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TERRAIN STUDY No. 50

AREA STUDY OF PORTUGUESE TIMOR

27th February, 1943

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AREA STUDY OF PORTUGUESE TIMOR

PART I: ENEMY STRENGTHS, DISPOSITIONS, INSTALLATIONS, ARMAMENT

SECTION I—NAVY

See Current Intelligence Summaries

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See Current Intelligence Summaries

SECTION III—AIRDROMES

1. General:

At present (February, 1943) the Japanese have three operational airdromes in the Island of Timor, viz., Koepang (Penfoei), in Dutch Timor, and Dilli and Fuiloro in Portuguese Timor. Although the Penfoei airdrome is by far the most developed of the three, the operational significance of Dilli and Fuiloro in relation to Australia is greater when it is realised that Dilli and Fuiloro are, respectively, 55 and 120 nautical miles nearer to Darwin than Penfoei.

Dilli and Fuiloro are the only known airdromes in Portuguese Timor. Dilli is operational for fighters and bombers and Fuiloro for fighters. It will, no doubt, shortly be fit for use by bombers.

2. Table of Distances:

Direct distances are as follows:—

	Nautical Miles.	Statute Miles.
Koepang to Darwin	440	515
Dilli " "	385	450
Fuiloro " "	320	375
Dilli to Ambon (Laha)	325	380
" Kendari	325	380
" Mandai	410	480
" Koepang	145	170
" Waingapoe	315	370
" Den Pasar	600	705
" Babo	580	680
Fuiloro to Ambon (Laha)	290	340
" Kendari	365	430
" Mandai	485	570
" Koepang	220	260
" Waingapoe	400	470
" Den Pasar	685	805
" Babo	520	600
Dilli to Fuiloro	85	100

3. Airdromes:

The location of airdromes and potential airdrome sites is shown on the map on page 2.

a. *Dilli* (8° 33' S., 125° 34' E.)—See Photos Nos. 1 and 2:

This airdrome is located on a level stretch of land on the north coast of Portuguese Timor, 1½ miles (2 km.) west of the town of Dilli, and now consists of two prepared strips, one N/S, 1,290 yards (1,180 m.), and the other E/W, 1,250 yards (1,140 m.). This latter runway and the southern portion of the former are situated on ground to the south of the main coast road which formed the south boundary of the old Portuguese airdrome area and constitute an extension by the enemy. Further extension of the N/S runway to the South appears possible.

It may also be possible to extend the E/W runway to the East by removing trees and houses. Extension to the West appears impracticable, as this would run out into the paddy fields, which are periodically flooded by the Comoro River. Coral and limestone surfacing material are available and have been used for repairing the runways.

The airdrome is between one and two miles (1½ km. and 3 km.) to the north of the foothills of a mountain range which rises to 6,000 feet (1,840 m.) approx. 5 miles (8 km.) from the site. There is open sea to the North and northeast. On all other sides the only obstructions are trees and native houses near the boundaries of the landing area. The topography of the foothills is such that a rather sharp turn is necessary in approaching from the southeast.

In the wet season, December to March, clouds with a base of 1,000 feet are common on the foothills of the mountain range.

Dispersal facilities are limited. The enemy appears to make use of a clump of trees along the eastern edge of the N/S runway and just south of the E/W runway and in the coconut plantations to the west of the old airdrome area. This latter area was used to disperse fighter aircraft seen on the field in March and April, 1942.

The prevailing wind in the dry season (April to November) is from the northeast, and in the wet season (December to March) is from the northwest.

Communication with Dilli town is by the main coast highway and by the old Dilli-Aileu road, each of which, in this area, is a good M.T. road.

Beach landings can be made about $\frac{3}{4}$ mile (1 km.) to the west of the airdrome, which is then approached through coconut and banana plantations between the coast and the main road. A.F.V.'s may approach through this area with fair cover.

