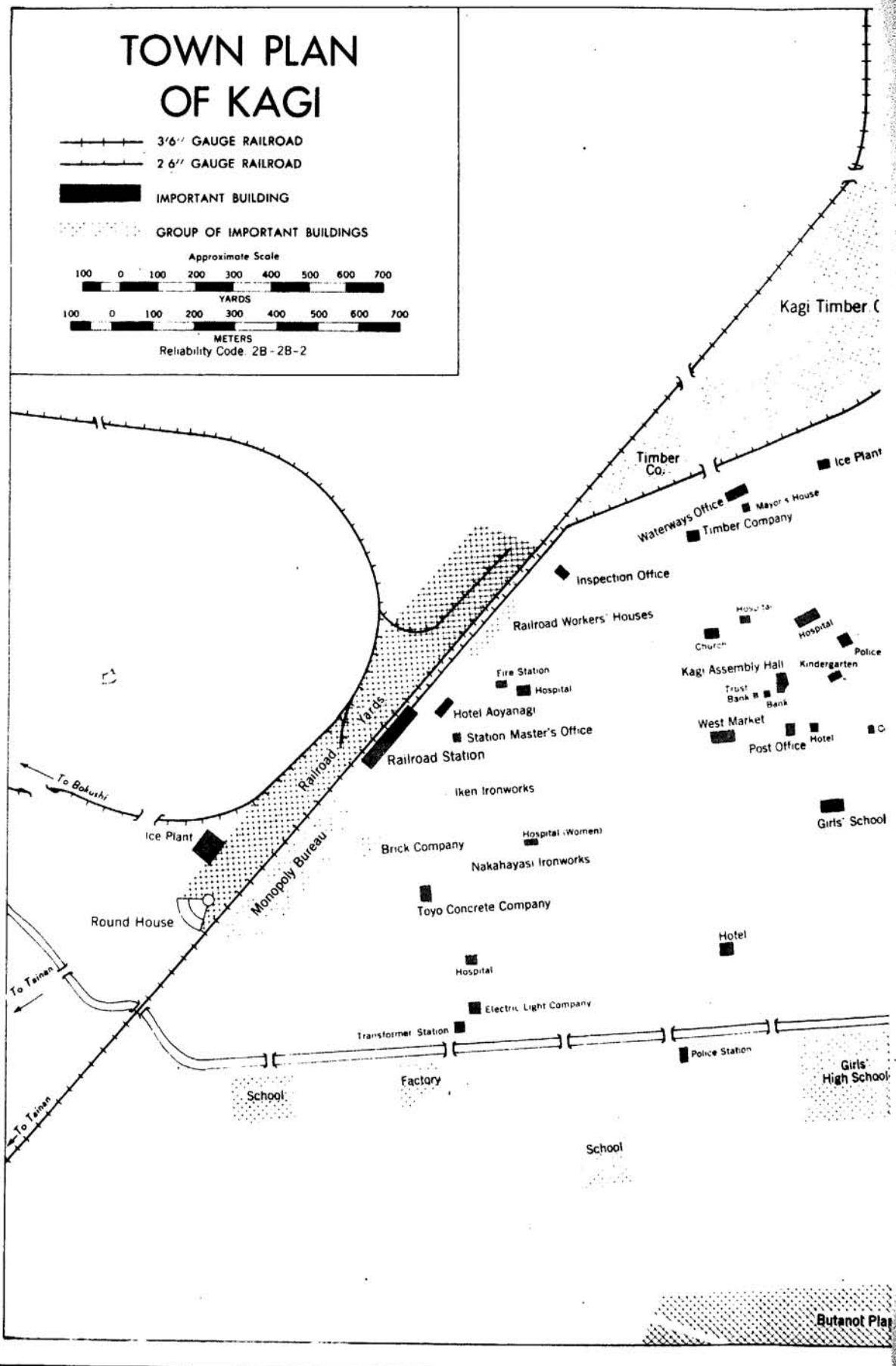
100 0 100 200 300 400 500 600 700

YARDS

100 0 100 200 300 400 500 600 700

METERS

Reliability Code: 2B-2B-2

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19 MAY 1944

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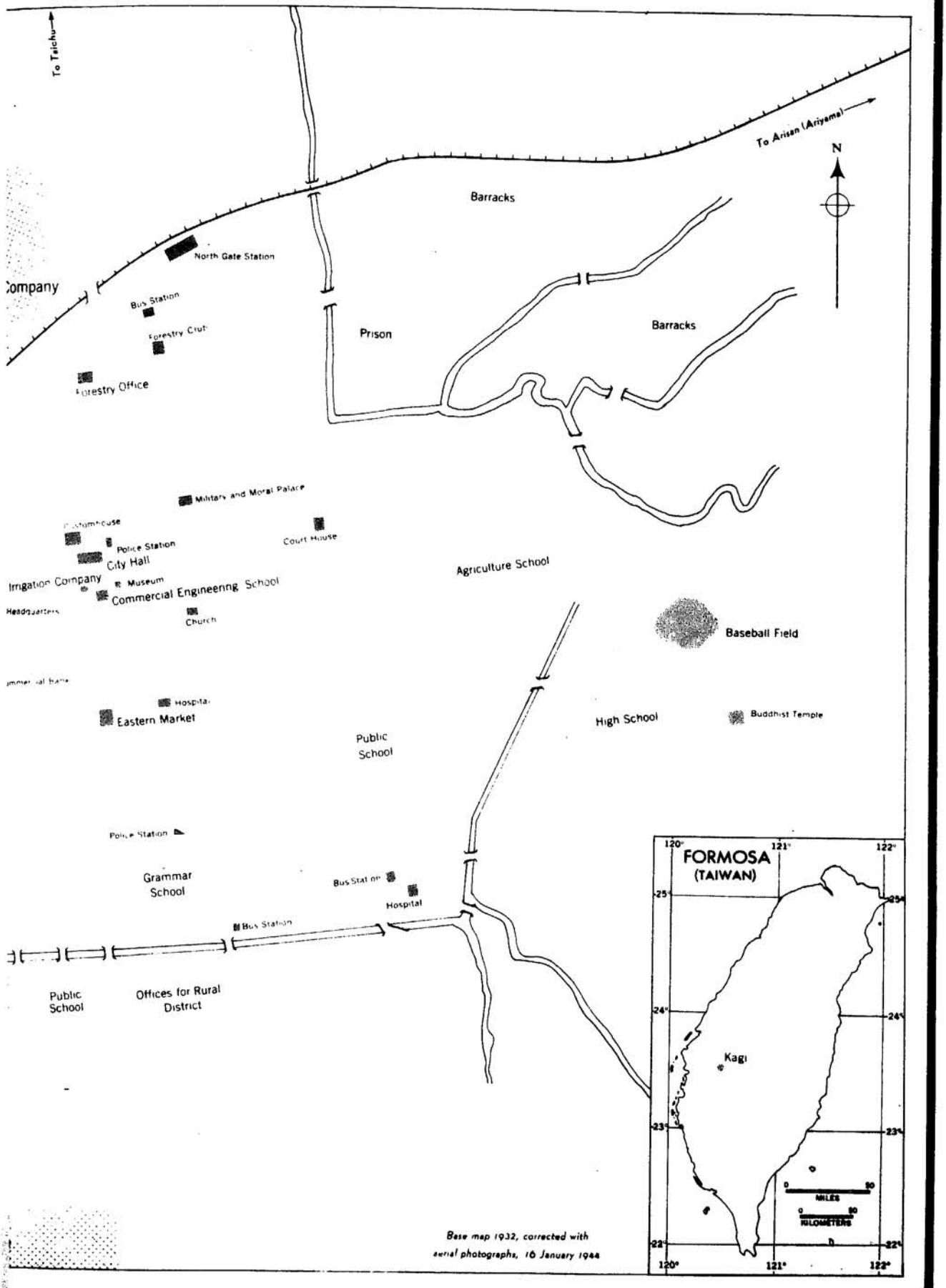




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TAICHU

## TAICHU

Location: Taichu is in the central part of the western coastal plain some 85 miles southwest of Taihoku. Latitude 24° 09' N, Longitude 120° 10' E.

Population(1940): 82,259, including 16,300 Japanese

References:

a. Interim Report "Formosa", dated April 1944.

b. JANIS of Formosa, Vols. I, II, and III, dated June 1944.

c. "Selected Aerial Objectives for Retaliatory Gas Attack on Japanese Controlled Mainland Installations" dated August 1944.

d. Civil Affairs Handbook, Taiwan (Formosa), Taichu Province, OPNAV 13-26 Office Chief, Naval Operations, dated 15 October 1944.

I. Importance

a. Taichu is the sixth largest city in Formosa. It is the center of a rich agricultural district producing rice, sugar, fruits, jute, and hemp, and has a large plant for refining sugar and distilling alcohol. Two airfields (with extensive maintenance and repair facilities) are located several miles to the northwest, and several groups of military buildings are in or near the city.

II. Terrain

a. Taichu is about 12 miles inland and 4 miles from the foothills of the central mountain range; it is in the center of a fertile plain which is virtually enclosed by the Chuo Mountain range to the east and the lower, coastal range (Daito) on the west and southwest. It is a hub for secondary railways and roads and it is located on the main west coast road and railroad. The Yanagi-gawa, boring through the northwest part of the city, and the Midori-gawa, through the southeast section drain southeastward to the Daito-Kei. Rice and sugar cane (during the dry season) are grown on the surrounding nearly flat plain; there are many scattered clumps of trees; grassy areas are about three miles eastward. Medium textured alluvial (loam - clays in paddy land areas) soil predominates; eastward from the city to the foothills is some fine textured clay and sand; in the foothills, the soil is thin and stony or of other rough terrain generally below 1600 feet. These soils are trafficable except during and immediately after precipitation.

b. Taichu is roughly circular in shape, with a diameter of about 1 1/2 miles. There are two grids of straight streets intersecting at right angles. The smaller grid lies southeast of and parallel to the main railroad; the larger, northwest of the railroad, meets it at an angle. The southeast section is the manufacturing section; the area northwest of the railroad, reaching as far as the Yanagi-gawa, is the real center of the city. In the eastern outskirts of the city is a large military

post. The Taichu and Toyohara airfields are 2 and 7 miles, respectively, north-northwest of Taichu; each has hangars, barracks, warehouses, maintenance and repair shops and administrative areas.

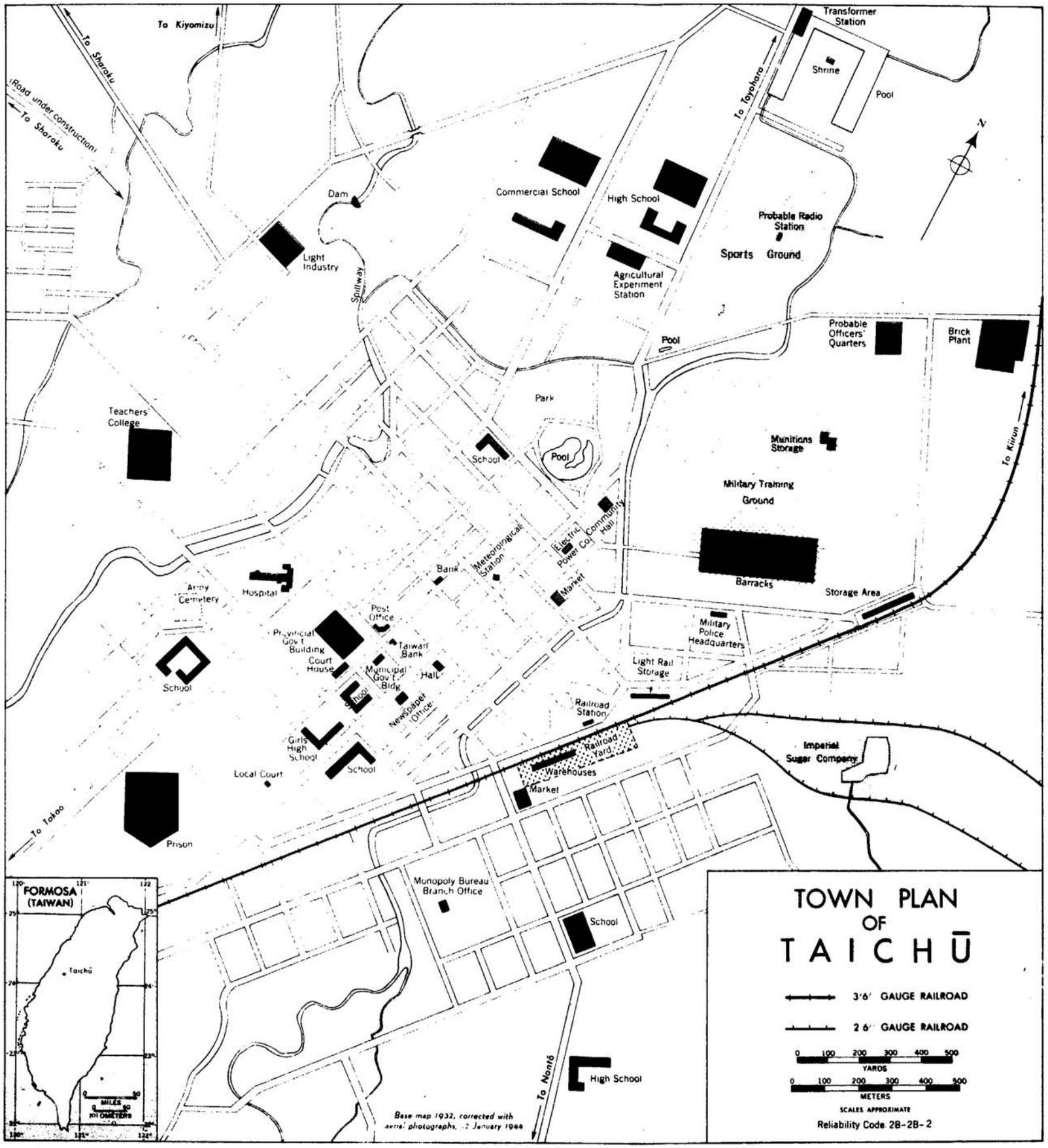
c. A north-south ridge (Chuo Mountains) west of Taichu, between Taiko-Kei and Daito-Kei, rises to about 1,000 feet, and would divert north-south movement to lower areas on either side. The west coast main highway divides around this ridge; one part passes through the corridor about 7 - 10 miles wide) to the east and in this corridor Taichu and Toyohara are located. The ridge commands this corridor through which all north-south routes pass. East-west movement across this region tends to be parallel to, but at a distance from streams (which generally flow westward). The Daito-Kei near Taichu and westward has low but steep and wide banks; the bottom is, generally, flat and subject to flooding particularly from May through September; the current is swift. Fording or bridging operations would be difficult; by-passing would be difficult. This stream is not generally navigable; short stretches near the mouth are navigable for native craft at high tide.

d. Landing beaches with good exits are approximately 2 miles southwest, west and northwest of the city.

