JOINT ARMY-NAVY INTELLIGENCE STUDY OF
Celebes Sea Area (Plans)

JOINT INTELLIGENCE STUDY PUBLISHING BOARD
May 1944
TABLE OF CONTENTS

PLAN

1. Mindanao—Physiography and strategic routes.
2. Celebes Sea Area—Vegetation.
3. Halmahera—Coastal terrain. HO 3080.
4. Halmahera—Perspective views and relief diagram.
5. Northern Halmahera—Hydrography, landing areas, coral, and mangrove.
6. Southern Halmahera—Hydrography, landing areas, coral, and mangrove.
7. Djaifoloe sheet, Halmahera—Topography and landing areas.
9. Akelamo sheet, Halmahera—Topography and landing areas.
10. Ternate sheet—Topography, landing areas, and coral.
11. Town of Ternate—Aerial mosaic.
12. Tobelo sheet, Halmahera—Topography and landing areas.
15. Morotai—Landing areas and mangrove. NHO 386.
16. Sangowe sheet, Morotai—Topography and landing areas.
17. Tate sheet, Morotai—Topography and landing areas.
18. Sangihe Island sheet—Topography, landing areas, coral, and mangrove.
19. Siaoe Island sheet, Sangihe Islands—Topography, landing areas, and coral.
20. Taheolandang Island sheet, Sangihe Islands—Topography, landing areas, coral, and mangrove.
21. Talaud Islands sheet—Topography, landing areas, and coral.
22. Liroeng sheet, Talaud Islands—Topography, landing areas, and coral.
23. Mindanao Sea sheet, Mindanao—Topography, landing areas, and coral.
24. Dipolog sheet, Mindanao—Topography, landing areas, and coral.
25. Moro Gulf sheet, Mindanao—Topography, landing areas, and coral.
27. Zamboanga and vicinity, Mindanao—Hydrographic chart. HO 4645.

PLAN

29. Batulaki sheet, Mindanao—Topography, landing areas, and coral.
30. Cape San Agustin sheet, Mindanao—Topography, landing areas, and coral.
31. Pakiputan Strait, Mindanao—Hydrographic chart. HO 4656.
32. Lianga sheet, Mindanao—Topography, landing areas, and coral.
33. Basilan Island—Landing areas and coral. USCGS 4511.
34. Isabela Channel, Basilan Island—Hydrographic chart. USCGS 4543.
35. Southern part of Takut Tanguig Bay, Basilan Island—Hydrographic chart. USCGS 4540.
36. Jolo Island, Sulu Archipelago—Topography, landing areas, and coral. USCGS 4513.
37. Tawitawi Group sheet, Sulu Archipelago—Topography, landing areas, and coral.
38. Dalrymple Harbor and Capual Channel, Sulu Archipelago—Hydrographic chart. USCGS 4541.
39. North Borneo—Topography, hydrography, and landing areas.
40. Northeast Borneo—Topography, hydrography, and landing areas.
41. Dumpil Point to Gaya Head (including Gaya Island), Borneo—Landing areas. HO 2441.
42. Maruda Bay, Borneo—Landing areas. HO 2798.
43. Laukayan to Sandakan Harbor, Borneo—Landing areas. HO 2795.
44. Darvel Bay, Borneo—Landing areas. HO 2116.
45. Northwest part of Sibuko Bay, Borneo—Landing areas. HO 2793.
46. Island of Tarakan sheet, Borneo—Topography, landing areas, hydrography, and coral.
47. Northern Celebes—Coastal terrain.
49. Golf van Tomini, Celebes—Hydrographic chart. NHO 306.
50. Golf van Tomini, Celebes—Hydrography and landing areas. NHO 305.
51. Oostkust Celebes (Tg Flesko Tot Gorontalo)—Hydrography and landing areas. NHO 232.
52. Bintaoena sheet, Celebes—Topography.

(Continued on reverse)
TABLE OF CONTENTS—Continued

53. **Kotambagoe sheet, Celebes**—Topography, hydrography, and coral.

54. **Amoerang sheet, Celebes**—Topography, hydrography, landing areas, and coral.

55. **Menado sheet, Celebes**—Topography, hydrography, landing areas, and coral.

56. **Baaï van Amoerang to Tg Mariri, Celebes**—Topography. Portion NHO chart 344.

57. **Noorkust Celebes (Kwandang Baaï Tot Tg Mariri)**—Hydrography and landing areas. NHO 343.

58. **Noorkust Celebes** (Stroomenkaap Tot Kwandang Baaï)—Hydrography and landing areas. NHO 342.

59. **Kwandand Baaï, Celebes**—Hydrography and landing areas. Part of NHO 36.

60. **Noordwestkust Celebes** (Noordwachter Tot Stroomenkaap)—Landing areas. NHO 118.

61. **Westkust Celebes** (Delaka Tot Noordwachter)—Hydrography and landing areas. NHO 119.

62. **Celebes**—Views of Menado Harbor and Tondano Lake.
PLAN 1  JANIS No. 155
MINDANAO—Physiography and strategic routes
ROUTE 1. MAKAR TO COTABATO
Section 1. Road runs north-westward through the Koronadal Valley. Flat, gently rolling grassland. Possible for mechanized equipment to operate off the road.
Section 2. Flats, grassy plains with considerable swampy ground in the middle portion. Motor vehicles could operate off the road except in the swampy areas. Road raised above the general level of the swamps.
Section 3. Road passes through cultivated rice fields. Cross-country movement may be difficult during the rainy season when rice fields are flooded, limited even in the dry season by the network of waterways. Lower Pulangi-Mindanao River can be crossed by ferry, or by a wooden bridge.
Section 4. (Alternate road) Road crosses two narrow valleys, but there are several stretches of hilly land. Route cutshorted in the hill sections.
Section 5. (Alternate) Flat, grassy plain; swampy in the northern half. Ferry crossing over the Lower Pulangi-Mindanao River. Deployment of motor vehicles impossible in the swampy areas.

ROUTE II. COTABATO TO DAVAO (ALL-WEATHER ROAD)
Section 6. Road crosses low, cultivated plains. Ferry crossing of Lower Pulangi-Mindanao River. Road raised above the general level of the plain.
Section 7. Road passes through hilly country with a pattern of cultivated fields, grassland, and some patches of forest. These hilly sections alternate with narrow valleys under rice cultivation. Maximum elevation about 300 feet.
Section 9. Road ascends gradually southeast of Kabacan. Much of the forest has been cleared.
Section 10. Mostly open grass and brush land; forest in the ravines. Winding road with some moderately steep grades. Numerous bridges.
Section 11. Narrow coastal plain with gravel benches extending to the sea in places. Terrain flat to rolling. Between Dolores and Talomo, the road passes through plantations of abaca and coconuts. North of Talomo for a short distance, the road is raised above the low ground. Between Talomo and Mamon, there are abaca fields and scattered areas with a sparse brush and forest cover. The hills generally lie from 1 to 1 mile inland from the road.