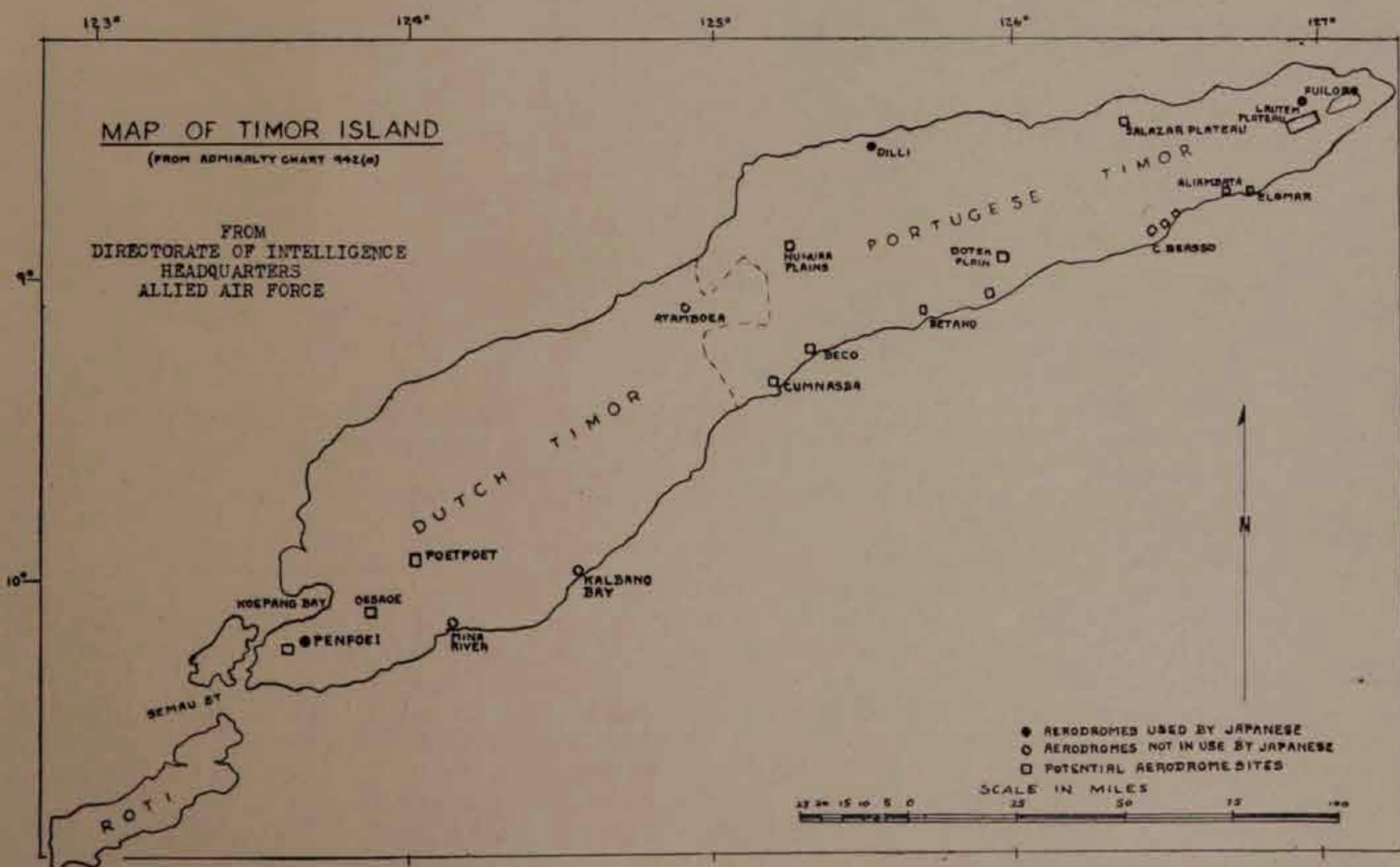
Both Australian and Japanese troops have already landed on the beach and made the above approach to the airdrome. In view of this, there might be certain advantages in landing further to the West between the Comoro River and Tibar. The approach from here by A.F.V.'s must be made along the coast road until the Comoro River is reached or tropical undergrowth and cactus make the area most difficult for A.F.Vs. This area is enclosed by the mountains to the South and spurs running to the coast at Tibar and to the west of the Comoro River.

The Dilli coastal area from Hera to the west of the Comoro River is also enclosed by a ridge of mountains running parallel to the coast south of Dilli, with spurs running to the coast at Cape Fatu Cama and to the west of Comoro River. A good foot and pony track runs along the top of the range from Remexio to Lau-Lora and overlooks the whole of the Dilli area. Spurs of the range run as close as 1,000 yards to the airdrome. O.P.'s were established by Australian troops in these spurs. Lau-Lora is reached by a good track leading up the mountain from the Comoro Valley just south of Comoro village.

b. *Fuilor* (8° 26' S., 127° 2' E.)—See Photo No. 3:

Construction of this airdrome which runs across the main road from Lautem about 1 mile (1½ km.) west of Fuilor (Vila de Avis) was commenced by the Japanese in November, 1942, and is continuing. It lies on the extreme northwest portion of Lautem Plateau and consists of two runways, one ENE/WSW, 1,300 x 100 yards (1,190 x 90 m.), and the other approximately N/S, 1,400 yards (1,280 m.) long. Both runways are capable of further extension.

The airdrome lies in open country 1,300 feet (400 m.) above sea level and is free from obstructions on all sides. Ten or 12 miles (16 or 19 km.) to the South the mountain range rises to 2,000 feet (600 m.) and 15 miles (24 km.) to the southeast it rises to 3,000 feet (900 m.).



There are good M.T. roads running from the site northwest to Lautem on the north coast, south to Loré near the south coast, and to the eastern extremity of the island at Tutuala. The surrounding country is suitable for A.F.V.'s and the airdrome could be approached by them from any direction.

4. Potential Airdrome Sites:

There are a number of areas in Portuguese Timor on which it is thought landing grounds could be constructed. Particulars of these are as follows:—

a. *Maliana*:

Located on the Nunura Plains.

The plains themselves are flat and smooth, covered with very high grass interspersed with thick clumps of palm trees and, on the eastern side, eucalyptus trees.