III. Gas Targets*

| Target No. | Name | Approximate Location | Significance and Description | Estimated Area Sq. Yds. |
|---|---|---|---|---|
| | Barracks** | 24° 09' N 120° 10' E | Permanent Barracks at Military Camp. | 70,000 |
| | Warehouses ** | 24° 09' N 120° 10' E | Military Supply Depots | 10,000 |
| | Airdrome Taichu** | 24° 11' N 120° 39' E | Air base with six hangars and several maintenance and repair shops | 100,000 |
| | Airdrome Toyohara** | 24° 15' N 120° 38' E | Air base with eight hangars, 3 maintenance and repair shops, 2 storage tanks, 25 feet diameter and 11 store buildings. | 300,000 |
| | Landing Beaches*** | Approximately 2 - 3 miles southwest, west and northwest of the city. | | 3 sq. miles. |

*Limited to tactical targets only by JCS 825/3.
**To be attacked with HE then with persistent gas.
***To be attacked with either nonpersistent or persistent gas.



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LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

SHINCHIKU

# SHINCHIKU

Location: Shinchiku is 38 miles west-southwest of Taihoku and 3 miles inland from Formosa Strait. Latitude 24° 48' N, Longitude 120° 57' E.

Population (1940): 57,957 including 7,504 Japanese

References:

a. Interim Report "Formosa", dated April 1944.

b. JANIS of Formosa, Vols. I, II and III, dated June 1944.

c. "Selected Aerial Objectives for Retaliatory Gas Attack on Japanese Controlled Mainland Installations" dated August 1944.

## I. Importance

Shinchiku is the seventh largest city in Formosa and it is the capital of Shinchiku Province. Its economic importance is based largely on rice, sugar, and tea, especially oolong, produced in the surrounding area. Southwest of the city, the trunk railroad and main highway of the island approach a section of the coast where there are good landing beaches. A large military airfield equipped with important maintenance and repair facilities has been developed on the northwestern outskirts of the city; it is also a combination staging base and bomber training school.

## II. Terrain.

a. Shinchiku is built in the center of a triangular coastal plain south of the Hozan-Tozen river channels. The town is said to have been a port for junks but recent photographs indicate no port facilities and no evidence of water borne traffic other than a few sampans. The narrow guage trunk railroad and the main highway pass through Shinchiku. Rice is grown on the lowlands. Surrounding the town (except on the east), medium textured alluvial (loam-clays in paddy land areas) soils predominate. Loams are trafficable except during and immediately after precipitation. East of town are grown sugar cane, vegetables, sweet potatoes, and tea, especially oolong; the soil is predominantly course textured alluvial (sandy and gravelly) soilm which are trafficable except during heavy precipitation.

b. The built-up area is roughly square in shape, each side being approximately 2,000 yards. The old Chinese town of narrow crooked streets has been modified greatly by the construction of several wide, regular streets.

The town is divided by a straightened stream channel. In the northwest outskirts of the city is one of the largest airfields in Formosa. Shinchiku is also the site of other army camps. Narrow guage railroads and secondary roads communicate with small towns and villages nearby.

c. Three miles southwest of Shinchiku, the main west coast roads turns northeastward across rice fields and numerous small streams. Directly northeast of Shinchiku, the many channels of the Tozen-Kei and the Hozan-Kei comprise a four mile long, nearly continuous obstacle. Five miles northeast of Shinchiku, the road follows the inland, better drained edge of the wet coastal plain to Chureki, Daikei and Toen. Easy movement south of Shinchiku will be confined to the narrow coastal belt which is a defensive phase line. Operations both north and south of the town will be hindered by the numerous ponds, the rivers (with low, steep banks), ditches, and the wet, low ground.

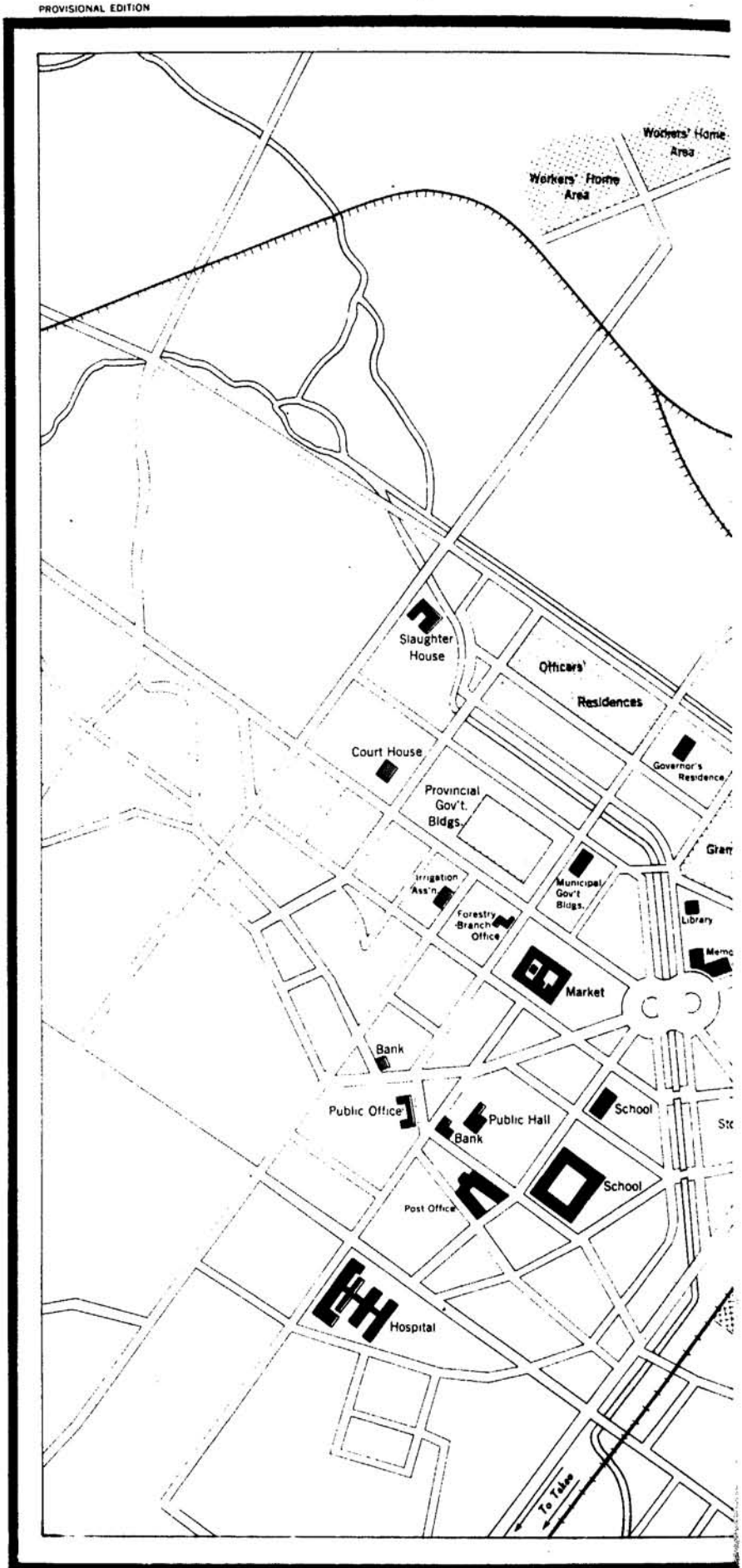
d. The streams in this area have flat bottoms, covered with pebbles and probably brick red in color. The currents are swift. Fording or bridging would be easiest from October to February and most difficult from March through September. These streams are not navigable. By-passing either ponds or streams would be difficult.

III. Tactical Gas Targets**

| AAF Target No. | Name | Approximate Location | Significance and Description | Area Sq. Yards |
|---|---|---|---|---|
| | Airdrome** | 25° 50' N 125° 55' E | Eight hangars and over 30 shops and stores buildings - staging area and training school; first class base | 1,000,000 |
| | Barracks and Military School** | Scattered thru city and at airfield | | 50,000 |
| | Landing Beaches *** | | Along coast in radius of approximately 2 miles of the city; reported to have pillboxes at 150-yd. intervals (unconfirmed). | 6 sq. mi. |

*Limited to tactical targets only by JCS 825/3.
**To be attacked with HE then persistent gas.
***To be attacked with either nonpersistent gas or persistent gas.

PROVISIONAL EDITION

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18 MAY 1944

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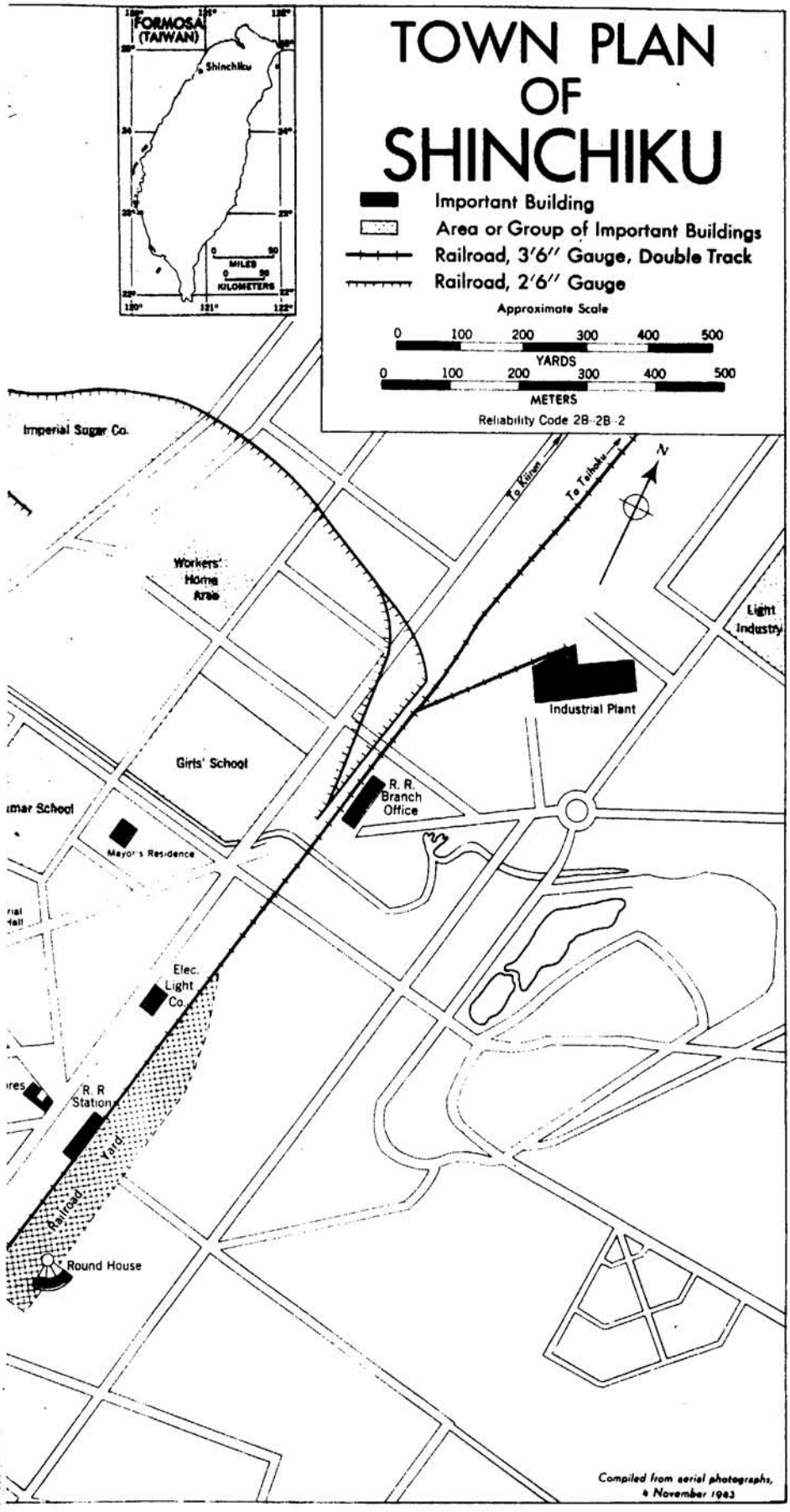



CONFIDENTIAL

COMPILED AND DRAWN IN THE BRANCH OF RESEARCH AND ANALYSIS, OSS
LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

HEITO

Location: About 14 miles east and slightly north of Takao, Latitude 22° 40' N, Longitude 120° 28' E.

Population (1940): 54,756, including 6,747 Japanese.

References:

a. Interim Report "Formosa" dated April 1944, prepared by AC/AS Intelligence.

b. JANIS of Formosa, Vols. I, II and III, dated June 1944.

c. "Selected Aerial Objectives for Retaliatory Gas Attack on Japanese Controlled Mainland Installations" dated August 1944.

d. Civil Affairs Handbook, Taiwan (Formosa", Takao Province, OF NAV 13-22, Office Chief Naval Operations, Navy Department, dated 1 October 1944.

I. Importance.

a. The Heito Airport is a large, well-equipped field. Its facilities include a secondary air depot, where some last-phase modifications or minor assembly is done. Between the airport and Heito Proper are several groups of barracks and military schools. Other small barracks areas - occupying converted school compounds - are scattered throughout the town.

b. A prison-like barracks area, covering some seven acres, is located about four miles east of town. The camp comprises some thirty buildings and the compound is inclosed by two high walls. While confirming evidence is lacking, it is possible that this may be the Allied prisoner of war camp which has been reported in this vicinity.

c. It has good transportation facilities and is an important commercial center.

II. Terrain.

a. Heito is located on the low western plain of western Formosa, about two miles east of the Katansui-Kei (stream). The channels of this stream form a mile wide valley and are a major obstacle in the wet season. A small stream flows along the eastern edge of the built-up area. Heito is accessible by a number of railroad lines and by a network of highways from all directions; the town is on the main line of the west coast railroad and on the main west coast road. Soils in this area are predominately medium textured loams; it is generally

trafficable except in wet weather. Many rice paddys are in the vicinity; ribbon areas of grass extend along Katansui-Kei; trees are green throughout the year.

b. The built-up area of the city is irregular in outline, but practically all of it is within a square measuring 7,000 feet on a side. Several military areas, with streets that intersect at right angles, adjoin the main built-up area; extensive barracks have been built in Heito. Little information is available regarding buildings but they are presumably similar to those in other Formosan cities.

c. A large, completely equipped airfield is located on the east bank of the Katansui-Kei, about 1-2/3 miles west of the city. Adjoining it to the north, a new airfield was in process of construction in January 1944.

d. The Katansui-Kei and the Toko-Kei are not navigable except to shallow-draft boats; they have steep banks 10 to 40 feet high, and swift currents. Fording or bridging would be easiest from November through February; these rivers are major obstacles to all operations crossing the plain extending from the landing beaches on each side of Takao to the western foothills.