ROUTE III. TRANS-BUKID NON HIGHWAY (BUGO TO KABACAN)
Section 12. Steep climb 1,500 feet in three miles. Although road is cut from hillside, blocking would be difficult. Vegetation on gently rolling summit is mainly cagong grass.
Section 13. Road winds along sides of ravines. Many spots suitable for ambush. Streams not permanent.
Section 16. Road crosses deep canyon. Sharp curves, steep slopes on either side. Vegetation mainly cagong grass, some brush. Road easily blocked in the canyon.
Section 17. Mostly open rolling grassland. Steep grades for two miles southwest of Malaybalay. Destruction of bridge over the Molipon River might be a serious hindrance to movement.
Section 18. Road crosses Pulangi River. Flat to hilly land. Some forest interspersed with open grassland and cultivated fields.

ROUTE IV. NORTH COAST ROAD -- LANUZA TO PAGADIAN
General Statement -- Entire Route. Road follows the coast at an average of a few yards to 5 miles inland. Terrain generally level except where the road crosses promontories. Route vulnerable to attacks from the sea throughout most of its length.
Section 19. Between Sumawit and Nasipit, there are several deep cuts where road blocks might be established.
Section 20. Between Osangon and Gingoog, there are numerous cuts 20 to 30 feet deep.
Section 21. Between Talayan and Salay -- steep slopes above and below the road. Vehicles could not operate off the road.

SULU SEA

Section 22. Some of the coastal plain in this section is low and swampy, and vehicles could not move off the road.
Section 23. Swampy ground near head of Panguill Bay.

ROUTE V. CAMP OVERTON TO THE COTABATO-DAVAO ROAD
Section 24. Road crosses narrow neck of land, 7 miles wide, between Panguill Bay and Pagadian Bay. Hilly wooded country (elevation about 1200 feet).

ROUTE VI. DAVAO TO TAGUM RIVER
Section 25. Two parallel roads, east branch cut out of steep hillside. Could be defended easily. West branch, along valley of Agus River, has more gentle grades and fewer cuts.
Section 26. Two steep hill sections where road could be destroyed. Two stream crossings could be forced only with great difficulty.
Section 27. Alternating stretches of open and wooded country. Ferry crossing at Mat兰ing River. Road very winding in places.
Section 28. Between Bugasan and Parang road is narrow and follows top of a bluff. Road winds through coconut plantations near Bugasan. Few cuts and no landslides. Two river crossings that are unfordable; one near Bugasan and one near Parang.

ROUTE VI. DAVAO TO TAGUM RIVER
Section 29. Road runs along level coastal plain backed by low foothills. Motor vehicles could maneuver off the road except in swampy areas between the road and the sea.
MINDANAO
STRATEGIC ROUTES

Numbers refer to Routes and Sections described above
CELEBES SEA AREA
VEGETATION

Rain Forest
Moss Forest
Grassland
Grass and Forest
Swamp
Cultivated and Scattered Fields
(including areas of secondary growth)
Plantations
(coconut, abaca and pineapple)

State and Division Boundary
International Boundary
Boundary of Janis 155

Statute Miles
Nautil Miles
Kilometers

NORTH BORNEO
INTERIOR NORTH BORNEO.
Forests with dense undergrowth, becoming less dense with distance from coast. Isolated fields and patches of second growth. Ridge summits in virgin rain forest with sparse undergrowth.

NORTHEAST COASTAL REGION.
The greatest portion in rain forest. Mangrove and hirsutifera swamps border shallow coastal channels where the rivers enter the sea.
BORNEO

INTERIOR NORTH BORNEO.

Forests with dense undergrowth becoming less dense with distance from coast. Isolated fields and patches of second growth. Ridge summits in virgin rain forest with sparse undergrowth.

INTERIOR - EAST BORNEO.

Mostly in forests with dense undergrowth which becomes less dense farther from the coast. Much second growth, scattered native fields of rice, corn, etc., and plantations of rubber, tobacco and coffee. Island valley bottoms are largely in cultivated land, second growth, and tall grass.

EAST BORNEO - NORTHEAST COASTAL REGION.

Extensive areas of mangrove and nipa swamps along coasts and rivers. Swamp forests along their drier margins and along rivers farther inland.

MIDDLE EASTERN COASTAL REGION.

Casuarina forests along much of the low sandy coast. Forested ridges extend to the coast. Extensive mangrove and nipa swamps at the mouths of the two largest rivers.

TAWITAWI.

Open coastal secondary land through scattered clearings in growth. Old land through understory growth.

SARAWAK.

SWATOKI.
SEA AREA

Swamp

Cultivated and Scattered Fields
(including areas of secondary growth)

Plantations
(coconut, abaca and pineapple)

NORTHEAST COASTAL REGION.

Forest portion in rain forest.

New and ancient swamps border
some of the larger confluences of the river

Forest streams where they merge into
swamps generally. Coconut trees along
smooth flat stretches of coast. Plantations,
scattered native fields, patches of grass
and secondary growth extend inland.

BASILAN ISLAND.

Forests cover over half the island.
Considerable marine vegetation and
much grasses of coastal marshes in
the northern and eastern parts. Scattered
cultivation on south side. Mangrove
swamps locally along the south
and east coasts.

JOLO ISLAND.

Largely in orderly cultivation or in
grazing land and patches of secondary
improvement. Formerly cultivated. Most
intensive cultivation around Jolo, Malimbung
and Parang. Minor areas of
mountain and hill country remain in
forest.

TAWITAWI ISLAND

Open cultivated fields, grass beds and
secondary growth around Ballimbing
in the southern part. Elsewhere
isolated cleared spaces amid secondary
growth along the coast, grading
inland through rain forest with dense
undergrowth to forests with sparse
undergrowth. Mangrove and swamp

TAPUL ISLAND GROUP.

Open fields and groves of tropical
fruits in orderly arrangement. Back
country in plantations, grass land or
second growth.
MINAHASA - WEST SIDE
Coastal plains and foothills covered with grass in most places. Some rain forests with sparse undergrowth on mountain slopes. Considerable cultivation of rice, corn, coconuts, rubber, and tobacco on flat or rolling lands.

MINAHASA - EAST SIDE
Comparatively dry forests. Cultivated areas and grass lands formerly cultivated on flat areas and extending up the mountain slopes. Cultivated lands and grass lands. Wet peatlands in the area around Tomohon Lake.

SANDINE ISLANDS
Coconut groves and plantations along the coast. Native fields or clearings with second growth inland. Mangrove swamps on eroded coasts.

NORTHERN PENINSULA - WEST SIDE
Rain forests extending inland from the coast to the outskirts of towns and villages. Dense rain forest along the coast with lower densities of vegetation inland.

CENTRAL Halmahera
Coconut groves along shores north of Ablambo Swamp, north of village. Mangrove swamps along coastal and inland margins. Dense forests inland.

