AWM52
2nd Australian Imperial Force and Commonwealth Military Forces unit war diaries, 1939-45 War

Item number: 8/3/23

2/23 Infantry Battalion

May 1945, Appendices, part 4 of 4

SECRET

GENERAL HEADQUARTERS
SOUTHWEST PACIFIC AREA
OFFICE OF THE CHIEF ENGINEER
INTELLIGENCE SECTION

TARAKAN ISLAND
NORTHEAST BORNEO

TERRAIN EVALUATION

90 A

Refer to
Allied Geographical Section
TERRAIN STUDY
90

5 APRIL 1945

ENGINEER INTELLIGENCE REPORT

ORIENTATION MAP

TARAKAN ISLAND
NORTHEAST BORNEO

PREPARED UNDER THE DIRECTION
OF THE CHIEF ENGINEER BY THE
INTELLIGENCE SECTION · GHQ · SWPA

ALL DISTANCES IN NAUTICAL MILES

S E C R E T

GENERAL HEADQUARTERS
SOUTHWEST PACIFIC AREA
OFFICE OF THE CHIEF ENGINEER
INTELLIGENCE SECTION

TERRAIN EVALUATION 90A

TARAKAN ISLAND, N.E. BORNEO

5 APRIL 1945.

TABLE OF CONTENTS

REFERENCES:

a. Maps and Charts:

(1) 2/1 Aust. Army Topo Svy Coy., Aust Svy Corps, 1:50,000
Island of Tarakan, February 1945

(2) British Admiralty, Hydrographic Chart:
No. 3377, Sungei Sesayap and Sungei Bulungan, 1:145,000

(3) U.S. Navy, Hydrographic Chart:

(a) H.O. Misc. 11,609-107, Approaches to Tarakan, 1:72,000

(b) H.O. Misc. 11,609-107, Entrances to Sesajap and Boeloengan Rivers, 1:36,000

b. Publications:

(1) Allied Geographical Section, SWPA

(a) Terrain Handbook, No. 61, Tarakan, February 1945

(2) U.S. War Department, Chief of Engineers, Military Intelligence

(a) Strategic Engineering Study, No. 115, Northern Borneo, Terrain Intelligence, June 1944

(3) Joint Army-Navy Intelligence Service.

(a) Janis 155, 1944

(4) U.S. Coast and Geodetic Survey

(a) Tide Tables, Pacific Ocean and Indian Ocean, 1945

(5) U.S. Navy Department

(a) Field Monograph of Netherlands East Indies, March 1941

(6) British Admiralty, Hydrographic Department

(a) Eastern Archipelago Pilot, Vol II, fifth edition, 1934

(7) Netherlands Forces Intelligence Service

(a) Military Study of the Island of Tarakan, December 1944

c. Aerial Photography:

Mission No.	*Date*	*F.L.*	*Photo Nos.*
K-17			
4M388	9 Dec 1944	24"	1-10
4M426	10 Dec 1944	24"	1-18
4M426	10 Dec 1944	24"	1-8
4M426	10 Dec 1944	12"	1-12
4M426	10 Dec 1944	6"	1-11
K-18			
4M Special	23 Oct 1944	24"	1-9
4M11262	26 Nov 1944	24"	1-11
4MB42F	10 Dec 1944	24"	1-13
4MB42J	10 Dec 1944	24"	1-42

S E C R E T

GENERAL HEADQUARTERS
SOUTHWEST PACIFIC AREA
OFFICE OF THE CHIEF ENGINEER
INTELLIGENCE SECTION

TERRAIN EVALUATION 90A

TARAKAN ISLAND, N.E. BORNEO

1. *GENERAL STATEMENT:*

Tarakan Island is located 6 to 8 miles east of northeast Borneo in the swampy delta area at the mouth of the Sesajap River. It is roughly triangular in shape, trending northwest to southeast, and covers an area of 85 square miles.

Tarakan Island is bordered generally by sandy beaches alternating with mangrove swamps, but extensive mud flats and fringing coral reefs characterize the beaches in the southern and southeastern portion. The northeastern and southwestern portions of the island are mostly swamp which change farther inland to undulating hilly terrain ranging from 300 to 512 feet high. In the northern part, the terrain is generally flat, although a few hills rise to a maximum altitude of 500 feet. Small streams radiating from the hilly area are evenly distributed, and the only large river is the Pamoesian River. Near the town of Tarakan, the river is narrow, but attains a width of 375 feet at its mouth. Surrounding the town of Tarakan and north to the airfield and Djoewata oilfields the terrain is flat and fairly well-drained. These areas are densely developed with oilfields and installations. However, there are areas suitable for military development bordering on the lowlands and swamps.

Lingkas, on the southwestern side of the island, approximately 2 miles from the town of Tarakan, is the important port. Limited docking facilities are available and the harbor is sheltered in all weather. Prior to the war there was a radio station in Pamoesian and telephone connections between Lingkas, Pamoesian, and the various parts of the oilfields.

The climate is characterized by moderately high uniform temperature, high humidity, and high rainfall. Over a 7-year period the mean annual temperature has been 79.5°F., with maximum and minimum temperatures of 92 and 73°F., respectively. Relative humidity is high, averaging 80 to 90% throughout the year. There is usually a difference of 20 or 25% between the early morning and mid-day minimum relative humidity. Tarakan has neither strong monsoons nor land or sea breezes. From December to April, winds are easterly and northeasterly, bringing frequent rain, squalls, and bad weather. From July to October, westerly winds with frequent rain are more prevalent. Winds are changeable during the remainder of the year. The mean surface wind speed from January to September is 8 mph and decreases during the rest of the year.

The rainfall is greatest during November, December, and March, at which time the sky is usually overcast by low clouds. From July to September rainfall is light on the sheltered sections of the east coast but greater on the exposed sections, with rains about every second day, usually occurring in the afternoon and evening. In May, June, October, and November, the weather is unsettled, and in November there are heavy rains. An entire week without rain is unusual. During the westerly monsoon squally showers from the westward are experienced in the vicinity of Tarakan. The average annual rainfall is 150 inches.

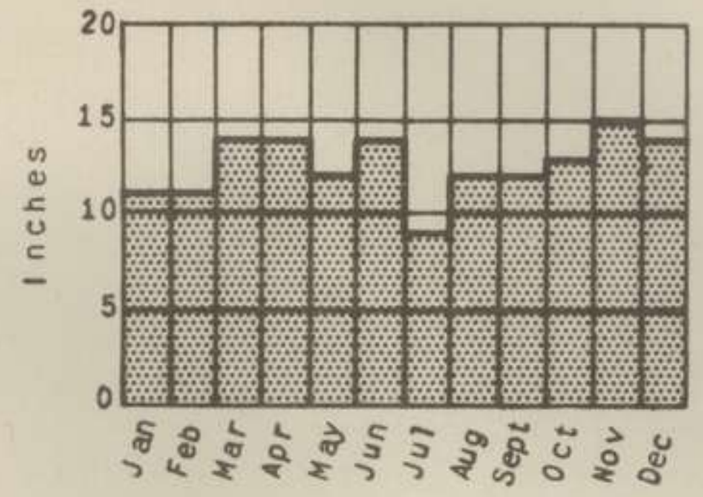
OFFICE OF THE CHIEF ENGINEER GHQ - SWPA

INTELLIGENCE SECTION

CLIMATIC DATA

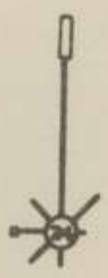
TARAKAN ISLAND, N.E. BORNEO

RAINFALL



Mean Monthly Rainfall

WIND ROSES



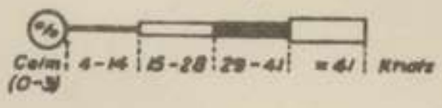
Dec-Jan-Feb

Mar-Apr-May

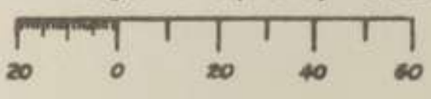
Jun-Jul-Aug

Sept-Oct-Nov

Scale of speeds



Percentage Frequency Scale



Ref. NEI - INTERIM REPORT - Vol. II - Aug. 1944.

2. *MILITARY SUITABILITY:*

a. Anchorages, Landing Beaches, and Port Facilities:

Lingkas is primarily an oil exporting port for Tarakan, and the waters within a radius of 1.5 miles from the head of the north wharf afford anchorage for a large number of Liberty ships. Waves within the anchorage are small, and surf is inconsiderable.

Lingkas beach is the most suitable for any landings on Tarakan Island. The beach is 7300 feet long, with its southern end approximately 1000 feet southeast of the south T-wharf. Landings are also possible on the east and northwest coasts of the island, but the beaches are fringed with swamp backed by a wide belt of low forested country which is crossed by a number of streams. Roads and trails are the only avenues of approach for MI to reach the objectives, and overland movement is suitable only for foot troops. See Table A for details on Landing Beaches.

There are two T-shaped wharves, an oil jetty, and a small pier at Lingkas port. The wharf is screwpile with a wooden deck. The wharf head can be extended to accommodate two large ships. The north wharf is lightly built, of iron and wood construction, and is used for loading small tank boats. There is an oil jetty 1100 feet long which has 36 feet depth of water at the end. "Existing and Potential Port Facilities" are tabulated in Table B.

On the east side of Tarakan Island, the current flows uninterruptedly to the south-southwest or southwest at a rate of ½-knot during flood and 2 knots during ebb. In Tarakan anchorage, a current of 4 knots has been observed. The tides in Lingkas (Tarakan) harbor vary but are dominantly semi-diurnal. The spring range is 9.3 feet. The mean range is 5.7 feet. During May, June, November, and December the highest possible tide that can be expected is 2.2 feet above the mean level. The lowest possible tide than can be expected is about 4.5 feet below the mean level and occurs at all semi-diurnal spring tides.

TABLE A

LANDING BEACHES

PRINCIPAL OBJECTIVE	LOCATION	LENGTH	ACCESSIBILITY TO SHORE	ACCESSIBILITY TO OBJECTIVE
Lingkas Port and Tarakan town.	At Lingkas port northwest of Meloendoeng River.	7300 feet. Its southern end is 1000 feet southeast of the south wharf.	Approach is from southeast through Batagau Channel between the coral reef at the south end of the island and a sand shoal which surrounds Menulum. Shoals and small islands are as charted. The 30-foot depth curve averages from 1000 to 1200 feet offshore. The 18-foot depth curve averages from 600 to 800 feet offshore. Gradients probably become very flat from the 18-foot depth curve to the shore. Beach is suitable for LCM at higher high water, but reconnaissance is required before beaching large landing craft.	The terrain behind the high water line varies from 3 to 10 feet high in front of the road which skirts the shore. The hinter land, except for the low hills on which the Lingkas oil tank farm is situated, is open and there are obstacles on the route to Tarakan. From Lingkas to the airfield, movement for mechanized and infantry troops is limited to paved highway through swampy terrain.

NOTE: a. The beach information given in Table A above is of a general nature due to inadequacy of source material. Hydrographic Charts of the area are not detailed, nor are they of sufficiently large scale to allow a detailed beach interpretation to be made.

b. Color vertical aerial photography of the landing beaches of southern Tarakan has been obtained, but will not be available in time to be included in this report. However, a complete landing beach supplement will be published immediately upon completion of the photographic interpretation of the color photography.

TABLE B

EXISTING AND POTENTIAL PORT FACILITIES

LOCATION	OFFSHORE CONDITIONS	EXISTING FACILITIES	POTENTIAL FACILITIES	SUITABILITY OF AREA
Lingkas Port, 2½ miles southwest of Tarakan oilfield, 3½ miles southeast of Tarakan airfield.	Approaches: The only entrance to the harbor is through Batagau Channel, approximately one mile in width between Tanjong Botu and Menulum Island. Anchorages: There is anchorage for 10 Liberty ships at Lingkas harbor. Further offshore, 3 miles northwest and 4½ miles south of Lingkas harbor is anchorage for 100 Liberty ships in 30 to 54-foot depths. Approximately 5 miles northwest of Lingkas harbor there is anchorage for submarines. The entrance has two channels southeast of Payau Island. The least depth in either is 36 feet and the least width is ½ mile.	1) North wharf, 1120 feet long and 7.6 feet wide, has a low water depth at head less than 30 feet. This wharf has a gasoline pipeline. 2) South wharf, 1500 feet long and 33 feet wide, has a low water depth along the T-head of 33 feet. The head is approximately 425 x 33 feet. There is a 10-ton crane mounted on tracks at this wharf. There is a 3-inch water pipe, and a fuel oil line with standard fittings runs to the oil fields. 3) Oil jetty, 1100 feet long and 13 feet wide, has a low water depth of 30 feet at head. This jetty has a 3-inch water pipe and the fuel oil line, with standard fittings, runs to the oil fields. The wharves and jetty are 6 feet above water at high tide, and there is a pump house supplying saltwater for fire fighting. Other Piers are located: 1) Southeast of Lingkas Port between the Nengitan and Koroengan Rivers; 100 feet long. 2) Inside the mouth of the Koroengan River on the north bank; 100 feet long. 3) Partly destroyed pier 570 feet long at mouth of Sibengkok River.	Liberty Wharves: The south T-wharves could be enlarged to accomodate three ships, by extension to 1500 feet. Approaches should be constructed at each end to facilitate traffic movement. Oil Jetties: One jetty could be constructed 500 feet north of the existing jetty. Seaplanes and PT Bases: Seaplanes can land and take off in Lingkas harbor. Gasoline and oil are available. Facilities for minor repairs are also available.	Usable Land: Limited to settled areas, cleared lowlands, and hills in the vicinity of oilfields and airfields. The hilly part of this area is moderately well-drained. Construction materials are available in the hills to the the north of Tarakan oilfields. Roads and Railroads: Good asphalt-surfaced, two-lane roads extend from the port northward to the oilfields. The longest, 6½ miles, is from 18 to 24 feet wide, and extends from the port up to the Djoewata oilfields in the north central part of the island. Tarakan airfield is 3 miles from the port. The other road extends from the port northeastward to the Tarakan oilfields. The narrow-gauge railroad line from Lingkas wharf to BPM Headquarters is now replaced by a surfaced MT road. The main roads have good bridges, but the wooden bridges and timber culverts on secondary roads are not suitable for heavy vehicles.

LINGKAS, TARAKAN ISLAND, 1945

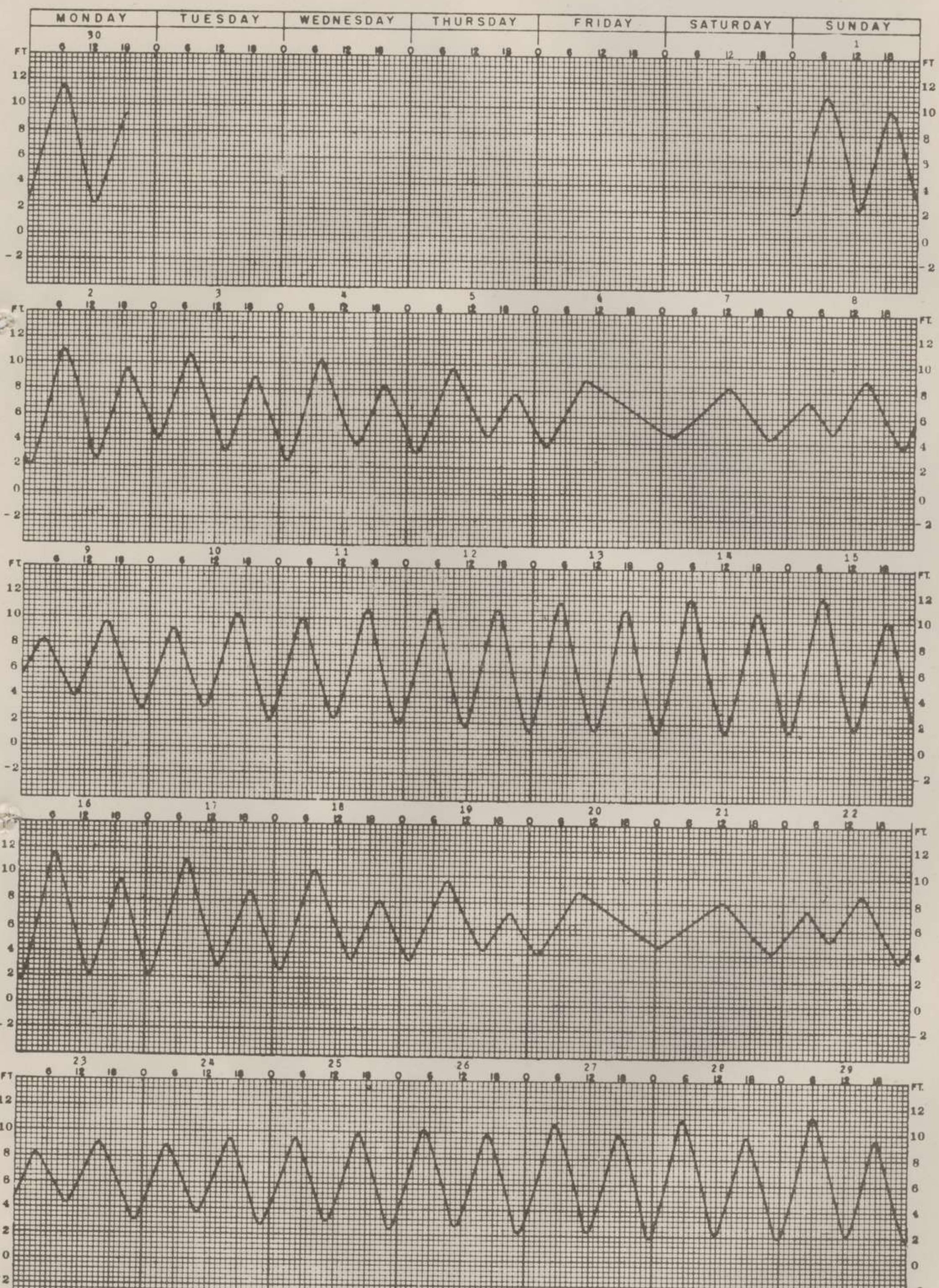
APRIL					MAY					JUNE				
DAY	HIGH		LOW		DAY	HIGH		LOW		DAY	HIGH		LOW	
	Time	Ht.	Time	Ht.		Time	Ht.	Time	Ht.		Time	Ht.	Time	Ht.
	h. m.	*ft.*	*h. m.*	*ft.*		*h. m.*	*ft.*	*h. m.*	*ft.*		*h. m.*	*ft.*	*h. m.*	*ft.*
1	06 40	10.9	00 28	1.9	1	06 40	11.3	00 13	1.8	1	07 35	10.2	00 52	2.1
Su	18 45	9.8	12 55	2.2	Tu	18 44	8.8	13 10	2.4	F	19 52	7.4	14 22	2.7
2	07 02	10.9	00 46	2.0	2	07 08	10.9	00 35	2.1	2	08 18	9.5	01 29	2.7
M	19 05	9.4	13 21	2.5	W	19 09	8.4	13 39	2.9	Sa	20 56	7.9	15 16	3.0
3	07 29	10.7	01 05	2.2	3	07 39	10.4	01 00	2.5	3	09 13	8.8	02 19	3.3
Tu	19 26	8.9	13 49	3.1	Th	19 39	7.8	14 18	3.4	Su	22 40	6.8	16 34	3.3
4	07 58	10.2	01 25	2.5	4	08 18	9.7	01 27	3.1	4	10 38	8.1	03 46	4.1
W	19 46	8.3	14 22	3.7	F	20 21	7.2	15 11	4.0	M	.. ..	. .	18 16	3.2
5	08 35	9.6	01 47	3.0	5	09 16	8.9	01 55	3.8	5	01 03	7.2	06 37	4.2
Th	20 01	7.6	15 08	4.4	Sa	22 50	6.7	17 16	4.4	Tu	12 32	7.8	19 32	2.9
6	09 27	8.8	02 05	3.7	6	11 34	8.3	02 51	4.7	6	02 13	8.0	08 17	3.6
F	.. ..	. .	.. ..	. .	Su	.. ..	. .	20 05	4.0	W	13 58	7.9	20 25	2.3
7	.. ..	. .	02 08	4.5	7	02 43	7.4	07 44	4.7	7	03 00	8.9	09 20	2.9
Sa	12 43	8.3	21 41	4.4	M	13 53	8.5	20 49	3.4	Th	14 58	8.1	21 06	1.9
8	03 47	7.2	08 15	4.8	8	03 09	8.4	08 57	3.9	8	03 38	9.7	10 03	2.3
Su	14 49	8.9	21 46	3.6	Tu	14 54	9.0	21 20	2.8	F	15 43	8.3	21 43	1.6
9	03 46	8.1	09 23	3.9	9	03 38	9.3	09 43	3.0	9	04 14	10.4	10 44	1.8
M	15 37	9.6	22 07	2.9	W	15 36	9.4	21 49	2.1	Sa	16 23	8.3	22 17	1.3
10	04 10	9.1	10 03	3.1	10	04 06	10.2	10 20	2.4	10	04 48	10.7	11 22	1.5
Tu	16 11	10.2	22 30	2.3	Th	16 12	9.7	22 18	1.7	Su	17 01	8.3	22 49	1.2
11	04 35	10.0	10 37	2.3	11	04 35	10.9	10 54	1.8	11	05 22	11.0	11 58	1.4
W	16 42	10.6	22 55	1.8	F	16 45	9.8	22 45	1.4	M	17 35	8.1	23 22	1.2
12	05 01	10.7	11 10	1.7	12	05 06	11.4	11 28	1.6	12	05 56	11.0	12 34	1.4
Th	17 12	10.8	23 20	1.5	Sa	17 17	9.7	23 14	1.3	Tu	18 10	7.9	23 54	1.4
13	05 29	11.3	11 41	1.5	13	05 35	11.6	12 02	1.5	13	06 28	10.8	.. ..	. .
F	17 41	10.8	23 46	1.3	Su	17 48	9.4	23 41	1.4	W	18 44	7.6	13 10	1.6
14	05 57	11.6	.. ..	. .	14	06 06	11.6	.. ..	. .	14	07 01	10.4	00 24	1.7
Sa	18 10	10.5	12 13	1.4	M	18 17	9.0	12 36	1.7	Th	19 19	7.3	13 47	1.9
15	06 12	11.7	00 10	1.4	15	06 37	11.4	00 07	1.6	15	07 35	9.8	00 55	2.1
Su	18 37	10.0	12 45	1.6	Tu	18 47	8.5	13 12	2.1	F	20 00	6.9	14 27	2.3
16	06 54	11.5	00 36	1.7	16	07 07	10.9	00 34	2.0	16	08 12	9.2	01 27	2.6
M	19 04	9.4	13 18	2.1	W	19 17	8.0	13 46	2.6	Sa	20 47	6.5	15 10	2.7
17	07 25	11.0	01 00	2.1	17	07 41	10.3	00 58	2.6	17	08 50	8.4	02 04	3.1
Tu	19 32	8.7	13 50	2.8	Th	19 50	7.4	14 27	3.2	Su	22 01	6.3	16 06	3.0
18	07 57	10.4	01 21	2.6	18	08 17	9.5	01 26	3.2	18	09 42	7.7	02 46	3.8
W	19 55	8.0	14 28	3.5	F	20 33	6.8	15 22	3.8	M	.. ..	. .	17 21	3.2
19	08 30	9.6	01 42	3.3	19	09 06	8.7	01 41	3.9	19	00 18	6.3	04 45	4.3
Th	20 20	7.2	15 18	4.3	Sa	.. ..	. .	17 21	4.2	Tu	11 09	7.1	18 47	3.2
20	09 18	8.8	01 47	4.0	20	10 46	8.0	.. ..	. .	20	01 54	6.9	07 58	4.2
F	.. ..	. .	.. ..	. .	Su	.. ..	. .	20 02	3.9	W	13 05	6.7	19 45	2.9
21	.. ..	. .	00 07	4.6	21	03 25	7.1	07 52	5.0	21	02 41	7.6	09 10	3.6
Sa	12 43	8.1	21 33	4.1	M	13 34	7.8	20 44	3.5	Th	14 19	6.7	20 28	2.5
22	04 19	7.5	08 50	5.1	22	03 23	7.8	09 03	4.4	22	03 16	8.2	09 52	3.1
Su	14 52	8.6	21 47	3.5	Tu	14 44	8.0	21 10	3.1	F	15 10	6.8	21 02	2.2
23	03 55	8.2	09 35	4.3	23	03 36	8.5	09 41	3.7	23	03 48	8.9	10 27	2.5
M	15 31	9.0	22 04	3.1	W	15 23	8.3	21 32	2.7	Sa	15 48	6.9	21 35	1.9
24	04 15	8.8	10 06	3.6	24	03 57	9.2	10 11	3.1	24	04 20	9.4	10 59	2.1
Tu	16 03	9.4	22 19	2.7	Th	15 52	8.4	21 53	2.4	Su	16 23	7.0	22 06	1.5
25	04 29	9.5	10 32	3.0	25	04 18	9.8	10 39	2.7	25	04 49	9.9	11 28	1.7
W	16 29	9.7	22 39	2.4	F	16 19	8.5	22 13	2.1	M	17 00	7.2	22 38	1.2
26	04 48	10.1	10 58	2.6	26	04 39	10.3	11 06	2.3	26	05 18	10.2	11 59	1.4
Th	16 51	9.8	22 56	2.1	Sa	16 45	8.5	22 35	1.8	Tu	17 27	7.3	23 12	1.1
27	05 08	10.6	11 22	2.3	27	05 04	10.8	11 34	2.0	27	05 52	10.4	12 31	1.3
F	17 16	9.8	23 14	1.9	Su	17 13	8.5	22 58	1.6	W	18 02	7.4	23 45	1.0
28	05 28	11.0	11 47	2.1	28	05 30	11.0	12 02	1.9	28	06 23	10.4	.. ..	. .
Sa	17 36	9.7	23 31	1.8	M	17 36	8.4	23 24	1.5	Th	18 39	7.4	13 05	1.2
29	05 50	11.3	12 13	2.1	29	05 57	11.1	12 33	2.0	29	06 57	10.1	00 22	1.1
Su	17 58	9.5	23 51	1.8	Tu	18 05	8.2	23 51	1.6	F	19 17	7.4	13 40	1.3
30	06 13	11.4	.. ..	. .	30	06 26	11.0	.. ..	. .	30	07 36	9.7	01 01	1.3
M	18 19	9.2	12 40	2.2	W	18 34	8.0	13 04	2.1	SA	20 02	7.2	14 17	1.4
					31	06 59	10.7	00 20	1.7					
					Th	19 10	7.7	13 41	2.3					

Time meridian 120° E. The hours of the day are numbered consecutively from 0^h (midnight) to 23^h (11 00 p. m.). 12^h is noon. All hours greater than 12 are in the afternoon (p.m.).
Heights are reckoned from t he datum of soundings on charts of the locality which is mean lower low water.

PREDICTED TIDE CURVE
HEIGHTS IN FEET ABOVE CHART DATUM
(MEAN LOWER LOW WATER)

LINGKAS, TARAKAN ISLAND
LAT. 3°17'N. LONG. 117°35'E.