The 2/2 Australian Independent Company inspected a site about 1½ to 2 miles (2 to 3 km.) north of Maliana on the western bank of the Bulobo River, which appears suitable. The site is level and is covered with short grass and a few tree stumps. Some filling would be necessary. This can be obtained from the Bulobo River. Native labor was readily available at the time of inspection (July, 1942). It was estimated that 200 laborers could complete the work in 14 days. Labor should still be obtainable although not so readily.

Excellent dispersal in gum trees and palms is available close to the site.

b. *Manatuto*:

To the southeast of the town, and south of the main road, there are a number of paddy fields which, when dry, appear suitable. At present they are under wet rice cultivation, but would dry very quickly if irrigation were discontinued. (See Photo No. 54 and Map No. 20).

c. *Salazar Plateau*:

This plateau is located in limestone country with many limestone outcrops. There is some light scrub and no grass. Sites can be obtained here, but a considerable amount of work would be involved in removing the limestone outcrops.

A site which it is considered can be easily and quickly established exists 4½ miles (7 km.) off the main road between Vemasse and Baucau and 10½ miles (17 km.) from Baucau. Some outcrops of limestone would have to be removed.

Dispersal can be found in adjacent jungle patches.

d. *Between Baucau and Lautem*:

Following sites appear suitable:—

- i. At the mouth of the Seical River, located south of the road and west of the river. Here terrain appears suitable.
- ii. Sarau: Along the coast near Sarau, and between the coast and the road, there is extensive grass country with some lonthar palms.
- iii. Pt. Curo: Along the coast just east of the point, and between the coast and the road, the Portuguese cleared a site for an airdrome with a runway of approximately 600 yards (550 m.). This site appears to be capable of development.

e. *Lautem Plateau*:

Terrain between Fuiloro and Los Pala along the western boundary of the Lautem Plateau is suitable for airdrome construction. The Fuiloro airdrome is located in an area 3 miles (5 km.) by 1½ miles (3 km.), which was surveyed by Dutch Shell Co. and considered by it suitable for airdrome construction. The terrain south of this area is less level, there being a considerable number of grass hummocks which would increase the work necessary for clearing. The best labor in Portuguese Timor is available in the Lautem area.

f. *South Coast Area*:

There are numerous coastal plains along the south coast between the Dutch border and Loré. They are largely covered with high buffalo grass, coconut plantations and tropical undergrowth. It appears probable that a number of sites could be found on these, but it should be noted that these plains would almost certainly be very wet and probably boggy in the wet season. In addition communications proved a real difficulty in the western areas of the south coast.

A number of sites have been located either on the ground or from the air. Again most of these are likely to be wet and boggy in the wet season. Particulars are as follows:—

- i. and ii. sites, at Beco and Cumnassa. Selected by Australian ground forces. (The following report and recommendations were made on 24th June, 1942):—

i. *BECO*:

Situated at 9° 15' S., 125° 25' E. Is on Government land adjacent to posto, approximately 5 to 6 miles (8 to 10 km.) from Rai-Mean anchorage by horse track only and with several river crossings.

The area is mainly an old coconut plantation and, upon detailed inspection, after a large area had been cleared of the tall tropical grass with which it was

covered, it is apparent that much labor and time would be necessary to make a satisfactory runway. It is, however, definitely possible.

Although the area is generally level and flat, there are now visible many places where palms and trees have been removed in the past, and the surface in the vicinity is soft. Further, it would be necessary for many more to be removed.

Suggested runway comprises 1,200 yards by 100 yards (1,100 m. by 90 m.) at 225° running past and parallel with the posto hill for the first 200 yards (175 m.) from the northeast end.

The surface for the first 200 yards (175 m.) from the northeast end is good, but from here to the southwest end at 1,200 yards (1,100 m.), clearing is necessary, particularly over the last 400 yards (360 m.). From this point it could be extended indefinitely, but would require much more time and labor in proportion.

The lack of suitable adjacent hard binding material for filling—for places where trees and palms are or have been removed—is the greatest difficulty. It would need to be carried by natives from the river, a distance of $1\frac{1}{4}$ to $1\frac{1}{2}$ miles (2 to $2\frac{1}{2}$ km.).