NORTHERN PENINSULA - EAST SIDE
Coastal groves, fields, wind growth and grassland covered. coconut and palm fields south of Ternate.

MINANGKABAU ISLANDS
Coconut groves along coasts and fields not the coastal regions, and are more scattered inland. East side of Ternate most highly cultivated. Dense forests and second growth on mountain slopes. Mangroves common on east coasts.

SOUTHERN PENINSULA
Rainforests extend on the eastern shores. coconut groves and swamp forest extend inland.

NORTHEASTERN PENINSULA
Rain forests extend to the shores except for a few stretches lined with coconut groves on the northeast coast, around Boeli and along Kawa Bay.

SOUTHERN PENINSULA
Coconut trees, mangrove forest, and swamp forest along the coastline. Dense rain forests further south.

ALUO ISLAND
Coconut groves along the coast. Plantations of coconut groves and second growth forest around the larger settlements on coast of northern part of the peninsula.
This oversized item has been filmed in sections

PLAN 3 JANIS No. 155
HALMAHERA—Coastal terrain
HO 3080
Area 31
Coast prevalingly steep and abrupt, backed by high, forested mountains. Rocky cliffs at places. Numerous narrow, discontinuous sandy beaches between headlands. Small coastal flats locally around Loloda Bay. Irregular, hilly islands with fringing reefs at a few places, both on islands and on mainland. Numerous rocks offshore.

Area 30
Coastal lowland: extends inland along 2 valleys. Sandy beaches fringed with coconut palms. Beaches or dunes locally along shore. Large swampy and marshy areas on inland side. Bordering by moderate to steep-sided hills and mountains. Access to Djalolo Plain to south via valley corridor behind coastal mountains.

Area 29
Moderate to steep forested slopes rise from narrow beaches or shore bluffs to high volcanic cones.

Area 28 Djalolo Plain
TOPOGRAPHY: Broad undulating lowland branching around 2 sides of high, steep-sided mountain ranges from shore. Continuous with valley of Lamo River, which crosses plain in meandering channel about 125 ft. wide. Stream banks of moderate height. High, ranking mountains rise steeply from plain. Fringing reefs on south.
GROUND CONDITIONS: Loam soil grades down into sand, silt, and clay, locally gravelly. Soils fairly well drained except in marshy and swampy areas near shore; give good footing and are easily excavated when dry. Beaches muddy and swampy on south, sandy on west.
VEGETATION: Coconut plantations extensive. Clearings and cultivated fields at many places. Larger areas of second growth forest. Bamboo thickets along streams. Mangroves along south shore and other swamp vegetation inland.
REMARKS: Possible airstrip sites. Access to interior via Lamo Valley.

Area 27
Irregular mountainous coast. Slopes steeper at north than at south.

Area 26 Dodina Bay
TOPOGRAPHY: Coastal lowland bordered in many places by shallow coral reefs. In Dodina Bay, scattered reefs lie a few feet below low water level. North side of bay commonly bordered by mangrove belt. Mangrove islands bordered by coral lie south and east of Sidangoli. Inland, ground rises gently to foot of mountains 1,000 to 2,000 feet in altitude. North of Sidangoli are broad rolling terraces backed by mountains. Terraces and rounded hills, 100 to 700 feet in altitude, form Dodina Inlet and restrict coastal plain to width of a few hundred feet or less. southeast of Inlet, gently undulating plain 2 to 4 miles wide, locally interrupted by hills 150 to 300 feet high. Beach generally broad and flat; some low ridges. Sweep mountains 1,000 to 2,000 feet high on inland escarpment.
Irregular mountainous coast. Slopes steeper at north than at south.

Area 26 Dodina Bay

TOPOGRAPHY: Coastal lowland bordered in many places by shallow coral reefs. In Dodina Bay, scattered reefs are a few feet below low water level. North side of bay commonly bordered by mangrove belt. Mangrove islands bordered by coral lie south and east of Sidangoli. Inland, ground rises gently to foot of mountains 1,000 to 1,500 feet in altitude. North of Sidangoli are broad rolling terraces 50 to 100 feet in altitude; backed by mountains.

Terraces and rounded hills, 100 to 700 feet in altitude, form Dodina isthmus and restrict coastal plain to width of a few hundred feet or less.

South of isthmus, gently undulating plain 2 to 4 miles wide, locally interrupted by hills 150 to 500 feet high. Beach generally broad and flat; some low beach ridges. Steep mountains 1,000 to 2,000 feet high on inland margin.

Sidangoli, Oba, and Toniko Rivers are only streams more than 125 feet wide. A few small streams east of Sidangoli disappear in coastal swamps.

GROUND CONDITIONS: Clay and clay loam predominant. Coarse-textured, sandy clay loam at foot of mountains. On lowland, soil grades downward into sandy silt and clay. On Dodina Isthmus, soil 15 to 30 feet deep; hard lava rocks or coral limestone exposed locally. Isthmus and higher parts of lowland are well drained. Fertile good in dry weather; deep mud when wet. Mangrove swamps and other local areas are perpetually wet. Beaches are rock, coral sand, or mud.

VEGETATION: Area largely covered by second growth forest and grassland; patches of rain forest and swamp forest common, especially south of the isthmus. Swamp forest and mangrove border most of area from Talaalea village to isthmus; cover islands near Sidangoli. Coconut plantations near Sidangoli and south of Toniko River.

REMARKS: No corridors into mountains of north and central Halmahera. Topography suitable for coastwise movement; on north side of bay, trails are at mountain front back of swampy shore. Short roads over isthmus and through Sidangoli Village. Airfield site can be found on Sidangoli terraces.

Area 25 Volcanic Islands

TOPOGRAPHY: Volcanic cones with steep sides, deeply ravined. Narrow coastal flats at some places; locally swampy or marshy. Elsewhere land rises with moderate to steep slopes directly from narrow beaches or coastal cliffs. Narrow, fringing reefs at a few places.

On Ternate, long narrow strip of coastal plain on east, shorter strip on south. Coastal slopes moderate on east and north, steeper on south, and steepest on west. Two small lakes at south and southwest.

GROUND CONDITIONS: Lava rock at or close to surface at many places; extends down to shore on northeastern Ternate. Soil in part is stony loam several feet deep; beaches gravelly; soils well drained and give good footing, but somnolence makes excavation difficult at places.

VEGETATION: On lower slopes of larger islands, particularly on east, large areas of cultivated fields and orchards, interspersed with patches of second growth forest. Virgin forest on higher slopes, with sparser, brushy vegetation near tops of higher peaks.

REMARKS: Larger islands circled by trails, with some stretches of road; trails also up mountain sides.

Area 24 Coast of west-central Halmahera

TOPOGRAPHY: Narrow irregular coastal lowland, a few hundred feet to 2 miles wide; locally restricted or interrupted by rocky headlands and steep-sided hills. Lowland is flat or gently undulating; many small marshes and swamps especially at river mouths. Beach ridges common. Coastal waters clear of reef except around Woda and nearby islands or at scattered points on mainland shore. Except Lamo River, streams are less than 100 feet wide. High rugged mountains rise 1,000 to 3,000 feet behind the lowland.