APRIL 1945
TIME MERIDIAN 112°30'E



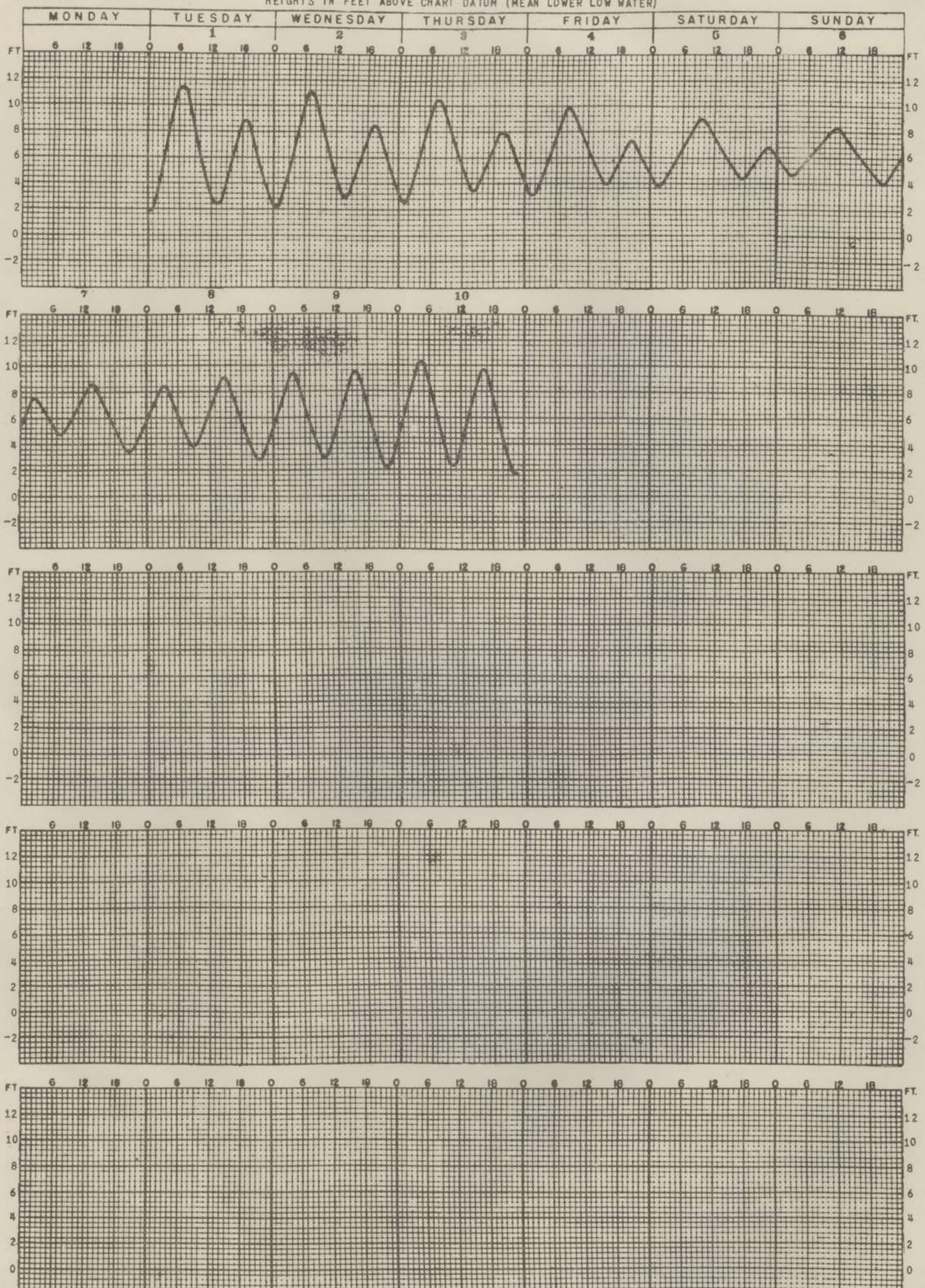
EACH SMALL DIVISION HORIZONTALLY REPRESENTS ONE HOUR AND VERTICALLY 0.4 FOOT

PREDICTED TIDE CURVE

LINGKAS, TARAKAN ISLAND
N.E. BORNEO
LAT 3°17'N. LONG 117°35'E

1 MAY TO 10 MAY, 1945
TIME MERIDIAN 120°

HEIGHTS IN FEET ABOVE CHART DATUM (MEAN LOWER LOW WATER)



EACH SMALL DIVISION HORIZONTALLY REPRESENTS ONE HOUR AND VERTICALLY 0.4 FOOT

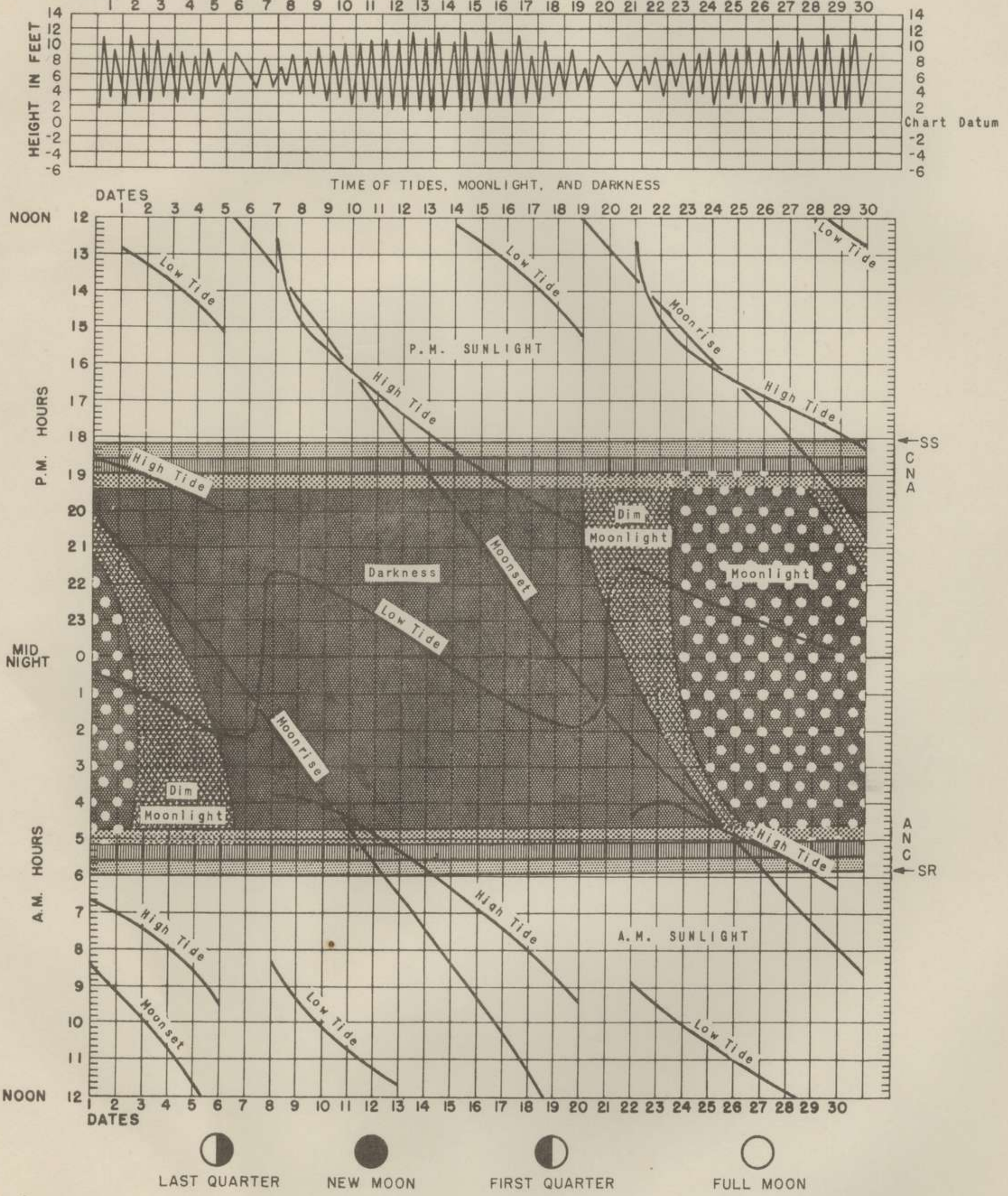
DIAGRAM OF TIDES, SUNLIGHT, AND MOONLIGHT

LINGKAS, TARAKAN ISLAND

APRIL 1945

LAT. 03° 17' N. 117° 35' E.

Time Meridian 120°



LAST QUARTER ● NEW MOON ◐ FIRST QUARTER ○ FULL MOON

A-ASTRONOMICAL TWILIGHT
N-NAUTICAL TWILIGHT
C-CIVIL TWILIGHT
SS-SUNSET
SR-SUNRISE

TABLE C

POTENTIALITIES OF TERRAIN				
TERRAIN TYPE NO.	DESCRIPTION	MOVEMENT	INSTALLATIONS	RESOURCES
1.	Tidal Swamps: This type includes the tidal swamps south of the Tarakan oilfield, drained by the Pamoesian and Meloendoeng Rivers and their tributaries; the coastal swamps northwest of Lingkas port to the southwestern end of Tarakan airfield; scattered swamps on the northwest side of the road connecting Lingkas port and Tarakan oilfield, and the east side of the road running southeast of the Tarakan airfield. Vegetation is mainly nipa palm. Portions of the area have been cleared. The southwestern extension of the Tarakan airfield is on cleared swamp ground, artificially drained. Roads are built up over boggy ground.	Foot: The area northwest of the mouth of the Sibengkok River between the sea and the motor road is suitable for foot troops. MT and Tracked Vehicles: Unsuitable. Pamoesian River navigable by shallow draft craft up to the junction of the Labanga and Pamoesian Rivers.	Unsuitable.	Water: Surface water, springs, and existing wells in settled areas will supply normal requirements. Further supplies should be available from shallow to moderately deep wells on higher ground. Wells in the alluvium will give variable water, which may be brackish if too close to the shore. Water for domestic purposes is obtained by catchment. The industrial supply is pumped from the Pamoesian River to a reservoir on top of a hill 3/4 mile south of the pumping station. Salt water for fire fighting is supplied by a pump house close to the shore. Power: There were two electric plants; one operated by the oil company, and the other by the N.V. Houtaankap Maatschappij. The former, and presumably the latter, were at Pamoesian. Engineering Materials: Refer to "Engineering Resources", Table D. Industry: (a) Oil: Pamoesian and Djoewata are the two main oilfields of Tarakan Island. Two other oilfields of minor importance are Besanip (about 3 miles northwest of Pamoesian) and Goenoeng Tjangkol (about 2 miles north of Djoewata). Pamoesian has a total of 850 wells, 600 of them were producing. While most were pumping wells, there were 5 flowing wells and 30 gas lift wells; total capacity 13,500 barrels a day. Djoewata has 60 wells, 41 producing, and all pumping wells, producing 1700 barrels a day. There are no refining facilities on the island. The crude is either used direct as fuel or shipped elsewhere for refining and blending. It is brought from wells direct to storage tank farms and pumped to Lingkas. Annual production is about 4,000,000 barrels. (b) Timber: The hilly terrain, which is covered with rain forest, north of the oilfields has been exploited commercially. There is a sawmill near the mouth of Karoengan River. On its northern bank is a wharf 100 feet long. This river is navigable by shallow draft craft. In 1934, approximately 8,100,000 board feet of timber were exported from Lingkas port.
1A.	Swamp Forest and Scrub Growth: Less than 1/2 square mile area partly drained at the north side of Tarakan airfield. Hilly rain forest borders the north side of this area.	Foot: Suitable in part for troop movement. MT and Tracked Vehicles: Unsuitable.	Suitable for storage installations. Low ground must be filled and drained.	
2.	Open Flat Land: Covers the northeastern 2/3 of Tarakan airfield. The area is approximately 1/2 square mile. Soil is possibly sand with fines or very silty sand. Much clearing has been done along the southwestern part where the existing airfield is located. Vegetation in the northern and northeastern portions is mainly brush and some secondary growth. Drainage is fairly good.	Foot: Suitable for foot troops at all times of year. Secondary growth provides cover but is some hindrance to movement. MT and Tracked Vehicles: The cleared area is suitable for MT. Drainage ditches and secondary growth are obstacles to cross-country movement.	Suitable for airfield. Extension of existing airfield northeastward will require clearing of brush and secondary growth. This area is also suitable for personnel, storage, and other military installations.	
3.	Flat Land, fairly well drained: From Lingkas port the flat land extends northwest along the road, widening in the populated section of Simpangtiga, the lowland area of Tarakan (Pamoesian) oilfield. Villages are numerous. Soil is sandy to silty clay. Drainage is fairly good, especially inland. Vegetation is scattered grassland and gardens around the Pamoesian district. Network of roads, mostly asphalt surfaced.	Foot: No natural obstacles to ground troops. Terrain is suitable for deployment of troops. MT and Tracked Vehicles: Only the main roads are suitable for MT. Open fields in oilfield areas suitable for MT at all times of year except during heavy rain on the southeastern part of Tarakan oilfield. Oilfield installations are obstacles to cross-country movement.	Suitable for personnel, storage and other permanent installations. Construction material are available in hills to the north.	
4.	Low Hills: Hills bordering the edge of the lowland and settled areas, and low hills breaking the continuity of flat areas are from 100 to 175 feet high. Vegetation is scattered secondary growth, rain forest, and small patches of cultivation. The few small streams provide good drainage throughout the area.	Foot: Limited to clearings and roads. MT and Tracked Vehicles: Roads too narrow for MT.	Suitable for personnel, storage, and other military installations. Source of good timber for constructional purposes.	
5.	Hilly Forested Area: On north side of Tarakan oilfield and Tarakan airfield, hills range in height from 300 to 500 feet.	Foot: Difficult for cross-country movement. MT and Tracked Vehicles: Unsuitable.	Unsuitable for any military installations. Good timber is available in this area.	

OFFICE OF THE CHIEF ENGINEER GHQ-SWPA
INTELLIGENCE SECTION

UNCONTROLLED MOSAIC

TARAKAN ISLAND
NORTHEAST BORNEO, NEI

Prepared under the direction of the Chief Engineer, GHQ, SWPA, by the Intelligence Section, OCE, GHQ, April 1945. Compiled from aerial photography by the Second Photo Charting Squadron, U.S. Army. Mission nos. UH842F and UH842J. Additional information from U.S. Navy Hydrographic Chart No. 11,600-107. Approaches to Tarakan. Scale 1:72,000.

CAUTION: This uncontrolled mosaic was produced from K-18 photography. Due to lack of accurate ground control, distances scaled on this mosaic may be at variance with actual ground distances.

LEGEND

Anchorage sheltered in all seasons
L Liberty ship — 36
Refer to text - Section 2A
Depth line in feet
Landing beach (length in feet) — 7350'
Refer to text - Section 2A, Table A
Extension of existing wharf and approaches — 220'
Refer to text - Section 2A, Table B
Site suitable for airfield construction with recommended direction and extension of runway and dispersal area.
Refer to text - Section 2C, Table D
Flat to gently undulating terrain suitable for military installations.
Refer to text - Section 2B, Table C — 1
Low, wet or hilly terrain probably suitable in part for military installations.
Refer to text - Section 2B, Table C — 5
Number indicates terrain descriptions.
Refer to text-- Section 2B, Table C

Scale 1:20,000

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 FEET
1 ½ 0 1 KM.

LOCALITY MAP

TARAKAN AND VICINITY

TARAKAN ISLAND

(NORTHEAST BORNEO, NEI)

TABLE D

POTENTIAL AIRFIELD DEVELOPMENT

LOCATION	SUGGESTED RUNWAYS	APPROACHES AND DISPERSAL	ESTIMATED SOIL CONDITIONS	ENGINEERING RESOURCES	ENGINEERING CONSTRUCTION NOTES
Tarakan Airfield lies 3 miles northwest of Lingkas, at 3° 20' north; 117° 34' east. Altitude: 10 to 20 feet.	Length: The present runway is 4400 X 100 feet. Extension northeastward for 600 feet will somewhat increase the already steep glide angle from 1:30 to 1:25, but owing to superiority of both drainage and subgrade conditions this extension could be completed more rapidly and successfully in the northeastward direction. Owing to swampy ground at southwest end of runway much fill would be required to build a southwestward extension. It may be necessary to use the strip as a one-way strip, taking-off to the southwest only. Width: The present width can be increased to 150 feet. Bearing: Approximately 238°.	Glide Angle: The glide angle of the present runway is about 1 in 30 in northeastern direction. Approach from southwest is over sea. Circling: The area surrounding the northeast half of the present runway is cleared 2700 feet northeast-southwest, and 2500 feet northwest-southeast, the runway lying in the approximate center of the clearing. Approaches are clear from south to west except for a few small, low, forested hills. On north, northeast, and southeast; the airfield is bordered by hills up to nearly 100 feet in height, and farther inland there are hills up to 500 feet high. Area: Runway and dispersal area is limited to ½ square mile. Terrain: The airfield is on a level area not more than 20 feet above sea level. Inland the airfield is bordered by hills and on the seaward side by marshy ground. Approximately 4400 feet northeast of the east end of the strip the hills reach a height of 165 feet. The northeastern half of the airfield has good natural drainage but that of the southwestern half is poor. Drainage ditches surround the field.	Group Symbols*: SF(A-2); ML(A-4) The soil on the northeastern half of the airfield is possibly sand with fines or very silty sands derived from sandstone and clayey sandstone. Depth to bed rock varies from 5 to 10 feet or more. On the low, swampy ground beyond the west end of present runway the soil is probably fine sand and silt with limited amount of clay. Other Soil Properties: Plasticity low to medium. If worked when wet with heavy machinery plasticity is increased. Cohesion in dry state and expansion and shrinkage on wetting and drying are probably low. Permeability of the soil beyond the west end of the runway is low, but elsewhere probably high. Foundation value is fair to good. (C.B.R.** after compaction 4 to 30).	Rock and Surfacing Material: Small streams contain little sand and gravel, but sand is obtainable along the eastern beach approximately 6 miles east of the airfield. Sandstone can be quarried from hills east of main Lingkas-Djoewata airfield road. At about 650 feet north and 600 feet south of east end of runway, rock, possibly coral, can be excavated from ridges adjoining old quarries. Coral rock is available along the southern and southeastern tips of the island approximately 8 miles southeast of the airfield. Timber: Timber is abundant in the hills to the north and east of the airfield. Water: Moderate supply probably available by drilling wells of shallow to moderate depth. Streams will supply ample water if they can be impounded. Water requires treatment.	Clearing: Clearing of brush and secondary growth on the northeastern half of the airfield is necessary to extend the runway in that direction. Minor cutting of forest possibly necessary. Drainage: Natural drainage is good inland on the northeastern half of the field, but poor toward sea on swampy, southwestern half of strip. Good drainage system is essential. Runoff is diverted around present field. If field is extended it would necessitate further diversion of runoff, or enlargement and extension of present drainage system. Subgrade: Drainage required especially for the southwestern half of the airfield. If field is widened, low ground must be filled to provide stable subgrade. Subgrade requires base and surface courses of graded crushed rock. Grading: Extension of field northeastward would probably involve excavation of shale and sandstone rock. Low hills at northeast end may need lowering for clearance. Stabilization: The soil is not suitable for stabilization with Portland cement or bitumen.

*Soil Group Symbols are those used in Table V (pages 84, 85) of TM 5-255, W.D. Technical Manual Aviation Engineers, 15 April 1944.

**California Bearing Ratio.

OFFICE OF THE CHIEF ENGINEER · GHQ · SWPA
INTELLIGENCE SECTION

SKETCH MAP

TARAKAN ISLAND
NORTHEAST BORNEO

LEGEND

Road, hard surfaced		Tanks, oil or gas	
Road, lightly surfaced		Spot elevations	
Road, earth		Stream, Perennial	
Trail		Stream, intermittent	
Bridge		Swamp	
Culvert		Mangrove	
Buildings or huts		Wooded area or forest	
Derrick, oil or gas		Secondary growth	

LOCALITY MAP
TARAKAN

SCALE 1:25,000
1 MILE
1000 FEET
1 KILOMETERS

Contour Interval 50 feet

APPROXIMATE MEAN DECLINATION 1943 FOR CENTER OF SHEET
ANNUAL MAGNETIC CHANGE 2' INCREASE

TARAKAN ISLAND
NORTHEAST BORNEO

Prepared under the direction of the Chief Engineer, GHQ, SWPA, by the Intelligence Section, March 1945, from vertical aerial photography by the 2nd Photo Charting Squadron, U.S. Army, 10 December 1944, Mission [illegible]; Dutch Hydrographic Chart No. 3577, Scale 1:145,000 Revised 1941; [illegible] - Island of Tarakan, N.E. Borneo, Scale 1:50,000, 1943.

CAUTION: This map was produced from aerial photography. Due to lack of accurate ground control, distances scaled on the map may be at variance with actual ground distances.

REPRODUCED by 2773 ENGRS

SECRET

6. Copy

GENERAL HEADQUARTERS
SOUTHWEST PACIFIC AREA
OFFICE OF THE CHIEF ENGINEER
INTELLIGENCE SECTION

TARAKAN ISLAND
NORTHEAST BORNEO

LANDING BEACH CONDITIONS

7

ENGINEER INTELLIGENCE REPORT

Evaluation 90 A

Refer to
Allied Geographical Section
TERRAIN STUDY

12 APRIL 1945

90

S E C R E T

GENERAL HEADOUARTERS
SOUTHWEST PACIFIC AREA
OFFICE OF THE CHIEF ENGINEER
INTELLIGENCE SECTION

LANDING BEACH CONDITIONS

LINGKAS PORT
TARAKAN ISLAND, N.E. BORNEO

12 APRIL, 1945

TABLE OF CONTENTS

INCLOSURES:

Climatic Data
Tide Table (April, May, June)
Tide Curve (April, 10 days May)
Tide and Light Diagram
Sketch Map, 1:5,000, Beach Area
Index to Oblique Photography

REFERENCES:

See Terrain Evaluation Report No. 90A, Tarakan Island.

GENERAL HEADQUARTERS
SOUTHWEST PACIFIC AREA
OFFICE OF THE CHIEF ENGINEER
INTELLIGENCE SECTION

LANDING BEACH CONDITIONS

LINGKAS PORT
TARAKAN ISLAND, N.E. BORNEO

PHOTOGRAPHIC NOTE:

Color photography was used in an effort to determine underwater depths by parallax measurement with a standard type of stereoscopic plotting machine. However, the color transparencies were over-exposed, causing the detail in the shallow water areas of the beach to be indistinct or entirely lacking. The beach gradients and hydrographic information contained in this study are, therefore, estimated, and should be used with caution.

GENERAL STATEMENT:

This Landing Beach Study was published to supplement the landing beach information contained in Terrain Evaluation Report 90A. The information herein was obtained from large scale (1:4000) vertical color photography, large scale black and white photography, and all available hydrographic chart data.

The beaches in this area are not suitable for landing operations due to the flat slopes of the beach and the large amount of silt that has been deposited along the foreshore throughout the entire area. The silted portion of the beach extends seaward for 800 to 1500 feet from a narrow sand beach. The submerged silt is not stable enough to support the weight of a man. It is believed that unless landings are made by the shallowest draft type of craft, at an extreme high tide of 10 to 11 feet, craft will ground too far from firm beach to allow easy access to shore.

Successive high tide lines on the beach are indicated by the oil deposit remaining on the beach after the water has receded. The line of highest high tides is evidenced by the cut bank at the general vegetation line. By a parallax measurement of ground elevations at the tide lines thus established, and by computing the height of tide at the time of exposure of successive flights of photography, an accurate estimate of the beach gradient can be established. The landing beach information in this study was obtained by using this method coupled with deep water data obtained from hydrographic charts and aerial photography. All depths given are referred to depths below highest high water, and are not based on MLLW.

LANDING BEACHES:

WHITE BEACH: 950 feet long, located southeast of the north wharf between the wharf and Sibengkok River. Beach is backed by a gently sloping bank about 5 feet high which will be no obstacle to troop movement. Near the river mouth, the beach slopes at 1.6% for 75 feet from the high water line. The 18-foot line lies about 825 feet offshore at this point, and the 3-foot line will be about 180 feet offshore. Near the wharf, the beach slope is 2.2%, making the 3-foot line fall 100 to 125 feet offshore at a high tide of 10 to 11 feet.

RED BEACH: Beach lies between the Sibengkok River and the oil jetty 2300 feet to the southeast. Although the beach is backed by a sloping bank 8 feet high, it will offer no hazard to troops or vehicles except where raised to 10 feet by wharf approach construction. At the eastern end of the beach the 3-foot line is approximately 172 feet offshore (1.7%). Stream mouth is very shallow and will allow entrance for very shallow native or assault craft only.

YELLOW BEACH: About 1250 feet of narrow (20 to 30 feet) sand beach backed by earth bank 10 feet high, extending general length of beach. The inshore beach has a gradient of 1.5%, with the 3-foot line falling about 185 to 205 feet offshore. The 18-foot line lies 860 to 875 feet offshore. The eastern end of the beach is believed to have a slightly steeper slope than the western end, and small craft can possibly approach to within 100 feet of shore on an extreme high tide.

GREEN BEACH: About 800 feet long, located adjacent to and northwest of the south wharf. Sand beach 40 to 50 feet wide, backed by a bank 6 to 8 feet high, between beach and road. From high water line, beach slopes 2.6 feet to 170 feet offshore (1.5%) and continues at a 2.6% grade to the 36-foot line at the wharf head. Landing craft with a draft of 3 feet will beach about 200 feet offshore at a tide stage of 9 to 10 feet above MLLW.

NOTE: Height of tide at the time of the offshore oblique photography was 6.0 feet above Mean Lower Low Water.

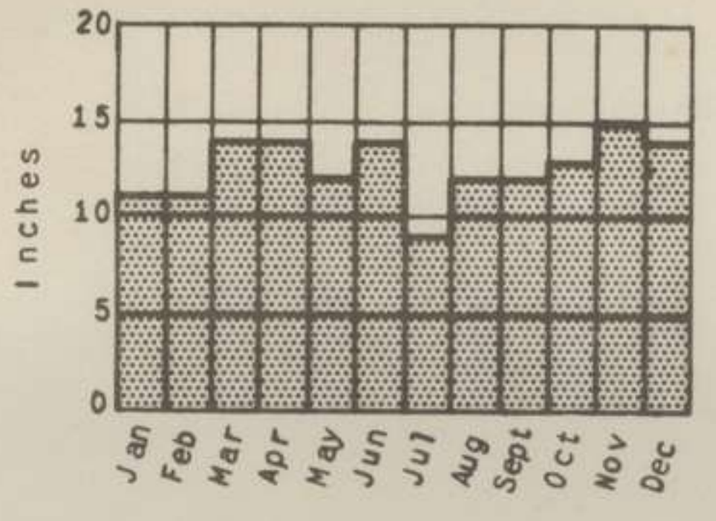
OFFICE OF THE CHIEF ENGINEER GHQ - SWPA

INTELLIGENCE SECTION

CLIMATIC DATA

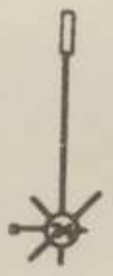
TARAKAN ISLAND, N.E. BORNEO

RAINFALL



Mean Monthly Rainfall

WIND ROSES



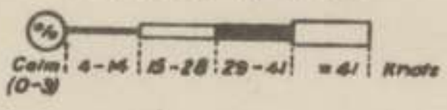
Dec-Jan-Feb

Mar-Apr-May

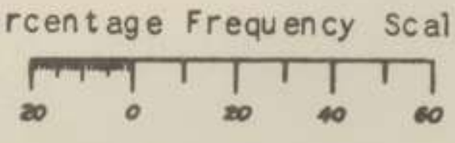
Jun-Jul-Aug

Sept-Oct-Nov

Scale of speeds



Percentage Frequency Scale



Ref. NEI - INTERIM REPORT - Vol. II - Aug. 1944.