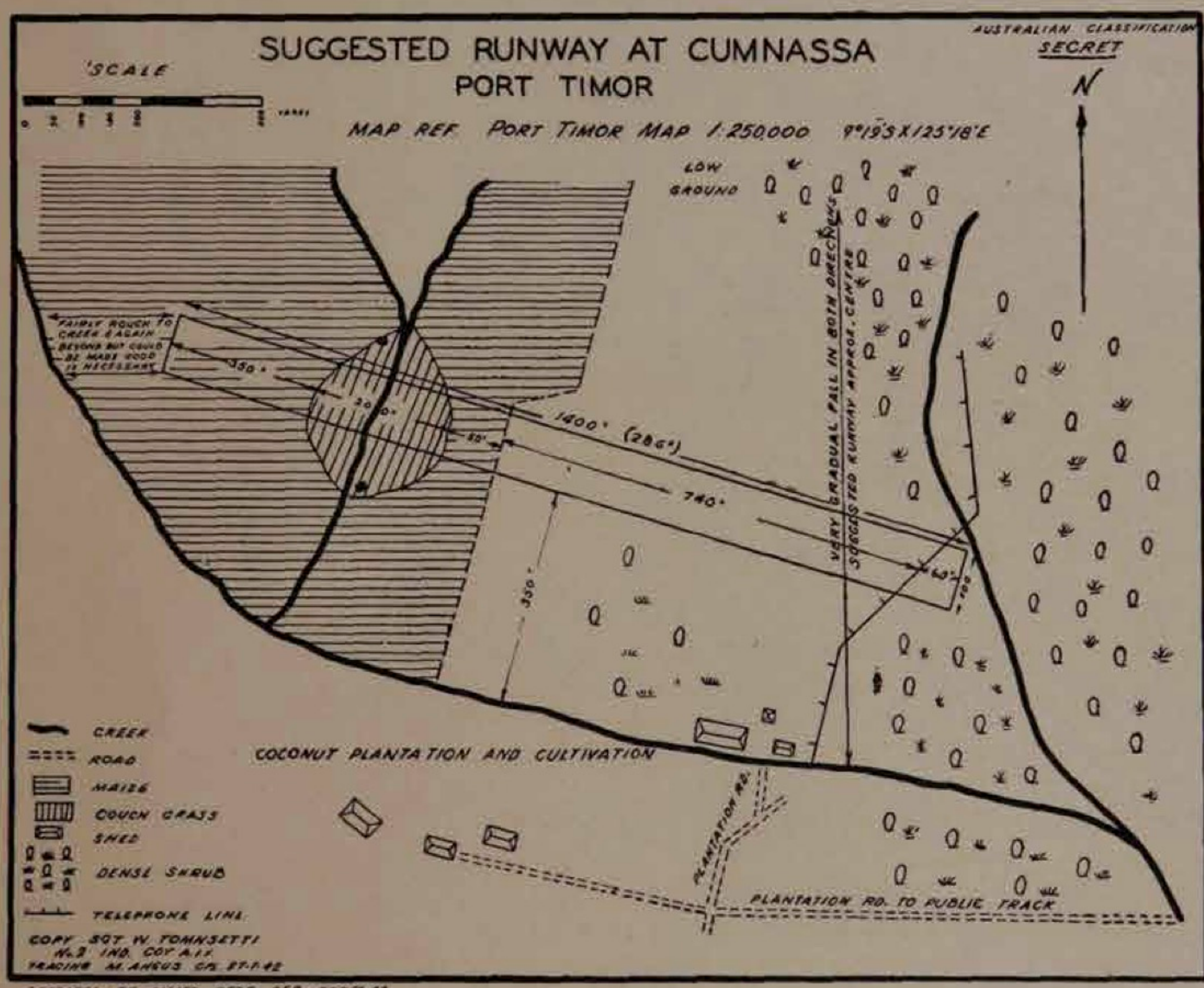
Apart from the trees and palms and soft patches caused by their removal there are no other obstacles.

The only natural cover is among the coconut palms of the adjoining plantation at the northeast end.

With the labor and tools available the area could be cleared in approximately two weeks, but it is not possible to estimate the length of time necessary to carry filling nor for it properly to settle. Turf sods are not available.

ii. CUMNASSA:

Situated at 9° 19' S., 125° 18' E. Is on the private property of Senhor Tenente Lopes, approximately $1\frac{1}{4}$ to 2 miles (2 to 3 km.) from Suai Bay anchorage by good cart track. Surrounding hills nil.



Eastern end is permanent grassed grazing land; western end is cultivated except for a small area which is also grassed grazing land. Extreme eastern end is tropical shrub and trees. Whole area generally flat.

Suggested runway is 1,400 yards by 100 yards (1,280 m. by 90 m.) at 286° along the highest portion and where least preparation is necessary.

At present the grazing land of the runway area is partly thinly covered with low shrub, easily removable with no disturbance of the surface, and approximately 4 or 5 large trees.

This cultivated area is planted with maize about 5 feet ($1\frac{1}{2}$ m.) high. It is considered that the whole runway surface, upon completion, would take, without risk, any aircraft up to the weight of a "Hudson Lockheed" under normal weather conditions.

The creek, telephone line, cultivation, trees and low shrub on the grazing area present some difficulty as obstacles. The creek is the biggest obstacle; it

crosses at approximately 1,000 yards (900 m.) from the east end, and is about 10 yards (9 m.) wide and 3 feet (1 m.) deep. It would be overcome by large box drain filling surfaced with turf sods; ample filling is available along the creek beds. The telephone line crosses the suggested runway as shown in the sketch, but it is understood there would be no difficulty or delay in taking this clear of the area generally. After clearing the crop on the cultivated area, the ground would require binding with sand and gravel which is available in the adjacent creeks, and—after rolling—should bind and set well. A 10 to 12 cwt. roller is available locally. The trees and low shrub on the grazing area are removable with little difficulty or damage to the surface.

