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# HANDBOOK

for

## SPECIAL OPERATIONS

# BORNEO

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HANDBOOK FOR SPECIAL OPERATIONS  
BORNEO



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### FOREWORD

This Handbook is designed primarily to support operational planners, unit commanders, and personnel who may be involved in special operations such as guerrilla warfare, counterinsurgency, civic action, or allied activities on the island of Borneo. The purpose of the Handbook is to present essential background material, some or all of which will be necessary for those planning and carrying out special operations. The Handbook is not designed for support of any specific operation or for support of any particular type of special operation. It is intended to supply basic essentials to which can be added more specific and more current details immediately prior to any operation.

Secondarily, the Handbook is designed to be useful as briefing, training, and familiarization material for those who do not have the time or need for more detailed reading. It will also serve as an introduction to Borneo for those who need further, more specialized study.

The principal sources used in the preparation of individual chapters of the Handbook are listed at the ends of the chapters. Users of the Handbook are encouraged to refer to these sources for more nearly complete coverage of the subject material.

Various names are commonly applied to the political divisions of Borneo. In this Handbook Kalimantan is used interchangeably with Indonesian Borneo, as Sabah is with North Borneo, and Malaysian Borneo is with ex-British Borneo. The latter two designations refer to Sarawak and Sabah together, now states of Malaysia. The general term northern Borneo refers to Sarawak, Brunei, and Sabah.

The cutoff date for material contained in this Handbook is 31 December 1963.

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## I. Introduction

The northern part of the island of Borneo has been transformed within the span of 2 years from a placid remnant of the British Empire into a focal point of rival power interests. A pattern of Indonesian-inspired, Communist-exploited insurgency has emerged: a hard-core dissident group operating in terrain that favors guerrilla activity; weak local governments whose electorates are divided by ethnic rivalries; and neighbors willing to exploit the area's domestic problems in order to further their own territorial claims or their ambitions to area leadership.

Although a Communist front organization has existed in northern Borneo since 1954, the tempo of political activity was slow until 1961. In that year, the government of Malaya proposed that Malaya, Singapore, Sarawak, Sabah (then called North Borneo), and Brunei form a federation, Malaysia. The Malaysian concept originated in Malayan and British fears that the Government of Singapore, the site of Commonwealth bases vital to western strategic interests and due to become independent in 1963, would fall under mounting Chinese chauvinism and pro-Chinese Communist pressures. According to the proponents of this concept, Singapore's merger with strongly anti-Communist Malaya, which would control internal security, defense, and foreign affairs for Malaysia, gave the best assurance of deterring further Communist growth. Singapore's overwhelmingly (75%) Chinese population, however, made this solution unpalatable to Malaya unless northern Borneo, which is largely non-Chinese, was also included. Malaya's ethnic balance is narrowly drawn between Chinese and Malays, although it is dominated politically by the latter. The incorporation of the northern Borneo territories into Malaysia also offered Britain an opportunity to end its colonial role in this area without granting premature full independence to unready native governments. After lengthy negotiations among member states which resulted in significant concessions to states' rights sentiment, Malaysia was formed on 16 September 1963. Brunei, however, decided not to join because of an unacceptable financial arrangement offered by the federation, questions of the Sultan of Brunei's standing in Malaya's Conference of Rulers which chooses the constitutional head of state, and the opposition to Malaysia expressed in Brunei's first popular elections in 1962.

Anti-Malaysia feelings are strongest among political groups already opposed to their local governments' policies. The abortive revolt of members of the pro-Indonesian Partai Ra'ayat in Brunei in December 1962 and a government crackdown

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on the Communist-penetrated Sarawak United People's Party caused the hard-core elements of these parties to withdraw into rural areas or to seek refuge in Indonesia. The Indonesian Government, which regards Malaysia as a continuation of British colonial power in the area and a block to its own ambitions to area leadership, has provided the dissidents with arms and military training for border raids into northern Borneo.

A number of new political parties, largely favoring Malaysia, have been organized by northern Borneo's major ethnic groups (Malays, Chinese, and tribal peoples). The British gave encouragement and guidance to local leaders in the formation and orientation of some of these parties. During elections in 1962 and 1963 the center and right wing parties won a majority of votes in Sarawak and Sabah. These parties now represent a promising basis for stable government.

The international situation created by the formation of Malaysia may prove more crucial to area stability than Borneo's domestic problems. Its birth was greeted by an emotional outburst in Indonesia which resulted in the sacking of the British Embassy in Djakarta and the temporary seizure of British enterprises. Malaysia was not granted diplomatic recognition by Indonesia or by the Philippine Government, the latter insisting that the Malaysian Government discuss Philippine claims to Sabah, which are based on the hereditary rights of the heirs of the Sultan of Sulu, now Philippine citizens.

Indonesia also cut off all trade ties with Malaysia, and economic losses threaten to be heavy for both sides. Indonesia could lose about 25 percent of its foreign exchange earnings, already critically short, if other outlets are not soon developed. Singapore estimates that its loss of Indonesian trade will amount to about 9 percent of its total national income and could result in the loss of jobs to some 20,000 persons, which would give a tempting target to renewed Communist labor agitation.

The Indonesian Government has begun a steady build-up of its military strength in Kalimantan and has stepped up covert operations against northern Borneo, apparently hoping to increase guerrilla strength to the point of toppling the government. The central Malaysian Government has placed its security forces on alert and has continued a crackdown on leftist elements in Singapore. Additional Commonwealth forces have been sent to northern Borneo from Singapore.

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Cross-border raids from Indonesian territory and increasingly effective Commonwealth military countermeasures have resulted in guerrilla warfare. Unless a political solution is reached, this guerrilla activity, combined with other elements of the confrontation, could well escalate into open warfare between the protagonists in this area.

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## II. Historical Background

### A. Chronology

- 1841 Beginning of hereditary rule by Brooke family in Sarawak
- 1881 British North Borneo Company established
- 1888 Brunei Sultanate became British Protectorate
- 1891 Boundaries established between British and Dutch spheres of influence
- 1929 Discovery of oil in Brunei
- 1941 Third hereditary Rajah of Sarawak promulgated constitution on centenary anniversary of Brooke rule
- 1945 Indonesian resistance to return of Dutch control began
- 1946 Rajah of Sarawak ceded territory to British Crown
- 1946 North Borneo established as British Crown Colony
- 1949 Dutch Government transferred sovereignty to Indonesian Government
- 1955 First popular (direct) elections in Indonesia
- 1959 Constitutional monarchy declared by Sultan of Brunei
- 1959 First popular (indirect) elections in Sarawak
- 1959 Indonesian 1945 Constitution readopted granting president virtually unlimited executive powers
- 1961 Prime Minister of Malaya proposed merger of Malaya, Singapore, Sarawak, North Borneo, and Brunei in a federation (Malaysia)
- 1962 Tour of Cobbold Commission (UK) to assess local sentiment for federation
- 1962 First popular (indirect) elections in Brunei (September); short-lived revolt by political elements in Brunei (December)

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- 1962 First popular (indirect) elections in North Borneo
- 1963 (June) Agreement for creation of Malaysia signed by United Kingdom, Malaya, Singapore, Sarawak, and North Borneo. Brunei declined to join. Inaugural date for Malaysia set for 31 August 1963
- 1963 (August) "Summit meeting" of heads of Malayan, Indonesian, and Philippine Governments resulted in creation of consultative association on regional problems (called "Maphilindo") and delay in formation of Malaysia pending UN-supervised assessment of local sentiment
- 1963 (September) Malaysia inaugurated 16 September

#### B. Introduction

Borneo has no documented early history, but various legends and early chronicles describe the island as subject to intermittent Chinese, Sumatran, and Javanese rule. During the 15th century, Borneo was part of the powerful Moslem empire at Malacca, and with its decline in mid-century sea-roving sultans based in northern Borneo extended their control along coastal areas. In the early 16th century western explorers, in search of the source of the rich spice trade, saw the magnificence of the Brunei court at the height of its influence. With the rise of western colonial power in the area in the 17th century, the Brunei Sultanate entered a period of decline in which piracy, slave trading, and headhunting became major occupations. The desire for peaceful seafarers and exploitation of natural resources led to increased British and Dutch activity on the island during the 19th century. The two governments in 1891 established the boundaries between their spheres of influence, which are the present borders of the northern states and Indonesian Borneo.

#### C. Sarawak

Private British interests in northern Borneo began in 1841 when James Brooke was granted the title of Rajah of Sarawak and a tract of land by the Sultan of Brunei for his help in settling a local revolt. Expeditions against lawless elements in the surrounding areas added to the territory controlled by the Brooke family, whose rule continued until 1941. In that year, the third (and last) Rajah Brooke gave up his autocratic powers and started the state toward self-government under a constitution. Following World War II, he ceded the territory to the British Crown. British colonial policy led

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to gradually increased popular participation in both local and national government, and in 1959 the first statewide elections were held.

D. Brunei

The Sultanate of Brunei by the end of the 19th century had been reduced to two small coastal enclaves by the expansion of North Borneo and Sarawak, and by the wars of local chieftains. The British Government made Brunei a protectorate in 1888 and restricted the Sultan's powers to matters of Moslem and native law in 1906. The discovery of rich deposits of oil in 1929 has had an important impact on Brunei's political and social development since World War II. An extensive development program was begun in 1953 to improve living standards, raise educational levels, and provide numerous social services. The British restored almost full executive powers to the Sultan in 1956, and in 1959 he enacted a constitution which provided for popularly elected representatives in national and local government. These progressive measures, however, brought with them a number of new problems. The development program stalled in 1959 because of inefficiency in administration, increasing corruption, and the vacillations of the Sultan's government. Unemployment increased as jobs failed to keep pace with newly educated applicants and as new construction slowed. General discontent was exploited by the Partai Ra'ayat whose leaders, despite their capture of all elected seats in the national legislature, found themselves still outnumbered by the Sultan's appointed majority. Since an abortive coup attempt by some of the party's members in December 1962, Brunei has returned to an outward calm, but its basic problems remain unresolved.

E. Sabah

Sabah (formerly known as North Borneo) came under British chartered company control in 1881. In that year, various foreign interests were consolidated in the British North Borneo Company following negotiations with the Sultans of Brunei and Sulu, each of whom claimed rights over the land involved. Company rule did little to encourage self-government, but provided a climate favorable for private investment and native progress. Sabah suffered extensive damage during World War II when it was occupied by the Japanese and regained by Allied forces. Rehabilitation was beyond company resources, and the territory was made a Crown Colony in 1946. In recent years the area has achieved rapid economic development. Self-government has been slower to develop, however, and popular elections were not introduced until 1962.

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F. Kalimantan

The modern history of Indonesian Borneo (Kalimantan) has been dominated chiefly by Javanese rather than local events. Dutch colonial control was centered in a few cities; the rural areas were controlled through the traditional rulers of local groups, with a minimum of direct contact with Dutch administrators. Most of the fighting against the return of Dutch control at the end of World War II took place on Java and Sumatra, and Borneo played only a minor role in the achievement of Indonesian independence. Javanese leadership has continued to dominate the Indonesian Government, causing considerable local resentment and, in some areas, minor dissident activity. By 1957 the central government had divided Kalimantan into the present four administrative areas (see map Population and Administrative Divisions) as a result of difficulties in administering it as one province and in response to some agitation for greater freedom in handling local problems.

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### III. Physical Geography

#### A. Introduction

Borneo, the third largest island in the world, occupies 288,154 square miles of territory, more than the state of Texas. It extends from 7°N across the equator to 4°S and from 109°E to 119°E. In the north are the British Protectorate of Brunei (2,226 square miles) and two states of the new federation, Malaysia -- Sarawak (48,250 square miles) and Sabah (29,388 square miles). The rest of the island (208,290 square miles) is Indonesian territory.

Anyone whose first-hand knowledge of Indonesia is based on visits to Java must revise his thinking to visualize Borneo. The mountains in Borneo are lower and less rugged than those in Java, and in many other respects Borneo contrasts sharply with its neighbor island to the south. In Borneo the rivers are long and form an integral part of the communications system, there are no active volcanoes (there are 16 on Java), earthquakes are uncommon (only about 4 a year as against 55 a year on Java), cultivated areas are small and scattered, and much of the area is unpopulated.

Borneo is largely unexplored or very inadequately known. It is a land of jungle; more than 90 percent of the island is covered with dense evergreen forest. To illustrate the completeness of the vegetative cover, it has been said that an orangutan could travel through Borneo from end to end without once touching the ground.

Mountain ranges covered with dense tropical forest occupy most of the interior of Borneo; poorly drained lowlands, also covered with dense tropical forest, occupy the coastal regions and extend inland more than 100 miles in some areas. Non-forested areas are small, scattered, and generally limited to cultivated clearings along the rivers.

The physical characteristics of Borneo make the island much more suitable for unconventional warfare than for conventional military operations. Mountains in the interior, swamps in the lowlands, and dense forest throughout -- including almost impenetrable forests of mangrove and nipa palms along much of the coastline -- preclude cross-country vehicular movement in all but a few small, scattered areas. Cross-country foot travel, although generally possible throughout the island, is arduous in most parts. The absence of good paths and easily visible landmarks makes it difficult to find one's way, even with the help of a compass. Travel at night

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is doubly difficult, as the forest is pitch black. Steep slopes are a deterrent to foot movement in parts of the interior. The mountains themselves are generally not hard to climb, however, as all except the highest and those with occasional sheer faces of bare rock are tree covered all the way to the top and the trunks and exposed roots provide hand-holds on slopes that would otherwise be too steep to climb.

The areas most unsuited to cross-country movement are the vast, densely forested, poorly drained lowlands. The combination of saturated sultry atmosphere (temperature and humidity are consistently high), land leeches (which no clothing will effectively keep out), and innumerable streams that must be forded, makes overland travel in Borneo extremely uncomfortable. The numerous rivers, although subject to flooding at any time of the year, provide the best transportation routes on the island.

## B. Terrain, Drainage, and Vegetation

### 1. Terrain

A central mountainous backbone trends northeast-southwest (see map Terrain) from Marudu Bay at the northeastern tip of Borneo nearly to Tandjung Sambar at the southwestern corner. This backbone divides rivers that flow to the South China Sea on the northern and western sides of the island from those that flow toward the Sulu Sea, Celebes Sea, and Makassar Strait on the east and toward the Java Sea on the south. The central backbone, together with two secondary ranges that extend laterally from it toward the sea, forms a very rough "X" pattern which extends to the four corners of the island and divides it into Western, Southern, Eastern, and Northern Lowland Regions. One of the two lateral ranges that forms part of the "X" pattern lies north of the watershed of the Kapuas River and extends from the central range to Tandjung Datu at the northwestern tip of the island. It forms the boundary between western Sarawak and Indonesian Borneo and separates the Northern Lowlands from the Western Lowland. The other lateral range extends southward from the east-central part of the island -- west of the Mahakam Basin -- almost to Tandjung Selatan at the southeastern corner. It separates the Eastern Lowlands from the Southern Lowland. The Western and Southern Lowland Regions are continuous, whereas the Eastern and Northern Lowland Regions comprise several individual lowlands separated by spurs from the interior mountains.

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Hilly or mountainous terrain occupies more than half the island. Elevations in the upland regions are generally less than 6,000 feet above sea level, and most ranges are breached by gaps and passes at elevations of less than 1,000 feet. Most of the mountain chains consist of short ranges with isolated peaks and many low passes rather than of continuous high ridges that extend for great distances. Some ranges have flat-topped mountains with steep sides; others have knife-edged ridges, summits barely wide enough to walk on, and steep slopes. The lowland regions are monotonously flat and poorly drained and may be under water several months of the year.

## 2. Drainage

The upper courses of most of the rivers of Borneo have steep gradients and steep valley walls. Waters are turbulent, and flash floods -- with rises in stream level of more than 30 feet in a few hours -- are common throughout the year. In the foothills, valleys are generally wider and stream gradients more moderate than in the mountains, but there are occasional gorges and rapids. Flash floods may occur at any time, particularly in the narrower valleys. In the lowlands, rivers generally meander sluggishly in broad channels. The streams are usually braided, and channels shift continually. Banks are low and muddy, and sandbars and mudbars are numerous in the stream channels. Long, narrow lakes that occupy beds abandoned by the shifting channels dot the landscape. During wet weather, wide areas along the stream channels are inundated to depths of several feet and one can wander for miles in a small boat through quiet flooded jungle.

Except for five of the major rivers -- the Kapuas, Mahakam, Kajan, Sesajap, and Rajang -- the rivers of Borneo form broad, shallow, single-channel estuaries as they empty into the sea. The above five rivers divide into numerous broad, shallow distributaries separated by mangrove-fringed islands of mud where they enter the tidal zone. These distributaries branch out to form broad deltas. At high tide the larger streams can be entered from the sea by fairly sizable vessels, but at low tide sandbars and mudbars block the entrances.

## 3. Vegetation

The mountains and hills of Borneo are, except for the highest peaks, covered with a luxuriant forest of broad-leaved evergreen trees. The few cultivated areas are generally confined to lower slopes and to river valleys. In the upland areas, up to an elevation of about 3,000 feet, the forest

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Figure 1. Tree of the tropical forest, illustrating development of plate-like buttresses along the base.

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Figure 2. The forest floor. Where the leaf canopy is dense, little sunlight penetrates to the forest floor, undergrowth is sparse, and movement by foot, although hindered in places by exposed roots, is relatively easy.

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Figure 3. The forest floor. Where the leaf canopy is sparse, such as along paths and streams, undergrowth is dense and foot movement off the trails is difficult.

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consists of trees up to 6 feet in diameter and up to 150 (and occasionally 200) feet in height. The trees commonly have a thin, platelike buttress that extends up the trunk as much as 15 feet and outward along the ground for several feet. The tree crowns form a canopy, generally 80 to 150 feet above the forest floor. There usually are secondary canopies at lower levels. Density of undergrowth in this type of forest varies according to density of leaf canopy and amount of sunlight received on the forest floor. Where the canopy is dense, the forest floor is quite open and free of undergrowth. Where the canopy is relatively open -- on the margin of clearings and along streams -- undergrowth is dense.

At elevations of about 3,000 to 7,000 feet, trees are smaller, generally less than 100 feet high and 3 feet in diameter, and undergrowth is denser. Evergreen shrubs commonly form dense thickets 4 to 6 feet high. Undergrowth is less dense along ridge lines where the soil is thinner and drier. Coniferous trees appear in this zone and become more common at higher elevations. On slopes where cloud cover is persistent, trees are no higher than 40 feet, gnarled, closely spaced, and festooned with wet moss; a mat of mossy vegetation, often several feet thick, covers the ground. Above 7,000 feet, a tangle of shrubs 3 to 4 feet high is interspersed with trees less than 20 feet high. Steeper slopes may be bare.

Salt-water swamp forests of mangrove and nipa palm are found along all coasts of Borneo but are most extensive on the eastern and southern coasts. These forests may extend unbroken along the coast for many miles and may extend inland along the major rivers as far as the tidal influence (up to about 20 miles). They vary in width from a few yards to about 2 miles. The mangroves grow on the outer (seaward) side of the salt-water swamp forest; nipa palms usually grow on the inner (inland) side and along the rivers. The mangrove tree is a broad-leaved evergreen, usually 10 to 100 feet in height and closely spaced. Although there is little undergrowth among the mangroves, the trees have a complex system of intertwined aerial roots that are exposed at low tide. The nipa palm has a horizontal trunk, usually buried in the mud, from which closely spaced fronds extend up to 20 feet. Movement through the mangrove and nipa forests is extremely difficult.

In many places, particularly on the north coast, the lowland regions are fringed on their seaward side by narrow sandy beaches covered by groves of casuarina -- a tree that resembles pine -- or coconut palms. The casuarina growth is quite sparse and does not offer much hindrance to movement.

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Figures 4 and 5. Mangroves at low tide (above) and high tide (below). Mangrove forests extend unbroken for many miles along the Borneo coasts. They vary in width from a few yards to about 2 miles.

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Figures 6 and 7. Nipa palms (above and below). Nearly impenetrable growths of nipa palms occur along the banks of many rivers inland as far as the tidal influence and sometimes along the inland side of the mangrove forests.

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Figure 8. Stand of casuarina trees. Groves of casuarinas are common on sandy beaches, particularly on the north coast. They offer little hindrance to foot movement but opportunities for concealment from ground observation are poor.

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Figures 9 and 10. Fresh water swamp forest. The swamp forest, which covers most of the lowland regions of Borneo, is dense, the ground is spongy at best and flooded at worst, and movement except by river craft is extremely difficult.

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Fresh water swamp forests extend inland from the area of tidal influence to the foothills of the interior and also cover much of the major interior river basins. They are most extensive on the northern, western, and southern parts of the island and least extensive in the east. These forests are generally similar to the broad-leaved evergreen forests of the upland areas, but the trees are smaller and more closely spaced. Roots are often above ground, and platelike buttresses extend well up the trunk more commonly than in the upland forest. There are many vines and low shrubs, and undergrowth is dense. The ground is muddy or spongy and much of the swamp forest is frequently inundated, particularly between November and April.

Scattered throughout the swamp forest are broad marshy depressions. They are of limited extent except along the Barito River in southeastern Borneo and in the interior river basins, notably the basins of the upper Kapuas and middle Mahakam Rivers. The vegetation of the marshlands consists of grass and reeds with scattered trees and bushes. The ground is damp and spongy throughout the year, and from November through April the marsh areas become lakes up to 5 feet deep.

C. Upland Regions (see Regions I through III on map Terrain)

1. Central Mountain Range

a. Northeastern Sector

The Northeastern Sector of the central mountainous backbone (which occupies most of Sabah) consists of a broad belt of high, steep-sided parallel ridges trending northeast-southwest and separated by narrow valleys. The ridges are generally more than 100 miles long; the westernmost ridge comes close to the coast. Sheer cliffs are common. Several pinnacles exceed 10,000 feet in elevation. The highest peak on the island -- Mount Kinabalu, in the Crocker Range on the western side of the mountainous belt and about 40 miles south of Marudu Bay -- is 13,455 feet high. Mountainous spurs extend eastward from the main range to the east coast where they form cliffs and rocky headlands.

b. Middle Sector

The central mountainous spine, the Middle Sector of which is made up of the Iran and Muller Mountain ranges, continues southwestward along the Kalimantan -- Sarawak border into Kalimantan. The Iran Mountains are generally rugged and

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Figure 11. Forested Uplands. This view of the Northeastern Sector of the Central Mountain Range shows typically heavily wooded and rugged topography of the Borneo Uplands. Note the scattered clearings in the right foreground. Mount Kinabalu is in the right background. The river is the Sungei Labuk.

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steep. Most crests are rounded and at elevations of 4,000 to 5,000 feet, although a few peaks are higher, the highest reaching 7,800 feet. A number of ridges extend westward toward the South China Sea and eastward toward the Celebes Sea. They generally terminate as low foothills near the coasts.

The Muller Mountains, which trend southwestward along the eastern side of the Upper Kapuas Plain, are a chain of peaks of volcanic origin, in part flat-topped, generally 4,000 to 5,000 feet above sea level. Slopes are almost vertical in places, particularly on the western side of the range where they drop sharply to the Upper Kapuas Plain. On the east, several low spurs extend eastward to the western edge of the Mahakam Basin.

### c. Southwestern Sector

The Schwaner Mountains trend southwestward from the Muller Mountains almost to the southwestern corner of the island. The Schwaner chain generally is lower (3,000 to 5,000 feet above sea level, although one peak attains a height of about 7,500 feet) and narrower than the Muller Mountains, with several passes at less than 1,000 feet. To the north the slopes of the Schwaner Mountains drop quite steeply; to the south they merge gradually with the hills of southwest Borneo.

## 2. Northwestern Mountains

A discontinuous chain of mountains that extends eastward from Tandjung Datu at the northwestern corner of the island forms the boundary between western Sarawak and Kalimantan. In the westernmost sector, west of Kuching, crests are generally low except for one peak of about 5,000 feet, and there are numerous passes at elevations of less than 300 feet. South of Kuching is a belt of limestone hills with steep slopes eroded into pinnacles in places and honeycombed with numerous caves. The rest of the chain, known as the Upper Kapuas Mountains, is characterized by greatly dissected east-west trending hills and low mountains separated by broad, flat to gently rolling valleys. Main ridges average less than 4,000 feet above sea level, but some peaks are higher. Although the forest cover is dense, the Northwestern Mountains, particularly between Tandjung Datu and Lubok Antu, are not a serious hindrance to north-south foot travel between Sarawak and Kalimantan. Movement is easiest in the sector west of Kuching. The Northwestern Mountains merge with the Iran Range northeast of the Upper Kapuas Plain.

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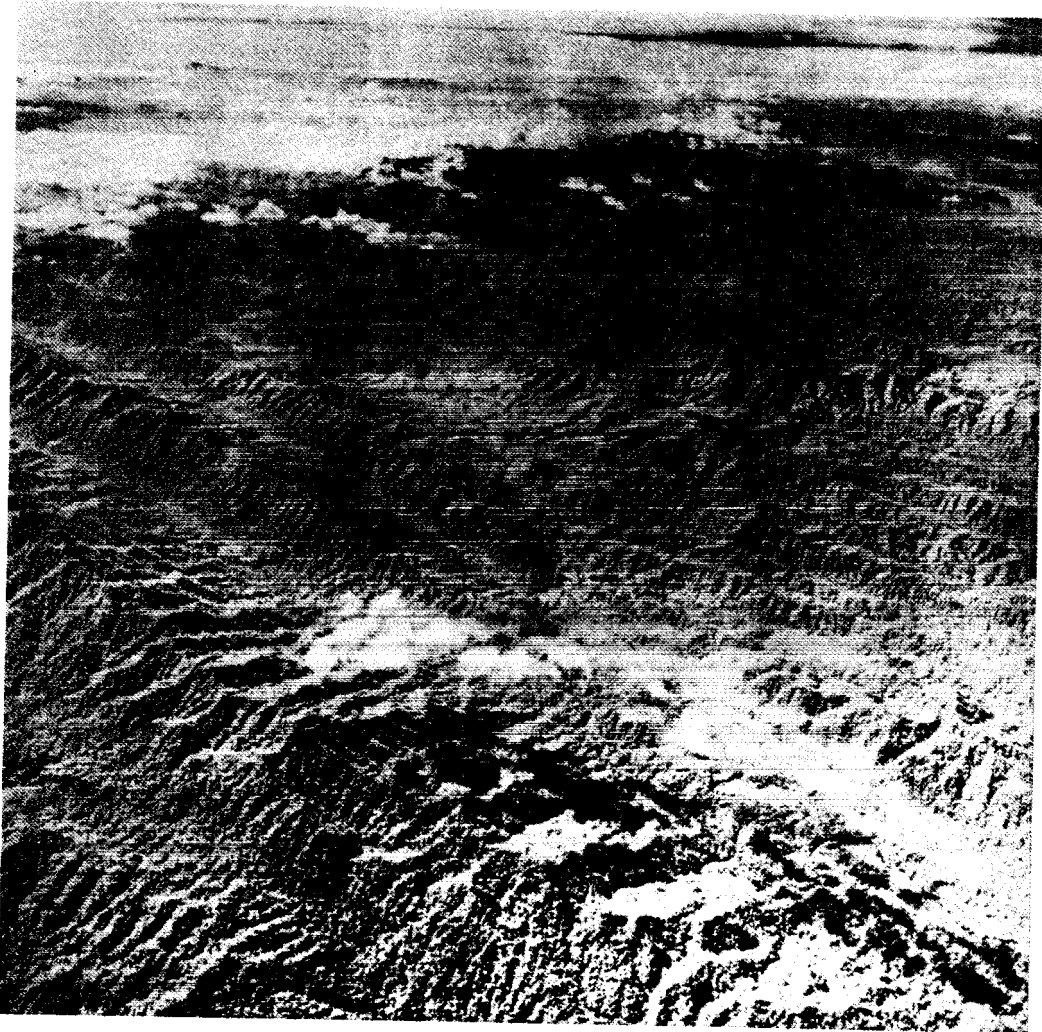


Figure 12. Mountains of southeastern Sarawak. These ridges are westward-extending spurs of the Iran Range. Slopes are steep, the forest cover is unbroken, and foot movement in the area would be difficult. The area is virtually uninhabited.

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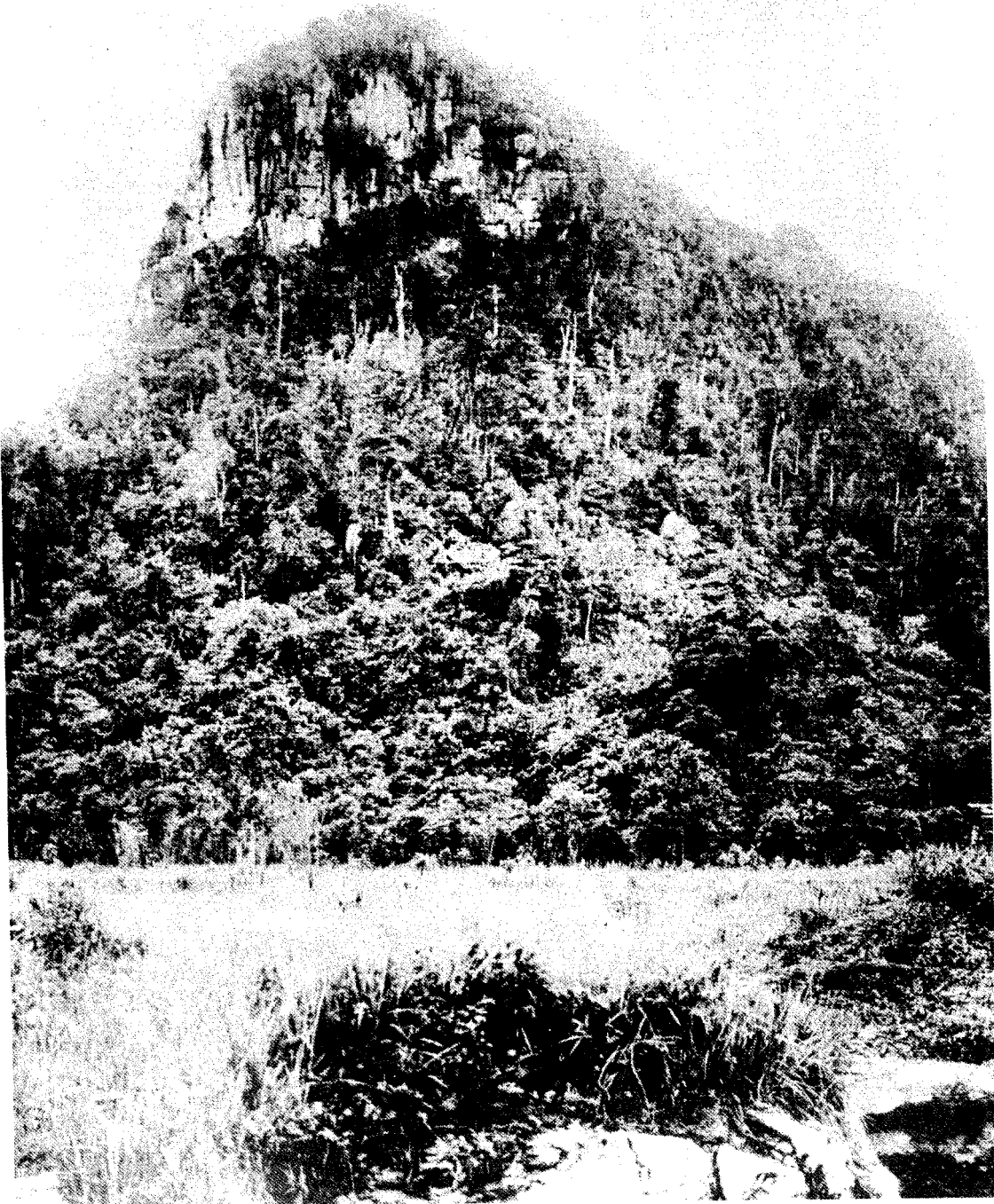


Figure 13. A limestone hill in Sarawak. Such hills, rising steeply above the surrounding terrain, are common south of Kuching and in Sabah. They are commonly honey-combed with caves.

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### 3. Southeastern Mountains

A series of low mountain ridges at elevations of about 2,000 to 4,000 feet forms the Meratus Range, which extends from the eastern spurs of the Muller Mountains southward to Tandjung Selatan. Several passes across the mountains connect the valley of the Barito River with the east coast. In the north, ridges trend almost due north-south; in the south they curve northeast-southwest.

### 4. Suitability for Operations

Vehicular movement in most areas of the Upland Regions is precluded by the dense forest cover and steep slopes. The only extensive area where vehicles may be able to travel is the lower western slopes of the Meratus Range in southeastern Borneo, where grasslands prevail. Even here movement is not easy because the grass is generally 2 to 4 feet high and has stiff, sharp blades.

Movement on foot by individuals or by small groups is possible throughout the Upland Regions, but is arduous in many places because of steep slopes and dense vegetation. Travel is easiest on slopes at elevations up to about 3,000 feet. Only on the margins of clearings and along streams is the undergrowth dense and movement hindered by tangles of trees and shrubs and climbing cablelike vines. Within the forest, undergrowth is sparse and movement is relatively easy.

On slopes at elevations of about 3,000 to 7,000 feet movement on foot is somewhat more difficult, as undergrowth is denser. On the highest slopes of the Upper Kapuas, Muller, Iran, and Crocker Mountains foot movement is seriously hindered by short, gnarled, closely spaced trees. These high elevations are easily avoided because passes at elevations below 1,000 feet are numerous.

Throughout the greater part of the Upland Regions, areas of grassland are few, small, and widely scattered. Most of them are located near the junction of the boundaries of Sarawak, Sabah, and Kalimantan, but the only extensive grasslands are on the western slopes of the Meratus Range. Movement on foot may be slowed by the sharp blades of the grass. During dry weather fire is a hazard.

Concealment from air and ground observation is good throughout the greater part of the Upland Regions. Only at elevations above 7,000 feet, where the slopes have sparse vegetation or are bare, and in the grasslands is concealment a problem.

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Figures 14 and 15. Grassland. Small, scattered grasslands are scattered throughout the Uplands, particularly in the Northeastern Sector of the Central Mountain Range and along the western slopes of the Meratus Range. The grass blades are stiff and sharp, up to 4 feet high, and burn easily during dry weather.

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A dense evergreen forest makes nearly all of the mountainous interior of Borneo unsuitable for use as aircraft landing zones and drop zones. Other than the grasslands on the western slopes of the Meratus Range, the only sizeable flat area suitable for use as a drop zone is a tableland in the mountains at the juncture of the Sarawak, Sabah, and Kalimantan borders. This tableland, which is about 30 miles from east to west and 50 miles from north to south, comprises the upper drainage basins of the Baram, Tutoh, Limbang, Trusun, Sesajap, and Bahau river systems. The flat areas are either cleared for cultivation or are abandoned and now support a grass cover. They were used as drop zones by the Allied forces during World War II.

D. Lowland Regions (see Regions IV through VII on map Terrain)

1. Western Lowland

The extensive lowland region of western Borneo is roughly triangular in shape and is bordered by the Northwestern Mountains on the north and by the Muller and Schwaner Mountains on the east and south. The region is divided into eastern and western halves by a belt of north-south trending low hills. To the east of this belt are the Upper Kapuas Plain and the watershed of the Melawi River. The Upper Kapuas Plain is 100 to 150 feet above sea level and is poorly drained. Terrain on its margins is rolling. The rest of the plain is flat, sprinkled with numerous lakes and swamps, and crossed by a complex system of channels and tributaries of the Kapuas River. Most of the plain is covered by evergreen forest with dense undergrowth. There are also scattered areas of marshland and cultivation. Most of the ground of the Upper Kapuas Plain always is moist and frequently between November and April is flooded. In dry weather, hollows filled with black mud dot the landscape.

The low-lying area south of the Kapuas River, which is the watershed of the Melawi River, is covered with grass. The entire area is damp throughout the year, but flooding is less frequent than in the Upper Kapuas Plain.

The lowlands of the west coast, which extend inland about 40 miles, are for the most part low, flat, poorly drained, and covered with dense evergreen forest. The northern sector of the west coast, between the Sarawak -- Kalimantan border and Singkawang, is low, mostly sandy but with stretches of mangrove, and backed by dense swamp forest. Hills descend close to the sea at Singkawang. Southward to the delta of

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the Kapuas River the coastal strip continues low and swampy with occasional patches of coconuts a short distance inland. The Kapuas Delta, which extends along the coast for more than 100 miles, consists of many mangrove-fringed distributaries. Most channels are obstructed by bars and shoals but are generally navigable by small craft. Offshore from the southern part of the Kapuas Delta are two large islands which are low, swampy, and fringed with mangroves. Numerous coral reefs and small islets extend southwestward from these islands. Between the Kapuas Delta and Tandjung Sambar at the southwest corner of Borneo, the shores are low and densely covered with swamp forest; there are a few rocky upland areas. North of Tandjung Sambar are some offshore coral reefs.

Potential landing beaches are scattered along the entire west coast except for the Kapuas Delta and other stretches covered with mangrove-nipa swamp. Exits from beaches into the interior, however, are blocked by dense vegetation.

Cross-country vehicular movement in the Western Lowland is precluded by the moist ground, frequent flooding, and dense vegetation. Similarly, movement on foot is arduous in the interior of the region throughout the year and particularly difficult between November and April when most of the region is flooded to a depth of several feet. The areas of grass along the Melawi River offer the least resistance to travel on foot, but the ground is spongy at best and is muddy or inundated during wet weather. Foot travel is extremely difficult in the coastal lowlands because of the dense vegetation, which is often nearly impenetrable close to the coasts, and because most of the land is inundated throughout the year.

