CONFIDENTIAL
95A/GS/MG

Guyana

June 1973

NATIONAL INTELLIGENCE SURVEY

CONFIDENTIAL
NO FOREIGN DISSEM

NATIONAL INTELLIGENCE SURVEY PUBLICATIONS

The basic unit of the NIS is the *General Survey*, which is now published in a bound-by-chapter format so that topics of greater perishability can be updated on an individual basis. These chapters—Country Profile, The Society, Government and Politics, The Economy, Military Geography, Transportation and Telecommunications, Armed Forces, Science, and Intelligence and Security, provide the primary NIS coverage. Some chapters, particularly Science and Intelligence and Security, that are not pertinent to all countries, are produced selectively. For small countries requiring only minimal NIS treatment, the *General Survey* coverage may be bound into one volume.

Supplementing the *General Survey* is the NIS *Basic Intelligence Factbook*, a ready reference publication that semiannually updates key statistical data found in the Survey. An unclassified edition of the factbook omits some details on the economy, the defense forces, and the intelligence and security organizations.

Although detailed sections on many topics were part of the NIS Program, production of these sections has been phased out. Those previously produced will continue to be available as long as the major portion of the study is considered valid.

A quarterly listing of all active NIS units is published in the *Inventory of Available NIS Publications*, which is also bound into the concurrent classified Factbook. The Inventory lists all NIS units by area name and number and includes classification and date of issue; it thus facilitates the ordering of NIS units as well as their filing, cataloging, and utilization.

Initial dissemination, additional copies of NIS units, or separate chapters of the *General Surveys* can be obtained directly or through liaison channels from the Central Intelligence Agency.

The *General Survey* is prepared for the NIS by the Central Intelligence Agency and the Defense Intelligence Agency under the general direction of the NIS Committee. It is coordinated, edited, published, and disseminated by the Central Intelligence Agency.

WARNING

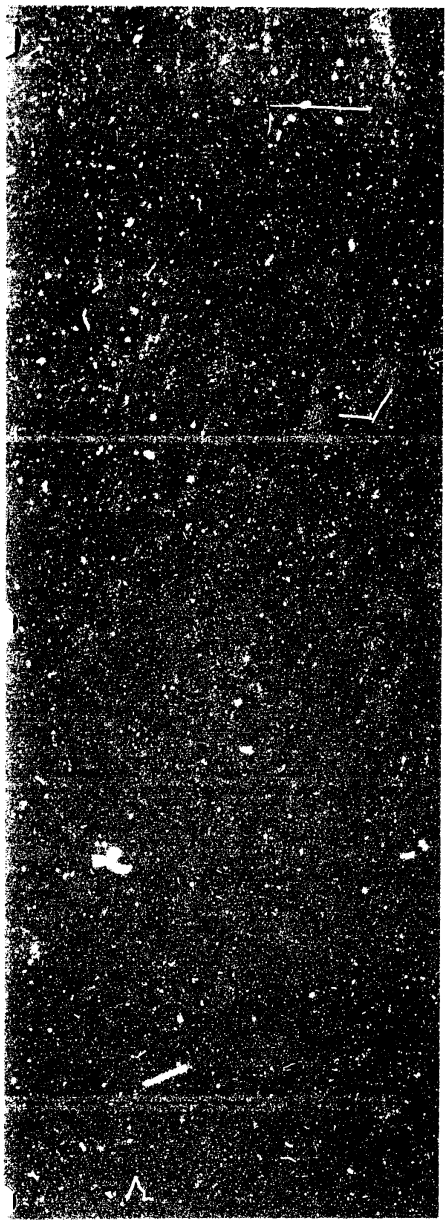
The NIS is National Intelligence and may not be released or shown to representatives of any foreign government or international body except by specific authorization of the Director of Central Intelligence in accordance with the provisions of National Security Council Intelligence Directive No. 1.

For NIS containing unclassified material, however, the portions so marked may be made available for official purposes to foreign nationals and nongovernment personnel provided no attribution is made to National Intelligence or the National Intelligence Survey.

Subsections and graphics are individually classified according to content. Classification/control designations are:

(U/OU) . . Unclassified/For Official Use Only
(C) . . . . . Confidential
(S) . . . . . Secret

This chapter was prepared for the NIS by the Defense Intelligence Agency. Research was substantially completed by January 1973.



guyana

CONTENTS

This chapter supersedes the geography coverage in the General Survey dated July 1969.

A. Description 1
Importance of location and size of country.

1. Topography 1
Brief overview of landforms, vegetation, drainage pattern, physical characteristics of settlements, and transportation network.

2. Climate 6
Type of climate, precipitation, cloudiness, temperatures, relative humidity, visibility, and winds.

B. Military geographic regions 6
Effect of terrain on operations by conventional ground forces, airmobile and airborne forces, amphibious forces, and irregular forces for the following regions:

1. Wet Coastal Plains 6
2. Forested Plains and Highlands 8
3. Southwestern Savanna 8

	Page
C. Strategic area — Significance, population, primary activities, nationally significant industries, important military installations, key airfields, and refined petroleum products storage capacity for Georgetown and other important areas—Linden and New Amsterdam.	9
D. Approaches — Data on lengths and legal status of land boundaries and extent of territorial waters.	10
1. Land — Conditions for movement in the border zones.	10
2. Sea — Conditions for amphibious approach to the coast.	10
3. Air — Weather and critical terrain conditions in air approaches within 200 nautical miles of borders.	10

FIGURES

		Page
Fig. 1	Location and comparative areas (*map*)	1
Fig. 2	Military geographic regions and terrain (*map*)	2
Fig. 3	Vegetation (*map*)	3
Fig. 4	Forested plains southwest of Georgetown (*photo*)	3
Fig. 5	Savanna north of the Kanuku Mountains (*photo*)	3
Fig. 6	Irrigated sugarcane fields southeast of Georgetown (*photo*)	4
Fig. 7	Dissected highlands southwest of Issano (*photo*)	4
Fig. 8	Waterfall east of Mount Roraima (*photo*)	4
Fig. 9	Precipitation, cloudiness, thunderstorm days, relative humidity, temperatures, and precipitation days (*map* and *graphs*)	5
Fig. 10	Georgetown (*photo*)	10
Fig. 11	Georgetown strategic area (*map*)	10
Fig. 12	Boundaries (*table*)	11
Fig. 13	Terrain and transportation (*map*)	*follows* 11

Military Geography

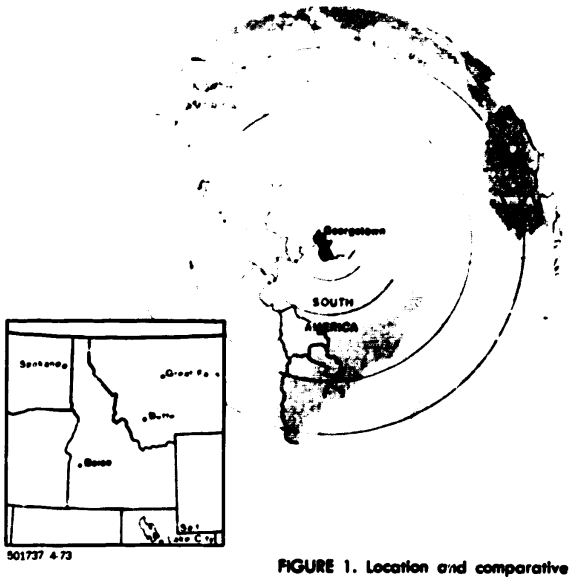


FIGURE 1. Location and comparative areas (U/OU)

A. Description (U/OU)

Guyana has an area of about 83,000 square miles and a population of about 763,000. The country is approximately equal in size to the state of Idaho (Figure 1) and has a slightly larger population. The maximum dimensions are about 500 miles[1] north-south and 285 miles east-west (Figure 13). Except for a narrow belt along the coast, most of the country is inaccessible because of dense tropical forests.