REMARKS: Intense very difficult of access. Native trails along coast.

Area 23 Pajahi Plain

TOPOGRAPHY: Coastal lowland; merges inland with broad irregular river basin; bordered by rugged mountains 1,000 to 3,000 feet high. Plain 6 to 9 miles wide; extends more than 1/4 miles inland. Flat or gently undulating, generally less than 100 feet in altitude. Some low terraces near margins, interrupted by 800-foot hill at southwest corner. Coast low and marshy; extensive marshes and swamps along Rai River and its tributaries; remainder of plain fairly well-drained. Mouth of Rai more than 200 feet wide; a few other streams between 100 and 200 feet wide.

REMARKS: Short trails on east side of area; no routes across plain. Trail from Pajahi-islam follows best possible overland route to Weda Bay. Possible airfield sites on better-drained parts of plain around Pajahi-islam.

Area 22 Coast between Pajahi-islam and Tagalajia

TOPOGRAPHY: Narrow strip of lowland a few hundred feet to 1/4 mile wide extends south nearly to Madi village; backed by very steep mountains 1,000 to 1,500 feet high. Broad coastal plain around Madi and Lifafa villages is surrounded by mountains. Flat or gently undulating surface largely covered by marsh; some sandy beaches of moderate width; low beach ridges locally. Talu flats north of Lifafa village. Low coast is interrupted by hills on south side of Madi. Madi River is only stream more than 100 feet wide.

REMARKS: Coastwise movement generally easy. Trail from Lifafa crosses narrow strip of coastal plains.
**Area 23 Volcanic Islands**

**TOPOGRAPHY:** Volcanic cones with steep sides, deeply ravined. Narrow coastal flats at some places; locally swampy or marshy. Elsewhere land rises with moderate to steep slopes directly from narrow beaches or coastal cliffs. Narrow, fringing reefs at a few places.

On Ternate, long narrow strip of coastal plain on east, shorter strip on south. Coastal slopes moderate on east and north, steeper on south, and steepest on west. Two small lakes at south and northwest.

**GROUND CONDITIONS:** Lava rock at or close to surface at many places; extends down to shore on northeastern Ternate. Soil in part is stony loam several feet deep; beaches gravelly; soils well drained and give good footing, but stoniness makes excavation difficult at place.

**VEGETATION:** On lower slopes of larger islands, particularly on east, large areas of cultivated fields and orchards, interspersed with patches of second growth forest. Virgin forest on higher slopes, with sparser, brushy vegetation near tops of higher peaks.

**REMARKS:** Larger islands circled by trails, with some stretches of road; trails also up mountain sides.

**Area 24 Coast of west-central Halmahera**

**TOPOGRAPHY:** Narrow irregular coastal lowland, a few hundred feet to 2 miles wide; locally restricted or interrupted by rocky headlands and steep-sided hills. Lowland is flat or gently undulating; many small marshes and swamps especially at river mouths. Beach ridges common. Coastal waters clear of reef except around Waola and nearby islands or at scattered points on mainland shore. Except Lamo River, streams are less than 100 feet wide. High rugged mountains rise 1,000 to 3,000 feet behind the lowland.

**REMARKS:** Interior very difficult of access. Native trails along coast.

**Area 25 Pajah Plain**

**TOPOGRAPHY:** Coastal lowland; merges inland with broad irregular river basin; bordered by rugged mountains 1,000 to 3,000 feet high. Plain 6 to 9 miles wide; extends more than 81/4 miles inland. Flat or gently undulating surface; some sandy beaches of moderate width; low beach ridges locally. Tidal flats off coast. Lowland is interrupted by hills on south side of Mardi. Tidal flats north of Mardi village. Lowland is interrupted by small islands on north side of Mardi. Tidal flats north of Madi River are rocky islands; slopes commonly rise directly from the sea. Other small islands off west coast are generally low and rolling. Small marshes common.

**REMARKS:** Coastal lowland. Several poor cross-mountain trails.

**Area 20 Batjan Island Group**

**TOPOGRAPHY:** Most of Batjan has rugged mountainous coast. Locally strips of lowland lie between mountain front and sea. Rolling plains form narrow isthmuses of Labohe and Wajoa. Extensive swamps and marshes on Laboko Island, and on coastal lowland of northwest Batjan. Tidal swamps in part bordered by beach ridges. A few streams more than 150 feet wide; numerous smaller streams.

Kasiroka, Manado, and most other islands of group have rough mountainous coasts interrupted at only a few places by lowlands. Some small, low, and rounded islands.

**REMARKS:** Except for well-travelled isthmuses on Batjan, interior of islands are difficult of access. Airfield sites can be found on Batjan isthmuses, on Manado and Kajo.
Narrow strips and pockets of coastal flats alternate with hilly to mountainous coast and terraced coastal slopes. High, heavily forested mountains in hinterland. Many small streams. Coastline locally cliffed. Beaches generally narrow, but locally broad at low tide.

One larger strip of coastal plain on east side. Surface flat to undulatory. Abrupt rise to mountains on inner side. Sandy beaches. Possible airfield site.

Topography of North Leobo Islands similar to mainland, but relief lower and coastal flats virtually absent.

Narrow fringing coral reefs at scattered localities.

Area 2 Morotai

TOPOGRAPHY: Diversified coastal topography includes stretches of lowland, terraced slopes, hilly areas, and steep, mountainous slopes. Relief minimum at southwest and west. Numerous streams, many of moderate to large size, and some navigable by small boats. Large coastal plain at southwest corner, and smaller one in vicinity of Wajibola at west. Surface flat to undulatory. Gradual rise on inland side at both places.

Small islands off southwest coast are low, with flat to rolling surfaces. Larger island of Raue is hilly with low to moderate slopes at shore; slopes steeper at higher elevations.

Fringing coral reefs at places along shores of main island and around some of smaller islands.

GROUND CONDITIONS: Sandy loam to clay soils, grading down into sand, silt, and clay locally gravelly, or lying on coral rock at depths of a few feet to several feet. Soil drainage fair to good, except in local marshy patches. Good footing when dry; moderately muddy when wet.

VEGETATION: Tropical rain forest, with some coconut palms along shore; bamboo along streams; local clearing and second growth forest around settlements.

REMARKS: Possible airfield sites near Wajibola and on coastal plain at southwest.

Area 3 Galela Plain

TOPOGRAPHY: Broad lowland surrounded by high, rugged mountains. Lakes near center bordered by 2 small, steep-sided volcanic cones; conspicuous landmarks. Flat to undulatory surface at north; low, rolling hills at south. Abrupt rise to bordering mountains at north, more gradual rise at south. Crossed by winding channel of Tubo River, about 50 yds. wide. Low, rounded beach ridges up to about 10 ft. high along shore north of Galela; low sea cliffs along shore south of Galela.