In the Western Lowland, as in all lowland regions of Borneo, rivers offer the easiest and in many instances the only feasible way to travel. When traveling by river craft, however, it is difficult to avoid detection by the local people, who live mostly in small villages on raised banks of the main streams, away from the wilderness of channels, pools, and flooded forests.

Opportunities for concealment from ground and air observation away from waterways are excellent throughout most of the Western Lowland. Concealment is likely to be a problem only in the Upper Kapuas Plain and Melawi River grasslands and in the areas of native cultivation (which are generally confined to the northern banks of the Kapuas River and to the better drained coastal stretches north of Pontianak).

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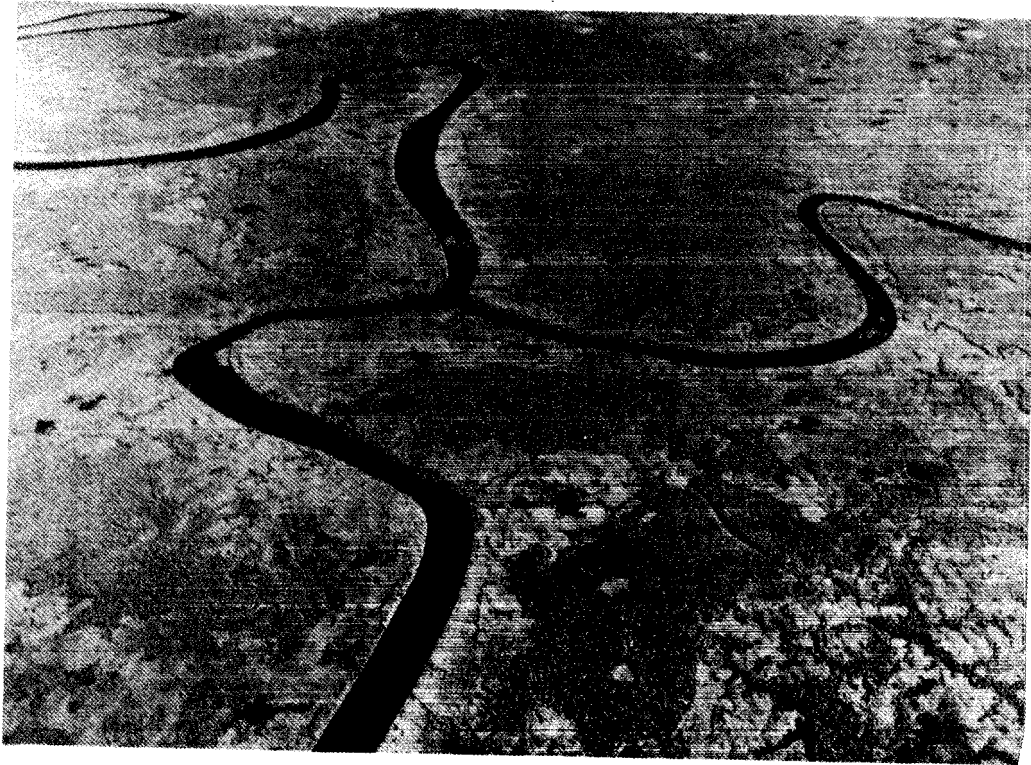


Figure 16. Confluence of the Kapuas and Melawi Rivers in the Western Lowland. The area is a patchwork of forest, cultivated land, and grass. The area is poorly drained although flooding is less frequent than in the upper stretches of the Kapuas. Sintang is located at the juncture of the two rivers.



Figure 17. Flooded grassland along a tributary of the Barito River in the Southern Lowland. Flooding is most extensive from November through April.

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No natural sites are suitable for aircraft landing zones in the Western Lowland because of the dense vegetation and the moistness of the ground. Wide stretches of the Kapuas River and some of the larger lakes in the region are probably suitable for use as seaplane landing sites. The lakes, however, may be too shallow for such use from May to October.

The areas best suited for use as drop zones away from native settlements are in the grasslands of the Upper Kapuas Plain and along the Melawi River. From November through April, however, the flooding of parts of these areas may preclude their use as drop zones. Indonesia was reported to have dropped 200 to 250 troops near Sintang (00°04'N-111°30'E) and Senaming (00°55'N-111°00'E) in September 1963.

## 2. Southern Lowland

The Southern Lowland comprises a very broad, flat, and generally poorly drained region bordered on the west and north by the Schwaner and Muller Mountains and on the east by the Meratus Range. The lowland extends inland more than 100 miles into the foothills of the mountains to the north. In the west, spurs of low hills stretch southward well into the lowland. Rivers are torrential along the northern margin of the region but are slow and meandering for most of their length.

Nearly all of the Southern Lowland is forested. Only along the river valleys are extensive cultivated areas found; many of these have been planted to rubber trees. The higher lands of the north and west are covered with broad-leaved evergreen forest. These higher areas, although moist during much of the year, are generally free from inundation except for brief periods after heavy rains, which occur most frequently from November through April. The rest of the Southern Lowland is covered with swamp forest -- mangroves and nipa palms along the coast, broad-leaved evergreens in the interior. In these swamp forests, the ground is always wet and frequently inundated to a depth of several feet. Undergrowth is generally dense.

The coastal strip of the Southern Lowland is low along its entire length. It is swampy and lined with mangroves and nipa palms along most of its length, with only occasional stretches of sandy beaches. The most extensive sandy areas -- and the stretches most suitable for use as landing beaches -- are east of Tandjung Sambar, east of Tandjung Keluang, and along the north-south trending shoreline between the estuary of the Kumai River and Tandjung Puting. All these beaches are backed

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by dense swamp forest, however, and movement into the interior is extremely difficult. The rivers that flow to the Java Sea have no deltas. Most of them have wide, shallow estuaries that are usually obstructed by sandbars and mudbars at low tide. The Barito River is the major river that flows through the Southern Lowland. At high tide, ships with 12-foot draught can enter the Barito River and navigate far into the interior. During the wetter part of the year, vessels drawing 7-1/2 feet can ascend the river beyond Muaratewe, more than 160 miles inland.

Cross-country vehicular movement is precluded throughout the Southern Lowland -- with the possible exception of the few small rubber plantations along the western rivers -- by the dense forest cover, the moist ground, and in many areas the long periods of flooding.

Foot movement is relatively easy in the dry northern and western forest areas, which generally have a sparse undergrowth. Throughout the rest of the Southern Lowland movement on foot is extremely difficult because of the wet and often flooded ground and dense undergrowth. Rivers offer the best travel routes but are not always navigable. The traveler may be delayed for days by low water in the lower stretches or by high water and strong currents in the upper courses.

The dense canopy of the broad-leaved evergreen forest which prevails throughout the Southern Lowland provides excellent concealment from air observation. The forest of the western and northern foothills gives good concealment from ground observation; the forest of the rest of the region provides excellent concealment from ground observation.

There are no natural sites suitable for aircraft landing zones in the Southern Lowland. Wide stretches of some of the larger rivers in their lower courses may be suitable for use as landing sites for seaplanes. Sites suitable for drop zones are limited to the few scattered areas of cultivation along the rivers. The most extensive cleared area is along the Barito River north of Bandjermasin, where wetland rice is grown.

### 3. Eastern Lowlands

Along most of the east coast the lowlands are narrow and, particularly in the north, interrupted by mountain spurs that extend to the sea. The watersheds of the Mahakam and Sesajap Rivers, however, form extensive plains.

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A coastal lowland generally less than 25 miles wide extends from Tandjung Selatan at the southeastern tip of Borneo northward to the delta of the Mahakam. It is bordered on the west by the Meratus Range. Terrain is predominantly flat, with scattered hills. Except for the immediate coastal area, most of the southeastern lowland is well drained. Dryland evergreen forest and cultivated crops are the prevailing vegetation types. Along the coast vegetation types vary considerably. Between Tandjung Selatan and Pulau Laut -- an island with low and mangrove-lined shores separated from the mainland by a narrow strait -- the coastal areas are covered by swamp forest in the west and by grasslands with some cultivated crops in the east. From Laut Strait northward to the Mahakam Delta the coast is low and has extensive stretches of mangrove and occasional patches of sandy beach, dryland evergreen forest, and cultivated fields. Several large bays are formed by estuaries. The coastal grassland areas between Tandjung Selatan and Laut Strait and the stretches of sand north of the Strait are suitable for use as landing beaches.

The Mahakam River, in its middle stretches, flows through a vast (more than 3,000 square miles) swampy basin with a complex system of shallow lakes and waterways. The southern edge of this basin is relatively well drained and is covered by a secondary growth of evergreen forest with dense undergrowth. Most of the rest of the basin is covered with swamp forest interspersed with areas of native cultivation and grassland. The Mahakam flows out of the basin and through a low range of hills to the coast, where it divides into numerous distributaries fringed with mangroves and nipa palms, forming a fan-shaped delta.

North of the Mahakam Delta the lowlands become narrower and more broken as spurs from the interior mountains extend close to the coast or jut into the sea as promontories. Sandy beaches are scarce. Northward from the Mahakam Delta to Tandjung Mangkalihat the coastal lowland is less than 10 miles wide. It is lined with mangrove and nipa palm forests as far north as the mouth of the Sungai Karangan. From here north to Tandjung Mangkalihat the lowland, including the coast, consists of dryland evergreen forest and scattered areas of native cultivation.

North of Tandjung Mangkalihat to the Kalimantan -- Sabah border the coastal lowland continues low and narrow with hilly terrain extending close to the coast in fingerlike projections between the main streams. Coral reefs are numerous offshore. The Kajan and Sesajap Rivers form large

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muddy deltas with channels fringed with forests of mangrove and nipa palm. The lower stretch of the Sesajap River forms a broad, poorly drained plain, covered with dense swamp forest that extends about 60 miles into the interior. Along the Kajan and Sesajap Deltas the coastal waters are shallow and dotted with numerous small, low, mangrove-fringed islands separated by muddy channels with many bars, banks, and shoals. Chief among these islands is Pulau Tarakan, an oil-producing area which is relatively densely populated.

The east coast of Sabah is very irregular, with numerous promontories; coastal lowlands are narrow or nonexistent. Most of the coast is lined with mangrove and nipa palm forests. The inner parts of the lowland area are for the most part covered with swamp forest that has a dense undergrowth of vines and creepers.

Cross-country vehicular movement in most of the Eastern Lowlands is precluded by the dense forest and poorly drained ground, much of which is flooded throughout the year. Only the narrow sandy areas between Laut Strait and the Mahakam Delta and the grassland area between Tandjung Selatan and Laut Strait are suitable for travel by vehicle. Even here, movement is confined to the coastal areas, as access to the interior is prevented by dense forests.

Cross-country foot travel is extremely difficult through the mangrove and nipa palm growth that prevails along most of the east coast. Travel on foot is also difficult in the areas of swamp forest in the plains of the Mahakam and Sesajap Rivers. Foot travel in the dryland evergreen forest covering most of the rest of the region is easier, as the ground, although often damp, is rarely flooded and undergrowth is generally sparse. Foot travel in the few scattered cultivated areas is easy.

Good concealment from air observation is provided by a dense forest canopy, except in the grassland area between Tandjung Selatan and Laut Strait. Concealment from ground observation is excellent in the swamp forests of the Mahakam and Sesajap drainage areas, and good in the areas of dryland evergreen and mangrove and nipa palm forests. The grasslands, native crop areas, and rubber plantations offer poor concealment from ground observation. Large caves are numerous along the north sides of Mangkalihat and Semporna Peninsulas. The caves on Semporna Peninsula are unsuitable for use as clandestine safe areas or cache sites. They are exploited regularly for birds' nests for birds' nest soup.

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No natural sites are suitable for use as aircraft landing zones because of the prevalence of dense forest throughout most of the Eastern Lowlands. Even the grassland west of Laut Strait cannot be used for landings because the grass is too high and its blades too stiff and sharp. The wider stretches of the Mahakam River and some of the larger lakes in the Mahakam Basin may be suitable for seaplane landings. The grassland west of Laut Strait and the few scattered areas cleared for native cultivation may be usable as drop zones.

#### 4. Northern Lowlands

Along Borneo's north side the lowlands are widest in the western part. Lowlands in the east are narrow and are divided by mountain spurs that descend close to the coast.

The western part of the Northern Lowlands, between Tanjung Datu and Brunei Bay, reaches its maximum width along the Rajang River where the lowland extends more than 50 miles into the interior. Elsewhere in the western part the width of the lowlands is generally less than 20 miles, and is narrowest west of Kuching and between Bintulu and Miri. The lowlands are swampy (most of the region is inundated throughout the year) and traversed by many meandering streams. Chief among these is the Rajang River which, with its tributaries, drains about 15,000 square miles of territory. Near the coast, the Rajang branches into a number of distributaries which flow through a wide swampy delta. Broad-leaved evergreen forest with dense undergrowth covers most of the region. Dryland forest, usually moist but rarely inundated for extended periods, prevails where low hills extend into the lowland region. Cultivated areas are extensive along the rivers. There are numerous rubber plantations near Kuching and along the Rajang.

The coastline of the western part of the Northern Lowlands is generally regular and low-lying. Although mangrove and nipa palm forests cover much of the coastal area, there are extensive stretches of narrow sandy beach, often as high as 4 feet above high tide level and covered with a sparse growth of casuarina trees. The longest sandy stretches are between Bintulu and Miri. Offshore approaches are clear.

The eastern part of the Northern Lowlands, between Brunei Bay and Marudu Bay, consists of generally narrow coastal lowlands, which are occasionally broken by headlands. With the exception of the broad, swampy peninsula on the northeast side of Brunei Bay, the lowlands are less than 5 miles wide, flat to gently rolling, and dotted with isolated hills and

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Figure 18. The western part of the Northern Lowland. Groves of palm trees fringe an occasional village. Pepper -- usually cultivated by Chinese -- can be seen at lower right.



Figure 19. Sandy beach along Sarawak coast at low tide. Such stretches are found on all Borneo coasts but occur most often in Sarawak. The sand is usually firm enough for use by wheeled vehicles.

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patches of swamp. They are crossed by numerous short rivers with rapid currents. Mangrove and nipa palm forests grow on the northeast coast of Brunei Bay and between Jesselton and Kota Belud. Narrow sandy beaches covered with sparse stands of casuarina trees extend along much of the rest of the coastline. Offshore approaches are generally clear. A belt of cultivated land parallels the coastline behind the stretches of beach and swamp. Inland from the cultivated land, a secondary forest with short trees and dense undergrowth extends into the foothills of the Crocker Range to the east.

Cross-country vehicular movement is precluded throughout most of the Northern Lowlands by year-round flooding, particularly in the west, and by dense forest. Only on the sandy beaches (where movement into the interior is prevented by the dense forests along their inner margins) and possibly in the areas cleared for cultivation around Kuching and between Kota Belud and Brunei Bay can cross-country vehicular movement be considered. Cross-country travel on foot is difficult in the swamp forest, which is inundated throughout the year, and in the secondary forest along the interior of the lowland between Kota Belud and Brunei Bay, which has an almost impenetrable undergrowth. Walking elsewhere in the region is relatively easy -- on the casuarina-covered beaches, in the dryland forest, and in the cultivated areas.

Opportunities for concealment from air observation are excellent throughout the Northern Lowlands except on the beaches and in the areas cleared for cultivation. Opportunities for concealment from ground observation range from excellent to poor. They are excellent in the belt of secondary forest between Brunei Bay and Kota Belud and in the swampland areas of broad-leaved evergreen forest, generally good in the dryland areas of broad-leaved evergreen forest, and poor in the cultivated areas and in the casuarina growths on the beaches.

No natural sites are known to be suitable for use as aircraft landing zones in the Northern Lowlands. The larger rivers of Sarawak probably have some stretches suitable for seaplane landings. Areas suitable for use as drop zones are limited to the sandy beaches and to the cultivated regions that are found mainly along the larger rivers, in the Kuching area, and along the west coast of Sabah.

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## E. Climate

### 1. General

On Borneo the equatorial climate imposes its monotonous uniformity more than anywhere else in Indonesia. Climatic elements vary little during the year; rainfall, temperature, and humidity remain high (see Tables 1 and 2 at end of chapter). There are no seasons as we know them. Instead the climate is dominated by monsoons -- winds out of the north between November and April and from the south between May and October. The monsoonal winds are, as a rule, light to moderate and blow steadily only in exposed coastal areas. Typhoons and other tropical cyclones are rare on Borneo, but thunderstorms are frequent, particularly during the north monsoon and during the transitional periods between the monsoons (usually during April and October). In June and July, there are occasional winds of gale force along the coastal regions of Sabah. Along the west coast, local squalls occur during the period of the south monsoon. In the southern and western coastal areas, land and sea breezes are marked, the sea breeze occurring during the day and the land breeze at night.

Rainfall is very high throughout Borneo -- generally between 100 and 200 inches annually. Unlike much of the rest of the Indonesian archipelago, where rainfall during the period of the south monsoon is considerably less than during the north monsoon, on Borneo the monthly fluctuation in amount of rainfall is insignificant. Rainfall during the north monsoon season is only slightly higher than during the south monsoon, the difference being most pronounced in the southeast part of the island where only about 10 percent of the yearly total occurs between July and September. From area to area, however, the amount of rainfall varies considerably. Precipitation is generally less in the eastern and southeastern parts than in the rest of the island. Rain falls more than 200 days a year in most areas but as few as 110 days in some areas on the southeast coast. Muaraantjalung, in the Mahakam Basin, receives only 87.3 inches of precipitation a year, and Bandjermasin, in the lower Barito valley, receives only 93.3 inches. Interior areas generally have more rainfall than coastal areas. Proceeding inland along the Kapuas River, Pontianak, on the coast, receives 125.2 inches of rain a year; Sintang, about 100 miles inland, receives 140 inches; and Putussibau, 140 miles from the coast, receives 170.9 inches. Precipitation fluctuates over particularly short distances in mountainous regions, where the broken terrain affects the amount of rainfall. Windward slopes may be covered by thick banks of clouds and be drenched by heavy rain while leeward slopes only a few miles away are cloudless.

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The weather of Borneo follows a regular daily pattern. A blanket of mist develops over low-lying areas in the early morning. The mist usually is dispersed by midmorning and replaced by a cumulus cloud cover that reaches its maximum extent and ascends into the mountains in the early afternoon. By midafternoon, towering cumulonimbus clouds usually develop and short thunderstorms are likely to occur. The clouds begin to dissipate toward evening, and by sundown the sky may be practically clear.

Sustained high temperatures throughout the year are characteristic of Borneo. Monthly variations are considerably less than daily variations. In the coastal areas, temperatures rarely fall below 70°F or rise above 92°F. In the mountain areas temperatures are lower (temperature decreases about 1.6 degrees for every 300-foot increase in elevation) and may plunge into the 50's during the night. Daily temperature variation is significantly greater in the mountains than in the lowlands.

## 2. Climatic Factors Affecting Land and Air Operations

Frequent heavy rainfall which results in muddy or inundated ground is the most serious climatic factor affecting ground operations on Borneo. Roads and trails are likely to be impassable during heavy rains. Although heavy rains fall at any time during the year, flooding of lowland basins is most serious from November through April.

The heat and high moisture content of the air cause rapid deterioration of clothing and equipment.

Visibility on the ground is generally good, although it may be limited to a few hundred feet during heavy rains and to even less in the lowlands during the early morning mists. It may also be poor on the highest peaks during the late afternoon and early evening periods of cloudiness.

Winds and turbulence are usually not severe enough to affect air operations seriously. Some turbulence occurs near the crests of the interior mountains, particularly during the afternoon and evening.

Cloud cover extensive enough to hamper air operations occurs more frequently in the mountainous areas than in the lowlands. Thick cumulus or cumulonimbus cloud banks persist on windward slopes in the late afternoon and early evening. In the lowland areas, cloud cover -- generally a thin stratus layer with its base between 1,500 and 2,500 feet above sea

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level -- is most common in the morning or during rainstorms. Cloud cover is usually light over both lowlands and mountains during the night. Cloud cover is usually less from May to October than during the rest of the year.

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Table 1

Mean Monthly Rainfall  
(in inches)

Station	Month												Years of Record	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Year
Balikpapan	7.9	6.9	9.1	8.2	9.1	7.6	7.1	6.4	5.5	5.2	6.6	8.2	87.8	43
Bandjermasin	12.7	11.7	11.9	8.5	6.2	5.6	3.5	3.2	3.9	5.1	8.5	12.2	93.3	63
Jesselton	6.3	2.8	3.4	5.7	10.0	11.3	9.7	8.8	12.7	15.9	12.2	11.5	110.3	20
Kapit	12.9	11.2	12.9	10.0	12.1	10.1	9.7	11.2	11.3	13.1	10.8	11.9	137.2	7-11
Kuching	27.1	19.7	14.2	9.7	9.0	8.5	6.9	8.8	9.5	12.6	13.1	20.1	159.2	43
Miri	13.7	7.2	5.5	6.9	8.1	8.0	7.2	6.0	10.2	13.4	13.9	12.1	112.2	9-12
Muaraantjalung	7.8	7.2	9.9	10.2	7.8	6.3	3.7	3.6	5.4	5.2	9.8	10.6	87.3	19
Pontianak	10.9	8.2	9.5	10.9	11.1	8.7	6.5	8.0	9.0	14.4	15.3	12.7	125.2	63
Putussibau	15.3	14.6	14.8	17.0	13.9	10.7	8.6	10.4	11.7	17.6	19.0	17.3	170.9	40
Sandakan	19.0	10.9	8.6	4.5	6.2	7.4	6.7	7.9	9.3	10.2	14.5	18.5	123.7	46
Sukamara	9.8	8.6	11.0	10.9	9.4	7.7	5.2	5.4	6.2	8.2	10.3	10.9	103.5	34
Tarakan	10.9	10.2	14.0	14.0	13.5	12.6	10.3	12.4	11.6	14.3	15.2	13.4	152.5	31
Tawau	4.9	5.2	5.3	5.7	8.6	7.7	9.2	9.2	5.6	5.8	7.2	7.1	81.5	11

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Table 2  
Mean Daily Maximum and Minimum Temperatures  
(in degrees Fahrenheit)

Station	Month												Years of Record	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Year
Balikpapan	Max	85	85	85	85	83	83	83	84	85	85	85	84	6
	Min	73	73	73	73	74	73	73	74	74	73	73	73	6
Jesselton	Max	86	86	87	88	88	88	89	88	87	87	86	87	20
	Min	71	71	71	72	72	71	71	71	71	71	71	71	20
Kuching	Max	88	88	89	90	91	91	92	90	90	90	88	90	11
	Min	72	72	72	72	73	72	72	72	72	72	72	72	11
Miri	Max	87	86	88	88	89	88	88	87	87	87	85	87	7-10
	Min	74	75	74	75	75	74	74	74	74	74	74	74	7-10
Pontianak	Max	87	89	89	89	90	89	90	90	88	88	87	89	20
	Min	74	76	74	75	75	74	74	75	75	75	74	75	20
Sandakan	Max	85	86	87	89	89	89	89	89	88	87	86	88	45
	Min	74	74	75	76	75	75	75	75	75	75	74	75	45
Tawau	Max	89	89	89	90	88	89	88	89	90	89	89	89	13
	Min	71	71	71	72	71	71	71	71	71	71	71	71	13

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~~SECRET~~IV. PopulationA. Introduction

The total population of Borneo, according to 1960 census figures for the northern part of the island and 1961 statistics for Kalimantan, is about 5,385,000. The population and density for individual political units are:

	<u>Total</u>	<u>Density</u> (persons per square mile)
Sarawak	744,396	15
Brunei	83,877	38
Sabah (North Borneo)	454,328	15
Kalimantan	4,101,475	20

Borneo has few urban centers, the urban population forming only 10 percent of the total. Only five cities -- Kuching in Sarawak, and Samarinda, Balikpapan, Bandjermasin, and Pontianak in Kalimantan -- have populations over 50,000. Six others -- Sibul and Miri in Sarawak; Jesselton, Sandakan, and Tawau in Sabah; and Singkawang in Kalimantan -- have populations between 10,000 and 50,000 (see map Population and Administrative Divisions).

The distribution of population on Borneo is uneven. Relatively densely settled pockets are centered on the coastal cities; the valleys of the lower and middle stretches of the larger rivers (the Rajang, Kapuas, Mahakam, and Barito) support a somewhat lower density. The rest of the lowland regions are generally sparsely populated. Large areas of the mountainous regions are uninhabited.

Although there are no pronounced racial differences among the peoples of Borneo (only the alien elements -- Chinese, Europeans, Indians, Arabs, and the like -- are easily identifiable), there is a lack of cultural uniformity on the island partially due to the inhospitable terrain and dense vegetation which have caused isolation of settlements.

The ancestors of the peoples of Borneo are believed to have arrived from other parts of southeastern Asia in successive waves of migration over several centuries. Each wave brought its characteristic social organization, customs, and

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language, and generally its people were culturally advanced beyond those who had already arrived. The less advanced peoples were pushed farther and farther into the interior. They generally moved up the major rivers from the coasts, but stopped short of the mountainous regions. Because there has been little contact between the peoples on opposite sides of the drainage divides in the interior, cultural contrasts between peoples separated by mountain barriers are greater than those between groups separated only by jungle. People of Malay extraction (including the Bandjarese and the Buginese)\* now inhabiting the coastal areas of Borneo generally have a considerably higher cultural level than people occupying the interior lowlands and foothills who practice primitive slash-and-burn agriculture. However, through the efforts of missionaries and colonial administrators, and as a result of improved communications, people of the interior are assimilating the way of life of the more civilized people along the coasts.

The Malays, Bandjarese, and Buginese tend more toward Mongoloid physical traits than peoples of the interior. Some Mongoloid characteristics appear among the latter, however, including wide cheekbones, small oblique eyes with a peculiar fold of the upper lid near the nose, and scanty beard. Their stature is short and stocky (men average under 5'4"), hair is black and generally straight, and skin color varies from brown to yellow.

All indigenous\*\* groups have some broad cultural traits in common. For example, most practice slash-and-burn agriculture, live in communal longhouses, and have an animistic religion. Because of isolation and lack of communication, each group has developed its own distinctive language, which generally is unintelligible to others. Language difference is therefore the chief factor in cultural differentiation among the indigenous groups.

\* The 16 major ethnic groups on Borneo are discussed in Section J of this chapter. The distribution of individual groups is shown on the map Ethnic Groups. Information on the size and culture of ethnic groups in the Malaysian-Brunei part of the island is reasonably accurate, as anthropological studies are relatively abundant and census statistics are recent. For Kalimantan, however, information is scarce, and the figures provided in this chapter are correlations of various estimates.

\*\* The terms "indigenous" and "native" as used in this chapter refer to the peoples who were on Borneo before the arrival of

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## B. Migrations

Except for the Punans, a nomadic people who traditionally have lived off the jungle in the far reaches of the interior, the indigenous peoples of Borneo have a sedentary way of life. They move their village sites a few miles up or downstream every 10 to 15 years, after the soil in the village area has been depleted. While this is usually the limit of tribal movement, historically there have been noteworthy migrations by various ethnic groups in the interior. For example, the Sea Dayaks, Land Dayaks, Kenyahs, and Muruts once inhabited only areas in that part of Borneo which is now Indonesian, but over several generations they have expanded their areas northward well into the Malaysian part of the island.

The Sea Dayaks are the most mobile of the indigenous peoples, and many of them have migrated to Malaya and other islands of the Indonesian Archipelago to seek employment. Some of the Sea Dayaks living in Sarawak are relatively recent arrivals, having come from Kalimantan to work in the oilfields or to enlist in the British Army or in the police force.

Because of the lack of contact among the various tribes within a group, there is little ethnic consciousness. For instance, a Land Dayak, Sea Dayak, Kayan, Kenyah, or Kelabit of Sarawak or a Murut of Sabah does not necessarily identify himself with a person of the same ethnic group on the Kalimantan side of the border. For most of its length, the border between Malaysian Borneo and Indonesian Borneo follows the divide that separates the rivers that flow to the north from those that flow to the east, west, and south. A tribal complex\* within an ethnic group does not usually occupy an area on both sides of the border. In some cases, however, particularly west of Lubok Antu where the divide is low, tribal complexes do straddle the border, and people cross the border extensively. Because for most of its length the border traverses remote, rugged, and heavily forested terrain and is undemarcated, those natives who cross it are often unaware of its existence.

The Malays, specifically these groups: Bajau, Dusun, Kayan, Kedayan, Kelabit, Kenyah, Land Dayak, Melanau, Murut, Ngadju, Punan, and Sea Dayak (Iban). Although most of them live in the interior, the Bajaus, Kedayans, and Melanaus are found primarily in coastal areas.

\* The term "tribal complex" refers to an alliance of adjacent villages of a single ethnic group but does not normally include all villages of that group.

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Figure 20. A typical coastal settlement.



Figure 21. A Sea Dayak longhouse.

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Of the peoples of the coastal areas, the Malays -- most of whom migrated from the Malay peninsula, Sumatra, or the Riau Archipelago -- and the Bandjarese -- who migrated from Java -- have lived on Borneo for several centuries. The Chinese have settled on Borneo only during the past 100 years. As of 1959, under Indonesia's transmigration program, about 15,000 colonists from the overcrowded islands of Java, Madura, and Bali had been resettled in Kalimantan, most of them in the areas around Pontianak and Bandjermasin. Many of the Buginese, who are found along the southeastern and eastern coasts, are recent immigrants from the Celebes.

### C. Housing

The rural peoples of the coastal areas on Borneo usually live in small compact villages of single-family dwellings. The houses, which are rectangular and usually have about four rooms, are constructed with wood or palm thatch walls and thatch roofs. Because they are built either over a river or near a river on land subject to flooding, they are raised on piles. Houses built over the water are connected to the shore by catwalks. Canoes are used to travel between houses.

Villages of the interior usually consist of one or more communal longhouses, which often are linked together by catwalks of split bamboo. Such villages are commonly situated on a ridge above a riverbank, often on the inner side of a sharp bend in the river. Villages along the lower stretches of the rivers tend to be larger than those farther inland.

The longhouse varies considerably in length but averages more than 50 feet and is 30 to 60 feet in width. It accommodates from 50 to several hundred people. Additions are constructed as the number of occupants increases. The longhouse is erected on a "forest of piles," with the floor generally from 10 to 20 feet above the ground, and must be entered by using ladders or notched logs that are propped against the side of the house. Floors are rough-hewn planks or bamboo; walls are board or bamboo; the roof is usually covered by palm fronds, although wooden shingles are sometimes used. The space beneath the house is used for storage, including paddy (unmilled rice), and is usually also occupied by large numbers of goats, pigs, dogs, and fowl. A loft beneath the roof is generally used for storing grain. When, after 10 to 15 years of occupancy, the village is abandoned, the longhouse is dismantled, and the timbers are moved to the new site to be used in the construction of a new longhouse.

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A veranda used for work, religious ceremonies, and as a sleeping place for strangers extends along the full length of one side of the longhouse. Verandas are entirely covered except in Sea Dayak longhouses, where the veranda consists of an inner roofed part and an outer unroofed part, and in Murut longhouses, which have no veranda at all. In addition to many household items and religious materials (for example, arrangements of chicken feathers used as offerings to the household gods) that hang from the rafters of the verandas, many longhouses have on display a collection of blackened skulls of heads taken in war by ancestors of the occupants.

Behind the veranda is an enclosed communal area running the full length of the longhouse. Still farther back are apartments, about 25 feet wide, that house single families of six to eight persons. The chief's apartment is usually near the middle of the longhouse, and the part of the veranda in front of it is reserved for reception of guests and for formal meetings.

#### D. Social Organization

Among the peoples of the interior, villages usually consist of members of the same ethnic group. Although villages inhabited by people of two different groups may be found near one another -- even along the same river -- commonly a number of villages of one group occupy a single river basin and will be loosely allied. Traditionally, such alliances served defensive purposes primarily. Even though large-scale intertribal warfare has been all but eliminated, the pattern of allied villages persists. Although the individual village is virtually autonomous and usually is the highest form of social organization, advice and cooperation are asked of chiefs of neighboring villages when major decisions are to be made. Because intermarriage is customary, neighboring villages within a tribal complex have close ties of kinship.

A headman generally is in charge of each longhouse. If there is more than one longhouse in the village, one of the headmen also is recognized as the chief of the village. Generally the headman has little authority except in settling quarrels within his own longhouse. Matters concerning the entire village -- such as questions about crops, moving to another site, and intertribal disputes -- are brought before the village chief, who usually consults with village elders before making a decision. In addition to these functions, the village chief also levies punishment for minor crimes (punishment for major crimes in all but the most remote areas is now handled by Malaysian or Indonesian government authorities), plays a leading role in social ceremonies and religious

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rites (he is responsible for seeing that taboos and omens are observed), and serves as an arbitrator and mediator in such matters as debt, inheritance, and divorce. Before the elimination of intertribal warfare, he was the leader of war parties. In addition to his obligations to the people of his village, the chief also acts as the link between the government and his people; in this capacity, one of his main functions is tax collecting. Although the position of chief is elective and not hereditary, usually one of the sons of the late chief is favored as his successor. In the Malaysian part of the island the government often is influential in the selection of the village chief. Sometimes a particularly strong chief will extend his authority over neighboring village chiefs within the tribal complex.

Although they are becoming less distinct, three social classes are still distinguishable among most indigenous tribes. An upper class, which is quite small and relatively wealthy, includes the village headmen and their close relatives. The middle class includes the great majority of the people. The lower class is made up of descendants of captives taken in war who served as slaves to the other two classes. The slaves generally lived with their owners, and in the case of those living with people of the middle class, the status of the two groups was nearly equal. Since the virtual elimination of intertribal warfare, the lower class is disappearing rapidly, and its members are being assimilated by the middle class.

Tribal codes of morality are generally strict. Marriage is taken very seriously. Although no clear-cut laws control marriage, native society is basically monogamous. However, if a first wife has not borne children, a chief may take a second wife. Marriage is usually within the members' class, particularly in the upper class. Marriage between people of villages within the same tribal complex is common, and marriage between members of different ethnic groups is not uncommon.

A typical day in the villages of the interior begins shortly before dawn, when animals and fowl become noisy. The women rise shortly thereafter, light the fires in the longhouse, and go to the river for water for bathing and cooking. The men begin to rise shortly after daybreak and eat the breakfast that the women have prepared. During the rice-growing season (usually October to February or March) all able-bodied persons leave for the paddy fields after breakfast. Sometimes all able-bodied villagers live in temporary huts in the fields during the growing season. During the rest of the year, employment is more varied and includes hunting, fishing, gathering jungle products, mending boats, and repairing the longhouse.

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Figure 22. Sea Dayaks burning off a hillside prior to planting. During August and September, the sky may be hazy and overcast from such fires.

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Except during the rice-growing season, women remain in or near the longhouse doing household chores such as pounding paddy. The midday meal is eaten in the longhouse by those who have remained in the village. About an hour before sundown, the men return from fishing or from their hunting and gathering forays in the jungle. They bathe in the river and, as darkness falls, go to their apartments for supper; the women eat later. After supper the villagers gather on the veranda to talk. They normally go to bed about 9 o'clock, although when parties are held, they may stay up most of the night.

#### E. Occupations

Although most of the people of Borneo who live in the coastal lowlands are engaged in subsistence agriculture, many also are employed in other economic enterprises, including the timber and oil industries, and the pepper, coconut, and rubber plantations. For most of the people, however, the annual cycle of activities revolves around rice. The various stages of its cultivation are the calendar of the countryside. In the lowland areas, wetland rice is usually grown. The people also raise vegetables, fruits, nuts, and other crops as well as small animals and poultry. Rubber, pepper, and copra are produced as cash crops.

In the interior the people have a subsistence economy, and nearly all of them grow rice as their major crop, 95 percent of which is dryland rice grown on a shifting, slash-and-burn basis. The Dusuns and Muruts, most of whom live in Sabah, are the only indigenous groups with a well-developed system of wetland rice agriculture. In the Malaysian part of the island the governments have initiated programs -- so far not very successful -- to resettle tribes now practicing wasteful, shifting agriculture, by moving them from the mountainous interior to lower lands, in the hope that they will become sedentary farmers.

In slash-and-burn agriculture a site -- usually a well-drained hillside -- is selected by the village, and the trees are felled and burned. During August and September the sky is hazy and overcast from hundreds of fires as the trees are burned. The drier the weather, the more complete the burnoff, and the better the subsequent harvest. The clearing and harvesting generally are done in common by the villagers, although each family lays claim to a part of the cleared land and the rice harvested from it. After the trees have been burned, the rice seeds are planted -- usually by women -- with no further preparation of the land. During the growing season,

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Figure 23. Young padi growing on a cleared hillside. During the ripening season, people of the community move into the small huts seen scattered throughout the fields. The fields may be several miles from the village.

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watchers equipped with elaborate devices of poles and ropes are stationed in and around the fields to frighten away birds and other marauders. To assure a good crop the plants are given great care and, as a further guarantee, religious rites are performed. Among many tribes, village longhouses are under taboo for several days during the harvesting of the crop. After all the grain has been reaped and stored the people hold a festival, perhaps lasting several days, with heavy eating and drinking and much dancing. Neighboring villages may be invited to attend.

After the harvest of the first rice crop the land usually lies fallow for 1 or 2 years. Saplings that have grown up during this period are then cut and burned to replenish the soil for the next crop. This procedure may be followed three or four times, after which that land may be planted to other crops such as yams or sugarcane for one or two seasons. By the time 10 to 15 years have elapsed the soil all around the village has been depleted. The site is abandoned, and the village is moved to a new site.