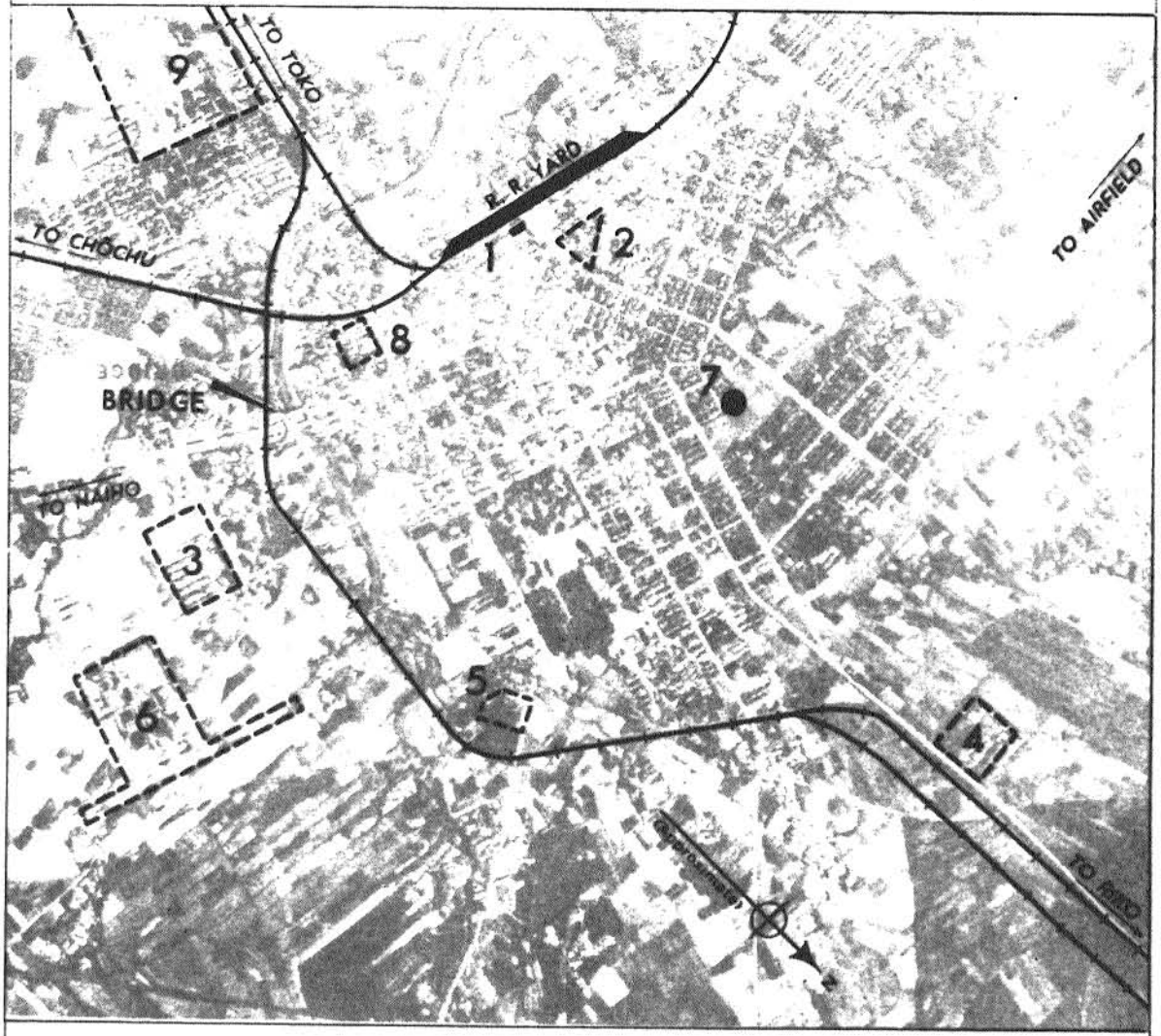
IV. Gas Targets*

| Target Number | Target Name | Coordinates | Comment | Estimated Area Sq. Yards |
|---|---|---|---|---|
| | Barracks** | | These are especially concentrated around airfield; two other barrack areas are in southern part of city; one about 3,800 ft. southwest of railroad yards; the other about 2,800 ft. west of the railroad yards. Permanent installations. | 144,000 |
| 57 | Air Base** | 22° 41' N 120° 27' E | Training center and repair shops. Permanent installations | 1,046,000 |
| 55 | Shimo Tansui RR Bridge ** | | 5,000 foot steel girder bridge | 17,000 |

* Limited to tactical targets only by JCS 825/3
** To be attacked with HE then persistent gas

# HEITŌ

## FORMOSA (TAIWAN)




AIRPHOTO FROM: *Photo Intelligence Report, No. 461, Dec. 1943*

500 1000
YARDS

1 Railroad Station and Yards
2, 3, 4, 5 Barracks
6 Water Filtration Plant
7 Transformer Sub Station
8 Industrial Plant
9 Alcohol and Sugar Refinery

NO. A-3410-RA, OSS
24 MAY 1944

LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

# TOKO

Location: On the Southwestern coast of Formosa. Latitude 22° 27' N, Longitude 120° 27' E.

Population (1935) 18,259 including 293 Japanese.

References:

a. Interim Report "Formosa", dated April 1944, prepared by AC/AS, Intelligence, Washington, D. C.

b. JANIS (No. 87) of Formosa (Vols. I, II and III) dated June 1944.

c. Civil Affairs Handbook, Taiwan(Formosa), Takao Province, OPNAV 13-22, Office, Chief, Naval Operations, Navy Department, dated 1 October 1944.

## I. Importance

a. Toko, the largest of the many small commercial centers serving the densely populated farming region southeast of Takao, is important as a river port for small craft. It is a market for cargoes of rice, sesame seeds and sugar cane drawn from the area tributary to the lower valleys of the Toko-kei and Katsusui-kei. A number of recently constructed military and naval installations, including a large sea-plane base, give the town military importance.

## II. Terrain

a. The port of Toko is formed by the mouths of the Toko and the Shimotansui Rivers, and is behind a coastal beach ridge. The town is a hub of secondary railroads and is on a spur of the main west coast line; it is at the junction of a coastline road and a road running north. Ribbons of grassland extend along the banks of the streams and along the coast south of Toko; rice and sugar cane are grown to the east and to the north. It is reported that rubber plants introduced near Toko were producing in 1941. Soils are predominately medium-textured alluvial loams; they are in general trafficable except during and immediately after precipitation.

b. The built-up area is scattered over a series of "islands" of dry land, which rise from the surrounding marshes, ponds and rivulets and is approximately 5/8 square miles in area. The street pattern is irregular, conforming to the shape of the "islands". Only the main streets continue from one "island" to another by bridges or causeways. There is a large sea-plane base with repair shops and warehouses on a lagoon one mile east of town; an airfield was reported to be under construction in the area in 1941. One barrack section area is on a former marsh in the southeastern section of town; the other is 1/2 mile north of the sea-plane base.

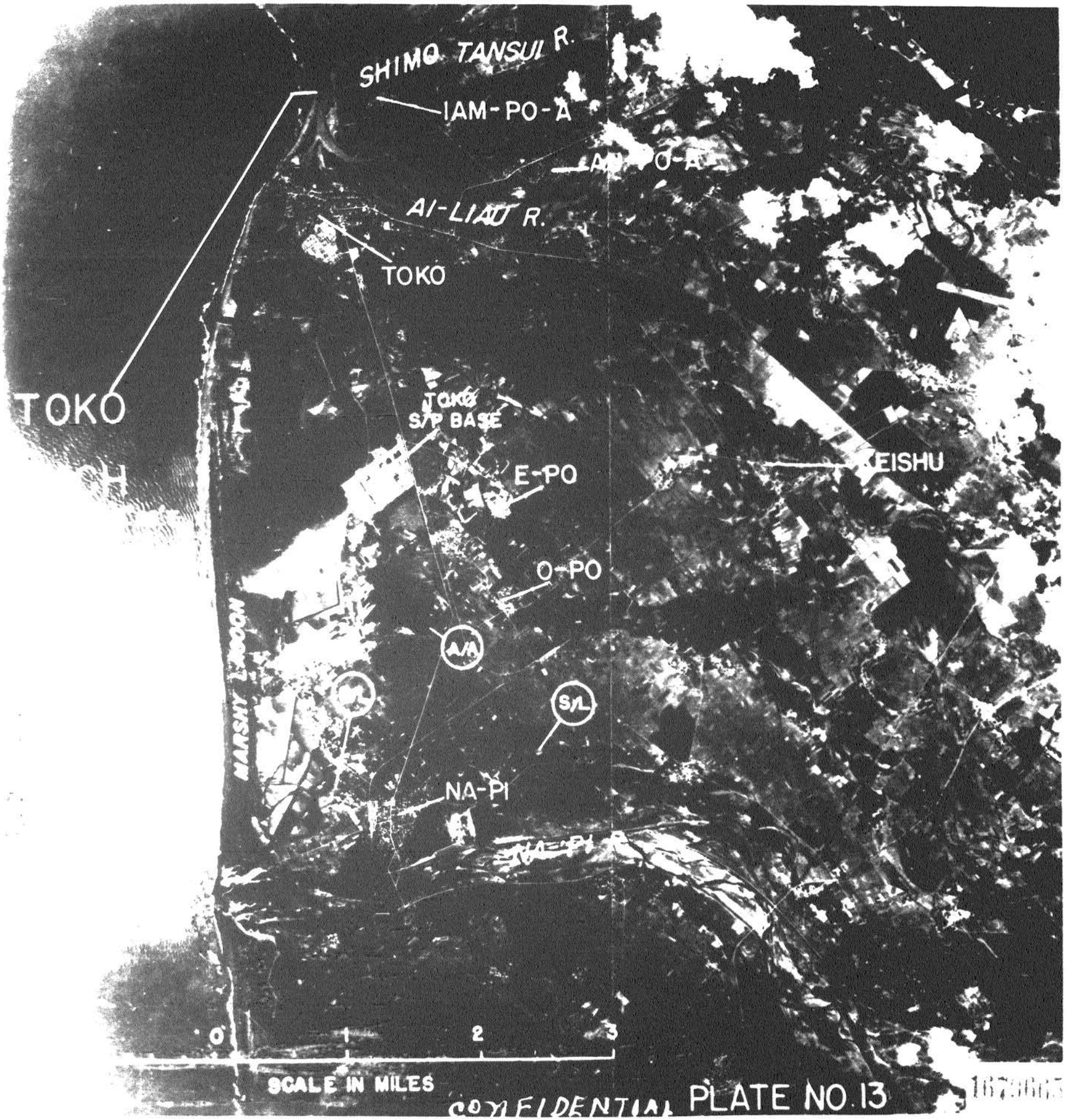
c. The Toko-Kei has steep banks, 10 to 40 feet high, its bottom is stony; its currents are swift. Fording or bridging would be easiest from November through February; by-passing would be impractical, if not impossible. Sand bars, with water from six inches to five feet at low tide, obstruct passage

at the mouth, but there is good anchorage used by Japanese warships about 2.2 miles southeast. Immediately off-shore from Toko, between the mouth of the rivers and Sho Ryuku (Lambei Island), the water is extraordinarily deep. The river is not navigable except by shallow draft boats. Good landing beaches with good exits extend along the coast north and south of the town.

III. Gas Targets*

| AAF Target No. | Target Name | Coordinates | Comments | Estimated Gas Gas Target Area Sq. Yds. |
|---|---|---|---|---|
| 162 | Toko seaplane base** | 20° 27' N 120° 27' E | Major seaplane station with 6 large hangars, several shops and storage bldgs; small power plant. | 764,400 |
| | Barracks Area** | 22° 27' N 120° 30' E | Permanent but not at seaplane base | 186,000 |
| | Landing Beaches*** | Probable terrain over which eml. operations will be conducted | | 4 square miles |

* Limited to tactical targets only by JCS 825/3
** To be attacked with HE, then with persistent gas
*** To be attacked with either nonpersistent gas or persistent gas




CONFIDENTIAL PLATE NO. 13

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FORMOSA CITY PLANS 1:10,000



TOKO

FIRST EDIT


7718

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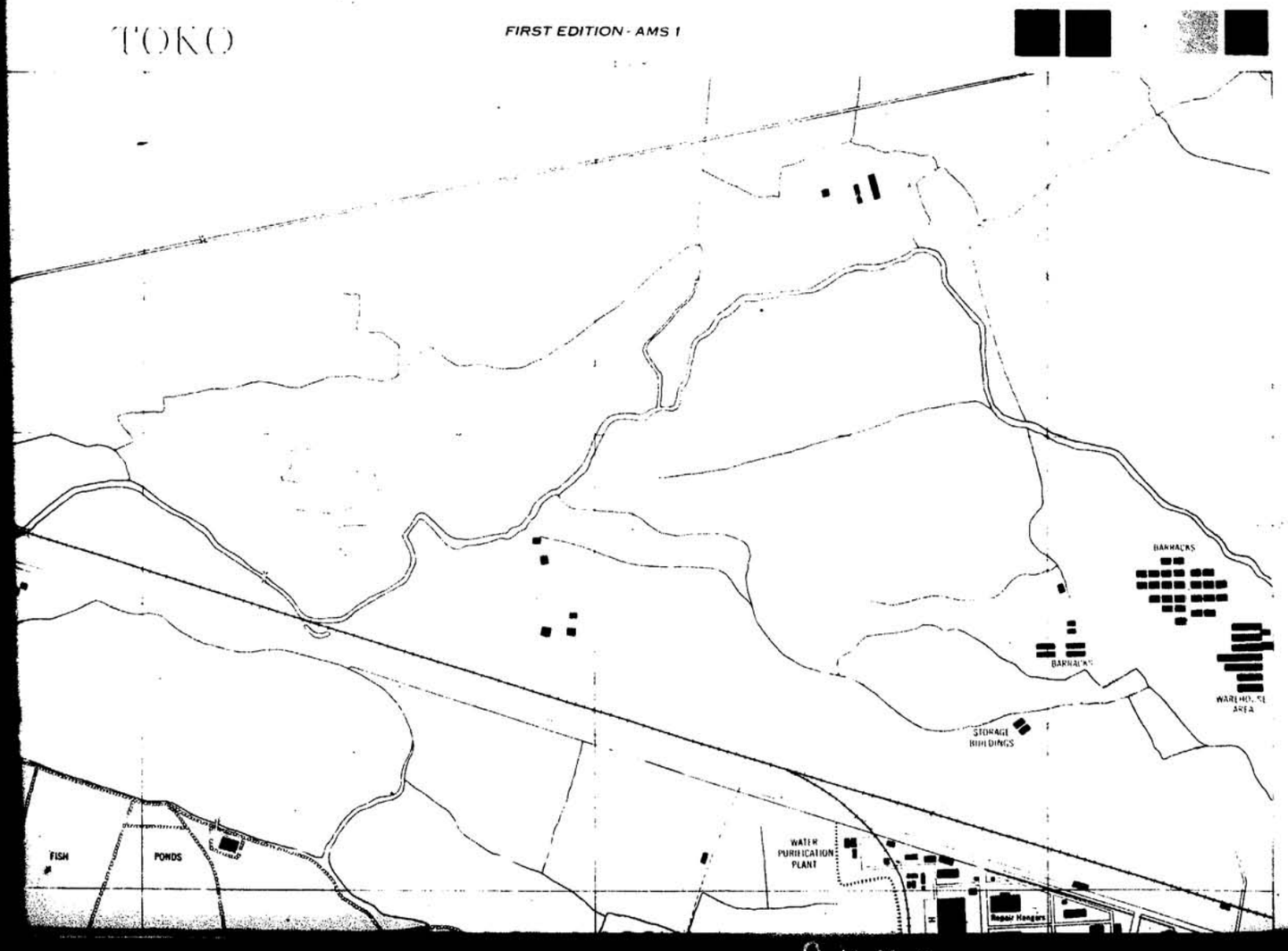