[1]Distances are in statute miles unless nautical miles are specifically stated

1. Topography

Most of the country is made up of hot, humid, sparsely populated, forested plains; there are some areas of rugged, densely forested hills and mountains, mainly in the south and west (Figure 2). The only large areas of open forest or grasslands (Figure 3) are near the coast in the northeast and along the Brazil border in the southwest.

The plains are chiefly flat along the coast and flat to rolling in the interior; locally they are severely dissected, particularly in the northwest. Local relief (differences in elevation between tops and bottoms of

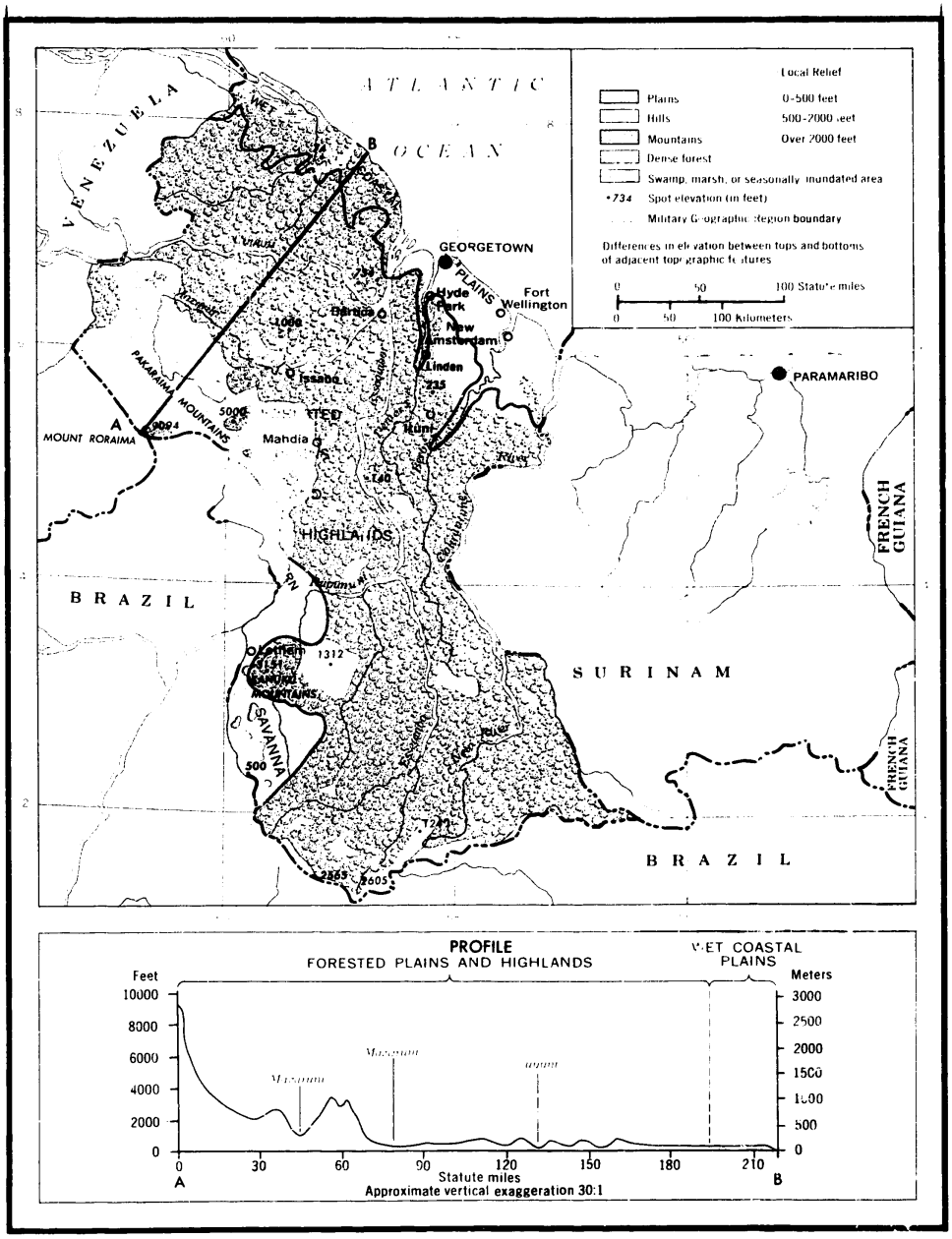


FIGURE 2. Military geographic regions and terrain (C)

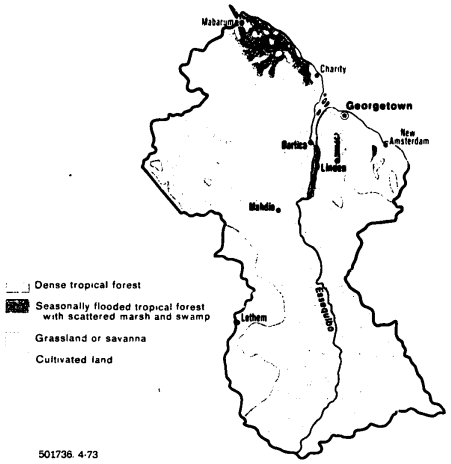


FIGURE 3. Vegetation (U/OU)

FIGURE 4. The dense broadleaf evergreen forest that covers most of the plains has a continuous canopy. The trees are up to 140 feet high and have umbrella-shaped crowns; the taller trees are heavily buttressed. (C)

adjacent topographic features) is generally less than 300 feet, and most slopes are less than 2% near the coast and less than 10% in the interior. Elevations are mainly low, ranging from about 4 feet below sea level at places near the coast to about 2,000 feet above sea level in the west. The plains are covered chiefly by dense broadleaf evergreen forest (Figure 4), but there are two areas of savanna, one in the northeast, between the Demerara River and Courantyne River, and a more extensive one in the southwest (Figure 5), north and south of the Kanuku Mountains. The savanna areas contain patches of forest, especially in the northeast. Cultivated vegetation is confined mostly to a narrow strip along the southeastern two-thirds of the coast and consists chiefly of sugarcane (Figure 6) and rice. Most large streams crossing the plains flow eastward or northward in broad valleys that contain old stream channels and marshy depressions. The majority of the streams are perennial but have great seasonal variations in water level, and most have numerous rapids and falls in their middle and upper reaches. Those that flow into the sea are tidal for about 50 to 60 miles in their lower reaches, and some are tidal to the first falls or rapids. The major streams are generally wide and deep in the middle

FIGURE 5. The savanna area near the Kanuku Mountains is composed of bunch grass interspersed with deep-rooted trees. The grass is very susceptible to conflagration during the dry season, September through April. (U/OU)

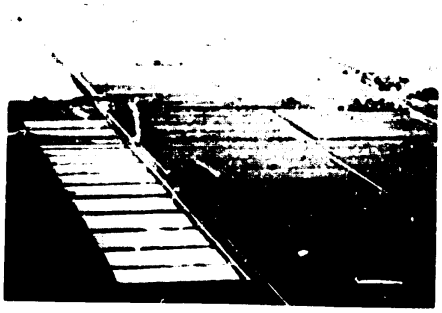


FIGURE 6. Extensive fields of sugarcane are common in the southwestern coastal area; the fields are criss-crossed by numerous drainage ditches and canals and are seasonally inundated. The sugarcane is susceptible to conflagration during the harvest season. (C)

FIGURE 7. The highlands southwest of Issano have almost flat-topped summit areas cut by deep, narrow valleys. The slopes are covered by broadleaf evergreen forest composed of trees about 50 feet high that have heavy crowns. (C)

and lower reaches. Stream levels often rise and fall quickly, and flooding may be extensive in the wet seasons. The primary wet season is May through August, and a secondary wet period, December and January, occurs in the northern half of the country. Streambanks are commonly low, and bottoms are mostly sandy or muddy except in areas of falls and rapids. There are many marshy areas in the savannas,

FIGURE 8. Waterfalls are typical of many streams in Guyana. Here, they cascade over the rocky bottoms of the upper reaches of the Ireng River, which flows between steep valley walls covered by dense broadleaf evergreen forest. (C)

particularly in the northeast, and numerous swamps in many stream valleys. The coastal plain is low and swampy, and unprotected areas are flooded by very high tides. In the cultivated areas of the coastal plain there are numerous drainage canals, ditches, and both natural and manmade levees.