In addition to rice, the villages have small gardens of allspice, sugarcane, and various vegetables and fruits (including corn, yams, cucumbers, bananas, pumpkins, melons, and cassava). Nearly all villages have coconut trees, and dense thickets of sago palm are found around many. The pith of the trunk of the sago palm serves as a substantial part of the diet for the less advanced peoples, and as an emergency food for others when the rice yields are poor. Most indigenous peoples drink a brew made from the distillation of fermented rice water. Sometimes the drink is made from sugarcane, sago palms, or mashed and boiled fruits. Betel palms are raised for their nuts which are chewed as a mild stimulant, and which stain the teeth black. Tobacco is grown by many groups.

As most villages of Borneo are situated near large rivers, fish provide an important part of the diet. Fish are caught in a variety of ways -- occasionally with rod and line, but more commonly with casting nets, traps, or with spears after the fish have been stunned by a poison that has been dumped into the river. The last method -- using the sap of the root of the tuba plant as the poison -- formerly was very common but, because it kills all the fish, large and small, the Borneo governments in recent years have discouraged the practice.

In addition to keeping small domestic animals and poultry, the natives of Borneo hunt a number of wild animals, most commonly pig and deer, but also wild cattle, monkeys, tigers,

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bears, lizards, and various types of birds. The hunter uses many methods. Often he drives the animals into a net of rattan or uses various types of traps. Weapons include the spear, the parang (a heavy steel blade mounted in a bone handle, which has been used for everything from clearing the jungle to decapitating an enemy), the blow pipe with poisoned darts (long the traditional weapon of most natives of Borneo), and the shotgun (introduced to the natives more than 50 years ago).

The peoples of the interior of Borneo barter products of the jungle -- rubber, camphor, rattan, honey, beeswax, sago, birds' nests, resin gum, and gutta-percha -- with coastal tradesmen in exchange for manufactured goods. The jungle products are gathered by small parties that may remain away from the villages for several months. The coastal traders are usually Chinese (although an edict issued in 1959 forbids Chinese tradesmen from operating in the rural areas of Indonesia), but Malays, Buginese, and Bandjarese also engage in coastal trading.

#### F. Language and Education

English (mostly limited to northern Borneo), various dialects of Chinese, and a large number of dialects of several Malayo-Polynesian languages are spoken in Borneo. The last group includes dialects of the coastal peoples of Malay extraction (Malays, Buginese, and Bandjarese) and of all indigenous peoples, many of whom speak and understand more than one dialect or language. Linguistic complexity is increased by the fact that the various Chinese dialects are mutually unintelligible. The various dialects of the Malayo-Polynesian languages also are mutually unintelligible, although many words of one dialect bear a strong resemblance to words of another. Furthermore, within the large group of closely related dialects that may be used by one ethnic group, no single form may have gained sufficient prominence to provide a standard language by which the group as a whole may be identified.

English, Mandarin Chinese, and Malay stand out as vehicles for communication outside the local indigenous groups. Mandarin is used in the Chinese schools and most of the Chinese on Borneo can speak and understand it, but it is rarely used in day-to-day conversation; most of the Chinese on Borneo are from southern non-Mandarin areas of China. None of these three languages, however, is understood by more than a part of the people, although Malay approaches being a lingua franca

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throughout the island; most tribes speak pidgin Malay as well as their own dialect. Written forms exist for only a few of the languages of the indigenous peoples.

Borneo has three main educational systems -- those of the governments, the Chinese, and the missionaries. The schools operated by the governments are almost all at the primary level; secondary education generally is obtainable only in the missions and in the Chinese schools. In Malaysian Borneo and Brunei there are 815 schools operated or subsidized by the governments, 329 Chinese schools, and 246 mission schools. More than 182,000 students, a disproportionately large number of whom are Chinese, are enrolled in these schools. Information is not available on the number of schools or students in Kalimantan, but the educational system there is believed to be less advanced than in the northern states of Borneo. Malay is the usual language of instruction in schools administered by the governments in Malaysian Borneo and Brunei. Bahasa Indonesia is the language used in the non-Chinese schools of Kalimantan. It is as closely allied to Malay as U.S. English is to British English.

The literacy rate varies among the three territories of northern Borneo -- 21 percent in Brunei, 14 percent in Sarawak, and 12 percent in Sabah. The literacy rate also varies among the different ethnic groups. The Chinese have the highest rate (30 percent), the Malays have 15 percent, and the indigenous groups have much lower rates. Some literate Chinese are also literate in English. The Malays are literate in the Malay language, written either in the Arabic script or in the Romanized alphabet. The indigenous groups are literate primarily in Malay and increasingly so in English. The Roman alphabet has been adapted to several languages such as Bajau and Sea Dayak, in which a few people are literate. These languages, as well as English, are taught in the mission schools. Current information is not available on the literacy rate in Kalimantan, but it is probably lower than in northern Borneo. As in northern Borneo, the Chinese are by far the best educated group in Indonesian Borneo.

Students in Borneo who desire an education beyond the secondary level must go abroad. Those who have completed the full 12-year course offered by some of the mission schools in the former British territories generally are fluent enough in English to enter universities in English-speaking countries. Either with the aid of the government or private scholarships or at their own expense, a few students study overseas, mainly in the United Kingdom. Many Chinese students have gone to mainland China for higher education, but their exodus is now

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closely controlled because the governments of Borneo fear that returning students might become instruments of Communist penetration. When British administrators in the former British territories were in office they believed that the Chinese schools, at best, were oriented toward traditional China, and, at worst, were openly against the British and for the Communist Chinese. Chinese schools in Kalimantan generally have been pro-Communist.

### G. Religion

Among the people living in the coastal regions of Borneo, most of whom follow Islam, there are some Christians, and most of the Chinese have retained their traditional religious beliefs -- Confucianism, Taoism, or Buddhism. Adherents to a considerably modified form of Islam are found in all of coastal Borneo, and some of the pagans of the interior are being converted. The Christians in Malaysian Borneo and Brunei number about 200,000, and those in Kalimantan probably no more than that. Other than members (mostly British) of the Western community in Malaysian Borneo, most of the so-called Christians are members of the indigenous community who have been converted by missionaries and who practice a brand of Christianity that incorporates many of their animistic beliefs. Rarely has an entire tribe been converted. Normally a tribe includes converts to Christianity or to Islam as well as pagans, but the faith of most tribesmen is somewhere between. The Muruts of Sabah, who have been largely won over to Christianity, and the Melanaus of Sarawak, nearly all of whom now accept the teachings of the Koran, are exceptions to this general rule. As with those converted to Christianity, the pagans converted to Islam retain many of their animistic beliefs.

Most of the peoples of the interior still retain their pagan religious practices. Although, in general, they are monotheists and believe in a Supreme Being, they also believe they are surrounded by a host of malevolent and benevolent spirits embodied in such tangible things as animals, trees, mountains, caves, and rivers, and in such intangible things as lightning and thunder. These spirits exercise much control over the lives of the natives, many of whom wear charms of beads, shells, teeth, and roots to help ward off the evil ones. Many rituals practiced today are designed to ward off evil spirits and placate good ones. Sickness, drought, and floods are believed to be the work of evil spirits, which can be propitiated by sacrifices or other offerings. These rites are usually conducted under the direction of a village priest or priestess (who is sometimes a chief) and who supposedly has magical powers that can be used to entice the spirits and

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"keep them in line." Although some tribes have no carved idols, most tribes have many within the village, and religious ceremonies are usually focused on them. Among all the pagans of Borneo there are many taboos associated with the planting and harvesting of rice.

Most of the pagans believe in an afterlife. Departed souls are thought by some tribes to reside in certain mountain peaks. For example, the Dusun dead are believed to inhabit Mount Kinabalu, and therefore a Dusun is reluctant to climb it without first propitiating the spirits of the dead with an offering. Certain animals are considered by different tribes to embody the souls of departed humans. The crocodile in particular is considered by many to be sacred.

Nearly all pagans are profound believers in omens, often associated with animals or birds (particularly the latter), or appearing in dreams. Omens are especially important when the native is traveling in unfamiliar territory. It is difficult for an outsider to conceive of the extreme degree to which omens control the life of the pagan. To have a snake, scorpion, or centipede cross one's path may require complete alteration of a journey; and the presence near the village of a particular bird may alter the crop planting or harvesting date by several days. Omens vary considerably from tribe to tribe, and a good omen for one tribe may be a bad omen for another. An important form of interpreting omens involves study of the shape and condition of the liver of a pig that has been recently slaughtered.

Taboos among the pagans of Borneo are many and, like the omens, have much influence on their lives. They vary considerably from tribe to tribe.

#### H. Dress

Western style dress is common among the peoples living along the coast and is becoming increasingly popular among those of the interior. The traditional male attire of the indigenous peoples has consisted simply of a wide cotton cloth, often brightly colored, wrapped around the waist and between the legs, with flaps hanging down in front and back. On occasion a short coat or vest is worn, along with a hat of rattan or a headcloth. The attire of the women is less uniform than that of the men but usually consists of a highly decorative knee-length or ankle-length skirt split along the left side. The upper part of the body sometimes is covered with a jacket but more often is left bare. Various adornments -- earrings, necklaces, bracelets, and legbands -- are worn by the women.

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of all tribes, and tattooing is practiced by many tribes. Traditional styles and adornments vary considerably from one tribe to another. Sea Dayak and Dusun women sometimes wear corsets made from coiled rattan, and on festive occasions the women of some tribes wear silver girdles. Kayan women wear cotton cloth wrapped around the body from above the breasts to the ankles. Land Dayak women encase their calves in solid sheaths of metal rings; this causes deformation of the calf muscles. A common practice of both men and women of some tribes (for example, the Sea Dayaks and Dusuns) is gradual elongation of the ear lobes through the use of progressively larger studs inserted in holes in the lobes during childhood. Brass rings, often falling below the shoulders, are inserted in these holes. Among many tribes (for example, the Dusuns), teeth are blackened and sometimes filed down to the gums. Removal of eyebrows and eyelashes is common among the Kayans and Kenyahs.

#### I. Health and Medical Factors

The most common of the serious endemic diseases are tuberculosis and malaria. Steady progress has been made in recent years in combating both, particularly malaria. An impressive decline in the number of cases of malaria reported in the northern territories of Borneo can be attributed to the relatively successful programs for eradicating the disease. In Sabah, for example, there were 14,827 cases reported in 1962 in contrast to 45,343 cases in 1957. In Brunei the incidence dropped from 3,062 cases in 1953 to 16 in 1960. In Sarawak there were 30,000 cases in 1946 but only 1,139 in 1961. Little has been done to combat malaria in Kalimantan, and its incidence there is much higher than in northern Borneo. Total elimination of malaria in all parts of Borneo cannot be achieved until the proposed Indonesian program for its eradication in Kalimantan has been implemented successfully.

Dysentery and other intestinal ailments are very common and account for about 10 percent of all disease. They are caused primarily by poor or nonexistent sanitary facilities and polluted water supplies in rural areas. Typhoid fever and filariasis are endemic. Cholera epidemics occurred in Sarawak in 1961 and in Sabah in 1962. Although the nutritional level in Borneo is above average for rural areas of southeast Asia, conditions of malnutrition -- mainly beri-beri and anemia -- are by no means uncommon.

There is no specific information on life expectancy among peoples of Borneo. The general picture conveyed by the limited information available indicates a slowly falling mortality

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rate and a birth rate either rising or remaining at a high level. The population is young -- 44 percent of the people of Sarawak and Sabah are under 15 years of age, and only 14 percent are over 45.

Medical facilities are inadequate in all parts of the island but are believed to be particularly lacking in Kalimantan. Most of the facilities are located in the major cities and, because of generally poor transportation, extension of health services into rural areas has been slow. There are nine hospitals with a capacity of 1,213 beds in Sabah, three hospitals with 355 beds in Brunei, and seven with 990 beds in Sarawak. Information is not available on medical facilities in Kalimantan.

#### J. Major Ethnic Groups

The following table lists the major ethnic groups of Borneo and their numbers in each of the political units. Unless otherwise noted, figures provided for Sarawak, Brunei, and Sabah are from 1960 censuses. Figures for Kalimantan ethnic groups are estimated since the 1960 census for Kalimantan did not gather information on individual groups.

Table

Borneo: Major ethnic Groups by Political Unit  
1960

Ethnic Group	Sarawak	Brunei	Sabah	Kalimantan	Total
Bajau	-- a/	--	59,710	--	59,710
Bandjarese	--	--	--	500,000	500,000
Buginese	--	--	N.A. b/	200,000	200,000
Chinese	229,154	21,795	104,542	400,000	755,491
Dusun (Kadazan)	--	2,757 (1947) c/	145,229	--	147,986
Kayan	7,899	--	--	N.A.	7,899
Kedayan	7,207	6,726 (1947)	N.A.	--	13,933
Kelabit	2,040	--	--	N.A.	2,040

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(Continued)

Ethnic Group	Sarawak	Brunei	Sabah	Kalimantan	Total
Kenyah	8,093	--	--	N.A.	8,093
Land Dayak	57,619	--	--	240,000	297,619
Malay	129,300	45,135	N.A.	1,000,000	1,174,435
Melanau	44,661	2,517 (1947)	--	--	47,178
Murut	5,214	296 (1947)	22,138	N.A.	27,648
Ngadju	--	--	--	500,000	500,000
Punan	4,675	--	--	N.A.	4,675
Sea Dayak (Iban)	237,741	1,330 (1947)	--	150,000	389,071

a. A dash indicates negligible representation.

b. Information not available.

c. The 1960 Brunei census did not provide information on the size of individual ethnic groups other than the Malays and Chinese.

#### 1. Bajaus

The Bajaus of Borneo live along the coast of Sabah, where they are concentrated in two places -- in the northwest between Kudat and Papar, chiefly near Kota Belud, and in the east along the shores of Darvel Bay, chiefly near Lahad Datu and Semporna. Although they number well under half the Dusun population, the Bajaus form the second largest indigenous group in Sabah. They live in small villages of individual houses usually built on stilts over the water of an estuary or an inlet. About half of the Bajaus are farmers who grow wetland rice and raise cattle. Many of the rest work in the timber industry or on rubber plantations, and a few who live on the east coast are fishermen. In the past, many Bajaus were pirates, and a few still are engaged in pirating and smuggling in the waters between Sabah and the Sulu Islands of the Philippines, where Bajaus comprise part of the population.

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Over the years various Europeans have described the Bajaus as bold, independent, lawless, savage, ferocious, truculent, and swaggering, and have accused them of cattle thievery and burning Chinese shops. However, the Bajaus were subdued considerably during the British administration of Sabah, and now are reported to be particularly friendly toward Europeans. They like to gamble, and betting on cockfights is a favorite pastime. The Bajaus are excellent horsemen; ponies (and occasionally buffaloes) are used for herding cattle, hunting, and travelling to market.

Although the Bajaus are Moslems and worship at mosques found in larger Bajau villages, they retain many vestiges of their former animistic religion and cherish many superstitions. Once a year they launch rafts loaded with offerings to bear evil spirits away from the village. They adhere to most Islamic tenets, however, and their villages are easily distinguished from those of the Dusuns and Muruts by the absence of pigs, since they do not eat pork. They observe Ramadan, the Moslem month of fasting when eating and drinking during daylight is forbidden. They do not adhere strictly to the Moslem law that forbids drinking alcoholic beverages at any time; some of them drink beer.

The Bajau men wear bold colors, including gaily colored wraparound headgear, the color and arrangement of which generally differs from one village to another. They usually carry a knife in a sheath over the left hip. Bajau women usually wear drab clothing and few ornaments.

## 2. Bandjarese

The Bandjarese are the predominant ethnic group along the southern coast of Borneo. They are concentrated mainly between the Barito River and the Meratus Mountains and particularly around Bandjermasin, a city of over 180,000 which they founded in the 15th century. The census of 1930, the latest one to provide information on the size of this ethnic group, listed 314,661 Bandjarese in Kalimantan. Today they probably number more than 500,000. The Bandjarese are descendants of Hindu Javanese colonists who arrived on Borneo more than five centuries ago. They have mixed considerably with the Malays and Buginese and, to a lesser extent, with the Ngadjus. Although they were originally Hindus, Islam was introduced to the Bandjarese in the 16th century, and the great majority are now Moslems though a few Hindu customs remain.

Although many live off the land by raising wetland rice, most Bandjarese are engaged in more progressive enterprises.

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Traditionally, they have been a trading people and today are the group most actively engaged in commerce in southern Borneo. Many Bandjarese own small rubber plantations; others are bankers, shipowners, bus operators, and manufacturers. They are fairly independent economically and, unlike many of their more unsophisticated neighbors in Kalimantan, have not been exploited by the Chinese. In southern Borneo, particularly around Bandjermasin, there are conspicuously few Chinese, who normally form the major group engaged in trade in Borneo.

Although the Bandjarese consider themselves good Indonesians, most of them favor more autonomy for their own area, and some would favor the creation of an autonomous state, preferably an Islamic one.

### 3. Buginese

The Buginese, who are native to the southwestern peninsula of Celebes, are found in Borneo primarily along the east coast, but also along the delta of the Kapuas River south of Pontianak. They probably number more than 200,000 in Kalimantan and a few thousand in Sabah (mostly in the areas of Semporna, Tawau, and Lahad Datu). There are none in Brunei or Sarawak.

The Buginese first settled on Borneo several centuries ago, and, although most families can trace their island ancestry several generations, some, particularly those in Sabah, are recent arrivals. Many living in Sabah were encouraged by the British to immigrate there to work on rubber plantations and in the timber industry. Immigration of Buginese as well as other Indonesians into Sabah has been curtailed in recent years because a balance between labor and employment is slowly being achieved. As a result of the policy of "confrontation" of the Indonesian Government toward Malaysia, legal immigration by Indonesians into Sabah has ceased. There is currently some illegal infiltration of Indonesians into the Tawau area.

The Buginese are a seafaring people. They have a maritime tradition of more than 350 years of trade, piracy, and colonial conquest in many parts of central and eastern Indonesia. Their colorful sailing boats are a common sight not only in Indonesian waters but also in the seas around the southern islands of the Philippines.

Most Buginese not engaged in maritime activities are settled on the land and cultivate wetland rice. Such land is held individually, but its use is subject to requirements of the village. Uncultivated land is held in common by the

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village. Buginese settlements are indistinguishable from those of other coastal peoples; they usually contain about 30 single-family houses built on piles along a waterway.

The Buginese formerly had three distinct social classes -- nobles, commoners, and slaves. Slavery is no longer permitted, and this structure of social rank is declining, though there is still much class consciousness. Relations among people of different social classes or age groups may be considerably restrained. Women have an important role in Buginese society, and many chiefs are women. Although a few Buginese still have strong beliefs in spirits, most of them are Moslems.

The Buginese in Sabah form part of an Indonesian community that totals about 25,000 people. Although an estimated 90 percent of these Indonesians refuse to become involved in politics, the community is a potential vehicle for subversive activity, and it is believed that within it a covert military organization has been established. Many Buginese in Sabah as well as in Kalimantan come from areas of Celebes where the anti-Djakarta Darul Islam, a fanatical Moslem sect that has political aspirations, has been active, and therefore some of them probably oppose, or at least do not support, the policies of the Indonesian government.

#### 4. Chinese

The Chinese in Borneo are found mostly in the coastal areas, where they form large communities in and around the chief trade centers. Although they are not evenly distributed throughout Borneo (more than 80 percent of the Chinese in Sarawak live in the First and Third Divisions, nearly half of those in Kalimantan live in the western part of the territory, and a few live in the southeast), the Chinese are in practically every village in all parts of the island. Even the smallest town in the hinterland may have a Chinese trader. In spite of their penetration into remote districts, more than 70 percent are settled in urban areas.

The Chinese are the largest ethnic group in Kuching and Sibuan in Sarawak; in Jesselton, Tawau, and Sandakan in Sabah; and in Singkawang and Pontianak in Kalimantan. Among the major cities, only Bandjermasin has a small Chinese population.

Only during the past 100 years have the Chinese settled on the island in sizable numbers. The Chinese community has grown at a substantial rate through natural increase and immigration, and now there are more than 750,000 on the island.

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Restrictions controlling the influx of Chinese into all parts of the island, particularly the northern part, have been tightened in recent years, and now Chinese immigration to Borneo has almost ceased. Most of the Chinese on the island are second or third generation Borneans.

Most Chinese families in Borneo emigrated originally from the southern provinces of Kwangtung and Fukien, and they continue to speak the dialects that are spoken there -- Hakka, Foochow, Hokkien, Cantonese, and Tiechiu. Hakka, the most common dialect, is spoken by more than 40 percent of the Chinese on Borneo. Mandarin has been the official language in the Chinese schools of the former British territories for more than 40 years, and all of the younger generation can speak it, though it is rarely used outside the schools. Most Chinese businessmen in northern Borneo also can speak Malay, and most in Kalimantan can speak Bahasa Indonesia. In addition, most Chinese can communicate in the languages spoken by the native groups with whom they do business.

Economically, the Chinese are the most important ethnic group on Borneo. Commerce and finance are mainly in their hands. They dominate export trade in such products as rubber, pepper, and sago, and they control a substantial part of import trade. Most shopkeepers, artisans, and small businessmen are Chinese. They produce considerable quantities of rubber and garden products and, in Sarawak, most of the pepper. Most of the timber and mining industries are in their hands. Professional men and bankers are largely Chinese, and so are large numbers of government officers. Buses, taxis, and riverboats are usually run by Chinese.

Jungle products such as camphor, rattan, and gutta-percha, gathered by the native groups, are collected by Chinese traders either in native settlements or in coastal bazaars. In return, the Chinese provide the natives with groceries, manufactured goods, cash, or credit. This debtor-creditor relationship inevitably has resulted in some friction, but generally the Chinese businessmen have established relationships of mutual trust and confidence with their indigenous neighbors. There have been instances of shady dealings, however, and though these are rare, they generate ill will.

Some Chinese are settled on the land, where they generally produce wetland rice for their own consumption. However, the Chinese are an enterprising people and are not satisfied with a subsistence economy. They find it profitable to plant something in addition to rice, particularly rubber. In Sarawak during periods of low rubber prices, the Chinese often borrowed

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land from their Malay and Sea Dayak neighbors, since their own land was planted in rubber, and planted it in rice. When prices for rubber went up, the Chinese returned to tapping rubber trees. In order to protect the economically unsophisticated native peoples from Chinese entrepreneurs, the governments of the former British territories maintain policies that, in effect, prevent the Chinese from gaining additional land at the expense of the native.

The Chinese are extremely eager for education. Wherever they have settled, they have financed and opened their own schools. Sarawak has 234 Chinese schools; Brunei, 8; Sabah, 87; and Indonesian Borneo well in excess of 200 schools. In Sarawak in 1960, 80 percent of Chinese children of school age attended school, as opposed to 35 percent of children of school age of other ethnic groups.

The Chinese communities are the most strongly united and politically cohesive of any on the island. Although it is difficult to assess the loyalties of the Chinese to the two Chinas, there probably is little active support for the Nationalist regime. Both old and new generations maintain a sentimental attachment for mainland China, and many Chinese regard it, rather than Borneo, as "home." These attitudes render the younger generation in particular, with its pride in the growth of Chinese power and its enthusiasm for social change, vulnerable to Chinese Communist propaganda. Because of the large Chinese population in the Pontianak-Singkawang area, the Indonesian Government believed in 1959 that there was danger of the region becoming a virtual Chinese Communist state. Consequently, they closed some of the Chinese businesses, curtailed Chinese trading activities in the rural areas, and closed most of the Chinese schools in the area.

The Chinese in Sarawak and Sabah generally have not been receptive to the federation of Malaysia, as they believe that it will be, in effect, a Malay state and that Malays will be given preferential treatment. Malays have always been the preferred group in the northern territories of Borneo; however, rarely in the past has there been any open antagonism between the two groups. Within the Sarawak United Peoples Party (SUPP)\*, which represents most of the Chinese population, there are anti-Malaysia elements, particularly the militant Clandestine Communist Organization (CCO). Up to December 1963, about 1,000 CCO supporters reportedly had crossed the border into Kalimantan, where, along with other Chinese and some natives from Kalimantan, they were trained in guerrilla

\* See Chapter V.

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Figure 24. Dusun girls of Sabah.



Figure 25. A Dusun house near Papar in Sabah. The communal longhouse is rare among the Dusuns living in the coastal areas.

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warfare. Many of the Chinese had infiltrated back into Sarawak, possibly with personal arms, and were believed to have begun training other CCO supporters. 25X1

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the potential armed strength of the Chinese in Sarawak, as of October 1963, was estimated at 3,500 and is likely to increase in 1964. It is estimated that there were about 20,000 tacit CCO supporters in October 1963.

### 5. Dusuns

Most of the Dusuns\* live in Sabah, where they are settled in the foothills behind the narrow coastal lowland and on the lower slopes of the mountains. Major concentrations of Dusuns are in the Kudat area of the northwest coast, the Tambunan and Ranau plains in the interior, and the valleys of the Sugut and Labuk Rivers in the east. Many of those living in the interior are now moving to the coasts to work on plantations and in the lumber industry. The Dusuns are the largest ethnic group in Sabah. The Brunei census of 1960 does not separate the Dusuns from the Muruts and the Kelabits, who are closely related, but in 1947 there were about 2,700 Dusuns living in the interior of the western part of Brunei.

The Dusuns display greater group cohesiveness than the Muruts and Kelabits, and the 15 or so Dusun tribes are closely affiliated. The Chinese have a strong influence among the Dusuns, and intermarriage is common. The Dusuns live either in single-family dwellings or in small longhouses that rarely shelter more than six or seven families.

Although many have been converted to Christianity or Islam -- in 1960, 36,148 Dusuns were listed as Christians and 9,880 as Moslems -- most of the Dusuns living in the interior still are animists. The majority, including many who have accepted the new faiths, are intensely superstitious and have great faith in omens. One noteworthy superstition involves veneration of certain porcelain jars which possess various grades of sanctity. The Dusuns, as well as many of the other peoples of Borneo, bury their dead in such jars.

Mount Kinabalu is considered to be the home of souls of departed tribesmen, and these spirits must be propitiated before one attempts to climb the mountain. The Dusuns set great store in talismans, and charm belts are usually worn. They throw

\* The term "Dusun" is a Malay word that means "people of the orchards" or, in effect, "country yokels." The Dusuns call themselves "Kadazans."

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rice and eggs into the river as an offering to water spirits in the hope that they will send rain.

Taboos are strong among the Dusuns and include prohibition against wearing anything white, red, or yellow while a religious ceremony is in progress; working on the "bad" days of the month (each month has both "good" days and "bad" days); and living in a new village in which a person has died within 6 months of its completion. If this occurs, the village must be abandoned and a new site selected.

Some of the Dusuns living in the interior practice shifting cultivation of dryland rice, but most grow wetland rice on small terraced fields of from 1/2 to 3 acres. Each field is usually owned by an individual family. Dusun women plant rice seeds in nurseries in August or September. At about the same time the men of the village prepare the fields to which shortly thereafter young rice shoots are transferred. Just before and during the harvesting of the rice (usually during February or March), most of the villagers live in temporary huts scattered throughout the fields, leaving the village nearly deserted.

When the harvest is completed, the Dusuns hold a large feast and drink much native brew, which they make from the sap of the sago palm or from rice. In addition to rice, the Dusuns grow manioc (tapioca), corn, sweet potatoes, and melons. Coconut groves are found in all villages, and tobacco is often grown. Food surpluses are taken to the coast and traded.

#### 6. Kayans and Kenyahs\*

The Kayans are located principally in the watersheds of the middle and upper Rajang and Baram Rivers in Sarawak, behind the coastal complex of Malays, Chinese, and Melanau in the Third, Fourth, and Fifth Divisions. The area occupied by Kayan tribes also extends southward across the Sarawak -- Kalimantan border and includes the headwaters of the Kapuas River. Kayans also inhabit much of the interior of northeastern Kalimantan in an area that is mostly the watershed of the Bahau River. This area is believed to have been the original habitat of both the Kayans and the Kenyahs. Villages of Kenyahs are dispersed throughout the area, although the Kayans are the predominant

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\*Although the Kayans and the Kenyahs speak different languages, they have many cultural traits in common and often are found living near one another. They are therefore treated here as one ethnic group.

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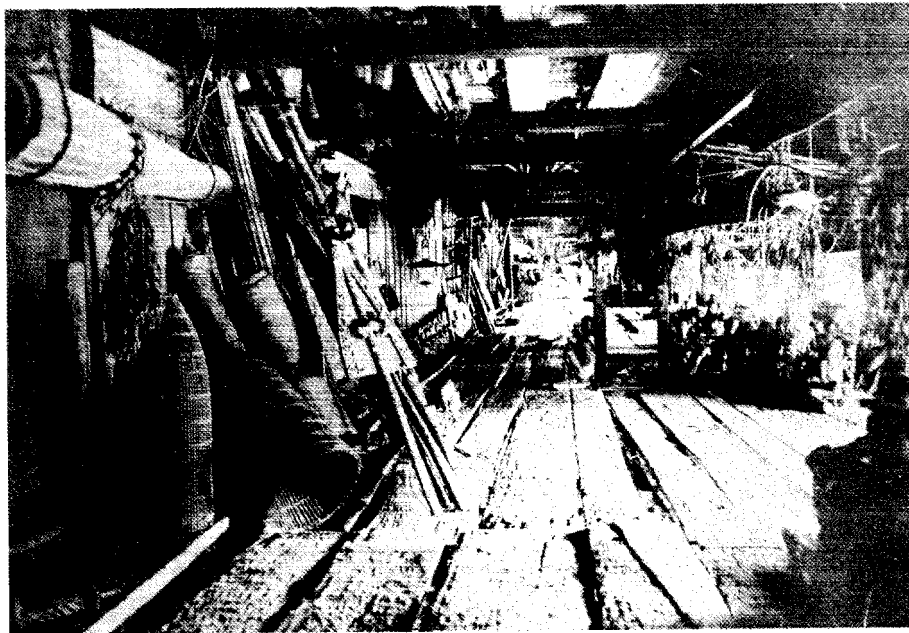


Figure 26. The gallery of a Kayan longhouse.

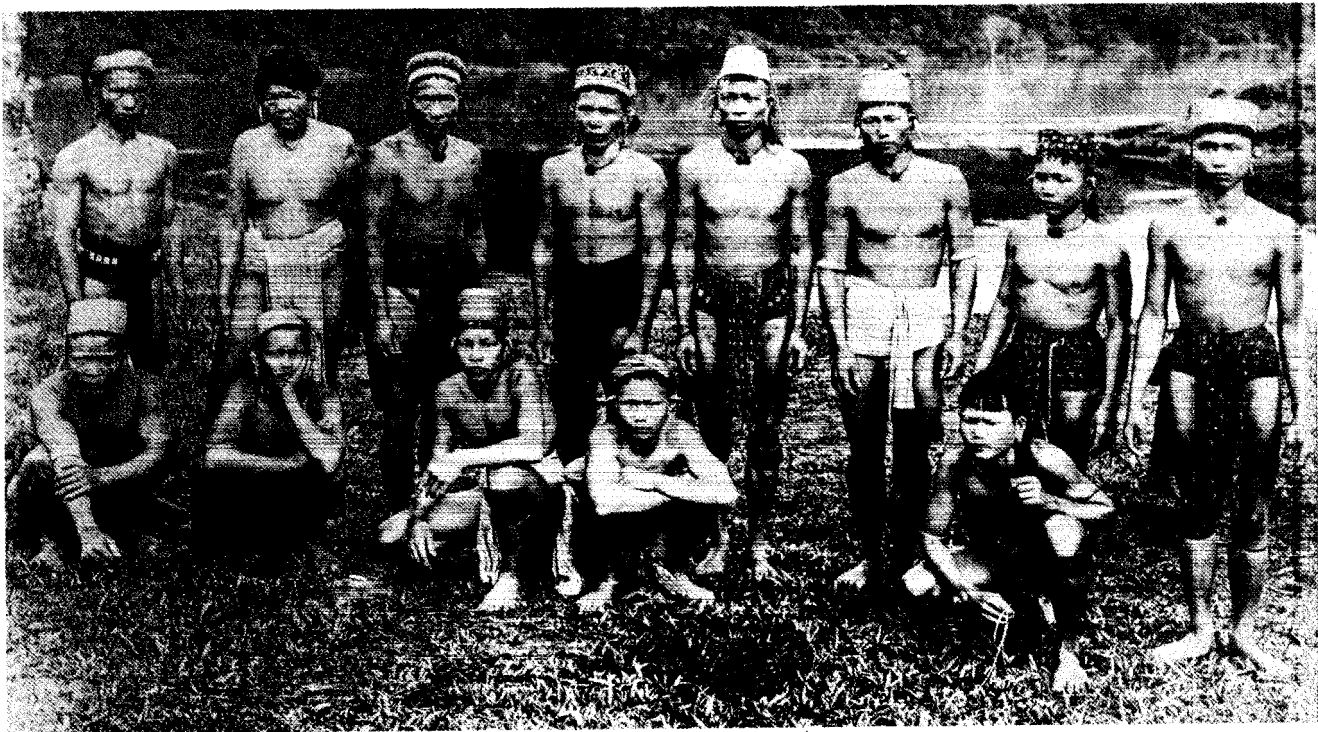


Figure 27. Group of Kayan men of interior Sarawak.

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ethnic group except in the higher parts of the Kayan-Kenyah regions, where the Kenyah villages tend to out-number those of the Kayans.

During the first half of the 19th century the Kayans and Kenyahs migrated northward from Kalimantan into Sarawak. The Kenyahs are believed to have preceded the Kayans. The Sea Dayaks, pushing in from the southwest at about the same time, soon came into conflict with them, and a state of warfare prevailed between the two groups. In 1863 the Kayan-Kenyah power was broken by an expedition of Sea Dayaks led by Charles Brooke, who later was to become the second Rajah of Sarawak. The Kayans and Kenyahs made no effective resistance; they were easily driven farther into the interior and never again were a significant force. Since their suppression by the Brooke expedition, their numbers have declined steadily, apparently because they were pushed into malaria-infested valleys, which they still inhabit. Only in recent years has it been known that the high mortality rate was caused by malaria, and measures have been undertaken to control the disease.

Ties of kinship between Kayan and Kenyah tribes living on opposite sides of the Malaysia -- Kalimantan border are reported to be close. Those tribes living in Sarawak, however, are considered generally loyal to the Malaysian authorities. During the uprising in Brunei in December 1962, the Kayans and the Kenyahs responded to a call for help from the British administrators. In July 1963, a body of 60 Indonesian soldiers encamped north of Longnawan (1°54'N-114°53'E) reportedly attempted to intimidate and subvert Kayan and Kenyah tribes living on the Kalimantan side of the border. According to accounts, the Indonesians were not well received even though the natives were frightened by the well-armed unit.

The Kayans speak one language, with little local diversity. The Kenyahs speak a number of mutually unintelligible dialects of one language. However, because most Kenyahs can speak more than one dialect of their own tongue, as well as the language of the Kayans, most of them can communicate with other tribes in their immediate area.

The Kayans and Kenyahs at one time were notorious headhunters (headhunting was an essential part of their religious ritual), and it was this that led to the expedition against them in 1863. Except during their boisterous feasts, they are a quiet, reserved, slow, and rather phlegmatic people, characterized as being loyal, truthful, dependable, and hospitable to outsiders.

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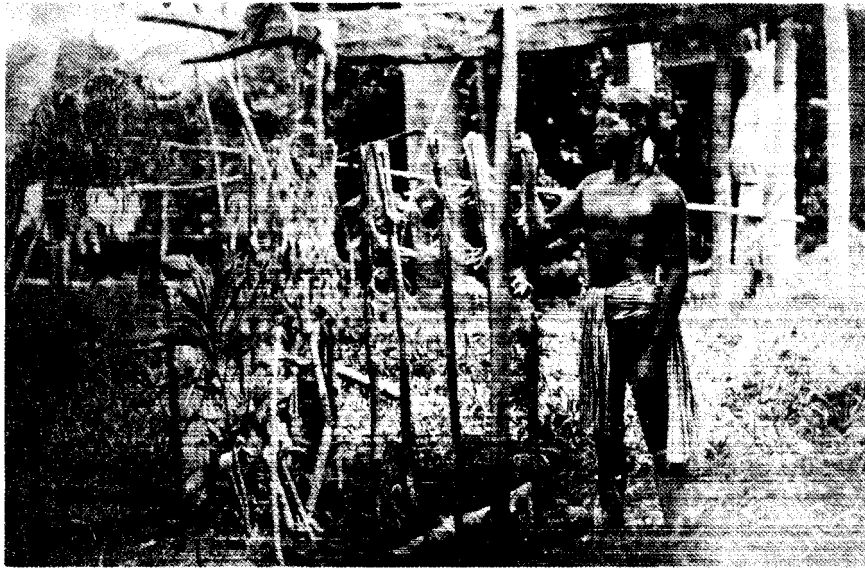


Figure 28. A Kayan boy making offering to the gods after recovery from an illness.



Figure 29. Kenyah women husking rice on the long-house veranda with pestle and mortar. Distended ear lobes decorated with copper rings are common among both men and women of many Borneo tribes.

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Figure 30. A Kenyah longhouse settlement along the upper Baram River of Sarawak. Settlement is recent as evidenced by lack of fruit trees.

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Unlike the Sea Dayaks, the Kayans and Kenyahs are class conscious, and their social system is well defined. The chiefs are exalted, and even their paddy fields are cultivated for them in the manner of a feudal due. The chief occupies a large room at the center of the longhouse, with the ordinary people occupying rooms on either side, generally decreasing in social standing toward either end of the house.