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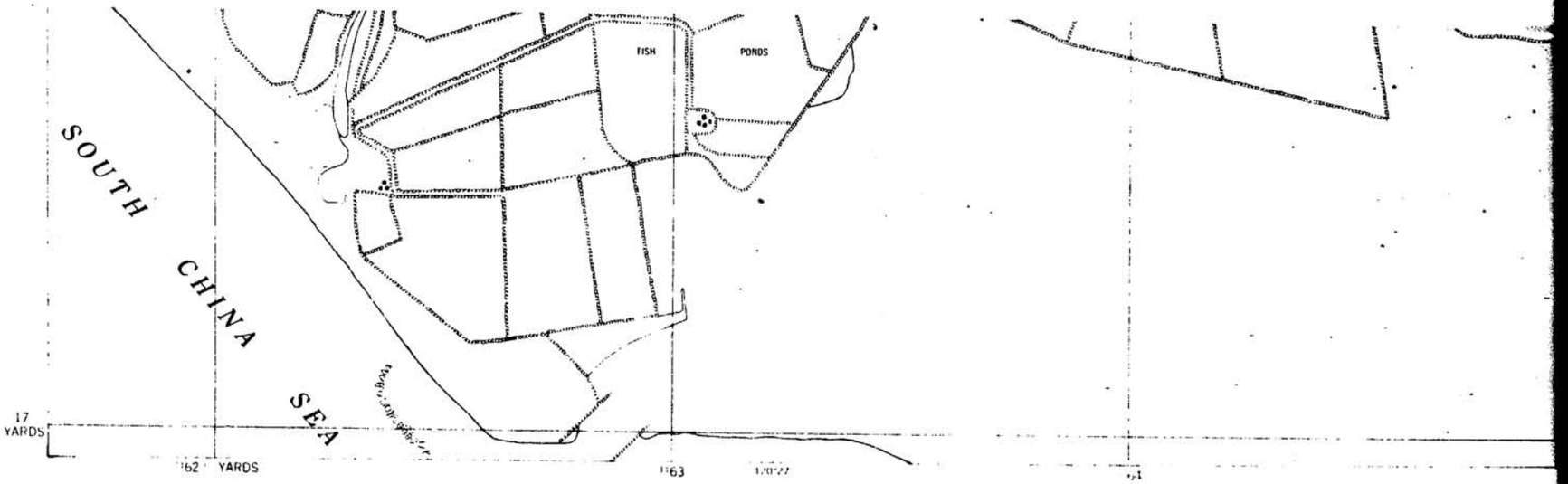


AMS L991 [illegible] AMS 1st 1944

Prepared under the direction of the Chief of Engineers by the Army Map Service (AMS), U.S. Army, Washington, D.C. Compiled in 1944 from aerial photography dated November 1943 and June 1944 by photo planimetric method and by reference to Formosa 1:50,000 AMS sheet 7114 II, 1944. Aeronautical charts and other geographic data. Place names are transliterated according to the Modified Hepburn (Romaji) System.

Scale 1:10,000

500 0 500 Meters

500 0 500 Yards

LEGEND

[illegible]

POLYCONIC PROJECTION

[illegible]

GLOSSARY

[illegible]

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AT CENTER OF SHEET
ANNUAL MAGNETIC CHANGE DECREASE
Use diagram only to obtain numerical values

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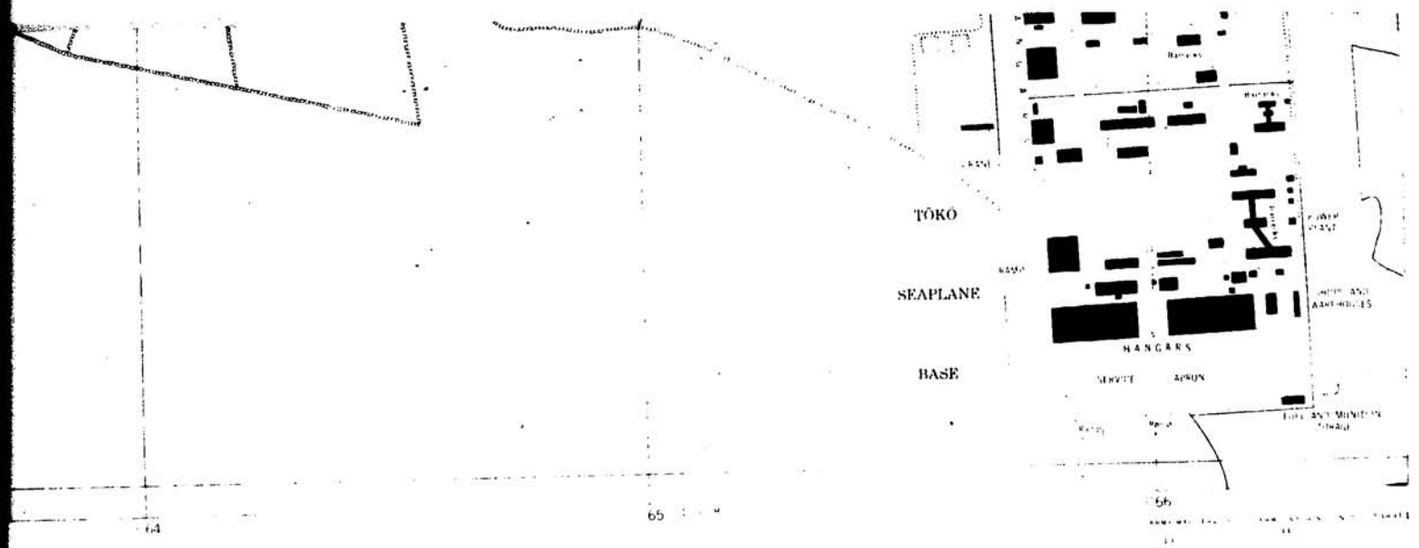


Scale 1 10 000

GLOSSARY

TOKO, FORMOSA (TAIWAN)
TAKAO-SHŪ
N2227 E12026 2/1.4x2.6

KARENKO

KARENKO

Location: On the eastern coast of Formosa. Latitude 23° 59' N. Longitude 121° 36' E.

Population (1935): 15,464 including 6,336 Japanese

References:

a. Interim Report "Formosa" dated April 1944, Office AC/AS, Intelligence.

b. JANIS of Formosa, Vols. I, II and III, dated June 1944.

c. "Selected Aerial Objectives for Retaliatory Gas Attack on Japanese Controlled Mainland Installations" dated August 1944.

d. Civil Affairs Handbook, Taiwan (Formosa", Karenko and Taito Provinces, OP NAV 13-24, Office Chief, Naval Operations, dated 1 October 1944.

e. Strategic Engineering Study No. 100: Summary Formosa (Taiwan) Terrain Intelligence, Office, Chief of Engineers, dated July 1944, US Army.

I. Importance.

a. Karenko is the largest town and has the best port on the eastern sea coast of Formosa. It is a trading center for the surrounding plain and valley to the south and has a large number of electro-chemical and electro-metallurgical plants. Four miles north-northwest of the city is an airfield fully equipped to handle large planes.

II. Terrain

a. A trough-like valley runs parallel to the eastern shore line of the island for a distance of 75 miles behind a narrow coastal mountain range. At its northern end, the valley meets the sea obliquely in a coastal plain, 10 miles in length, which narrows rapidly to the north. The town of Karenko lies on this coastal plain, about 3 miles north of its southern boundary, against the abrupt slopes of the northeastern tip of the coastal range. The city borders the sea just to the south of the Beiron-Kei; its artificial port lies about 1 mile north along the coast. West and southwest of the town are grass lands, rice paddys and sugar cane fields; south and north of the city strips of marsh lands and belts of grass. Along the coast is a narrow strip (about 3 miles wide) of medium textured alluvial (loams) soils; west of this strip, the floor of the valley is predominately course-textured alluvial (sandy and gravelly) soils. Such soils are trafficable except during and immediately after precipitation.

b. The built-up area of Karenko is rectangular in shape with the long side about 1400 yards and the short side about 1100 yards; the street pattern is cut by one major and several minor diagonals. A railroad, the only line on the east coast runs south through the valley to Taito. A road runs about 50 miles south along the interior valley. A large airport is located just north of the port. The city would probably be defended by the Japanese.

c. The Taito-Karenko corridor is about 90 miles long, averages 3 miles wide and is commanded by 200 to 5,000 foot mountains on both sides. It could be blocked. Its generally level floor is locally suitable for airfields. Cross-country movement must cross many swift, small streams. Existing roads cross the corridor from side to side to avoid the streams. Vehicles or equipment could not get out of this area by land except over established routes. Foot troops would find cross-country movement out of this corridor extremely difficult or impossible. The banks of the streams are generally low and steep, but are high and steep where a stream cuts against a terrace or against the valley side; the bottoms are flat and full of boulders. The best months, for fording or bridging are from December through April; these streams could not readily be by-passed. None of these streams is navigable.

d. An almost continuous stretch of sandy beach (50 feet or more in width) extends for about 14 miles between the mouth of the Karen-Kei and that of the Tatsu Kiri-Kei. Sea conditions are best from the end of spring to the middle of summer, otherwise, surf usually heavy. A plain backs the beach and extends inland about 4 miles. It is crossed by a network of railroads, roads and trails (reliability - fair).

III. Gas Targets*

| AAF Target Number | Name | Approximate Location | Comments | Estimated Area sq. yds. |
|---|---|---|---|---|
| | Barracks** | 23° 59' N 121° 36' E | Permanent Barracks | 50,000 |
| | Airfield** | | 2 hangars, each capacity of 6 aircraft; fuel tanks, 3 barracks, aircraft factory adjoins field, also naval air base. | 30,000 |
| | Taiko-Karenko Corridor*** | | Tactical Operations | 5 sq. mi. |
| | Landing Beaches*** | | Tactical Operations | 5 sq. mi. |

* Limited to tactical targets only by JCS 825/3
** To be attacked with HE then persistent gas.
*** To be attacked with either nonpersistent or persistent gas.



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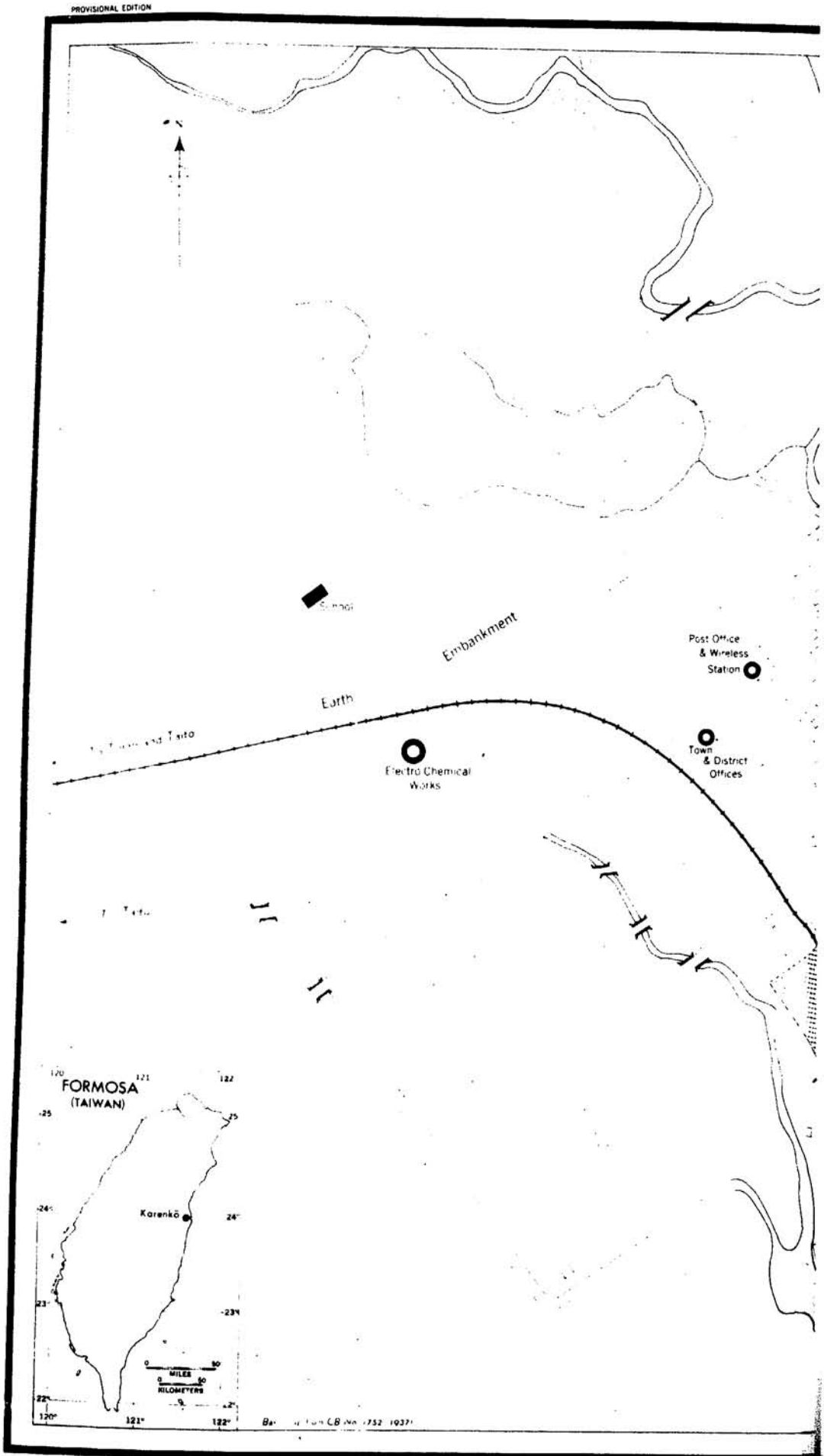

PROVISIONAL EDITION
Embankment
Earth
Post Office
& Wireless
Station
Electro Chemical
Works
Town
& District
Offices
FORMOSA
(TAIWAN)
Karenkō
MILES
KILOMETERS




COMPILED AND DRAWN IN THE BRANCH OF RESEARCH AND ANALYSIS, OSS
LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

OKAYAMA

## OKAYAMA

**Location:** On the western coastal plain of Formosa, Latitude 22° 48' N, Longitude 120° 16' E.

**Population (1935):** 15,285 including 429 Japanese

References:

a. Interim Report "Formosa", dated April 1944, prepared by AC/AS Intelligence.

b. JANIS of Formosa, Vols. I, II, and III, dated June 1944.

c. Civil Affairs Handbook, Taiwan (Formosa), Takao Province, OPNAV 13-22, Office, Chief, Naval Operations, Navy Department, dated 1 October 1944.

