

CENTRAL INTELLIGENCE AGENCY

30 January 1951

INTELLIGENCE MEMORANDUM NO. 348

SUBJECT: Vulnerability of the Bauxite Industry in Surinam and Trinidad

1. Description of the Industry.

General.

Bauxite mining and its associated activities are being carried on in three general areas in Surinam. Two of these areas, Paramam and Moengo, are being worked by the Surinam Bauxite Company, a subsidiary of the Aluminum Company of America. The third, Onverdocht-Smalkalden, is a concession being worked by the H. V. Billiton Company, a Dutch concern.

Virtually all of the bauxite mined in the three areas is shipped to North American ports either directly or by way of Trinidad. Transshipment terminals are maintained at Trinidad by both the Alcoa Steamship Company, Inc. (US), and the Aluminum Corporation of Canada. The former receives ore from Surinam for transshipment at its terminal, whereas the latter handles ore from mines in British Guiana.

Paramam Area.

a. Location of Installations (See Map CIA 11784, Surinam -- Bauxite).

(1) Paramam, on the west bank of the Surinam River 20 miles upstream from Paramaribo, is the site of the processing installations and loading station.

(2) Topibo Hill, 4.5 miles west of Paramam, is the site of a mine that is nearly worked out.

(3) Onoribo, ^{2.2}~~2.5~~ miles northwest of Topibo Hill, is the mine site now being most actively worked.

Note: This report, which has been prepared at the request of the Special Assistant for Intelligence, Department of State, on the basis of immediately available information, has not been coordinated with the intelligence organizations of the Departments of State, the Army, the Navy, and the Air Force. It contains information available to CIA as of 17 January 1951.

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(4) Rorac, on the east side of the Surinam River 5 miles north of Paramaribo, is the site of a new concession in the process of being developed.

b. Description of Installations.

(1) Mining Installations.

All of these mines are worked by open-pit methods, using highly mechanized equipment.

At the Onoribo mine, which is now supplying the bulk of the ore for the processing plant at Paramaribo, six 1.5-cubic-yard and two 1-cubic-yard diesel shovels are in operation. The reserves at this deposit appear to be roughly 1.5 million tons, or sufficient to last until mid-1952 at the present rate of operation.

The Topibo Hill site is divided into two concessions, both of which are nearly worked out. It was anticipated that operations at the site would be abandoned by the end of 1950.

The best remaining untouched reserves in the area are at Rorac. Actual mining of ore at the site is not expected to begin until 1952. The ore will be mined, crushed, and partially washed at Rorac and then moved by barge to Paramaribo for drying and shipment. Reserves are believed to be extensive enough to provide for from 5 to 7 years of operation at the mine.

(2) Processing Installations (See Photo No. 1).

At Paramaribo, installations are provided for crushing, washing, screening, drying, storing, and loading bauxite. The ore is crushed in hammer mills, washed and screened, and conveyed to rotary kilns -- two drying kilns (combined capacity, 180 to 190 tons per hour) and one calcining kiln (capacity, 10 tons per hour). The bauxite from the two drying kilns is conveyed to a 36,000-ton storage shed of concrete construction, whereas the calcined bauxite passes through a cooling system and then to special steel storage bins. Both the storage shed and the bins are connected with loading conveyers at the dock. Two conveyers on the 200-foot wooden dock can load one ship at a time in 12 hours or less.

Power from the installations is supplied by a company-owned diesel electric plant located on the grounds.

Water for industrial use is pumped directly from the Surinam River. Water for sanitary use is supplied by two wells and is stored in a 100,000-gallon tank built on a 150-foot tower at the plant site.

Four steel tanks are provided for fuel oil storage, and two for diesel oil storage.

The mills at Paranam are of steel and concrete construction.

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A map showing the plant lay-out of the Paranam installation in detail is available on loan from the CIA Library (see enclosure to [REDACTED])

(3) Transportation and Communication.

A fleet of nine 14-ton Euclid trucks transports ore from the Onoribo mine over a bauxite-surfaced road to the Topibo Hill railway terminal, a distance of 2.2 miles. From this terminal ore is sent to Paranam over a 4.5-mile, single-track, 36-inch gauge, company-owned railway. Diesel locomotives draw trains of 16 cars of 20 tons each. A road parallels the railroad from Topibo Hill to Paranam but is not used for ore transport.