The hill and mountain groups are scattered and mainly rugged. In the west the largest area of hills and mountains, the Pakaraima Mountains, consists of a belt of high plateaus that stretches for about 160 miles along the borders of Brazil and Venezuela. These plateaus rise in high, steep escarpments and have flat to rolling summer areas (Figure 7). The other hill and mountain groups are also mainly steep sided but are sharp crested. Local relief generally ranges from between 500 to 1,000 feet in the south to as much as 7,000 feet in places in the Pakaraima Mountains. In general, the hills and mountains are much lower in the south than in the west. Elevations are mostly between 1,000 to 2,500 feet in the south but exceed 5,000 feet in many places in the west; Mount Roraima, the highest point in the country, is 9,094 feet. The vegetation is primarily dense broadleaf evergreen forest except in small areas in the west where savanna is predominant. Highland streams commonly flow through gorges, some of which are over 1,000 feet deep, or through narrow valleys. Rapids and falls (Figure 8) are numerous, and some falls are several hundred feet high. Most streams are narrow and shallow but water levels often fluctuate rapidly and flooding is common during the wet season, May through August. Flooding also occurs in the Pakaraima Mountains during a secondary wet season.

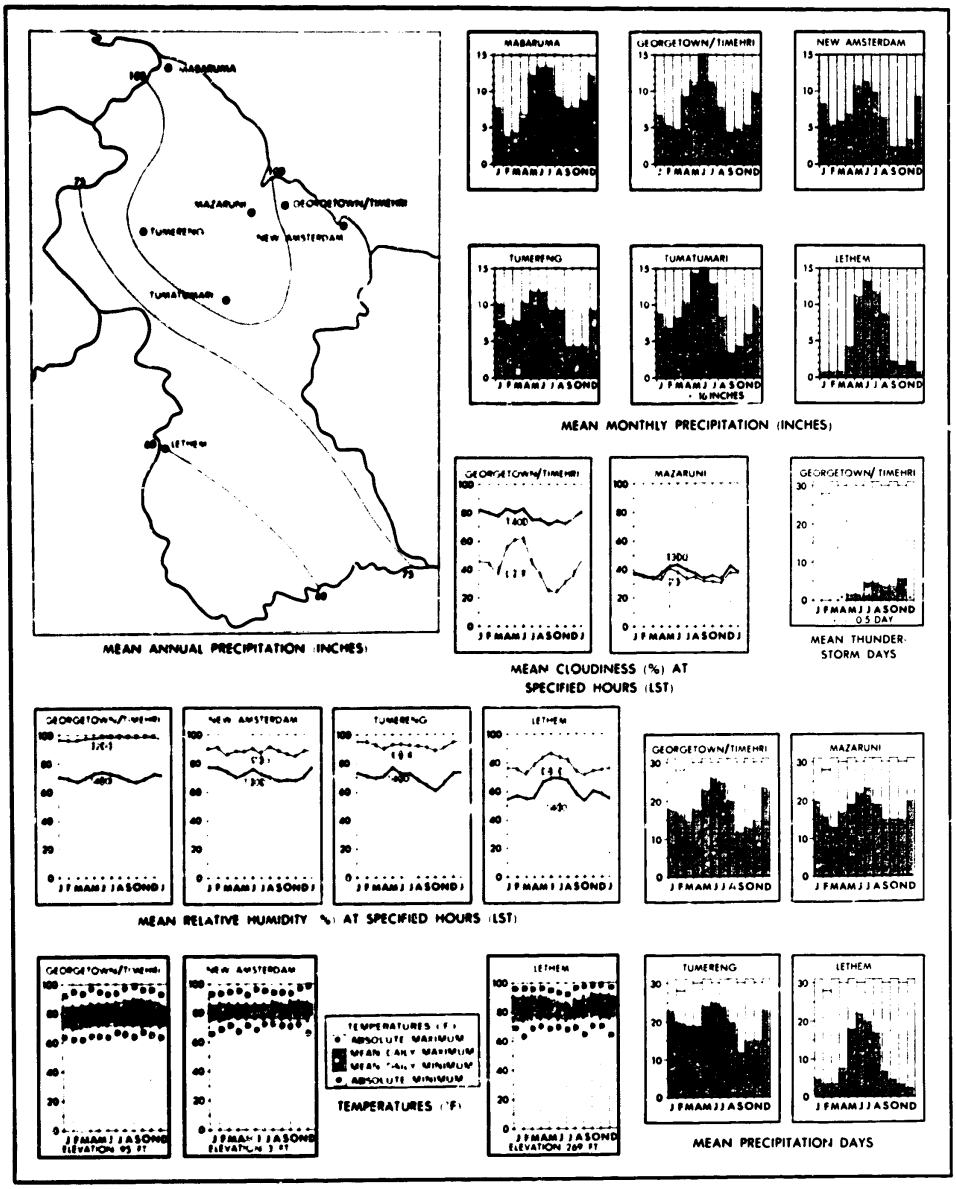


FIGURE 9. Precipitation, cloudiness, thunderstorm days, relative humidity, temperatures, and precipitation days (U/OU)

December and January. Banks are mostly high and rocky, and bottoms are commonly composed of sand, gravel, boulders, or rock. Many stream valleys are swampy.

Culture features are sparsely distributed in most of Guyana. Most towns and about nine-tenths of the population are in a narrow strip along the southeastern two-thirds of the coast. In the interior there are a few scattered mining and lumbering settlements, small Indian villages and, in the southwestern savanna, some isolated ranching communities. Buildings in the towns are constructed mostly of wood, although some of the newer buildings in Georgetown are of concrete or stone. Streets in the major towns generally form a grid pattern, and the main streets are surfaced. The road network of Guyana is sparse and discontinuous, and there are no through routes to the adjacent countries. Most roads are one lane and of earth; however, there are a few hard-surfaced roads. There are two single-track railroads along the coast; however, the 4′8½″-gage line from Georgetown southeastward has been abandoned and will be dismantled, and the other, a 3′6″-gage line west of the Demerara River, is still in operation but probably will be phased out by 1975. The only other railroad is a 3′0″-gage line in the interior that connects mining areas with a river port. The principal rivers are navigable in their lower courses and provide the main means of access to the interior.

2. Climate

Guyana has a tropical climate, with uniformly high temperatures and humidity, generally heavy rainfall, and moderate to abundant cloudiness (Figure 9). Persistent northeast and southeast trade winds from off the Atlantic and the intertropical convergence zone (ITCZ), which is between the two trade systems, are the principal climatic controls. The north–south migrations of the ITCZ across Guyana produce recurring wet and dry periods over the country. In the northern portion of the country the primary wet period is from April or May through August, when monthly precipitation averages over 10 inches. A short secondary wet period occurs in December and January, with similar or slightly smaller monthly amounts. The remaining months, February through March and September through November, are comparatively dry periods when monthly rainfall decreases to 3 to 8 inches. In the southern part of the country there is only one wet period, mainly May through August, during which rainfall averages 7 to 15 inches per month. In the long dry period that follows, September through March, the frequency of rainfall is sharply reduced, and monthly amounts total only 3 inches or less. Throughout Guyana precipitation usually falls as heavy, brief showers. The heaviest downpours occur on the windward slopes of the Pakaraima Mountains, where thunderstorms probably are very frequent all year. Thunderstorms are infrequent over the coastal and interior lowlands except in July through November, when about five per month occur.