I. Importance

a. Okayama, once a market town for a densely settled agricultural area of the southwestern coastal plain has recently gained considerable industrial and military importance. A large airfield and an airplane repair and assembly plant lie to the west between Okayama and Mida.

II. Terrain

a. Okayama is in the southern part of the western coastal plain, less than four miles inland from Formosa Straits and about midway between Takao and Tainan. It is a hub for secondary roads and railroads; it is on the main west coastal highway and railroad; it has no port or other water connections. The surrounding area is flat, with numerous streams, and is dotted thickly with agricultural villages, and rice and fields of sugar cane. Soils are predominately medium-textured loams; it is generally trafficable except in wet weather. Many rice paddys are in the vicinity; stream channels and valley edges are fringed with ribbons of grassland; tree leaves are green throughout the year.

b. Okayama, exclusive of the airfield and aircraft plant, is approximately a square of 5600 feet to the side. About 2 1/2 miles south of the railroad station is an airfield of about 500 acres; the intervening territory is almost completely built up. Extensive new installations of barracks, huts and administrative or storage facilities surround the airfield and the town.

c. The 1,000 foot peak, Taiko-zan, is about five miles to the northeast. Two streams winding through the area have made necessary a dozen or more highway and railroad bridges on the approaches to the city. Low banks (less than 50 feet high) confine the streams. The bottoms are generally stony and flat. Currents are swift. These streams can be forded or bridged with some difficulty; such operations are easiest from November through February. These streams are not navigable except to shallow-draft boats.

III. Gas Targets

| AAF Target Area | Name | Coordinates | Comments | Estimated Gas Target Area Square Yards |
|---|---|---|---|---|
| | Barracks** | 22° 47' N 120° 15' E | Permanent Installations | 233,000 |
| | Gun Positions** | 22° 47' N 120° 15' E | Permanent Installations | 86,000 |
| | Warehouses ** | 22° 47' N 120° 15' E | Repair shops, warehouses and administrative buildings. | 611,000 |
| | Landing Beaches *** | 22° 47' N 120° 14' E | Landing beaches with suitable exits within 12 miles of Okayama | 10 sq. mi. |

*Limited to tactical targets only by JCS 825/3
**To be attacked with HE and then persistent gas
***To be attacked with either persistent or nonpersistent gas.

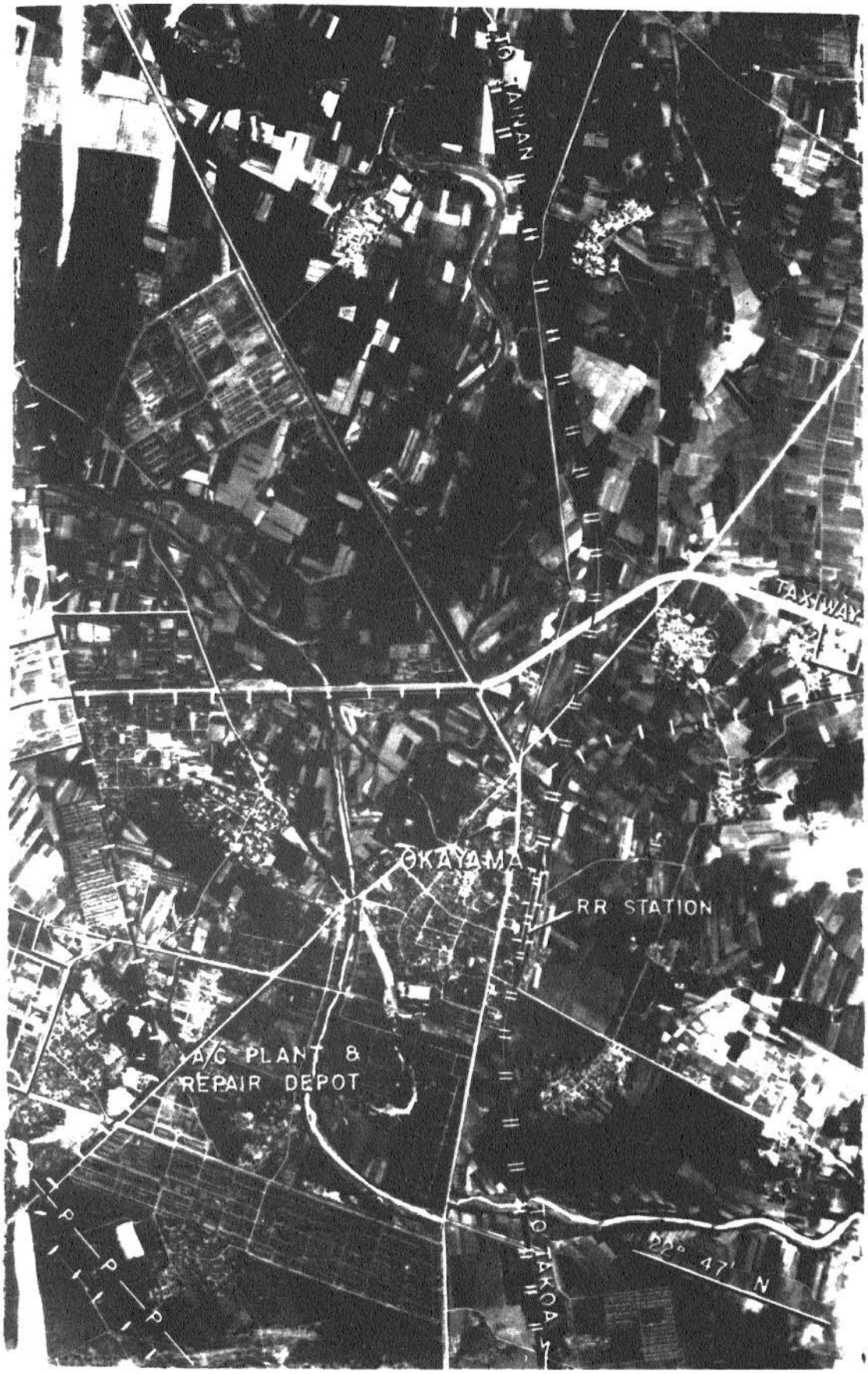
OKAYAMA A/C PLANT & REPAIR DEPOT
OKAYAMA, FORMOSA
PHOTO INTELLIGENCE REPORT No. J-13
PHOTOGRAPHY OF 25 AUGUST 1944

APPROXIMATE SCALE
2000' 1000' 0 1000' 2000'

**U.S.- CONFIDENTIAL**
(BRITISH-CONFIDENTIAL)

OFFICE OF AC/AS, INTELLIGENCE
AND
P.I.C., DIV. OF NAVAL INTELLIGENCE

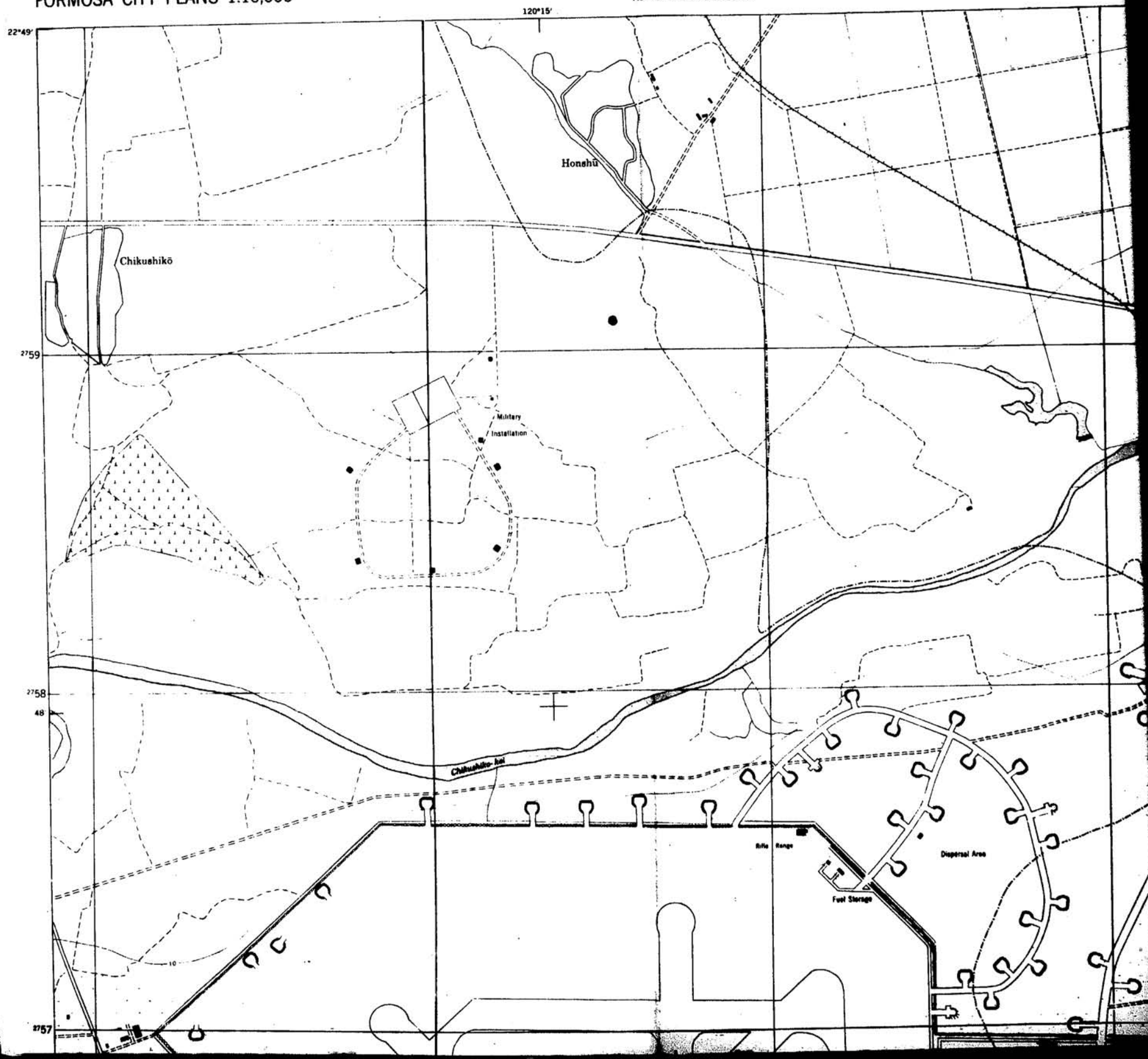
743.215A


TO AIHAN
TAXIWAY
OKAYAMA
RR STATION
A/C PLANT &
REPAIR DEPOT
TO AKOA
34° 47' N


UNDERGROUND
STORAGE
KEY
POWER LINE
DOUBLE LINE RR
SINGLE LINE RR

FORMOSA CITY PLANS 1:10,000





# OKAYAMA

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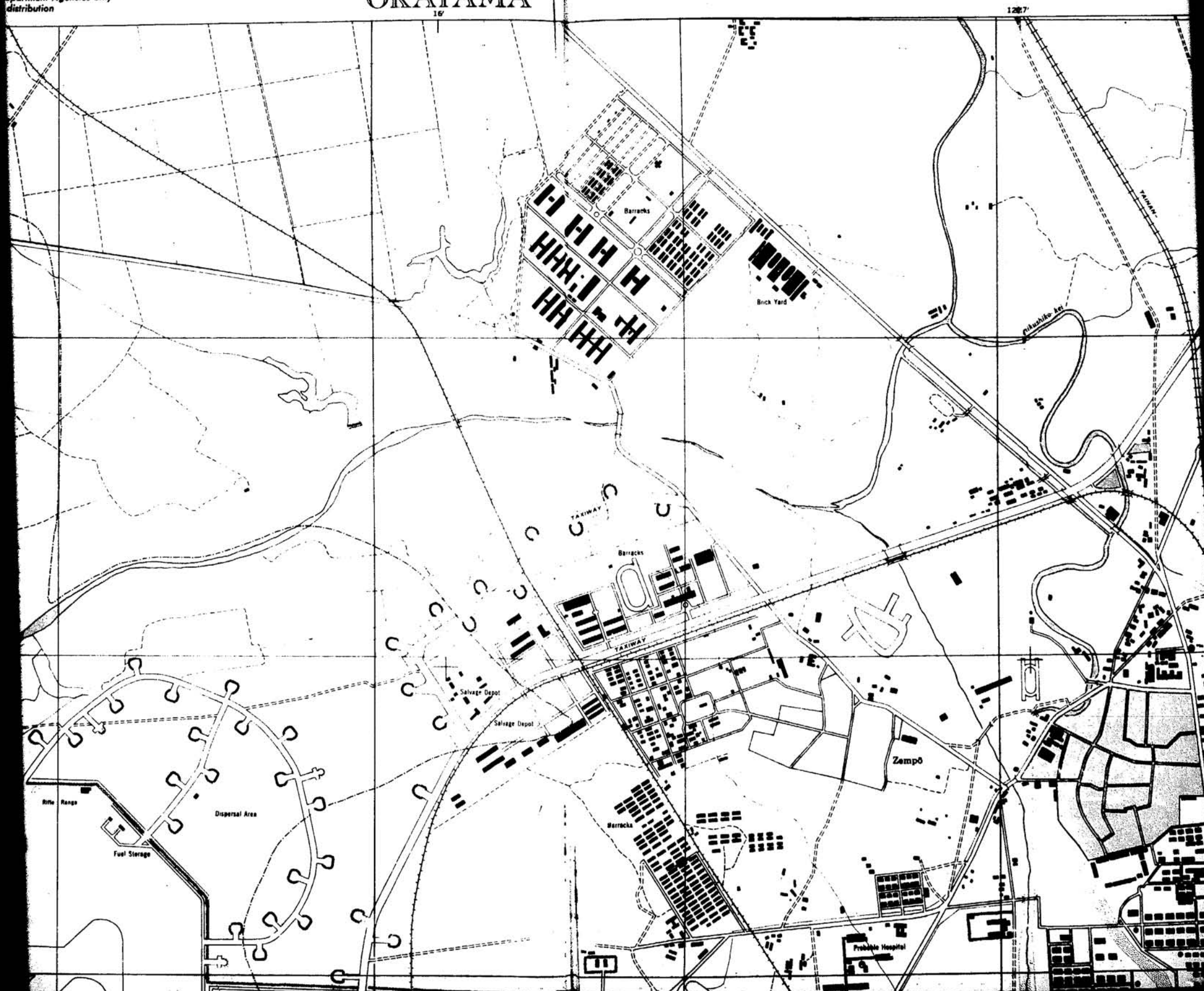