GROUND CONDITIONS: Sandy loam to clay soils grading down into sand, silt, and clay locally gravelly, on lowland surface. Fair to good drainage except in large swamps near shore north of Galela. Good footing except during and immediately after rain. Volcanic cinders near ground surface on conical hills, and lava rock at or near surface locally south of Galela. Sandy beaches north of Galela, rocky shore south of Galela.

VEGETATION: Large areas of grassland on inland side. Clearings, cultivated fields, patches of second growth forest, virgin forest, and swamp vegetation in rest of area.

REMARKS: Jap airfield north of Galela. Other possible airfield sites. Narrow valley corridor extends to west coast. Shore road south to Tobelo.

Area 4

Narrow terrace at foot of steep volcanic cone with sides grooved by numerous ravines. Terrace bordered by low sea cliff. Rocks along shore. Coconut palms and other forest vegetation. Road on inner side of terrace reported recently blocked by lava flow.

Area 5 Tobelo Plain

TOPOGRAPHY: Flat to undulatory lowland strip averaging about 1.5 miles wide. Gradual rise to high mountains on inner side. Crossed by a few small streams.

Several low-lying islands up to more than 2 miles long a few miles offshore. Fringing coral reefs at places along island and mainland shores.

GROUND CONDITIONS: Loam soil, sandy near shore, grading down into sand, silt, and clay, locally gravelly. Good drainage except in local marshy tracts. Good footing except during and immediately after rain. Beaches sandy.

VEGETATION: Coconut palms both on islands and on mainland; partly in plantations. Some grassland at north. Bamboo along streams. Virgin forest and second growth forest in rest of area.

REMARKS: Jap airfield on Mitu Island. Other possible airfield sites. Road at north continuous with horse trail at south; follows shore.

Area 6

Broad terrace flats and gentle slopes extending several miles inland; sea cliffs and bluffs 150 to 300 ft. high. Stony ground near shore. Beaches narrow or absent. Terrace edge cut by irregularly spaced, narrow, V-shaped valleys.

Area 7

Undulated rolling plains and rolling hills leading gradually up from shore to heights overlooking Kaoe Valley. Widely spaced valleys of moderate size cut below general level. One low-lying island about a mile offshore. Narrow sandy beaches. Possible airfield sites.

Area 8 Kaoe Bay

TOPOGRAPHY: Coastal lowlands, diverse in size and shape, alternate with stretches of hilly to mountainous coast and terraced coastal slopes. Lowlands bordered by mountains. Moderate to large streams...
Area 6

Broad terrace flats and gentle slopes extending several miles inland; sea cliffs and bluffs 150 to 300 ft. high. Stony ground near shore. Beaches narrow or absent. Terrace edge cut by irregularly spaced, narrow, V-shaped valleys.

Area 7

Undulatory sloping plains and rolling hills leading gradually up from shore to heights overlooking Kaoe Valley. Widely spaced valleys of moderate size cut below general level. One low-lying island about a mile offshore. Narrow sandy beaches. Possible airfield sites.

Area 8 Kaoe Bay

TOPOGRAPHY: Coastal lowlands, diverse in size and shape, alternate with stretches of hilly to mountainous coast and terraced coastal slopes. Lowlands bordered by mountains. Moderate to large streams enter bay on all sides.

Principal lowland is at mouth of Kaoe River, one of largest streams of island; continuous with broad interior basin. Bordered by low, rolling hills on east and higher, steeper hills on west. Sand bars at river mouth. River channel about 80 ft. wide. Banks low.

Beaches narrow or absent where shore is steep; locally broad along lowlands. Narrow fringing coral reefs at a few places.

GROUND CONDITIONS: Sandy loam to clay soil, grading down into sand, silt, and clay locally gravely, on lowlands. Large areas of swampy and marshy ground along and in from lowland shores; elsewhere not too wet; is easily excavated.

Along steeper stretches of coast, soils grade down into bedrock at depth of several feet; well drained; footing good.

Beaches sandy to muddy along lowlands, sandy to rocky elsewhere.

VEGETATION: Coconut palms along shore at many places. Some grassland on Kaoe Plain. Clearings and second growth forest near settlements. Mangroves and other swamp vegetation along and in some lowland areas. Virgin tropical forest elsewhere.

REMARKS: Jap airfield near Kaoe; another airfield reported across bay at Waisile. Kaoe Valley provides access to interior; lower course of Kaoe River navigable by small boats. Isthmus corridor from west end of bay leads to west coast. From south shore of bay, a direct overland route extends to head of Weda Bay.
Area 9 Wasile Bay

**TOPOGRAPHY:** Broad, flat to undulatory lowlands at east and north, separated by stretch of terraced shore. At south, shore terraced to hilly. Several moderate size streams. Abrupt rise to mountains east of main coastal plain, more gradual rise from plain at north. Narrow fringing reef at north.

**GROUND CONDITIONS:** Loamy soil grading down into gravel, sand, silt, and clay, and at north locally underlain by coral rock. Soil fairly well drained, gives good footing, is easily excavated; muddy when wet. Beaches sandy.

**VEGETATION:** Coconut palms along shore, bamboos along streams, and virgin tropical forest on rest of area except for local clearings and second growth forest tracts near settlements.

**REMARKS:** Several possible airfield sites. Difficult mountain trail gives access to north shore of Boeli Bay.

---

Area 10

Terraced coast rising gradually toward interior mountains. Narrow sandy beaches. Moderate to steep shore slopes, locally rocky. Widely spaced streams of moderate size. Fringing coral reef at northeastern tip. One narrow lowland strip with possible airfield site.

---

Area 11

Broad, flat to undulatory lowland. Steep, abrupt rise to high mountains at west; less abrupt rise to mountain at south and to high hills at north. One isolated hill at south shore. Crossed by a few large streams and a few minor streams. Beach ridges locally. Narrow fringing coral reefs at a few places.

Several possible airfield sites. No easy access to other parts of peninsula.

---

Area 12

Hilly coast with moderate to steep slopes rising from sea or narrow discontinuous beaches. A few streams of moderate size and many small streams.

---

Area 13 Boeli Bay

**TOPOGRAPHY:** Coastal lowlands fronted by sandy beach; separated by rough steep-sided ridges and prominent rocky headlands. High rugged mountains rise from inland margins. Most extensive lowland is on south shore. Narrow east half is flat and swampy except for beach ridges and local coastal terraces. West half includes broad valley flats of lower Nau River; flat or gently undulating and fairly well-drained. Lowlands on northwest and north sides of Bay are 10 to 11 miles long, 1 to 3 miles wide. Plains slope gently seaward from mountain front; fairly well-drained. Many small reefs in Boeli Bay, some dry at low tide.

Steep rugged islands off the rocky headland near Boeli Serani.

**REMARKS:** Short stretches of trail along parts of coast. Mountainous interior inaccessible except by a few difficult foot paths.