In the coastal sections the moist, onshore winds during the day produce large amounts of clouds, which reach a maximum (near 80%) in the early afternoon. Cloud amounts decrease during the night, to between 25% and 50%, as the onshore winds subside, and this daily pattern varies little from month to month. Inland, mean cloudiness is generally less than 50% at any hour most of the year. However, on windward slopes and over the mountains cloudiness is usually much greater than over the adjoining lowlands. Irritating aspects of the climate are the high moisture content and the high temperatures which cause oppressive conditions everywhere except in the mountains. At most places daily temperatures rise to mean maximums in the 85° to 95° F. range and decrease only to mean minimums in the low or middle 70's (°F). The daily range of relative humidity is from early morning maximums in the 90's (%) to afternoon minimums in the 60's or 70's; in some sections, however, the afternoon humidity does not get below 80%. Visibility is normally good all year over most of the country; brief periods of rain or fog are the chief restrictions. Winds are light everywhere and strong winds occur only during thunderstorms.

B. Military geographic regions (C)

Based primarily on differences in terrain, Guyana is divided into three military geographic regions—Wet Coastal Plains, Forested Plains and Highlands, and Southwestern Savanna (Figure 2). The combination of environmental conditions within each region would have a relatively uniform effect on military operations, but there would be marked differences between regions.

1 Wet Coastal Plains

This region consists of a narrow belt of low, flat plains along the Atlantic Ocean ranging in width from less than 10 miles near the mouth of the Essequibo River to about 50 miles near the Venezuela and Surinam borders. Most of the region is either

perennially wet or subject to seasonal inundation. The predominant vegetation types are dense broadleaf evergreen and semideciduous forest in the northwest, cultivated crops along the central and southeastern parts of the coast, and savanna inland from the cropland in the southeast. In addition, there are scattered areas of swamp and marsh throughout the region, particularly near the Venezuela border. Although comprising only about one-tenth of the total national area, this region contains most of the country's population, culture features, and transportation network.

The Wet Coastal Plains are unfavorable for conventional ground operations. Cross-country movement would be seriously hindered or stopped by dense forest and swamps and, in the cultivated areas, by wet ground, the dense network of drainage ditches, and dikes. Movement on the sparse road network would be hindered by narrow widths and poor surface conditions. Most roads become very slippery or impassable during the wet seasons and are subject to flooding during exceptionally high tides. Potential bottlenecks include weak timber bridges and ferry crossings. Conditions for offroad dispersal are generally very poor because most roads are built on embankments that are flanked by drainage canals or ditches. Road construction would be very difficult because of poor natural foundations and drainage conditions, the necessity for much clearing in most places, and the lack of rock and soil suitable for construction uses. Good concealment from both air and ground observation would be afforded troops and vehicles by dense evergreen forest; additional concealment for troops would be afforded by mature sugarcane. Cover from flat-trajectory fire would be provided by road embankments, dikes, and drainage ditches and to a limited extent by tree trunks in the forested areas. There are few sites suitable for constructing bunkers because of extensive swamp and permanently wet ground and no sites for the construction of tunnel-type installations because of insufficient relief.

Only parts of the Wet Coastal Plains are moderately suited for airmobile and airborne operations; much of the area is unsuited because of dense vegetation and/or wet, miry ground. Parachute landings would be limited mainly to the savanna areas in the southeast. Helicopter landing areas are more numerous and landings would be possible on much of the cropland as well as the savannas; however, flooding and fields of mature sugarcane would present seasonal restrictions. Sites for assault-type aircraft landings would be restricted to the one large airfield and the few, mostly small, airstrips. Construction of airfields would be hindered by dense forests, drainage problems, and the lack of natural construction materials.

Although offshore approaches are generally clear, the Guyana coast is poorly suited for amphibious operations because of a wide shallow nearshore zone and poor beaches. The coastal terrain is wet, largely impassable, and contains few roads. In several places, however, small-scale amphibious landings could probably be made by landing craft during higher tide stages.

About half of this region, the area northwest of the Essequibo River, is fairly well suited for irregular force operations, whereas the remaining half is poorly suited. The primary determining factors are the existence of sufficient vegetation for concealment in the northwest and the general lack of available year-round vegetation for concealment in the southeast. In addition, the paucity of surface transportation routes and the extreme difficulty or impossibility of vehicular cross-country movement in the northwest would render irregular force activities difficult to detect and combat by conventional forces. By contrast, the southeast contains the most extensive road network as well as the densest population in the country. In most of the region, movement by small groups of irregular force personnel on foot would be feasible but would be arduous because of dense vegetation or periodically wet, miry ground. Cover from flat-trajectory fire would be available locally from surface irregularities east of the Essequibo River and to a limited degree from thick tree trunks in the northwest. Small groups of personnel generally could obtain basic sustenance by exploiting local resources. Cultivated food crops, particularly rice, would be available in much of the southeast; natural sources and local areas of subsistence agriculture could be utilized elsewhere. Airdrops of supplies would be limited to the savanna areas in the southeastern part of the region, and supply by sea would be possible in several places along the coast but would be greatly restricted by shallow nearshore approaches and by wet ground along the shore. Irregular force personnel operating in this region would be subject to several adverse physiological and psychological conditions, the most severe of which are the almost continually high temperature and humidity and the numerous poisonous reptiles and disease-carrying insects. Border crossings would be easy and could be accomplished with little chance of detection along the forested Venezuela boundary but would be difficult across the wide, unfordable Courantyne River comprising the Surinam boundary.

2. Forested Plains and Highlands

This region, comprising nearly 90% of the country, is covered almost completely by dense forest and contains a variety of landform types. The only significant exception to the dense forest canopy exists in a small part of the northeast where savanna and open forest are predominant. The terrain generally increases in relief and elevation from the northeast to the southwest; low, flat to rolling plains make up much of the northeast; dissected hills and tabular mountains are common in the west; and lower, sharp-crested hills and mountains are scattered throughout the south. In general, the region is sparsely populated, and there are very few roads and only one short railroad. Large areas are accessible only by means of air or river travel.

Conditions are generally unfavorable for conventional ground operations. Except in the small, relatively open plains areas in the northeast, cross-country movement would be very difficult because of the dense forests, numerous streams, swamps and marshes on the plains, and steep slopes in the hills and mountains. Dense undergrowth in many places would be a further hindrance. Conditions are poorest during the wet seasons because of soft ground, swollen streams, and large flooded areas. Movement on the few existing roads would be slowed by narrow widths, sharp curves, and poor surface conditions, and most roads would break down quickly under heavy military traffic. Practically all the roads are of earth, and many sections become impassable during the wet seasons. Offroad dispersal would be difficult in most places because of dense vegetation. Construction of roads in most of the region would entail much clearing and bridging, and, in the hills and mountains, extensive grading. Alignments would be restricted by the dense network of streams on the plains and by steep slopes in the hills and mountains. Good concealment from ground and air observation would be provided by the dense evergreen forests that cover most of the region. Cover from flat-trajectory fire would be available in the hills and mountains, but on the plains would be afforded only by streambanks, other minor surface irregularities and, to some extent, by thick tree trunks. Sites suitable for the construction of bunkers are available in many places in the extensive plains. Construction of tunnel-type installations would be limited mostly to the areas of hills and mountains, where in most places there is adequate relief.