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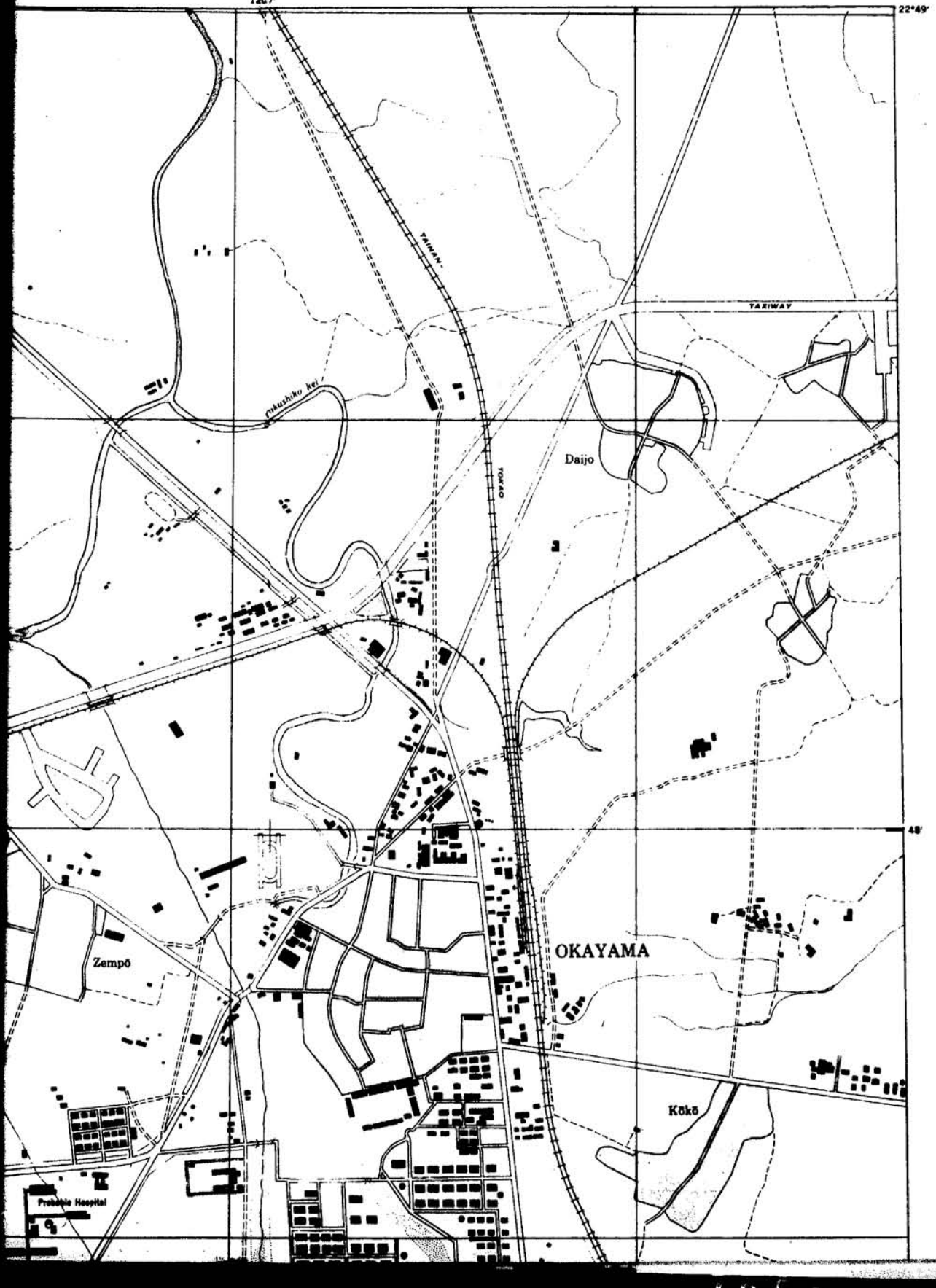
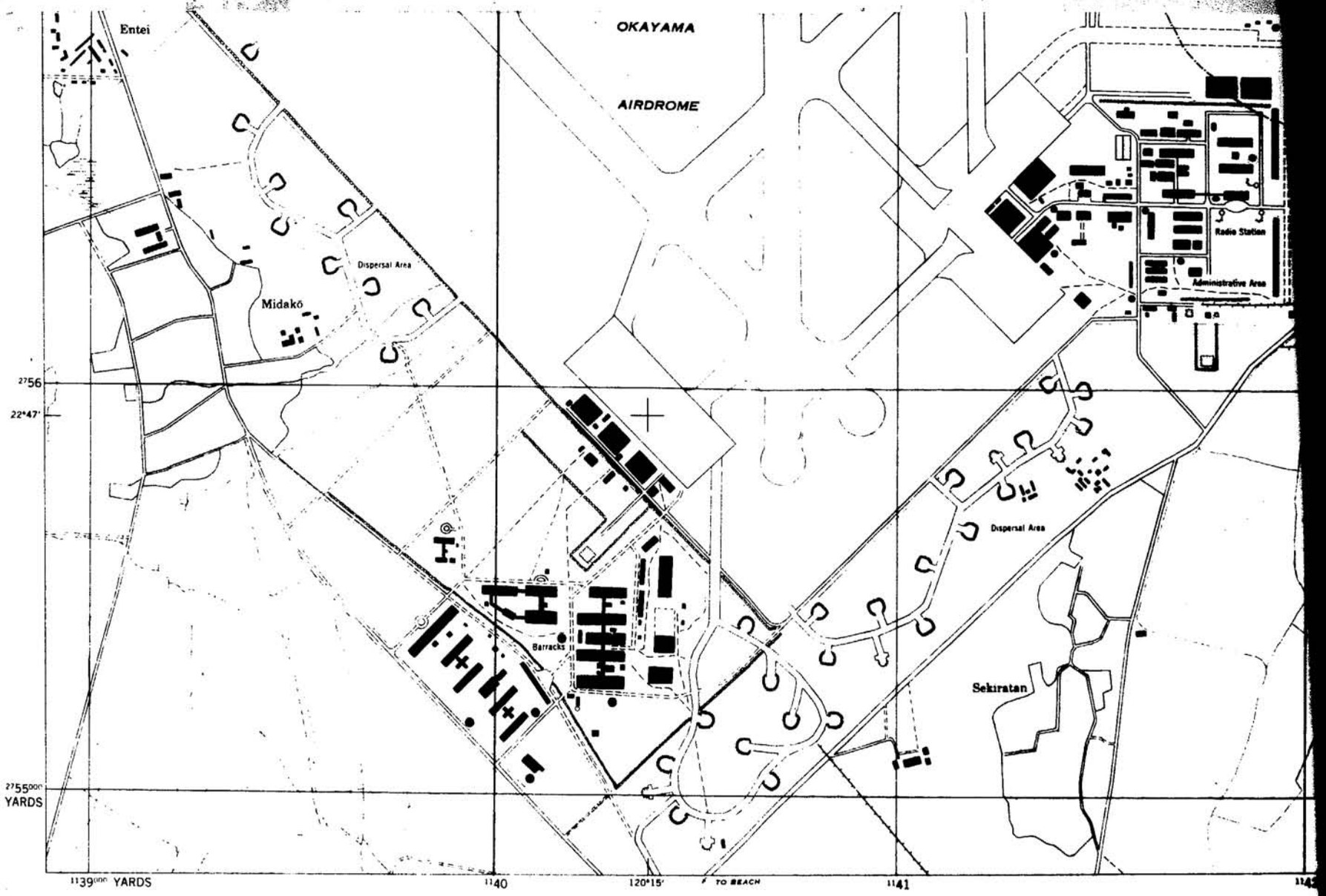
FIRST EDITION - AMS 1






A.M.S. L991 First Edition (AMS 1), 1944

Prepared under the direction of the Chief of Engineers by the Army Map Service (AMS), U. S. Army, Washington, D. C., 1944. Compiled from aerial photography dated from January 1944 to June 1944 by photo-planimetric method and by reference to Formosa 1:50,000, A.M.S. Sheet 2115 II, 1944, Formosa 1:50,000, A.M.S. Sheet 2115 III, 1944. Additional information from intelligence data. Place names are transcribed according to the Modified Hepburn (Romaji) System.

1 Mile

1000

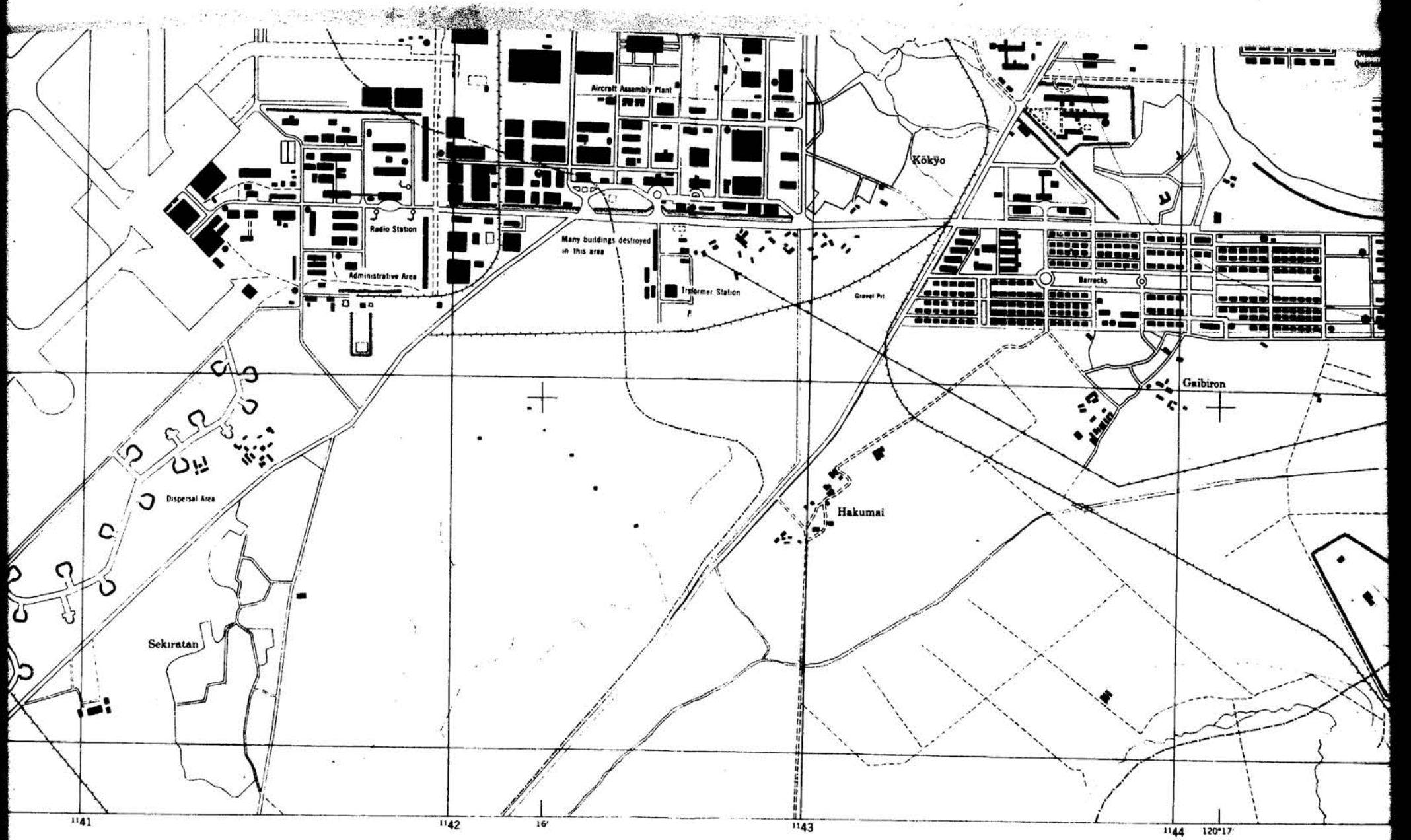
1000

LEGEND

Areas densely built up
Areas moderately built up
National or Prefectural Road generally metalled over 4 m. wide
Road 2-4 meters wide
Track or Trail
Railroads
3'6" gauge Single track with Station
3'6" gauge Double track
Narrow, Light or Special gauge Single track
In street labeled with gauge
Boundaries
Prefectural (Chō or Shi)
Gun or Shi
Ku or Shō
Earth covered buildings
Temple, Shrine Pagoda
Church, Monument or Statue, Dam
School Chimney
Prison Radio mast Mine
Ship Anchorage Fence Cemetery
Water wheel or mill, Mineral spring, Fumarole
Control point Bench mark, Spot elevation .720
Generally Rice or Sugar Cane
Orchard or Vineyard Bamboo
Mud or Tidal Flat
High tension line
Masonry retaining wall or Revetment Falls

1°45' OR 31 MILS
0°29' OR 9 MILS
MAGNETIC NORTH

APPROXIMATE MEAN DECLINATION 1944
FOR CENTER OF SHEET
ANNUAL MAGNETIC CHANGE 1' DECREASE
Use diagram only to obtain numerical values.