LINGKAS, TARAKAN ISLAND, 1945

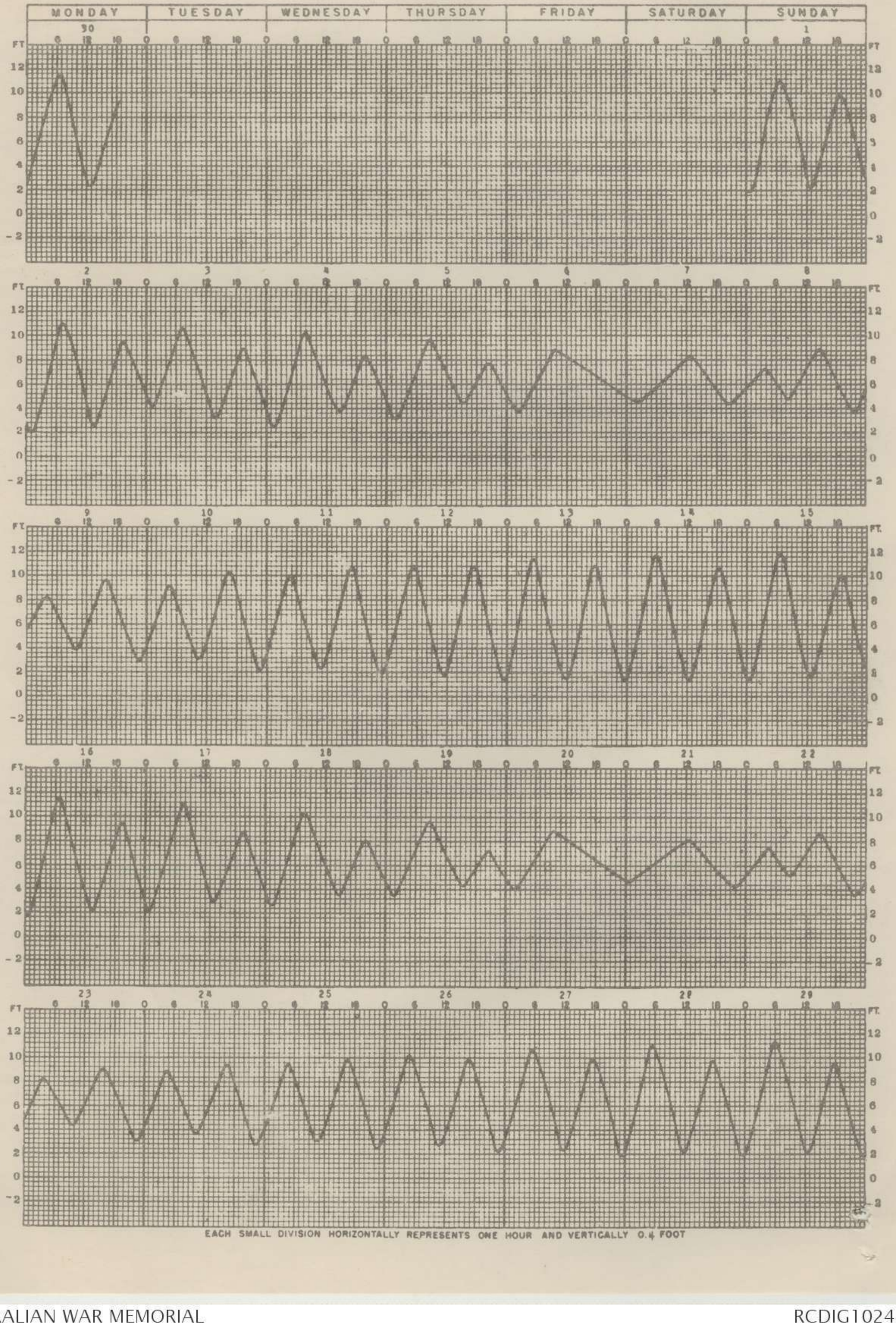
APRIL					MAY					JUNE				
DAY	HIGH		LOW		DAY	HIGH		LOW		DAY	HIGH		LOW	
	Time	Ht.	Time	Ht.		Time	Ht.	Time	Ht.		Time	Ht.	Time	Ht.
	h. m.	*ft.*	*h. m.*	*ft.*		*h. m.*	*ft.*	*h. m.*	*ft.*		*h. m.*	*ft.*	*h. m.*	*ft.*
1	06 40	10.9	00 28	1.9	1	06 40	11.3	00 13	1.8	1	07 35	10.2	00 52	2.1
Su	18 45	9.8	12 55	2.2	Tu	18 44	8.8	13 10	2.4	F	19 52	7.4	14 22	2.7
2	07 02	10.9	00 46	2.0	2	07 08	10.9	00 35	2.1	2	08 18	9.5	01 29	2.7
M	19 05	9.4	13 21	2.5	W	19 09	8.4	13 39	2.9	Sa	20 56	7.9	15 16	3.0
3	07 29	10.7	01 05	2.2	3	07 39	10.4	01 00	2.5	3	09 13	8.8	02 19	3.3
Tu	19 26	8.9	13 49	3.1	Th	19 39	7.8	14 18	3.4	Su	22 40	6.8	16 34	3.3
4	07 58	10.2	01 25	2.5	4	08 18	9.7	01 27	3.1	4	10 38	8.1	03 46	4.1
W	19 46	8.3	14 22	3.7	F	20 21	7.2	15 11	4.0	M	.. ..	. .	18 16	3.2
5	08 35	9.6	01 47	3.0	5	09 16	8.9	01 55	3.8	5	01 03	7.2	06 37	4.2
Th	20 01	7.6	15 08	4.4	Sa	22 50	6.7	17 16	4.4	Tu	12 32	7.8	19 32	2.9
6	09 27	8.8	02 05	3.7	6	11 34	8.3	02 51	4.7	6	02 13	8.0	08 17	3.6
F	.. ..	. .	.. ..	. .	Su	.. ..	. .	20 05	4.0	W	13 58	7.9	20 25	2.3
7	.. ..	. .	02 08	4.5	7	02 43	7.4	07 44	4.7	7	03 00	8.9	09 20	2.9
Sa	12 43	8.3	21 41	4.4	M	13 53	8.5	20 49	3.4	Th	14 58	8.1	21 06	1.9
8	03 47	7.2	08 15	4.8	8	03 09	8.4	08 57	3.9	8	03 38	9.7	10 03	2.3
Su	14 49	8.9	21 46	3.6	Tu	14 54	9.0	21 20	2.8	F	15 43	8.3	21 43	1.6
9	03 46	8.1	09 23	3.9	9	03 38	9.3	09 43	3.0	9	04 14	10.4	10 44	1.8
M	15 37	9.6	22 07	2.9	W	15 36	9.4	21 49	2.1	Sa	16 23	8.3	22 17	1.3
10	04 10	9.1	10 03	3.1	10	04 06	10.2	10 20	2.4	10	04 48	10.7	11 22	1.5
Tu	16 11	10.2	22 30	2.3	Th	16 12	9.7	22 18	1.7	Su	17 01	8.3	22 49	1.2
11	04 35	10.0	10 37	2.3	11	04 35	10.9	10 54	1.8	11	05 22	11.0	11 58	1.4
W	16 42	10.6	22 55	1.8	F	16 45	9.8	22 45	1.4	M	17 35	8.1	23 22	1.2
12	05 01	10.7	11 10	1.7	12	05 06	11.4	11 28	1.6	12	05 56	11.0	12 34	1.4
Th	17 12	10.8	23 20	1.5	Sa	17 17	9.7	23 14	1.3	Tu	18 10	7.9	23 54	1.4
13	05 29	11.3	11 41	1.5	13	05 35	11.6	12 02	1.5	13	06 28	10.8	.. ..	. .
F	17 41	10.8	23 46	1.3	Su	17 48	9.4	23 41	1.4	W	18 44	7.6	13 10	1.6
14	05 57	11.6	.. ..	. .	14	06 06	11.6	.. ..	. .	14	07 01	10.4	00 24	1.7
Sa	18 10	10.5	12 13	1.4	M	18 17	9.0	12 36	1.7	Th	19 19	7.3	13 47	1.9
15	06 12	11.7	00 10	1.4	15	06 37	11.4	00 07	1.6	15	07 35	9.8	00 55	2.1
Su	18 37	10.0	12 45	1.6	Tu	18 47	8.5	13 12	2.1	F	20 00	6.9	14 27	2.3
16	06 54	11.5	00 36	1.7	16	07 07	10.9	00 34	2.0	16	08 12	9.2	01 27	2.6
M	19 04	9.4	13 18	2.1	W	19 17	8.0	13 46	2.6	Sa	20 47	6.5	15 10	2.7
17	07 25	11.0	01 00	2.1	17	07 41	10.3	00 58	2.6	17	08 50	8.4	02 04	3.1
Tu	19 32	8.7	13 50	2.8	Th	19 50	7.4	14 27	3.2	Su	22 01	6.3	16 06	3.0
18	07 57	10.4	01 21	2.6	18	08 17	9.5	01 26	3.2	18	09 42	7.7	02 46	3.8
W	19 55	8.0	14 28	3.5	F	20 33	6.8	15 22	3.8	M	.. ..	. .	17 21	3.2
19	08 30	9.6	01 42	3.3	19	09 06	8.7	01 41	3.9	19	00 18	6.3	04 45	4.3
Th	20 20	7.2	15 18	4.3	Sa	.. ..	. .	17 21	4.2	Tu	11 09	7.1	18 47	3.2
20	09 18	8.8	01 47	4.0	20	10 46	8.0	.. ..	. .	20	01 54	6.9	07 58	4.2
F	.. ..	. .	.. ..	. .	Su	.. ..	. .	20 02	3.9	W	13 05	6.7	19 45	2.9
21	.. ..	. .	00 07	4.6	21	03 25	7.1	07 52	5.0	21	02 41	7.6	09 10	3.6
Sa	12 43	8.1	21 33	4.1	M	13 34	7.8	20 44	3.5	Th	14 19	6.7	20 28	2.5
22	04 19	7.5	08 50	5.1	22	03 23	7.8	09 03	4.4	22	03 16	8.2	09 52	3.1
Su	14 52	8.6	21 47	3.5	Tu	14 44	8.0	21 10	3.1	F	15 10	6.8	21 02	2.2
23	03 55	8.2	09 35	4.3	23	03 36	8.5	09 41	3.7	23	03 48	8.9	10 27	2.5
M	15 31	9.0	22 04	3.1	W	15 23	8.3	21 32	2.7	Sa	15 48	6.9	21 35	1.9
24	04 15	8.8	10 06	3.6	24	03 57	9.2	10 11	3.1	24	04 20	9.4	10 59	2.1
Tu	16 03	9.4	22 19	2.7	Th	15 52	8.4	21 53	2.4	Su	16 23	7.0	22 06	1.5
25	04 29	9.5	10 32	3.0	25	04 18	9.8	10 39	2.7	25	04 49	9.9	11 28	1.7
W	16 29	9.7	22 39	2.4	F	16 19	8.5	22 13	2.1	M	17 00	7.2	22 38	1.2
26	04 48	10.1	10 58	2.6	26	04 39	10.3	11 06	2.3	26	05 18	10.2	11 59	1.4
Th	16 51	9.8	22 56	2.1	Sa	16 45	8.5	22 35	1.8	Tu	17 27	7.3	23 12	1.1
27	05 08	10.6	11 22	2.3	27	05 04	10.8	11 34	2.0	27	05 52	10.4	12 31	1.3
F	17 16	9.8	23 14	1.9	Su	17 13	8.5	22 58	1.6	W	18 02	7.4	23 45	1.0
28	05 28	11.0	11 47	2.1	28	05 30	11.0	12 02	1.9	28	06 23	10.4	.. ..	. .
Sa	17 36	9.7	23 31	1.8	M	17 36	8.4	23 24	1.5	Th	18 39	7.4	13 05	1.2
29	05 50	11.3	12 13	2.1	29	05 57	11.1	12 33	2.0	29	06 57	10.1	00 22	1.1
Su	17 58	9.5	23 51	1.8	Tu	18 05	8.2	23 51	1.6	F	19 17	7.4	13 40	1.3
30	06 13	11.4	.. ..	. .	30	06 26	11.0	.. ..	. .	30	07 36	9.7	01 01	1.3
M	18 19	9.2	12 40	2.2	W	18 34	8.0	13 04	2.1	SA	20 02	7.2	14 17	1.4
					31	06 59	10.7	00 20	1.7					
					Th	19 10	7.7	13 41	2.3					

Time meridian 120° E. The hours of the day are numbered consecutively from 0^h (midnight) to 23^h (11 00 p. m.). 12^h is noon. All hours greater than 12 are in the afternoon (p.m.).
Heights are reckoned from t he datum of soundings on charts of the locality which is mean lower low water.

PREDICTED TIDE CURVE
HEIGHTS IN FEET ABOVE CHART DATUM
(MEAN LOWER LOW WATER)

LINGKAS, TARAKAN ISLAND
LAT. 3°17' N. LONG. 117°35' E.

APRIL 1945
TIME MERIDIAN 112°30' E



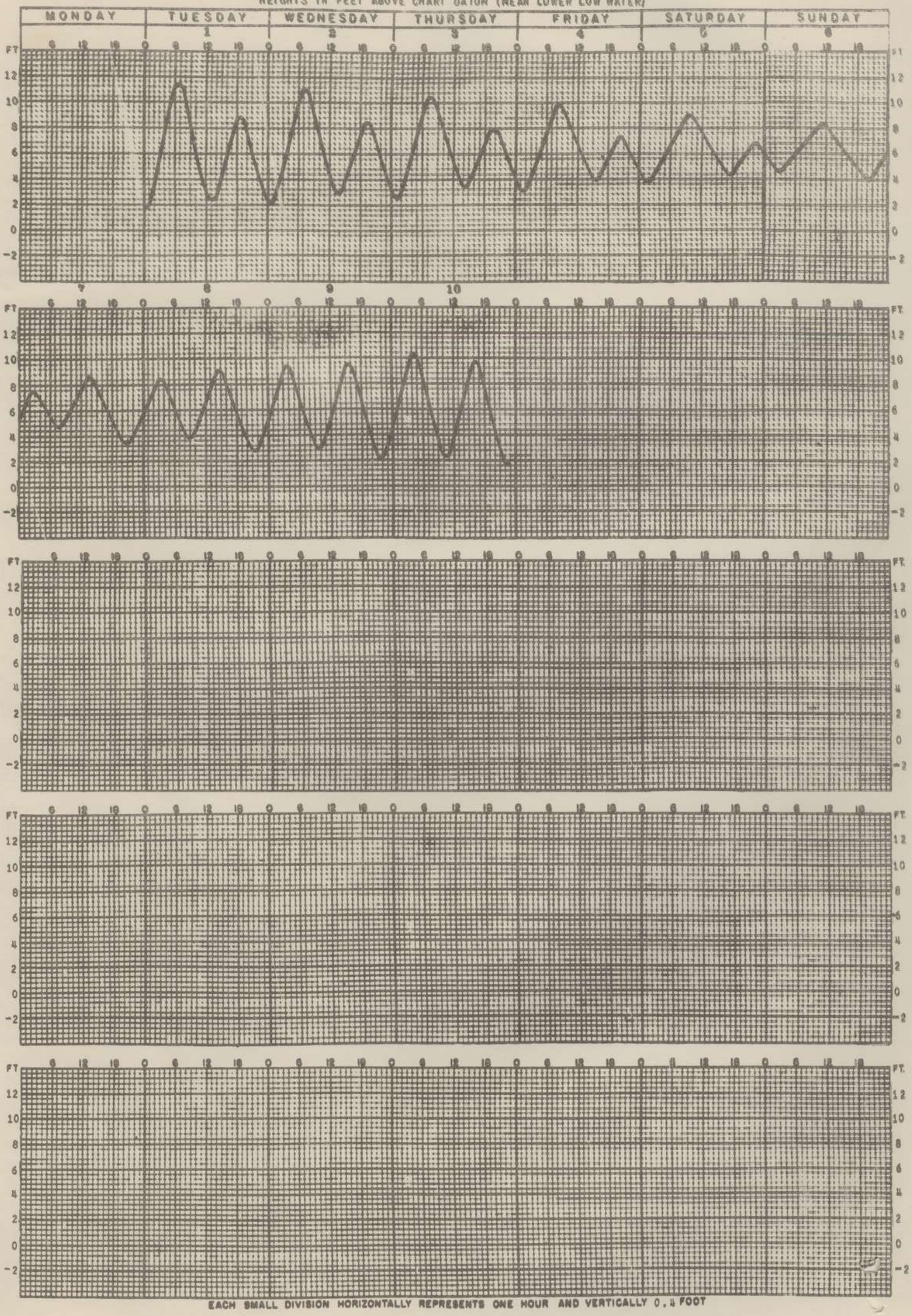
EACH SMALL DIVISION HORIZONTALLY REPRESENTS ONE HOUR AND VERTICALLY 0.4 FOOT

PREDICTED TIDE CURVE

LINGKAS, TARAKAN ISLAND
N.E. BORNEO
LAT 3°17'N. LONG 117°35'E

1 MAY TO 10 MAY, 1945
TIME MERIDIAN 120°

HEIGHTS IN FEET ABOVE CHART DATUM (MEAN LOWER LOW WATER)



EACH SMALL DIVISION HORIZONTALLY REPRESENTS ONE HOUR AND VERTICALLY 0.4 FOOT

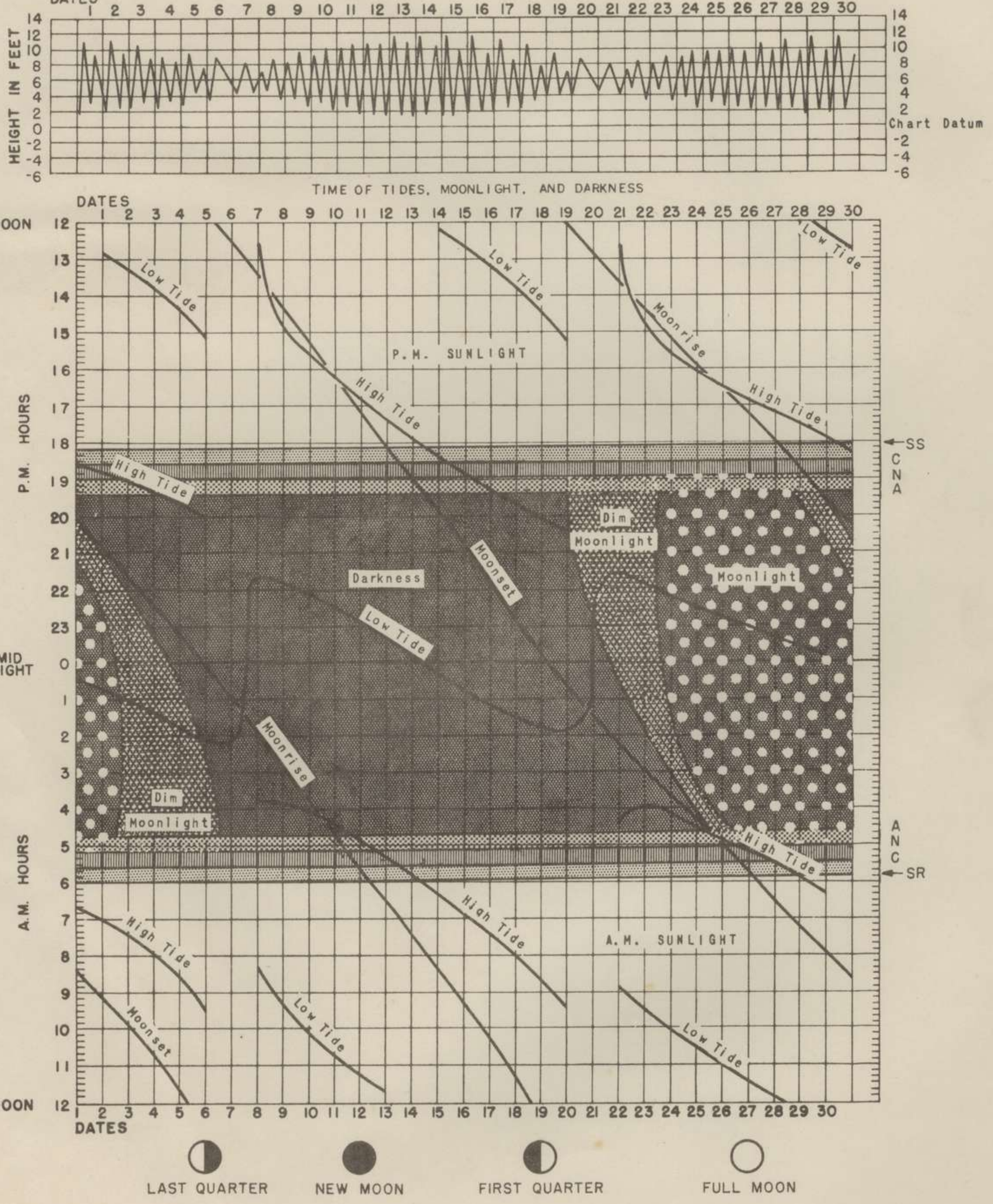
DIAGRAM OF TIDES, SUNLIGHT, AND MOONLIGHT

LINGKAS, TARAKAN ISLAND

APRIL 1945

LAT. 03°17'N. 117°35'E.

Time Meridian 120°



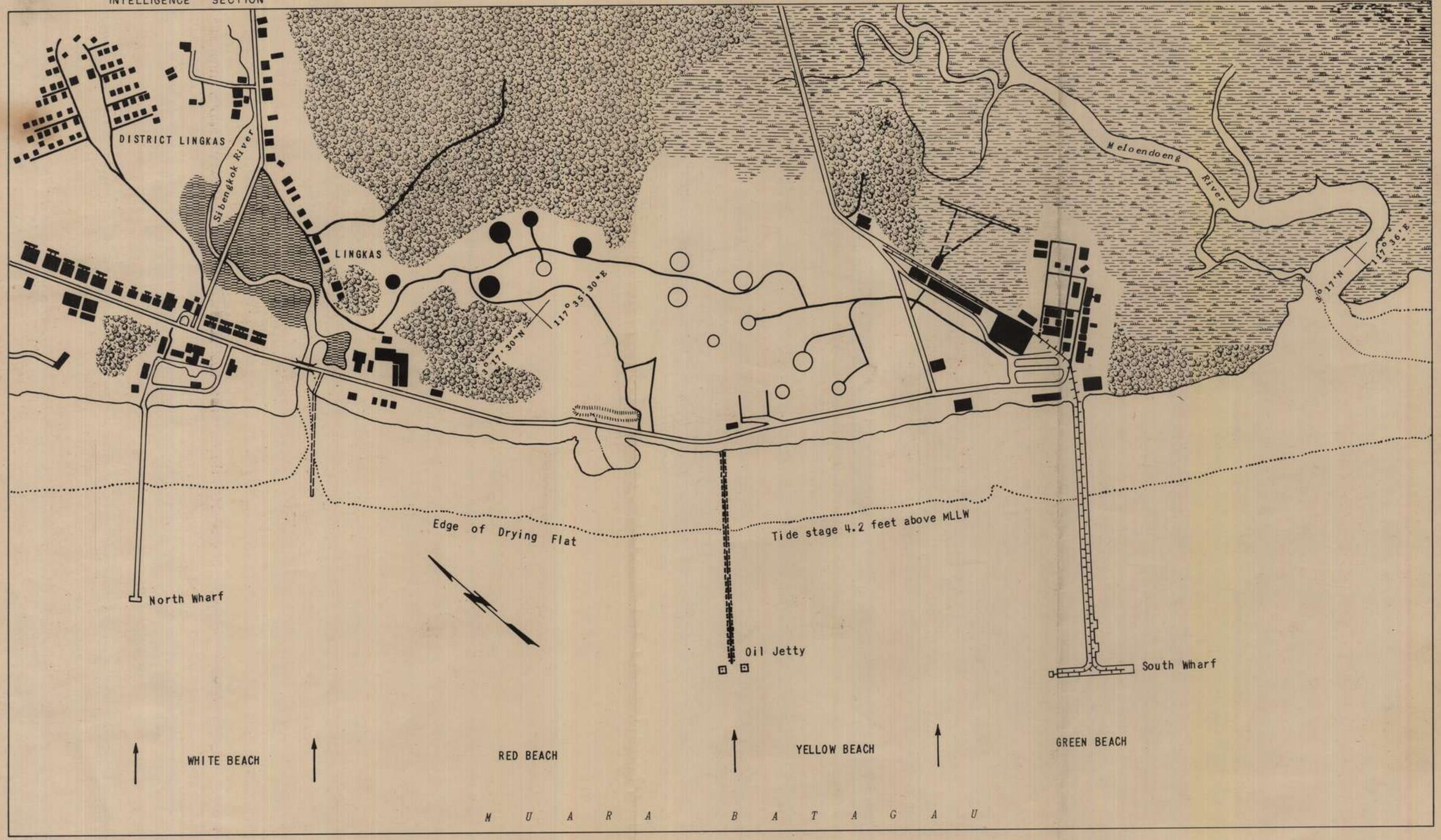
LAST QUARTER NEW MOON FIRST QUARTER FULL MOON

A-ASTRONOMICAL TWILIGHT
N-NAUTICAL TWILIGHT
C-CIVIL TWILIGHT
SS-SUNSET
SR-SUNRISE

OFFICE OF THE CHIEF ENGINEER · GHQ · SWPA
INTELLIGENCE SECTION

SKETCH MAP

TARAKAN ISLAND
NORTHEAST BORNEO



LEGEND

Road, hard surfaced
Road, lightly surfaced
Bridge
Buildings or Huts
Tanks, destroyed
Tanks, existing
Stream, intermittent
Swamp
Mud Flats

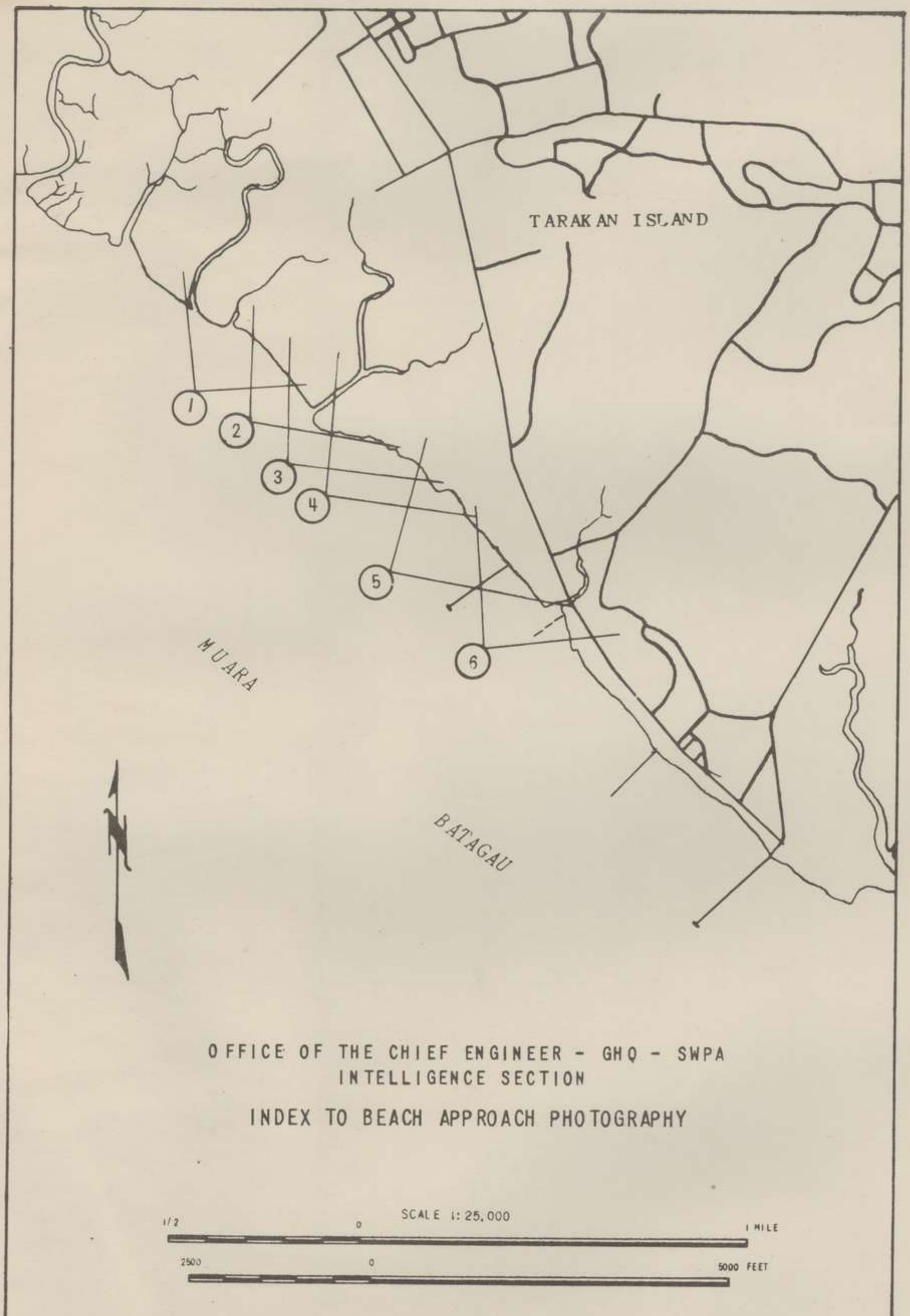
SCALE 1:5,000 approx.

0 ¼ ½ mile
1000 500 0 1000 feet
0 ¼ ½ kilometer

TARAKAN ISLAND
NORTHEAST BORNEO

Prepared under the direction of the Chief Engineer, GHQ, SWPA, by the Intelligence Section, April 1945, from vertical aerial photography by the 2nd Photo Charting Squadron, U.S. Army, April 1945.

CAUTION: This map was produced from aerial photography. Due to lack of accurate ground control,



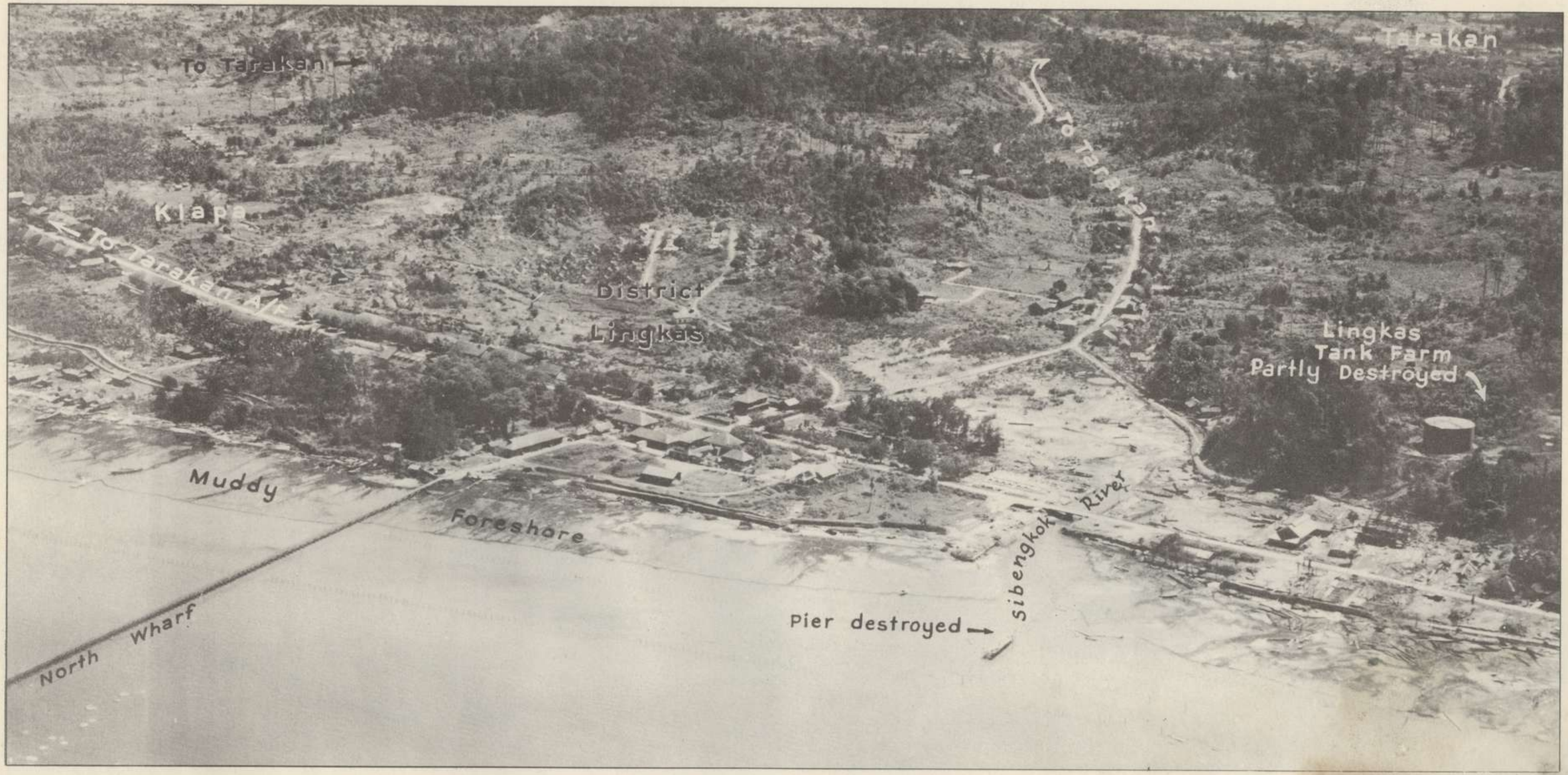
OFFICE OF THE CHIEF ENGINEER - GHQ - SWPA
INTELLIGENCE SECTION

INDEX TO BEACH APPROACH PHOTOGRAPHY

SCALE 1: 25,000

1/2 0 1 MILE

2500 0 5000 FEET



TRACKS.

(a) Patrol
(b) Coy disposns
(c) Tank Going

39

GEORGE

70

70

ABLE

N

FOX

DOG

BAKER

EASY

CHARLIE

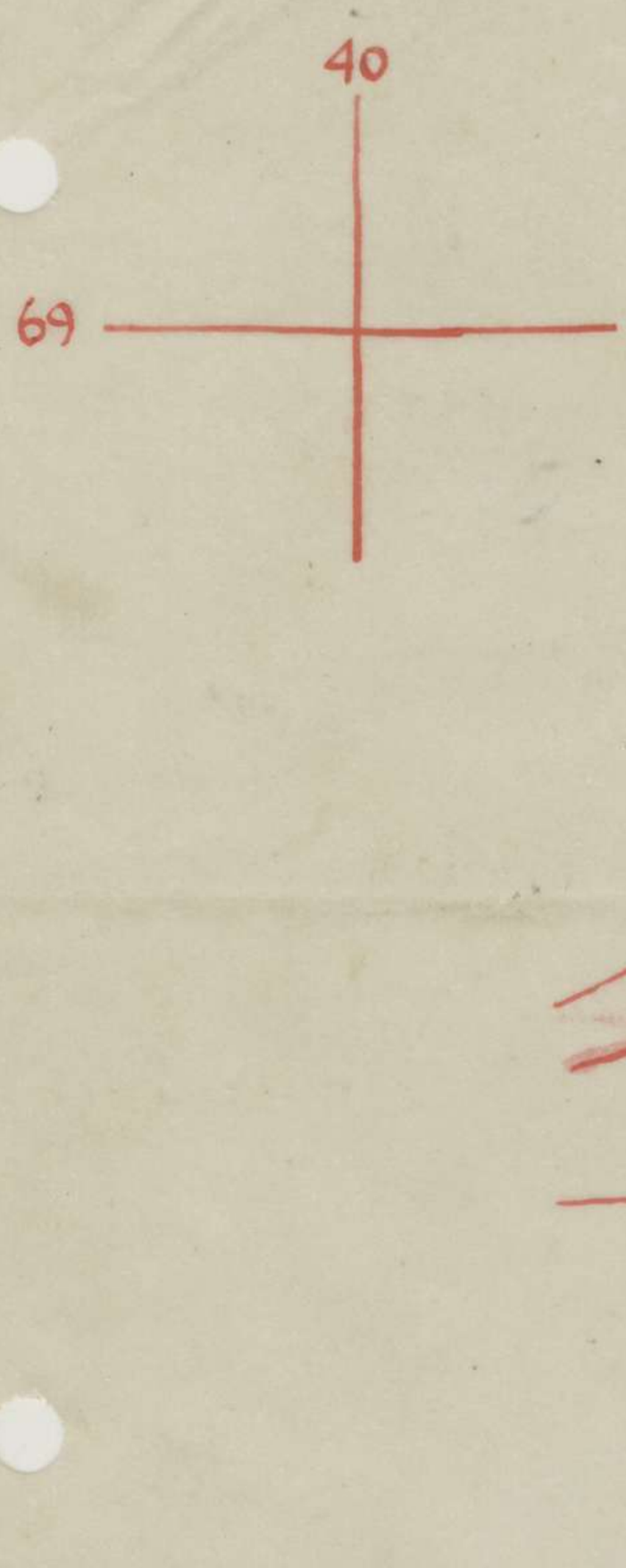
Ref Map TARAKAN 1:50.000.