Excellent natural cover for concealment of up to 10 to 15 aircraft is available adjacent to the boundary at the east end of the runway. This could be increased in that area indefinitely.

Ample native labor is available, but tools are few; thus full use of labor cannot be made. Based on tools available, it is estimated that the 1,000 yards (900 m.) from the east end to the creek could be made ready within 10 to 12 days (Senhor Lopes says 5 days) from time instructions are received at Cumnassa.

From and including the creek to the west end at 1,400 yards (1,280 m.), approximately another two months.

Recommendation: Taking all points into consideration, Cumnassa is regarded as the more favorable of the two sites.

iii. THREE MILES NORTHWEST OF BETANO:

There is a large open patch of ground 3 miles (5 km.) northwest of the creek mouth at Betano. The area is elongated northeast/southwest and is over 1,200 yards (1,100 m.) long and averages 300 yards (275 m.) wide. A track passes along its northwest side running northeast/southwest. There is a village of 20 huts at the northeast end. It is suggested that this might furnish a useful emergency landing ground. It is well away from any mangrove swamps or large rivers. The Betano Creek, which passes between it and the small village, has dwindled to insignificant size in the three miles between here and the sea. At the south end of the field there are a number of animal tracks converging on a spot, which may be a small waterhole, but this is uncertain.

The trees around the field are open and of medium size, probably small eucalypts and a few casuarinas ("She-oaks"). One or two scattered trees and patches of grass occur on the open patch, but a landing could probably be made without any preliminary clearing. The patch is certain to be soft and sticky at times, especially during the wet season (November-July).

iv. SOUTH OF BETANO VILLAGE:

There is another open patch of ground south of Betano village, between the latter and the creek. This is 1,500 yards (1,380 m.) long, but is partially cultivated, and does not appear to have the potentialities of the area three miles (5 km.) to the northwest.

v. FIVE MILES EAST OF THE SOUTH LACLO RIVER:

For about 6 miles (10 km.) east of the South Laclo River there are extensive alluvial flats (presumably of the Clerec River) with scattered areas of cultivation. Five miles (8 km.) east of the Laclo there appears to be an uncultivated patch large enough for an emergency landing ground. It is 800 yards (730 m.) north/south and probably more. Its average width is 350 yards (320 m.). It must be stressed, however, that the ground is in the vicinity of a swamp on a big river delta. It will, therefore, be flooded during the wet season.

vi. DOTEK PLAINS:

These have been suggested as suitable for emergency landing grounds.

vii. BEASSO AREA:

In this area there are several flat grass-covered areas which, upon inspection, may be found suitable.

viii. FOUR MILES SOUTHWEST OF ALIAMBATA:

Some 4 miles (6 km.) southwest of Aliambata, between two small streams called the Laguasa and the Saguito, there is a large area of open grassland about one to three miles (2 to 5 km.) inland from the sea. The "Exploration of Timor" describes it as very fertile, with a deep black loam very rich in humus. This suggests that the area is not swampy, though naturally it will be sticky during the wet season. In an area at least 2 miles (3 km.) long (east/west) and half a mile (1 km.) across (north/south), located halfway between the Laguasa and the Saguito Rivers, just south of the road, the ground appears suitable for emergency landing. The Saguito is reported to give a steady supply of water at all seasons.

ix. TWO MILES WEST OF ELOMAR:

About threequarters of a mile (1 km.) to the east of the Irabere River and 2 miles (3 km.) west of Elomar there is a large clear area bounded on the North by the road leading east from Beaco and Aliambata to Elomar and Saenamo. The southern boundary is about 500 yards (450 m.) from the coast, where there is a small creek and swamp. Its dimensions are about 1,400 yards (1,280 m.) east/west by at least 500 yards (450 m.) north/south, and it appears to be quite devoid of trees or bushes.

Fatu-Bessi (Cota-Bot) is 26 miles (42 km.) from Bobonaro at a bearing of 270°. This village should not be confused with the much larger and richer district of Fatu-Bessi in Suro Province. Actually it comes under the administration of Balibo. The village lies just southwest of the mountain of Cota-Bot.

Fatu-Mean (Oliveira) is 28 miles (45 km.) west of Bobonaro at a bearing of 236° overlooking the Dutch border. Stated to be a posto and market town and not very rich in products. It is 2,000 feet (600 m.) above sea level on top of a razor-back ridge in very rugged terrain.

Maliana is 8½ miles (13½ km.) from Bobonaro at a bearing of 278°. It has a large coconut plantation which is its main industry. The branch M.T. road on which it is situated joins the main Dilli road at the Be Bai River.

Marobo is 3 miles (5 km.) from Bobonaro at a bearing of 359°. It is situated in a deep re-entrant at the foot of Mt. Uso Lau. The town is a resort on account of its sulphur springs. It is connected to Bobonaro by M.T. road. There are about 12 stone houses and the town is concealed from the air.