Most Kayans and Kenyahs are still animists and believe that spirits are embodied in plants, animals, mountains, rivers, and the like. Carved idols, used when addressing the gods, are extremely common. Since World War II, however, increased European influence has prompted many of these tribesmen to discard their animistic beliefs and adopt Christianity, although many converts have retained their traditional beliefs and have molded Christian beliefs to fit their old religion.

The Kayans and Kenyahs practice slash-and-burn agriculture, with dry rice as the chief crop. Because their areas are not overpopulated, shortage of land is not a problem, and famines are rare. Kayans and Kenyahs are very artistic. Some groups are skillful wood carvers, and the Kenyahs in the region of the upper Bahau River in Kalimantan are excellent metal craftsmen. They make steel sword blades for trade. Both the Kayans and the Kenyahs are well known for their skill in canoeing.

#### 7. Kedayans

The Kedayans occupy an area a short distance inland from the coast of northern Borneo, extending from near Miri in the Fourth Division of Sarawak through the two Brunei enclaves to Papar in Sabah. Most of the Kedayans in Sarawak are in the Limbang area between the two enclaves of Brunei. The 1960 census for Brunei did not count the Kedayans as an individual group, but in 1947 there were more than 6,500. A few thousand live in Sabah.

Little is known of the background of the Kedayans. They are believed to have migrated originally from Java to Brunei and from there northeastward along the west coast of Sabah. They have intermarried with Malays and Muruts, losing much of their identity, and many authors do not consider them a distinct ethnic group. Most have adopted Islam as their religion although, like most other indigenous groups in Borneo, they have continued to cling to many of their animistic beliefs. Most Kedayans are farmers and grow rice along with some rubber and fruit trees, but a few are fishermen.

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Figure 31. Kelabit men from the uplands of eastern Sarawak near the juncture of the Sarawak, Sabah, and Kalimantan borders.

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Most of the non-Malays who participated in the uprising in Brunei in December 1962 were Kedayans. Most Kedayans are reported to be sympathetic to the Partai Ra'ayat (People's Party) and to the Tentara Nasional Kalimantan Utara (North Kalimantan National Army -- TNKU).\* The Kedayans are longtime enemies of the Kayans and Kenyahs.

#### 8. Kelabits

The Kelabits are a small group who occupy the inaccessible hill country centered on the headwaters of the Baram River in Sarawak, although some Kelabit country extends into Kalimantan. In 1960 there were about 2,000 Kelabits in Sarawak, and there may be an equal number in Kalimantan. They once were far more numerous but have been decimated by disease. The Kelabits live in rugged hill country, generally higher than 3,000 feet above sea level. They are skillful farmers. Most of them grow dry-land rice, although some grow irrigated rice on small fields. Large amounts of vegetables and fruits are raised.

The Kelabits have a strong social structure, and class lines are strictly observed. They normally marry within their class. The chief, whose position is inherited, exercises considerable authority. They have been spoken of as the most realistic and logical people of the interior and have been characterized as intelligent, rational, generous, gay, and extremely hospitable. They look for similar traits in other people, but respect firmness as well. Unlike the usual long-house of other groups, but consistent with the open and friendly ways of the Kelabits, their longhouses have no partitions. The occupants seem to have developed a spirit of cooperation and comradeship above the usual level, but a visitor usually requires considerable time to adapt to the lack of privacy.

The Kelabits consume immense quantities of rice beer at their festivals, and every event -- births, deaths, harvests, arrival of visitors, and the like -- is an excuse for drinking. The noise, good humor, and hospitality of a Kelabit festival are said to be almost overpowering to an outsider. Their increased contact with outsiders has prompted them to abandon many of their superstitions, though few have been converted to Christianity. Today, although they seem more worldly than other hill peoples, they still feel that they are looked on by the lowlanders as "up-country cousins," and are eager to improve their status.

\* See Chapter V.

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The Allied forces used drop zones in Kelabit country when entering Borneo during the late phases of World War II. The Kelabits welcomed the Allies and were easily persuaded to take up arms, including blowguns, against the Japanese. They achieved an extraordinarily good wartime record and since the war have been considered fiercely loyal to the British authorities. Most probably they are unhappy at the British withdrawal from Borneo.

#### 9. Land Dayaks

The Land Dayaks occupy the inland part of the First Division of Sarawak and most of Kalimantan Barat Province of Indonesian Borneo. In the latter they occupy all the province except the Upper Kapuas region, where the much more numerous Sea Dayaks form the predominant ethnic group, and the coastal belt, which is inhabited by Malays, Chinese, and Buginese. Both Land and Sea Dayaks are believed to have settled originally in the southern part of Borneo and migrated northward. The Land Dayaks have made no significant migrations eastward across Sarawak because the more aggressive Sea Dayak tribes are located along their eastern flank. Only 600 of the more than 57,600 Land Dayaks in Sarawak live outside the First Division. In Kalimantan they have been estimated to number about 240,000.

The language of the Land Dayaks is distinct from that of the Sea Dayaks, although related to it. Like all major indigenous groups in Borneo, Land Dayaks are divided into numerous tribes, each with its own dialect.

The Land Dayaks are a mild, shy people, in contrast to their bolder, more adventurous neighbors, the Sea Dayaks. Because of their nonaggressive nature they were in danger of extinction in the early part of the 19th century, being unable to withstand attacks by the Sea Dayaks of neighboring areas who captured and sold them as slaves to the Malay leaders of Sarawak. The arrival in 1841 of James Brooke, the first White Rajah of Sarawak, put an end to such exploitation. Since then the Land Dayaks have lived a peaceful and secure, although austere life. Animosities between the Land and Sea Dayaks, however, still exist, and the Land Dayaks of Sarawak have regarded the British administrators as protectors.

The economy of the Land Dayaks is based on subsistence slash-and-burn cultivation of dryland rice, although a few, mostly living in downriver areas, are engaged in economic pursuits such as working on rubber plantations. Most of the area in Sarawak occupied by Land Dayaks, and much of their area of

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Figure 32. A family room of a Land Dayak longhouse.

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Kalimantan, has been burned over at least once for rice cultivation. As a result, dense second-growth forests and thickets of bamboo have grown up. Overworking the land has left few areas suitable for cultivating rice, but the Land Dayaks are reluctant to move elsewhere. The Sarawak government has tried to discourage the wasteful system of shifting agriculture by resettling these people along the coast, but the program has met with little success.

Most Land Dayaks are animists, but as the result of long contact with Europeans, many have embraced Christianity. In 1960 nearly 16,000 were Christians. Some observers believe that their animistic religion bears certain resemblances to Hinduism. They practice cremation of the dead, a custom unknown in other parts of Borneo.

The Land Dayaks live in villages that consist of several small longhouses with roofed verandas. The longhouses are linked together by walks of split bamboo. These villages differ from those of other peoples of Borneo in typically having a building with a high, steeply pitched roof. This building is used for social gatherings, accommodation of visitors, and as a dormitory for village bachelors.

The Land Dayaks have never been considered particularly loyal to the British, but 13,000 in the Bau District of the First Division of Sarawak stated in October 1963 that they "were ready to sacrifice everything to fight against any enemy." Their passive nature, however, would probably limit their military or paramilitary potential. Indonesia reportedly was unsuccessful in attempts to subvert several hundred Land Dayaks from Sarawak during 1963. A few Land Dayaks from Kalimantan, however, were reported to be involved in cross-border raids on the village of Tebedu in 1963.

#### 10. Malays

Malays inhabit the coastal areas all around the island, with major concentrations on the northwestern and western sides. They have been a powerful force on Borneo since their migrations there from Sumatra, the Riau Archipelago, and southern Malaya in the 14th century. Because they were more advanced culturally than the indigenous inhabitants, they easily assumed and retained political control of the island until the European powers began to carve out their spheres of influence in the 16th century. Although they ultimately yielded control to the British and Dutch, they have remained, with the exception of the Chinese, the most politically conscious non-European group on the island. The Malays provided

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Figure 33. Malay men. Note mixtures of influence in their attire.

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the main support for the Brooke regime, which controlled Sarawak from 1841 until it became a British crown colony in 1946. Under the Brooke administration, they held nearly all the high offices of state, but the government services are now staffed (although perhaps still disproportionately favoring the Malays) by people from all ethnic groups. Most civil service positions in Kalimantan are held by Malays, Buginese, or Bandjarese.

The Malay community has increased at a rapid rate through the absorption of other peoples. Few Bornean Malays today are of pure Malay stock. Their group includes indigenous persons who have merged with them through marriage or who have adopted Islam and the Malay language. Although there are minor differences in dialect and customs among Malays living in various parts of Borneo, there is a strong cultural cohesion among all of them. There are also basic affinities between the Malays of Borneo and those of Malaya and of other parts of the Philippine and Indonesian archipelagos.

Islam is by far the most powerful unifying force among Malays, and it has produced a considerable measure of uniformity among those who embrace it, regardless of original ethnic affiliation. In fact, in Borneo the term "Malay" often is used loosely to refer to any person who professes Islam. All the larger Malay villages have mosques. Although the Malays take their religion seriously (many have made the pilgrimage to Mecca), they are, nevertheless, quite tolerant in their practices. Many Malays drink alcohol. The women go unveiled. Polygamy is permitted for Moslems, but monogamy is the rule among the Malays of Borneo. Islamic rules that are rigidly adhered to include abstinence from pork and the observance of the fast of Ramadan.

The Malays have an aristocratic social tradition with a system of hereditary rank ranging through four or five stages from ex-slaves and commoners to a titled upper class. This pattern reached its highest development in the Brunei Sultanate and among the upper class Malays of Sarawak under the Brooke rajahs. Moslem ancestry is valued, and the Malay who can look back on several generations of Moslem ancestors feels superior to those more recently converted. A pilgrimage to Mecca also assures prestige and provides a means for a prosperous Malay of doubtful antecedents to climb the social ladder.

Most Malays gain their livelihood by fishing and growing wetland rice and sago. A few are traders, but they rarely have much success in this field. It is likely that since the 1959 edict forbidding the Chinese to trade in rural areas of Indonesia, some Malay traders have replaced Chinese traders in

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Kalimantan. Malays of Brunei formed the major component of the TNKU -- the rebel force that revolted against the British in Brunei in December 1962. The TNKU has since served as a front for Indonesian-sponsored raids along the Malaysia - Kalimantan border.

#### 11. Melanaus

The Melanaus live in the poorly drained coastal areas of Sarawak and Brunei. Most of the nearly 45,000 in Sarawak live in the Third Division. They were the original inhabitants of the Sarawak coast and formed a distinct ethnic group there before the arrival of the Malays. Most of them still live in their own villages and have retained their own language, similar to that of the Kayans, and a highly stratified social system. Nevertheless, they have lost much of their identity as a result of mixing with the Malays, who now form the predominant ethnic group in the coastal regions. Most of the Melanaus have adopted Islam, a few are Christians, and some are still animists. A single village is likely to have adherents to all three beliefs, although isolated villages may contain only pagans.

The Melanaus formerly lived in longhouses but now live in single-family dwellings raised on piles. Their villages, indistinguishable from Malay villages, usually consist of a straggling line of houses along a riverbank, often with a wooden platform over the river and extending the full length of the village. This platform serves as a work area and as a place for village meetings, much as the veranda of the longhouse in interior villages.

Because the Melanaus live along lower stretches of rivers not far from the sea, they are an amphibious people. Nearly all travel is by canoe. They are excellent sailors and fishermen and sometimes fish in extremely rough seas in their small but seaworthy craft. The Melanaus cultivate swamp crops -- notably the sago palm, which at one time provided the staple of their diet but which has been replaced by rice. They grow rubber trees on some of the better drained land. Many work in the timber industry.

The Melanaus are gentle and peace-loving. They are reported to be exceedingly likable, good-humored, industrious, and intelligent. Because they are recent converts to Islam, they do not have the prestige of true Malays. This fact, combined with their generally passive nature, has relegated them to a minor role in governmental affairs. They have, however, begun to show considerable interest and aptitude in the development of local governing bodies.

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Figure 34. A Murut from the uplands of Sabah.



Figure 35. A Murut longhouse. Sections of the roof are propped open to admit light to the family compartments. Communal houses are being replaced among the Muruts by smaller dwellings.

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## 12. Muruts

The Muruts are concentrated in the isolated hilly country where the territories of Sarawak, Sabah, and Kalimantan meet, various Murut tribes occupying territory in all three states. A few Muruts also live in the eastern enclave of Brunei. In Sarawak they are found mostly in the upper valley of the Trusan River, which flows along Brunei's easternmost border. In Sabah, where they are sometimes called Tagals, some live in the valley of the upper Padas River and along the railroad between Tenom and Jesselton, but most are found along the rivers flowing southward into Indonesian territory. In Kalimantan Muruts are found as far south as the Sesajap River. They are closely related to the Dusuns, their neighbors on the north, and to the Kelabits, who occupy the valley of the upper Baram River to the southwest.

The Murut communities were ravaged during the first half of the 20th century by diseases such as smallpox and cholera introduced by outsiders, and standards of health among them remain low. Additionally, heavy drinking has depleted their numbers. Much of their rice crop is used for making wine, and they have a reputation for regularly drinking themselves into a stupor. Their general state of squalor and wretchedness has made the Muruts a target for Christian missionary efforts, particularly during the past 30 years.

There is little unity among the Muruts. They form fairly independent groups, each differing somewhat in customs and language. Chiefs have little authority within the loose social organization of the Muruts.

Because the Muruts inhabit rugged uplands, where rivers generally are too turbulent for canoes, most movement is on foot. As a result, they have finer physiques than most other peoples of Borneo. They are reported to be a dour and obstinate people, though not unreliable. During World War II, some Muruts aided Europeans who took refuge from the Japanese in their territory. When paramilitary forces were organized in the Trusan valley during the closing stages of the war, Muruts took up arms against the Japanese with considerable success. A few of the tribes living in the Sabah -- Kalimantan border area were reported to have actively aided the Japanese, however.

Some of the Muruts of Brunei are Moslems. They joined forces with the Malays and the Kedayans in the rebellion against the British in December 1962. Many of the chiefs of Murut tribes in Sabah are ex-police officers. For this reason

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most Muruts in Sabah probably would be loyal to Malaysia if attempts to subvert them were made by Indonesia. Some living near the Sabah -- Kalimantan border (the tribes that assisted the Japanese) reportedly are not favorably inclined to the Malaysian concept, however, and may be sympathetic to Indonesia.

Muruts are good farmers. While most practice shifting cultivation, some, particularly in the Trusan valley of Sarawak, have developed an advanced system of irrigated rice cultivation. Occasionally a Murut village has one large communal rice field, but usually villagers grow rice independently on small family plots. The Muruts of the Malaysian part of the island are generally more prosperous than those across the border in Kalimantan, and often Malaysian Muruts hire Indonesian Muruts to do heavy work for them.

The traditional longhouse of the Muruts is unique in that a corridor, with family cubicles on either side, extends through the middle. There is no veranda along the front, and the interior is dark even though sections of the roof are propped open to admit light. Longhouses are rapidly disappearing, however, and many villages now consist of houses built on stilts and occupied by one, two, or three families.

### 13. Ngadjus

The Ngadjus\* are found only in Indonesian Borneo, mostly in the interior of the southern lowlands, back from the coastal strip occupied by Malays, Buginese, Bandjarese, and Chinese. The Ngadjus also inhabit parts of the upland region -- the Schwaner and Muller Mountains and the northern part of the Meratus Range -- but most of these mountainous areas are sparsely populated.

Ngadjus live to the east of the Land Dayaks and to the south of the Sea Dayaks, Kayans, and Kenyahs. Because all of these peoples have common cultural traits, in the transitional areas it is extremely difficult to determine to which group a particular tribe or village belongs. Little information is available on traits that would help distinguish Ngadjus from neighboring peoples. Apparently language has been the basic criterion used to identify them as a group. The Ngadjus have little ethnic unity. Affiliations are usually limited to loose alliances of villages within a small area.

\* Use of the term "Ngadju" varies. Here it is used in a broad sense, and much of the information therefore may not be applicable to all Ngadju subgroups.

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Most Ngadjus practice slash-and-burn agriculture and primarily cultivate dryland rice. Jungle products, notably camphor, are gathered and traded to Chinese in exchange for cloth and other manufactured goods.

Most Ngadjus are animists. Planting practices are ritualistic, and taboos and superstitions are deeply rooted. For example, virgins plant the rice seeds, pregnant women sleep in the fields to impart fertility to the growing grain, and longhouses are taboo for a period of 8 days during the harvest.

During the period of Dutch administration, some Ngadjus were converted to Christianity. When the Dutch departed, many of the converts reverted to their traditional animism. Although the present Indonesian Government has done little to impose Islam on the peoples of Borneo, a significant number of Ngadjus have been converted since 1949. Greatest conversion has occurred in the Barito Valley, where outside influence has extended relatively far into the interior.

Although they are suspicious of outsiders and their confidence is not easily gained, the Ngadjus are normally quiet and peace-loving. Formerly they were headhunters, said to be fearless in battle. Some of the more progressive Ngadjus resent Indonesian Government neglect of Borneo, particularly in the field of education.

Ngadjus from the Bandjermasin and Samarinda areas reportedly have been trained by Indonesia for guerrilla warfare in western Kalimantan, but have been found unreliable for such activity.

#### 14. Punans

The nomadic Punans\* are the most primitive people on Borneo. They collect wild fruits and vegetables and hunt and trap animals in the most remote jungles of Sarawak and Kalimantan. Because of their migratory way of life, they have no permanent homes; instead they erect crude huts of thatch near a supply of wild sago palm, which provides the staple of their diet. After several weeks, when the sago is exhausted, or when game or jungle products have become scarce, they move to a new location always travelling by land, never by river.

\* Although the term "Punan" is generally used to refer to this group, the term "Penan" is sometimes used in Sarawak. Some authorities believe that there actually are two closely related peoples: the Penans, who are nomadic, and the Punans, who are sedentary.

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Figure 36. Punan man with loincloth and jacket of bark. Collection of birds is an indication of the accuracy that can be achieved with a blowgun.



Figure 37. A group of Punans of the Baram valley of Sarawak. Although some are now agriculturists, most Punans still practice a primitive hunting and gathering economy.

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Some Punans have adopted a sedentary way of life. There are several Punan longhouse communities along the Rajang River system of Sarawak, and a particularly large village near Kapit.

The Punans trade jungle products to more advanced tribes, who in turn sell them to Chinese on the coast. Among the products collected and bartered are gutta-percha, rattan, and gallstones of monkeys, valued by the Chinese for medicinal purposes. Tobacco and iron are the two trade products most desired by the Punans. In hunting, animals are killed with poison darts shot from blowguns, with which the Punans are notoriously accurate, but this weapon is being replaced by steel spears and, to a lesser extent, by shotguns. Punans living in northeastern Kalimantan used blowguns against the Japanese during World War II. The Punans usually emerge from the jungle only to barter the products they have collected. In Sarawak, trading meetings supervised by the government are held two or three times a year to accommodate the Punans.

The Punans are fine physical specimens -- well built, strong, and vigorous. They are a shy, furtive people not likely to harm one without provocation. When unjustly treated, however, they await patiently an opportunity for revenge. They are said to be stubborn and untrustworthy and to feign stupidity if it suits their purpose. Their clothing is usually confined to a loincloth for men and a skirt for women, both traditionally made of bark, or in recent years more commonly of cotton cloth. Their nomadic life does not permit complex social organization. They generally live in groups of 20 to 30, each an extended family with a senior male as its chief. There is little ethnic cohesion above this level, though marriage is usually within the Punan community.

#### 15. Sea Dayaks (Ibans)

The Sea Dayaks, who are also called Ibans, are concentrated in the interior of the Second and Third Divisions of Sarawak and in an area of about the same size across the border in the upper Kapuas region of Kalimantan. The latter area is generally regarded as their original homeland, from which they migrated northward into Sarawak. Some have moved eastward into the Fourth and Fifth Divisions and into the western enclave of Brunei in the past 100 years.

The Sea Dayaks probably are the most publicized people of Borneo. Until headhunting was suppressed by the Brooke regime it was practiced by many Bornean tribes, but the Sea Dayaks were the most notorious. Since taking a head -- whether of a man, woman, or child -- was considered proof of manhood,

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great effort was required on the part of the Rajahs to suppress headhunting. Until very recent years punitive expeditions were necessary to quell repeated outbreaks. Collections of blackened skulls are still found in most longhouses of the Sea Dayaks, though they are less venerated than formerly.

The Sea Dayaks were also notorious pirates along the northern coast of Borneo, and their piracy brought them into relatively early contact with Europeans as well as conflict with the first Rajah of Sarawak. With the help of the British Navy, the Rajah broke up the sea forays of these people in the 1840's. Although the name "Sea Dayak" is no longer appropriate, it is still the official term used by the Sarawak Government.

The social organization of the Sea Dayaks is highly communal and is democratic, though ill-defined and somewhat chaotic. They live in villages of one or more longhouses with each family responsible for the construction and maintenance of its segment of the house. Each house has a headman with power to settle small disputes and impose penalties if quarters are not properly maintained. In Sarawak a chief is elected by the village headmen of a particular area, usually a river valley containing 20 to 30 villages. He is responsible for the good order of his area and for settling major family and land disputes and is paid a salary by the Government. There are such chiefs in Kalimantan, as well, but it is doubtful that they maintain effective liaison with the Indonesian Government. Although the office of chief is not hereditary, lineage is respected, and a chief is often succeeded by one of his sons.

The traditional way of life of the Sea Dayaks revolves around the shifting cultivation of dryland rice. Because population pressures are increasing, areas suitable for dryland rice are diminishing rapidly. The Sea Dayaks are hard pressed in their search for new village sites. The Government of Sarawak has initiated resettlement programs in an effort to move them to lowlands where it is hoped they will adopt sedentary agriculture, but most Sea Dayaks seem to have a natural wanderlust and are reluctant to settle down.

Expeditions to isolated places to gather jungle products and to fish and hunt are common. In recent years this migratory habit has been partly satisfied by emigration to other areas to seek work, particularly to Malaya, Sumatra, Celebes, and New Guinea. The Sea Dayaks prefer work in the oilfields or with the British Army in Malaya. Until recently, many living in Kalimantan crossed the border into Sarawak to seek work. Travel passes were issued to some, but because of poor security along the border many crossed illegally.

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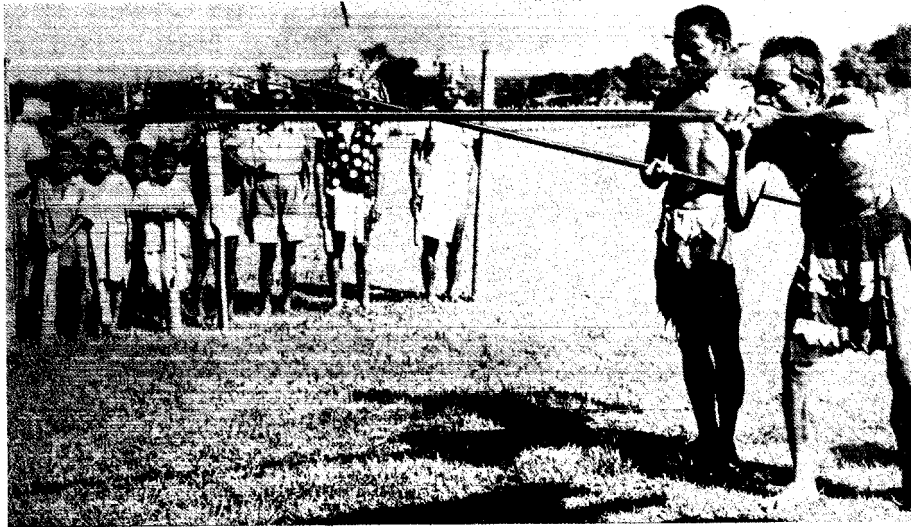


Figure 38. Sea Dayak men demonstrating the use of the blow-pipe. This weapon, although still used, has been replaced among the more sophisticated tribes by more modern weapons.



Figure 39. Sea Dayak men wearing traditional loin cloths made from tree bark. Western style dress has been adopted by many.



Figure 40. Sea Dayak woman collecting water from river.

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Although most Sea Dayaks are animists, many who live in the lower river valleys of Sarawak have been converted to Islam or Christianity (415 Moslems and 26,608 Christians are listed in the 1960 census). Sea Dayaks who remain animists have no idols, prayer houses, nor priesthood, but they do call on witch doctors to cure the sick. The practice of reading omens by interpreting the shape and condition of a pig's liver is still common among some tribes. A pig is slaughtered for this purpose on every important occasion.

Monogamy is nearly universal among the Sea Dayaks. Divorce is easy, but uncommon. Promiscuity is common among the unmarried, but fidelity is the rule after marriage. In Sea Dayak society, women occupy a position of equality and respect, enjoying considerable independence and a strong voice in village politics.

The downriver Sea Dayak communities, which have been in closest contact with Malays, Chinese, and Europeans, are more aware of the outer world than those upriver. Education has made progress among them although the number of educated Sea Dayaks is still small. In upriver areas, which encompass all Sea Dayaks living in Kalimantan, they still live very much as their forefathers did, and literacy is rare. Interest in and desire for education are growing slowly. The Sea Dayaks have no script of their own but do have a system of hieroglyphics that can be read by all Sea Dayak tribes.

The hospitality of the Sea Dayaks is outstanding. Their longhouses have no locked doors. The visitor is fed and looked after, no matter how limited the food supply. Relations with Europeans have always been cordial.

The Sea Dayaks probably are the most individualistic and dynamic of the indigenous peoples of Borneo. They are excellent jungle fighters, and during World War II gave invaluable help to the Allies, being largely responsible for the containment of Japanese forces within the coastal areas of Borneo. After the war some Sea Dayaks from Sarawak were organized into the "Sarawak Rangers," a special unit of the British Army. They were used effectively as trackers in Malaya in the suppression of Communist terrorism in the late 1940's and in the 1950's. They helped the British forces in mopping-up operations after the rebellions in Brunei in December 1962. Although a few Sea Dayaks in the Sibuti area of Sarawak reportedly joined the Brunei rebels, having been told there would be "a good fight downtown," the Sea Dayak community in Sarawak is generally considered loyal to the Malaysian authorities. Reportedly, however, a few Sea Dayaks from Sarawak have crossed

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into western Kalimantan, where they have received military training -- along with some Sea Dayaks and others native to Kalimantan, and Chinese. Indonesia reportedly has had considerable success in gaining the loyalties of chiefs of both Land and Sea Dayaks from the Kalimantan side of the Kalimantan -- Sarawak border. Some of the chiefs reportedly were flown to Djakarta, where they were entertained and presented with gifts such as radios and knives. If this report is accurate, Indonesia probably is hopeful that these chiefs will in turn gain support from chiefs on the Sarawak side of the border.

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## V. Politics and Government

### A. Current Problems

#### 1. States of Northern Borneo

The major problem facing the inexperienced governments of northern Borneo is one of providing effective administration while preventing the mutual distrust among major ethnic groups from becoming a serious source of trouble. Language and literacy barriers prohibit the early growth of mass communications. Political party activity has mushroomed in recent years, and nearly all parties have appealed to the special interests of one ethnic group over the others. Although internal security is the responsibility of the Malaysian Government, the implementation of security measures will require the close cooperation of local governments. (see E. Subversion).

#### 2. Indonesian Borneo

Low-level dissident activity has been almost entirely stopped by the imposition of army martial law. Although martial law was lifted in 1963, the army remains strong in Borneo's administrative structure. Economic stagnation and the prevalence of Javanese in the bureaucracy remain a source of criticism of the central government. This has been offset by popular support for such government policies as gaining control of West New Guinea from the Dutch and opposing the formation of Malaysia.

### B. Structure of Governments

#### 1. Sarawak and Sabah

Sarawak and Sabah are headed by governors who are appointed by the Government of Malaysia, in whose House of Representatives Sarawak has 24 delegates and Sabah 16. These delegates are selected by the legislative bodies of Sarawak and Sabah. The governors perform a largely ceremonial role, and the main executive powers are held by chief ministers who head parliamentary cabinets responsible to state legislatures. In Sarawak the legislature (called the Council Negri) consists of 40 members, 36 of whom are elected. Sabah's Legislative Council has 25 members, 18 of whom are elected. In both states, the remaining legislators are appointed by the governors.

An indirect system of election is used, with direct popular votes being cast only for local government representatives

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(the district councilors). These councilors select delegates to the next highest echelon of government (division in Sarawak and residency in Sabah), which in turn selects delegates to the national legislatures.

Sarawak is divided into five divisions, each under a Resident, with headquarters at Kuching (First Division), Simanggang (Second), Sibiu (Third), Miri (Fourth), and Limbang (Fifth). Sabah is divided into four residencies: West Coast (headquarters Jesselton), Interior (headquarters Keningau), Sandakan (headquarters Sandakan) and Tawau (headquarters Tawau). Divisions and residencies are subdivided into districts. Local government has been increasingly entrusted to the popularly elected district councils.

Sarawak and Sabah each has its own system of native courts which have jurisdiction over matters involving customary law. The higher court system is part of the Malaysian judiciary, which is an extension of the system used by Malaya.

## 2. Brunei

Brunei is a British protectorate ruled by a hereditary sultan. The 1959 Constitution, declaring a constitutional monarchy, provides for a Privy Council consisting of 24 advisers selected by the Sultan, a 16-man Executive Council (also appointive), and a 33-member Legislative Council with an elective minority of 16 representatives (elected indirectly through district councils, as in Sarawak and Sabah). The Sultan suspended the constitution following an abortive revolt in December 1962 and reverted to personal rule for an indefinite period.

Brunei is divided into four districts: Belait (headquarters Kuala Belait), Tutong (headquarters Tutong), Temburong (headquarters Bangar), and Brunei and Muara (headquarters Brunei Town).

Brunei has its own system of lower courts and until September 1963 shared in the Supreme Court of Judicature which also served Sarawak and North Borneo. The present status of its higher court system is not known.

## 3. Indonesian Borneo

The four provinces of the Indonesian portion of the island are administrative divisions of the Republic of Indonesia. The names of the provinces and their capitals are: Kalimantan Timur (East Borneo) -- Samarinda, Kalimantan Selatan (South

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Borneo) -- Bandjermasin, Kalimantan Tengah (Central Borneo) -- Plangkaraja, and Kalimantan Barat (West Borneo) -- Pontianak. The heads of provincial and subprovincial governments are appointed by the central government in Djakarta and have extensive powers to suspend or veto acts of the partially elected regional legislatures. Small (two- to five-man) daily executive boards are appointed by the regional heads to perform the main executive tasks. The four Borneo provinces are also represented by 19 delegates (appointed by the central government) to the People's Consultative Congress at the national level.

The electoral system (not now in use) is one of proportional representation by direct ballot. A new electoral system is reportedly being devised in which elected officials will be a minority.

The judicial system consists of a national supreme court with state courts presiding in the provinces.

### C. Political Parties and Influence Groups

#### 1. Introduction

Political party activity is relatively new in northern Borneo. The first party was organized in 1956 in Brunei. Most of the parties champion the special interests of one of the major ethnic groups. In each of the three states of northern Borneo, however, a number of parties have found sufficient common ground to form Alliance Parties which have lasted beyond the electoral campaigns and now form the basis of government party coalitions. This type of party cooperation developed originally in Malaya and appeared in northern Borneo during the elections of 1962 and 1963 when the pending formation of Malaysia was a major campaign issue. Communist activity is illegal in northern Borneo, but Communist influences are exerted through labor and youth organizations, through traditional Chinese social organizations, and through the affiliation of some party leaders with Communist or Communist-penetrated organizations in neighboring nations. Communist influence is much greater in Sarawak than in Sabah.

Political parties in Indonesia have been relegated to a minor role by President Sukarno's "guided democracy" concepts. In early 1960 a National Front was formed under Sukarno's leadership for the purpose of blending political parties and special interest groups into one semiofficial organization to provide mass support for state policies. At the same time, the number of political parties was reduced from 40-odd to 10,

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and all were required to affirm their allegiance to the government. With key political posts subject to approval by the central government and with elections repeatedly postponed since 1959, most of the political parties have been hard put to maintain a meaningful existence. The Communist Party of Indonesia (PKI) is one of the 10 legal parties and has profited from the decline of the other parties. About 25 percent of the appointed national legislature and top advisory agencies created during 1960 are PKI members or are susceptible to Communist direction. Approximately 30 percent of the membership in the top executive boards of the National Front is oriented toward the PKI. To date, Communists have not been appointed to key policy-making posts within the Cabinet. The PKI is well organized, well financed, and controls a network of effective front organizations.

## 2. Sarawak

a. The Sarawak Alliance is a coalition of ethnic parties which holds a majority (19 seats) in the legislature. It campaigned on a pro-Malaysia platform in the 1963 elections. Chairmanship is held by the Partai Pesaka Anak Sarawak (PAPAS), a Dayak party formed in July 1962 under the leadership of Temenggong Jugah Anak Barieng, who is the chief leader of the Sea Dayak community. Other members of the Alliance are the Barisan Ra'ayat Jati Sarawak (BERJASA), a Malay-Sea Dayak party; the Sarawak National Party (SNP), a conservative Sea Dayak-based party led by Stephen Kalong Ningkan, who is Sarawak's new Chief Minister; and the right wing Sarawak Chinese Association (SCA), founded in July 1962. The majority of the Alliance vote was delivered by PAPAS and SNP.

b. The Sarawak United People's Party (SUPP) is a Communist-penetrated party formed in June 1959 which holds five seats in the legislature. A majority of its members is Chinese and the party is strongly anti-Malaysia. SUPP ranks have split on the issue of ousting Communist members. The SUPP chairman and leader of the moderate right wing is Ong Kee Hui, a wealthy Kuching banker. Its secretary-general and leader of the left wing is Stephan Yong, a British-educated lawyer. Both are Sarawak-born Chinese. The SUPP cooperates openly with the pro-Communist Barisan Sosialis Party of Singapore.

c. The Partai Anak Negara Sarawak (PANAS), organized in April 1960, holds five seats in the legislature. PANAS is almost exclusively Malay and campaigned for the formation of Malaysia. Its chairman, Abang Haji Mustapha bin

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Abang Haji Moasili, is the traditional head of the Malay community.

### 3. Sabah

a. The Sabah Alliance includes all of Sabah's major parties and was opppsed in the 1962 elections only by independent candidates. Alliance members supported Malaysia, but in widely differing degrees. The leader of the Alliance is the United National Kadazan (Dusun) Organization (UNKO). The UNKO, headed by Donald Stephans who is Sabah's new Chief Minister, draws most of its support from the Kadazan community but includes some Chinese. The Alliance also includes the United Sabah National Organization (USNO), primarily Malay Moslem and headed by Datu Mustapha; the United National Pasok Momogun (UNPM), formed by leaders of the west coast rural tribes and led by G.S. Sundang; and the Borneo Utara National Party (BUNP), which is a merger of two local Chinese-based parties (the United Party of Sandakan area and the Democratic Party of the Jesselton area).

### 4. Brunei

a. The Partai Ra'ayat (People's Party), organized in 1956 by A.M. Azahari, captured all 16 elective seats in the legislature in mid-1962. The party's leadership launched an abortive revolt in December 1962, and the party has since been banned. Partai Ra'ayat campaigned on a platform of opposition to Malaysia and advocacy of a three-state Borneo federation under the leadership of the Sultan of Brunei.

b. The Brunei Alliance, formed after the banning of the Partai Ra'ayat, is a coalition of parties reportedly strongly influenced by the Sultan. It includes the Brunei United National Organization, formed by a splinter group from the Partai Ra'ayat, and two parties closely associated with court circles, the Brunei United Party and the Brunei National Organization.

### 5. Indonesian Borneo

a. In East Borneo (Kalimantan Timur) the non-Communist parties are virtually inactive. The activities of the Communist Party of Indonesia (PKI) are also at low level, but the PKI has used a variety of front organizations in labor and village community affairs. The PKI has a noteworthy potential in the Balikpapan area among oil refinery unions affiliated with the Communist-dominated labor federation, SOBSI.

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b. In South Borneo (Kalimantan Selatan) the Moslem parties (Masjumi and Nahdatul Ulama-NU) have what approaches a monopoly on political influence, although the Masjumi was banned as a political party in 1960. Provincial wealth is concentrated in the hands of the traditional leaders of the Moslem community and is used to reinforce Moslem leadership. The PKI has made a strong bid for the support of Javanese migrants and Chinese labor, especially in the port of Bandjermasin. The Moslem population is largely Bandjarese, and their resentment of the dominant position of the Javanese in national policies has prompted delaying tactics in carrying out central government programs.

c. In Central Borneo (Kalimantan Tengah) Christian Dayak influence is strong because of superior education obtained in missionary schools, which are still functioning. This important minority supplies most of the local government's administrative personnel and led the agitation for separate provincial status. Two factors affect local willingness to accept stronger government control, however: (1) most of the key administrative positions are held by Javanese appointed by the central government and (2) the traditional Dayak leadership looks to Djakarta to protect its position against the growing strength of a sizable Bandjarese minority.

d. In West Borneo (Kalimantan Barat) the Communist-penetrated Partai Indonesia (Partindo) has gained an important advantage through its affiliation with leaders of the now-banned Dayak Union Party (Persatuan Dayak-PD). The Dayak Union was the largest single party and drew support from up-country Dayak peoples and the Chinese. Most of the non-Communist parties are ineffective. The PKI has courted Dayak support with an unknown degree of success, but the combined PKI-Partindo efforts are probably increasing the Communist subversive potential.

