LAKE TANGANIKA SURVEY REPORT

COAST, RIVER AND LAKE GUARD BASING FACILITIES

Office of Public Safety
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I. SUMMARY OF LAKE TANGANIKA CRLG SURVEY

A. TERMS OF REFERENCE

The purposes of this study are to examine the existing marine repair facilities of the Congo Great Lakes Railroad Co. (CFL) and Congo Transportation Office (OTRACO) Port installations at Kalemie and Port Kalundu, Provinces of Katanga and Kivu respectively, to determine the practicality of using these facilities as maintenance, support, operational and headquarters bases for the newly formed Congolese Garde Cotiere, Fluviale et Lacustre (Coast, River and Lake Guard - CRLG).

B. THE SITUATION

The GDRC has contracted for construction of six 20 m type, aluminum hulled, diesel drive patrol craft. Vessels are to be constructed by Swiftships, Inc., Morgan City, Louisiana. Total cost of contract including vessels, transport, spare parts, armament, electronic equipment, and technical assistance is $3,337,286. GDRC has asked for a loan of the necessary funds from the Import-Export Bank for a total of $3,952,819 including interest.

The 133 officers and non-coms will have three months English language training in Kinshasa and two months ship and engine training at Mare Island, California by USN. A former Gendarmerie Colonel has been appointed Director for the Force. The Congolese National Army (ANC) and CFL have reportedly agreed on use of a portion of the

latter's Kalemie Port facility by the CRLG through June 1971. No housing for crews is as yet available at Kalemie. Land communications and technical police assistance is being provided by USAID/PSD.

C. LAKE AERIAL RECONNAISSANCE

An aerial reconnaissance of Lake Tanganika shores and water areas from Baudouinville to Uvira was made by the Team. Beginning at Baudouinville the shores rise precipitously from the lake. Between Baudouinville and Kalemie, a distance of 70 nautical miles, narrow, restricted sand beaches were observed. Small villages are usually found at large beaches. No roads of significance were observed. Only trails lead from the small fishing villages over the mountains to the interior in most places. From Kalemie north to Uvira, a distance of 150 nautical miles, the lake shore rises even more precipitously from about 450 m to over 3,000 m within 80 kms. of the lake. This section of the lake shore is geographically inhospitable. Only two anchorage areas were observed which could provide shelter for the Swiftships. The first, at Ile Kavolo, is large and well sheltered. The Burton Bay anchorage provides shelter from all but northerly winds and seas. The seas are reported to rise to heights of 4 m during the transition months (April-June) and are dangerous to navigation. Although no hydrographic data was available Lake Tanganika is apparently a deep body of water. Soundings of 1,500 m have been reported.

A U.S.N. hydrographic team is reported to have made a survey of the lake in 1967, the scope of which is not known. This report was not available to the PSD Team.

A Belgian government survey is also reported to have been made (including hydrographic and terrain features of Lake Tanganika). This report was not available at time of survey. Mr. Warimot, Belgian advisor to the Director of Voies Navigable, Kinshasa provided the information by phone and said that "survey was very detailed and provided extremely useful data on the lake."

Important points and distances between Baudouinville and Uvira along the Congolese side of Lake Tanganika are as follows:

Baudouinville to Uvira	220 N.M.
Baudouinville to Kalemie	70 N.M.
Kalemie to Uvira	150 N.M.
Kalemie to Ile Kavolo Anchorage	20 N.M.
Baraka (Burton Bay) to Uvira	42 N.M.

D. FACILITIES OF CFL (KALEMIE) AND OTRACO (PORT KALUNDU) IN SUPPORT OF THE CRLG

The CFL facility at Kalemie, although somewhat battered by the high water level of Lake Tanganika in recent years, has undergone an extensive seawall and landfill construction program which appears to effectively barricade major facilities of the port from the encroaching lake waters. New concrete work around the graving dock and increase in height of the entrance caisson has returned this facility to use for the first time since 1962. The marine railway is

under projected reconstruction and should be available within the coming year. The rail or slipway will be useful in hauling out the Swift patrol vessels for periodic maintenance and overhaul. Ample quayage, a transit shed, open storage area, light and heavy lift cranes, diesel and gasoline, major overhaul and injector shops are in place, and skilled marine workers and engine mechanics are available on contract. The CFL facility is the logical location for the major operations, maintenance, communications training and administration base of the CRLG force.