Lbengo Area.

a. Location of Installations (See Map CIA 11784).

(1) Lbengo, situated on the east bank of the Cottica River, 104 miles by river from Paramaribo, is the site of the processing installations and loading station.

(2) Rikanau Hill, 8 miles due east of Lbengo, is the site of the bauxite mine.

b. Description of Installations.

(1) Mining Installations.

The open pit method of mining is employed at Rikanau Hill. Overburden is stripped by bulldozers, and the ore is then dug, without blasting, by electric shovels. Dump trucks carry the bauxite from the pit to ore cars at the railway terminus.

(2) Processing Installations (See Photo No. 2).

The mills are of steel and concrete construction. Ore cars bringing bauxite to the mills dump their load directly into an open hopper. From the hopper the ore is carried by belt feeder to a new underground hammer mill having a capacity of from 400 to 500 tons per hour. Since the ore requires no washing, it is then moved by conveyors to three rotary drying kilns having a combined maximum capacity of 150 tons per hour, or to an open storage area. The ore moves next to temporary

storage, from which it is loaded aboard vessels via a single loading chute at a rate of 600 tons per hour.

The storage building has a capacity of 40,000 tons and is of concrete construction with corrugated iron roofing.

The loading dock at Ibengo runs parallel to the river bank for 300 feet. Half the length of the dock has recently been reconstructed, using sheet steel piling filled with earth; the other half is of wood construction. Railway facilities run the entire length of the dock.

Power and light at the plant are supplied by a company-owned diesel-electric plant.

Water for sanitary use is supplied by two 30-foot wells, and is stored in a 100,000-gallon tank built on a 100-foot tower. The company has a filtration plant which, in case of emergency, will allow river water to be used with safety.

Four 5,000-barrel storage tanks are provided for fuel oil, and two 2,500-barrel tanks for diesel oil storage.

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A map showing the layout of the company installations at Ibengo is available on loan from the CIA Library (see enclosure to XXXXXXXXXX)

(3) Transportation and Communication.

Bauxite ore is transported from the mine at Rikana Hill to the processing plant at Ibengo by means of sixty 21-ton side-dump cars, which are pulled by diesel locomotives over an 8-mile, 36-inch gauge railway. A road parallels the railroad but is not suitable for trucking -- it is narrow and has one bridge inadequate to support heavy traffic.

With the exception of a single gravel road from French Guiana, the only means of transportation to Ibengo is by river. The river route follows the Surinam River to the mouth of the Commewijne; the Commewijne River for 17 miles to the mouth of the Cottica; and the Cottica River for 79 miles to Ibengo. In order that ore ships may safely pass a sand bar near the mouth of the Commewijne River, their draft is at present limited to a maximum of 18-1/2 feet. The upper part of the Cottica River is narrow, and for the last 7 miles of passage the larger ore boats are towed upstream backwards by tug. Although ships up to 447 feet in length now make the trip to Ibengo, tugs are employed on the Cottica River to assist them around sharp bends.

Communication between Ibengo and Paramaribo is by radio.

Onverdacht-Smalkalden Area.

a. Location of Installations (See Map CIA 11784).

- (1) Smalkalden, situated on the west bank of the Surinam River approximately one-half mile north of Paranam, is the site of the drying plant and loading station of the Billiton Company.
- (2) Onverdacht, 4 miles west of Smalkalden, is the site of the mine and crushing mill.

b. Description of Installations.

(1) Mining Installations.

Bauxite is extracted by the open-pit method, using diesel draglines and bulldozers. The ore beds average 10 feet in thickness and the reserves are large, but figures on actual working reserves are not available.

(2) Processing Installations.

Ore is crushed at the mill at Onverdacht in the immediate vicinity of the mine and then transported to Smalkalden for drying. The combined crushing, drying, and loading plants of the company are about the same size as those at Paranam, and the processing methods are the same. Both calcining and drying kilns are used, but figures on kiln capacity are not available at present. One ship at a time can be loaded at the dock, using two loading belts having a combined capacity of about 500 tons per hour.

(3) Transportation and Communication.

Ore is transported the short distance from the mining pit to the crushing mill at Onverdacht by truck. From the crushing mill ore is moved to Smalkalden both by trains over a double-track, 24-inch gauge railroad, and by truck over a road that parallels the railroad and is maintained in usable condition in all seasons.