Conditions in most of the Forested Plains and Highlands are unfavorable for airmobile and airborne operations. As with ground operations, the only significant exceptions are in the small, mostly savanna-covered areas in the northeast where conditions are generally favorable for all airmobile and airborne operations except assault-type aircraft landings. In the bulk of the region the dense forest greatly limits the number of sites suitable for parachute landings. Landings of assault-type aircraft would be restricted to the few small, scattered landing strips. Helicopters could land in clearings in and around the scattered small settlements. Large airfields having unrestricted runway orientations and air approaches could be constructed in many places on the plains; however, clearing would be a major problem.

Most of the Forested Plains and Highlands region is well suited for irregular force operations. The predominantly dense vegetative cover affords excellent concealment from both air and ground observation as well as limited cover from small arms fire. In the areas of irregular terrain, there are numerous opportunities for cover from flat-trajectory fire and concealment from ground observation. Although the dense vegetation and/or rough terrain would hinder movement of irregular forces these factors would restrict or preclude opposition by conventional ground, airmobile, and airborne forces. The region is sparsely populated and has very few surface transportation routes; trails and the larger streams are the only avenues of surface transportation in large areas of the region. In general, fresh water, food from natural and cultivated sources, and timber for fuel and shelter construction are available. Supply by air from outside the area would be feasible by utilizing the scattered cleared areas. Conditions that could cause adverse physiological and psychological effects on irregular forces are similar to those prevalent in the Wet Coastal Plains. The international boundaries of this region are either forested or along forest-lined streams, are inadequately patrolled, and could be crossed by small groups with little chance of detection.

3. Southwestern Savanna

This region is largely flat to rolling plains except in the north, where flat-topped hills cut by deeply incised stream valleys are predominant. The plains portion, which is nearly split into two equal parts by the Kanuku Mountains, is generally less rolling in the south; however, there are numerous isolated forest-covered hills and mountains that rise directly 500 to 2,500 feet above the plains. Savanna or open forest

covers most of the region. Although the major streams are deeply incised and seldom overflow their banks, lakes and ponds develop in hollows and smaller tributary streams periodically flood extensive areas. Scattered small groups of natives engaged in shifting subsistence agriculture and the inhabitants of a few cattle ranches comprise the region's sparse population. For the most part, the surface transportation network consists of a few dry-weather roads and tracks.

The central and southern portions of this region are generally favorable for conventional ground operations during the dry season, September through April; in the north, however, operations would be largely compartmentalized by many areas of steep slopes. Cross-country movement would be fairly easy on the predominantly flat to rolling, grass-covered plains, but streams, marshes, and patches of forest are hindrances. During the wet season, cross-country movement would be difficult because of soft ground and extensive flooding. Movement on the sparse network of roads and tracks would be hindered by poor surface conditions and narrow widths. In many places the roads and tracks are flooded during the wet season. Conditions for offroad dispersal are generally good during the dry season. Roads having straight alignments and gentle gradients could be constructed in most of the central and southern parts of the region with only minor clearing and grading problems. Constructing roads to connect the more level areas in the north would be considerably more difficult because of steep slopes. Concealment from ground and air observation would be limited mostly to scattered forest patches commonly associated with surface irregularities. Cover from flat-trajectory fire would be provided by the numerous areas of steep slopes in the north; elsewhere, however, cover would be only locally available, generally where provided by the slopes of isolated hills and mountains and the banks of scattered streams. Many sites suitable for the construction of bunkers are available, but sites suitable for the construction of tunnel-type installations are limited mainly to the northern part of the region.

Conditions are generally favorable for airmobile and airborne operations during the dry season. There are numerous sites suitable for parachute and helicopter landings on the flat to rolling surfaces, particularly in the central and southern parts of the region. During the wet season, extensive flooding would limit operations. There are a few small landing strips suitable for assault-type aircraft scattered throughout the region. In many places airfields having unrestricted approaches and runway orientations could be easily constructed with little grading and clearing.

Conditions for irregular force operations are unfavorable in most of the region; locally, in the northern part, conditions are moderately favorable. The main determinants are the general lack of sufficient vegetation for concealment from air observation and the overall suitability of the region for conventional military operations. Moreover, personnel would have to contend with wet, miry ground and extensive flooding at times during the wet season, May through August, and a scarcity of fresh drinking water the rest of the year. Food and timber for fuel as well as shelter construction are limited. Supply by air would be possible almost everywhere but conditions are most favorable in the central and southern parts of the region. Although irregular force activities would be possible in parts of the north, they would be restricted to the forested areas, most common on the steeper slopes and in incised stream valleys.

C. Strategic area (C)

Guyana has only one strategic area, the city of Georgetown (Figure 10) and its environs (Figure 11). Georgetown is the capital, largest city (estimated population, Georgetown and environs, 170,000), principal seaport, and the commercial, industrial, telecommunications, and cultural center of the country. Roads connect the city with towns along the coast and inland with Linden. The railroad leading east from Georgetown to Rosignol has been abandoned and is being dismantled. The line leading west from Vreed en Hoop is still in operation but will probably be phased out by 1975. The Demerara River is navigable for oceangoing vessels up to Linden. Industrial installations in the strategic area are small; the most important include sawmills, a small shipyard, and food-processing plants. Timehri International, the only international airfield in the country, is located near Hyde Park, about 18 miles south-southwest of Georgetown. POL (refined petroleum products) storage facilities that have a capacity of about 183,000 barrels are located in Georgetown and in the vicinity of Timehri.

Other important areas are as follows:

Linden (formerly Mackenzie, Wismer, and Christianburg) 6°00′N., 58°18′W.	Second largest town (estimated population 30,000). Center of third largest bauxite deposits in the world. Site of largest bauxite processing plant in country.
New Amsterdam 6°15′N., 57°31′W.	Third largest town (estimated population 23,000). Trade center and transshipment point for area producing sugar, rice, bauxite, and timber.

FIGURE 10. Georgetown is the most populous city in Guyana. The streets, which are surfaced and form a grid pattern, are lined by buildings primarily constructed of concrete or stone except in the older sections, where they are wood. (C)

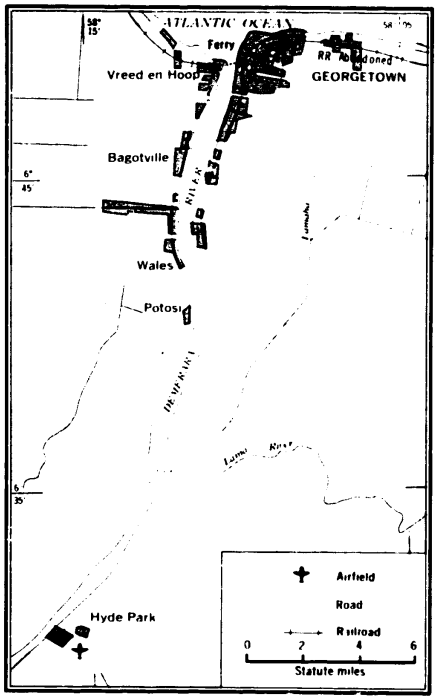


FIGURE 11. Georgetown strategic area (C)

D. Approaches

The perimeter of Guyana is approximately 1,885 miles, of which about 1,600 miles are land boundaries; none are fortified. The coastline is about 285 miles. Guyana claims jurisdiction over territorial waters for 3 nautical miles from shore. Figure 12 presents data on land boundaries. (U/OU)

1. Land (C)

Approaches to Guyana by land are extremely poor. Cross-country movement in the border areas would be severely hindered or stopped by extensive, dense tropical forests, by swamps, by wide, deep streams, or by rugged hills and mountains. No roads or railroads cross the borders.