The Port Kalundu (OTRACO) facility offers a good potential as an ancillary base of the CRLG. Port Kalundu is about 140 nautical miles north of Kalemie and is near the end of the northern CRLG patrol effort.

The shipping facilities (quayage, transit sheds, cranes) are in apparently good condition. There appears to be ample room at OTRACO for establishment of a bunkering and minor repair and preventive maintenance CRLG base with a limited number of personnel.

The railroad which extends to the limestone quarries nearby is now abandoned, as are the 14 homes and railroad administration office.

E. CURRENT CRLG (ANC) FLEET CAPABILITY

At the time of the study the Lake Tanganika fleet of the ANC, which it is assumed will revert to the CRLG, consisted of two 15 m Swiftships, two 12 m utility craft, one 30 m logistics vessel; and four 7 m runabouts. All except the runabouts are diesel driven.

The runabouts are inboard/outboard MERCRUISER propelled, with 1965 engines. The 30 m craft is of questionable value to a maritime law enforcement group. The four 7 m runabouts were in non-repairable condition and should be surveyed out. The 15 m Swiftships and two 12 m utilities should be retained and considered for overhaul at some future, low priority date. All engines of the eight vessels described are deadlined for lack of spare parts and obvious neglect and abuse. There have been no spare parts or institutional maintenance program for these vessels since 1967.

END OF SUMMARY

II. PERSONALITIES

LUBUMBASHI

NEHER, Leonardo, U.S. Consul General

MONGUYA, Daniel, Commissaire of Katanga

LINTON, Mark, U.S. Vice-Consul

NZOIGBA, Denis-Daniel, Brig. General

BISHERERA, Michael, Inspector Principal

KALEMIE

KAYEMBE-MDOWA, Andre, District Commander, NP Inspector

MULULA, Jacques, Lt. Col., Commander, ANC

INGONCOMO, Alexandre, Adjutant, Acting Commander, ANC Marine Element

NZITA, Honore, District Commissaire

KATKONDE, Nicolas, Deputy Commander, ANC

STAS, Joseph, Technical Director, CFL

LEMBA, Jean-Pierre, Chief, d'Information et Documentation (ex-Surete)

UVIRA

MWENZI, Leonard, NP Inspector, District Commander

PORT KALUNDU

RAMSEZAIN, Vincent, Port Captain, OTRACO

MUZINGA, Polydore, CFL Representative

BUJUMBURA, BURUNDY

HOYT, Michael, U.S. Embassy, Charge d'Affaires, a.i.

III. TERMS OF REFERENCE

The purposes of this study are:

A. To examine the existing marine repair facilities of the CFL (Chemin de Fer du Grande Lac) at Kalemie, Province of Katanga, (formerly Albertville), to determine the practicality of using these facilities as a maintenance support, operational base and headquarters for the newly formed Congolese Garde Coteriere, Fluviale et Lacustre (Coast, River and Lake Guard - CRLG);

B. Inspect the OTRACO shipping installation at Port Kalundu on Lake Tanganika, seven kilometers south of Uvira;

C. Development of alternative facilities if such are required;

D. Make comparative cost studies of modifications to existing facilities to place them into CRLG operations;

E. Examine the problem of living quarters for the CRLG personnel families;

F. Perform aerial reconnaissance and develop other marine and navigation studies to furnish a background for organizational and operational planning;

G. Examine and assess the existing marine operations and equipment currently at the Port of the Armie National Congolaise (ANL);

H. Gather and report such other incidental information and intelligence which may be useful in organization, facility and operations planning.

IV. THE SITUATION

GDRC finds itself in the position of having ordered six 65-foot aluminum hull patrol craft to be delivered by commercial air lift to Kalemie in sections for re-assembly, outfitting, launching and testing by the manufacturers at the CFL yards in Kalemie. First deliveries begin in March and terminate in June 1971. Two Swiftships technical representatives will supervise reconstruction and provide aluminum welding equipment. One hundred and thirty-three officers and enlisted men have been, or are being, selected for English language training (three months in Kinshasa), boat handling training at Mare Island, California (two months), and marine police training (three months, preferably in Kalemie). The first group of 74 officers and men hopefully will be ready for a pilot operation in June 1971. Laws have been promulgated establishing the CRLG and its mission, and a Director General, a former Gendarmerie Colonel, has been designated. A headquarters staff (Kinshasa) has yet to be organized and trained. Z1,000,000 of GDRC budget funds have been allocated for FY 71 and the GDRC has asked for a $3.9 million loan to finance the vessel construction program.