Bauxite is shipped from Smalkalden in chartered vessels. The major portion of the ore is transhipped at the Point Tembladora transshipment terminal in Trinidad.

Smalkalden is linked with Paramaribo by telephone.

Point Tembladora Transshipment Terminal (Alcoa).

The primary purpose of this transshipment terminal in Trinidad is:

to transfer bauxite arriving from Surinam in small ships to larger north-bound ships, and to fill up (or top) the north-bound ships that arrive from the mines with part cargo.

a. Location of Terminal.

The terminal site is at Point Tembladora ($10^{\circ}40'49''N$, $61^{\circ}35'53''W$), seven miles west of Port of Spain. The west boundary of the plant-site is coincident with the east boundary of the United States Naval Base leased area (see attached H.O. chart No. 2115).

b. Description of Installations (See Photo No. 3).

(1) Dock Facilities.

The terminal has one 680-foot concrete dock constructed on steel piling. The working length of the dock is 450 feet, with one side used for loading and the other for unloading ore.

Two unloading towers equipped with 5-ton clamshell buckets can together discharge one large vessel or two smaller ones at a rate of 600 tons per hour. The towers operate on a 30-foot gauge track and are capable of travelling 480 feet along the pier. Direct-current electric tractors are used for trimming ship's holds during unloading process.

The loading equipment of the company consists of one travelling loading tower having a capacity of 2,000 tons per hour. The tower receives ore from a conveyor belt and transfers it by chute to the ship's hold.

(2) Storage Facilities.

Bauxite is conveyed either directly from the unloading to the loading tower or to the fifteen 5,000-ton storage tanks located on the bulkhead area northeast of the dock. The tanks are constructed of field-welded steel plates and rest on steel-pile and concrete foundations.

(3) Power Installations.

The power installations provided at the terminal consist of two diesel generators and an AC-DC converter plant. The generators are capable of producing 1,000 kva. each or 800 kilowatts at 80-percent power factor. Normally these installations supply power for the unloading towers only, and the power for the conveyers, loading towers and other plant facilities is purchased from the Port of Spain municipal power station. It is reported (early 1951) that the

municipal generator has been broken down for several months, and that the company power plant has been providing all the power.

(4) Water Supply.

Water is obtained from the local public water-supply system and is stored in an 150,000-gallon steel tank located on a hillside immediately north of the terminal. The water is used both for sanitary purposes and for supplying ships.

(5) Fuel Storage.

In the vicinity of the water storage tank are two 25,000-barrel steel storage tanks for Bunker C oil, one 10,000-barrel tank for heavy diesel oil, and one 10,000-barrel tank for light diesel oil. The Bunker C oil and the heavy diesel oil are used for bunkering and fueling ore vessels, whereas the light diesel oil is used in operating the plant's diesel generators.

Blueprints of the Point Tembladora transshipment installations are available on loan from CIA Library (see enclosure to [REDACTED])

Chaguaramas Bay Transshipment Terminal.

The bauxite transshipment terminal at Chaguaramas Bay in Trinidad is owned by the Aluminum Corporation of Canada and receives its ore from mines in British Guiana.

a. Location of Terminal.

The terminal is located at the east end of Chaguaramas Bay (10°40'30"N, 61°38'03"W), approximately 3 miles west of Point Tembladora along the Western Main Road. On the landward side, the installation is surrounded by property under lease to the US Navy (see attached H.O. chart No. 2115).

b. Description of Installations (See Photos Nos. 4 and 5).

(1) Dock Facilities.

The terminal has a 900-foot wharf constructed of interlocking sheet piling filled with rock. The wharf, 200 feet in width, parallels the shoreline and thus has but one working side.

The terminal is equipped with two travelling unloading towers, each handling grab buckets of 4-ton capacity. The towers discharge one vessel at a time at an average rate (including trimming) of 450 tons per hour.

One travelling loading tower, having a capacity of 1,000 tons per hour, handles the loading operations of the terminal. Only one vessel, therefore, may be loaded at a time. Discharging and loading operations may, however, be carried on simultaneously.

(2) Storage Facilities.