#### D. Foreign Relations

##### 1. Northern Borneo

Sarawak and Sabah, as Malaysian states, and Brunei, as a British protectorate, have no control over their own foreign policies, which are in the hands of the Malaysian and the British Governments respectively.

The former Government of Malaya, which will dominate Malaysia during its formative years, is pro-Western and strongly anti-Communist. Neutralist tendencies, long evident in Malayan opposition parties and the bulk of Singapore's

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Chinese population, will probably increase with the addition of the Borneo states' energetic Chinese and politically inexperienced tribal populations.

## 2. Indonesian Borneo

The formulation of foreign policy is a function of the central government, and the individual provincial governments play no part in the process. The Republic of Indonesia is highly nationalistic, and anticolonialism is a basic principle of its foreign policy. The Indonesian Government is publicly committed to disrupting Malaysia and has developed a foreign policy of "confrontation" which combines diplomatic and economic pressures and subversive activity. In September 1963 Indonesia cut off all trade ties with the new Malaysian nation and stepped up covert operations against northern Borneo.

### E. Subversion

#### 1. Introduction

Significant subversion exists only in the three states of northern Borneo. With the end of colonial rule in an area not ready for self-government, several factors have created security problems in Sarawak, Brunei, and Sabah. Among these are lack of basic social unity, political immaturity of the inhabitants, and Indonesian ambitions.

The population is racially diverse. Language barriers and high illiteracy deny effective mass communication.

The Malays, with the exception of the Chinese the most politically sophisticated of the inhabitants of Borneo, were given preference by the British in education and together with the Chinese hold most government jobs. They are inclined to look down on the Chinese and other Bornean ethnic groups and are resented and mistrusted by both the tribal peoples and the Chinese.

The Chinese, the best educated, and politically and economically adept, retain loyalties to mainland China. Often considered aliens by the rest of the population, the Chinese community is vulnerable to Communist penetration.

The tribal peoples are apprehensive over the departure of the British, to whom they looked for protection from the Chinese and Malays. Totaling half the population, these people represent a force for stability, but their lack of political experience makes them a target for subversion.

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The motivating force for exploitation of subversive tendencies comes from Indonesia's opposition to Malaysia. Djakarta has an interest in northern Borneo because of geographic nearness, historical claims, ethnic ties with two of the area's main racial groups (the Malays and the tribal peoples), and its desire to acquire more territory. At President Sukarno's instigation, Indonesia seems determined to prevent such a closely related area from becoming a stable part of a rival Southeast Asian power.

## 2. Sarawak

Significant organized communism is found only in Sarawak, where a third of the population is Chinese. Here the Sarawak Advanced Youth Association (SAYA), the youth arm of the Sarawak United Peoples Party (SUPP), and also the front group for the Clandestine Communist Organization (CCO), represents the greatest subversive threat. Its basic aim is the establishment of a Communist state in Sarawak. Until 1962, the CCO, whose membership is exclusively Chinese, pursued this aim through constitutional methods. Since the CCO is essentially a Communist Chinese organization, its ultimate aims and the aims of the Indonesian Government are incompatible. Nevertheless, the Indonesians have decided to use members of the CCO as a ready weapon for their immediate purposes in Sarawak. There are also indications that the CCO has succeeded in establishing a firm link with the Indonesian Communist Party (PKI). The PKI has in some measure been responsible for sponsoring the recruitment and training of CCO members.

The CCO's political activities have been concentrated in the SUPP, the most articulate, organized, and vigorous of Sarawak's political parties. The CCO has significant influence at the branch level and on national committees but has never succeeded in gaining absolute control of the SUPP.

The CCO is well established in all divisions except the Fifth, where the Chinese population is small. It has established a network of cells in Chinese schools for the purpose of talent spotting, indoctrination, and recruitment. The CCO is represented on the staffs and boards of management of many Chinese schools.

The CCO also makes use of the small trade union movement to further its aims. Recent government administrative action to combat this influence has had some success, but CCO control of and influence in trade unions in the First and Third Divisions of Sarawak is still effective.

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The Sarawak Farmer's Association is an illegal puppet organization of the CCO designed to achieve a controlling influence among the Chinese rural masses. Established in all divisions but the Fifth, it has attracted no tribal support, but its membership is increasing and may total 8,000.

After the Brunei revolt in December 1962 the CCO leadership began to prepare for armed struggle. Military training in guerrilla tactics and jungle warfare was started in the First, Second, and Third Divisions in February 1963. CCO trainees also received tactical instruction in attacks on police and security force personnel and posts.

CCO personnel have been crossing from Sarawak into Kalimantan and receiving military training there from Indonesian military and civil authorities. It is known that a few Chinese have been assimilated into the Indonesian-sponsored raider units based in areas opposite the First and Second Divisions. Most are probably being reinfilitrated into Sarawak to provide the nucleus for an internal uprising.

It is estimated that the CCO has about 1,000 full members and a potential armed strength of about 3,500. This force could probably be supported and supplied by about 20,000 non-militant Communist sympathizers. These sympathizers include members of the Sarawak Farmer's Association and other elements of the CCO-influenced Chinese rural population.

As a countermeasure to the CCO's program of militancy, in April 1963 British forces and Sarawak police units began patrolling in areas of CCO strength and along the Indonesian border. The Sarawak Government has also ordered that all arms owned by Chinese residents in the first four divisions be surrendered. The vast majority of these weapons, mainly shotguns, have been turned in and this, combined with the intensive patrolling, has led to a virtual cessation of CCO training within Sarawak. The movement of Chinese into Kalimantan and reinfilitration back into Sarawak is continuing.

### 3. Brunei

The degree of subversive danger in northern Borneo was first revealed by an armed revolt in Brunei on 8 December 1962 by the Tentara Nasional Kalimantan Utara-TNKU (North Kalimantan National Army). The TNKU was formed and armed by the now defunct, left wing Partai Ra'ayat (People's Party) of A.M. Azahari under the nose of the British without arousing great suspicion. The causes of the revolt centered around the inefficiency, corruption, and decadence of the Sultan's

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Government and the anti-Malaysia sentiment of most of Brunei's predominantly Malay population who fear that Brunei's oil wealth might be drained off for development of the other two Borneo territories. About 80 percent of the Brunei population was and still may be sympathetic to the Partai Ra'ayat. Even though the failure of the revolt produced disillusionment, Brunei will remain a potential danger spot for subversion.

The TNKU, which numbered about 3,500 at the time of the revolt, was composed almost entirely of Brunei Malays and Kedayan tribesmen, closely related to Malays. They were partially equipped and trained in Indonesia. When the revolt was crushed by several thousand British troops, the majority of the TNKU (3,000) surrendered. Most of the rank-and-file captives upon interrogation showed little comprehension of why they had been fighting and were later released. About 200 of the hard-core TNKU managed to disperse throughout the Borneo territories or escaped into Indonesian Borneo. Today no more than 50 TNKU insurgents are believed to be at large in the Borneo territories and the TNKU as an independent force is practically defunct. Azahari, an Indonesian-sponsored exile, appears to have lost the allegiance of his old followers, and TNKU activity is now largely limited to the participation of TNKU units or individuals in Indonesian-based border raids into Sarawak.

#### 4. Sabah

Of the three states of northern Borneo, Sabah is the least troubled by subversive elements. There was no significant sympathy in Sabah for Azahari's revolt, and most inhabitants are pro-Malaysia. In the summer of 1963 the British expelled two members of the Indonesian Central Intelligence Agency (BPI) operating in Jesselton under consular cover. They had been engaged in various subversive activities among the large Indonesian labor force, which represents the chief threat to security. British authorities have also been expelling Indonesian immigrants and closing down Indonesian organizations suspected of subversive activities.

#### 5. Indonesian Paramilitary Activity

Indonesian paramilitary operations against northern Borneo involve penetration by Indonesian guerrilla units operating under TNKU cover. These units are believed to be attempting to establish pockets of resistance and rallying points for dissident support within Sarawak. They may be engaged in sabotage missions. Regular Indonesian army units have been sent to remote border areas to provide patrols and contact

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points for meeting CCO members from Sarawak and Malays from Brunei. Communications stations are in operation to maintain radio contact with guerrilla units operating in Sarawak. There has also been a military reinforcement of the border near each seaward end of the Kalimantan -- Malaysia border by troops normally stationed in southern Kalimantan. Improvement of interior airstrips has begun, and the Indonesian Air Force has been patrolling the border for several months. Indonesian Army Intelligence maintains agents and contacts in northern Borneo. This net is believed to be directed by the consulate at Jesselton with contact with Indonesia at Tarakan. The Indonesian Communist Party, whose operations are directed from a headquarters in Pontianak, is also believed to maintain contact with agents in northern Borneo.

The Indonesian military is recruiting, supporting, and directing border-raiding parties. These parties consist of CCO and TNKU elements, tribesmen, Indonesian irregulars, and Indonesian military personnel acting as trainers and leaders. They are reported to be training Dayak infiltrators near Malinau and about 1,500 to 2,000 volunteers in northwest Kalimantan near Singkawang. It is estimated that the volunteers will total 3,000 by the spring of 1964. Instruction is believed to be given in the use of .303 Enfield rifles, Sten and Owen submachine guns, hand grenades, plastic bombs, and 50mm and 61mm mortars. This covert activity is conducted under the term "A Operations" and is controlled by the BPI.

The raids, which began in April 1963, have increased in frequency and generally have taken place close to the Indonesian border in the western section of Sarawak where the terrain is least mountainous, although recently raids have been made in central Sarawak. In most raids TNKU propaganda leaflets have been left behind.

In response to the increasing threat posed by these raids into Sarawak, British military forces there are being heavily reinforced and intensive patrolling by troops and helicopters is under way.

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## VI. Economy

### A. Introduction

The economies of Sarawak, Brunei, Sabah, and Kalimantan are each dependent upon the export of one or two commodities. Economic development is confined to the coastal areas. The most important export crops, rubber, copra, and pepper, are cultivated primarily by smallholders, although there are a few large plantations.

Northern Borneo is enjoying prosperity, while Kalimantan suffers from the problems affecting the Indonesian economy.. Sabah relies on rubber and timber for income. The major source of income for Sarawak, Brunei, and Kalimantan is petroleum, which is the only industry of economic importance in Borneo. Nevertheless, Borneo oil represents an insignificant share of total world production -- less than 2 percent. Diversification of existing industries as well as new industries is needed to lessen dependence on declining oil reserves and on rubber for which world prices fluctuate widely.

Prospects for industrial development on Borneo are limited by lack of transportation, electric power, and skilled labor. At the present time, light consumer goods are manufactured, and agricultural products and timber are processed. Surveys of potential mineral resources have prompted the planned development of a small iron and steel facility in Kalimantan. Other surveys may discover minerals which exist in profitable quantities. Additional oil resources are being sought with some success both on land and offshore near Brunei, Sabah, and Sarawak.

### B. Natural Resources

#### 1. Sarawak

Oil, bauxite, phosphate, lime, and extensive tropical forests are Sarawak's main natural resources. About 25,000 tons of bauxite a year are mined in western Sarawak, while a few Chinese mine gold on a small scale. At one time antimony, mercury, and diamonds were also mined. Their extraction may be revived. Coal deposits have been discovered and may be exploited. Good timber is available, but the better grades are on high, relatively inaccessible land in the interior. Forests supply firewood for home use.

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## 2. Brunei

The main resources of Brunei are petroleum and tropical forests. There are no known deposits of nonferrous metals. Crude oil production is declining because of depleting reserves. There are deposits of high grade lignite, but exploitation has been unprofitable. Tropical forests provide timber and firewood for home use.

## 3. Sabah

Sabah's most important resource is its tropical forest. There are nonferrous metal deposits which may be exploitable. Known locations of asbestos, chromite, copper, gold, and silver are being surveyed. There are no known oil fields.

## 4. Kalimantan

Kalimantan has a wide variety of natural resources and produces about 10 percent of Indonesian oil exports. Coal, found principally between Balikpapan and Samarinda, is an important resource. Bauxite deposits have been surveyed by Japanese firms, but there is no large-scale exploitation. Gold and silver are mined in northwestern Kalimantan. Promising undeveloped antimony deposits have been found in western Kalimantan. Manganese is mined at Gunung (mountain) Besi near Siluas and mercury on the east coast at Gunung Sekerat. There are unexploited areas of nickel-bearing iron ore in southeastern Kalimantan.

### C. Industry and Electric Power

#### 1. Sarawak

Sarawak's major industries are petroleum refining, lumber milling, and sago and copra processing. Consumer goods such as cigarettes, metal cans, bricks, arrack (a strong alcoholic drink), soap, rubber footwear, and light clothing are manufactured.

The only oil refinery in northern Borneo is operated by Sarawak Shell at Lutong. It receives crude oil by pipeline from the Brunei fields and from the declining Sarawak field at Miri. The refinery has a capacity of 2.4 million tons and produces primarily gasoline and diesel fuel.

Lumber milling is thriving; about 70 sawmills are scattered throughout the country. A plant to manufacture veneer sheets is located at Selalang.

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Electric power output is small, and its distribution confined to the main towns. Most electricity is produced by a government-owned public utility. Continuous electricity is supplied by diesel generators to Kuching, Simanggang, Sibul, Sarikei, Binatang, Kapit, Miri, Bentulu, and Limbang. Other towns have limited service. Total generating capacity is more than 11,000 kilowatts (kw).

## 2. Brunei

The only industry of importance in Brunei is oil. Brunei Shell operates the oil fields at Seria and a small field in the eastern part of the state. Peak production was obtained in 1956 when 42 million barrels were extracted. Since then output has declined. A Shell plant on the Seria field produces gasoline and diesel fuel -- all for domestic consumption. Natural gas is also processed into gasoline on this field. The greatest portion of crude output, however, is shipped to Lutong, Sarawak, where part of it is refined and the remainder exported.

Industries based on petroleum and natural gas -- such as fertilizer, plastics, and petro-chemical manufacturing -- may soon be established, as may fisheries and glass and timber industries. There are about 17 small sawmills, but additional lumber must be imported from Sarawak.

Shell operates a 10,850 kw thermal power plant at its Seria oil field. It consists of a 6,000 kw steam unit and a 4,850 kw gas-turbine unit, which generates power for the oil field and Seria township. Shell also operates a 3,000 kw diesel plant at Seria. Brunei Town (3,800 kw), Kuala Belait (257 kw), and Tutong (375 kw) all have diesel units. There are also small diesel plants at Brooketon (Muara) and Bangar.

## 3. Sabah

Industry in Sabah is very limited. Agricultural and timber products are processed for export and foodstuffs and consumer goods are prepared for the local market. Seventy-one sawmills, which are operated by large concession holders and licensees, cut lumber.

Electric power facilities are meager, consisting of generators in the main towns. Total capacity was 9,431 kw in 1961. Diesel power plants are located in Jesselton, Sandakan, Labuan, and Tawau. There may be possibilities for hydro-electric power development.

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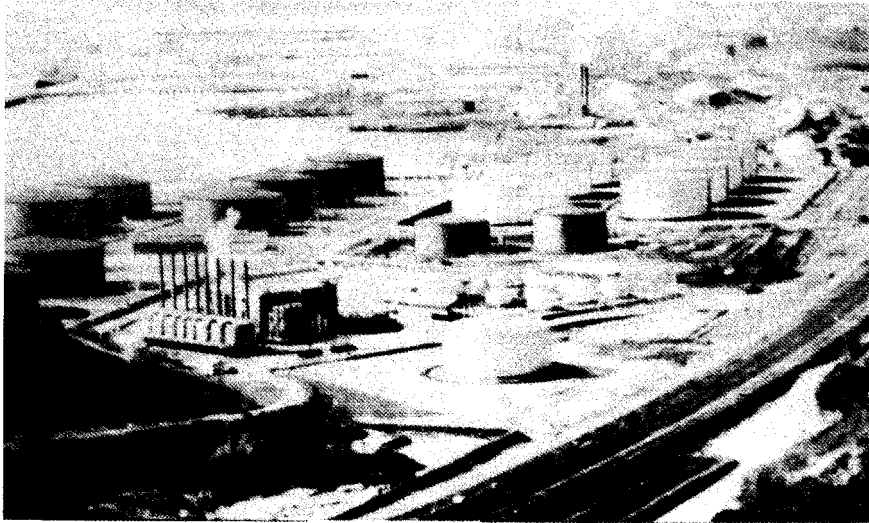


Figure 41. Oil refinery, Balikpapan.

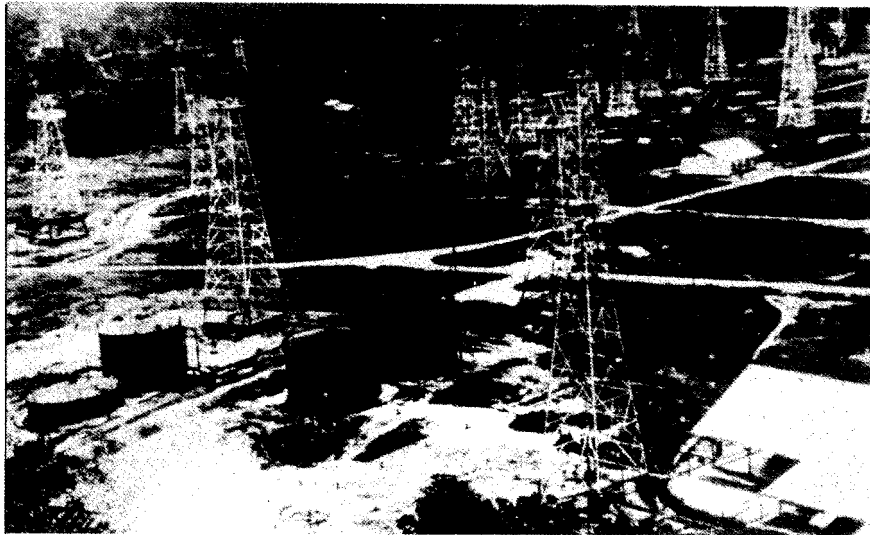


Figure 42. Oilfield, Tarakan Island.

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#### 4. Kalimantan

Kalimantan has little industry. A single oil refinery, owned by Shell Oil, is located at Balikpapan. It produces aviation turbine fuel, diesel fuel, and kerosene, but cannot produce aviation gasoline. The capacity of the refinery is about 3.65 million metric tons a year.

A rubber vulcanization plant is operating at Bandjermasin. Sawmills, operated by Chinese, are located near Pontianak. A small iron and steel industry is scheduled for development in southeastern Kalimantan under a Soviet credit. Surveys are now being conducted by Soviet technicians to locate the ore deposits necessary for this industry.

Electric power facilities are few. The Balikpapan refinery has a 30,000 kw thermal unit which also supplies power to the town. Balikpapan is also served by a 1,000 kw diesel unit. Diesel power plants exist at Bandjermasin (2,000 kw), Pontianak (1,400 kw), and at Plangkaraja (200 kw). A 2,100 kw diesel plant supplies the oilfields, the oil storage facilities, and the town of Lingkas. Other towns in Kalimantan have small diesel power generators.

#### D. Agriculture

##### 1. Sarawak

Sarawak is basically an agricultural country, but soils are generally poor. Although more than 75 percent of the labor force is engaged in agriculture, only about 20 percent of the total land area is cultivated. Cultivation occurs primarily in the coastal regions; the inland areas are covered by tropical forests. The traditional farming practice has been a wasteful system of slash-and-burn, shifting cultivation.

Cash crops include rubber, pepper, sago, and coconuts. Rubber, the principal cash crop, is produced largely by smallholders, although there are five large estates. Production is about 50,000 tons a year but is expected to increase substantially when recently planted high-yielding trees mature.

Despite the fact that three-fourths of the cultivated area is used for rice production, approximately one-half of Sarawak's total requirements of rice must be imported. Other food crops include tapioca, yams, sweet potatoes, and maize.

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## 2. Brunei

There is little agriculture production in Brunei. No information is available on the percentage of land under cultivation. Rice, coconuts, fruits, and vegetables are grown, but not in sufficient quantity to support the population.

## 3. Sabah

In Sabah about 6 percent of the land is cultivated. The most important agricultural export is rubber, 60 percent of which is produced by smallholders. Other cash crops include copra, hemp, and tobacco. Falling world market prices for rubber and hemp have resulted in sharp declines in the value of these exports. Prospects for Sabah's agricultural export future depend on two new crops -- oil palm and cacao. Rice, the staple foodstuff, is produced by primitive methods of shifting cultivation. Little rice is grown commercially; one-third of domestic requirements are imported.

## 4. Kalimantan

Cash crops grown in Kalimantan include rubber, coconut, and pepper. These products are grown principally around Sambas and Pontianak and in the southern lowlands north of Bandjermasin, where rice is also grown. Copra production has been declining in recent years because of aging trees and an inefficient replanting program. Food production is inadequate to support the population; rice is imported.

## E. Fishing and Forestry

### 1. Northern Borneo

Commercial fishing is insignificant in northern Borneo. Fish are important, however, as a source of protein for much of the population. Fresh-water fisheries are found in Sarawak, Brunei, and Sabah. Prawns are caught along the coast and exported from Sarawak and Sabah. Tuna fishing is carried out in Sabah around Pulau Si Amil.

About three-fourths of the land area in northern Borneo is covered with primary forests. A portion of this is under state protection to insure the future availability of timber stands. Future timber exploitation is likely to take place in the highlands where better grades of timber can be obtained.

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## 2. Kalimantan

Kalimantan supplies about one-third of total Indonesian salt and fresh-water fish. There are no canning facilities. The fish are dried and salted.

Eighty percent of Kalimantan is covered by tropical forests. About 10 percent of the total forest area is protected to insure future timber reserves. Large-scale mechanized logging has been started by the state forest service. Many of the forested areas are inaccessible for commercial exploitation.

### F. Employment and Labor

#### 1. Sarawak

The labor force of Sarawak consists of about 38 percent of the population. The majority of these people are occupied in rice farming, forestry, hunting, and fishing. The more profitable crops, such as rubber and pepper, are cultivated by Chinese farmers. There is a shortage of skilled laborers, and those used by Shell Oil, the timber mills, and new industries must be recruited from outside.

Government policy encourages trade unions, so long as they can be covertly controlled to prevent Communist penetration and direction. In 1961, there were 31 unions, but many are too small to be effective. The older and bigger unions continue to develop, but none are politically significant.

#### 2. Brunei

Most workers in Brunei are occupied in cultivating small farms, fishing, and harvesting jungle products. Shell Oil is the largest industrial employer. Both skilled and unskilled labor are in short supply. Skilled labor is recruited from Hong Kong, Malaya, and Singapore; unskilled and semiskilled labor from Sarawak and Sabah.

#### 3. Sabah

Sabah's labor force numbers about a third of the population. Nearly all of these people work as producers of raw materials. The rest work in manufacturing, transportation, communications, commerce, public services, professions, and personal and domestic services. There is no unemployment. Skilled and semiskilled workers from Hong Kong and Singapore are employed by construction and engineering firms.

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The government is sponsoring responsible trade unions, but the union movement is still in its earliest stages.

#### 4. Kalimantan

Labor is generally scarce in Kalimantan. Some skilled and unskilled labor is obtainable from the areas of major population concentrations (the northeast coastal area and the Bandjermasin, Balikpapan, and Tarakan areas). Skilled labor has been obtained from Java to man the oil installations. Most of the population is engaged in smallholder agriculture (rubber and copra).

Trade unions have a membership of 25,000. Their influence is very limited because of government control over all unions.

#### G. Foreign Trade

##### 1. Sarawak

Exports from Sarawak for 1962 totaled US \$134 million, and imports were US \$132 million. Fifty-five percent of total exports was refined and crude petroleum, most of which was imported from the Seria field in Brunei. Twenty percent of total exports by value is rubber. Timber and pepper are the next most important exports.

Crude petroleum from Brunei accounts for 48 percent of total imports. Other imports are manufactured goods, rice, and other foodstuffs.

Sarawak's most important trading partner is Brunei because of the re-exporting of a large share of Brunei's oil. Major countries exporting goods to Sarawak are the United Kingdom, Singapore, and Hong Kong. Exports are sent primarily to Japan, Australia, and Singapore, although Hong Kong has been steadily encroaching on the Singapore trade.

##### 2. Brunei

Brunei's exports totaled US \$66 million in 1962; imports were US \$16 million. Ninety-four percent of total exports was crude oil sold to Sarawak. (Brunei has no adequate port facilities for international shipping.)

Imports consist largely of manufactured goods and food. Most imports come from Singapore; direct trade with the United Kingdom and Australia is increasing.

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### 3. Sabah

Sabah's exports for 1962 were US \$77 million and imports were US \$79 million. Timber, rubber, and copra are the most important exports.

Primary imports are machinery, rice, and other provisions from the United Kingdom, United States, and Indonesia. Tobacco is purchased for re-export. Most exports are sent to Japan, Malaya, and the United Kingdom; Japan alone receives 43 percent.

### 4. Kalimantan

The rubber production of Kalimantan accounts for one-third of the total rubber exports of Indonesia and amounts to about US \$60 million annually. About 85,000 tons of rice are imported each year.

## H. Foreign Loans and Aid

### 1. Sarawak

Economic assistance to Sarawak has consisted of grants from the United Kingdom and technical assistance under the Colombo Plan and from the United Nations. The United Kingdom provided US \$2 million during 1961, and similar amounts in earlier years. Colombo Plan assistance ranged over a number of projects which included sending an expert to advise on bush airfields, a team to revise the secondary school curriculum, and a number of teachers. The United States has assigned Peace Corps volunteers to Sarawak. The Soviet Bloc has extended no economic assistance to any of the countries of northern Borneo.

### 2. Brunei

Brunei has received no external economic assistance in the form of grants or loans. The United Nations has provided technical assistance for the purpose of designing a development plan.

### 3. Sabah

Sabah receives assistance from the United Kingdom, the United Nations, and under the Colombo Plan. In 1961, grants from the United Kingdom totaled about US \$2.5 million. The Colombo Plan countries have provided training facilities and technicians in various fields. Assistance in malaria control has been received from the World Health Organization (WHO)

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and the United Nations International Children's Emergency Fund (UNICEF). The United Nations also has given assistance valued at US \$0.8 million for a large scale natural resource survey in the Labuk Valley. The US Peace Corps has sent volunteers to Sabah.

#### 4. Kalimantan

Very little information is available on the dollar value of external assistance to Indonesian Borneo as a separate entity. The US Government has provided assistance to projects for local government improvement, diesel electrification, fisheries, and various educational training programs. Czechoslovakia provided long-term economic credits to Indonesia of which US \$5.5 million went for tractors and other agricultural equipment for use in Kalimantan. The USSR has begun work on extensive roadbuilding projects and on an iron and steel project including a steel mill.

##### I. Currency

###### 1. Northern Borneo

The Malayan dollar, equal to \$0.327, is used in all of northern Borneo. The following currency is in circulation:

<u>Notes</u>	<u>Value in US Dollars</u>
M\$1	\$ 0.33
M\$5	\$ 1.63
M\$10	\$ 3.27
M\$50	\$ 16.34
M\$100	\$ 32.68
M\$1,000	\$326.80

###### Coins

M\$.01 (copper and bronze)	0.003
M\$.05 (cupro-nickel)	0.02
M\$.10 (cupro-nickel)	0.03
M\$.20 (cupro-nickel)	0.07
M\$.50 (cupro-nickel)	0.16

###### 2. Kalimantan

The Indonesian rupiah is used in Kalimantan. On the free market, such as in Singapore, it is worth approximately 1,000 to US \$1.00. There are bank notes of 1, 2 $\frac{1}{2}$ , 5, 10, 25, 50, and 100 rupiah. Aluminum coins of 1, 5, 10, and 25 rupiahs

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are in circulation, as are cupro-nickel coins valued at 50 sen or one-half rupiah.

J. Prime Economic Targets

There are two economic targets in Borneo, oil installations and public utilities.

Oil refineries are located at Lutong in Sarawak and at Balikpapan in Kalimantan. A 150-mile pipeline connects the Balikpapan refinery and the Tandjung oilfield. All these facilities are operated by Shell Oil. Although their destruction would not greatly affect the world petroleum market, the domestic economies of Brunei, Sarawak, and Indonesia would be seriously affected.

Public utilities such as electric generators would be prime economic targets for the small unit. These facilities are found only in the main towns. Their destruction would be of nuisance value rather than the cause of great economic damage.

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## VII. Transportation

### A. Inland Waterways

Inland waterways are the most important means of transportation on Borneo. There are roughly three times as many miles of inland waterways as of roads in Kalimantan, and the total mileage of inland waterways in Malaysian Borneo and Brunei exceeds the total combined mileage of roads and railroads by a wide margin. Rivers usually offer the only means of surface transport into the interior of the island. Typically, cargo moves downriver in shallow-draft native craft to ports near the mouth of the river, where it is transferred to coastal vessels and enters coastal traffic; and upriver from coastal ports into the interior.

No dams, locks, or irrigation devices and very few bridges obstruct navigation on the rivers of Borneo. The waterways are not interconnected, however, and it is often necessary to portage cargo from one navigable stretch to another or from one river to another, particularly in the upper reaches which are impassable because of rapids and waterfalls. The lower reaches generally traverse sluggish coastal swamps that are difficult to navigate because of their numerous meanders and abandoned channels. Many rivers can be entered only at high tide because sandbars lie across their mouths. Because of excessive rainfall, sudden changes in water levels are common, and a rise of 30 feet in a few hours is not unusual. Periods of low water are most common from June to August, and maximum levels normally occur between November and March. During periods of heavy rainfall, navigation is handicapped by rapid floodwaters that carry large items of debris, such as trees. Furthermore, coastal areas are often flooded to the extent that it is hard to find the navigable channels.

Most vessels on the inland waterways of Borneo are of shallow draft and of 2-ton to 20-ton capacity. Many are hand powered, but there also are some paddle-wheeled steamers and powered junks. Most vessels are privately owned, but a few are owned by organized companies, mostly Chinese, that maintain scheduled service on the larger rivers.

### B. Roads and Trails

#### 1. Roads

The roads of Borneo, probably less than 5,000 miles in total length, are mostly short, isolated, and capable of serving only local needs. No actual network or unified road

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Figure 43. Nondescript facilities along the Kapuas River. Such facilities are typical of native craft landings along the inland waterways of Borneo.

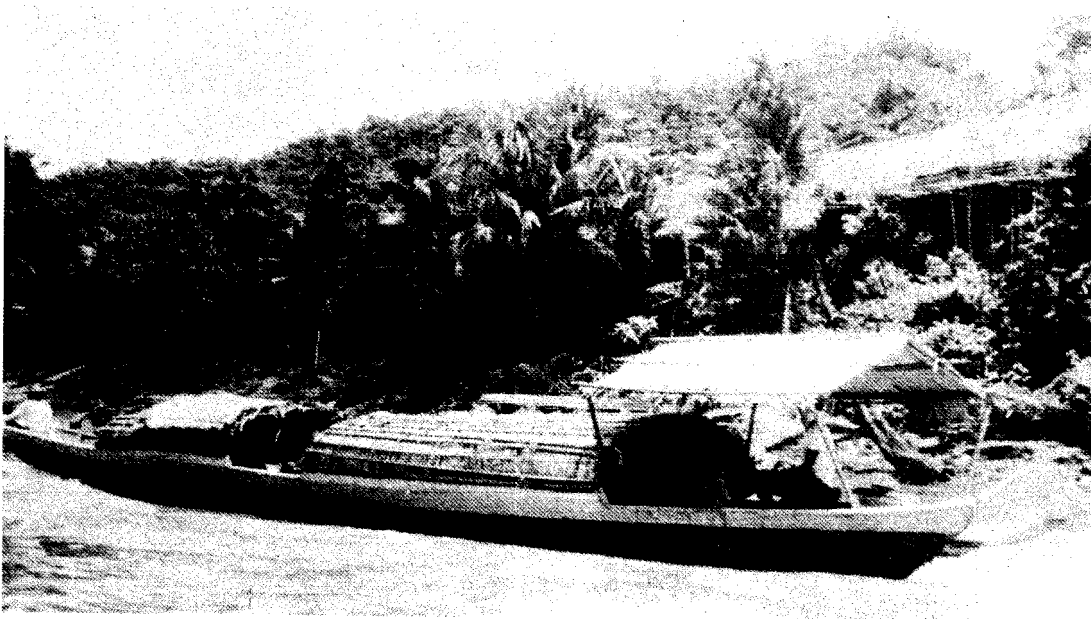


Figure 44. Native craft on the Rajang River. Much of the cargo transported over the inland waterways of Borneo is carried in vessels such as this. Note the outboard motor.

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Figure 45. The lower reaches of most large rivers in Borneo are navigable.



Figure 46. Typical portage on the upper reaches of a large river.

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system has been developed for the island as a whole, partly because many of the rivers are navigable and have served adequately for transport to the interior. Furthermore, dense vegetation and rugged terrain are serious deterrents to the development of an extensive road system. Most of the roads are in the coastal areas of the northern, southeastern, and western parts of the island. They serve the hinterlands of such ports as Brunei Town, Jesselton, and Sandakan in the north, Balikpapan and Bandjermasin in the southeast, and Kuching and Pontianak in the west (see main map Borneo). Few roads penetrate deeply inland, and no roads cross the border between Malaysian Borneo and Kalimantan.

A few of the all-weather roads are surfaced with asphalt or crushed stone, but actually the term "all-weather" is misleading because most of Borneo's roads are unsurfaced and even the surfaced ones may be impassable during part of the year. Heavy rainfall throughout the year frequently causes flooding and washouts that can make even the best roads temporarily impassable. Flooding is particularly likely and unsurfaced roads are especially muddy from November to April. Much of the overland traffic comes to a halt during the heavy rains. Roads are poorly maintained throughout the island, although maintenance usually is somewhat better near urban centers.

Most of the bridges, fords, and ferries along the roads of Borneo are bottlenecks, especially the ferries because of their limited capacity. Many ferries are nothing more than a few native craft tied together, and most of the bridges are only one lane wide.

In Sarawak, Sibul and Kuching will ultimately be linked by a road that is being extended from Simanggang. In Sabah a road is being built across the northern part of the island to connect cities of the west coast with Sandakan. Most of the road construction and improvement now in progress in Kalimantan is in the southeast. Although the roads in western Borneo near the Kalimantan -- Malaysia border do not form a complete network, they are significant because of their relation to the border. In Kalimantan the coastal towns of Pontianak, Sungaipenju, and Singkawang are connected by road to Siluas, approximately 10 miles from the border. The road from Sungaipenju continues inland to Sintang, and from this road, trails and navigable tributaries of the Kapuas River (not to be confused with the Kapuas River that empties into the Java Sea near Bandjermasin) extend northward toward the border.

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Figure 47. An example of road conditions in Kalimantan during the rainy season. Road travel is restricted throughout Borneo during this period.



Figure 48. A section of the Brunei-Seria road. Most of the roads in Borneo are not of this quality.

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Figure 49. Gravel-surfaced road, illustrating problem of encroaching vegetation.

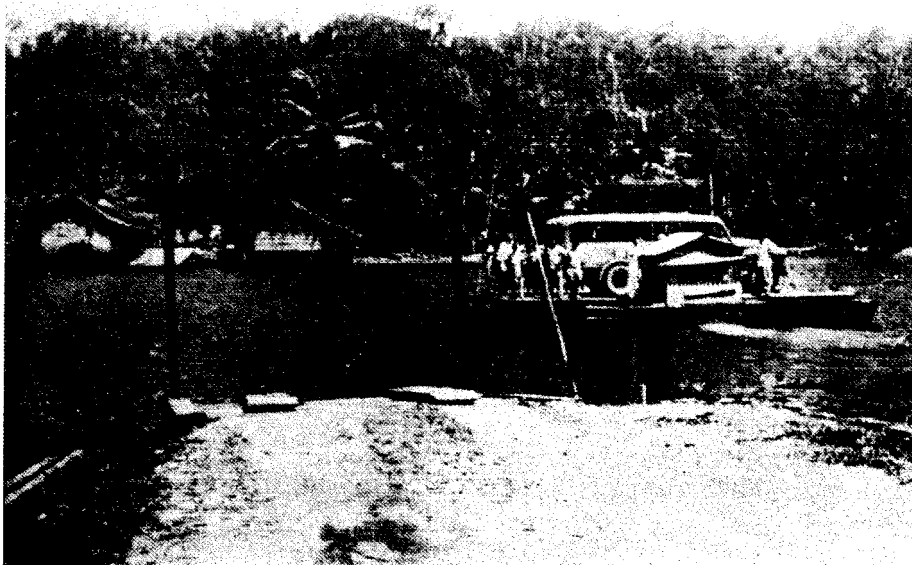


Figure 50. River ferry in operation. Most ferries are of limited capacity, and many are hand-powered.

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Only 8,307 motor vehicles were registered in Kalimantan in 1959. Of these 2,911 were trucks, 2,844 were passenger cars, and 2,225 were motorcycles. There were 327 miscellaneous-type vehicles. By comparison, the states of northern Borneo have a relatively large number of motor vehicles. In 1960, 4,374 motor vehicles were registered in Brunei, and in 1962, Sarawak and North Borneo, respectively, had 8,660 and 12,450 motor vehicles. Passenger cars and motorcycles are more numerous than other types of motor vehicles in Malaysian Borneo and Brunei.

Off-road, cross-country movement by wheeled vehicles anywhere on Borneo is extremely difficult because most of the island is rugged, swampy, or covered with dense forest. With the exception of a few coastal areas, only parts of the southeastern corner of the island and a few isolated areas in the interior are suited to such movement. Where it is possible at all, cross-country vehicular movement is easiest between July and October.