An informal agreement has been reached between the ANC and the CFL for the use of the latter's yards for reconstruction of the boats. However, according to the Deputy Chief of Staff; ANC, such use will end in June 1971. No housing, temporary or permanent, exists at

Kalemie for the CRLG personnel. Land-based communications procurement and technical police assistance is being provided by the USAID/PSD.

The ANC has proposed the establishment of a complete Naval base at Kalemie or at the Bay of Burton, 30 kms. north of the town. The initial estimates of the cost of the base by the ANC is 9,000,000 Zaires ($18,000,000). If the base should be located at the Bay, a 30 km. road would have to be constructed. No significant hydrographic data is available concerning Lake Tanganika, and specifically in the bay where dredging and extensive wharfage might be required.

V. LAKE AERIAL RECONNAISSANCE

On December 10 the survey team began aerial reconnaissance of the western lake shore at 1,200 m altitude. The lake surface is 675 m above sea level. En route from Lubumbashi the reconnaissance began at Baudouinville, progressing northwards toward Kalemie keeping sufficiently far off shore so that the team could observe the shores, villages, transportation, and landing areas.

The villages were small (10 to 20 huts) to relatively large as PALA (about 200 thatched huts), and numerous. The shores of the lake, in the Baudouinville area were precipitous, rising sharply from the water to heights of several hundred feet. Much of the terrain was heavily forested. Occasional trails connecting the villages were observed but no roads.

Numerous beaches were seen and good landings could be made on many of them by small craft. As the plane approached Kalemie the

shoreline became less precipitous to heights ranging from 3 m to 20 m.

Lake Tanganika appeared to be a deep body of water. No shoal areas were visible from the plane except at river mouths. The lake at all points between Baudouinville and Kalemie appeared to drop off sharply from the narrow beaches into dark blue coloring indicating deep water close to shore.

It would appear that the new 20 m Swifts will be able to pull in closely to most villages for inspection purposes although these large craft will have to carry or tow a small boat to land inspection teams ashore.

The team asked numerous people as to where, or if, hydrographic charts of the lake were extant and were told that none were. At the close of the survey, it was learned from the Director of Navigable Waterways Service (Service des Voies Navigables), Kinshasa, that comprehensive hydrographic data and information was available as a result of previous Belgian studies.

An interesting feature of Lake Tanganika is the total absence of hyacinth or other visible marine growth except near river mouths or marshes. If so desired, at a later date, jet engine propelled craft (similar to the 31' PBR of the Mekong Delta) could be utilized in the lake for patrol work.

VI. FACILITIES AT CFL YARD, KALEMIE (See Annex II, Photographs)

A. On 11 and 12 December 1970 the port facilities at Kalemie CFL yard were inspected. Joseph STAS, Belgian Civil Engineer Advisor to the CFL conducted the PSD team through the various facilities of the complex. These included a recently reconstructed graving dock, the large machine shop, an electronics repair shop, a marine railway, a heavy lift crane and wharf cargo cranes, the general cargo loading and discharge area and wharf, and the refueling facilities.

In general terms the repair and maintenance capability of the CFL complex was impressive. They far exceed the requirements of the 20 m Swift boats which will shortly be put into marine police service on Lake Tanganika.

Two possible base sites were shown to the team. The first is located in the tanker berthing and fueling area. There are only fuel handling facilities at this location. The second site is at the extremity of the general cargo quay on the opposite side of the harbor. The tanker area is devoid of buildings and has no access road. Petroleum products, principally diesel fuels, are discharged at the tanker berth via pipelines which pass through the site to two storage tanks of 250 cubic meters capacity each. In addition to hazard, local conditions, and obvious cost requirements, the site within the bulk storage area is of questionable value. Firstly, the area handles only inflammable liquids and for this reason is in an isolated part of the harbor. Secondly, a seawall would have to be constructed since no buildings exist in the bulk storage area.