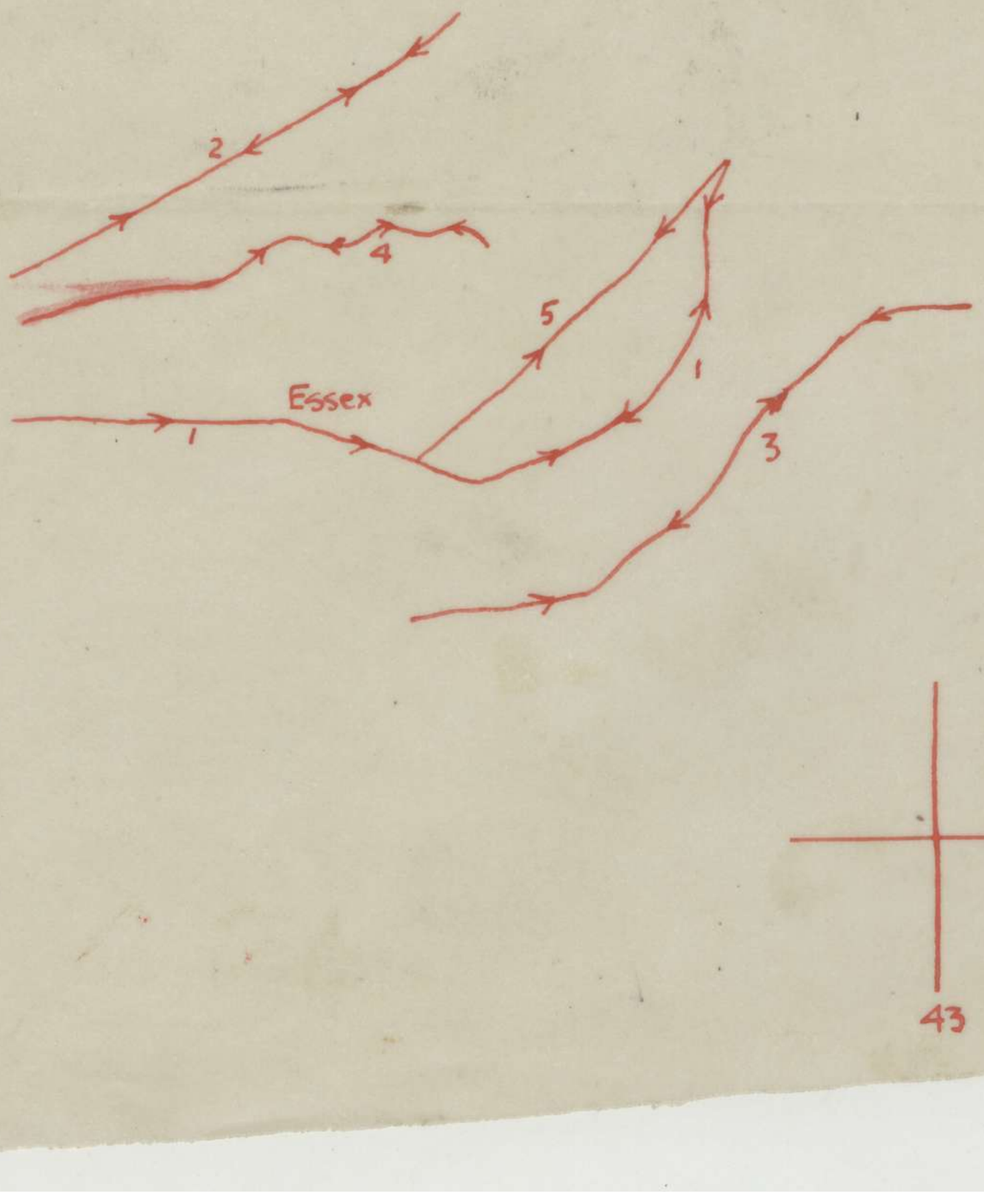
AREAS OF RESPONSIBILITY
for Mopping-up & Security

Patrol Notifications 7 May '45

Overlay to TARAKAN SOUTH SPECIAL 1:25000

Ref Message G1 23





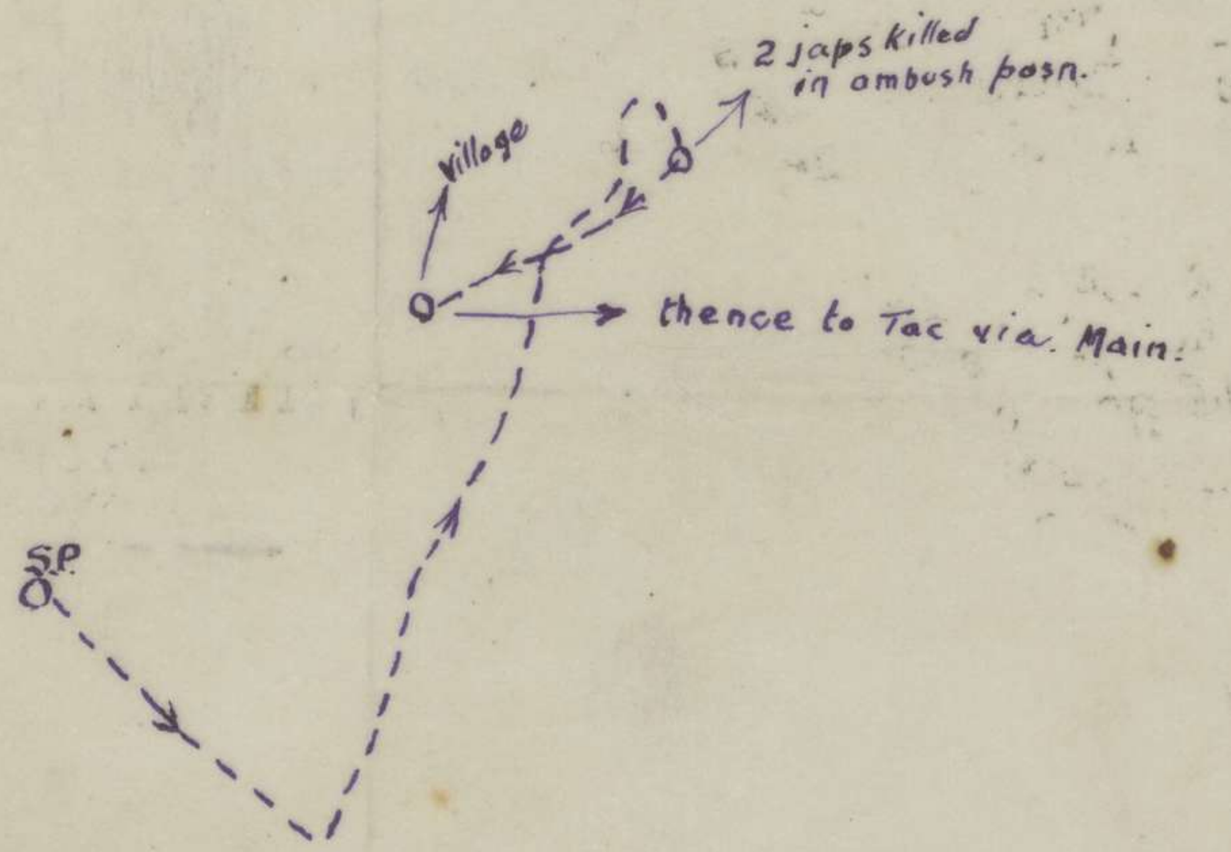
OVERLAY TARAKAN SOUTH (spec) 1:25000

40
69

N° 8 PATROL 1 offr 8 ors C. coy 2/23

Out. 080800

In. 091500



44
66

Prepared by

Int. Sec. 2/23. Aust inf Bn.

Army Form C2136 (Small)
(Pads of 100) (Adapted Sept. 1943)

MESSAGE FORM

Register No.

Call	Ser. No.	Priority	Transmission Instructions

ABOVE THIS LINE FOR SIGNALS USE ONLY

FROM (A) Originator: LOG1 | Date—Time of Origin: 091200I | Office Date Stamp

For Action

TO [redacted] HOK1.

(w) For Information (INFO.)

Message Instructions — GR

NO 11. PROPOSED PATROL

ORIGINATOR'S No.

GI 117 @ patrol NO 110 ~~Suggested~~ patrol from LOG1 2 due EAST to ridge through contact #21671 investigate track to d bend SNAGS TRACK #24679 @ return to ESSEX S.W. along spur @ pt of patrol INCO 6 ORS. out 1100 in 1600

This message may be sent AS WRITTEN by any means { except ..... } Wireless

Signed

If liable to be intercepted or fall into enemy hands, this message must be sent IN CIPHER

Signed A Hegarty Lt

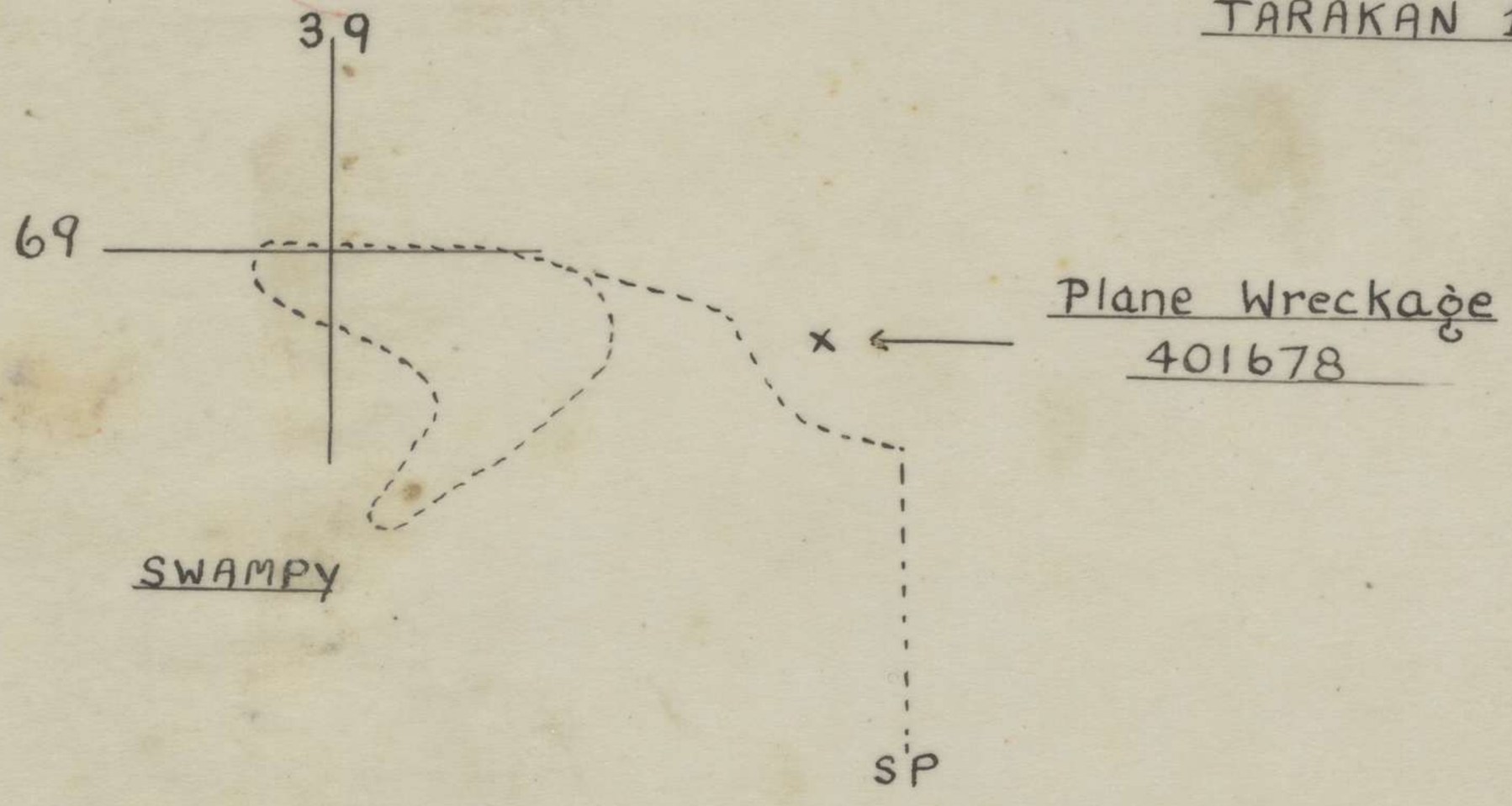
Originator's Instructions
Degree of Priority

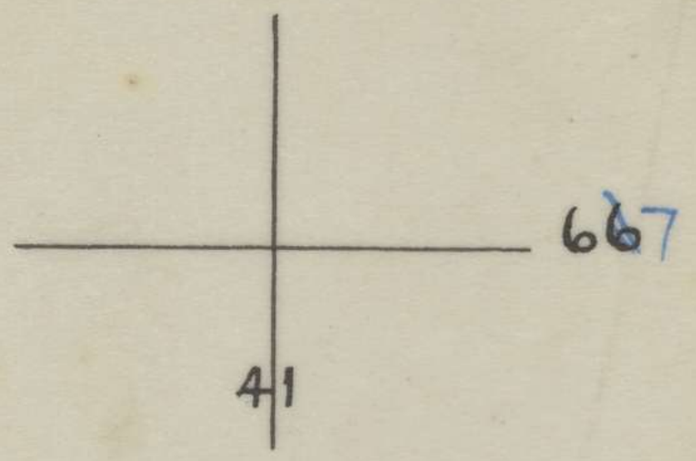
Time	System	Op
THI or TOR		
Time Cleared		

10th

PATROL 12 TO 101500I

TARAKAN 1:25,000

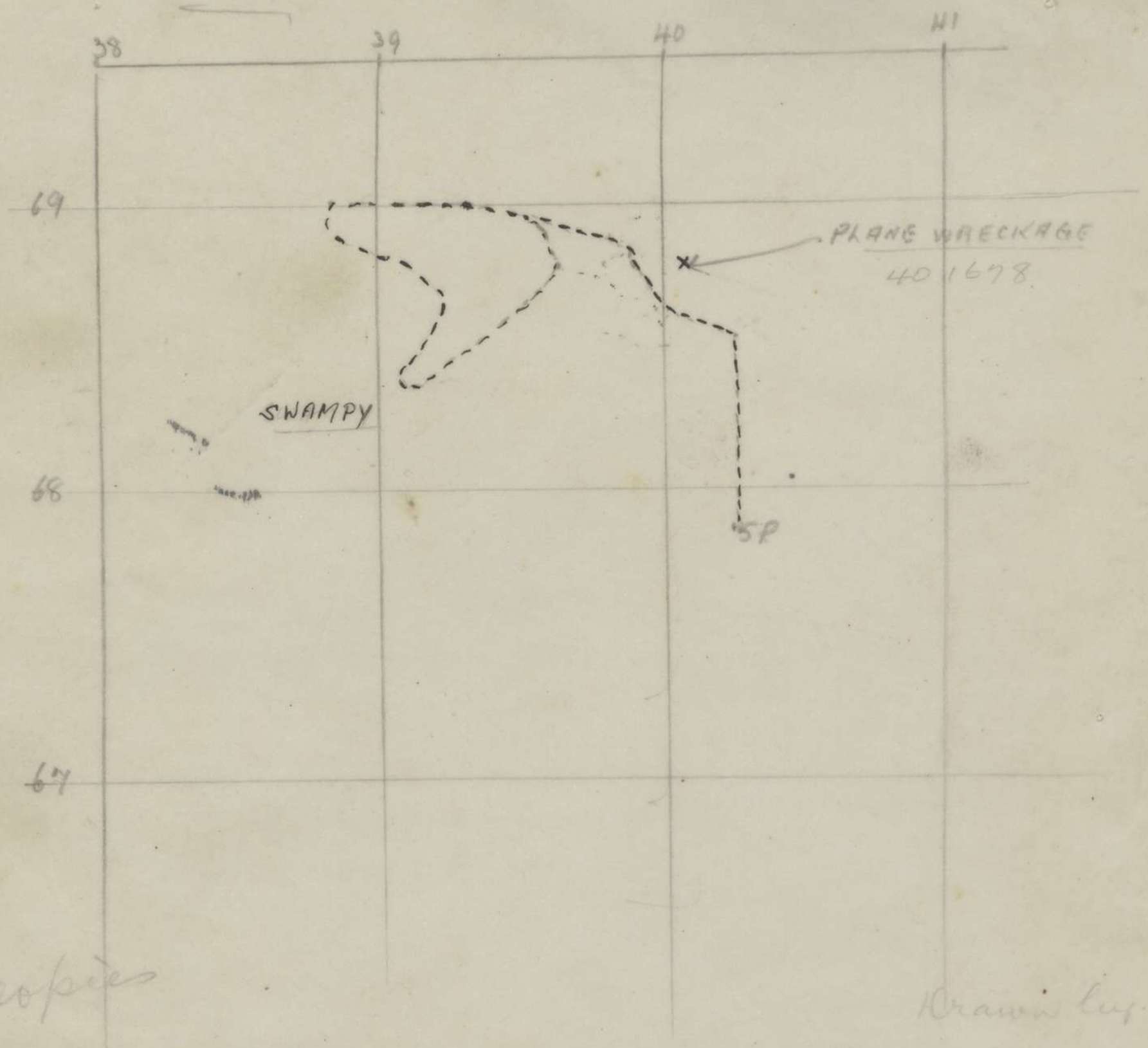




Drawn by:
Int. Sec.
2/23 Bn.
10 May '45.

PATROL 12 to 10 15 0 0 I

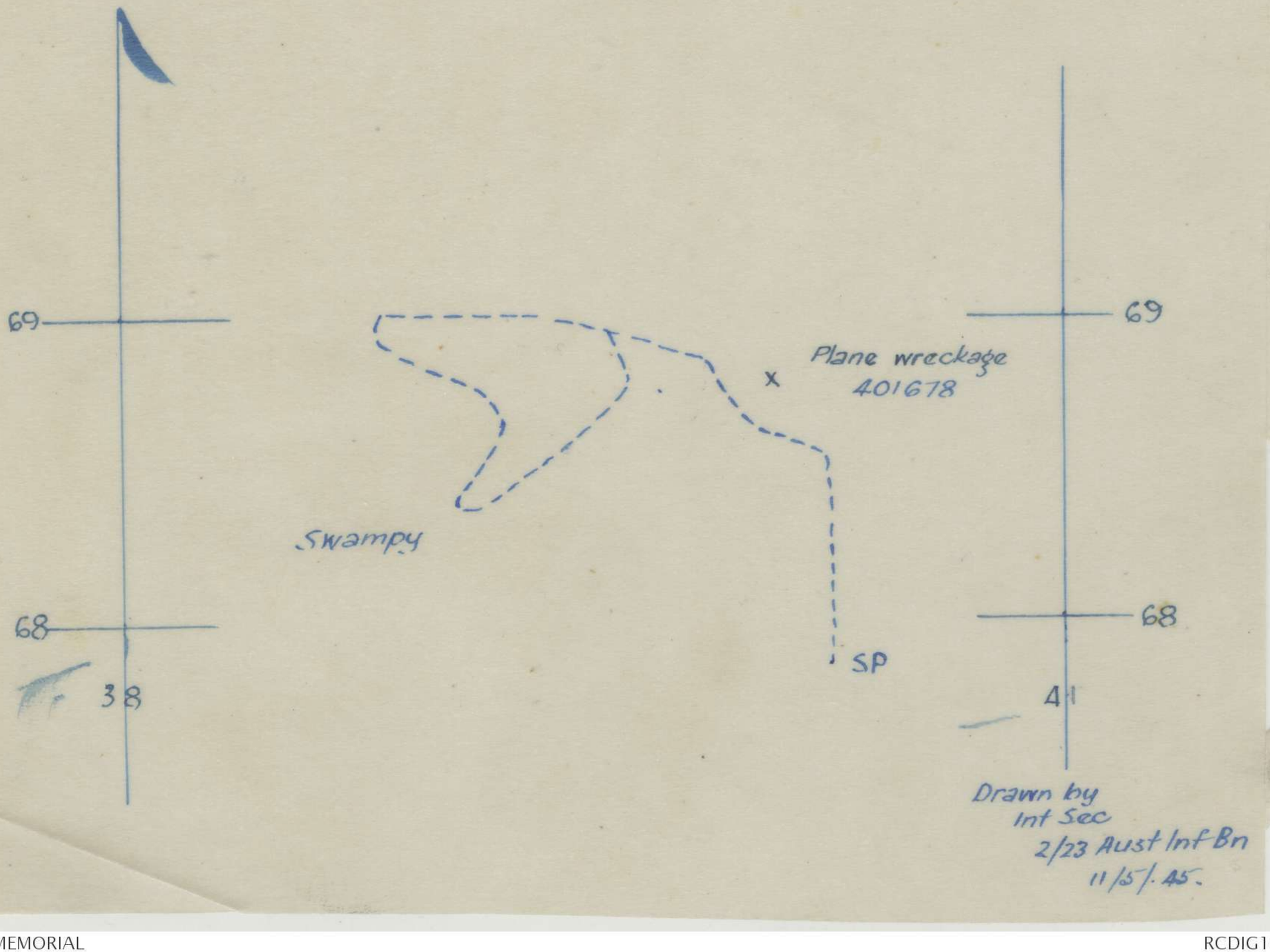
B coy



2 copies

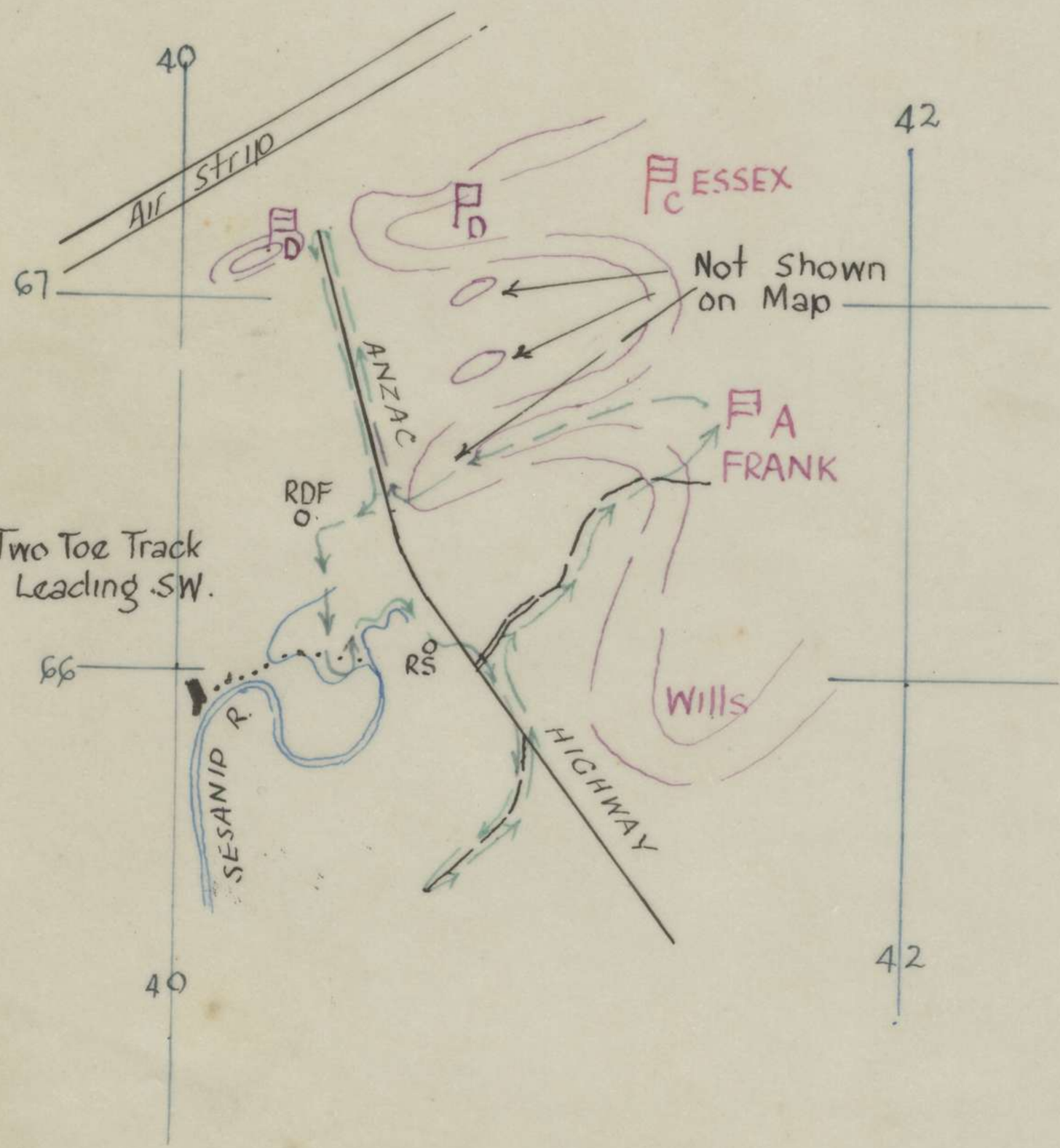
Drawing by
INT SEC
8/43.
Date

No 12. PATROL TRACE B Coy



D Coy No 15 PATROL TRACE 10th May

Ref Map TARAKAN SOUTH 1:25000



Drawn by
Int Sec
2/23 Aust Inf Bn
11/5/45.

38

69

2/23 Aust. Inf. Bn.

Proposed Patrols for 10 May '45

Ref Tarakan South Special 1:2500

12

SP

13

SP

14

SP

SP

15

66

42

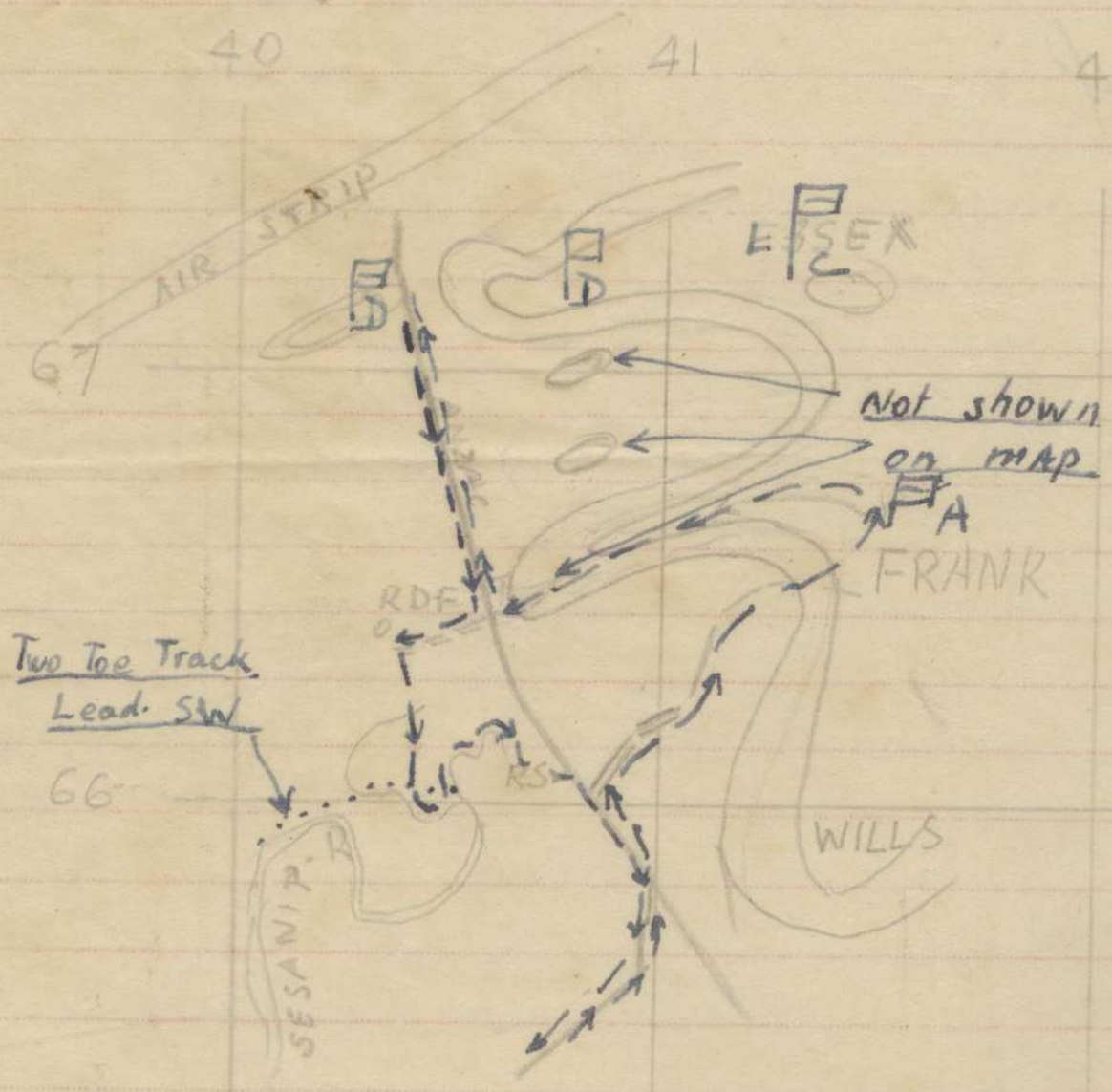
D coy No 15 patrol
10 11 44

X

PATROL TRACE

Tarakan 1:25.000

1 copy kept ✓
1 " War diary



All patrol traces to be retraced twice

HP

ADD.