Memo is 11½ miles (18½ km.) from Bobonaro at a bearing of 266°. There is a posto building for the Administrator of Bobonaro, who visits Memo periodically; the building is constructed of stone, with circular turrets at the northeast ends and a stone wall surrounding it. To the North are soldiers' barracks, school and horse stables, and on the southeast Chinese shops mostly built of stone with thatched roofing. Air cover fair.

Suai (see Map No. 11) is 23 miles (37 km.) from Bobonaro at a bearing of 192°, and is situated on the mouth of the Tafara River. This village is controlled by the Administrator of Tilomar, who has a native chief in charge. The native chief's house is built of stone, while several native huts are in the vicinity. There is a possibility that jeeps could be used to travel to Debos, Cumnassa and Beco, but inclined to be boggy in wet weather.

2. Province of Dilli:

The Province of Dilli extends as a long, narrow strip on the northwest corner of Portuguese Timor. Dilli, the capital, is also the capital of Portuguese Timor.

Bazar-Tete (Vila Eduardo Marques) is 14 miles (22½ km.) southwest of Dilli at a bearing of 242°. A small posto town on the southern slopes of the range running through Dilli Province. The posto is situated 3,000 feet (900 m.) above sea level, and has the usual surrounding stone wall. Besides the posto there are a few Chinese shops built of stone with galvanized iron roofs. It is connected to Dilli by M.T. road and joins the main road at Aipelo. Bazar-Tete is usually cloud bound, especially in the afternoons. Australian troops established an O.P. on Cutu-Lau for observation on Dilli and north coast with good results. Water pipeline from small concrete reservoir on Cutu-Lau.

Dilli is the capital town and posto of the Portuguese Colony. Situated 8° 34' S., 125° 35' E., on the north coast, in a large bay, between Point de Motael on the West and Point Fatu Cama on the East. On the South, southeast and southwest, precipitous mountain ranges overlook the town, with a commanding aspect.

The town of Dilli covers an area of about 90 acres. There are many Government buildings and residences built of stone, with a cement plaster finish. With avenues, gardens and coconut palms, this town has a true Oriental setting. At present it is under Japanese control, and is stated to be headquarters of their forces. It has since been subject to heavy Allied bombing and all these statements refer to conditions appertaining prior to Japanese occupation.

The main feature of Dilli is the airdrome, which is situated on the West, and about one to two miles (1½ to 2½ km.) from the center of the town. Its main runway crosses the Dilli-Tibar road.

The chief stone and plaster constructed buildings are pin pointed in Photo No. 16.

Liquissa (Vila de Liquiça—see Photo No. 14 and Map No. 13) is 17 miles (27 km.) west of Dilli at a bearing of 262°. It is situated on the main M.T. road to Maubara, on the north coast, and is a posto and market town. The buildings constitute a posto and administrative block, several Chinese shops, Chinese school, secretary's house, rest house, store house, and church. There is a reticulated water supply which is brought to the town by a pipeline. It is stated that some buildings were erected by the Japanese as a concentration camp for Portuguese civilians.

Maubara is 26 miles (42 km.) from Dilli at a bearing of 262°. This small posto and market town is situated on the north coast and at the terminus of the coast road. The posto itself is constructed on a knoll with its usual administrative and auxiliary buildings. Several buildings were destroyed by floods during

that the wall has been partly destroyed by floods. The new posto is about 150 yards (140 m.) south, and is at the junction of the main motor road and the road west to Laclubai.

There are three coconut plantations, one just southwest of the town and the other two over the river, one north and the other south of the town. There are a number of cultivated fields and a pineapple plantation.

The main road to Beasso crosses the river by a wooden bridge (12 spans, 12 feet wide), but an alternate route to the other side of the river makes use of a ford.

6. Province of Lautem:

The Province of Lautem is on the extreme eastern end of Portuguese Timor. On the west side of the Province there is a high mountain range with many branching spurs running roughly north and south. This range falls away to the East to the Fuiloro Plain. Lautem is the provincial capital.

Com (see Photo No. 89) is 10 miles (16 km.) at a bearing of 87° from Lautem. It is on a small bay which is a useful anchorage with hills directly behind. The Ililuro, a small stream, enters the bay from the hills. The vegetation is scrubby on the coast, but dense inland.

It is a posto settlement of little importance, the posto being by the shore on the south of the bay. On the west side of the bay is an abandoned customs house and 100 yards (90 m.) further west a native village of about 10 huts. The population of the area is quite small. About 200 yards (180 m.) south of the posto is a spring from which a bamboo pipe brings water to the posto. There is a coconut plantation southwest of the posto. Com is the eastern termination of the coastal motor road, but a horse track leads east along the shore to Tutuala.

Fuiloro (Vila de Avis—see Photo No. 3) is situated 9 miles (14½ km.) at a bearing of 117° from Lautem. It is in the northwest corner of the Lautem Plateau which extends 8 miles (13 km.) south and 12 miles (19 km.) east at 1,400 feet (425 m.) above sea level.