## 2. Trails

Trails on Borneo have been used to connect inland waterways and, more recently, to supplement motorable roads. No extensive network has been developed, and most of the rugged, uninhabited interior as well as large sections of the swampy coastal areas lack even local trails. Most of the trails are in western Kalimantan between the Malaysian border and the long Kapuas River and in the upland area at the junction of the borders of Sarawak, Sabah, and Kalimantan. Many in western Kalimantan are near the border, and a few cross into Malaysian territory. A few of the trails near the trijunction of the Sarawak, Sabah, and Kalimantan borders parallel or cross the international border. Along the southeast coast of Kalimantan, and along the coastal areas of Sabah the trails provide transport to the interior but rarely extend beyond the limits of navigation of the rivers.

## 3. Transborder Movements

The boundary between Kalimantan and Malaysia extends approximately 900 miles through areas that are characterized by low population density, rugged terrain, and dense vegetation. Only a small segment of the boundary, southwest of Kuching, has been demarcated. The western end of the boundary traverses hilly, forested terrain for approximately 150 miles, and the eastern end of the boundary crosses a poorly drained coastal area. The western segment from Tandjung Datu (2°05'N-109°39'E) to a point approximately 30 miles east of

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Figure 51. Most of the trails in Borneo are obscure footpaths. Encroachment by vegetation is a constant problem.

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Lubok Antu (1°03'N-111°50'E) traverses relatively flat, open country and can be crossed almost anywhere with relative ease. Most of the remainder of the boundary extends through heavily forested, mountainous terrain at elevations between 3,000 and 7,000 feet.

Transborder movements are difficult along the entire border, but they would be possible along (1) a route that follows the Kajan River and its tributaries in Kalimantan and the Rajang River and its tributaries in Sarawak; (2) a route that extends from Malinau in Kalimantan up the Mentarang River and its various tributaries, joins the Padas River in Sabah, and eventually leads to Lawas on Brunei Bay; and (3) another route from Kalimantan into Sabah that follows the Sembakung River and its tributaries across the border to the town of Pensiangan. From Pensiangan it is possible to travel by various means to Lawas, Beaufort, Kota Belud, and other places in Sabah. Although there probably are some trails near the eastern end of the border, this segment would be hard to cross because it is extremely swampy. Infiltration in this part of the island would be faster and easier by sea.

Transborder movements by men on foot were rather common and in general were officially ignored before December 1962. Border patrols were few, and smuggling was commonplace. Many natives of Kalimantan smuggled crude rubber across the border because it brought higher prices in Sarawak. Border patrols have been increased since 1962, but the border is virtually impossible to patrol effectively because of its length and inaccessibility.

### C. Air Transport

Air transport is important on Borneo because the island has no well-developed system of surface transportation. Domestic service throughout the former British territories of Borneo is provided by Borneo Airways, which offers scheduled service to 21 airfields. The airline maintains a fleet of three Scottish Aviation Twin Pioneer aircraft and one DC-3.

Borneo has a total of 86 usable airfields (see main map Borneo and Appendix A). Only two airfields, Kuching and Labuan, in Malaysian Borneo, have surfaced runways exceeding 6,000 feet in length. The runway at Anduki, between Kuala Belait and Brunei Town, is 6,300 feet long but has a grass surface. Brunei Town has an airfield that is 5,800 feet long, and Jesselton one that is 5,100 feet. Both have macadam surfaces. Borneo Airways offers service to Bareo, Belaga, Bintula, Brunei, Jesselton, Keningau, Kuching, Kudat, Labuan,

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Lahad Datu, Lawas, Long Akah, Lutong, Marudi, Mukah, Ranau, Sandakan, Sapulut, Sibul, Simanggang, and Tawau. None of these airfields is capable of performing routine maintenance.

International service is provided by two airlines. Malayan Airways uses Viscount and DC-3 aircraft and offers daily service from Singapore to Brunei, Jesselton, Kuching, Labuan, and Sibul, and twice-weekly service to Lahad Datu, Sandakan, and Tawau. Cathay Pacific Airways uses Lockheed Electras and offers service twice weekly from Hong Kong through Manila to Jesselton.

The Brunei Shell Petroleum Company and the Borneo Evangelical Mission own the two most important private air facilities in northern Borneo. Brunei Shell also maintains its own airfield at Anduki. In 1962 the company had three Percival Prince aircraft and three chartered helicopters. Also in 1962 the Borneo Evangelical Mission, with headquarters in Lawas, owned, operated, and maintained two Piper Tri-Pacer aircraft.

Civil air service in Kalimantan is operated by the Government of Indonesia. The Department of Civil Aviation operates flights by Garuda Indonesian Airways into Kalimantan. Garuda provides scheduled service to Pontianak, Bandjermasin, Tandjung, Balikpapan, and Tarakan. These five airfields have runways that range between 3,600 and 5,600 feet in length; none of them has facilities to perform major maintenance on aircraft. Although the exact number of aircraft in Garuda's fleet is unknown, in 1963 the fleet was composed of the following types of aircraft: Convair, Lockheed Electra, Douglas DC-3, Twin Pioneer, and DeHaviland Beaver. Before 1958, many of Garuda's personnel were Dutch. After the ouster of the Dutch in 1958, much of the domestic air service was curtailed, but an accelerated training program has partly alleviated the shortage of qualified Indonesian personnel. The Government maintains a Civil Air Academy at Tjurug, Java, for the training of Indonesian personnel.

The only private air operations in Kalimantan are the occasional flights of the Shell Oil Company in connection with its concession at Tandjung.

#### D. Marine Transport

##### 1. Merchant Marine

The merchant marine of Malaysian Borneo is similar to the merchant marine of Malaya. Most of the service between

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Malaysian Borneo and Singapore is provided by the Straits Steamship Company and the Sarawak Steamship Company. It is reported that in 1962 the services of these companies were supplemented by the Hua Siang Shipping Company and the Hiap Eng Moh Lines, but no detailed information is available on their ships or schedules. The Straits Steamship Company and the Sarawak Steamship Company offer scheduled freight and passenger service between all of the major ports of Brunei, Malaysian Borneo, and Singapore. The Sarawak Steamship Company has its offices in Kuching. Its largest ship is the Rajah Brooke (2,312 gross tons). The company also has at least five smaller vessels of less than 1,000 gross register tons (GRT) engaged in coastal trade.

By far most of the ships of the merchant marine of Malaysian Borneo are engaged in coastal rather than open traffic. The vessels employed in this work are mostly diesel-powered, wooden craft owned by Chinese. The capacity of each of these vessels is normally small, with few exceeding 50 tons dead-weight capacity. Most of them are owned by individuals or groups of individual shareholders rather than by companies, and there is little standardization with regard to ship design, safety, or qualified seamen.

In Kalimantan the ports of Singkawang, Pontianak, Banjarmasin, Balikpapan, and Samarinda are regular ports of call for interisland service. Most of the ships of the merchant marine are owned by the Indonesian Government. In 1960, the government owned 98.5 percent of the total tonnage of ships larger than 1,000 GRT, and 63 percent of the total tonnage in the category of 100 to 999 GRT. These ships are managed through various government agencies, the most important of which is the National Indonesian Navigation Company (PELNI). Of the 43 Indonesian merchant ships of more than 1,000 GRT, 32 are freighters, 8 combination passenger freighters, 2 tankers, and one passenger ship, aggregating 87,671 GRT. Thirty-seven of these ships are less than 10 years old, and the Government has contracts outstanding for construction of additional ships, most of which will be more than 1,000 GRT. The Government often charters foreign ships, especially from Hong Kong, to supplement the limited capacity of the Indonesian merchant marine.

There is a shortage of qualified Indonesian maritime personnel. As a result, foreigners are frequently employed, mostly on chartered ships. The Indonesian Government has established maritime schools at Makasar, Semarang, and Djakarta to meet the growing demand for Indonesian mariners.

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~~S-E-C-R-E-T~~2. Ports

Brunei, Sarawak, and Sabah are served by numerous ports, most of which are located on navigable rivers likely to be affected by floods and sandbars. Kalimantan has fewer ports. Information on the most important ports of Borneo is given below, in clockwise order around the island, beginning in southwestern Sarawak.

<u>Name of Port</u>	<u>Total Length of Wharves (feet)</u>	<u>Alongside Depth (feet)</u>	<u>Covered Storage (sq. ft.)</u>	<u>Remarks</u>
<u>Malaysian Borneo and Brunei</u>				
Kuching	2,100	7-13	123,000	Accommodates 300-foot vessels drawing 15 feet. Three wharf cranes of 1/2-ton to 10-ton capacity, two 5-ton mobile cranes. Port clearance by road and inland waterway.
Sibu	1,200	7-19	64,500	Accommodates 280-foot vessels drawing 16 feet. Numerous harbor craft.
Miri/ Lutong	925	3-7	105,800	Water depth over bar at mouth of Miri River only 1 to 4 feet. Miri has three 10-ton mobile cranes, one 5-ton. Lutong, 6 miles north of Miri, has four deep-water oil-loading berths.
Kuala Belait	725	4-7	20,600	River harbor only 7 feet deep at high water. Five cranes of up to 25-ton capacity, one 30-ton derrick. Port clearance by road and inland waterway.
Brunei Town	880	4-19	29,000	Accommodates 250-foot vessels drawing 15 feet. Marine railroad and 10-ton mobile crane. Port clearance by road and inland waterway.

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<u>Name of Port</u>	<u>Total Length of Wharves (feet)</u>	<u>Alongside Depth (feet)</u>	<u>Covered Storage (sq. ft.)</u>	<u>Remarks</u>
<u>Malaysian Borneo and Brunei</u>				
Victoria (Labuan Island)	1,885	7-31	60,650	Natural harbor accommodates vessels of any length drawing 34 feet. Two mobile cranes and two marine railroads. Numerous harbor craft.
Jesselton	1,020	7-23	120,800	Accommodates ships of any size. One 5-ton overhead crane. Numerous harbor craft. Port clearance by road and rail.
Sandakan	1,300	2-24	299,000	Accommodates ships of any length drawing 28 feet. One 15-ton crane, two 5-ton cranes, several mobile cranes, and two marine railroads. Port clearance by road and narrow-gauge railroad to timber areas.
Tawau	1,630	7-15	86,000	Accommodates ships of any size. Five lighters with derricks; lifting power varies from 5-tons to 10-tons. Port clearance by road.
<u>Kalimantan</u>				
Lingkas	700	11-31	35,000	Accommodates vessels of any size. Harbor facilities include one 3-ton crane and, possibly, one 15-ton floating crane, two towing launches, and at least three lighters of 200-ton to 300-ton capacity. Port clearance by road.

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<u>Name of Port</u>	<u>Total Length of Wharves (feet)</u>	<u>Alongside Depth (feet)</u>	<u>Covered Storage (sq. ft.)</u>	<u>Remarks</u>
<u>Kalimantan</u>				
Balikpapan	4,000	12-35	160,000	Accommodates vessels drawing 25 feet. Harbor facilities include six cranes (maximum lift 20 tons) 19 tugboats, and approximately 40 lighters. Marine railroad (117 feet long) and small shops serve ships of up to 150 tons. Clearance by two surfaced roads.
Bandjermasin	1,300	10	190,000	Accommodates vessels 300 feet long drawing 15 feet. Harbor facilities include some power-driven launches and a 20-ton crane. Port clearance by inland waterway and road.
Pontianak	1,250	9	113,000	Entrance via Kapuas-ketjil River is restricted to vessels 300 feet long drawing up to 6 feet. Vessels drawing up to 12 feet can enter harbor via Punggur-besar River and Kapuas-ketjil. A number of lighters of 70-ton to 100-ton capacity. Dry-dock large enough for vessels of 300 GRT. Port clearance by road and inland waterway.

Two of Kalimantan's ports are especially equipped to process petroleum and petroleum products. The port of Balikpapan, a natural harbor on the eastern side of Balikpapan Bay, serves as the refining and storage depot of the Shell Oil Company. It is the terminal for the pipeline from the Tandjung oilfields and has facilities for storing 3,764,000 barrels of petroleum.

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A narrow-gauge railroad owned by Shell leads to the oilfields. In general, Balikpapan is the best equipped port in Kalimantan. Oil also is exported from the port of Lingkas, located on the island of Tarakan. Lingkas has an oil storage capacity of 75,000 tons and facilities for minor repairs.

#### E. Railroads

Railroads play a very minor role in the transportation system of Borneo. Kalimantan has no permanent railroads, although a few short, temporary lines run into areas where timber is cut. A Shell Oil Company subsidiary operates a private, narrow-gauge railroad for a distance of 6 miles between Seria and Badas in Brunei.

The only public railroad is a single-track, meter-gauge line in Sabah, owned and administered by the government. The main line runs from Jesselton through Papar and Beaufort to Melalap, a distance of 96 miles. A branch line runs southward for 20 miles from Beaufort South (across the river from Beaufort) to Weston on Brunei Bay.

Maintenance of the railroads is especially difficult because the roadbed, particularly in swampy sections, is subject to subsidence under heavy traffic. Heavy rains cause washouts, landslides, and flooding, and special efforts must be expended to keep the track clear of fallen trees and the constantly encroaching vegetation. Barriers must be maintained in some of the coastal sections to prevent tidal floods.

The railroad is not designed to handle heavy traffic. Only steam engines and rail cars operate between Beaufort and Melalap. As there is no rail connection across the Padas River, passengers and freight transferring from the main line to the Beaufort South-Weston branch must be ferried across the river from Beaufort to Beaufort South by means of a cable-hauled pontoon ferry of 40-ton capacity.

As of December 1961 the railroad had a variety of power and rolling stock, including six wood-burning steam locomotives, three diesel locomotives, and four gasoline locomotives. It also had three diesel train sets (power unit and trailer). Enginehouses are located at Tenom, Beaufort South, and Weston. The principal repair shops are at Tanjong Aru, 4 miles south of Jesselton, and auxiliary facilities are at Beaufort and Papar. Traffic is very light, averaging only one or two trains per day.

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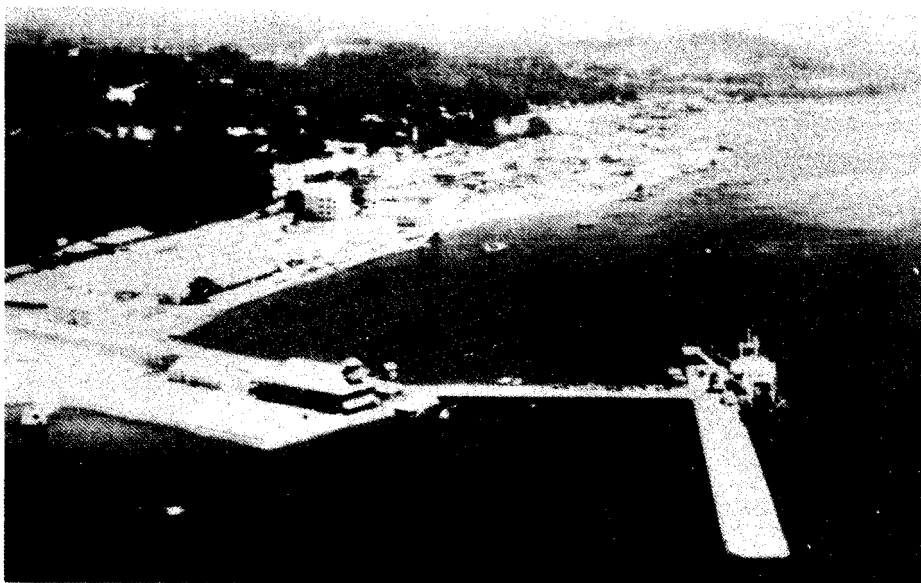


Figure 52. Port of Jesselton, 1958.



Figure 53. Pangalat Tunnel, on the railroad, located 3.3 miles northeast of Papar ( $5^{\circ}45'N-115^{\circ}58'E$ ). This tunnel is 600 feet long.

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Most bridges are of steel construction. Five on the Jesselton-Beaufort section are more than 100 feet in length. There also are two tunnels, one in the Jesselton-Beaufort section near Papar and one in the Beaufort-Tenom section. A telephone system owned and operated by the railroad serves as the only signal system.

F. Targets

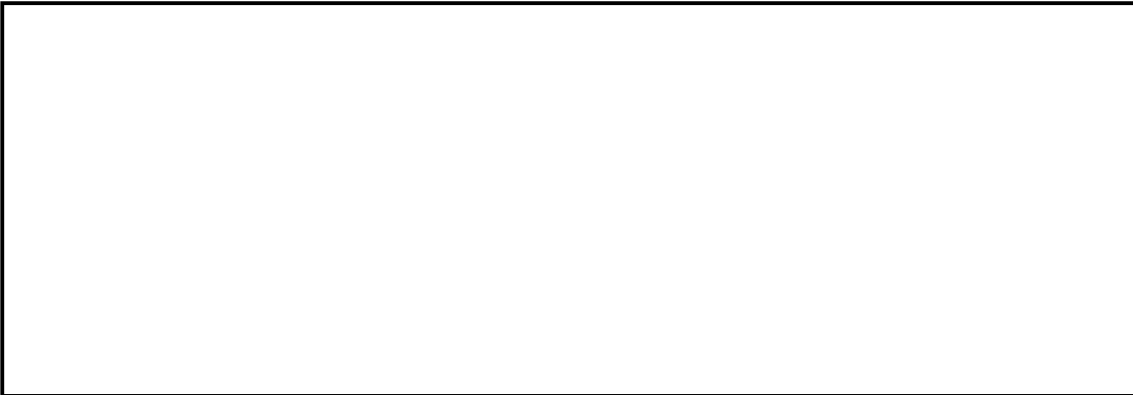
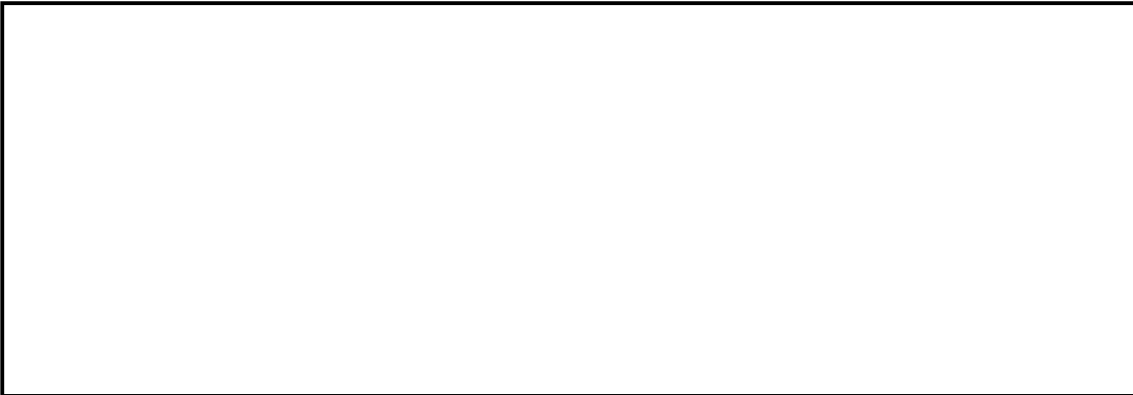
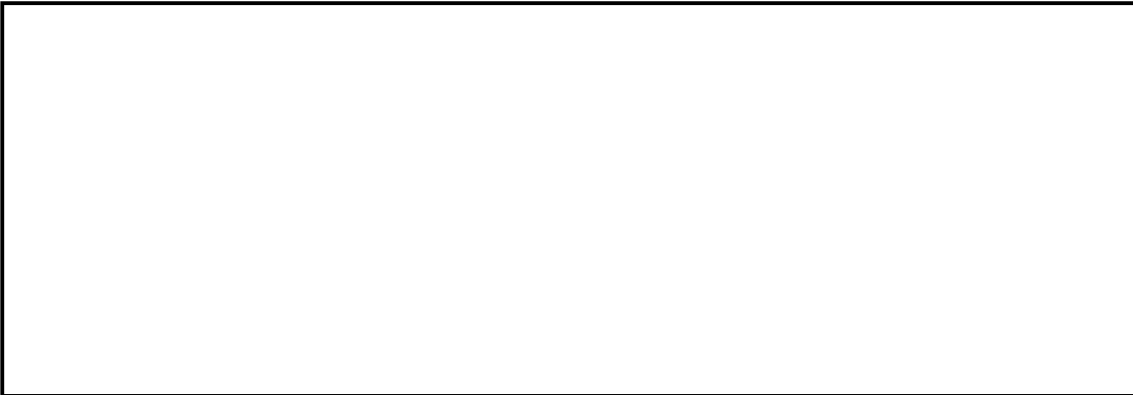
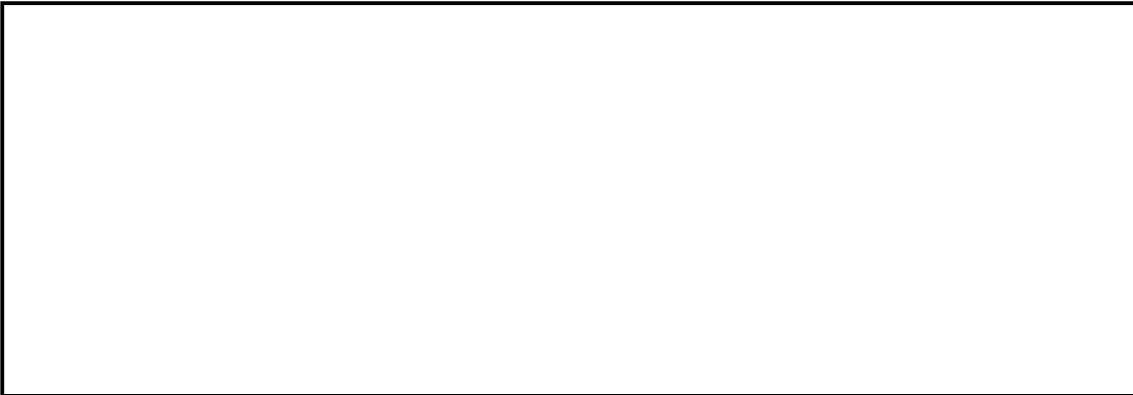
The transportation systems of Borneo offer few targets because they are so poorly developed. The inland waterways and the airlines offer no targets because they have so few vulnerable facilities. Roads offer some minor targets. There are numerous ferries throughout Borneo whose destruction would interfere with vehicular traffic. Also, there are some bridges, usually of small capacity, that are vulnerable.

The railroad in Sabah is the most vulnerable part of Borneo's transportation systems. There are 24 bridges and 2 tunnels between Jesselton and Melalap. Most bridges are short, but five exceed 100 feet. The longest (400 feet) bridge, which crosses the Papar River, is built on concrete piers and abutments. One tunnel (600 feet) is near Papar on the Jesselton-Beaufort section, and the other (100 feet) is in the Penotal Gorge in the Beaufort-Tenom section. The Beaufort South-Weston section has only three bridges. The ferry that links rail traffic between Beaufort and Beaufort South also is vulnerable.

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## VIII. Telecommunications

### A. Introduction

#### 1. Northern Borneo

The telecommunication systems of Sarawak, Brunei, and Sabah are administered by Departments of Posts and Telegraphs (DPT). Although not well developed, the facilities of these systems provide telephone, telegraph, and radiobroadcasting services that meet present internal and external communication needs.

Throughout northern Borneo, telephone and telegraph services are carried mainly over high-frequency (HF) point-to-point radio and very-high-frequency (VHF) radio relay networks. Use of wire lines is confined to local telephone systems, with the exception of Sabah where some open wire and underground multiconductor cable lines are in use on long-distance telephone routes. Besides the DPT, a number of other government and private enterprises operate separate HF and VHF radio facilities for their own special needs.

#### 2. Indonesian Borneo

The telecommunication facilities of Kalimantan are inadequate to meet either the internal or external communication requirements of the area. Facilities consist of a public system managed by the Indonesian Department of Post, Telephone, and Telegraph, and a private system operated by Shell Oil Company.

### B. Sarawak

#### 1. Telephone and Telegraph Facilities and Services

A VHF radio relay network is the main medium used for long-distance communication (see Diagram 1). More than 4,000 telephones are served by automatic and manual telephone exchanges. The most important exchanges are at Kuching (2,000 lines), Sibul (1,200 lines), and Miri (400 lines). Most of the 60 or more outstations of the VHF network have small manual exchanges.

Facilities of the VHF network also carry telegraph traffic -- manual Morse and teleprinter. The main centers for teleprinter traffic are at Kuching, Sibul, Miri, Sarikei, Mukah, Marudi, and Limbang.

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HF radio transmitting facilities at Stapok, near Kuching, provide telephone connections to Brunei, Sabah, Singapore, Malaya, Hong Kong, India, Japan, Australia, the United Kingdom, and the United States. There are no direct telephone or telegraph connections to Indonesia, including Kalimantan. HF facilities provide teleprinter service between Kuching and Singapore and manual Morse service between Miri and Labuan Island, Sabah; between Miri and Seria, Brunei; and between Limbang and Labuan Island.

## 2. Broadcasting Facilities and Services

Radio Sarawak, with studios and transmitters in the Kuching area, broadcasts in English, Malay, Chinese, Land Dayak, and Melanau. Medium-wave broadcasts are carried by 10-kilowatt (kw) and 5-kw transmitters and short-wave by a 5-kw transmitter and a 7.5-kw transmitter. More than 40,000 radiobroadcast receivers are in use.

## 3. Specialized Networks

### a. Police

The police operate HF radio facilities at Divisional Headquarters in Kuching, Simmanggang, Sibul, and Miri as intra-divisional links to mobile patrols. The VHF network of the DPT is used for interdivisional communication. These facilities also are used at Kuching, Sibul, and Miri for local communication to vehicles and boats.

### b. Marine

An HF radio network connects marine stations at Kuching, Sibul, and Tanjong Sirik. The VHF network of the DPT serves ships in Sarawak waters through coastal relay stations at Tanjong Po, Tanjong Kidurong, Tanjong Jerijeh, Tanjong Lobang, Tanjong Baram, Mukah, Bintulu, Miri, Sarikei, and Limbang.

### c. Air

Civil aircraft are served by radio stations at Kuching, Sibul, Lutong, Simmanggang, and Bintulu.

### d. Private

Sarawak Shell, the Bombay Burmah Trading Corporation, and other firms have their own facilities. Details are not available.

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C. Brunei

1. Telephone and Telegraph Facilities and Services

Long-distance communication requirements are met by a single-channel VHF radio relay network connecting Brunei Town with about eight population centers (see Diagram 2).

There are about 1,000 telephones in use, most of which are connected to automatic exchanges. Automatic exchanges are located at Brunei Town (800 lines) and Kuala Belait (500 lines).

Domestic telegraph service is available only between Brunei Town and Kuala Belait, Seria, and Temburong.

International telephone and telegraph needs are served by VHF and HF radio facilities. The VHF network provides telephone and telegraph connections from Brunei Town to Limbang, Miri, and Kuching in Sarawak and to Labuan and Jesselton in Sabah. An HF manual Morse circuit operates between Brunei Town and Singapore. There are no communications of any type between Brunei and Indonesia, including Kalimantan.

2. Broadcasting Facilities and Services

Radio Brunei operates three medium-wave transmitters broadcasting in English, Malay, and Chinese. These transmitters are located near Brunei Town, Tutong, and Kuala Belait and have powers of 1.2-kw, 20-kw, and 0.015-kw, respectively. About 6,000 receivers are in use.

3. Specialized Networks

a. Brunei Shell Petroleum Company

Brunei Shell operates a VHF radio network linking Seria with Brunei Town, Badas, and Kuala Belait in Brunei and with Miri and Lutong in Sarawak. The company also operates fixed and mobile HF radio facilities in the Seria area and operates and maintains its own 800-line automatic telephone exchange.

b. Police

The police operate an HF radio network that connects police headquarters in Brunei Town with Kuala Belait and Seria in Brunei, with Jesselton and Labuan in Sabah, and with Miri and Kuching in Sarawak. Police VHF radio facilities connect headquarters in Brunei Town with Seria as well as with mobile patrols throughout the state.

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c. Public Works Department

The Public Works Department has HF radio facilities connecting the Roads Section Office in Brunei Town to its workshop at Sungei Liang (Belait District).

D. Sabah

1. Telephone and Telegraph Facilities and Services

Long-distance communication requirements are met by a VHF radio network that connects Jesselton, the capital, with the main population centers (see Diagram 3).

Use of open wire and underground multiconductor cable lines for long-distance telephone communication is confined to the west coast area. Open wire lines follow the railroad and connect Jesselton to Beaufort, with extensions from Beaufort to Weston and Membakut. In 1961, construction began on an underground multiconductor cable line from Jesselton to Papar and from Jesselton to Tuaran. These lines were in the final stages of completion in early 1963; a new cable line from Papar to Beaufort was scheduled for construction in 1963.

There are approximately 4,500 telephones in use. The most important exchanges are located at Jesselton (1,500 lines), Sandakan (1,000 lines), and Tawau (500 lines).

The VHF network also carries manual Morse telegraph traffic between Jesselton and major towns. Jesselton has VHF teleprinter circuits to Sandakan and Labuan.

VHF, HF, and submarine cable facilities are used to meet international telephone and telegraph requirements. The VHF stations at Sandakan and Labuan have direct teleprinter connections to the telegraph submarine cable terminals at Jesselton. These cables, owned and operated by Cable and Wireless Ltd., provide direct telegraph connections to Hong Kong and Singapore. Cable and Wireless Ltd. also operates HF radio transmitting facilities at Jesselton that afford telegraph connections to Hong Kong and Singapore and telephone connections to Hong Kong, Singapore, Malaya, Australia, Canada, and the United Kingdom. No telecommunication circuits operate between Sabah and Indonesia, including Kalimantan.

2. Broadcasting Facilities and Services

Radio Sabah, with studios and transmitting facilities in the Jesselton area, provides statewide radiobroadcasting

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service in English, Hakka, Malay, and Kadazan. Radiobroadcasting facilities consist of a 0.5-kw medium-wave transmitter and a 5-kw short-wave transmitter. About 20,000 receivers are in use.

### 3. Specialized Networks

#### a. Police

Police authorities operate extensive mobile and fixed VHF and HF radio facilities that connect police headquarters in Jesselton with police stations throughout the country. In 1961 the police mobile force was equipped with walkie-talkie radios, and speedboats engaged in antipiracy patrols were equipped with VHF and HF radio gear.

#### b. Civil Air

In 1961 a new air-to-ground and ground-to-air VHF network was placed in operation. It enables the flight information center at Labuan to communicate with aircraft in flight on 126.7 megacycles via a relay station on Mount Kinabalu. Civil air authorities also operate an HF telephone and teleprinter circuit between Labuan and Singapore and an HF manual Morse circuit between Labuan and Manila.

### E. Kalimantan

#### 1. Telephone and Telegraph Facilities and Services

Open wire and HF point-to-point radio facilities constitute the Department of Post, Telephone, and Telegraph system. The facilities are concentrated along the northwestern and southeastern coastal regions and provide some communication to areas in the interior. The main communication centers are Pontianak and Bandjermasin.

Pontianak operates HF point-to-point radio facilities that are used for internal main line telephone and telegraph service as well as for telephone, telegraph, and subscriber teletype (TELEX) service to Djakarta. Long-distance telephone service is available over open wire line routes connecting Pontianak with Mampawah, Singkawang, Sambas, Siluas, and Sintang, all in northwest Kalimantan. Pontianak has a 500-line manual telephone exchange. Other points on the wire line route use manual exchanges of 20 to 40 lines.

Bandjermasin is also served by HF radio and open wire line facilities, with HF radio the primary transmission medium for

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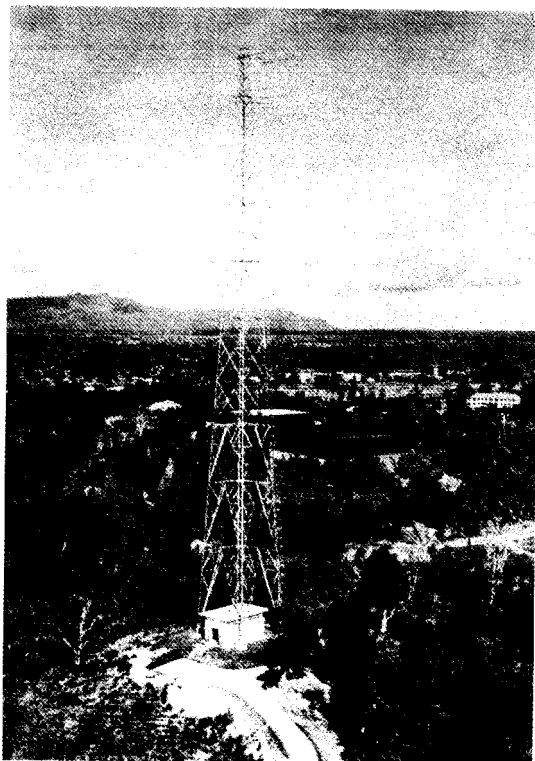


Figure 54. VHF radio relay tower, Kuching, 1961.

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main line telephone and telegraph service internally and to Djakarta. Open wire lines for long-distance telephone communications connect Bandjermasin with Tandjung via the towns of Martapura, Kandangan, Barabai, and Amuntai, all in the southeast. In 1956 a 700-line manual exchange was in use in Bandjermasin.

## 2. Broadcasting Facilities and Services

The radiobroadcasting facilities of Kalimantan are run by Radio Republic Indonesia and consist of short-wave transmitters located at Pontianak, Bandjermasin, and Samarinda. Broadcasts from Pontianak are carried by 5-kw and 1-kw transmitters; those from Bandjermasin are carried by 10-kw and 1-kw transmitters. A 1-kw transmitter at Samarinda is used to relay programs of unknown origin. The number of receivers in use is unknown.

## 3. Specialized Networks

Shell Oil Company operates extensive telecommunication facilities. They consist of wire line, HF, and VHF radio networks that are centered on Balikpapan. Open wire and underground multiconductor cables are used to connect subscribers to the two automatic telephone exchanges (500 lines each) and one manual exchange (100 lines) installed by the company in Balikpapan. All company installations along the eastern coastal area are connected to Balikpapan by either HF or VHF radio or both.

## F. Prime Telecommunication Targets

The telecommunication facilities chosen as targets were selected because their destruction would disrupt the command-control structures of the governments of the various regions by isolating their capitals.

### 1. Sarawak

Destruction of VHF towers at Kuching, Sibul, Miri, Simanggang, and Limbang would halt network operations. Figure 54 shows the VHF radio tower serving Kuching. Other VHF towers in Sarawak are similar in appearance. They are usually on the outskirts of town.

The studios and transmitters serving Radio Sarawak are at Kuching. Destruction of the antennas serving these transmitters would curtail broadcasting indefinitely. The antennas are 100 to 150 feet high.

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Figure 55. Open wireline facilities leading from Jesselton, 1962.

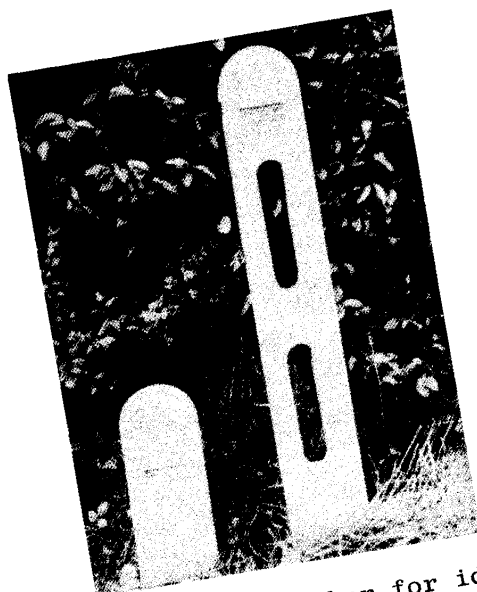


Figure 56. Cable marker for identification of underground cable lines.

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## 2. Brunei

Destruction of the VHF tower on the outskirts of Brunei Town would cut most internal communications as well as those to Sarawak and Sabah. This same tower relays broadcasts from the studio in Brunei Town to the transmitter at Tutong. Destruction of the VHF tower would thus also halt the broadcast of programs from the studio.

## 3. Sabah

The wire line network of Sabah is centered on Jesselton and offers vulnerable targets. Open wire line follows the railroad and connects Jesselton to Beaufort, with extensions from Beaufort to Weston and Membakut. Underground multiconductor cables connect Jesselton to Beaufort via Papar and link Jesselton to Tuaran. Destruction of wire and cable anywhere along these routes would disrupt communications for a number of days. Figure 55 shows open wire pole line facilities leading from Jesselton. Cable markers (see Figure 56) identify the location of underground cables.

All circuits of the VHF network radiate from the station on the outskirts of Jesselton. Destruction of this station would completely disrupt network operations.

Submarine cables are used for telegraph traffic to Hong Kong and Singapore. These cables land at Jesselton. Locations of the cable landing points are unknown but may be identified by cable markers and/or by small cable huts on the shoreline.

The radiobroadcasting facilities of Radio Sabah also are located near Jesselton. Destruction of the antennas would halt broadcasting.

## 4. Kalimantan

The open wire line routes in the vicinity of Pontianak and Bandjermasin are highly vulnerable. They are used for long-distance telephone traffic. They connect Pontianak with the northwest towns of Mampawah, Singkawang, Sambas, Siluas, and Sintang and connect Bandjermasin with the southeast towns of Martapura, Kandangan, Barabai, and Amuntai. Destruction of pole line facilities, similar to those shown in Figure 55 would disrupt communications for a number of days.