DRAWN BY
INT SEC. 2/23
Aust Inf Bn

Date

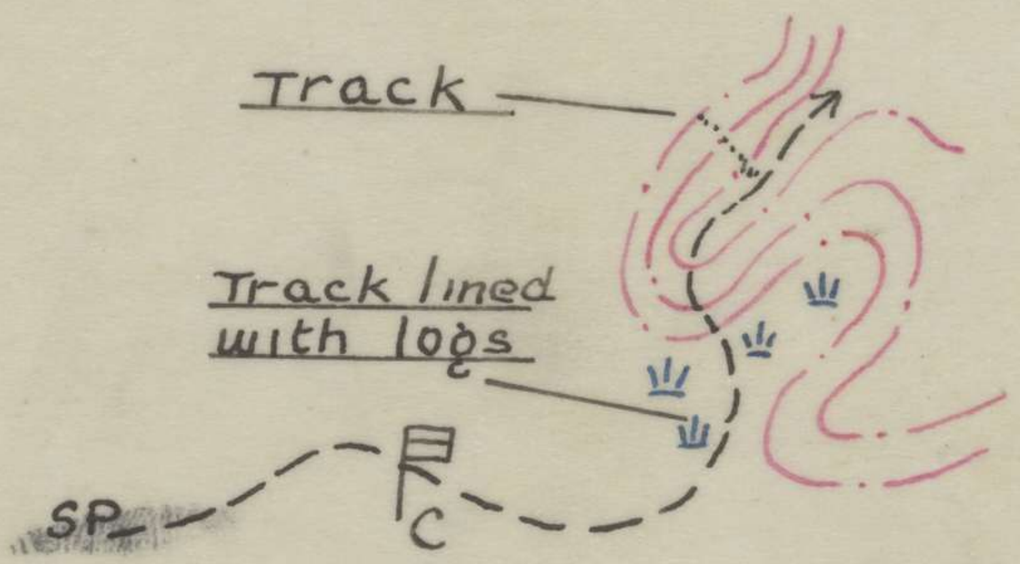
PATROL TRACE 11th. MAY

TARAKAN 1:25,000

40

69

Patrol No. 18 D Coy. 2/23 Bn



Int Sec
2/23 Bn
11th. May '45.

42

66

P 18

D'bay 2/23

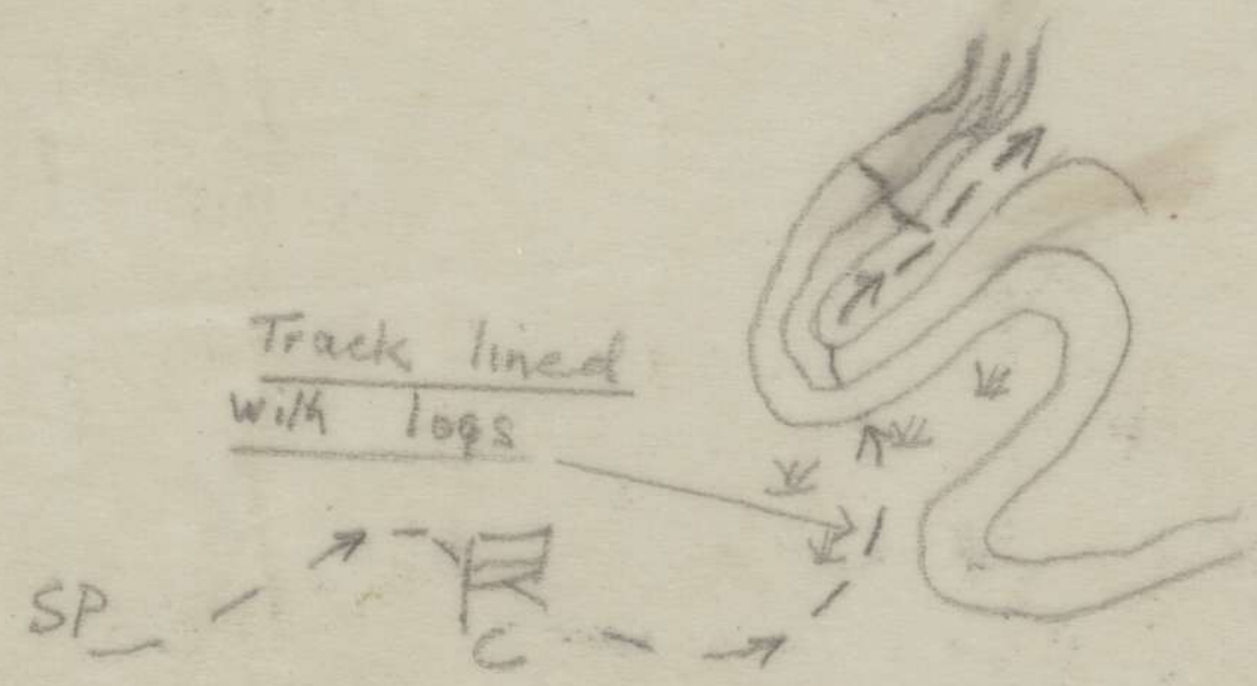
40

69

PAT. TRACE 11th May 45

TARAKAN

1 : 25 : 000

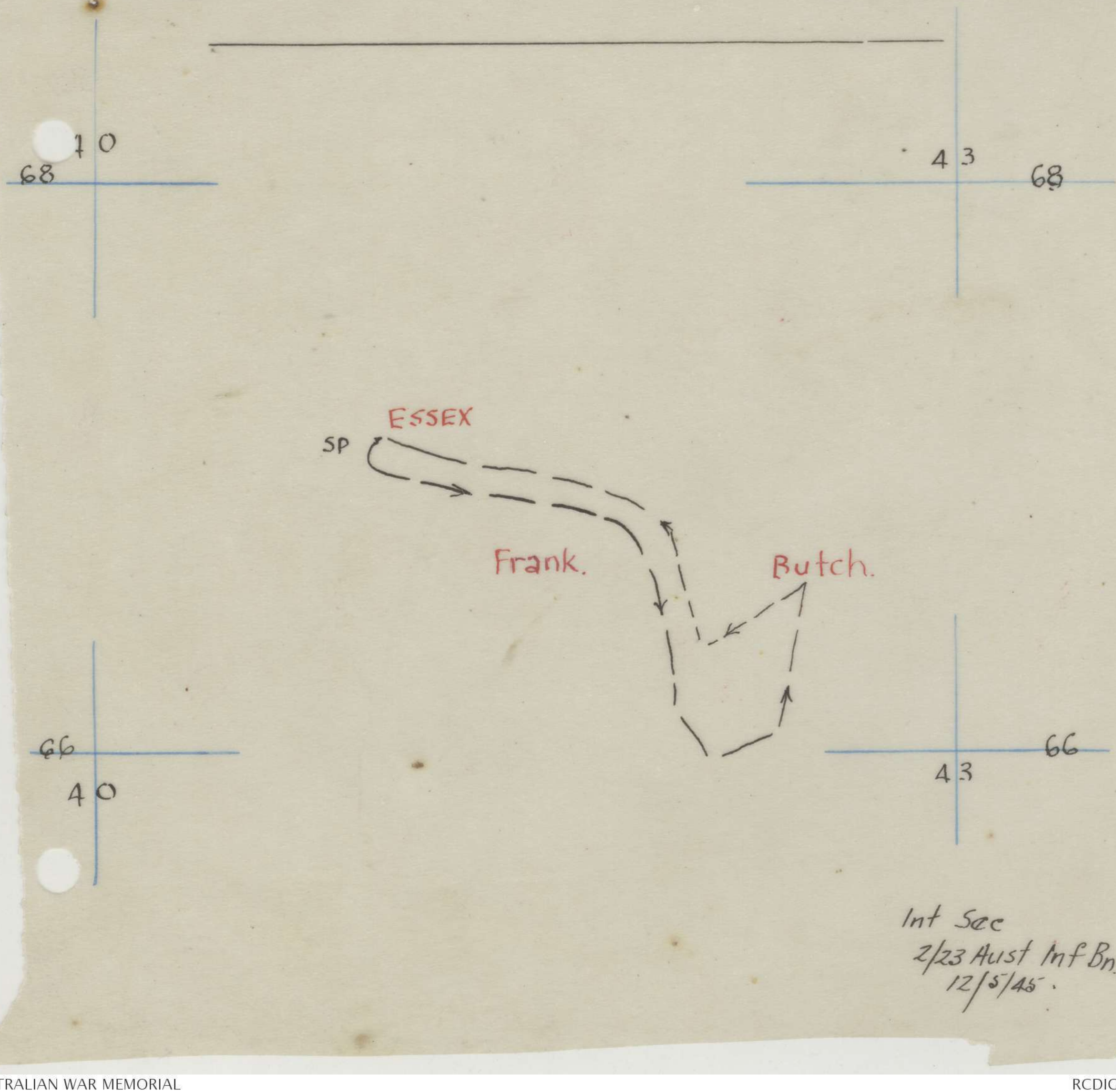


42

66

C Coy Nº 17 Patrol Trace. May 11.

Ref Map TARAKAN SOUTH. 1:25000

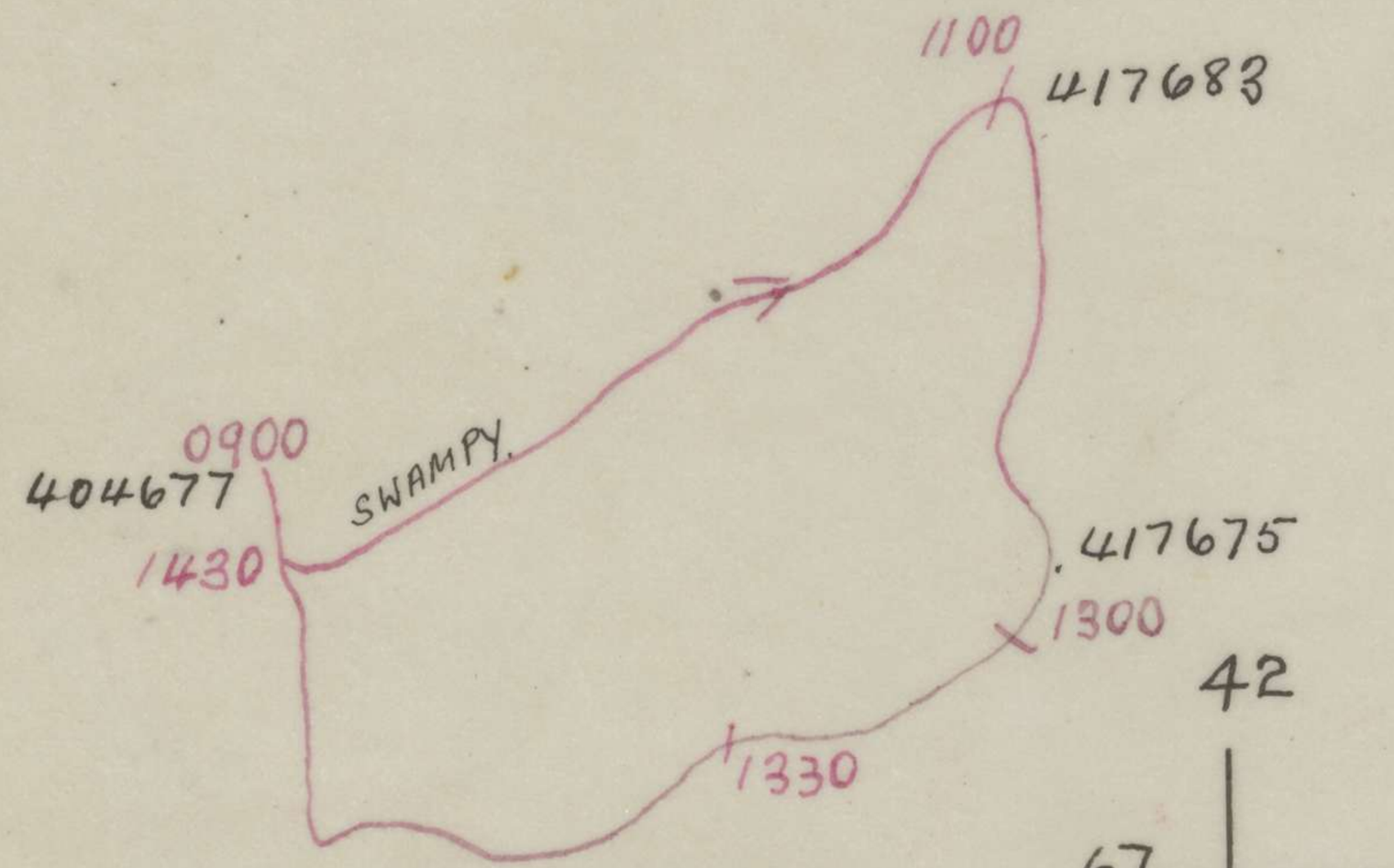


Int Sec
2/23 Aust Inf Bn
12/5/45.

40
69

TRACE No. 16 PATROL

11th. May

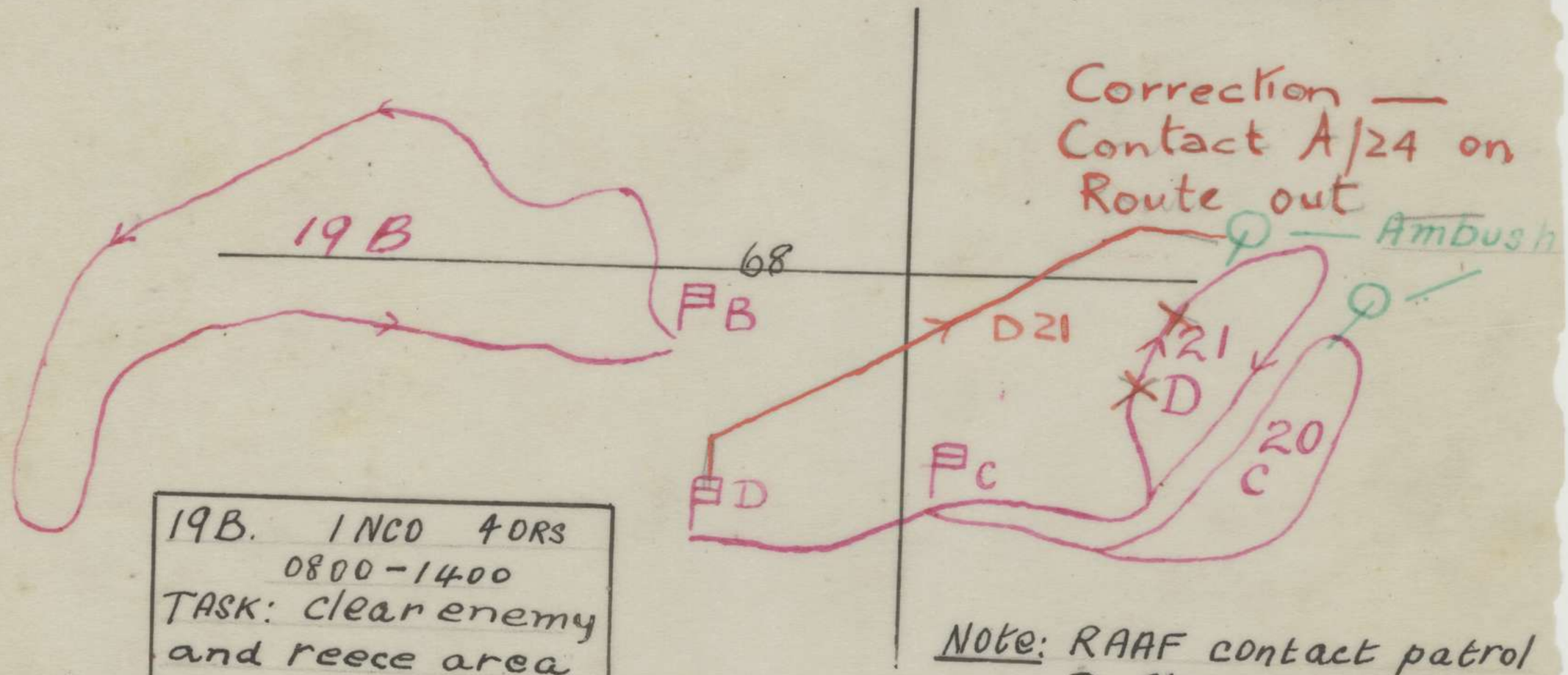


42
67

SECRET

PATROLS 2/23 Bn 12 MAY '45.

Ref: TARAKAN SOUTH
1:25,000



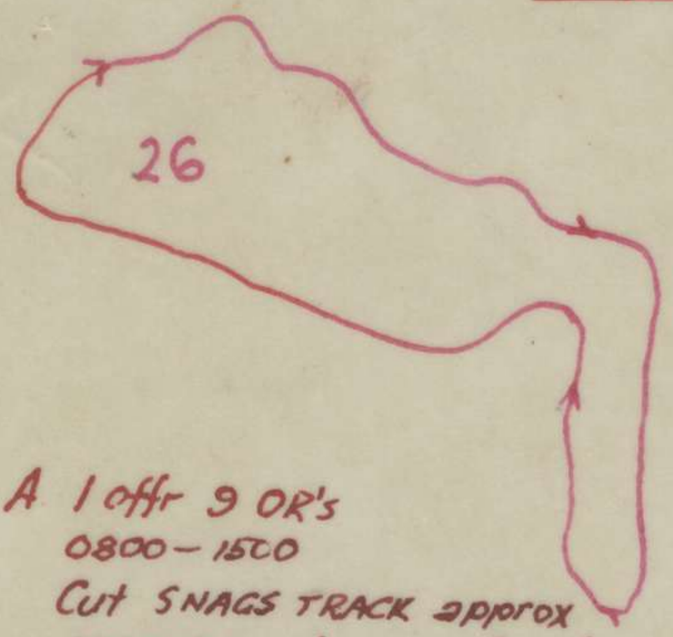
19B. 1 NCO 4 ORS 0800-1400 TASK: Clear enemy and reece area
20 C. 1 Offr 9 ORS 0800-1700 TASK: Set Ambush 424679
21 D. 1 Offr 9 ORS 0800-1700 TASK: Set Ambush 421682.

Note: RAAF contact patrol
D Standing patrol
as for 11 May

Int Sec
2/23 Bn.
11 May '45.

2/23 BN. PATROLS 14 May

SECRET.



25. A 1 offr 9 OR's
0800 – 1500
Cut SNAGS TRACK approx 426679 and recce track towards EAST. Ascertain enemy posns Report on terrain.

B Standing Patrol Nightly

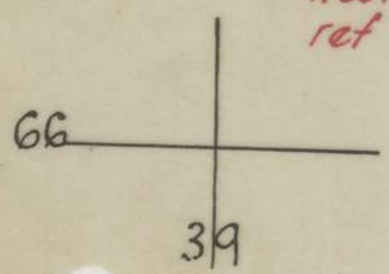
26 B – 1 Offr 9 ORs
0800 – 1500
Search for enemy seen by patrol 22.

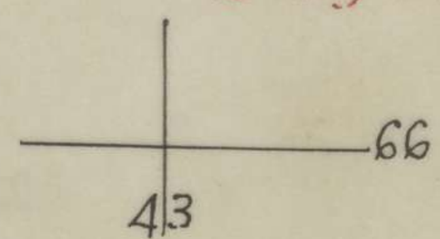
D Standing Patrol Nightly

27 D – 1 offr. 9 ORs
0700 – 1500
Via ESSEX to SNAGS then patrol west towards 2/24 A Coy. Infm reqd ref enemy posns along SNAGS

C. Recce A Coy Area 2/24 with reps per pl. Route Via Airstrip continuation to N.E.

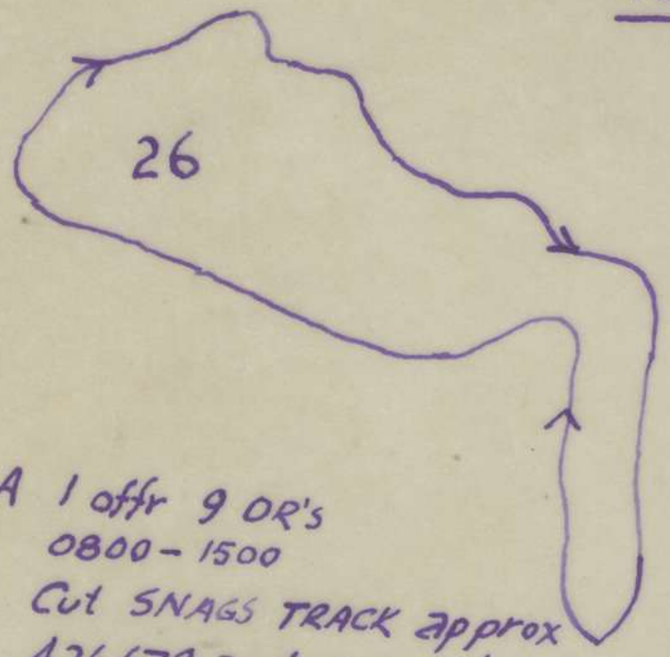
Int. Sec.
2/23 Aust. Inf. Bn.
13 May 45.





2/23 BN PATROLS 14 May

SECRET



25 A 1 offr 9 OR's
0800 - 1500
Cut SNAGS TRACK approx 426679 and recce track towards EAST. Ascertain enemy posns. Report on terrain

B Standing Patrol Nightly

26 B 1 offr 9 ORS
0800 - 1500
Search for enemy seen by patrol 22

D Standing Patrol Nightly

27 D 1 offr 9 ORS
0700 - 1500
Via ESSEX to SNAGS then patrol WEST towards 2/24 A Coy. Infm reqd ref enemy posns. along SNAGS.

66
39

C. Recce A Coy Area 2/24 with reps per pl. Route via Airstrip continuation to N.E.

Int. Sec
2/23 Aust. Inf.
13 May '45

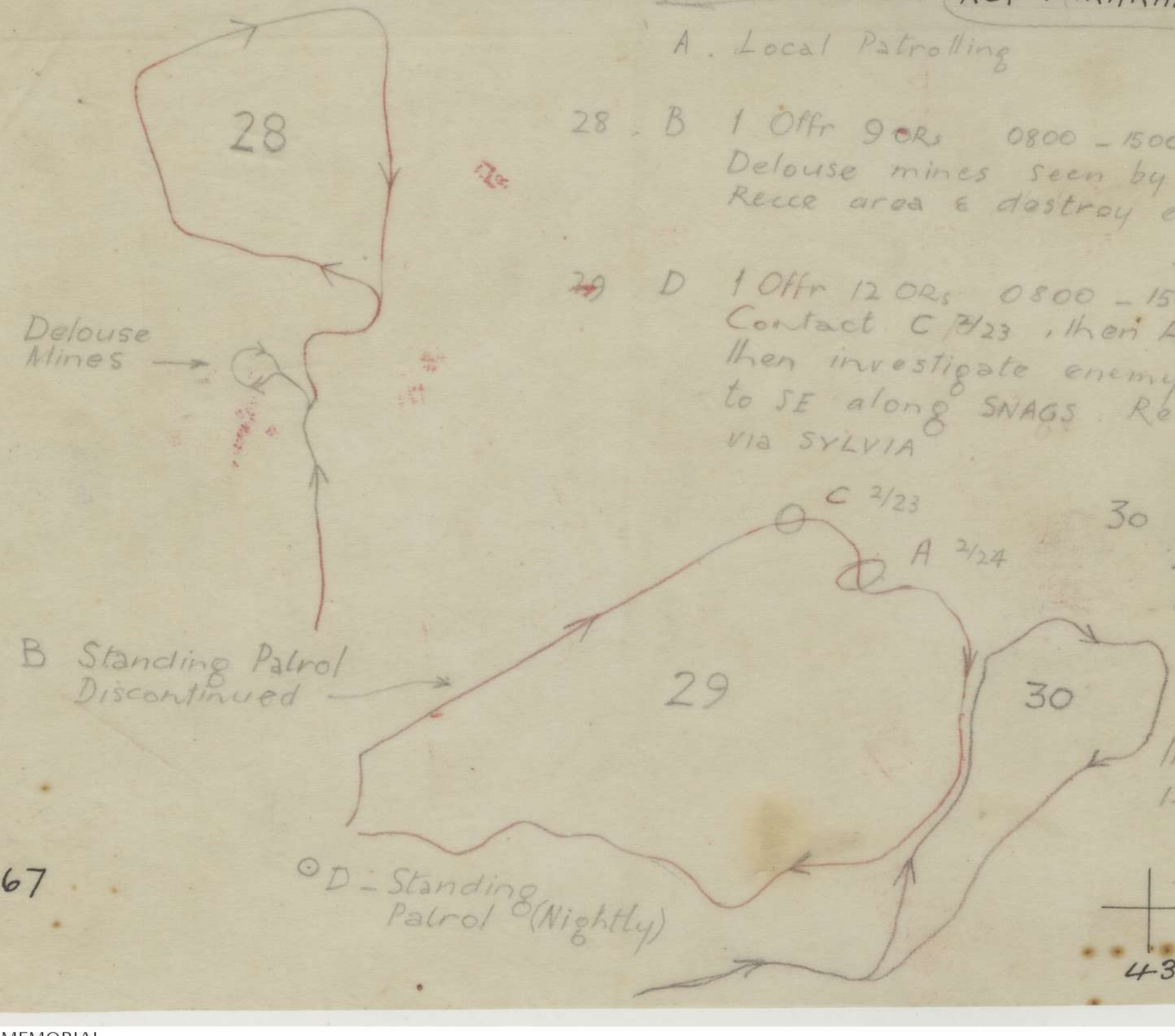
66
43

SECRET

2/23 Bn

~~TRACE~~: PATROLS No. 15 MAY '45.

Ref: TARAKAN 1:25.000



A. Local Patrolling

28. B 1 Offr 9 ORs 0800 - 1500
Delouse mines seen by Patrol 26
Recce area & destroy enemy.

~~29~~ D 1 Offr 12 ORs 0800 - 1500
Contact C 2/23, then A 2/24
then investigate enemy posns
to SE along SNAGS. Return
via SYLVIA

30 A. Patrol
25 to be re-
peated.

Int Sec 2/23 Bn
14 May 45

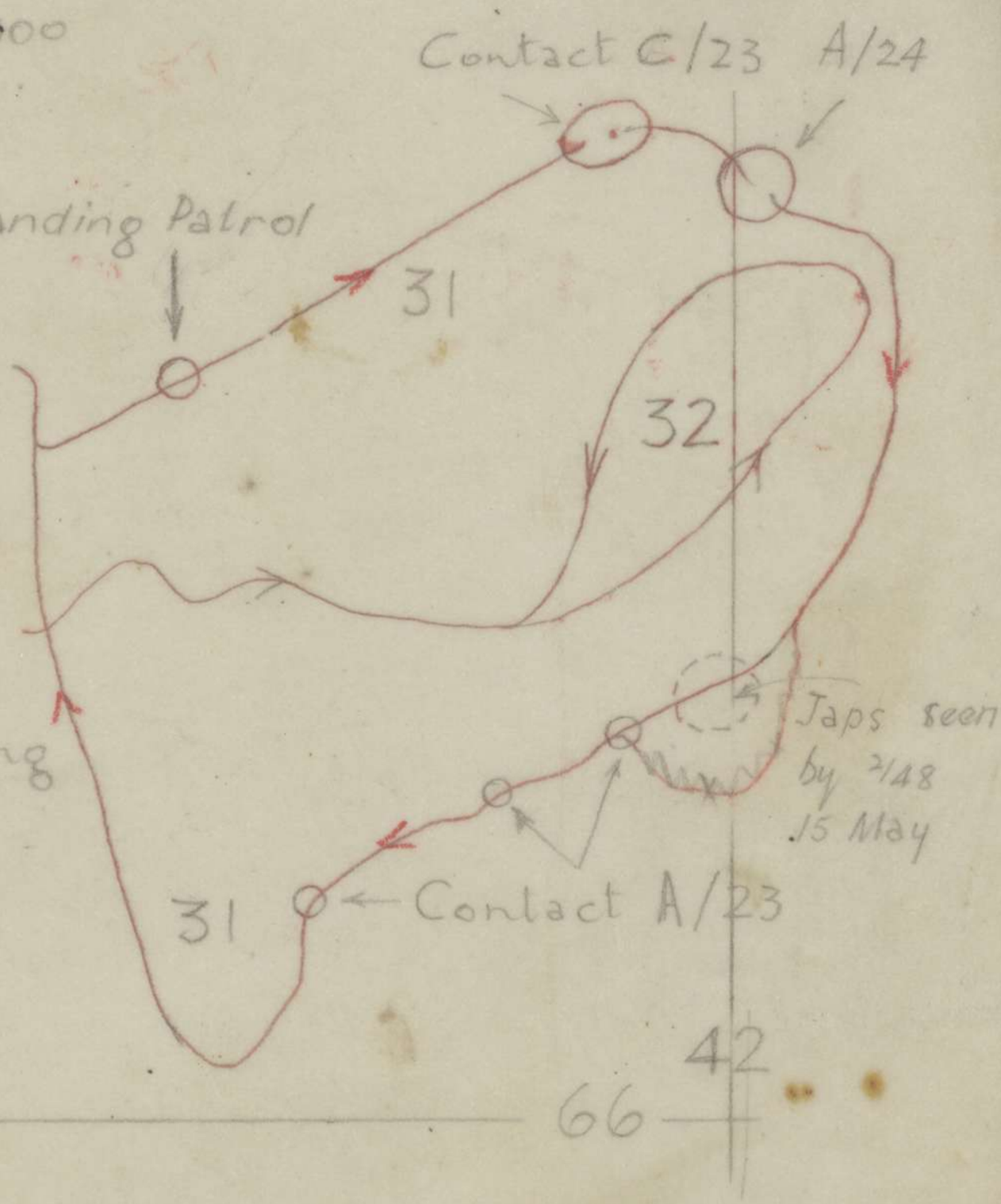
SECRET

2/23 PATROLS 16 May 45

31. B – 1 Offr 9 ORs 0800 ~~1500~~
Contact A/24.
~~Recce~~ SNAGS area

32 D – INCO 8 ORs
0800 – 1500
Recce NE area
ZEBRA – OSTRICH

AC – Local Patrolling



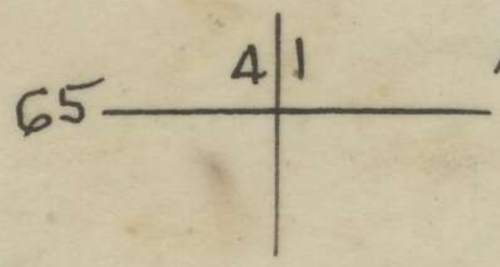
Int Sec 2/23 Bn
15 May 45

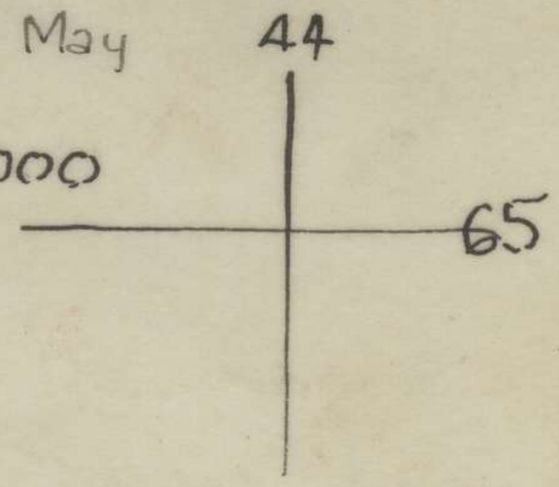
PATROL TRACE

Date	Route	No
8		8
9		
10		12, 14, 15.
11		16, 17, 18
12		19, 20, 21
13		22 23 24.
14		
15		28 29 30
16		32.