One large building of steel-and-concrete construction is provided for bauxite storage. The building, measuring 600 feet by 200 feet by 80 feet, has a capacity of 170,000 tons and is located just east of the wharf. Space for 250,000 tons of open storage is available near the south end of the storage building.

(3) Conveyer System.

Six main conveyer belts capable of handling 1,000 tons of ore per hour handle the movement of ore at the terminal -- a discharging belt, a loading belt, and four belts for conveying ore to and from the storage building.

(4) Power Provisions.

The power necessary for operating the loading and unloading towers, the conveyers, and other installations is purchased from the Port of Spain municipal power station. It is reported that the municipal generator at the Port of Spain has been broken down for months. It is presumed that the power to operate the Chaguaramas Bay Terminal is provided by the Billiton Company.

Bauxite Shipping.

Sand bars at the mouths of the Surinam and Commewijne Rivers can at present be safely passed only by vessels drawing no more than 18-1/2 feet. Thus large ore vessels plying these rivers find it impossible to take aboard full cargoes at the mines. As a result, two methods are generally employed in shipping bauxite from the mining areas in Surinam: (1) small vessels shuttle between the mining areas and Trinidad, unloading their ore at the Point Tembladora transshipment terminal for immediate transshipment or storage, and (2) large vessels take on a partial cargo at the mine docks and then stop at Point Tembladora for topping before proceeding to US ports. A few vessels operate directly from the mining districts to the US.

Bauxite from the Moengo and Paranam mines is transported by the Alcoa Steamship Company, Inc. (US). In addition to operating its own fleet, the company charters a varying number of vessels on a time basis.

On the shuttle run between Moengo and Point Tembladora the company operates two converted LST's that are tug-towed, two time-chartered LST's that are self-

propelled, two British-constructed 7,000-ton vessels, and several small time-chartered vessels. A few small time-chartered vessels are also operated between Paranam and Point Tembladora.

The following ships are operated by the Alcoa Steamship Company from the mining districts through to the US, stopping at Point Tembladora for topping:

3 Victory type passenger-freighters	--- Alcoa-owned
3 C2 cargo ships	--- Alcoa-owned
10 C1 cargo ships	--- Alcoa-owned
3 Norwegian liberty ships	--- 40% Alcoa-owned
7 Norwegian liberty ships	--- chartered

Very little information regarding shipment of ore from the Billiton Company mine was available at the time this report was prepared. It is believed that the ore is transported in chartered vessels. A major proportion of the Billiton ore is known to be transhipped at Point Tembladora.

2. Present Status of Local Measures to Protect Vulnerable Facilities.

Properties of Alcoa.

a. Moengo.

(1) Transportation.

There is no known protection of the 8-mile railroad between the Rikaneu Hill deposit and the processing plant at Moengo. If this railroad were sabotaged at the present time, production at the Moengo plant would be paralyzed until railroad repairs could be made or until the road which parallels the railroad could be put into use to accommodate trucks. This road is not used; at present it is narrow and has one bridge inadequate to support heavy trucking traffic. Alcoa has an agreement with the Surinam Government whereby it will take over maintenance of this truck road, and the company has already started improving the road. Although the company is to some extent concerned about getting the road in shape, at present it has no plans for sending to Moengo heavy trucks capable of hauling ore. Company officials have stated that "the railroad can be so quickly repaired in the event of damage that it is not yet necessary to make such plans."

As regards transportation of bauxite after it leaves the plant, Alcoa's shipping subsidiary reports that "a watchman is stationed at the ship's gangway in US ports, and in Surinam a crew member is at the gangway. No extraordinary security measures are followed." There is no present method of effectively guarding against sabotage to channels or barges.

(2) Plant and Dock.

Many of the installations at Moengo are not enclosed by fences, including the new underground crusher mill and the long conveyor belt which carries the crushed bauxite either to storage bins or to the drying kilns. The fences which do exist are of the same type described below with reference to Paramaribo. The company is now in the process of constructing a fence which, when finished, will enclose all important installations at Moengo.

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██████████ does not have information indicating how many guards are stationed around the installations or whether or not these guards are armed. In any event, ██████████ if there are guards, they are local colored men, and if they are armed, the company would not consider them very effective. This opinion would seem to be borne out by the observations of an engineer of the US Bureau of Mines who visited Surinam in June 1950. He saw only one person at Moengo who might be termed a guard and described him as

"a man who opens and closes the gate" (at the point where the road from the village approaches the plant).