2. Sea (C)

The coast of Guyana is not suited for large-scale amphibious landings. Offshore approaches are clear except for a small number of shoals and wrecks, but nearshore approaches are encumbered by shoals, an extremely flat bottom gradient, and tidal mudflats that extend far from shore. Surf 4 feet and higher is most frequent during the period January through June, when it may occur about 25% of the time on shores fully exposed to the northeast. The tides are semidiurnal, and the spring range varies from about 4 feet at the northwestern end of the coast to 8½ feet near Georgetown and about 9 feet farther to the southeast. Extensive mudflats front the coast in most places and uncover several miles seaward at low tide. Under the influence of coastal currents and generally low but effective surf, the mudflats migrate along the coast from southeast to northwest. Between the migrating mudflats, the shore in places is sandy, although sometimes only near the high-water line. These transitory sandy beaches, which usually have slightly deeper water in the direct approaches than on the flanks, comprise the only sites where amphibious landings are feasible. Recently obtained evidence of the impermanency of the sandy shores and the migration of obstructing mudflats makes the selection and description of beaches impractical.

3. Air (U/OU)

Air approaches[3] to Guyana from the north are over the Atlantic Ocean; from the west, over the plains and highlands of eastern Venezuela and northwestern

[3]The discussion zone for air approaches extends approximately 200 nautical miles beyond the borders of Guyana

FIGURE 12. Boundaries (U/OU)

BOUNDARY	LENGTH	STATUS	TERRAIN
	Miles		
Venezuela	405	Demarcated in extreme north and delimited in remainder. Entire length in dispute—all territory west of Essequibo River claimed by Venezuela.	Across flat swampy plains near coast, rolling, densely forested plains in interior, and primarily rugged, grass-covered hills in south.
Brazil	745	Demarcated and undisputed	Mostly across densely forested, rugged hills and flat to rolling plains; central section marked by streams which flow across predominantly flat to rolling, grass-covered plains.
Surinam	450	Defined but disputed along southern one-third, specifically the area between New River and headwaters of Courantyne River.	Aligned almost entirely along Courantyne River, which flows mostly through densely forested, flat to rolling plains.

Brazil, from the south, over the Amazon basin and an area of hills along the Brazil border; and from the east, mainly over the plains and highlands of Surinam, although also over small parts of western French Guiana and northeastern Brazil. The best approach is from the north, where there are no topographic hazards and excellent weather conditions prevail most of the year; in the other approaches, unfavorable weather conditions seldom exist for long periods at a time.

All approach areas are south of the usual tropical storm paths, and only on rare occasions is the northern approach affected by tropical cyclones. In all approaches, severe turbulence and aircraft icing are usually encountered only in thunderstorms and towering cumulus clouds. In the approaches over Venezuela and Surinam thunderstorms are quite frequent in May or June through October or November, when 7 to 15 thunderstorm days per month are normal, but are comparatively infrequent during the rest of the year. In the approaches from Brazil thunderstorms occur on 2 to 10 days monthly in the western sections and 5 to 15 days monthly in the eastern sections throughout the year. Thunderstorm activity is least over the Atlantic Ocean, where thunderstorms occur only occasionally during May through November. The greatest risk of aircraft icing in clouds is above about 15,000 feet, the average height of the freezing level all year. Cumulus clouds, which often tower above the freezing level, are most prevalent in the afternoon over the land approaches, where mean cloudiness averages 60% to 80% during these hours. Over the water, towering cumulus clouds are most likely to occur at night when convective activity is greatest. At other times, partly cloudy skies prevail, and the risk of aircraft icing is minimal. Generally, upper winds are light and easterly in all approaches except from about November through June, when winds are predominantly westerly between 25,000 feet and 50,000 feet. Winds are strongest near 40,000 feet in November through June in the extreme north, where mean speeds are less than 40 knots, but actual wind speeds may occasionally exceed 60 knots.

Maximum elevations are relatively low in all of the approaches. In the western approach, several peaks are over 6,000 feet in elevation; the highest 9,094 feet, is Mount Roraima, located at the junction of the boundaries of Brazil, Venezuela, and Guyana. Elevations in the southern and eastern approaches are mostly less than 1,000 feet; however, the hills along the border in the southern approach reach 2,605 feet and several peaks in the eastern approach exceed 2,000 feet. The highest elevation in the eastern approach, 4,035 feet, is in central Surinam.

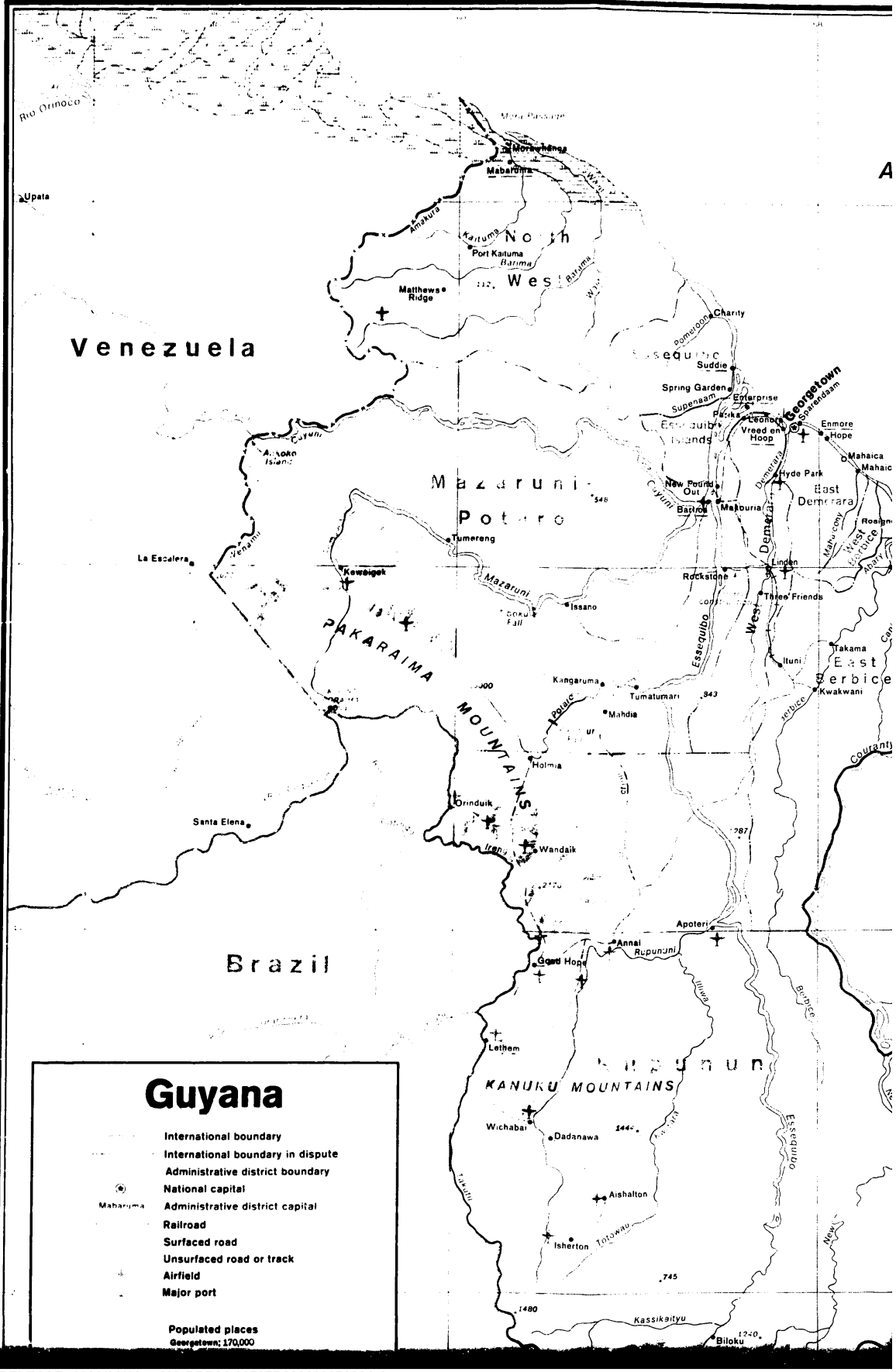
Places and features referred to in this General Survey (u/ou)