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~~SECRET~~G. Place Name List

Several place names appearing on the Sarawak and Brunei Telecommunication Systems Diagrams do not appear on map 38284 12-63. These locations and their coordinates are listed below.

Sarawak

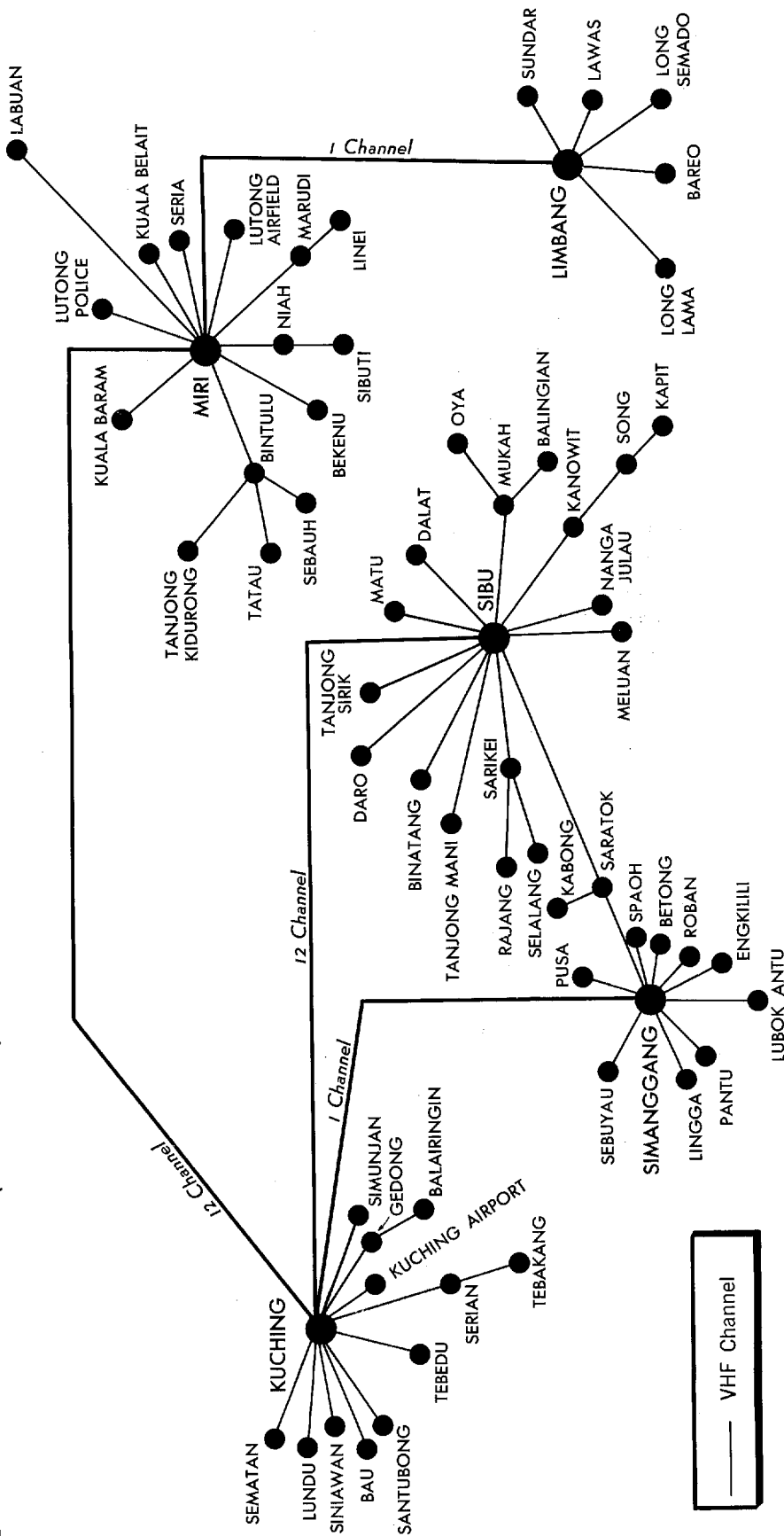
BALINGIAN	02 55 N-112 32 E
BEKENU	04 05 N-113 50 E
BETONG	01 24 N-111 31 E
DALAT	02 43 N-111 56 E
DARO	02 31 N-111 26 E
GEDONG	01 14 N-110 41 E
KABONG	01 48 N-111 07 E
KANOWIT	02 06 N-112 09 E
LINEI	04 01 N-114 28 E
LINGGA	01 21 N-111 11 E
LONG LAMA	03 46 N-114 24 E
LONG SEMADO	04 15 N-115 34 E
MATU	02 41 N-111 30 E
MELUAN	01 52 N-111 56 E
NANGA JULAU	02 01 N-111 55 E
PANTU	01 08 N-111 07 E
PUSA	01 36 N-111 17 E
RAJANG	02 09 N-111 15 E
ROBAN	01 54 N-111 18 E
SANTUBONG	01 44 N-110 20 E
SEBAUH	03 07 N-113 16 E
SEBUYAU	01 31 N-110 56 E
SINIAWAN	01 27 N-110 13 E
SIMUNJAN	01 23 N-110 45 E
SONG	02 01 N-112 33 E
SPAOH	01 27 N-111 28 E
SUNDAR	04 54 N-115 12 E
TANJONG MANI	02 10 N-111 21 E
TATAU	02 54 N-112 50 E
TEBAKANG	01 06 N-110 30 E
TEBEDU	01 01 N-110 30 E

Brunei

LABI	04 23 N-114 27 E
SUNDAR	04 54 N-115 12 E

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# SARAWAK (MALAYSIA): DIAGRAM OF THE VHF RADIO RELAY NETWORK, 1963

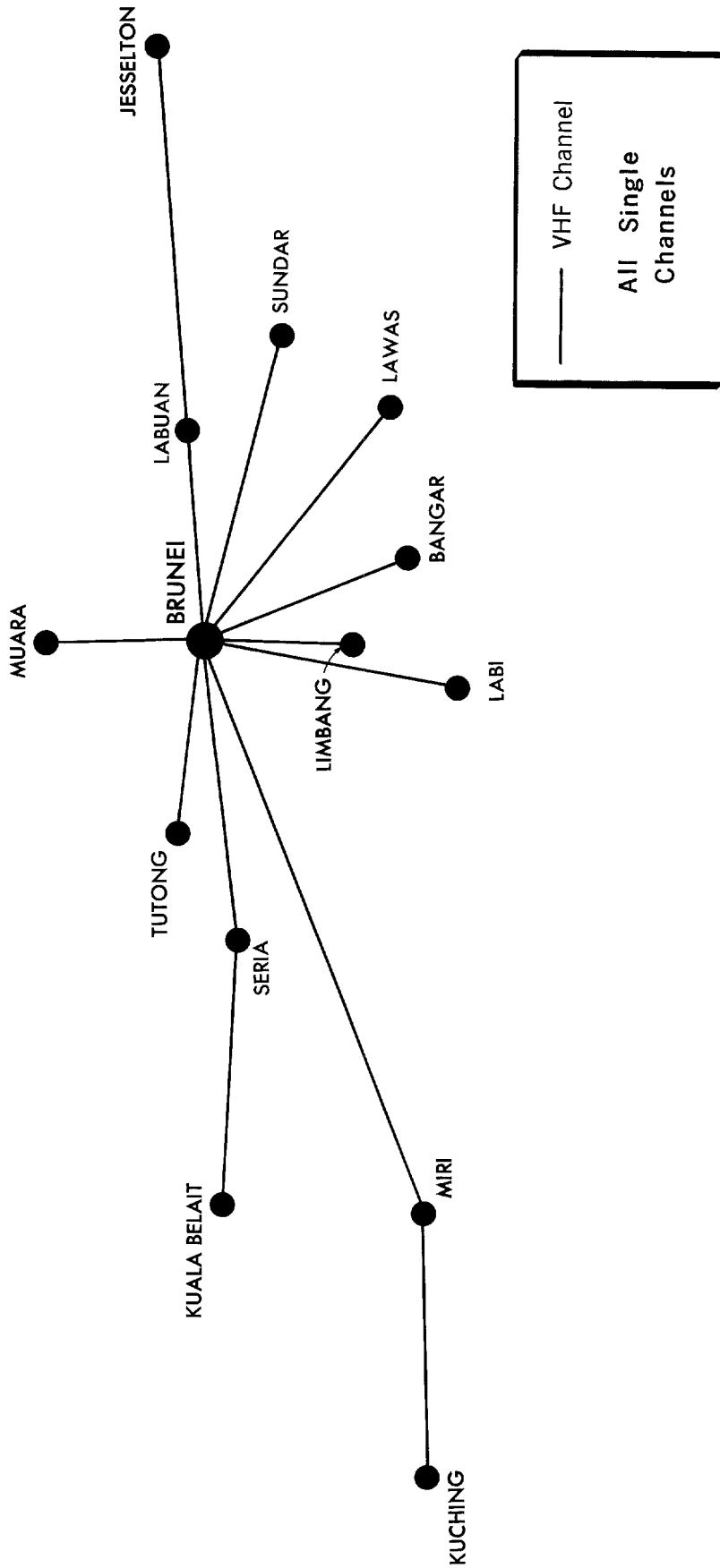


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DECLASSIFICATION

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Diagram 1.

~~SECRET~~ BRUNEI: DIAGRAM OF THE VHF RADIO RELAY NETWORK, 1963



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AND DECLASSIFICATION

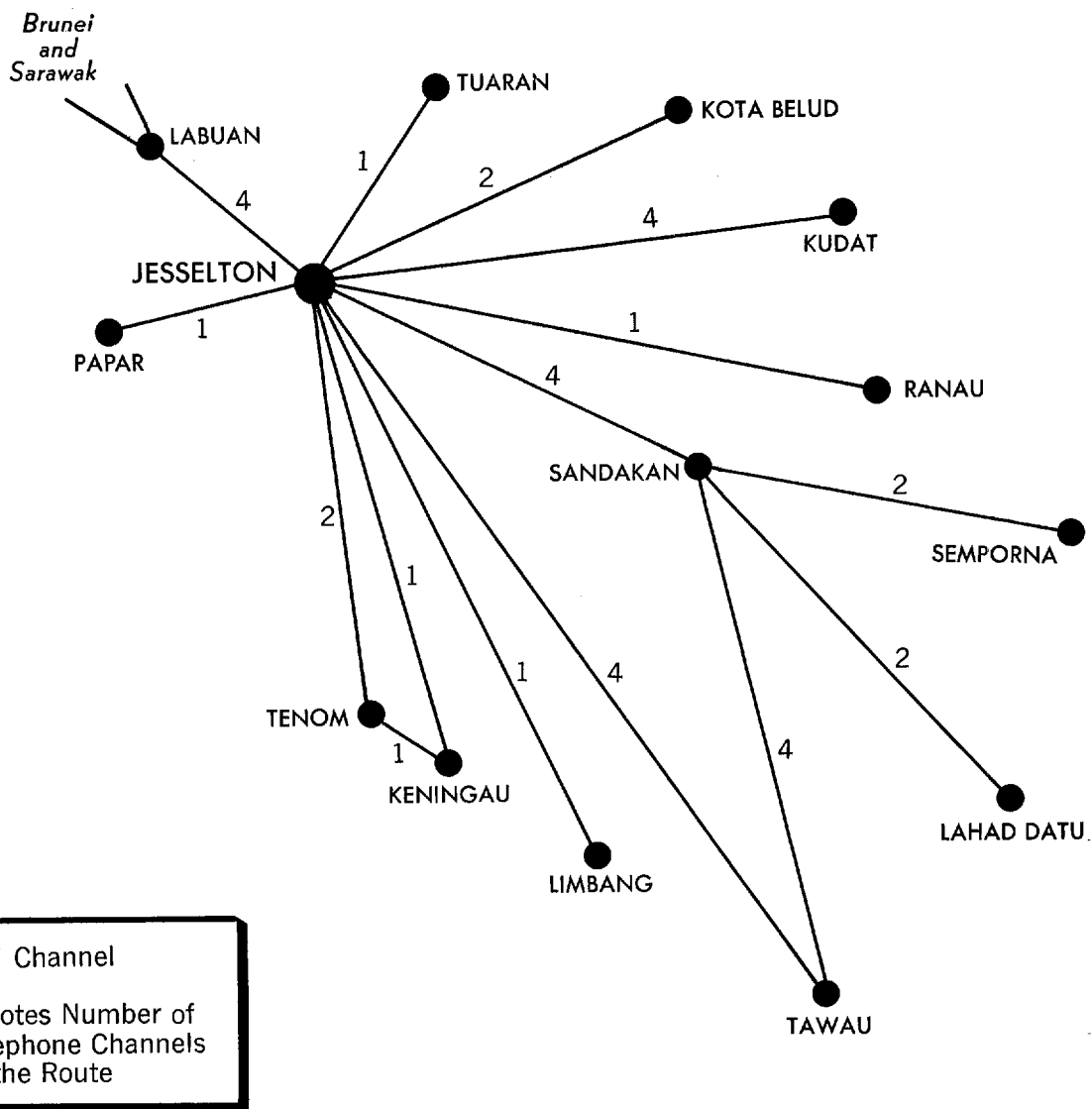
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Diagram 2.

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### SABAH (MALAYSIA): DIAGRAM OF THE VHF RADIO RELAY NETWORK 1963



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AND DECLASSIFICATION

Diagram 3.

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## IX. Military and Internal Security Forces

### A. Indonesian Borneo

#### 1. Introduction

The Indonesian military services, known collectively as the Armed Forces of the Republic of Indonesia (APRI), total 352,000 men and consist of the Ground Forces (ADRI) 297,000, the Air Force (AURI) 34,000, and the Naval Forces (ALRI) 21,000.

The APRI is strongly nationalistic and basically western oriented. The US military training program has had a wide impact on the Indonesian Army, many of whose officers have been trained in the United States. The higher echelons of the Army are firmly anti-Communist, but there has been some leftist penetration among junior officers and enlisted personnel. The traditionally strong western orientation of the Navy has been considerably watered down because of the acquisition of a large number of ex-Soviet ships and the Soviet training missions accompanying them. Communist orientation is strongest within the Air Force because of its reliance on Soviet combat aircraft, extensive training programs within the Soviet Union, and the leftist attitudes of some senior Air Force officers.

The APRI has only a limited capability to wage offensive war or to defend the Indonesian archipelago effectively. However, equipment obtained since 1958, mostly from the USSR, gives the APRI the most powerful military potential of any nation of Southeast Asia. Indonesia has a manpower reserve of about 13.2 million males fit for military service. Common religion, physical stamina, mental alertness, individual loyalty and obedience -- at least through the battalion level -- favor the development of effective forces. These assets are offset by lack of combat experience, command problems, poor leadership, ethnic and language differences, and the generally low level of training. Technical and logistic deficiencies and the necessity for weapons and equipment procurement from foreign sources will continue to limit the development of the APRI's total military potential. Its greatest capability is to conduct effective guerrilla warfare, in which it had some experience in West Irian (ex-Dutch New Guinea), and during the revolution against the Dutch, 1945-49.

#### 2. Army

The Indonesian Army includes 140 infantry battalions, 8 armored battalions, and 20 artillery battalions. The Army is

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equipped with a large variety of light infantry weapons of varied origin: Soviet Bloc, Netherlands, United Kingdom, United States, Japan, and others. The basic stocks of weapons turned over by the withdrawing Dutch in 1949-50 are virtually worn out and are being replaced by large-scale deliveries of Bloc equipment of almost all types.

A very limited US program that provided small arms and spare parts has been suspended because of reaction against Indonesia's policy of "confrontation" against Malaysia. The MAP personnel will be removed, but the program for training officers in the United States continues.

Indonesian artillery consists of 72 Russian 122mm howitzers, 66 Yugoslav 105mm and 76mm howitzers, and 20 Swedish 75mm howitzers. Indonesian armor consists of 80 Russian, 75 French, and 25 US light tanks, and 275 Russian and British armored personnel carriers. Ammunition up to light artillery shells, grenades, and land mines is manufactured at the arsenal at Bandung in Java but all explosives, metals, and propellants must be imported.

Indonesia is organized into 17 military District Commands or Kodams. Kodams IX, X, XII are located in Borneo (see map Order of Battle). For administrative convenience an inter-regional command was established for these Kodams at Bandjermasin. The interregional commander is a deputy army chief of staff and acts as the representative of the ADRI commander within his area. In security operations, however, the chain of command appears to go directly from Djakarta to the Kodam commander concerned. The Kodam commander exercises control over all troops in his area and is responsible as well for training, martial law, and some recruitment.

The overall Army strength in Borneo is 8,000, about 6,000 of which are combat troops. The battalion is the largest tactical unit normally employed offensively. The standard infantry battalion has a Table of Organization strength of 874 but actual strengths vary considerably. It is organized into a headquarters company, four infantry companies and one support company. The six infantry battalions on the island are garrison battalions of low quality. They have had no training above battalion level and are armed with conventional infantry small arms. Support weapons include .303 Vickers machine guns, 80mm and 50mm mortars. The Army has no armor or field artillery of any significance in Borneo, but is increasing anti-aircraft strength.

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A raider battalion with headquarters at Bandjermasin, is attached to the interregional command and was partly or wholly recruited in Borneo. This battalion includes a number of Dayaks and one report suggests that Dayaks are grouped together to form an infiltration unit or to train infiltrators. (The exact location of this battalion, which specializes in guerilla warfare, is not known and it is possible that it is dispersed throughout Indonesian Borneo.) Another raider battalion was recently sent from Java and is now deployed along the border opposite Sarawak's First and Second (administrative) Divisions.

Most Indonesian troops in the border regions have been deployed from battalions normally stationed farther south in Borneo. The bulk of the two infantry battalions at Singkawang and Sintang have been moved up close to the western Sarawak border. One company of naval marines (KKO) has been placed on the west coast and 1,500 volunteers, made up of such diverse elements as PKI (Communist Party) members, Dayak tribesmen, and Indonesian workers from Sabah, are reported in training at a camp at Bengkajang, near Singkawang. An inland communications and command center has been established at Sintang from which small patrols fan out to cover the border. To the northeast troop reinforcements in not greater than company size are scattered at border villages and strategic inland locations. These troops come primarily from Balikpapan and Samarinda. Two companies of marines have reinforced the small naval station at Tarakan.

### 3. Navy

The Indonesian Navy's principal units consist of a Soviet light cruiser, 12 Soviet submarines, 5 Soviet destroyers, 2 Italian light destroyers, and 4 Soviet destroyer escorts. In addition, there are 5 Soviet Komar missile firing patrol boats and about 60 other regular patrol craft (submarine chasers, patrol gunboats, and torpedo boats) mostly of Soviet origin. The Navy is now establishing an air arm and is acquiring 6 to 8 IL-28's from the USSR to be used for anti-submarine patrolling. Pilots for these planes and some helicopter pilots will be trained in the USSR.

The Indonesian Navy's capabilities, despite good morale and fair discipline, are low because of lack of experience and poor leadership, training, and maintenance. Almost all Indonesian warships are based at Surabaya in Java. Only a few small patrol boats and landing craft are based in Borneo, primarily for anti-smuggling duties. None of the four ports in Indonesian Borneo could support a major naval force.

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Bandjermasin and Balikpapan are the best equipped. Ports near northern Borneo are inadequate, having virtually no repair facilities. Makassar in Celebes is the responsible naval headquarters for Borneo naval operations.

#### 4. Air Force

The Indonesian Air Force combat squadrons consist of 2 medium bomber squadrons of TU-16's; 2 light bomber squadrons of IL-28's, B-25's, and B-26's; 2 all-weather fighter-interceptor squadrons of MIG-19's and MIG-21's; 1 fighter-bomber interceptor squadron of MIG-15's and MIG-17's; and 1 fighter-bomber squadron of F-51's and T-6's. An additional squadron of MIG-21's is being acquired from the USSR.

The AURI has only light utility planes and a few transport planes in Borneo. Bandjermasin can handle all types of AURI aircraft. Almost all airfields in Indonesian Borneo would require extensive development before they could be used to support large-scale operations. (For Borneo airfields see main map Borneo and Appendix A.) Helicopter pads and airstrips for Cub-type aircraft are being rushed to completion along the Sarawak -- Kalimantan border.

The AURI can drop paratroop units from C-130 and C-47 aircraft. It is acquiring 6 AN-12's from the USSR. They also have a number of light aircraft which, operating from small strips along the border, could be used to support clandestine operations. In addition the AURI operates 15 amphibious aircraft, some of doubtful serviceability. Operating from their main bases in Java and in the future probably from Bandjermasin, Pontianak, and Balikpapan, C-130's could lift 1,000 paratroops from Java to any point on the island. This force could be backed up by short range transports (IL-14's and C-47's) which could operate from forward airfields at Tarakan, Pontianak, and possibly Singkawang.

Indonesia's ground attack units (F-51's, B-25's, B-26's) can operate from Borneo airfields and reach any point in northern Borneo. Jet fighter units (MIG-17's and MIG-19's) could also be used as ground attack units, but lack of suitable airfields in northern Kalimantan would keep Brunei and Sabah out of range.

#### 5. Police

The Indonesian National Police consists of four services -- the General Police, the State Police Security Service, the Criminal Investigation Service, and the Mobile Brigade.

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The main body of the 106,000 man Indonesian National Police is the General Police. The bulk of this force, whose duties are to handle routine police functions, is stationed in the larger towns. The basic unit is the three man patrol which operates from local police stations. The State Police Security Service, which is poorly staffed and organized, is the intelligence and security arm of the National Police. The Criminal Investigation Service has overall supervision of the prevention and detection of crime.

The Mobile Brigade (Mobrig) is a tough paramilitary force and is the elite element of the National Police. It is a light infantry organization trained for internal security duties and in the past has been effective in operations against rebels. In Kalimantan Mobrig headquarters is at Bandjermasin. Units of two battalions, possibly up to company strength, are located in a number of main centers. In times of emergency the Mobile Brigade may be placed under military control.

The Indonesian National Police is capable of coping with small-scale passive resistance, strikes, and demonstrations. Should insurgency become dangerous, the Army would be called upon to restore public order.

## B. Northern Borneo

### 1. Military Forces

Responsibility for the defense and internal security of Sarawak and Sabah is now a function of Malaysia, backed by an extension of the 1957 Agreement on External Defense and Mutual Assistance with the UK, which promises British aid in the event of an attack. The British Government is responsible for the defense and internal security of the Brunei protectorate.

British Far East Forces total approximately 45,000 of all services, excluding the Hong Kong garrison and the two-battalion Australian-New Zealand contingent in Malaya. There is a 12,000 navy-air force component and nearly 28,000 well-trained and efficient British and Gurkha troops in Singapore and Malaya from which ground forces are drawn for use in northern Borneo. This number includes 14 infantry battalions, 1 guard battalion, 1 armored car battalion, 4 artillery regiments, and 2 commando battalions.

The British could airlift 1,500 men from Malaya in about 24 hours. They did this during the Brunei rebellion of December 1962. More than 6,000 British troops, having their headquarters in Brunei Town, are now deployed in northern Borneo

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Figure 57. Captured rebels marched to compound by British troops, Brunei, December 1962.



Figure 58. Gurkha patrol in search of rebels, Brunei, December 1962.

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(see map Order of Battle). Malaysia has a small army of 14,600 men including 9 infantry battalions, 2 reconnaissance battalions, and 1 artillery battalion, but has no naval or air combat units. In September 1963 a Malaysian infantry battalion was sent to Sarawak and 2 more are scheduled for duty in Malaysian Borneo. With these additions Malaysian troops in Borneo should total 2,700.

The British fleet at Singapore includes 1 aircraft carrier, 1 light cruiser, 8 destroyers, and 5 submarines. British naval activity in the Borneo area is largely confined to destroyer patrols off Tawau and Kuching and the transporting of troops and supplies up river.

The British Far East Air Force, stationed in the Malaya/Singapore area, has two combat squadrons -- a fighter squadron of 16 Javelin F (AW)-9's, 19 Hunter GA.9's, and 1 Meteor T.7, and a light bomber squadron of 8 Canberra B.15's and 1 Canberra T.4. Two Australian Air Force squadrons in the area are equipped with Sabre MK-32's and Canberra MK-20's. Detachments of Hunter GA.9's are stationed at the airport on Labuan Island in Brunei Bay and at Kuching airport. During December 1963 a squadron of 8 longrange, medium jet bombers (Victor bombers), capable of reaching any target in Java and returning to base, arrived in Singapore.

## 2. Police

Law enforcement in Sarawak, Brunei, and Sabah in the past was carried out by police forces under the supervision of Commissioners of Police, directly responsible to the colonial authorities. Cooperation and communication among the forces of the three territories was so close that they seemed at times to be parts of a single system. The Sarawak and Sabah forces are now being integrated with the Singapore and Malayan forces into a Malaysian force. Efficiency is high and the police apparatus is adequate for the maintenance of internal order under normal conditions.

Police headquarters are at Kuching, Jesselton, and Brunei Town in Sarawak, Sabah, and Brunei respectively. From these cities radiates a network of police communications and substations in the outlying areas. The structures of the three forces are almost identical except that the Brunei police organization is much less elaborate. Each of the police forces consists of three main branches: a Regular Force, which performs all routine police functions, a Field Force, and a Special Force. In addition to the three main branches of Brunei's police force the Brunei Volunteers Police Force serves as an oilfield security force.

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Figure 59. Malayan police force awaits departure for Sarawak to reinforce local troops. Kuala Lumpur, Malaya, September 1963.



Figure 60. Gurkhas, in pursuit of Brunei rebels, take boats as far as possible into mangrove swamp before advancing on foot.

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The Field Force, or Mobile Force as it is known in Sabah, is a mobile striking force of military character which is designed to suppress riots or serious breaches of order. Its members are trained in jungle warfare and, in Sarawak and Brunei, are kept strictly separate from the Regular Force. Since the Brunei emergency they have been used to supplement military forces. The Special Forces are in charge of the detection of political subversion, and are also responsible for criminal investigation.

Police personnel are drawn mainly from Malays and tribal peoples, but many commissioned police officers still are British; these officers in time will be replaced by native personnel. Despite recruitment efforts, the number of Chinese personnel is not proportionate to the size of the Chinese population. The lack of Chinese-speaking officers is a particular handicap to the Special Forces since Communist subversive potential centers in the Chinese community.

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## X. Survival Factors

### A. Food and Water

#### 1. Plants

A traveler in Borneo should have little difficulty living off the land if he is willing to eat unfamiliar foods. Wild fruits, nuts, and vegetables are plentiful and often serve as an emergency food supply for the natives when rice harvests are poor. The best places to search for food plants are in forest clearings and along trails and streams. The commonest edible vegetation consists of wild fruits (breadfruit, bananas, papaws, pineapples, figs, oranges, mangoes, raspberries, and passion fruit), various types of nuts, plant leaves, roots, tubers (taros and yams), grasses, and shoots of ferns, bamboo, palms, and other trees.

Taro is most plentiful in damp places. Its tuberous root should be cut into small pieces and boiled in water that is changed two or three times. Young taro leaves, though slightly acid, also are edible if cooked in the same way. The yam, found at the base of the stem of a twisting plant with ivylike vines, is edible if it does not have an acrid taste. Fern fronds and stalks, which are found almost everywhere in the forests, and the roots and tubers of the water chestnut, water lily, and bulrush can be eaten raw or cooked. The stem and root shoots of wild rice, which grows in poorly drained areas, can be eaten raw. Coconuts are a good source of food -- growing wild most commonly along the coasts, and cultivated in or near native villages. The sago palm -- a large thorny palm with huge leaves, generally found in moist regions -- also grows both wild and cultivated. The pith of the trunk is edible if crushed to a pulpy mass and then washed and dried. The white kernel inside the nut of the nipa palm is also edible.

Crops are cultivated near native villages. Wetland rice is the most common cultivated crop in the lowlands, and dry-land rice is the staple food in the uplands. Corn, tapioca, and sago are raised to supplement rice. There are usually gardens of fruit and vegetables in or near villages. Ripened crops may be available in village fields, but extreme caution is necessary to avoid detection when pilfering because the fields are closely watched for predatory birds and animals during the ripening period. The best approach to the fields is from the downwind side after dark.

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Several plant foods may be toxic. Cassava, from which a commonly consumed flour is made, contains cyanide. To avoid cyanosis, cassava flour must be soaked and washed well before consumption. Native foods prepared from certain molds may produce toxoflavin poisoning. Symptoms of this poisoning are vomiting, perspiration, cramps, coma, and sometimes death. A fermented food called ontjom made from peanuts may produce temporary jaundice. No specific antidotes for these poisonings are known.

Some plants have poisonous roots and tubers and should not be confused with edible plants. The tuba plant, which looks like the soybean plant and has a black stem and pink flowers about half an inch long, has a poisonous root. Natives make a fish poison from the root; the poison is also used as a means of suicide. Gadoeng is a climbing plant with a poisonous tuber. Gloriosa superba is a vine growing up to 20 feet long with large flowers appearing singly on long stalks. Its roots contain a poison used to kill dogs and fish. No specific antidotes are known for these poisonings.

## 2. Animals

Meat is abundant in the forests of Borneo. Most animals, birds, reptiles, and fish are edible, and their meat is generally more nourishing than wild plant food. Only the denser and darker parts of the forest lack plentiful animal life. Large animals abound, but it is usually dangerous to attempt to kill them; small animals such as wild pigs, monkeys, deer, badgers, otters, squirrels, and foxes are easier to catch and, for the most part, are tastier. All native villages have domestic animals and poultry, but stealing them is risky. Borneo has an enormous number of bird species, all of which are edible. Included are pheasants, hornbills, and swifts. Birds' eggs also are a good source of food. All of the many varieties of snakes on Borneo, including the poisonous species, can be safely eaten if the head -- where the poison sacs are located -- is removed.

The rivers contain a wide variety of fish and Amphibia including frogs, turtles, and lizards. Crocodiles are becoming rarer. Crabs, crayfish, and clams are found, particularly in the mangrove areas. Generally all fresh-water fish and amphibious life are safe to eat, although they should be cooked well because of the prevalence of flukes and other parasites. Fish can be caught with the fishing equipment in standard survival kits, with crude improvised equipment, or by spreading poison on the water. Fishhooks can be made from

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pins, needles, wire, wood, or bone; lines can be made from bark, roots, or the leaf and stem fibers of various trees and plants; spears can be made from bamboo or saplings. Poison can be derived by crushing the parts of several types of plants (notably the tuba plant) or by extracting lime from burned coral or seashells. Fish are usually easiest to see in small shallow streams, but they prefer to congregate in pools of deep calm water, particularly when streams are low.

Edible grubs are found in rotten logs, in the ground, and under the bark of dead trees. Edible termites are common throughout the jungles. Both can be eaten raw without ill effects, although cooking is probably preferable. Caterpillars should not be eaten, as some are poisonous.

### 3. Water

There is a ready supply of water in most of Borneo, but availability of uncontaminated water suitable for drinking can be a serious problem. Water supplies, except in major urban areas, are not controlled and should be regarded as contaminated. Dysentery, cholera, and typhoid are the commonest of the water-borne diseases; blood flukes and worms can also be picked up from drinking contaminated water. Other than rain-water, which is safe to drink if collected in a clean container, the safest water supplies are streams at high elevations -- above the sources of contamination. The most dangerous sources of water are still or slow-moving bodies of water near native villages. Water should be purified by using chemical water purifiers or by boiling for 1 minute plus 1 additional minute for each 1,000 feet of elevation. In poorly drained coastal areas, only brackish or salt water is available and a desalter kit must be used to provide fresh water.

Fluids may be obtained by chewing the fruits, growing tips, leaves, stems, and buds of many plants. Water may be extracted from some varieties of bamboo and from many of the woody vines in the forests. Vines with large pores contain the most water. They should be cut into 2-foot or 3-foot lengths and allowed to drip. Potable liquids also may be obtained from the trunks of banana trees and many palms, from coconuts, and from the stems of nipa palms. The milk of ripened coconuts contains an oil that may cause diarrhea. The milk can be drunk safely by allowing it to stand, as the oil will separate from it and can then be drained off.

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## B. Environmental Hazards

### 1. Animals

Large animals are a potential hazard in the Borneo jungles, but they are seldom encountered because they normally avoid humans. They rarely attack a man unless provoked; it is best not to attempt to kill them. Elephants, although not native to Borneo, were imported in the 19th century and are found wild in Sabah. The rhinoceros (particularly common in southern Sabah), wild pig, leopard, bear, and ape may be encountered throughout the island. Potentially the most dangerous ape is the orangutan, which lives only on Borneo and Sumatra. The orangutan is commonest in northwest and southeast Kalimantan and along some of the rivers of Sarawak. It is reported to be in danger of extinction because of the high prices paid for the young, which are greatly prized by zoos.

Dogs and other animals may carry rabies.

### 2. Reptiles and Fish

Borneo has many snakes, but only a few are dangerous to man. The krait, cobra, and viper are the most dangerous of the poisonous snakes. The python, a large nonpoisonous snake that crushes its prey, is found on Borneo. Its numbers have been depleted by the natives who sell its skin for use in the manufacture of clothing. Crocodiles -- nonpoisonous, but dangerous when aroused -- are found in rivers but are becoming rarer.

To minimize the chance of being bitten by a snake, basic precautions should be observed at all times. Extreme caution should be taken in gathering firewood, particularly around fallen trees and limbs. When traveling in rocky terrain, one should not place his hands on rocks or ledges above his head or step down into shadowed rock crevices without first visually examining the site. During the heat of the day, all areas with deep shadows should be regarded as potential shelters for snakes. Clothing and equipment should be hung on tree limbs rather than left lying on the ground. Instead of sleeping on the ground, a hammock or sleeping platform should be improvised.

Dangerous fish which may be found in the waters off Borneo include sharks, stingrays, and puffers. All meat of the puffer, particularly the roe, is very poisonous. The fish has no scales and puffs up with air when removed from the water.

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### 3. Insects

The danger of bites and stings from insects varies considerably from place to place and from individual to individual. As precautionary measures, contact with all insects and other small animals such as leeches should be avoided whenever possible and repellents used.

Mosquitoes are common in all parts of Borneo. At best, their bite is unpleasant; at worst it can lead to delirium and death. Many species of mosquito are vectors of malaria; others carry dengue and filariasis. Schemes to eradicate malaria have greatly reduced the incidence of the disease in northern Borneo, but in the Indonesian part of the island malaria is still a serious problem. All mosquitoes require water for breeding. Malaria-carrying mosquitoes are most prevalent in coastal districts and in poorly drained lowlands of the interior where they breed in pools open to the sun. Disease-carrying mosquitoes are also found, but in lesser numbers, in areas up to about 5,000 feet where they breed in mountain streams, particularly in slow-moving stretches open to the sun. A traveler in mosquito-infested areas should use suitable clothing and netting to keep exposed skin to a minimum, particularly after sundown when mosquitoes are most likely to bite.

Several species of flies are found on the island. Their bites may cause swelling and intense itching and may result in secondary infection if scratched. Near infested villages they may carry intestinal diseases and trachoma. One can usually escape flies by moving out of the vicinity because most flies travel only short distances from their breeding areas.

Fleas, numerous in native villages, carry many diseases. Rat fleas are vectors of plague and typhus. If it is necessary to kill rodents for food, the animals should be hung up as soon as killed and not handled until cold; fleas soon leave dead animals. Lice, also common among native groups, may transmit typhus or relapsing fever.

The bloodsucking land leech is perhaps the most irritating form of animal life on Borneo. Leeches are very difficult to avoid, especially in forested areas after heavy rain. They cling to blades of grass, leaves, and twigs and fasten themselves to the skin of passers-by. They can slip through coarse socks or the eyelets of shoes. Although their bites may cause discomfort, they generally are painless and often are discovered only after examination of the body. In leech-

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infested country the body should be examined regularly, as failure to remove leeches promptly will result in loss of blood. Leeches should be removed from the body very carefully in order to avoid secondary infection. They are best removed by applying a burning cigarette or a dehydrating substance such as salt, iodine, alcohol, or dry ashes.

Ticks and mites may carry scrub typhus. Additionally, they may cause secondary infections (tropical ulcers) if improperly removed from the skin. Ticks and mites are usually more difficult to remove than leeches. If the substances recommended for the removal of leeches are not effective in removing ticks and mites, a sterile instrument should be used to extract them. Repellents are fairly effective in keeping ticks and mites away.

Scorpions, which average about 1-1/2 inches in length but are sometimes as long as 8 inches, are found on Borneo. They should be carefully avoided because their sting, although rarely fatal to humans, is extremely painful. Scorpions usually hide under the loose bark of fallen timber, under boulders, and in dry, grassy areas during the daytime; they move about at night. Clothing, shoes, and equipment should not be left on the ground, as scorpions are likely to crawl inside.

There is a variety of spiders on Borneo. Their bites, although not normally fatal to man, may cause severe pain and swelling. The bites of numerous other insects are poisonous but rarely serious. Because of the danger of secondary infection, however, care should be taken to avoid bites or stings from ants, centipedes, wasps, and other insects.

### C. Climatic Hazards

#### 1. Heat and Humidity

The tropical heat of Borneo is oppressive. Temperature and humidity are high throughout the year, particularly at lower elevations. The most pleasant and most healthful climate is in the mountains. Loss of body moisture through perspiration is high and has a debilitating effect unless the salt balance of the body is maintained. Men unaccustomed to tropical climates have low resistance to infection and are particularly subject to intestinal and gastric infections. Young individuals in prime physical condition and with adequate diet usually become acclimatized in 1 to 2 weeks and usually retain unimpaired health for periods varying from 6 months to a year or more. Exertion of any kind, even for the acclimatized, is more taxing than in a moderate climate.