The dock at Ibengo is protected by a company watchman. Since the Ibengo plant operates on a 24-hour-a-day basis, protection is greater than at Paranam. Half of the 300-foot dock is of wood construction. The company has at Ibengo a 100,000-gallon water tank built on a tower 100 feet high. The plant is equipped with hoses, fire hydrants, and hose carts, and fire drills are conducted once a month.

(3) Personnel.

Alcoa has recently sent instructions to reestablish a strict pass system. The company is considering reinstating an employee photograph system.

b. Paranam.

(1) Transportation.

There is no known protection of the 4-1/2-mile railroad from Topibi Hill to Paranam, but, unlike Ibengo, there is an adequate trucking road which could be used in an emergency and the company has nine Euclid trucks which could carry ore from the Onoribo deposit to the Paranam plant if necessary. As in the case of Ibengo, provision is made for stationing one person at the gangway, but there is no protection of river transportation, so that the bauxite is completely unprotected from the time it is loaded on vessels to the time it arrives in Trinidad. In 1952, when the company will begin to exploit the Rorac concession, this matter of unprotected river transportation will affect two processes of bauxite shipment from Paranam, as the company will then extract, crush, and wash ore at Rorac, ship it by barge to Paranam to be dried in the kilns there, and then reship it from Paranam to Trinidad.

(2) Plant and Dock.

The plant is protected by a 6-foot-high cyclone woven wire mesh fence with four strands of barbed wire at the top. The company gave the same opinion of the possible effectiveness of the guards as it did for Ibengo. A recent visitor there recalls one guard, stationed at the point where the road from Paramaribo enters the fenced-in area. He observed that this guard was reasonably alert and seemed to take note of who was in the car before opening gate.

The dock is protected during nonworking hours by a company watchman. Operations at Paranam are conducted in two 8-1/2-hour night shifts.

with no work done between 0830 and 1530 hours. The dock is of wood construction. The company has a 100,000-gallon water tank built on a tower 100 feet high. The plant is equipped with hoses, fire hydrants, and hose carts, and fire drills are conducted once a month.

(3) Personnel.

Same provisions as at Ibengo.

c. Trinidad.

Storage tanks and the dock area at Point Tembladora are surrounded by wire fencing similar to that at Paranam. There are six company guards or watchmen on duty around the dock area at night. The company does not know whether or not they are armed but presumes that the same situation applies as in Surinam.

A pass system has been instituted by the company at Point Tembladora.

Some degree of protection is afforded the Point Tembladora transshipment terminal by the fact that the west side of its plant site and pier is adjacent to property leased by the US Naval Operating Base. The water surrounding this Navy-leased property is divided into three roughly concentric zones (see map in Part 2). The zone closest to shore, the prohibited area, is patrolled by US Marines. As of October 1950, no vessel was allowed to enter this zone without permission, and it was protected by four Marine patrol boats and by sentries stationed on shore. The boats at the disposal of the Marines in this area include a crash boat (manned by four seamen), a fireboat, a captain's gig, an executive gig, and a barge. The zone next to the prohibited area is termed a "restricted zone." Vessels can transit this restricted area but are not allowed to stop; fishing vessels are not allowed to troll in this zone. Between the Aloca and Alcan terminals, about one-fourth of a mile west of Point Tembladora, there is a navy seaplane hangar above which is constructed a control tower. Since seaplanes sometimes land in the restricted water zone near this observation tower, the Marine crash boat contacts the tower by radio and, when notified that a plane is about to land, goes out to clear the area of all vessels. Beyond the restricted zone, according to the US consul who returned from Trinidad in October 1950, is a restricted anchorage zone (not shown on map) which is under the jurisdiction of local Trinidad police. Vessels are allowed to proceed freely in this zone, subject only to the restriction that they may not anchor here; however, the zone can be proclaimed closed at any time if it should be deemed advisable. Any persons who are found violating the provisions applying to the two zones under the jurisdiction of the US Marines are turned over to the local police.

The Alcan terminal at Chaguaramas Bay is afforded greater protection than Point Tembladora, since it is enclosed by US Navy-leased property

on three sides and on the water side is actually included within the prohibited zone.