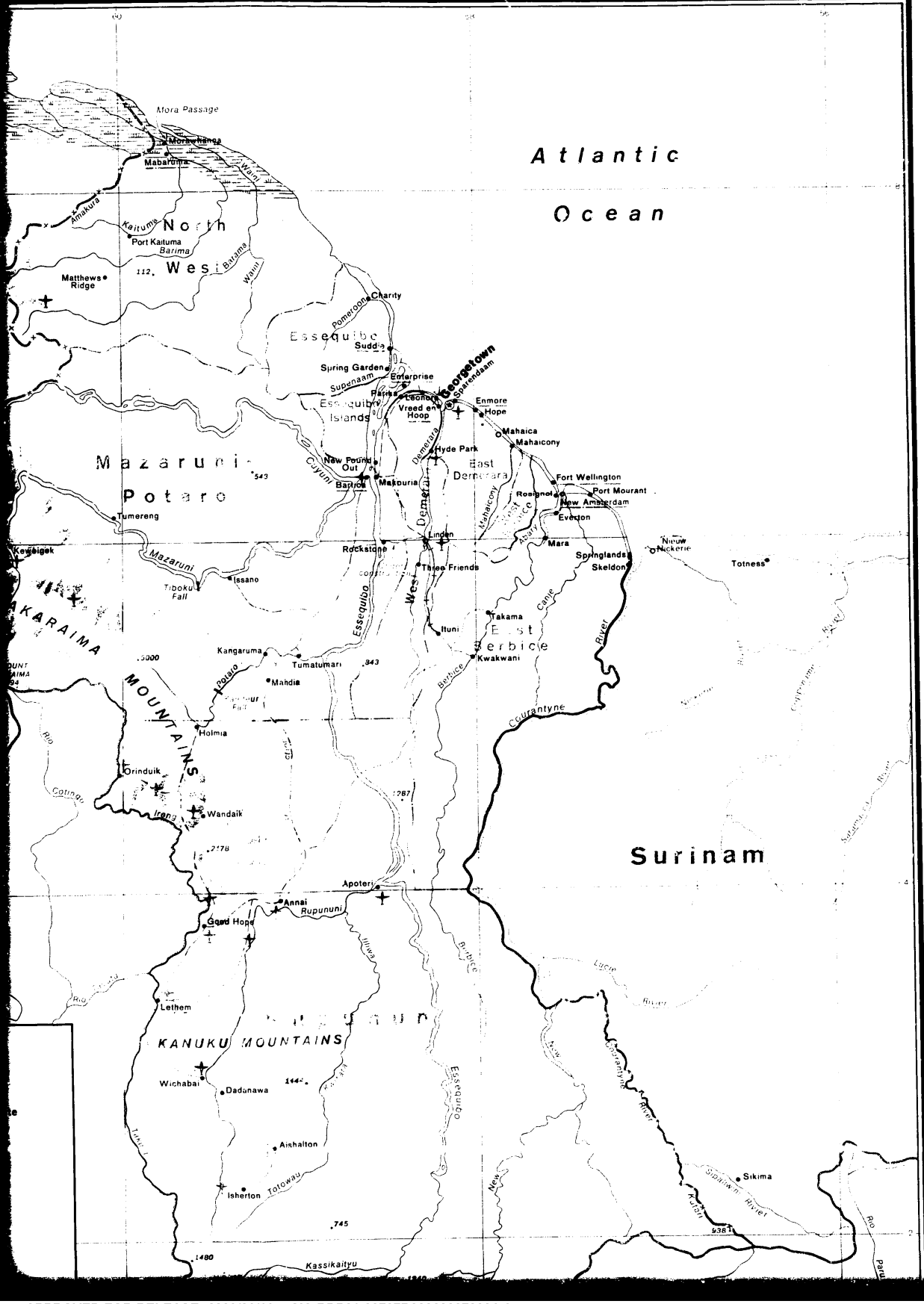
	COORDINATES	
	° 'N.	° 'W.
Ankoko Island (*island*)	6 43	61 08
Annai	3 57	59 06
Barima River (*stream*)	8 35	60 25
Bartica	6 24	58 37
Berbice River (*stream*)	6 17	57 32
Best	6 50	58 11
Canje River (*stream*)	6 16	57 32
Charity	7 24	58 36
Coeroeni Rivier, Surinam (*stream*)	3 23	57 36
Corriverton	5 52	57 10
Courantyne River (*stream*)	4 45	57 50
Cuyuni River (*stream*)	6 23	58 41
Demerara River (*stream*)	6 48	58 10
Essequibo River (*stream*)	6 59	5 23
Everton	6 12	57 31
Georgetown	6 48	58 10
Hyde Park	6 30	58 16
Ireng River (*stream*)	3 33	59 51
Issano	5 50	59 26
Ituni	5 30	58 14
Kaituma River (*stream*)	8 11	59 40
Kanuku Mountains (*mountains*)	3 12	59 20
Kutari River (*stream*)	2 22	56 52
Kwakwan	5 17	58 03
Lethem	3 23	59 48
Linden	6 00	58 18
Mackenzie (*section of Linden*)	6 00	58 17
Mahaica	6 41	57 55
Mahdia	5 13	59 09
Matthews Ridge	7 30	60 10
Mora Passage (*tidal creek*)	8 20	59 45
Mount Roraima (*mountain*)	5 12	60 44
New Amsterdam	6 15	57 31
New River (*stream*)	3 23	57 36
Pakaraima Mountains (*mountains*)	4 05	61 30
Parika	6 52	58 25
Pomeroon River (*stream*)	7 37	58 44
Port Kaituma	7 44	59 53
Port-of-Spain, Trinidad	10 39	61 31
Potaro River (*stream*)	5 22	58 52
Rockstone	5 59	58 32
Rose Hall	6 16	57 23
Rosignol	6 16	57 32
Rupununi District (*adm. district*)	3 00	59 00
Rupununi River (*stream*)	4 03	58 34
Skeldon	5 52	57 08
Sparendaam (*plantation*)	6 49	58 06
Springlands	5 54	57 09
Takama	5 34	57 55
Tumatumari	5 20	59 00
Turkeyen (*plantation*)	6 49	58 07
Vreed en Hoop	6 48	58 11
Waini River (*stream*)	8 23	59 48
Wismar (*section of Linden*)	6 00	58 18