---

Area 14 Southeast arm from Bitjoli village to Cape Ngolopopo

**TOPOGRAPHY:** Narrow discontinuous lowlands and low rocky terraces interrupted locally by rugged headlands. Large area of marsh on lowland of Tog. Ingangal. Hinterland of high terraces and steep-sided mountains. Coast bordered at several points by reefs. Several coral islands off-shore. Mosor and Sajahi are hilly in part, locally more than 280 feet high. Others low, rounded, less than 100 feet in altitude.

**REMARKS:** Mountainous interior; inaccessible. A few short coastwise trails. Short road on Ingangal Island.

---

Area 15 South Coast of Southeast Peninsula

**TOPOGRAPHY:** Rugged mountainous coast. In a few places, narrow strips of lowland lie between the steep mountain front and the sea. Small swamps common at river mouths. A few streams are more than 150 feet wide in lower reaches; numerous smaller streams.

**REMARKS:** Mountainous interior inaccessible except for a few difficult trails. A few short coast-wise trails.

---

Area 16 Lelilef to Sosowomo

**TOPOGRAPHY:** Flat or gently undulating plain of Kobe River and its tributaries extends 8 to 10 miles inland from Weda Bay. Width 4 to 6 miles. Valley has low marginal hills and terraces bordered by high mountains. River plain locally swampy. Largest swamp is at mouth of Kobe river, which is more than 400 feet wide in its lower reaches. Low beach ridges along the shore.

Along coast south of Kobe plain, narrow irregular lowlands alternate with low hills and coral limestone terraces. Except broad valley of middle and upper Fidi River, hinterland is rough and mountainous. Reefs along parts of coast. A few small coral islands and submerged reefs off-shore from mouth of Fidi.

**REMARKS:** Some short coastal trails. Trails leading north through Kobe valley follow most direct overland route to western side of Kobe Bay. Airfield sites can be found in better drained areas on east side of lower Kobe Valley.

---

Area 17 East coast of southern peninsula

**TOPOGRAPHY:** Flat or gently rolling coastal plain of irregular width extends without interruption from Cape Sosowomo south to Bubula Island. Low hills and coral limestone terraces. Few isolated reefs off-shore from mouth of Fidi. Lowland is drained by several streams. Beaches are narrow and sandy. Coral islands and reefs off-shore from mouth of Fidi.

**REMARKS:** Some short coastal trails. Trails leading north through Kobe valley follow most direct overland route to western side of Kobe Bay. Airfield sites can be found in better drained areas on east side of lower Kobe Valley.
Area 11

Broad, flat to undulating lowland. Steep, abrupt rise to high mountains at west; less abrupt rise to mountains at south and to high hills at north. One isolated hill at south shore. Crossed by a few large streams and a few minor streams. Beach ridges locally. Narrow fringing coral reefs at a few places. Several possible airfield sites. No easy access to other parts of peninsula.

Area 12

Hilly coast with moderate to steep slopes rising from sea or narrow discontinuous beaches. A few streams of moderate size and many small streams.

Area 13 Boei Bay

TOPOGRAPHY: Coastal lowlands fronted by sandy beach; separated by rough steep-sided ridges and prominent rocky headlands. High rugged mountains rise from inland margins. Most extensive lowland is on south shore. Narrow east half is flat and swampy except for beach ridges and local coastal terraces. West half includes broad valley flats of lower Nau River; flat or gently undulating and fairly well-drained. Lowlands on northwest and north sides of Bay are 10 to 11 miles long, 1 to 3 miles wide. Plains slope gently seaward from mountain front; fairly well-drained. Many small reefs in Boei Bay, some dry at low tide. Steep rugged islands off the rocky headland near Boei Serani.

REMARKS: Short stretches of trail along parts of coast. Mountainous interior inaccessible except by a few difficult footpaths.

Area 14 Southeast arm from Bitjoli village to Cape Ngolopo

TOPOGRAPHY: Narrow discontinuous lowlands and low rocky terraces interrupted locally by rugged headlands. Large area of marsh on lowland of Tg. Ingelang. Hinterland of high terraces and steep-sided mountains. Coastal bordered at several points by reefs. Several coral islands off-shore. Moorer and Saja are hilly in part; locally more than 280 feet high. Others low, rounded, less than 100 feet in altitude.

REMARKS: Mountainous interior; inaccessible. A few short coastwise trails. Short road on Ingelang Island.

Area 15 South Coast of Southeast Peninsula

TOPOGRAPHY: Rugged mountainous coast. In a few places, narrow strips of lowland lie between the steep mountain front and the sea. Small swamps common at river mouths. A few streams are more than 150 feet wide in lower reaches; numerous smaller streams.

REMARKS: Mountainous interior inaccessible except for a few difficult trails. A few short coastwise trails.

Area 16 Lellief to Sosowomo

TOPOGRAPHY: Flat or gently undulating plain of Kobe River and its tributaries extends 8 to 10 miles inland from Weda Bay. Width 4 to 6 miles. Valley has low marginal hills and terraces bordered by high mountains. River plain locally swampy. Largest swamp is at mouth of Kobe river, which is more than 400 feet wide in its lower reaches. Low beach ridges along the shore.

Along coast south of Kobe plain, narrow irregular lowlands alternate with low hills and coral limestone terraces. Except broad valley of middle and upper Fidi River, hinterland is rough and mountainous. Reefs along parts of coast. A few small coral inlets and submerged reefs off-shore from mouth of Fidi.

REMARKS: Some short coastal trails. Trails leading north through Kobe valley follow most direct overland route to western side of Kobe Bay. Airfield sites can be found in better drained areas on east side of lower Kobe Valley.

Area 17 East coast of southern peninsula

TOPOGRAPHY: Flat or gently rolling coastal plain of irregular width extends without interruption from the village of Sosowomo to the southern tip; merges westward with broad valley flats lying between long-finger-like ridges. Plain interrupted locally by isolated hills 300 to 800 feet high. Coast generally low and sandy; locally low beach ridges border the plain. Many streams more than 100 feet wide in their lower courses; some more than 200 feet. Only large areas of marsh and swamp lie between Foja and Boli rivers in north part of the plain.

REMARKS: Good coastwise foot trail. No easy routes to west coast, several poor trails cross mountains. Airfield sites can be found at many places on the plain.

Area 18 Tip of southern peninsula

TOPOGRAPHY: Sandy lowlands and raised coral reefs border irregular hills, ridges, and terraces 150 to 600 feet in altitude. Some low marshy areas around Gane Bay. Forest cover somewhat thinner with trees smaller and farther apart than on other lowlands; underbrush thicker.

REMARKS: Topography locally suitable for airfield sites.

Area 19 Damar and Dioronga Islands

TOPOGRAPHY: Broad flat coastal plains with small groups of rounded hills inland. Coast generally bordered by broad coral reefs. Mangrove swamps fairly common. Smaller islands of the group are mostly flat coral inlets; Woka is an atoll.

REMARKS: No trails or roads. Forest and swamp are serious barriers to movement inland.