Steps Now Being Taken by the Netherlands Government to Protect Bauxite Installations in Surinam

a. Police Protection Nil.

There are two or three Surinam police stationed at Paramaribo and no more than six at Moengo. These police are colored natives, and their function is solely the maintenance of law and order. They have nothing to do with plant protection.

b. Army Protection Nil at Present.

At present the Dutch Army Garrison in Surinam consists of 26 officers and from 500 to 600 enlisted men. All of the officers with but two exceptions, and from 60 to 65 percent of the enlisted men, are from the Netherlands. Most of these troops are stationed in Paramaribo, and none are stationed in either the Moengo or Paramaribo mining areas, so that they offer no protection to bauxite facilities at the present time.

c. Possible Future Protection from Dutch Marines.

25X1A5a1 [redacted] the Netherlands Government has plans to replace the present Surinam colonial armed force with marines. The first contingent of 30 marines is reportedly on the way now, but the company does not know where these marines will be deployed.

d. Protection of River.

25X1A5a1 [redacted] the Netherlands Government has some guns installed at Fort 25X1A5a1 (time of installation not specified, presumably some years ago). [redacted] if they are still installed, they would not furnish much protection against a real effort to enter the river.

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25X1A5a1

a. [redacted] protection of river transportation presents a major problem. During World War II, US soldiers were stationed on each ship. However, there is no present method of guarding against sabotage to the channels or the barges.

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[redacted] the Governor of Surinam, while not actually expressing himself as opposed to the stationing of US Army personnel in Surinam, has stated that the local government 25X1A5a1 provide guards when necessary. The Governor has expressed himself [redacted] as being keenly aware of the danger of possible Communist sabotage, but he feels that at the present

time there is no Communist activity in Surinam. It could be inferred from this that the Governor does not sufficiently recognize the possibility of Communist saboteurs being brought into the territory from the outside.

b. [REDACTED] the greatest danger will come from the activities of left-wing sailors on US bauxite ships.

25X1A5a1 c. [REDACTED]

There are about 2,000 Chinese in Surinam who keep to themselves and associate through Chinese clubs. Their loyalty to their mother country was indicated shortly after World War II, when the Chinese Nationalist Government ordered a consul to Surinam. When the Surinam Government protested that the posting of a Chinese consul was neither necessary nor in order since virtually all the Chinese in the territory were Surinam citizens, the Chinese population objected, claiming they were Chinese nationals. The consul arrived and was allowed to remain until recalled several months ago by the Nationalist Government. While he was there, the local Chinese purchased a house for the consul as a personal gift (ownership of the house is now in doubt). Information was received by the Surinam Government shortly after the recall of the Nationalist consul that a Chinese Communist consul has been ordered to report in his place. He has not yet arrived, but if he does, Alcoa is apprehensive of his possible influence over the 2,000 Chinese.

Properties of the Billiton Company.

Little information is presently available regarding measures which may have been taken to protect the installations of the Billiton Company, which produces roughly 25 percent of the bauxite in Surinam. It is known only that at least part of the plant at Onverdacht is protected by a fence similar to the one which encloses Alcoa's Paranam plant.

3. Security Comment.*

a. Conclusions.

Despite certain security measures instituted by the Surinam Bauxite Company (ALCOA) and by the Alcoa Steamship Co., Inc., the continuing supply of bauxite from Surinam is vulnerable to sabotage. Known protective measures by these companies are insufficient. Little can be said concerning the vulnerability of the properties operated by the Billiton Company, since specific information is unavailable. However, it may be assumed that prevailing conditions are comparable to those at the properties of the Surinam Bauxite Company.

b. Recommendations.

Since the security information available is incomplete, any recommendations for additional security measures will have to await a field survey. Favorable factors in the situation are US-Surinam relations during World War II and the presence of a US naval operating base in Trinidad. However, the cooperation of the Surinam Government would have to be obtained in the drawing up and implementation of a security program.

APPENDIX

Photographs Available in CIA Graphics Register.

- a. Surinam: CIA Nos. 17011, 27162, 27163, and 44055 through 44061.
- b. Trinidad: Office of Naval Intelligence, Nos. 447319, 453514, 453515, 453516, 458432, 462584, and 462588.

* This section, dealing with security, has been prepared by the CIA component responsible for security matters.