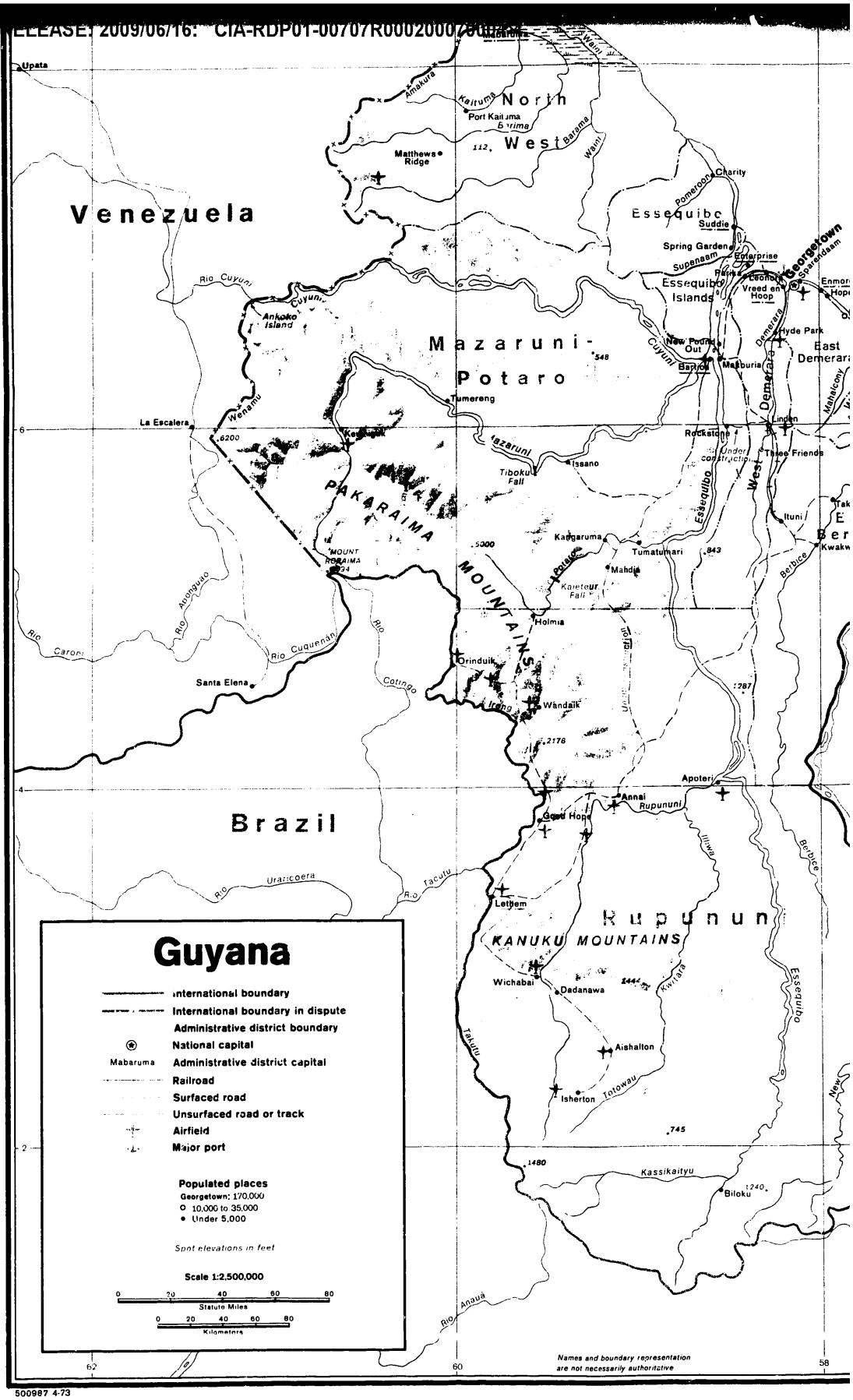
Selected airfields

Aishalton	2 29	59 19
Annai	3 57	59 06
Apoteri	4 02	58 36
Barimita	7 25	60 30
Bartica	6 22	58 39
Good Hope	3 52	59 35
Imbaimadai	5 43	60 17
Kamarang	5 53	60 37
Karanambo	3 46	59 21
Karasabai	4 00	59 31
Kato	4 39	59 50
Lethem	3 22	59 47
Lumid Pau	2 24	59 26
MacKenzie	5 58	58 16
Monkey Mountain	4 26	59 38
Ogle	6 48	58 06
Orinduik	4 43	60 00
Timehri International	6 30	58 15
Wichabai	2 53	59 30

(1)

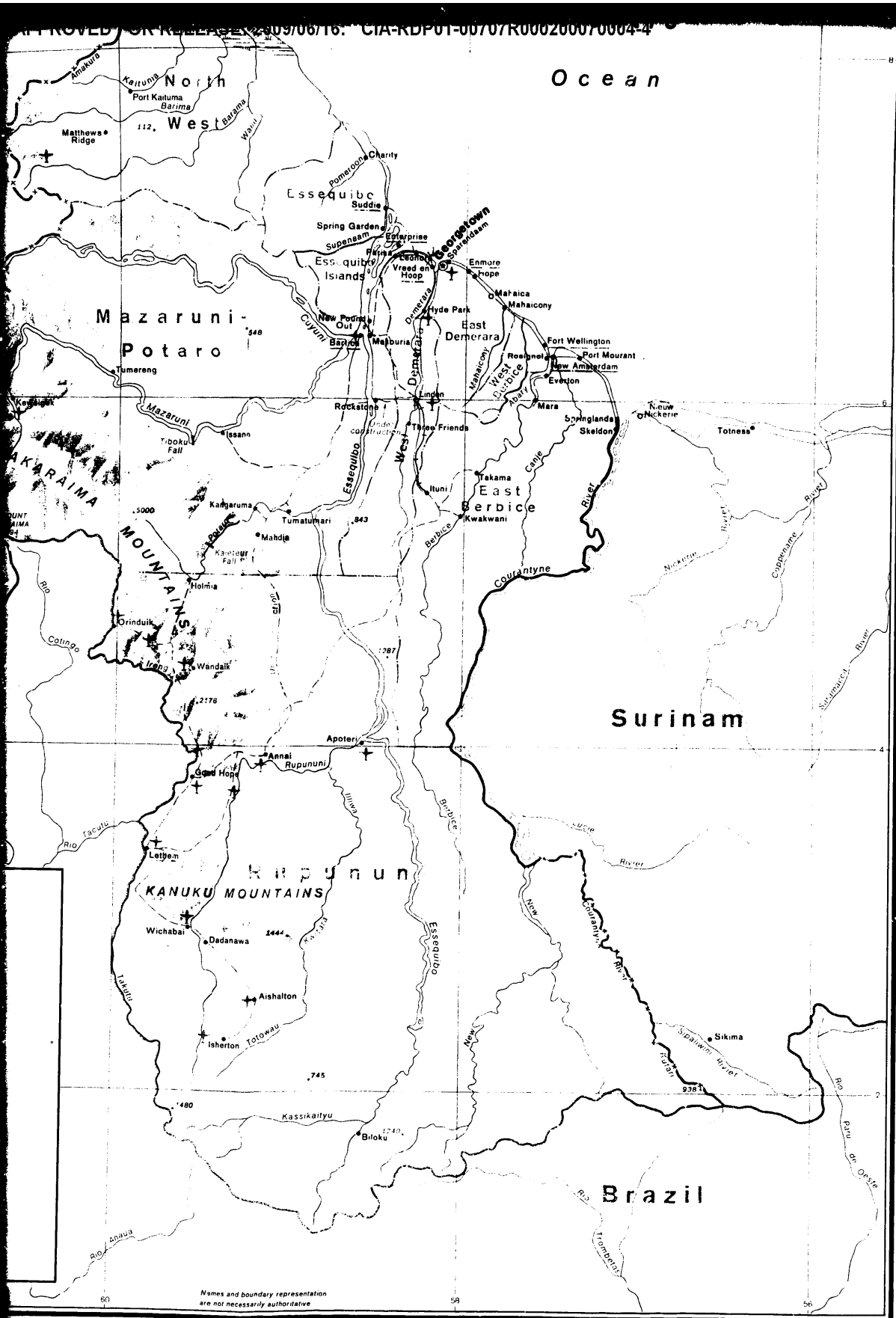






500987 4-73

Central Intelligence Agency **For Official Use Only**



l Use Only (4)

(5) Terrain and Transportation Figure 13