CONFIDENTIAL
This oversized item has been filmed in sections

PLAN 4  JANIS No. 155  CONFIDENTIAL

HALMAHERA—Perspective views and relief diagram
Vegetation

Dense tropical rain forest or swamp forest covers most of the islands. Around settlements and on the larger plains are clearings, gardens, and thick bushy second growth. The virgin rain forest is a mixed stand of hardwood and softwood trees intergrown with a tangle of vines and other plants. Tree trunks are tall and straight, broad at base with buttressed roots; crowns form a continuous overhead canopy. Undergrowth is most dense along streams, in coastal lowlands, and near forest borders. Along streams dense bamboo thickets are common. On higher mountain ridges and drier terrace land along the coast, the forest thins, with trees becoming smaller and farther apart but the underbrush is more dense. Grass (alang-alang) plains are rare but may occur on coastal terraces. Thick stands of Sago palm cane-like vegetation occur in swamps above tide water level. Near the coast in brackish water grown nipa palms with thick fronds, no trunks, and sharp spikes hidden in the muck. Many tidal swamps have mangrove forests with tangles of prop roots. Coconut palms with little undergrowth border the sandier strips of shore.
Orthographic projection made mechanically from A.M.S. Netherlands Indies maps 1:100,000 and from A.M.S. T.N.G. maps 1:20,000 reduced to 1:100,000 with additional data sketched from photographs. Altitudes in meters above sea level. Vertical scale of plan 1:100.000. Extent of areas shown by stipple.

Scale

[Map showing geographical features and topography of the region, including contour lines and place names such as Ternate Island, Sahoe Mountains, and Loleta.]

TERRAIN DIAGRAM

ISTHMUS OF DODINGA
VEGETATION
Dense tropical rain forest or swamp forest covers most
of the islands. Around settlements and on the larger
plains are clearings, gardens, and thick brushy second
growth. The rain forest is a mixed stand of hardwood and softwood
trees, with crowns forming a continuous overhead canopy.
Tree trunks are tall and straight, broad at base with buttressed
roots. Undergrowth is dense along streams, in coastal lowlands,
and near forest borders. Along streams dense bamboo
thickets are common. On higher mountain ridges and drier
terrace land along the coast, the forest thins, with trees
becoming smaller and farther apart but the underbrush is
more dense. Grass (sang-sang) plains are rare but may
occur on coastal terraces. Thick stands of Sago palm and
cane-like vegetation occur in swamps above tide water level.
Near the coast in brackish water grown nipa palms with
thick fronds, no trunks, and sharp spikes hidden in the
muck. Many tidal swamps have mangrove forests with
tangles of prop roots. Coconut palms with little undergrowth
border the sandy strips of shore.

GROUND CONDITIONS
Soil is generally deep and clayey throughout the mountain
areas. On volcanic cones and on some of the steeper
ridges, however, the soil is rocky, and cliffs and ledges
are numerous. Most of the underlying rock is conglomerate,
hard lava rock, or limestone. In the lowland areas, the soil
is clayey or sandy, in places gravelly. On terraces along the
coast, it is fairly thin and clayey with hard coral limestone
locally at or near the surface. Most soils are well drained
and provide good footing when dry but all become muddy
and slippery during and after rains. There are large tracts
of swamp and marshland on many of coastal lowland
especially along the larger rivers. In dry seasons the
marshland may become fairly firm and passable but travel
is slow. Beaches commonly have mantle of rock fragments
or coarse coral sand. Small low inter-tides of coral rock overlain by sand or patches of clay soil.

GENERAL DESCRIPTION
TOPOGRAPHY
The 3 types of terrain characteristic of the coastal
regions of Halmahera are described below. The principal coasts
lowlands and larger swampy areas shown on the map;
mountains and higher terraces have been differentiated.

COASTAL LOWLANDS: Flat to undulating alluvial/plain crossed by a few fairly large rivers; numerous and
extensive along the east coast and on Morotai, less so along
the west coast and on the Batjan Islands.

LOW COASTAL TERRACES AND HILLS: Low rough-
surfaced or rolling terraces and broad rounded hills a few
hundred feet high; occupy large areas only on the east side
of Halmahera and on certain islands in the Batjan group.

MOUNTAINS: On Morotai, Batjan, and most of Halmahera,
mountains, which along the coast end in high cliffs or
steep rugged slopes broken by numerous sharp ridges and
steep narrow valleys. Makian, Moti, Tidore, and Ternate
Islands off the west coast of Halmahera are part of a chain
of volcanoes that extends diagonally across the northern
peninsula of Halmahera. The mountain ranges sharply de-
limit most of the lowland areas and, with few exceptions,
are unbroken by natural corridors which would permit easy
access into the interior of the island.
This oversized item has been filmed in sections

PLAN 5 JANIS No. 155 CENTRAL

NORTHERN HALMAHERA—Hydrography, landing areas, coral, and mangrove
VOORLOOPIGE SCHETSKAART
VAN HET EILAND
HALMAHERA
EN OMLIGGENDE EILANDEN
Schaal 1:300 000.

LEGENDA.

R. Standplaats van den Resident.
C. • • een Controller.
G. • • Gesaghebber.
O. • • • Districtshoofd.
- Gemene plek.
- Onderlinge buurten.
- Wegen met vaste afgebakken heinde.

VERKORTINGEN.
A. Aan.
N. Bat.
S. Soemagi.
T. Tribu.

Sjaal: 1:300 000.

ADMINISTRATIEVE INDEELING.

I. Aldeeling Ternate
   II. • Batjan
      Dist. Diolo meest a Solangoli
         - Sohoe
         - Ioe
         - Loloa
         - Oba
      Dist. Tubelo.
         - Moroati
         - Galera
         - Koec
         - Wande
      Dist. Wada
         - Naka
         - Gake

II. Aldeeling Halmahera
   - Naka
   - Gake

III. Aldeeling Halmahera
   - Naka
   - Gake

De grenzen van de onderafdelingen en districten zijn niet met juistheid bekend en op deze kaart slechts in grote trekken aangegeven.

N.B.: Bergmaten in Meters.
Sandy beaches backed by moderate slopes, swampy at river mouth. Landing place at Loldea village.

Narrow sandy beaches backed by coconut palms and moderate slopes.

Black volcanic sand beach backed by coconut palms, beach ridges or dunes locally. Inland swampy and wooded.

Narrow volcanic sand beaches scattered along rocky coast, locally sheltered. Beaches backed by low areas rising to forested volcanic slopes.
NOTE: FOR BEACHES ON MOROTAI ISLAND, SEE PLANS 15 to 17.
This oversized item has been filmed in sections

PLAN 6  JANIS No. 155  CONFIDENTIAL

SOUTHERN HALMAHERA—Hydrography, landing areas, coral, and mangrove
Landings possible on east coast. Backed locally by coconut palms and coastal plain rising to moderate slopes. Small pier at Waja village.
Coast generally sandy, backed by jungle. Coastal plain merges with valleys between ridges. Impassable surf during southeast monsoon.