It is a posto town of 200 inhabitants with a large market. North of the market square is a large building used formerly for a hospital, but now as the *Chefe de Posto's* residence. South of the square is the typical old-fashioned posto. The secretary's office, telephone and prison are west of the square. The Japanese airdrome is immediately west of the town.

There is a very good spring northeast of the town in the bed of a stream; it can be reached by a short road. There is no reticulation system and all water has to be carried. The region is dry and dusty in the dry season, but has plenty of rain in the wet seasons. The vegetation is limited to short or long grass, and air cover is very poor except for a few large trees about the square.

Iliomar is 24 miles (38½ km.) at a bearing of 193° from Lautem. It is a posto town on the northwest of the hills behind Cape Batu Puti on the south coast and overlooks the Lio Ulo River valley.

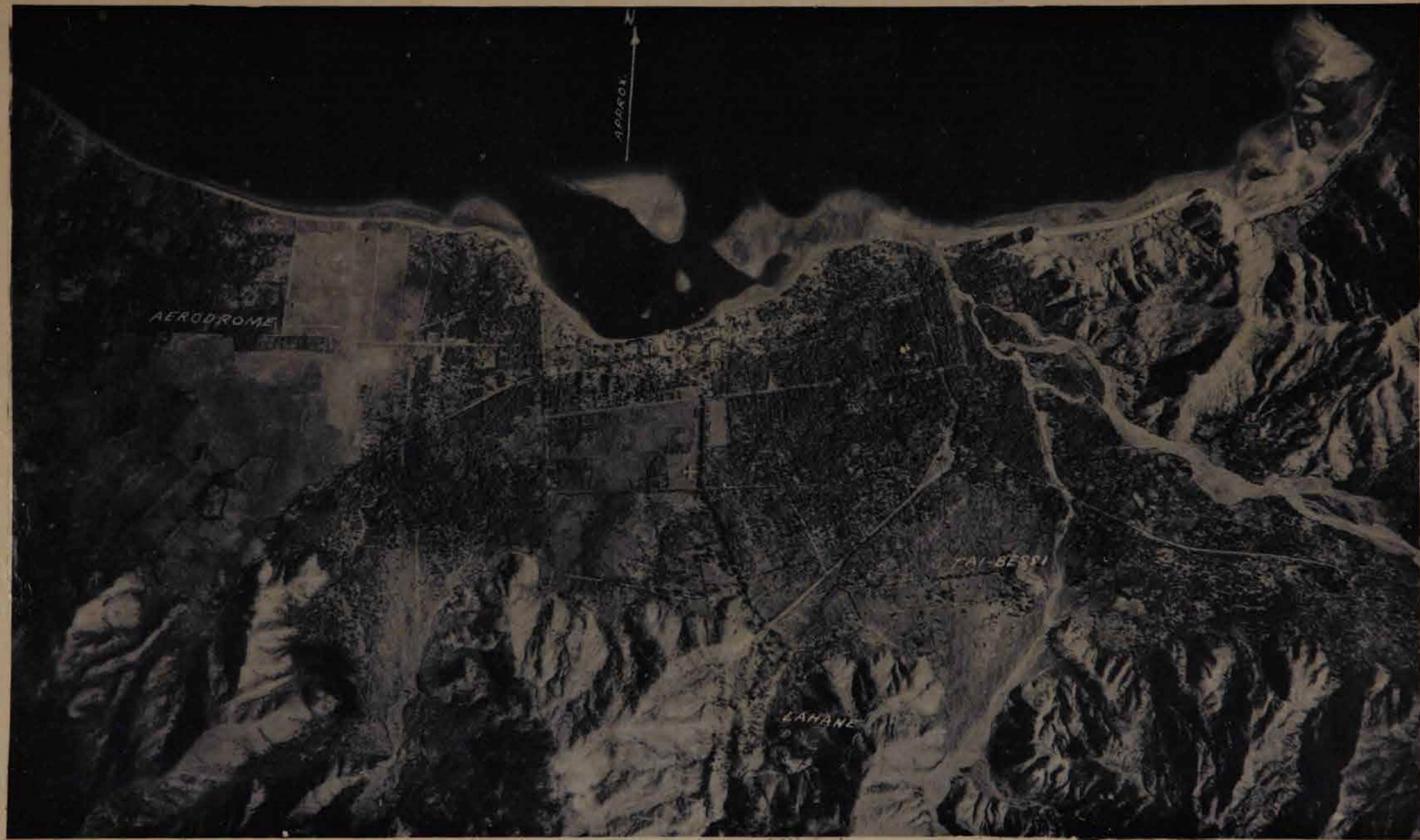
The telephone is connected to the posto, north, west and northwest of which is a group of Government buildings (district offices, rest house, doctor's house, hospital and store). The native huts and barracks are scattered between these two groups; the market is south of the posto.

The surrounding country is poorly populated but thickly timbered with massive trees and bamboo. On the coast five miles southwest of the town is the Elomar anchorage. This is 28 miles (45 km.) at a bearing of 197° from Lautem. There are seven native huts and a beacon. Water is said to be plentiful.