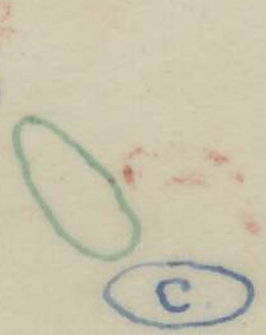
Overlay Shewing
DOMO Coy DISPOSITIONS 1st May

Ref Map Tarakan South 1:25000





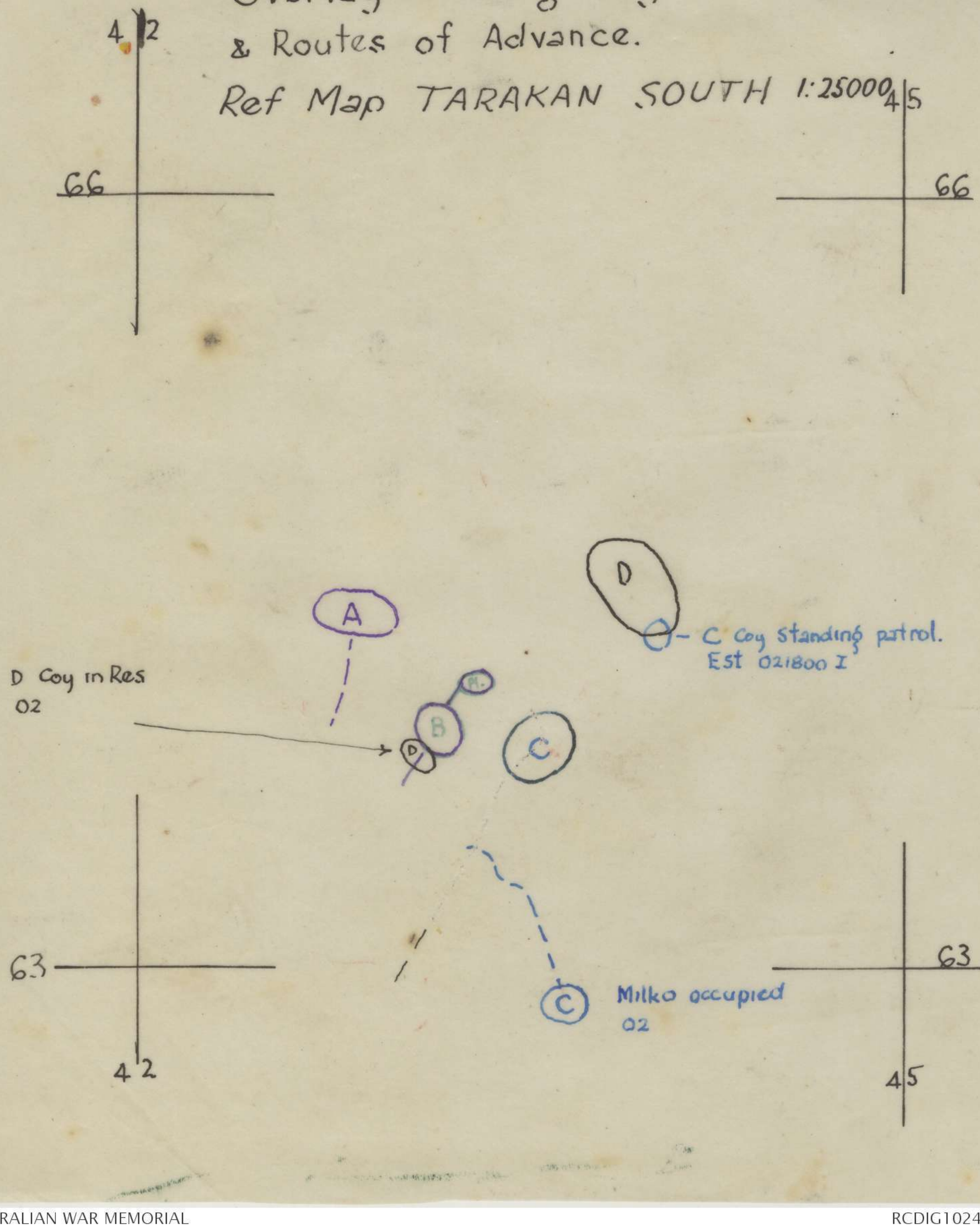
Coy Dispositions
Night 1/2 May



TAC Location
both phases

Coy Dispositions
First Phase 010830

Overlay Shewing Coy Posn Night 2/3 May
& Routes of Advance.
Ref Map TARAKAN SOUTH 1:25000



Overlay Showing Coy Posn.
on Night 3/4 May

Ref Map TARAKAN SOUTH 1:25000

43 66 46 66

2 tanks blast tunnel close end Sec not fired on

16+17 Pl repulsed

Tunnel

A B D 2/4 Cav

C

1 Pl C Coy

1 Coy NEI relieved C Coy Platoon

63 43 46

Overlay shewing Coy Posn
on Night 4-5.

Ref Map TARAKAN SOUTH 1:25000

66

A

B

D

C

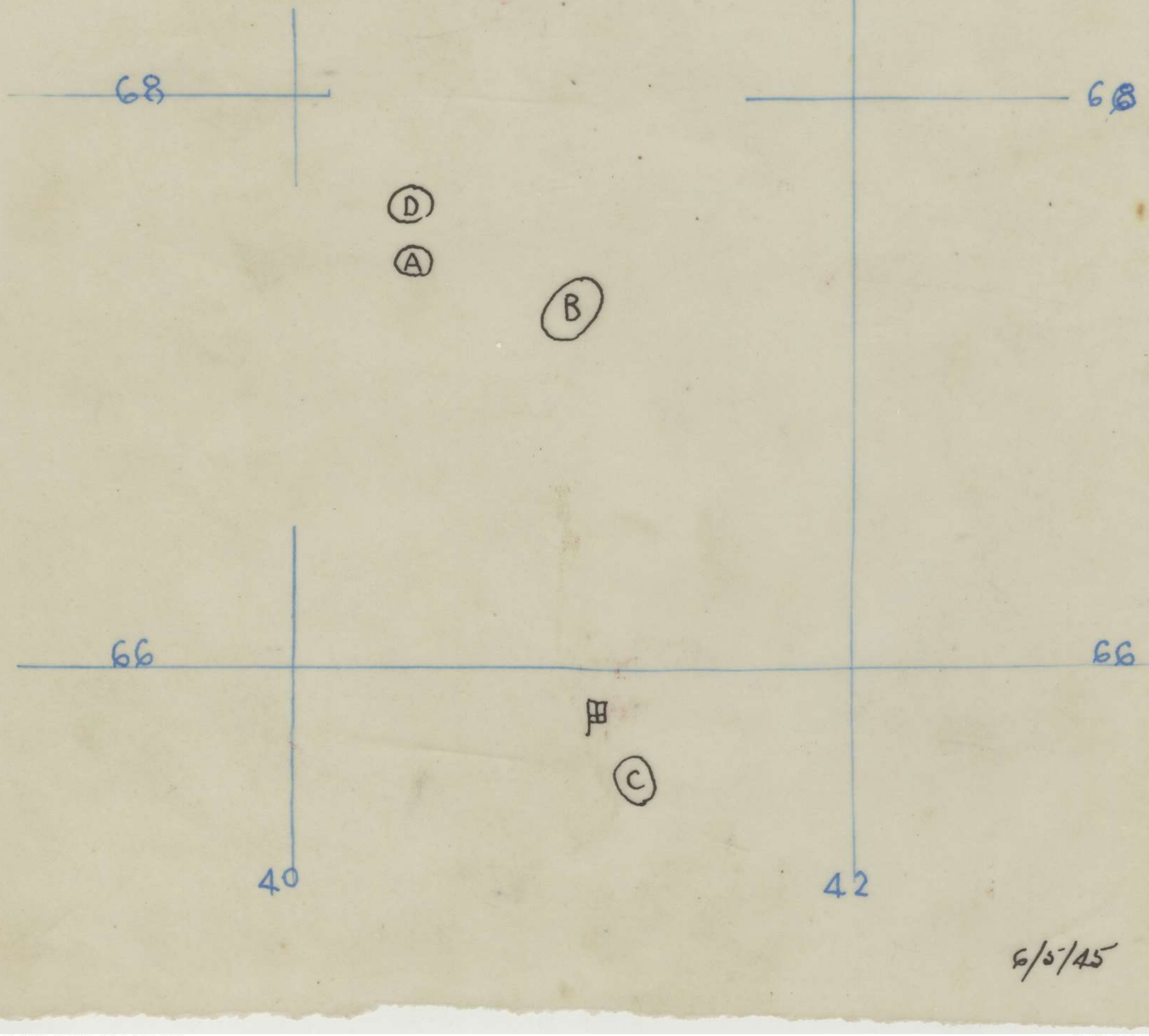
63

42

45

5/5/45.

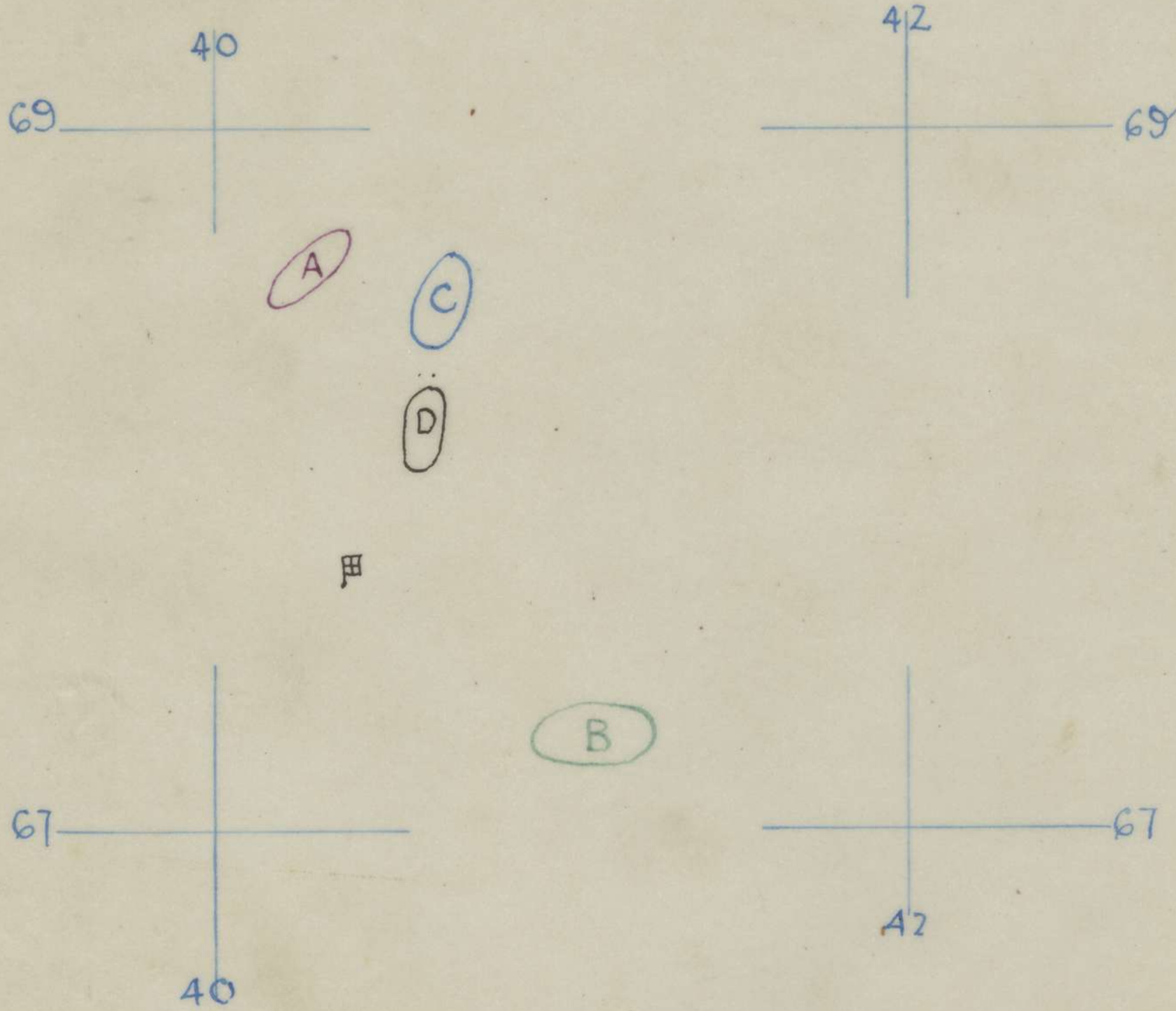
Overlay Showing Coy Disposn.
on Night 5-6 May
Ref Map TARAKAN SOUTH 1:25000



6/5/45

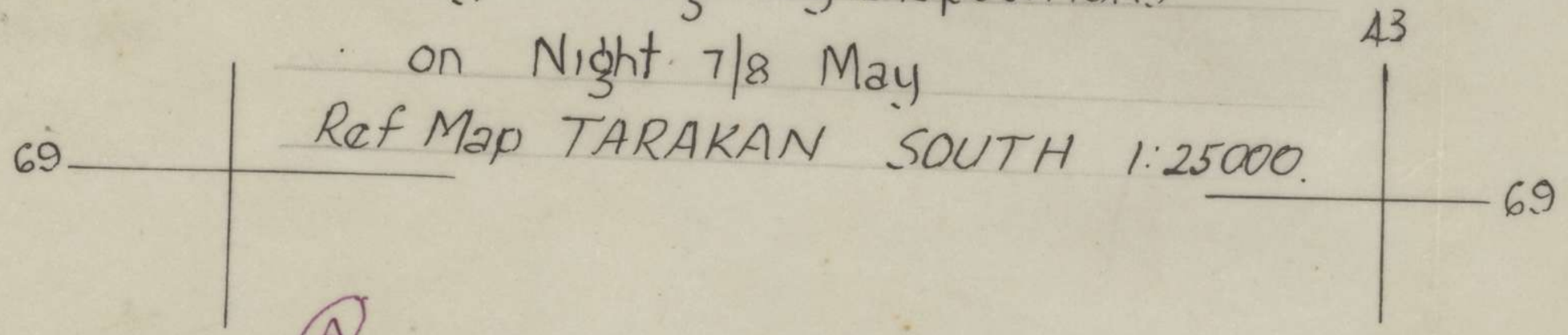
OVERLAY Shewing Coy Dispositions Night 6/7 May

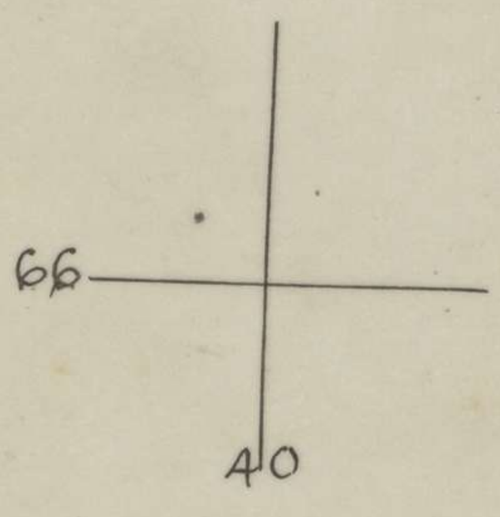
Ref Map TARAKAN SOUTH 1:25000

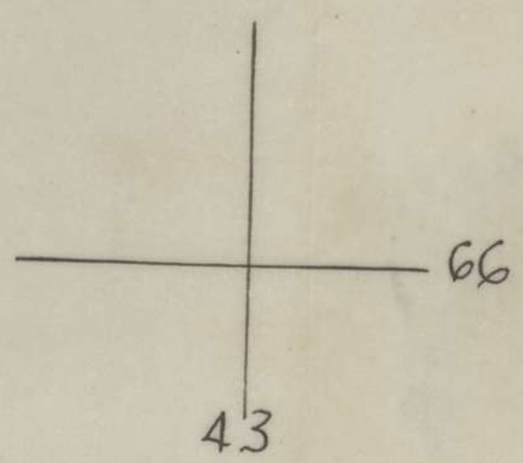


7/5/45.

Overlay showing Coy Dispositions
on Night 7/8 May
Ref Map TARAKAN SOUTH 1:25000.







MOVEMENTS SUB UNITS from 6/7 – 7/8 May.

A
B
C
D

061500
C less 13 – 6

70

70

Sec

N

API

A – 6/7

6/7 Remained in posn & came u/c B late 07.

070700 – 9pl

A fwd 06

C – 6/7

404684

071400
B moved fwd relieved C by 1700

C less 14 to ESSEX
approx 071600

6/7

15 occupied late 06 &
Withdrew 062100
Reoccupied by 13 early 07

13 – 6/7

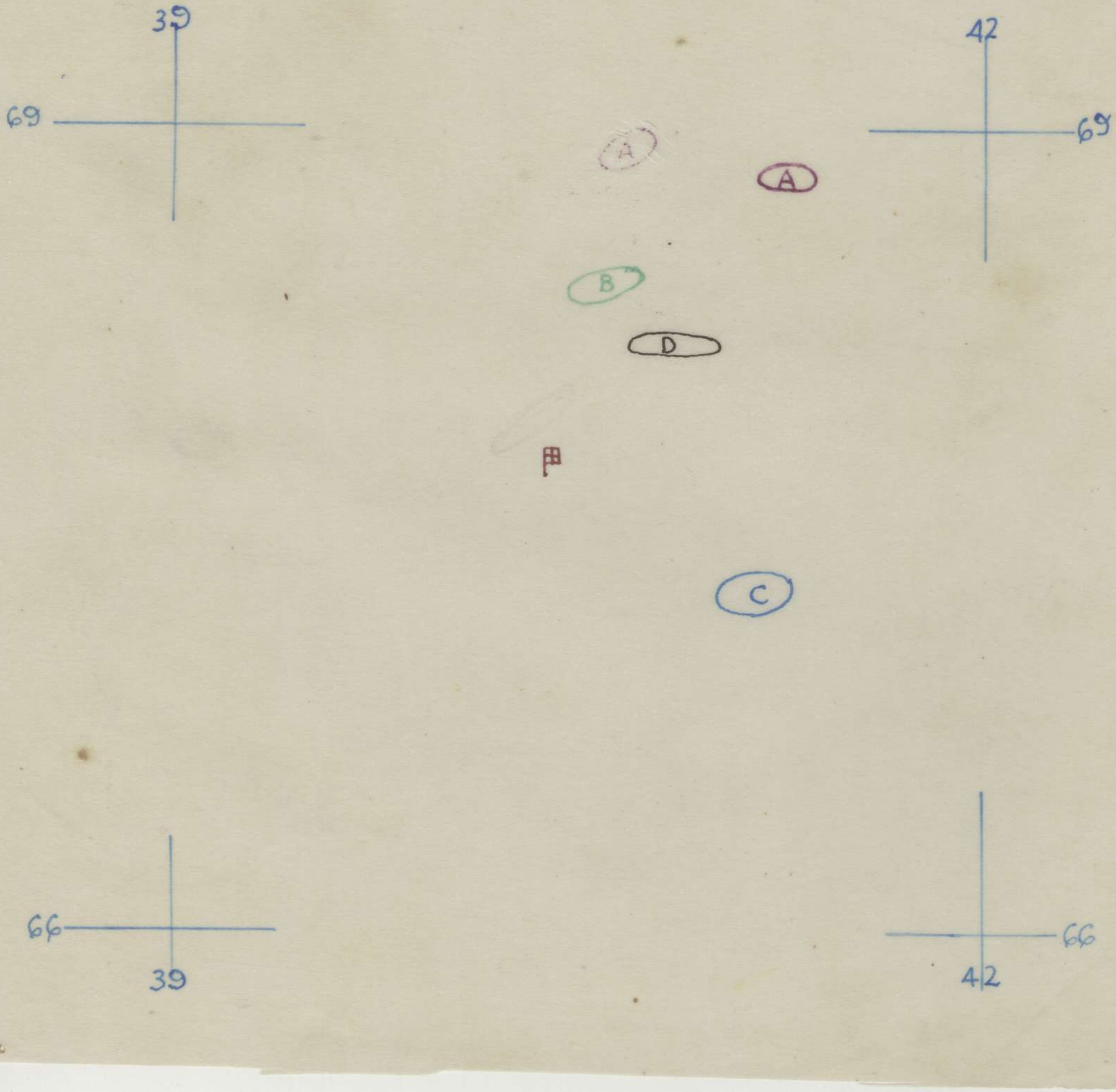
6/7 18
17

D less 17 & 18 – 6/7

C fwd 06

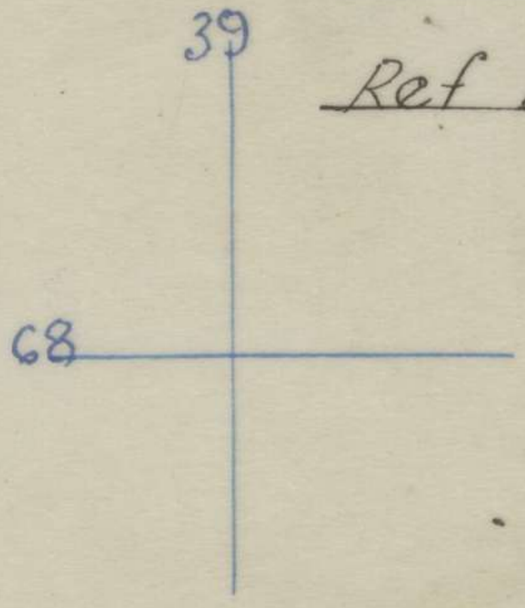
D moved fwd early 06

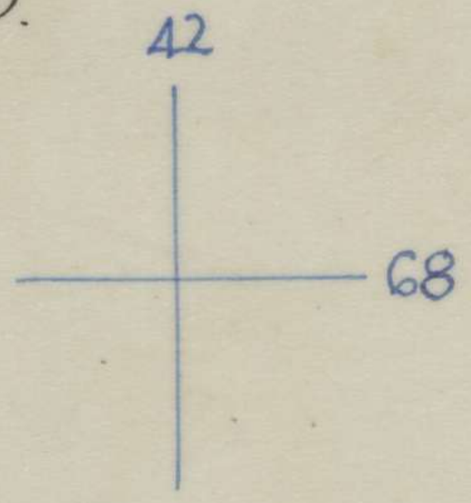
Overlay shewing Coy Disposn.
on Night 8/9 May
Ref Map TARAKAN SOUTH 1: 25000.



Overlay shewing Coy Dispoan on Night 9/10 May to

Ref Map TARAKAN SOUTH 1:25000.





B

Tac

D

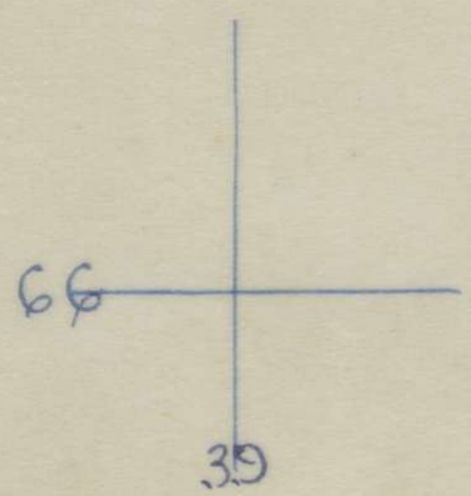
C

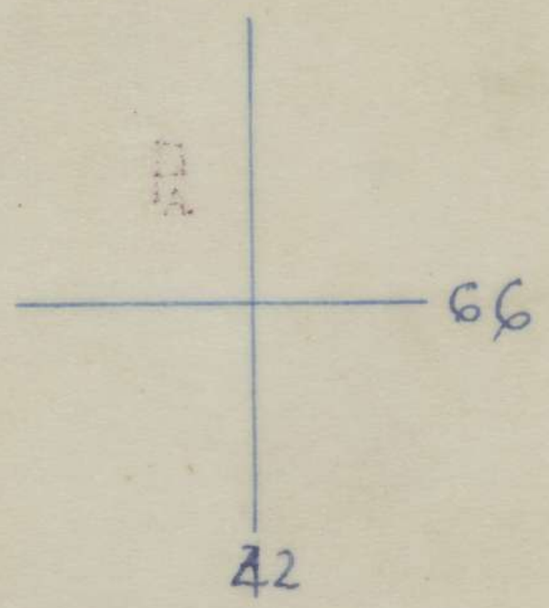
D Coy Standing Patrol

A 9

A 8

A 7 Pl.





SECRET.

2/23 Bn Coy Dispositions Night 14 May 45

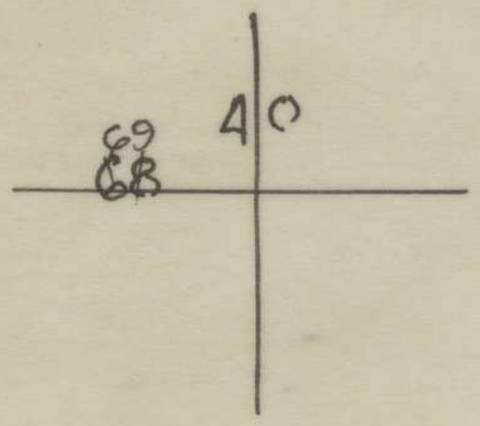
Ref Map TARAKAN SOUTH 1:25000.

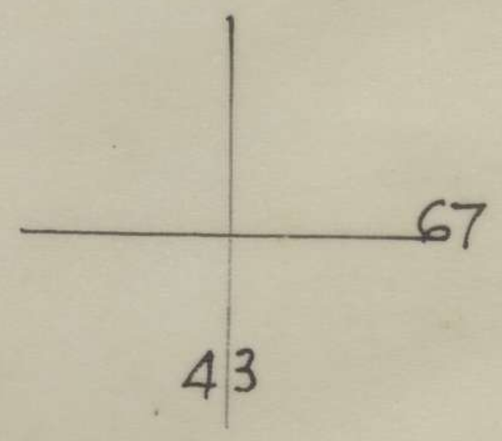
Int Sec
2/23 Aust Inf Bn
15 May 45.

SECRET

DISPOSITIONS NIGHT 15/16
2/23 BN ~~PATROLS~~ ~~17~~ May 45

Ref Map Tarakan South 1:25000





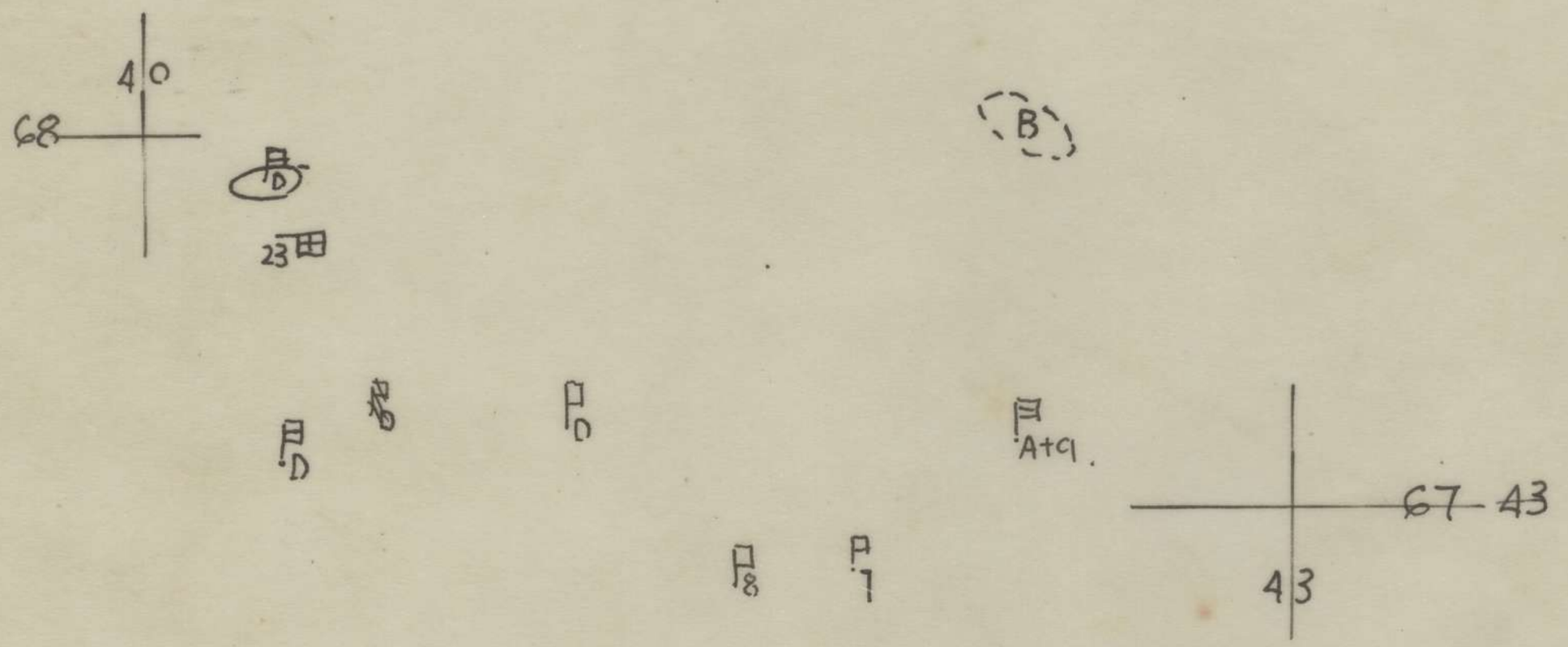
Int Sec
2/23 Aust Inf Bn.
16. 5. 45

SECRET.