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Activities requiring exertion must be undertaken with caution; overexertion often results in heat exhaustion and temporary disability. Chronic overexertion may result in premature physical deterioration and, consequently, a shortened period of effectiveness in Borneo.

Fungi and molds grow rapidly because of the high humidity and cause rapid deterioration of cloth and leather.

## 2. Precipitation

Rainfall is high throughout the year in all parts of Borneo; it is highest in the interior and generally lowest in the east and southeast. Torrential rains are common. Sleeping accommodations should be adequately insulated against ground moisture and protected against night rains. Campsites should be well above stream level, particularly in narrow valleys, as a sudden rise of 30 feet or more in water level is not uncommon during heavy rains. Streams are hazardous to ford during and immediately after heavy rains, when they become raging torrents with swift currents and numerous whirlpools.

### D. Cultural Factors

Contact with local people is hard to avoid on Borneo except in the more remote and virtually unpopulated mountainous areas of the interior. Most interior villages are situated on riverbanks, and rivers are the most practical travel routes, particularly in the poorly drained lowlands. In order to avoid contact with people, one should travel at night and in the early morning, preferably from midnight until about an hour before dawn, when the people are asleep. During Ramadan, however -- the month when Moslems fast from dawn until sunset -- Moslem villages become active earlier in the morning. (In 1964, Ramadan began on 13 January; it advances at the rate of 11 days and 3 hours per year on the Christian calendar.)

Hostility to strangers is unlikely among the people of Borneo. In spite of the earlier notoriety of some groups as headhunters, most of the people now are friendly and are likely to receive visitors warmly. Headhunting was virtually eliminated before World War II. The last known beheadings were those of Japanese soldiers during the War. Some of the people, in particular the nomadic Punans, may be shy and suspicious at first, but this attitude should not be construed as unfriendliness. If the visitor shows no antagonism toward his hosts, relationships should warm up rapidly. A visitor who acknowledges native hospitality quickly and politely is likely to be accepted. One who has a sense of fun will please

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the natives most; stuffiness or an air of superiority is almost sure to antagonize them.

Spirits and omens are believed to be embodied in various animate and inanimate things (animals, birds, trees, mountains, caves, rivers, thunder, and lightning). They vary from tribe to tribe; objects sacred to one tribe are not necessarily sacred to another. When in the company of native people, one should not kill an animal or bird without first determining whether or not it is sacred to their tribe. When traveling with natives, no route should be selected without their approval lest it cross sacred rivers or mountains. If natives wish to travel far out of the way to avoid offending the spirits, it is probably best not to question their decision, as to do so will strain relations. Failure by an outsider to acknowledge the host of spirits, omens, and taboos of the natives is not likely to evoke violence. To avoid an offense serious enough to arouse ill feelings in the people of a tribe and to affect future contacts between the tribesmen and the outsider, however, one should watch carefully for native reactions and quickly attempt to rectify any faux pas committed.

During the periods of British and Dutch administration, relationships between natives and Europeans were good. Missionaries have been active in Borneo and have done much to foster good relations between natives and white men. Many natives in northern Borneo remember the return of the Allied forces -- mostly British and Australian -- near the end of World War II with particular fondness. Since the beginning of the Indonesian "confrontation" policy against Malaysia, however, many of the tribes in the Indonesian Borneo -- Malaysia border area have been politically indoctrinated by Indonesia. Their receptiveness and helpfulness to white men traveling in the area may depend on the degree of success of such indoctrination.

#### E. Medical Factors

Factors in the climate of Borneo affecting the health of men operating in the back country are much the same as in other tropical areas. Diseases are carried by mosquitoes, mites, ticks, and other insects, and are also caused by contaminated soil and water (see tabulation at end of chapter). Personal hygiene and the cleanliness of camps and messing facilities are essential. Although most of Borneo is tropical, there are some mountainous areas with peaks exceeding 10,000 feet. Operations in such areas would present the problems of cold climate.

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Grasses such as alang, Bermuda, panic, and couch differ from similar grasses in the United States and Europe and often produce allergenic reactions such as hay fever. Sensitive individuals should carry a good antihistamine. Chlortrimeton (8 mg.) will suffice.

The saps of some trees contain irritant poisons. These saps cause itching and blistering if they touch the skin. Treatment consists of washing the area of contact with strong soap or applying mild alkali.

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Principal Diseases  
on Borneo

Carrier	Disease	Distribution	Prevention	Treatment	Comments
Infected humans	Yaws	Widespread	General cleanliness and penicillin	Penicillin	Infects up to 80 percent of population in some areas
do	Bronchopneumonia	Unknown but appears general	Avoid close bodily contact.	Penicillin	Produces a very tenacious pneumonia
do	Asian influenza	Widespread during epidemics	Avoid crowded conditions; inoculation	Rest and aspirin or APC	No real problem unless epidemic develops
do	Trachoma	Widespread	General cleanliness; avoid contact with infected persons.	Tetracycline	Very common
do	Small pox	Widespread during epidemics	Inoculation	None	Fairly common
do	Diphtheria	Widespread	Inoculation	Diphtheria antitoxin	Attack rate usually low, even in susceptible adults.
Skin	Tropical ulcers	Widespread	General cleanliness and prompt attention to superficial wounds	Sulfonamide powders; tetracycline	Various bacteria on skin may infect an unattended wound, producing ulcer or open sore.
Wild dogs and other animals	Rabies	Widespread	Avoid or kill wild dogs that may attack. Natives of Borneo have effective poison for killing dogs.	Thorough washing of wounds and institution of anti-rabies vaccine series	Antirabies vaccine treatment requires 2 weeks to 1 month and is impractical to carry out under field conditions. Evacuate bite victim as soon as possible.

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~~SECRET~~Principal Diseases  
on Borneo

Carrier	Disease	Distribution	Prevention	Treatment	Comments
Mosquitoes	Malaria	Widespread	Mosquito repellent and primaquine	Chloroquine diphosphate	There are eight varieties of mosquito vectors, but most of the malaria produced is benign tertian and quartan malaria which are milder than malignant forms.
do	Filariasis	Widespread	Mosquito repellent	Hetrazan	Can produce elephantiasis
do	Dengue fever	Widespread	Mosquito repellent	Bed rest and aspirin or APC	Also called 5-day fever or 7-day fever
Unclean food, water, and soil	Amebic dysentery	Widespread	Clean food and water	Diodoquin	Very prevalent
do	Bacillary dysentery	Widespread	Clean food and water; sulfaguanidine if exposed	Aureomycin or sulfadiazine	Very prevalent
do	Typhoid and paratyphoid fevers	Widespread	Inoculation	Chloromycetin	Very prevalent
do	Cholera	Uncommon	Inoculation	Tetracycline and chloramphenicol	
do	Hookworm and roundworm	Widespread	Wear shoes. Clean food and water	Tetrachloroethylene or piperazine	Very prevalent
do	Tetanus	Widespread	Inoculation	None	Very prevalent

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Principal Diseases  
on Borneo

Carrier	Disease	Distribution	Prevention	Treatment	Comments
Mites, fleas, Scrub typhus and flies		Rat-infested	DDT powder in clothing	Chloramphenicol	Vector mites make camping hazardous in fields of tallong grass.
do	Plague	Rare	Inoculation	Streptomycin	Appears only sporadically. Vector is the rat flea.
do	Visceral leishmaniasis	Rare	Fly repellent	Neostibosan	Also known as kala azar

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25X1

1.

2.

3. CIA. NIS 100, Indonesia, sec 21, Apr 56. C.

4. Ibid., sec 24, Jan 56. C.

5. CIA. NIS 44, British Indonesia, sec 22, Sep 51. C/NOFORN.

6. Ibid., sec 24, Aug 55. C/NOFORN.

7. Craighead, F.C. and J.J. How to Survive on Land and Sea, Annapolis, 1962. U.

8. Harrisson, Tom. World Within, London, 1959. U.

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# MISSING PAGE

**ORIGINAL DOCUMENT MISSING PAGE(S):**

172

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## APPENDIX A

AIRFIELDS OF BORNEO\*A. USABLE AIRFIELDSSarawak

1.	BA KELALAN	03 58 N 115 40 E	1,050 feet grass
2.	BAREO	03 42 N 115 27 E	1,800 feet grass
3.	BATU GADING	03 50 N 114 40 E	1,100 feet grass
4.	BELAGA	02 39 N 113 46 E	1,415 feet grass on clay
5.	BINTULU	03 12 N 113 02 E	3,600 feet grass on hard sand
6.	KUCHING (Batu Toujoh, Stabar)	01 29 N 110 20 E	6,300 feet blacktop
7.	LAWAS	04 51 N 115 24 E	1,800 feet grass on stone
8.	LIO MATU	03 09 N 115 14 E	1,020 feet grass
9.	LONG AKAH	03 18 N 114 47 E	1,400 feet grass on clay
10.	LONG ATIP	03 51 N 114 45 E	1,500 feet grass
11.	LONG BANGA	03 11 N 115 27 E	1,320 feet grass
12.	LONG GENG	02 37 N 114 08 E	1,140 feet grass
13.	LONG LELLANG	03 27 N 115 06 E	1,140 feet grass

\* Keyed to main map Borneo~~S-E-C-R-E-T~~

~~S E C R E T~~

14.	LONG SEMADOH	04 14 N 115 36 E	1,416 feet grass on sand
15.	LONG SERIDAN	03 59 N 115 03 E	1,080 feet grass
16.	LONG TEBANGANG	03 23 N 114 52 E	1,080 feet grass
17.	MARUDI	04 11 N 114 19 E	1,400 feet grass on sand
18.	MIRI (Lutong)	04 27 N 113 59 E	3,366 feet grass
19.	MUKAH	02 54 N 112 04 E	1,400 feet grass on sand - planned extension to 2500 - 3000 feet (Dec. 62)
20.	PATIK	03 44 N 115 17 E	800 feet grass
21.	SELALANG	02 01 N 111 20 E	720 feet grass
22.	SEMATAN	01 49 N 109 46 E	2,350 feet grass on sand
23.	SIBU	02 20 N 111 50 E	3,600 feet grass on stone - being extended (Dec. 62) to 4,500 feet blacktop. Temporarily reduced to 1,800 feet during re-surfacing.
24.	SIMANGGANG	01 13 N 111 27 E	1,800 feet blacktop

Brunei

25.	ANDUKI (Seria)	04 38 N 114 23 E	6,300 feet grass on sand
26.	BRUNEI (Berakas)	04 55 N 114 56 E	5,800 feet blacktop, be- ing extended (Dec. 62) to 6,300 feet
27.	SERIA TOWN (Penaga)	04 36 N 114 17 E	1,000 feet grass



~~S-E-C-R-E-T~~Sabah

28.	ALLEN FIELD	06 21 N 116 24 E	858 x 55 feet grass
29.	DHABU	06 25 N 116 33 E	1,020 feet grass; runway overgrown
30.	JESSELTON	05 56 N 116 03 E	5,100 x 100 feet black- top
31.	KALABAKAN	04 25 N 117 29 E	1,000 feet clay
32.	KENINGAU	05 22 N 116 12 E	2,400 feet grass
33.	KOTA BELUD	06 22 N 116 28 E	4,500 x 150 feet grass on graded earth. On a strip 6,300 feet long
34.	KUDAT	06 57 N 116 48 E	2,400 feet grass on coral
35.	LABUAN	05 17 N 115 16 E	6,070 feet blacktop
36.	LAHAD DATU	05 02 N 118 19 E	3,600 feet sand over coral
37.	MARAK PARAK	06 17 N 116 44 E	1,290 feet grass
38.	MELIGAN	04 39 N 115 37 E	1,500 feet grass
39.	MERIDI	06 06 N 117 03 E	1,350 feet grass
40.	PA SIA (Long Pasa)	04 24 N 115 45 E	1,350 feet grass
41.	RANAU	05 58 N 116 41 E	2,700 feet grass
42.	SANDAKAN	05 54 N 118 04 E	4,110 feet gravel
43.	SAPULUT (Sepulot)	04 46 N 116 30 E	1,700 feet grass

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44.	SIPITANG	05 05 N 115 33 E	2,100 feet sand
45.	TAWAU	04 17 N 117 53 E	4,500 feet crushed stone and sand
46.	TELUPID	05 40 N 117 09 E	1,700 feet sandy clay
47.	ULU TOMANI	04 43 N 115 54 E	1,440 feet sand
48.	WALLACE BAY	04 15 N 117 34 E	1,100 feet clay

Indonesian Borneo (Kalimantan)

49.	BALIKPAPAN (Sepinggang)	01 16 S 116 54 E	4,100 x 100 feet perfo- rated steel plank on coral
50.	BANDJERMASIN (Ulin)	03 27 S 114 45 E	5,660 x 150 feet black- top
51.	BUKITKELAM (Sintang)	00 04 N 111 30 E	2,000 feet grass (est.)
52.	KETAPANG (Kali Nilam)	01 52 S 109 59 E	2,300 feet, probably grass
53.	LONG BAWAN	03 48 N 115 34 E	1,968 feet, probably grass
54.	LONG NAWANG	01 54 N 114 53 E	2,000 feet grass (est.)
55.	MUARATEWE (Bengaris)	00 57 S 114 53 E	1,640 feet, probably grass - may have been extended to 1,800 feet
56.	PALANGKA RAYA (Pahandut, Pengarung)	02 16 S 113 56 E	2,000 feet grass (est.)
57.	PANGKALANBUUN (Kotawaringin, Sukabumi)	02 42 S 111 41 E	2,750 x 150 feet (est.). Rolled earth rehabili- tated 1958 on site of World War II 5,200 feet airfield

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58.	PONTIANAK	00 09 S 109 24 E	3,610 x 100 feet gravel
59.	PURUKTJAU	00 35 S 114 35 E	2,000 feet grass (est.)
60.	PUTUSSIBAU (Kedamin)	00 50 N 112 56 E	2,000 feet grass (est.)
61.	SAMARINDA (Karangasam)	00 30 S 117 07 E approx.	1,650 feet grass (est.)
62.	SAMARINDA 2 (Melak, Sendawar)	00 12 S 115 46 E	2,000 feet grass (est.). Rehabilitated 1958 on site of World War II runway 4,500 feet long.
63.	SAMPIT	02 33 S 112 58 E	2,000 feet earth, grass (est.)
64.	SINGKAWANG	01 05 N 109 41 E	3,000 x 200 feet earth, grass
65.	TANDJUNG (Warukin)	02 13 S 115 26 E	4,265 x 100 feet gravel
66.	TANDJUNG REDEB (Kalimaraui)	02 10 N 117 29 E	2,460 feet probably grass
67.	TARAKAN	03 20 N 117 34 E	4,595 x 100 feet gravel

Natuna Island

68.	NATUNA* (Ranai)	03 54 N 108 23 E	4,200 feet rolled earth (est.)
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B. FORMER AIRFIELDSSarawak

69.	BATU KAWA	01 32 N 110 19 E	5,000 feet coral
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\*Administratively a part of Sumatra, but listed with the airfields of Borneo because of its location.

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- |     |                        |                     |                          |
|-----|------------------------|---------------------|--------------------------|
| 70. | RAJANG<br>(Belawai)    | 02 14 N<br>111 14 E | 4,500 feet rolled earth  |
| 71. | TROMBOL<br>(Kuching 2) | 01 42 N<br>110 10 E | 3,600 feet grass on sand |

Brunei

(nil)

Sabah

- |     |                         |                     |                                |
|-----|-------------------------|---------------------|--------------------------------|
| 72. | KENINGAU SOUTH          | 05 20 N<br>116 10 E | 4,545 feet; surface<br>unknown |
| 73. | NANGOH<br>(Tiendu Batu) | 05 58 N<br>117 18 E | 1,290 feet grass               |
| 74. | TIMBALAI                | 05 20 N<br>115 12 E | 3,600 feet coral               |

Indonesian Borneo (Kalimantan)

- |     |                        |                     |                                      |
|-----|------------------------|---------------------|--------------------------------------|
| 75. | ASA (Melak<br>West)    | 00 13 S<br>115 44 E | 4,400 feet grass                     |
| 76. | BALIKPAPAN/<br>MANGGAR | 01 12 S<br>116 58 E | 3,940 feet coral                     |
| 77. | DAJU                   | 02 00 S<br>115 04 E | 2,750 feet grass                     |
| 78. | KUALAPESAGUAN          | 02 01 S<br>110 08 E | Not known                            |
| 79. | MANDOR                 | 00 15 N<br>109 20 E | 4,000 feet grass                     |
| 80. | SINGKAWANG 3           | 00 55 N<br>109 32 E | Not known                            |
| 81. | TABANIO<br>(Kartungan) | 03 41 S<br>114 36 E | 6,300 feet coral and<br>rolled earth |

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C. REPORTED (BUT UNCONFIRMED) AIRFIELDS

Indonesian Borneo (Kalimantan)

82.	KUALAKAPUAS	03 01 S)	
		114 21 E)	
		)	
83.	KUALAKURUN	01 07 S)	Town coordinates
		113 53 E)	
		)	
84.	LONGRIAN	03 43 N)	
		115 46 E)	
		)	
85.	SIMPANG	01 03 S)	
		110 06 E)	Town coordinates
		)	
86.	TANAHGROGOT	01 55 S)	
		116 12 E)	

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APPENDIX B

RECOMMENDED MAPS

No topographic map series covers all of Borneo at a scale larger than 1:1,000,000. Two series at a scale of 1:250,000 together with two series at 1:253,440 cover nearly all of Malaysian Borneo and Brunei and parts of Kalimantan. All of the recommended series are in English and all but one are available in quantity at the Army Map Service.

1. Borneo; 1:200,000; 1944. Army Map Service Series T531. Redrawn from Dutch series published 1912-41. 53 sheets cover western Sarawak and western Kalimantan.
2. Indonesia; 1:250,000; 1961-63. Army Map Service Series T503. 12 sheets cover parts of western and southern Kalimantan. Compiled in part from aerial photography.
3. Borneo; 1:250,000; 1945. Army Map Service Series T532. 25 sheets cover most of Sabah and much of south-eastern Kalimantan. Sheets of this series will be superseded by sheets of series T503 as they become available.
4. Sarawak; 1:253,440; 1945-46. HIND Series 1113 reprinted and distributed as Army Map Service T534. 11 sheets cover Sarawak and Brunei. Sheets of this series will be superseded by Series T503 as they become available.
5. Borneo; 1:253,440; 1962-63. Great Britain Directorate of Survey, War Office and Air Ministry Special Series. 7 sheets cover Brunei, western and northeastern Sarawak, and southwestern Sabah.
6. International Map of the World; 1:1,000,000; 1961. Army Map Service Series 1301. 7 sheets cover entire island.

Aeronautical chart coverage of Borneo at a scale of 1:1,000,000 is complete and reasonably current. The two ONC charts that cover the island provide a good general picture of the terrain and drainage pattern along with a fair amount of cultural information.

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1. USAF Operational Navigation Charts (ONC); 1:1,000,000;  
Sheets L-11 and M-11 cover entire island with air  
information current through 14 March 1963 and  
7 February 1963 respectively.
2. USAF Jet Navigation Chart (JN); 1:2,000,000. Sheet number  
JN-54 covers Borneo north of about latitude 1°S.  
Air information is current through 31 May 1961.

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APPENDIX C

RECOMMENDED FILMS

1. Malaysia (Chet Huntley Reports). NBC-TV, May 1963, 16 millimeter, sound, black and white, 30 minutes. CIA film S6459.
2. Progress in Sarawak. Malayan Film Unit, 1958, 16 millimeter, sound, color, 25 minutes. CIA film N7028.
3. Land of the Hornbill. Sarawak area survey, British Information Services, 1954, 16 millimeter, sound, black and white, 12 minutes. CIA film H6233.
4. Lost Continent. Indonesia area study, Astra Cinematografica, Leonardo Bonzi, 1954, 35 millimeter, sound, color, approx. 15 minutes (Borneo section only). CIA film K6926.
5. Expedition: Borneo, Land of the Sleeping Giant. Zoological expedition, Copley Productions, 1961, 16 millimeter, sound, color, 13 minutes. CIA film S0261.
6. Iban Trackers. Borneo natives as guides and trackers in jungle operations against Communists in Malaya. Malayan Film Unit, 1952, 35 millimeter, sound, black and white, 11 minutes. CIA film D7848.
7. Ten Million Strong. Examines the chances for the success of the new federation of Malaysia. ABC-TV, February 1964, Australian Broadcasting Commission, 16 millimeter, sound, black and white, 60 minutes. CIA film T6115.

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11.3 11.2 11.4 11.6

# BORNEO

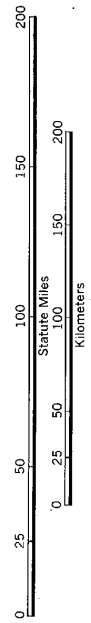
- Railroad
- Road
- Track or trail
- Principal port
- Secondary port
- Navigable waterway (native craft)

## AIRFIELDS\*

- Over 6000 feet
  - 2000 to 6000 feet
  - Less than 2000 feet
  - Seaplane station
- \* Numbers refer to airfields listed in Appendix A.

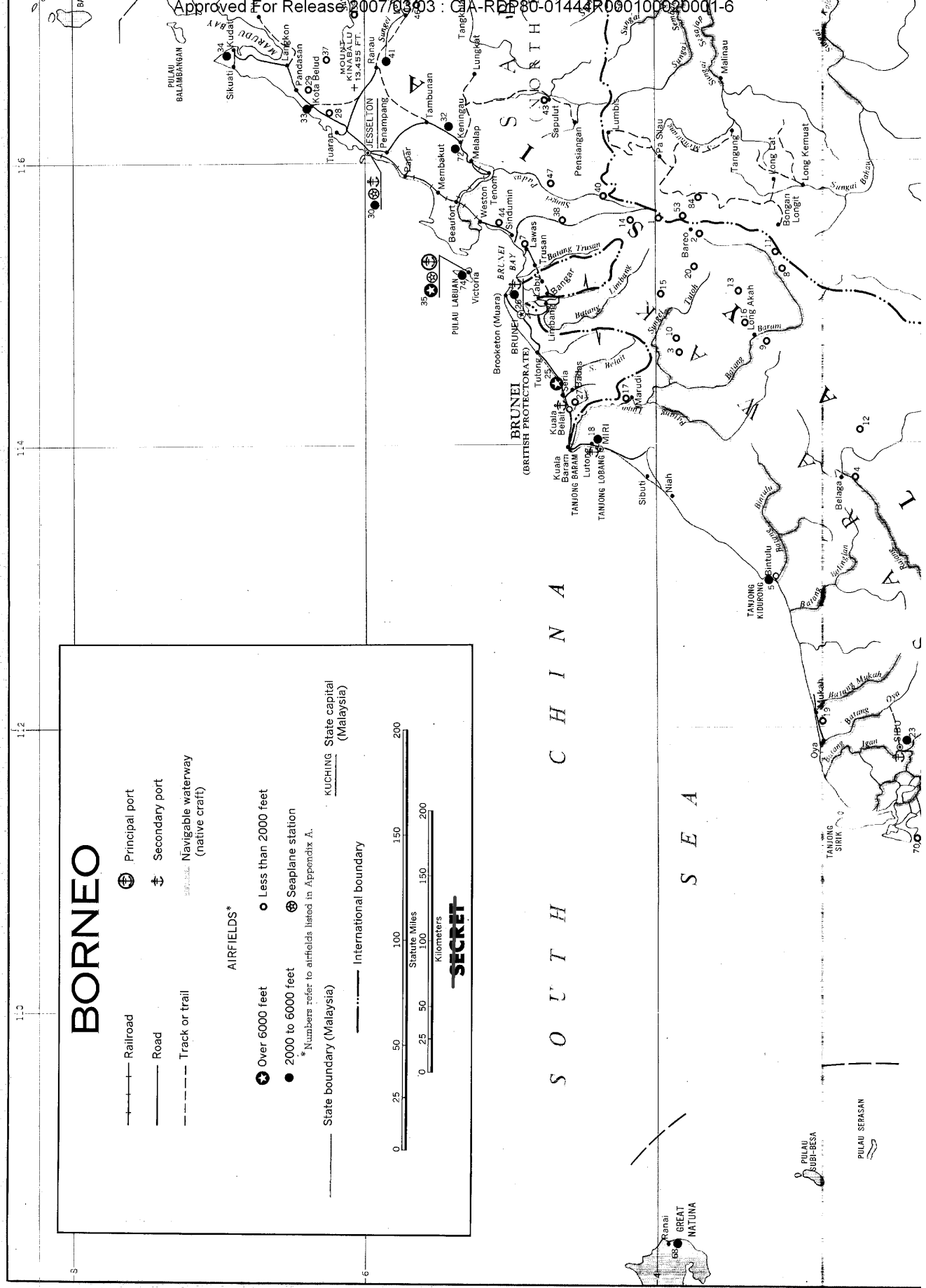
KUCHING State capital (Malaysia)

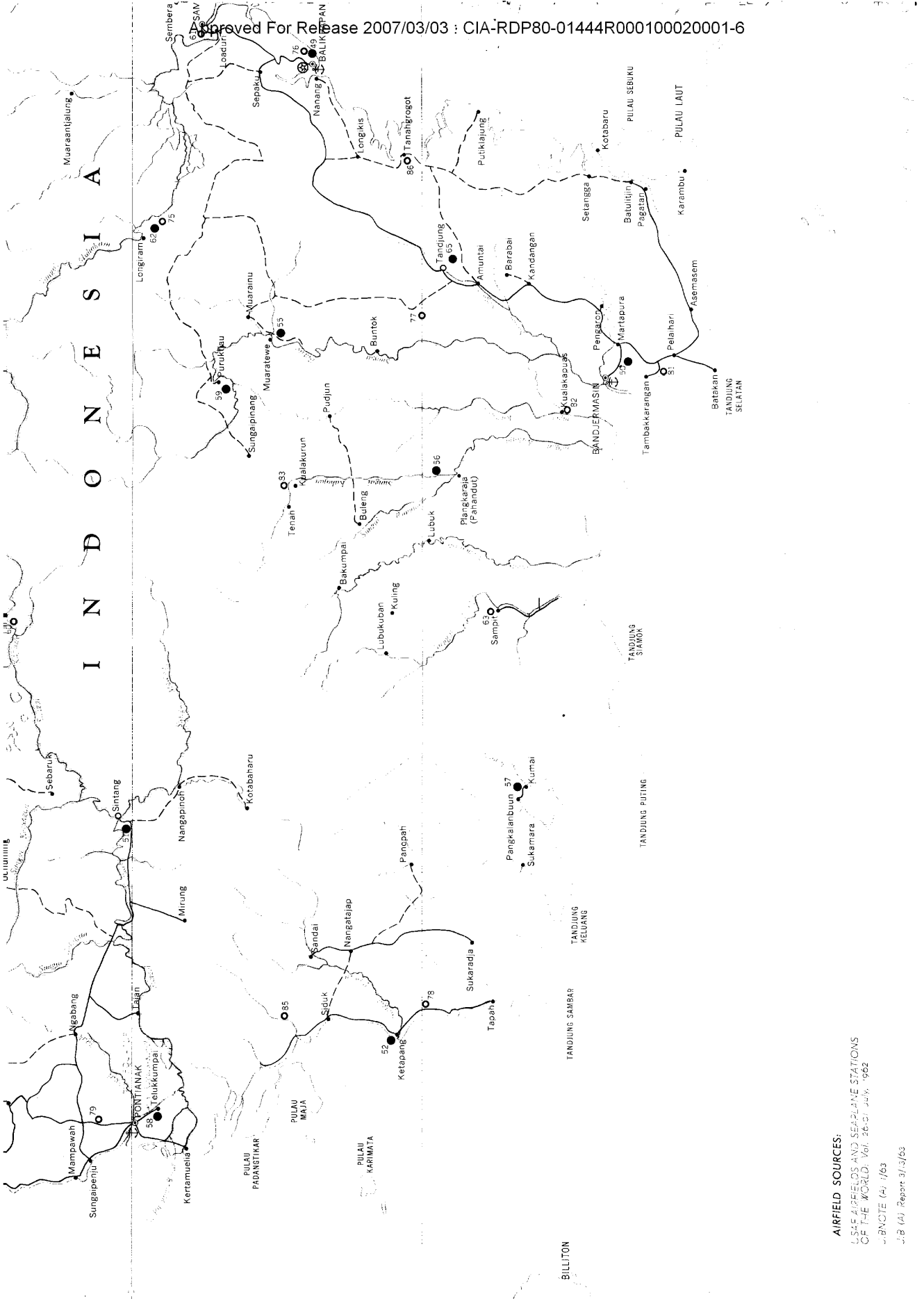
International boundary



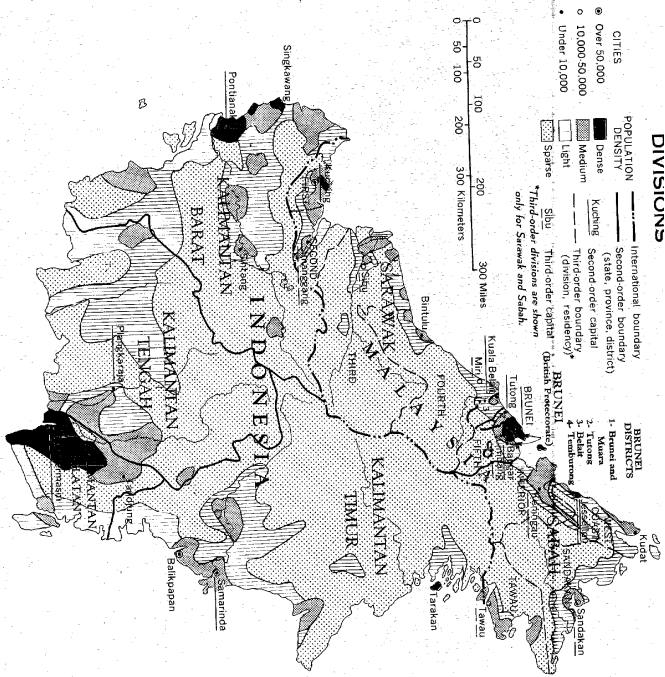
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# S O U T H C H I N A S E A



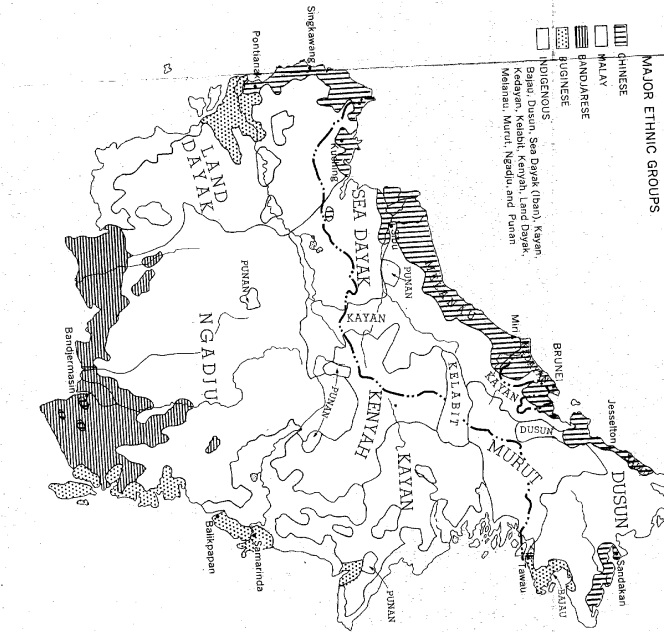
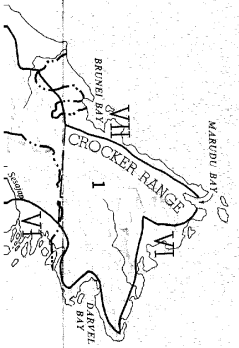


AIRFIELD SOURCES:  
 USAF AIRFIELDS AND SEA/PLANE STATIONS  
 OF THE WORLD, Vol. 26-31, July, 1962  
 AFBNOTE (4) 1/63  
 J.B. (A) Report 31/3/63



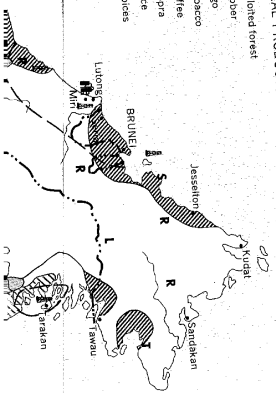
**TERRAIN**

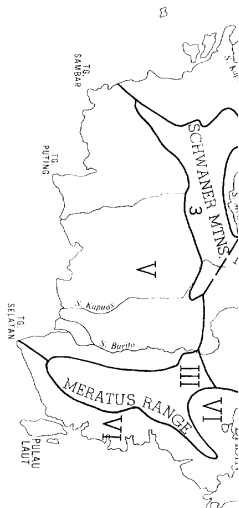
- I CENTRAL MOUNTAIN RANGE
- 1 Northern Sector
- 3 Southwestern Sector
- II NORTHWESTERN MOUNTAINS
- III SOUTHEASTERN MOUNTAINS
- IV WESTERN LOWLAND
- V SOUTHERN LOWLAND
- VI EASTERN LOWLANDS
- VII NORTHERN LOWLANDS



**ECONOMIC ACTIVITY**

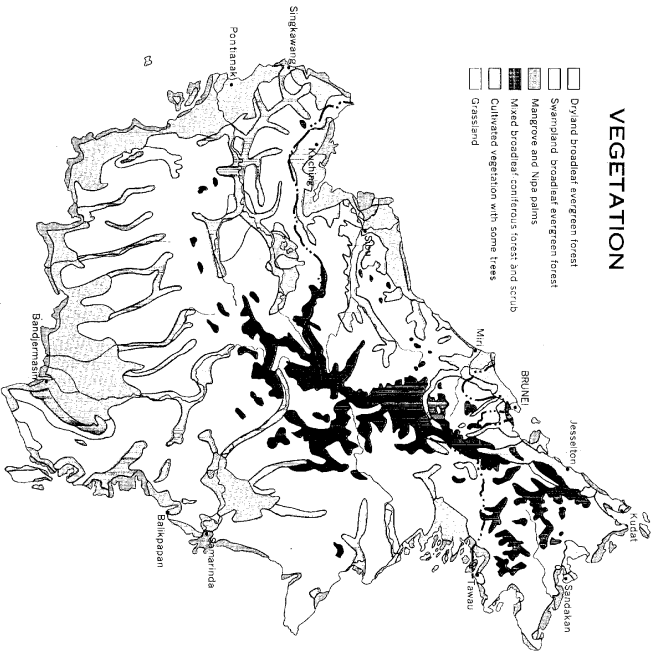
- MINERALS**
- Oil
  - Coal
  - Nickel
  - Mercury
  - Iron
  - Gold
  - Quartz
  - Lead
  - Copper
  - Silver
  - Coal
- AGRICULTURAL PRODUCTS**
- Exploited forest
  - Rubber
  - Sago
  - Tobacco
  - Coffee
  - Rice
  - Rubber
  - Sago
  - Tobacco
  - Coffee
  - Rice
  - Spices





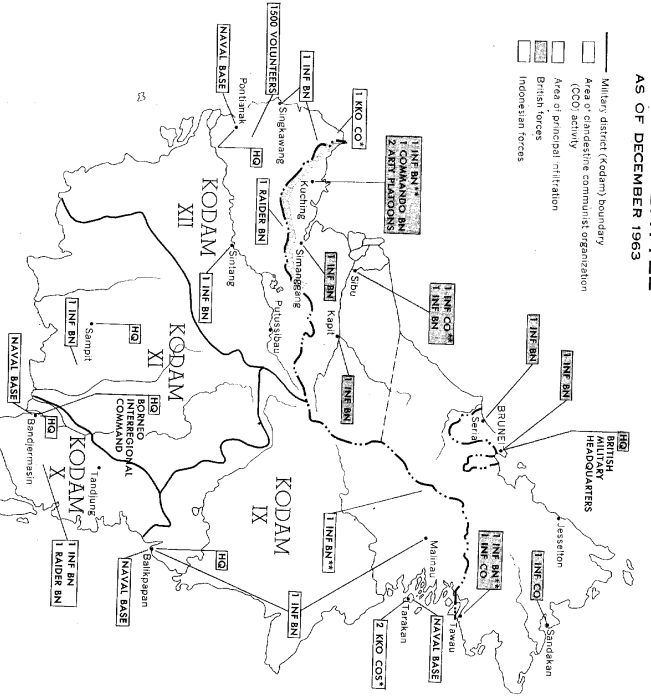
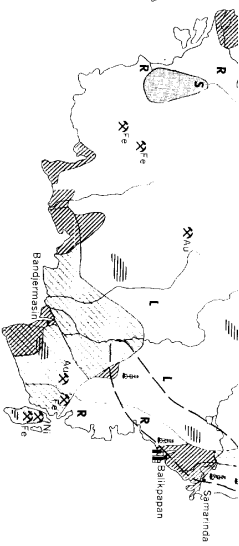
**VEGETATION**

- Dry and broadleaf evergreen forest
- ▨ Swampy and broadleaf evergreen forest
- ▩ Mangrove and Nipa palms
- Mixed broadleaf/ coniferous forest and scrub
- Cultivated vegetation with some trees
- Grassland



**ORDER OF BATTLE**  
AS OF DECEMBER 1963

- Military district (Kodam) boundary
- Area of charistive communist organization
- ▨ Area of principal infiltration
- ▩ British forces
- Indonesian forces



~~SECRET NO FOREIGN DISSEM~~