Scale 1:10,000

0 — 1 Mile

1000 — 0 — 1000 Meters

1000 — 0 — 1000 Yards

POLYCONIC PROJECTION

CONTOUR INTERVAL 10 METERS

ONE THOUSAND YARD WORLD POLYCONIC GRID BAND 11th ZONE D
THE LAST THREE DIGITS OF THE GRID NUMBERS ARE OMITTED

NOTE OFFICERS USING THIS MAP WILL MARK HEREON CORRECTIONS AND ADDITIONS WHICH COME TO THEIR ATTENTION AND MAIL DIRECT TO THE CHIEF OF ENGINEERS WASHINGTON D C

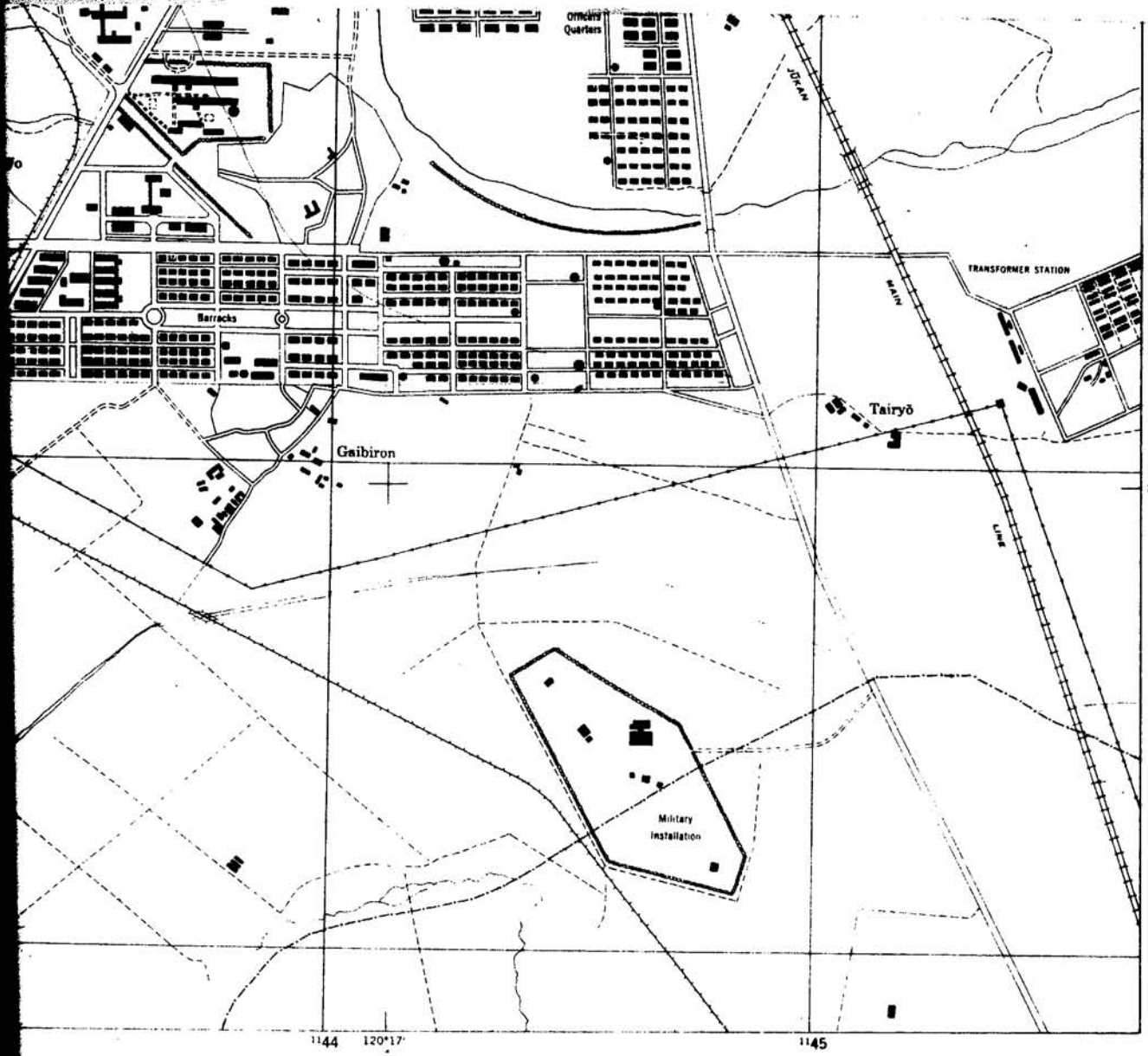
## GLOSSARY

| | | | |
|---|---|---|---|
| -gun | county | -shō | township |
| -kai | township | -shū | prefecture |
| -kai | river, stream | | |

HEIGHTS IN METERS

INDEX TO

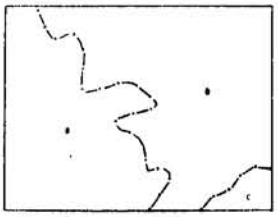
Tokuo-shō
Obayama-gun
a. Mido-shō
b. Obayama-kai
c. Nanaki-shō




ARMY MAP SERVICE U S ARMY WASHINGTON D C 138901
1-45 1944

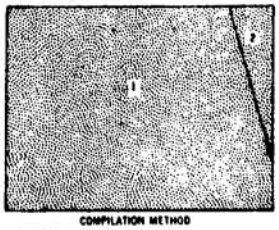
1 Mile
00 Meters

INDEX TO BOUNDARIES



Takao-shū
Okayama-gun
a. Mida-shō
b. Okayama-kai
c. Nanshi-shō

COVERAGE DIAGRAM




COMPILATION METHOD

PHOTO
PLANIMETRIC

(1) Sortie 4608/52, June 1944, 24'' V
(2) Sortie M13/4, January 1944, 24'' V

# OKAYAMA, FORMOSA (TAIWAN)
## TAKAO-SHU

## MAKO

**Location:** Mako is on the western side of Boko-to in the Pescadores Islands. Latitude 23° 34' N, Longitude 119° 34' E.

**Population(1935)** 7,854 including 2,041 Japanese.

References:

a. Interim Report "Formosa", dated April 1944, AC/AS, Intelligence, Washington, D. C.

b. JANIS of Formosa, Vols. I, II and III dated June 1944.

c. Civil Affairs Handbook, Taiwan (Formosa), the Pescadores Islands, OPNAV 13-21, Office, Chief, Naval Operations, Navy Department, 1 September 1944.

d. Strategic Engineering Study No. 100, Summary Formosa (Taiwan) Terrain Intelligence, Office, Chief, Engineers, U. S. Army dated July 1944.

I. Importance

a. Mako, the largest town and principal port of the Pescadores Group, is a center of supply, communications and administration. Anzan Naval Base, on Sokutem-to, across the bay from Mako, gives the town strategic importance. Its present primary functions (from a military viewpoint) are convoy control, aircraft detection and defense and defense outpost for Formosa and the strait area against seaborne attack.

II. Terrain

a. Mako is situated on the north shore of Jokoku-Wau (Junk Bay), the northern inlet of Mako Harbor; it occupies the greater part of a low peninsula which commands the northern entrance to Junk Bay and Mako-Ko. Broad sandy beaches are on outer coast of peninsula on the south side of the harbor. Mako is easily and rapidly reached by road from all parts of the island Upland rice, sugar, vegetables and tea are grown in the surrounding country; heavy dikes and hedges are among the fields. Small patches of woodland (mainly banyan, mulberry and pandonus) are along the coast on either side of the city. Medium textured alluvial (loams mostly derived from basalt) soils predominate; there are a few patches of fine clays. Such soils are trafficable except during and immediately after precipitation.

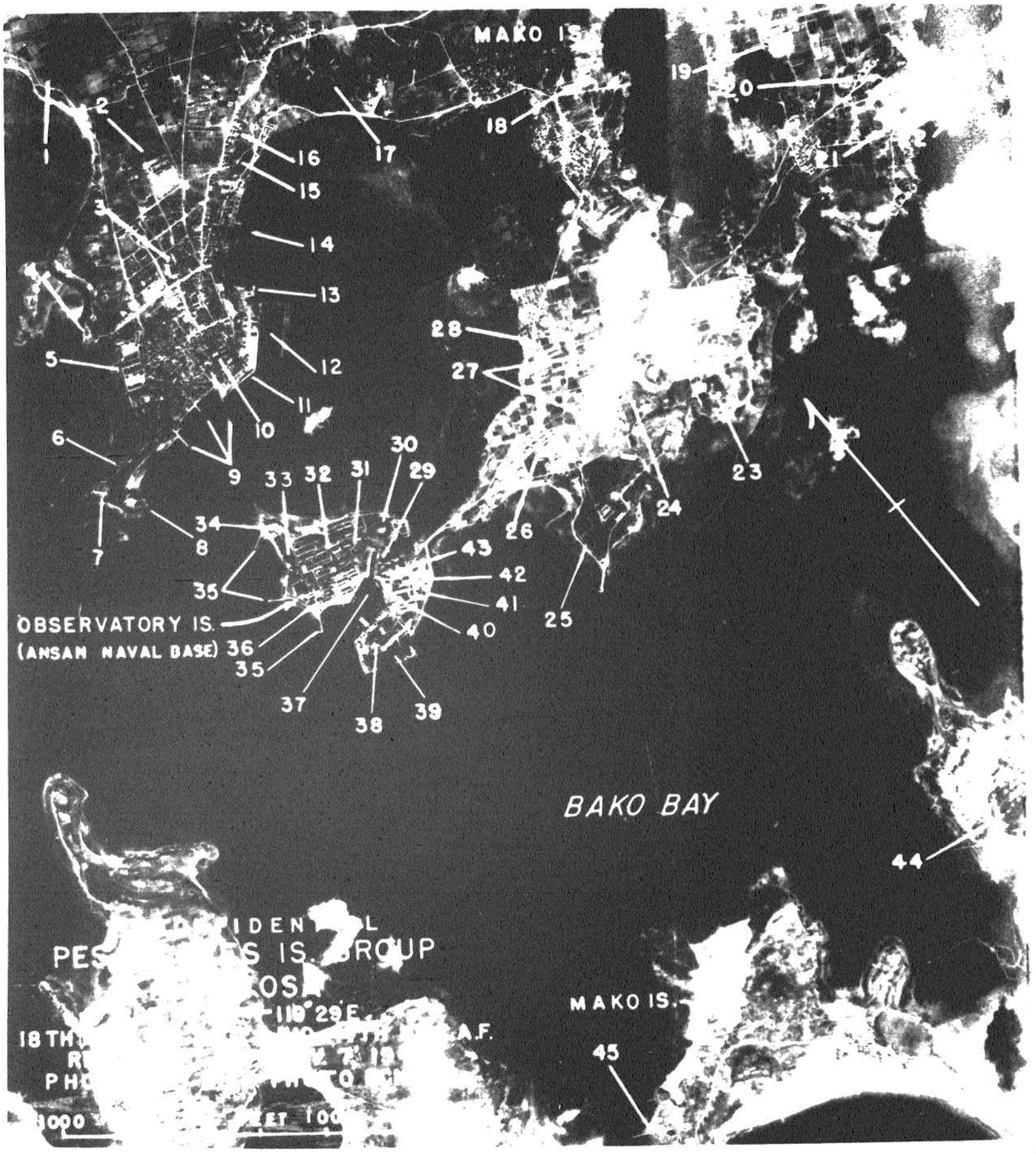
b. Mako is about 1/2 mile long, north-northeast to south-southwest, and a little more than 1,000 yards wide. The city plan is determined by the irregular shape of the peninsula. In the center of the town, the maze of alleys in the old Chinese city is little changed. Scattered through the town are five barrack areas. The principal landing field is believed to be on the peninsula south of Mako-Ko, some eight miles by road from Mako.

c. Mako Island, for the most part, is flat. Except for the sandy beaches on the south, the coast line consists of basalt rocks and reefs with a covering of limestone over most of them. Sabo-San, a hill about 142 feet high, and very conspicuous, is on the southern shore of Mako-Ko. Air photos show at least ten apparent stream valleys on Mako (Boko) Island, but only the lower reaches of 1 or 2 appear to contain water. These streams would have little or no effect on cross-country movement; none are navigable. A complete highway and road net, and causeways connect this island with Chuton-sho and Hakusa-to to the north and Soku-ten-to to the south. There are no railroad facilities on the island. Two cables connect Mako with Hotei and Ampin, Formosa. A mine field is reported to have been laid in the southwest approaches to Mako in July 1941. The whole of the island is fortified with A/A and C/D guns.

III. Gas Targets*

| AAF Target No. | Name | Approximate Location | Comments | Estimated Area Square Yards |
|---|---|---|---|---|
| 152 | Barracks, Repair Shops and Stores, Ansan Naval Base ** | 23° 33' N 119° 34' E | Located on small island connected to Bako only by a causeway, base occupies area about 2200 by 2200 ft. Facilities include administrative and barracks bldgs. 400 ft. graving dock and repair shops, small power plant, two small oil tanks and a large coaling wharf. | 200,000 |
| 151 | Barracks Area Mako** | 23° 34' N 119° 34' E | Permanent Installations | 260,000 |
| | Warehouses ** | 23° 34' N 119° 34' E | Believed used predominately for military stores | 145,000 |
| | Gun Positions*** | 23° 34' N 119° 34' E | Permanent installations | 5,000 |
| | Landing Beaches *** | | Area over which it is probable, during appropriate weather, chemical operations would be conducted. | |

*Limited to tactical targets only by JCS 825/3
**To be attacked with HE then with persistent gas.
***To be attacked with either nonpersistent or persistent gas.


MAKO IS.
OBSERVATORY IS.
(ANSAN NAVAL BASE)
BAKO BAY
MAKO IS.
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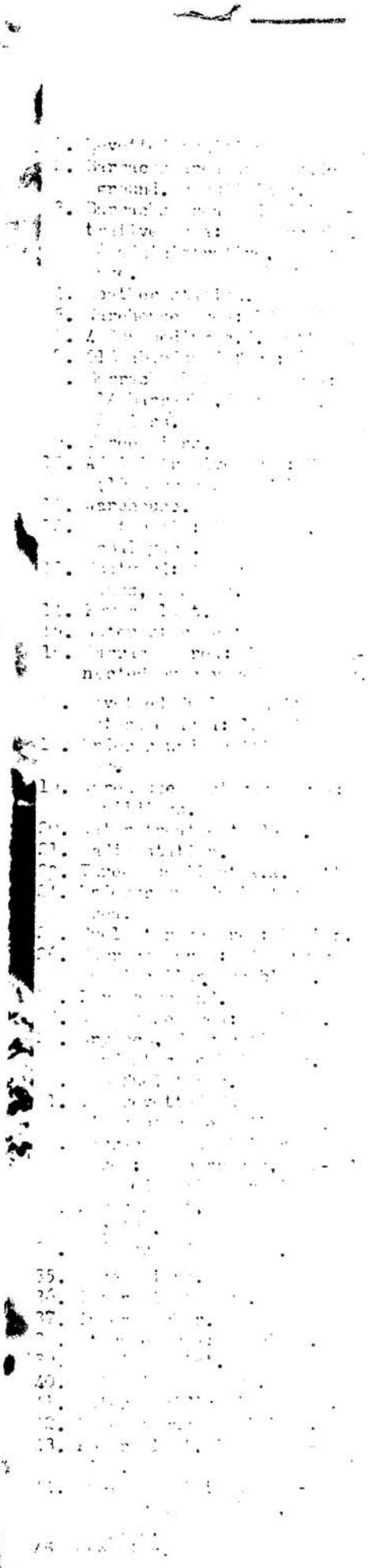


## GOSEI (NIITAKA)

Location: In the central part of the west coast of Formosa, Latitude 24° 16' N, Longitude 120° 31' E.