DISPOSITIONS NIGHT 16/17

2/23 BN ~~PATROLS~~ 17 May 45

Ref Map Tarakan South 1:25000



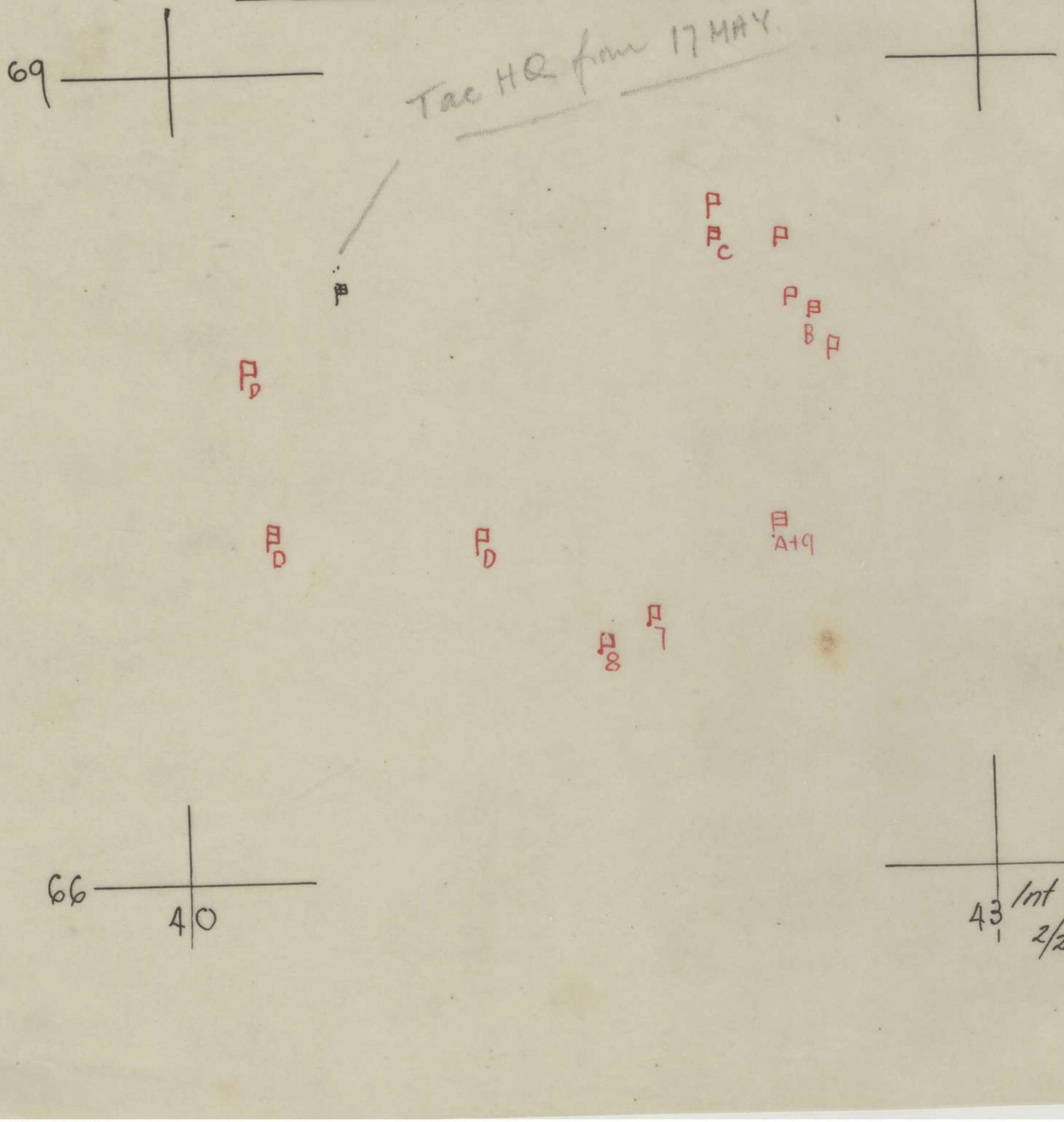
Int Sec
2/23 Aust Inf Bn.
16. 5. 45.

SECRET.

Dispositions—Night

2/23 BN ~~PATROLS~~ 18 May 45

Ref TARAKAN SOUTH 1:25000

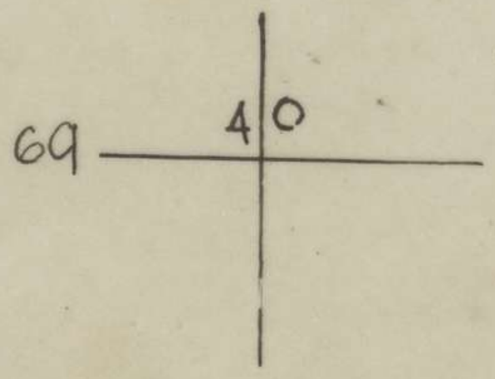


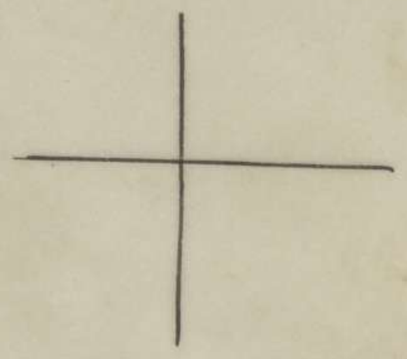
SECRET.

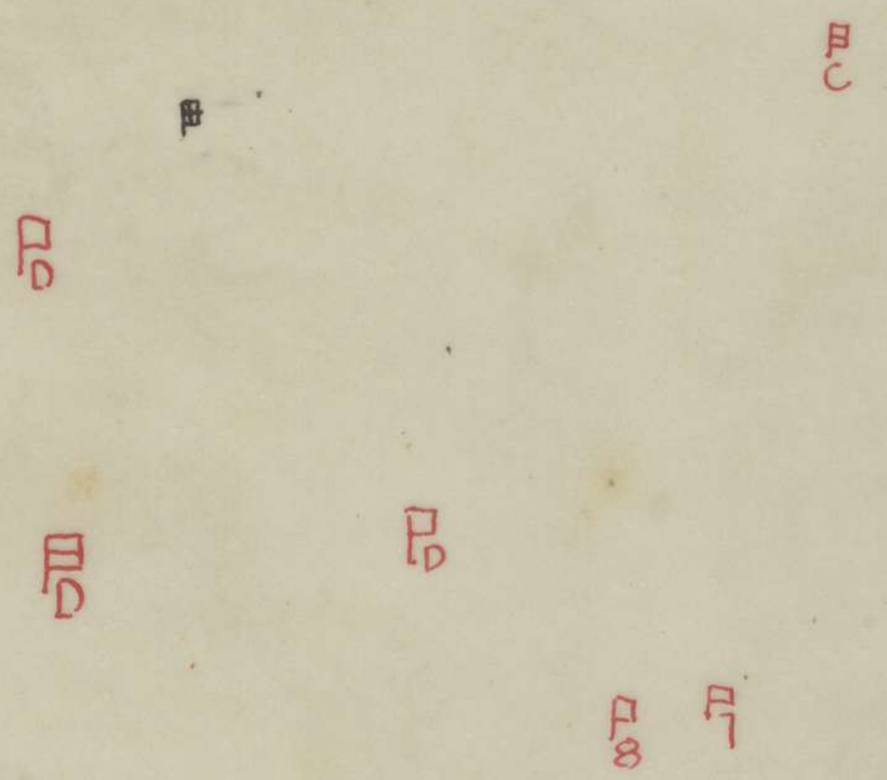
Dispositions 20

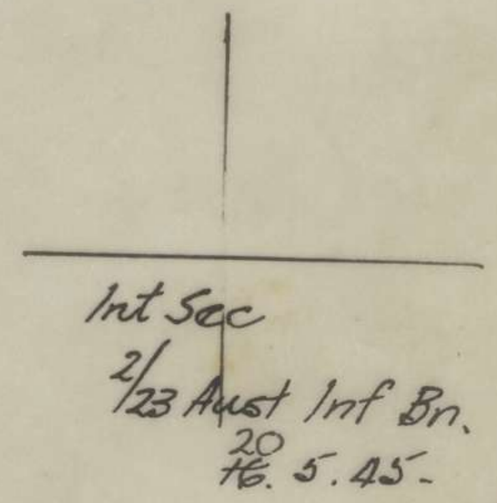
2/23 Bn. ~~PATROLS~~ 19 May 45

Ref Map Tarakan South 1:25000





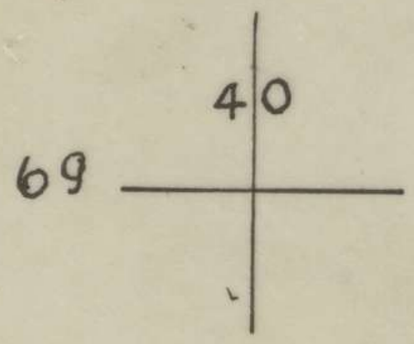


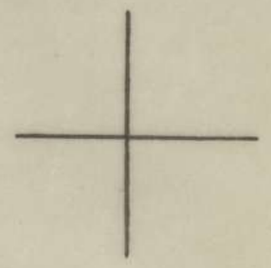


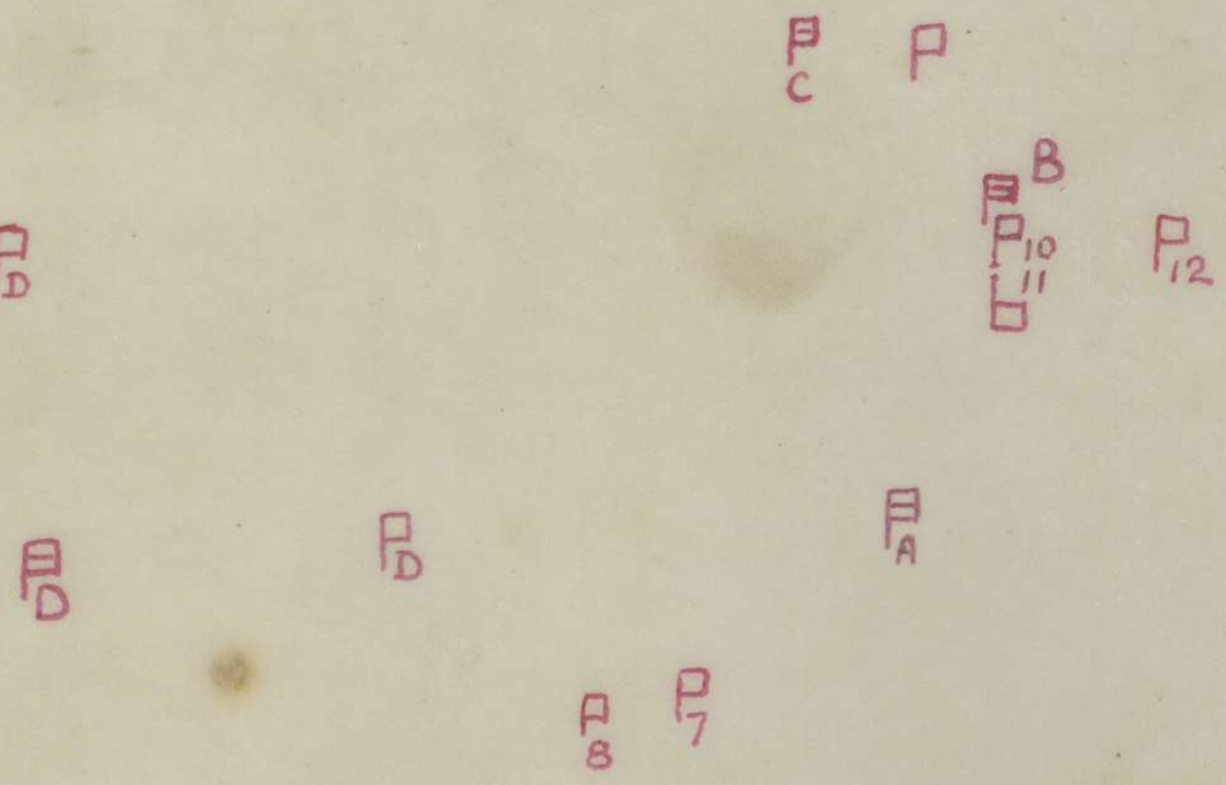
SECRET

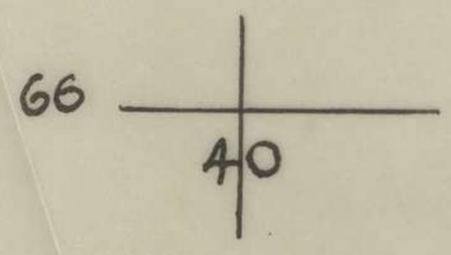
2/23 Bn. Dispositions 21 May '45.

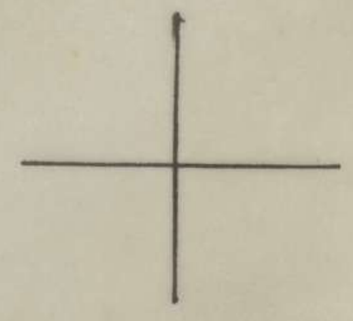
Ref: Map TARAKAN SOUTH 1:25,000











Int Sec 2/23 Bn
21 May '45.

SECRET.

2/23 Bn. Dispositions 22 May '45.

Ref: Map TARAKAN SOUTH 1:25.000.

4|0
69

C
15+13 Pl.

D

14

TAC

12

B

10

9

8

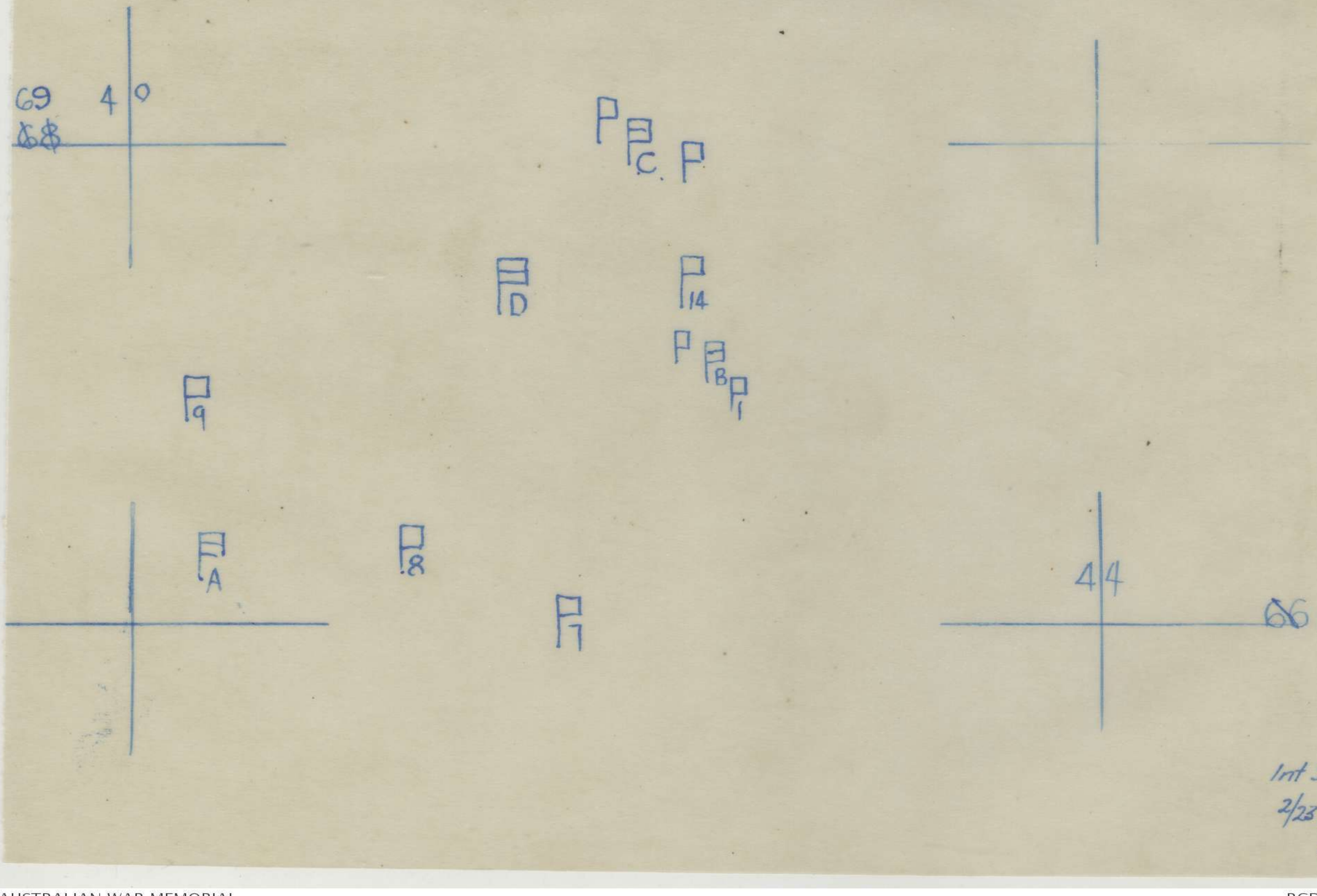
A

7

66
4|0

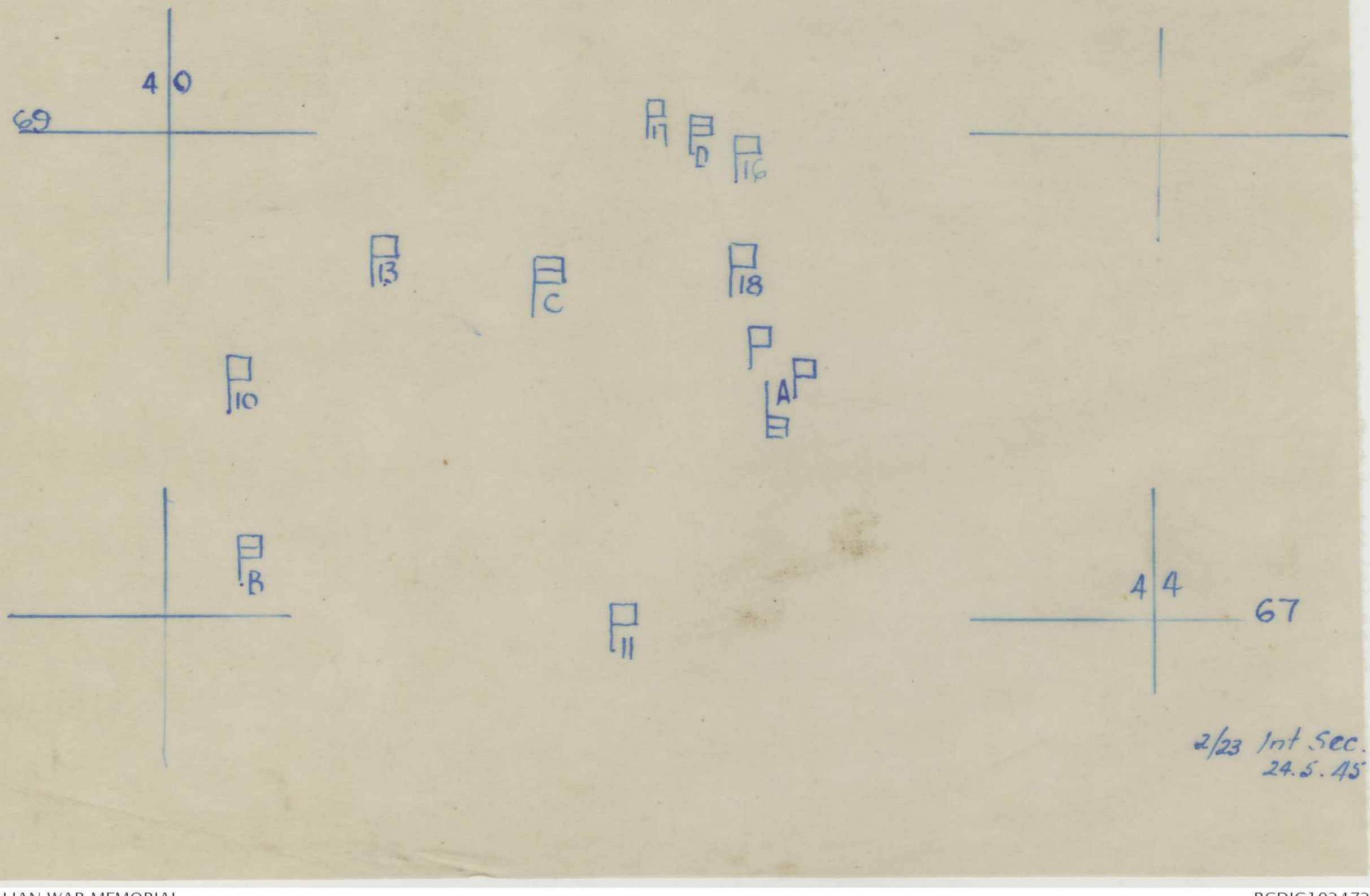
Int Sec 2/23 Bn
22 May '45.

2/23 BN DISPOSNS 23 May 45



Int Sec
2/23 Aust I
24.5

2/23 BN DISPOSNS 24 May 45



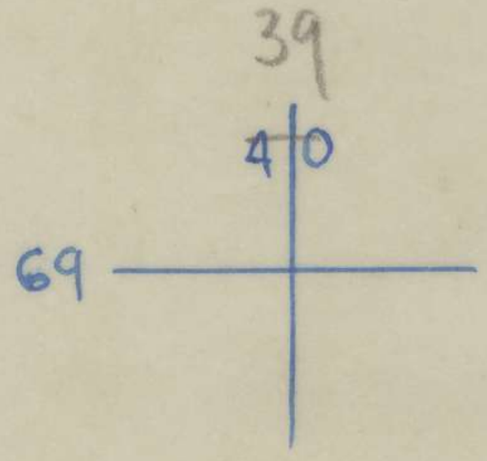
2/23 Int Sec.
24.5.45

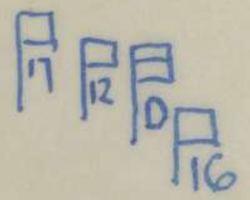
SECRET.

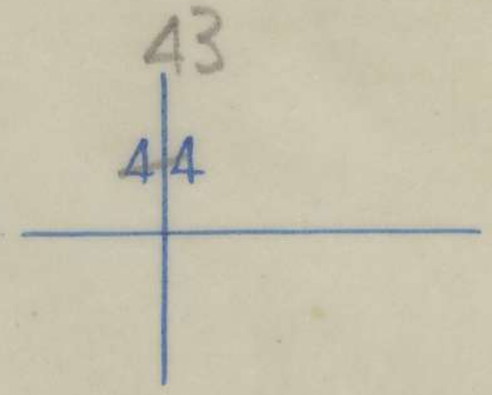
DISPOSNS 25

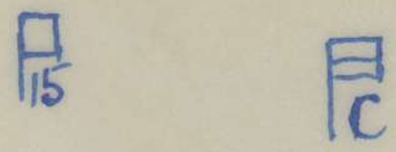
2/23 Bn ~~PATROLS~~ 17 May 45

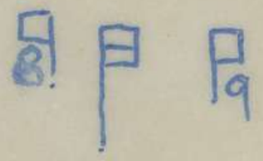
Ref TARAKAN SOUTH 1:25000.

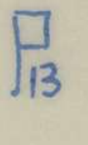


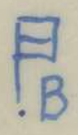


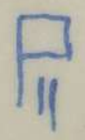


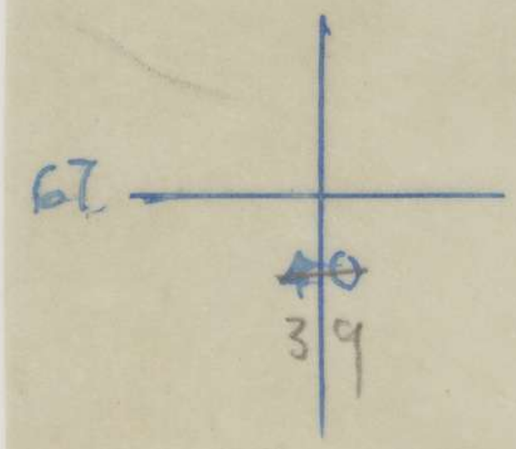


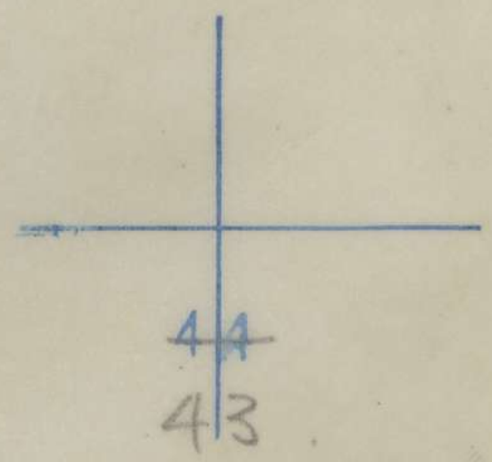












Int Sec
2/23 Bn.
25 ~~16~~ 5. 45.

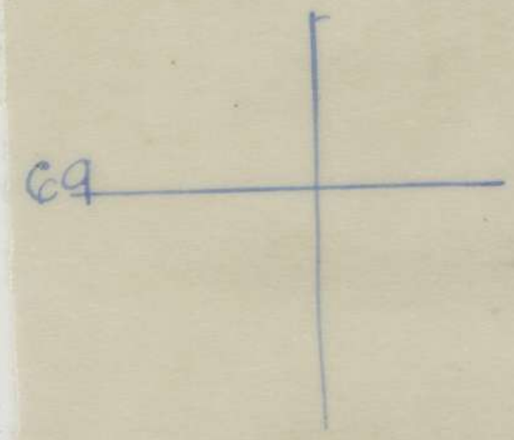
29 30

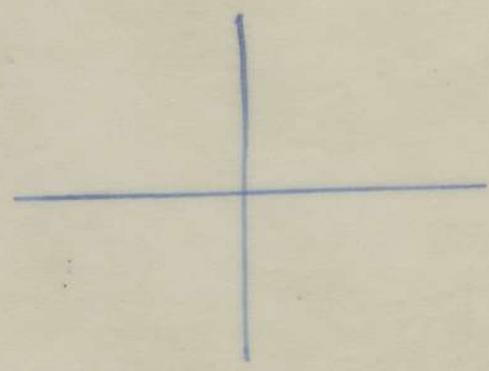
31

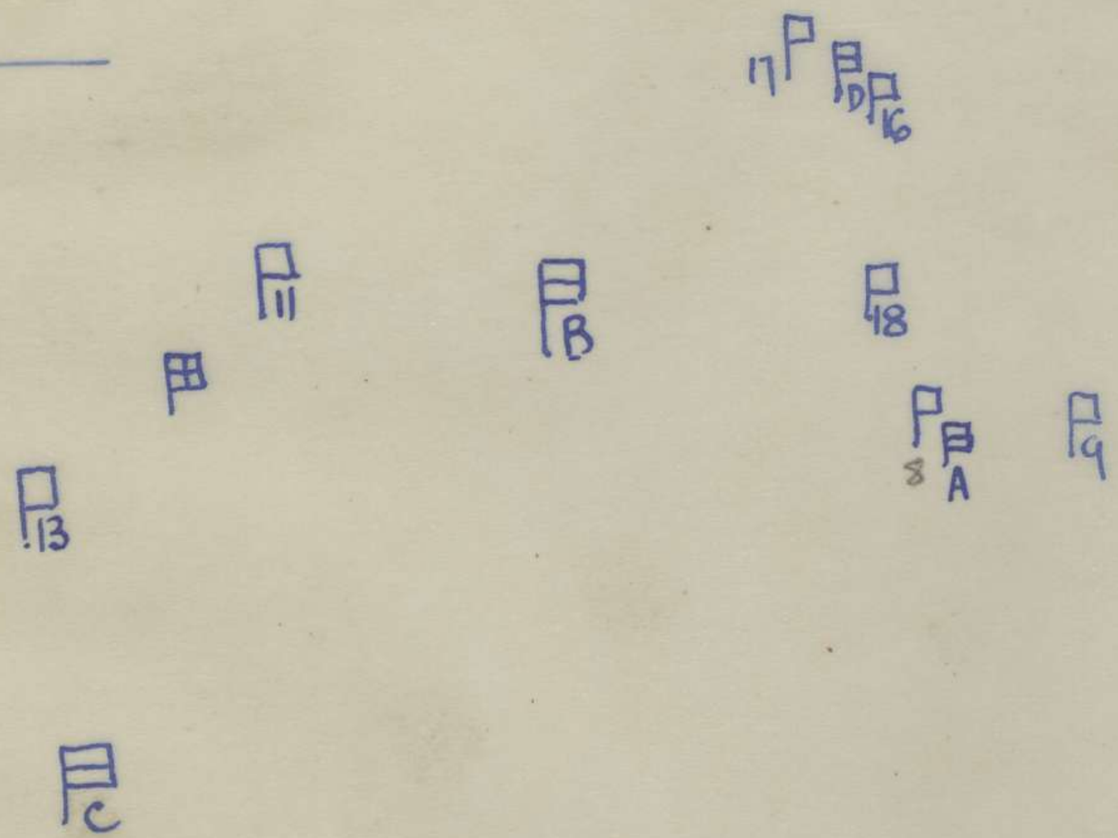
-27 & 28

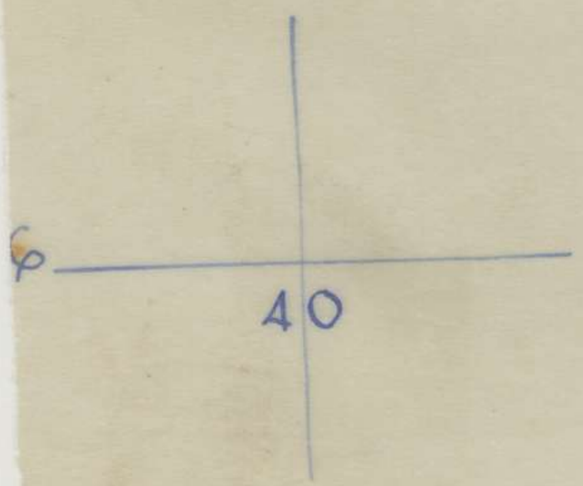
2/23 Bn Dispositions 26 May 45

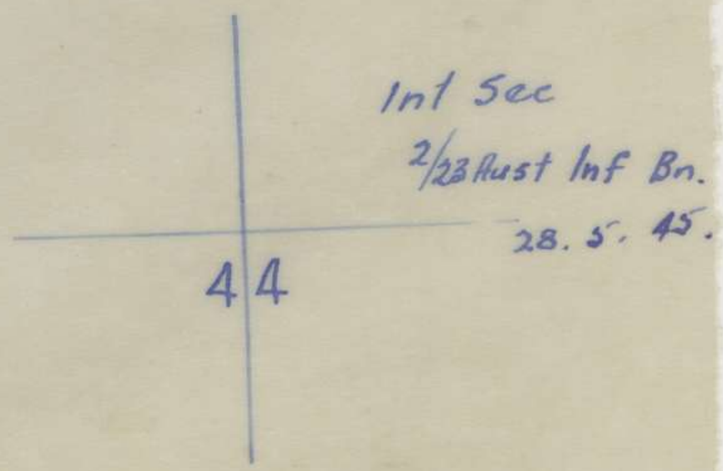
Dispositions for 29-30 May same as 28 with 12 Pl replacing 11 Pl at REST CAMP.