B. The various shops of CFL are described as follows:

1. The Machine Shop: The machine shop is large and well-equipped. Most of the machine tools appear to be of Belgian and German manufacture. They include boring mills, large and small lathes (one capable of handling engine or propeller shafts up to 12" in diameter), shapers, drill presses of various sizes and diesel engine injector overhaul and repair shop. Engines of the following types were in various stages of overhaul: Maybach, GM and Mercedes Diesel and Ford gasoline engines. The Maybach diesel engine is the one installed in the locomotives of the CFL Company and many of these large units were under repair. Spare parts of all categories are in limited supply.

2. The Electronics Shop: This shop is the CFL communications center for radio maintenance and SSB communications with its facilities beyond Kalemie including Lubumbashi and Kinshasa. A Thompson-Houston SSB radio was operating at time of visit.

3. The Carpenter Shop: This facility handles the heavy timber work. A large plane was turning down .304 m timbers during the visit. According to Mr. Stas the shop produces planking for wooden hulled vessels and .304 m shoring timbers for vessel shoring in the dry dock.

4. The Graving Dock: Because of the high level of water in Lake Tanganika in recent years, the graving dock has been out of commission since 1962. However, a major seawall construction program was

undertaken and the entrance gate, or caisson, of the graving dock was raised sufficiently high to keep the rising waters of the lake in check. The graving dock is of concrete construction, about 20 m wide x 100 m in length. At least four of the new Swift 20 m patrol craft could be accommodated at the same time in this graving dock. At time of visit a 60 m coastal freight ship was resting in the graving dock leaving at least 30 m of clear keel block space between entrance gates and the freighter's stern.

5. The Marine Railway: This facility, rather than the large graving dock, appears to be the most practical to use in the repair of the Swift 20 m craft. It is of concrete and wooden construction. It is presently out of commission awaiting a shipment of heavy timbers to replace those now supporting the haul-out rails. According to Mr. Stas the railway should be back in operation within six months after these timbers arrive, but in the Advisor's opinion will be more like six to eight months. The marine railway is capable of handling vessels to lengths of 46 m or two 20 m Swifts at the same time. The haul-out machinery consists of rather outmoded, hand-operated winches, but according to the CFL advisor, operate satisfactorily. It may be worthy of consideration at a later date to provide the yard with an electric winch for the marine railway. Similar satisfactory winches are in use at other USAID supported marine police operations.

6. Port Cranes: One heavy duty A-frame crane, 25 ton capacity, is located at west end of the general cargo quay. According to Mr. Stas

this heavy lift crane, by a rather simple modification, could be increased to a capacity of 50 tons or enough to raise a 20 m Swift from water to quay surface in an emergency.

A total of five, three to five ton capacity electric cranes run on tracks along the quay apron for loading and discharge of lake freight ships.

A small, possibly 3 ton, tractor-type crane was also at east end of the quay. It was reported to be operational.

Two heavy overhead cranes, about 50 tons capacity each, were also observed in the CFL machine shop. These were apparently for exchanging locomotive engines, and lifting locomotive chassis off their undercarriages.

7. The General Cargo Quay: This quay forms the boundary of the south side of Kalemie Harbor. On the opposite side and forming the north boundary, the bulk petroleum facility is located. The harbor entrance or channel divides both areas.

The general cargo quay is about 300 m long. The five light duty (three to five ton) portable electric cranes and the single fixed 25 to 50 ton heavy duty crane are all located on the face of the general cargo quay. Railroad tracks extend along the face of the quay to its extremity at which point the recommended CRLG base is located. The alignment of the quay is generally east/west oriented.

At the western end, some 15 m from the face of the general cargo quay, is a 60 m long x 13 m wide Congo Customs transit shed. Near the lake or east end of the quay another 15 m x 30 m transit shed is located, one section of which has been requisitioned by the ANC. For five years it has been used as the site of its Lake Tanganika patrol force. The section of transit shed used by the army is about 15 m x 11 m in size. It appeared to be in good condition. A large open storage area (approximately 30 m x 40 m in area) is adjacent to the ANC shed and except for storage of three captured and stripped ex-Tanzanian runabouts, was unused. Other open storage areas lie between the sheds along the length of the quay.

Behind the transit sheds traces of the former access road are visible extending from the Marine Police Base to root of quay, a distance of about 1 kilometer. This road is inundated during high water periods of the lake. A quantity of fill will be required before the road can once more be restored to use. Estimates of fill requirements, through courtesy of Mr. Stas, for the depressed area adjacent to the marine police base were some 300 m^3 of laterite and for the road about 6,600 m^3. The seawall height for a length of 600 m would have to be increased by 2 m to prevent lake intrusion. Laterite fill for the road would cost approximately 28,000 Zaires.