Population (1935): 5,413 including 53 Japanese.

References:

a. Interim Report "Formosa" dated April 1944, prepared by AC/AS, Intelligence, Washington, D. C.

b. JANIS (No. 87) of Formosa (Vols. I, II and III), dated June 1944.

c. Civil Affairs Handbook, Taiwan (Formosa), Taichu Province, OPNAV 13-26, Office, Chief, Naval Operations, Navy Department, dated 15 October 1944.

I. Importance

a. At Gosei, a large, artificial harbor is under construction. It is intended to serve as an outlet for central Formosa and thus relieve the congestion at Keelung (Kiirun) and Takao. A probable airfield and ten probable seaplane ramps are under construction about a mile north of the harbor entrance. About 60 administration buildings, barracks, and warehouses had been completed in March 1944.

II. Terrain

a. Gosei is about 13 miles northwest of Taichu. These towns are connected by a spur off the main coastal railroad; a new highway between them is still under construction. Gosei is on a low-lying fertile plain on which rice and sugar cane are grown. Soils are predominately fine-textured (clays) which are non-trafficable except in dry weather.

b. The built-up area of Gosei is roughly rectangular in shape, about 3,000 yards long and 300 yards wide. When all the construction is completed, the size of the town will be larger. The old harbor was at the mouth of a small stream; the new one will be north of town where most of the construction is located.

c. The coast immediately south of Gosei is not suitable for landing operations, suitable beaches extend northward along the coast for about 14 1/2 miles. Heavy surf makes landing difficult at Gosei (except in the artificial harbor); north of Gosei is a wide belt of surf offshore. Numerous trails lead inland about five miles to the main coastal highway. A railroad closely follows this highway.

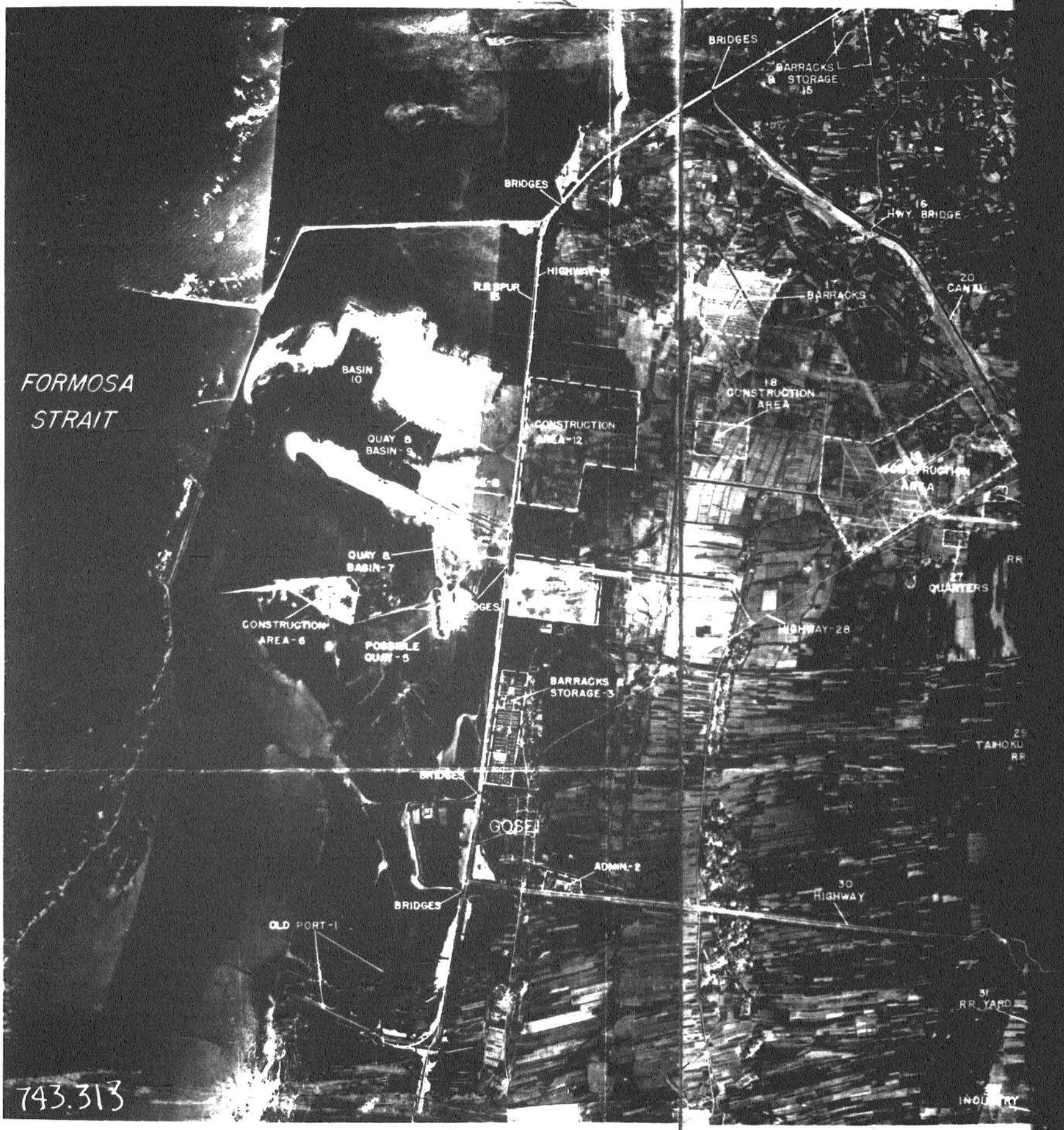
III. Gas Targets*

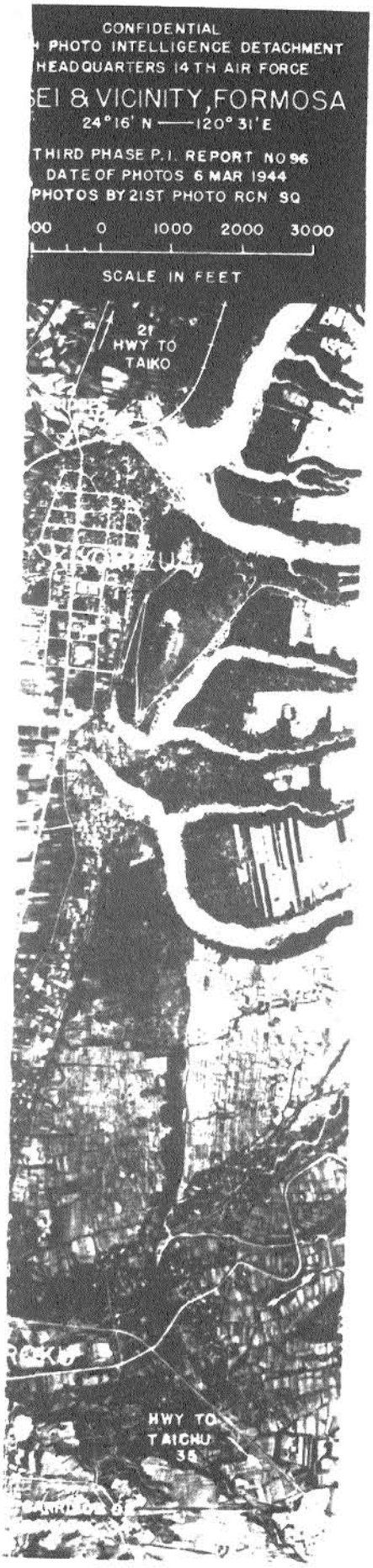
| AAF Target No. | Name | Approximate Location | Comments | Estimated Gas Target Area Square Yards |
|---|---|---|---|---|
| | Barracks & Storage Areas** | 24° 16' N 120° 31' E | Three barracks & is storage area. These may be supplemented when new construction is completed. | 256,000 |
| | Landing Beaches *** | | Over which chemical operations will probably be conducted | 5 sq. miles |

*Limited to tactical gas targets only by JCS 825/3. Construction areas not included until work is completed.

**To be attacked with HE, then with persistent gas.

***To be attacked with either nonpersistent or persistent gas.


FORMOSA STRAIT
BRIDGES
BARRACKS & STORAGE 15
BRIDGES
16 HWY. BRIDGE
HIGHWAY 19
R.R. SPUR 15
17 BARRACKS
20 CANAL
BASIN 10
18 CONSTRUCTION AREA
CONSTRUCTION AREA-12
QUAY & BASIN-9
QUAY & BASIN-7
27 QUARTERS
RR
CONSTRUCTION AREA-6
POSSIBLE QUAY-5
HIGHWAY-28
BARRACKS & STORAGE-3
29 TAIHOKU RR
BRIDGES
GOSEI
ADMIN-2
30 HIGHWAY
BRIDGES
OLD PORT-1
31 RR YARD
INDUSTRY
743.313


CONFIDENTIAL
PHOTO INTELLIGENCE DETACHMENT
HEADQUARTERS 14TH AIR FORCE
SEI & VICINITY, FORMOSA
24°16' N —— 120°31' E
THIRD PHASE P.I. REPORT NO 96
DATE OF PHOTOS 6 MAR 1944
PHOTOS BY 21ST PHOTO RCN SQ
00 0 1000 2000 3000
SCALE IN FEET
21
HWY TO
TAIKO
HWY TO
TAICHU
35

SECRET

## GARAN-BI (GARAMBI)

Location: A point at the southeastern tip of Formosa.
Latitude 21° 55' N, Longitude 120° 51' E.

Population: Unknown

References:

a. JANIS (No. 87) of Formosa (Vols. I, II, and III) dated June 1944.

I. Importance:

a. Garan-bi is a strategic area rather than a town. The military and naval installations are reached by the main highway running northward along the west coast from which a cut-off leads to the east coast road. Among the installations are a lighthouse, a radio station, an army airfield, a naval air base, and a number of auxiliary buildings.

II. Terrain

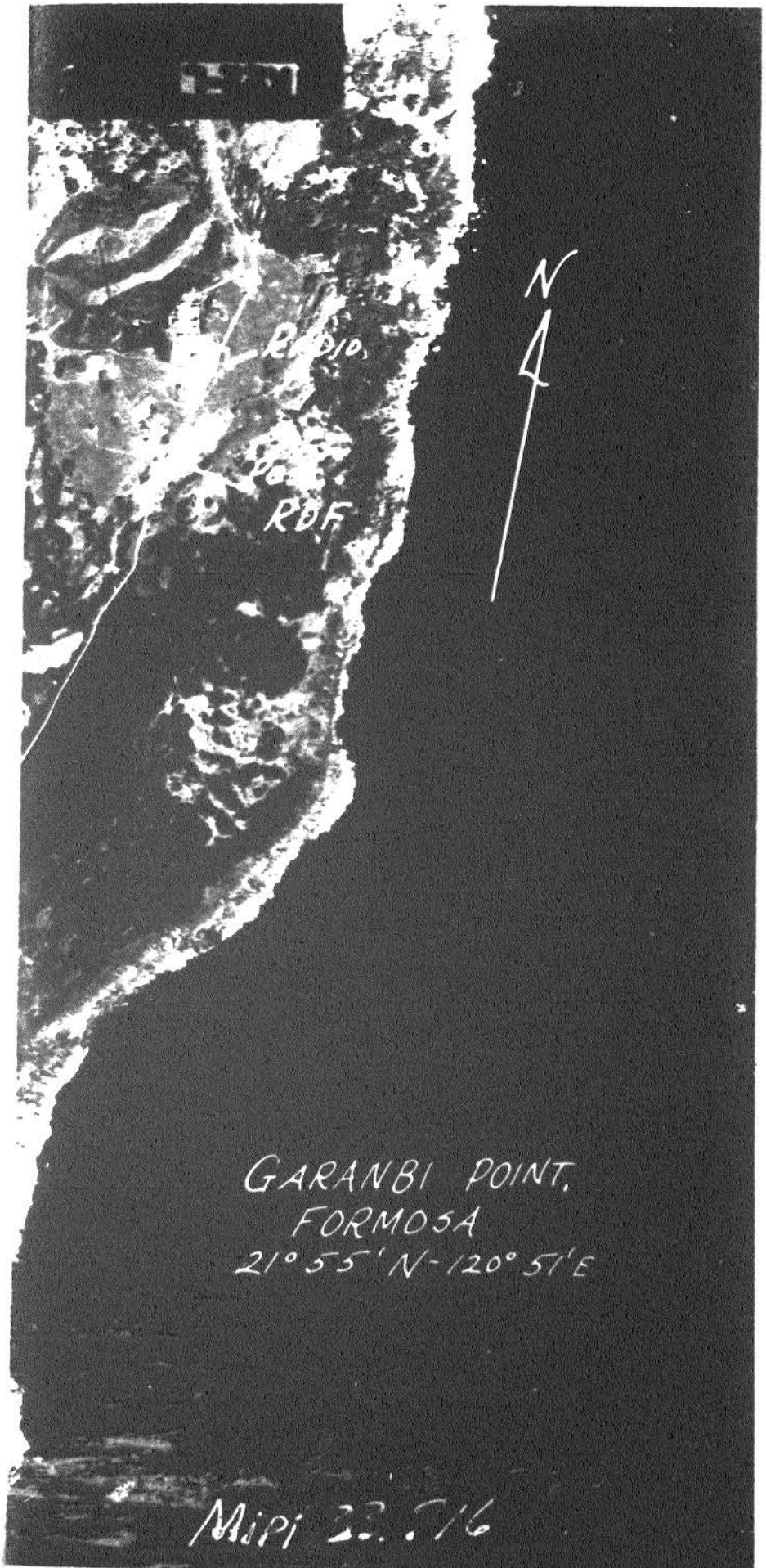
a. Garan-bi is a cape formed by hills up to 600 feet in altitude; hills are steep or cliffed, ravined sides, rounded to flat-top. The cape ends in terraces which descend to the sea by a series of steep slopes or scarps, 20 to 180 feet high. On each side of the cape, the hills are bordered by strips of lowland 600 to 1300 feet wide. Hills are covered with woods and patches of grassland; thin stony soil. Terraces are of coral rock with stony, well-drained soil, cultivated and grassy. Narrow lowlands at foot of hills are generally sandy, with strip of trees (some palm) and grassy spaces. The airfield is near the tip of the cape.

III. Gas Targets*

| AAF Target No. | Name | Coordinates | Comments | Estimated Gas Target Area Square Yards. |
|---|---|---|---|---|
| | Airport and Naval Air Base** | 21° 55' N 120° 51' E | Permanent Installations | 300,000 |

*Limited to tactical targets only by JCS 825/3.
**To be attacked with HE then with persistent gas.


LIGHTHOUSE
LV26A


N
RADIO
RDF
GARANBI POINT,
FORMOSA
21°55'N-120°51'E
MiPi 22.5.46