2/23 Bn Dispositions 31 May

Ref TARAKAN SOUTH 1: 25000

39

69

44

D

17

16

12

18

B

8

A

9

13

C

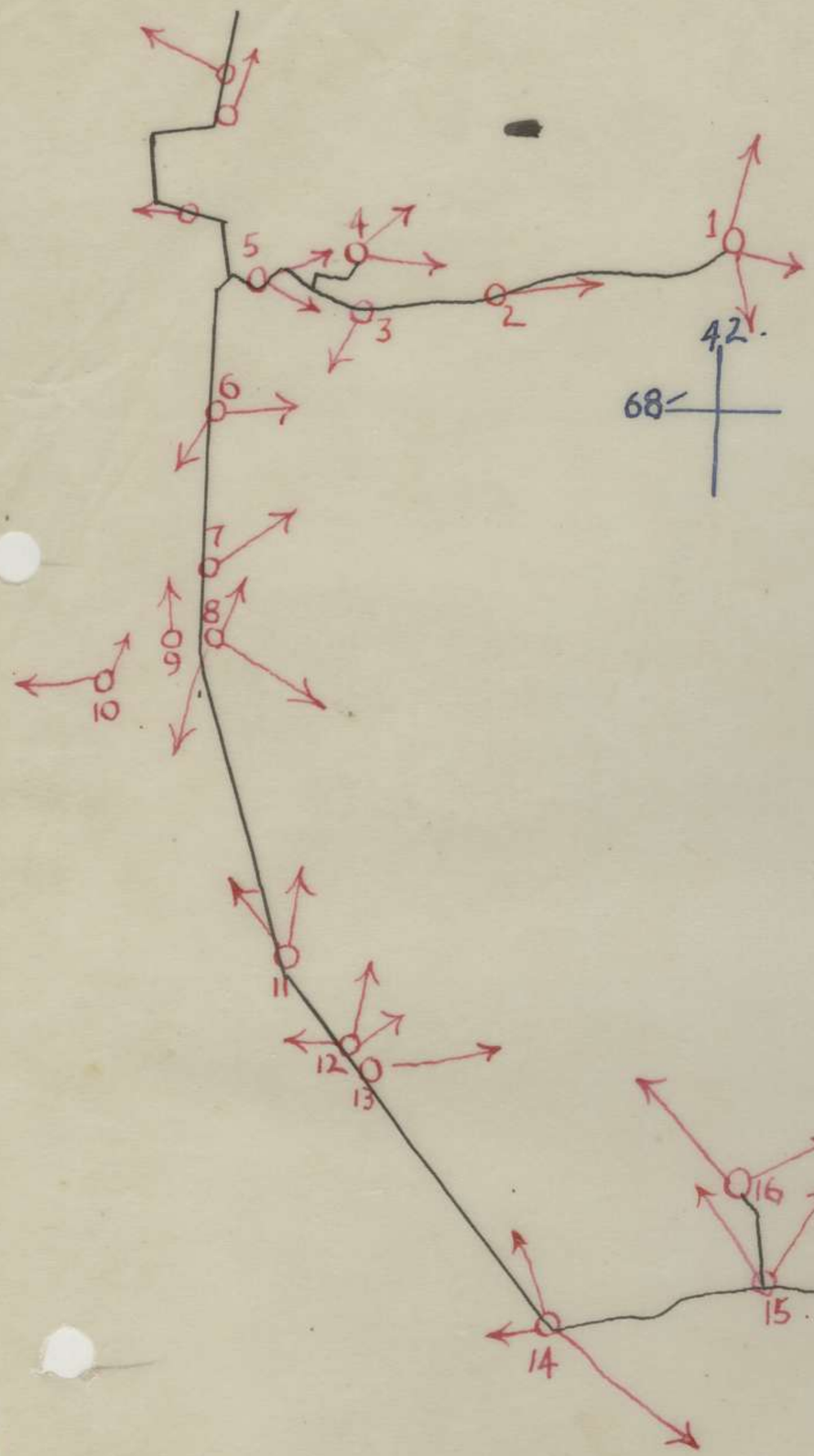
66

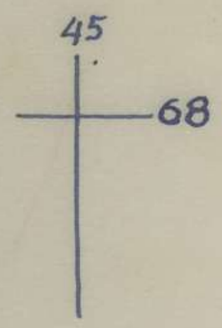
TRACE "P"

OVER LAY

Ref. Map TARAKAN ISLAND SOUTH

1 : 25000



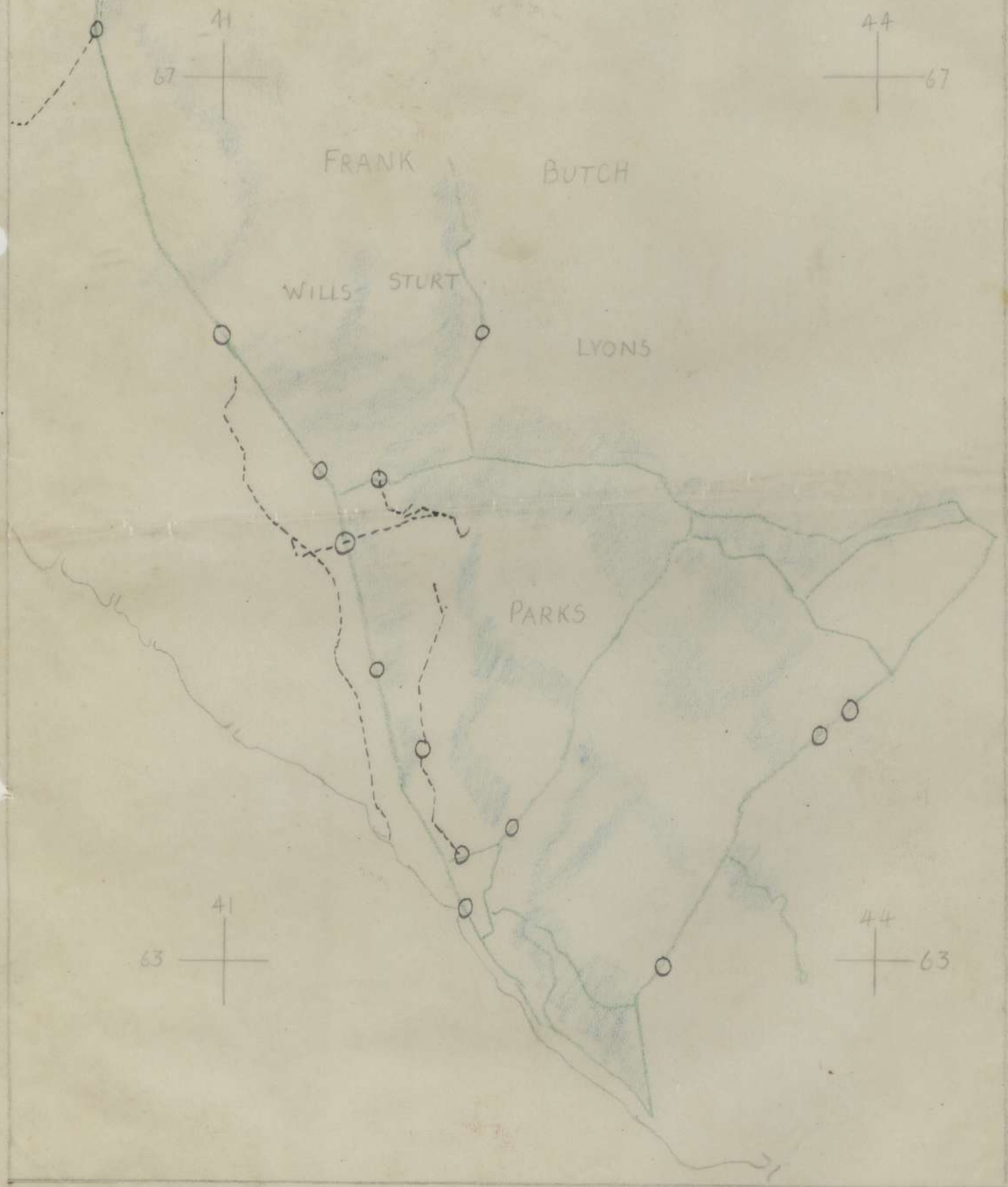


Tank Going ——

Tk. Posn & Arc of Fire

OVER LAY

Ref Map : TARAKAN ISLAND SOUTH SPECIAL



TANK GOING

GOOD GOING (All Roads) ——

POSSIBLE "

" TK OBSTACLES O.

TK OBSTACLES - - - - - - -

W.D

SCALE IN YARDS

100 50 0 100 200 300 400 500 600 700 800 900

N

SIBENGKOK

OIL TANK FARM

LOW SWAMPY AREA

LINGKAS

PART OF PAMOESIAN RIVER MOUTH

FORMER DUTCH NAVAL AIR BASE

OLD PIER

ROWS OF BEACH OBSTACLES

NORTH PIER

OIL JETTY

SOUTH PIER

20 YDS

100 YDS

WHITE

RED ONE

RED TWO

YELLOW

GREEN ONE

GREEN TWO

043°

525 YDS

375 YDS

400 YDS

LINE OF DEPARTURE

313° - 133°

2,500 YDS OFF BEACH

2/48 AUST INF BN

2/23 AUST INF BN

2/24 AUST INF BN

LEGEND

- LVT
- FREE LVT
- LCVP
- FREE BOAT - LCVP
- LCVP TOWING 2 FOLDING BOATS
- WAVE GUIDE BOAT
- LCM
- FREE LCM
- LCT
- LCI(L)
- LSM
- LST
- WITH CAUSEWAY
- LSD
- CONTROL CRAFT
- SUPPORT CRAFT

WAVE ONE
LEAVES L. OF D. AT "H"-12
LANDS AT "H" HOUR

WAVE TWO
LEAVES L. OF D. AT "H"-5
LANDS AT "H"/7

WAVE THREE
LEAVES L. OF D. AT "H"/5
LANDS AT "H"/14

WAVE FOUR

NO CRAFT

WAVE FIVE
LEAVES L. OF D. AT "H"/11
LANDS AT "H"/20

WAVE SIX
LEAVES L. OF D. AT "H"/16
LANDS AT "H"/25

ON CALL

(FOR CAUSEWAY IF NEEDED)

WAVE ONE
LEAVES L. OF D. AT "H"-19
LANDS AT "H" HOUR

WAVE TWO
LEAVES L. OF D. AT "H"-14
LANDS AT "H"/5

WAVE THREE
LEAVES L. OF D. AT "H"-9
LANDS AT "H"/10

WAVE FOUR
LEAVES L. OF D. AT "H"-4
LANDS AT "H"/15

WAVE FIVE
LEAVES L. OF D. AT "H"/11
LANDS AT "H"/20

WAVE SIX
LEAVES L. OF D. AT "H"/16
LANDS AT "H"/25

ON CALL

(FOR CAUSEWAY IF NEEDED)

CAUSEWAY LSTs ARRIVE AT LINE OF DEPARTURE BY H+30 MIN.

HMAS MANOORA

HMAS WESTRALIA

RESERVE

TOP SECRET

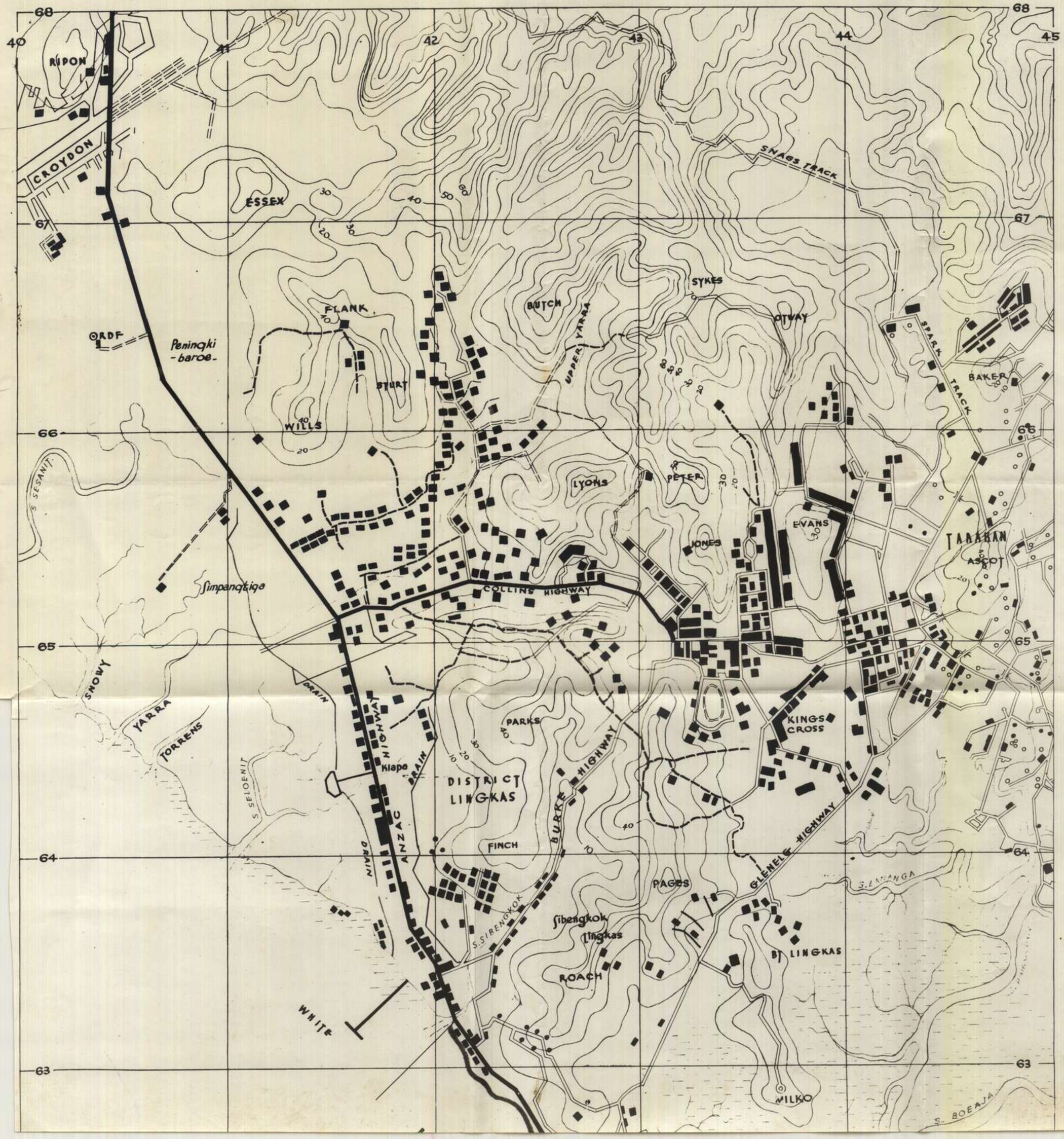
APPENDIX 3 TO ANNEX "J" TO
COM PHIB GROUP SIX
ATTACK ORDER A604-45

BOAT WAVE DIAGRAM

TARAKAN

Ref map TARAKAN ISLAND SOUTH SPECIAL.

R.F 1:12,500



NORTHEAST BORNEO 1:50,000

ISLAND OF TARAKAN

ADV/032/0687

CONTROL: From A.M.S. Map ISLAND OF TARAKAN First Edition.

AIR PHOTOGRAPHY: By 2 Charting Sqn U.S.A.A.F. Missions 5-MC-4-3 Jan 45, 5-MC-4-1 Jan 45, 2CS-4MB 42-2CL34 Dec 44, 2CS-4MB- 42-45L17 Dec 44 and 2CS- 4MB 42-2SR27 Dec 44.

COMPILATION: 2/1 Aust Army Topo Svy Coy, Aust Svy Corps from A.M.S. map, revised from Air Photos.

DRAWING & REPRODUCTION: 2/1 Aust Army Topo Svy Coy, Aust Svy Corps. Feb 45.

FEB 45

ABBREVIATIONS

G	GOENOENG	(MOUNTAIN)
BT	BOEKIT	(HILL)
P	POELAU	(ISLAND)
TG	TANDJOENG	(CAPE)
S	SOENGAI	(RIVER)

LEGEND

Road, hard surfaced
Road, lightly surfaced
Road, earth
Jeep Track
Trail
Railway, narrow gauge
Buildings or Huts
Iron Post
Tanks, Oil or Gas — Oil
Oil or Gas Wells — Oil
Swamp Palms
Streams
Swamp
Scattered Trees
Forest
Secondary Growth
Sand

TRUE & GRID NORTH — MAGNETIC NORTH — 2° 31′ OR 45 MILS

APPROXIMATE MEAN DECLINATION 1944 FOR CENTER OF SHEET

Scale 1:50,000

1 0 1 2 3 Miles
1 0 1 2 3 4 Kilometers
1000 500 0 1000 2000 3000 4000 Yards

CONTOUR INTERVAL 25 METRES DATUM SEA LEVEL
LAMBERT CONICAL ORTHOMORPHIC PROJECTION

HEIGHTS IN METRES

NOTE: OFFICERS USING THIS MAP ARE REQUESTED TO MAKE ANY NECESSARY ADDITIONS AND AMENDMENTS ON THE MAP ITSELF AND FORWARD SAME TO SURVEY DIRECTORATE, H Q OF FORCE CONCERNED

RELIABILITY DIAGRAM

A. Reliable: from vertical Photography.
B. Fairly Reliable: from close Oblique Photographs and Reliable Maps.

NETHERLANDS EAST INDIES
EQUATORIAL ZONE GRID

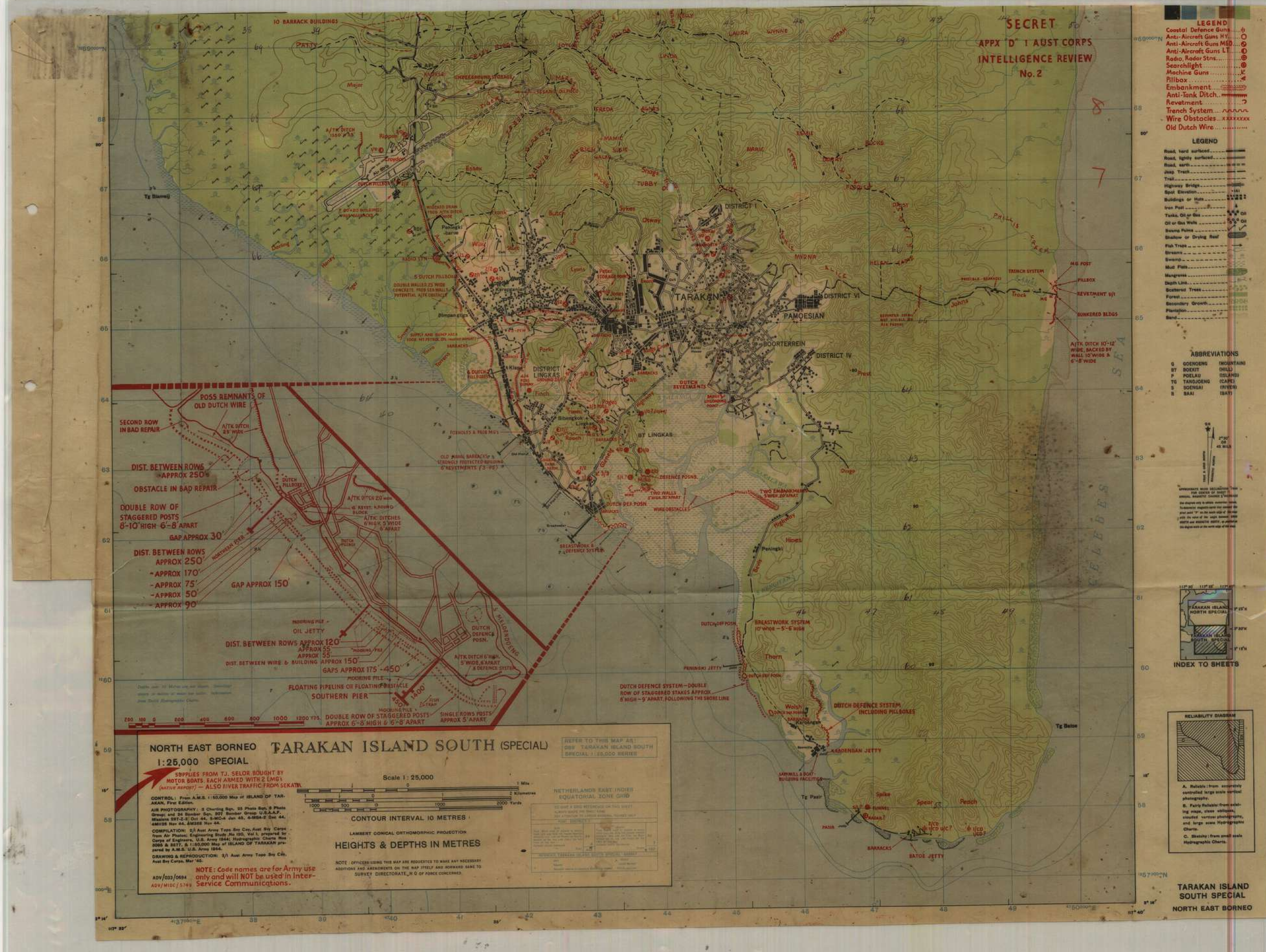
TO GIVE A GRID REFERENCE ON THIS SHEET

USE ONLY THE LARGER FIGURES PRINTED IN THE MARGIN OR ON THE FACE OF THE MAP eg. 4727

POINT DISTRICT I — LETTERS N

REFERENCE N446667

ISLAND OF TARAKAN
NORTHEAST BORNEO



PHOTOMAP
TARAKAN
BORNEO 1:10,000

Scale 1:10,000

1/4 0 1/4 1/2 Mile

1/2 0 1/2 Kilometre

500 0 500 Yards

ROAD CLASSIFICATION

See planimetric map of corresponding area

AIR PHOTOGRAPHY : By 2 Charting Sqn U.S.A.A.F. Missions 297-Z-3 Oct 44. 4MB4-Z-E-3 Oct 44. 4M368(1-V) Nov 44. 4MB42-I-SR Dec 44. 4MB42-I-SL Dec 44. 4MB42-3-SR Dec 44. 4MB42-2-SL Dec 44. 4MB42-4-SR Dec 44. 4MB42-4-SL Dec 44. 5MC4-LV Jan 45.

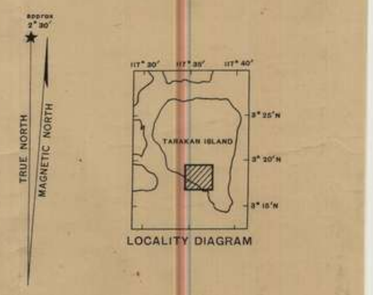
COMPILATION & REPRODUCTION : 2/1 Aust Army Topo Svy Coy, Aust Svy Corps. Mar 45.

WARNING - ARBITRARY GRID

Refer to this map as 0695 TARAKAN PHOTOMAP.

To give co-ordinates of a point use both figures on the grid lines and add tenths.

EXAMPLE : DISTRICT IV 15/29



LOCALITY DIAGRAM

LEGEND

1	TANK FARM	22	POST OFFICE
2	OIL PIPE LINE	23	SCHOOL
3	BREAKWATER	24	FOOTBALL FIELD
4	PIPE STOCKS	25	CLUB HOUSE
5	WAREHOUSE	26	SWIMMING POOL
6	WAREHOUSE	27	LAWN
7	CHINESE CEMETERY	28	WATER SUPPLY RESERVOIR
8	WIRELESS STN	29	FIRE STN
9	MOSQUE	30	HOSPITAL
10	EUROPEAN CEMETERY	31	ELEC POWER STN
11	GARDENS	32	WATER PUMPING STN
12	SCHOOL	33	ELEC POWER STN
13	MILITARY CEMETERY	34	TANK BATTERIES (SEE NUMEROUS SIMILAR FEATURES)
14	MILITARY BARRACKS	35	LABOURERS RESIDENTIAL AREA
15	SCRAP YARD	36	ELEC POWER STN
16	LOCO SHEDS	37	LABOURERS RESIDENTIAL AREA
17	TANK FARM	38	PIER
18	ELEC POWER STN	39	WAREHOUSE
19	TELEPHONE EXCH	40	GRAVEL CRUSHER
20	RC CHURCH		
21	POLICE STATION		

ABBREVIATIONS

G	GOENOENG	(MOUNTAIN)
BT	BOEKIT	(HILL)
P	POELAU	(ISLAND)
TG	TANDJOENG	(CAPE)
S	SOENGAI	(RIVER)
B	BAAI	(BAY)

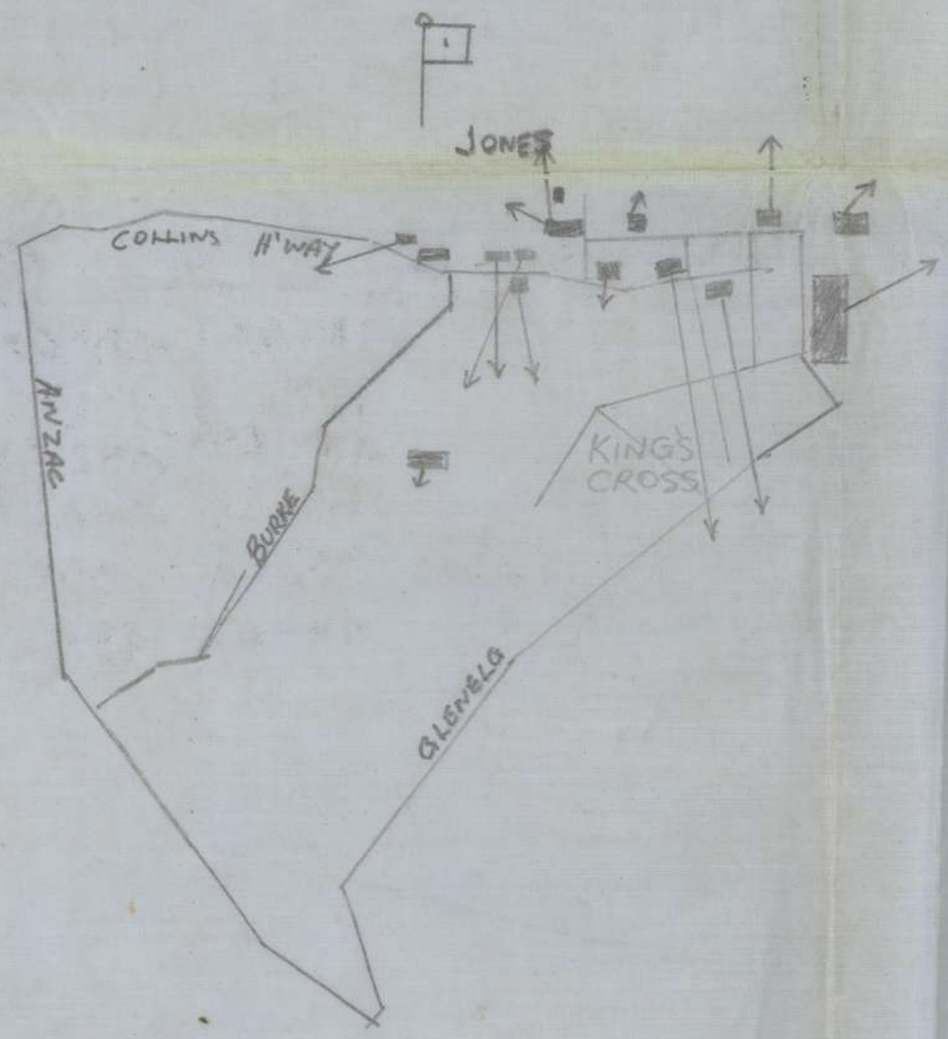
CAUTION : Distances scaled on this photomap may be at variance with actual ground distances as it was produced from unrectified aerial photography.

ADV/034/0695

TARAKAN
BORNEO

TRACE OF LINOTYPE
FOUND STORE KNOLL
021300 I MAY '45

Size of wpns
Unknown



1/25000

Approx Posns

415653	436653
431652	436654
432651	437650
434651	438653
433651	441657
434650	444652
	444653

Interpretation shows only admn buildings

021630 I
RG