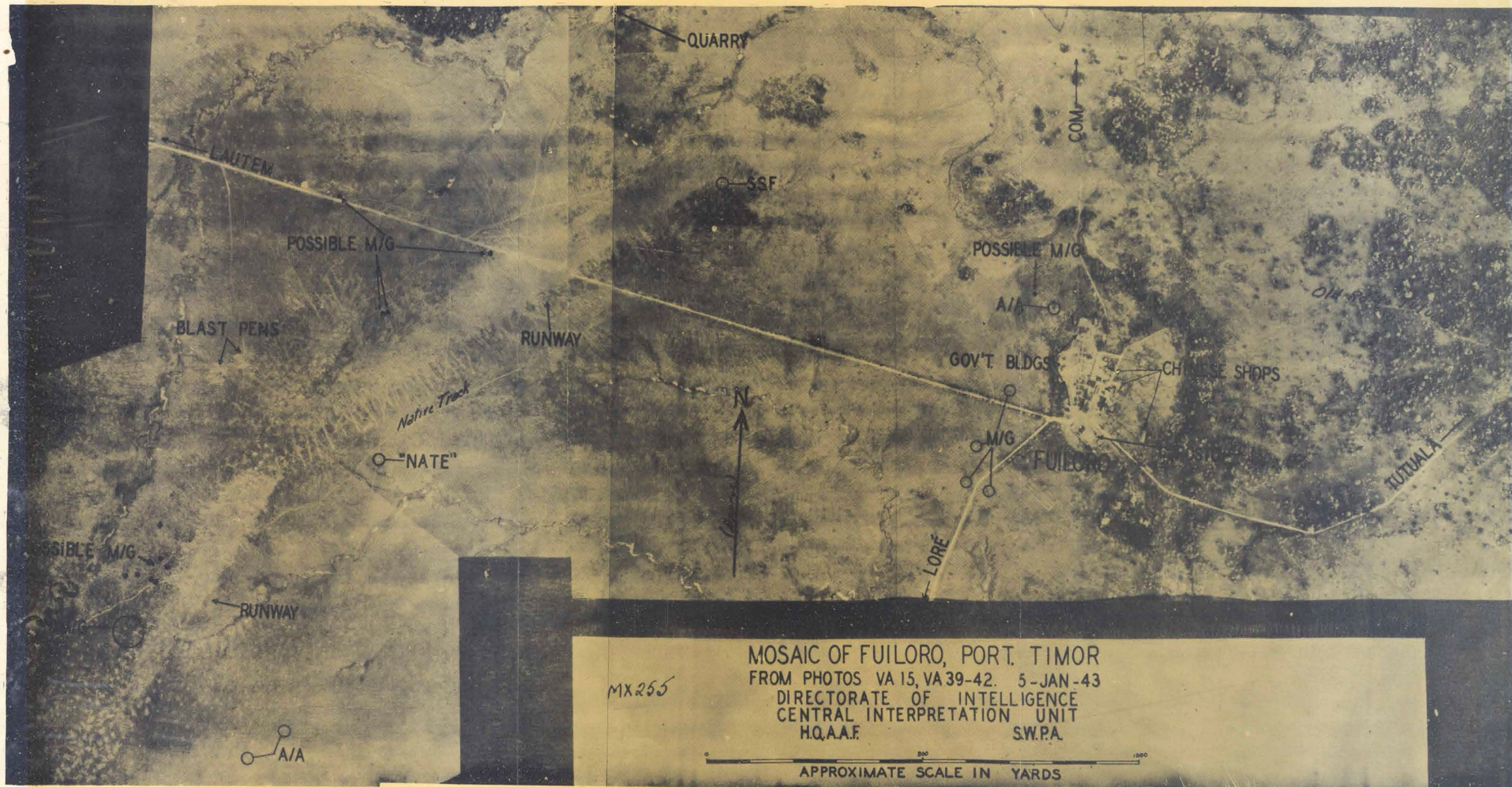
Laivai (see Map No. 30) is 12 miles (19½ km.) at a bearing of 254° from Lautem. The town is on the north coast on a narrow coastal plain which stretches 1½ miles (2½ km.) west to the Laivai River. Many irrigated paddy fields cover this area.

Laivai is a posto town and anchorage. The posto is built on top of a flat hill about 200 feet (60 m.) above the surrounding plain. To the East are the secretary's office, armory and telephone. The posto is set in a wide compound with a low wall. On the beach north of the posto hill is a customs house recently used as a storehouse. To the northwest on the beach is a ship's beacon, and further west a native village of 15 huts. South of it are some Chinese shops and between them and the posto hill a small park. South of this park there is a Chinese school on the edge of the hill. There is at the posto a well from which the town water supply is drawn.

The road from Baucau to Lautem goes through the town on the north side of the posto hill; there are ramps up the east and west sides to the posto. About 1½ miles (2½ km.) east along the road to Lautem there is a big coconut



1. Dilli, showing airdrome west of town, (10/11/42)



Produced by D.of I. A.A.F. S.W.P.A. on 18.11.4
from vertical photographs. Soundings from
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