Numerous small coral sandy beaches. Islands flat and densely wooded. Heavy surf at entrance to lagoon on west side at ebb tide.
### Administrative Units

Afdeeling is equivalent to state or province. Onderafdeeling is next sub-division; next is the district. The boundary lines of the Onderafdeeling and Districts are not very accurate.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>River, Stream</td>
</tr>
<tr>
<td>B</td>
<td>Mountain</td>
</tr>
<tr>
<td>G</td>
<td>Island</td>
</tr>
<tr>
<td>H</td>
<td>Hill</td>
</tr>
<tr>
<td>I</td>
<td>Inhabited Place</td>
</tr>
<tr>
<td>J</td>
<td>Seat of Resident</td>
</tr>
<tr>
<td>K</td>
<td>Seat of Controller</td>
</tr>
<tr>
<td>L</td>
<td>Seat of Administrator</td>
</tr>
<tr>
<td>M</td>
<td>Garrison</td>
</tr>
<tr>
<td>N</td>
<td>Seat of District Chief</td>
</tr>
<tr>
<td>O</td>
<td>Carriage Road</td>
</tr>
<tr>
<td>P</td>
<td>Bridge Path</td>
</tr>
<tr>
<td>Q</td>
<td>Footpath</td>
</tr>
<tr>
<td>R</td>
<td>Harbor Open for Trade</td>
</tr>
</tbody>
</table>

### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Island</td>
</tr>
<tr>
<td>G</td>
<td>Mountain</td>
</tr>
<tr>
<td>B</td>
<td>Mt, Hill</td>
</tr>
<tr>
<td>T</td>
<td>Cape</td>
</tr>
<tr>
<td>S</td>
<td>Strait</td>
</tr>
<tr>
<td>E</td>
<td>Islands</td>
</tr>
</tbody>
</table>

### Legend

- **R**: Boundary of Afdeeling
- **C**: Boundary of Sub-Afdeeling
- **G.H.**: Boundary of District
- **O**: Inhabited Place
- **J**: Seat of Resident
- **K**: Seat of Controller
- **L**: Seat of Administrator
- **M**: Garrison
- **N**: Seat of District Chief
- **P**: Carriage Road
- **Q**: Bridge Path
- **R**: Footpath
- **S**: Harbor Open for Trade

**MOLUKKEN ISLANDS, HALMAHERA**

Declasified
This oversized item has been filmed in sections.

PLAN 8  JANIS No. 155

DJAILOLO AREA, HALMAHERA—
Aerial mosaic
item has been

tions

PLAN 9      JANIS No. 155

AKELAMO SHEET, HALMAHERA—
Topography and landing areas
This oversized item has been filmed in sections.

PLAN 10    JANIS No. 155

TERNATE SHEET—Topography, landing areas, and coral
This oversized item has been filmed in sections.

PLAN 11 JANIS No. 155
TOWN OF TERNATE—Aerial mosaic
PLAN 12 JANIS No. 155
TOBELO SHEET, HALMAHERA—
Topography and landing areas
PLAN 14  JANIS No. 155

DODAGA SHEET, HALMAHERA—
Topography and landing areas
This oversized item has been filmed in sections.

PLAN 15  JANIS No. 155

MOROTAI—Landing areas and mangrove. NHO 386
NOORD HALMAHERA
EN
MOROTAI
1: 200.000

R.M. Opnamen en vaarten, Van Doorn '1920 en Van Gogh '1922-1924.

Of Grond, h. hord, K. Kol, K. Koel, M. Mudder, S. Scholten, St. Steeman, J. Zand.

DIEPTEN en BEGRHOOGDEN in METERS.
(Diepten bericht tot laguwatepeing i.d.M. beneden middenstand.)

NOORD-LOLODA EILANDEN

[X° 39']
's-Gravenhage, Directuur in Meir 1834 door het Ministerie van Marine Afdeling Hydrographie. Verzorgd van de Schepenen van Chief, April 34.
Sandy beach at Beri Beri village backed by narrow plain leading inland to steep slopes. Landing place in middle to south.

Possible sandy beaches. Landing difficult during northwest monsoon.

Continuous coral sand beach backed by narrow plain rising inland to high mountains. Heavy surf during northwest monsoon.
Continuous coral sand beach backed by narrow plain rising inland to high mountains. Heavy surf during northwest monsoon.

Sandy beach at Boose Boose village. Heavy surf October to March. Possible sandy beaches to south.

DISTRIBUTION
LANDING AREAS, AND MANGROVE

LANDING AREAS

MANGROVE
has been

PLAN 16    JANIS No. 155   CONFIDENTIAL
SANGOWE SHEET, MOROTAI—
Topography and landing areas
SANGIHE ISLAND SHEET—Topography, landing areas, coral, and mangrove
This oversized item has been filmed in sections

THIS ITEM HAS BEEN MICROFILMED AT A REDUCTION RATIO OF 16 x 1.

PLAN 19       JANIS No. 155
SIAOE ISLAND SHEET, SANGIHE ISLANDS—Topography, landing areas, and coral
TAHOELANDANG ISLAND SHEET, SANGIHE ISLANDS—Topography, landing areas, coral, and mangrove
TALAUD ISLANDS SHEET—Topography, landing areas, and coral
This oversized item has been filmed in sections

THIS ITEM HAS BEEN MICROFILMED AT A REDUCTION RATIO OF 16 x 1.

PLAN 22  JANIS No. 155  CONFIDENTIAL
LIROENG SHEET, TALAUD ISLANDS—
Topography, landing areas, and coral
MINDANAO SEA SHEET, MINDANAO—Topography, landing areas, and coral
This oversize item has been filmed in sections.
This item has been microfilmed at a reduction ratio of 1/2.

Plan 26 — JANIS No. 155

Pangutaran Group Sheet, Mindanao — Topography, landing areas, and coral
PLAN 28    JANIS No. 155
DAVAO SHEET, MINDANAO—Topography, landing areas, and coral
Plan 29
Janis No. 155
Batulaki Sheet, Mindanao—
Topography, landing areas, and coral

This item has been microfilmed at a reduction ratio of 16 x 1.
PLAN 31  JANIS No. 155  CONFIDENTIAL

PAKIPUTAN STRAIT, MINDANAO—
Hydrographic chart. HO 4656
PHILIPPINE ISLANDS
SOUTHEAST COAST OF MINDANAO
PAKIPUTAN STRAIT
Scale 1:20,000
Surveyed in 1930 and 1940
SOUNDINGS IN FATHOMS
AT MEAN LOWER LOW WATER
Not to be used for Navigational purposes
NOTE:
Currents in Pakiputan Strait run
short northward with flood
and southward with ebb.
The currents are strongest in the
northwest winds with rising and
falling tides.

SOURCE: U.S.C.G.S. CHART 4656 (1:20,000)
LIANGA SHEET, MINDANAO—Topography, landing areas, and coral