Cost of reconstructing the seawall is estimated to be 30,000 Zaires. All above estimates exclude cost of labor but include rail transportation of laterite, or other fill material, to the site. Mr. Stas believed that the entire project including fill for both the

access road and depressed Marine Police section, and construction of the seawall, including labor would be very close to 100,000 Zaires, however the work must be done if this essential part of the quay is ever to be reclaimed. Other building construction is estimated at 100,000 Z.

C. Port Engineering Costs

Annex 1 is a cost sheet provided by CFL for labor, machine tool and piece work, and cost of gasoline and diesel fuel per liter.

Cost of hauling out vessels on the CFL marine railway is also shown.

VII. INSPECTION OF MARINE POLICE VESSELS

On December 12 the Chief of the CRLG and the PSD team surveyed the few craft now owned by the unit. All craft surveyed are listed below and were inspected at the CFL yard where they are in lay-up status.

1. One 15 m Swift, aluminum hull, twin 12-cylinder GM engines.

Comment: The 15 m Swift hull is in apparently good condition. It is non-operational at present because of lack of spare parts for its two 12-cylinder GM diesel engines. The vessel had been equipped with radio and radar. These were reported to be in the CFL communications repair shop. The compass and all electronic equipment had disappeared. The vessel is dirty but apparently in sound condition. The Swift is salvageable. Engine spares, tools, life-saving equipment and plumbing will be required. Installation of new electronic equipment should be considered.

2. Two 12 m utility boats at Kalemie and Uvira, aluminum hull, powered by single 4-cylinder diesel engines. Comment: The utility boat located at Uvira is reported to be in operable condition. The sister ship berthed at Kalemie and inspected by the survey team was not in operating condition and was reported as having sunk alongside the dock. The hull was apparently in sound condition. The GM engine was out of commission for lack of spares. There was no electronic equipment on the vessel and very little else. The Kalemie hull could be put in operating condition if, like the 15 m Swift, spare parts, compass, lifesaving equipment and engine hand tools were provided.

3. Four 7 m fiberglass, open runabouts, twin 150 horsepower MERCRUISER inboard/outboard drive, each hull. Comment: The four fiberglass runabouts were in very bad condition. Two hulls had large holes along the chineline and numerous hairline cracks on bottom, sides, and along the keel line denoting general breakdown of the fiberglass material. A third hull was in such a state of deterioration that it should have been disposed of long ago. Considering the cost of major repairs required, the lack of repair material and the non-availability of skilled fiberglass repairmen at Kalemie, all four fiberglass hulls should be surveyed out.

The 150 horsepower MERCRUISER engines, 1965 model, were reported to be in operable condition except for spare parts. The outboard drive units also require spare parts. Four engines were seen by the team at Kalemie, two in one of the hulls and two in the

Marine Police Commander's office. Two were reported by the Commander as having been sent to Kinshasa for repairs. The economics and probable misuse of these engines would make their commissioning highly questionable.

4. One 30 m logistics supply vessel, name "Hermes", steel hull twin 4-cylinder GM diesels, built in 1952. Comment: The hull of this vessel appeared to be in sound condition. The deck planking was in poor shape. Since the vessel is almost 20 years old, the present planking would have to be replaced or most certainly, thoroughly caulked. The vessel is salvageable, but whether or not the craft is required by the Lake Marine Police Force is questionable. Possibly it would be better to return it to Congo Army Logistic Supply Service.

VIII. CFL YARD BULK OIL STORAGE FACILITY

This facility has 250 m^3 tanks for diesel oil storage with pipelines extending from the POL tanks to a small tanker berth at entrance to harbor.

Mr. Stas informed the surveyors that there were a number of surplus-to-needs water tanks in the yard area which the Force could transfer from their present site to the bulk storage area and use for diesel fuel storage for the CRLG fleet. The water tanks were formerly used by the yard to fill tanks of the older steam locomotives which are being phased out. Size of the surplus water tank shown to the team is 60 m^3.

IX. NAVIGATION ON LAKE TANGANIKA

The lake apparently has never been thoroughly surveyed so hydrographic features are not known with any exactitude. Depths of 1,700 m have been reported. Its deep blue coloring is indicative of an extremely deep body of water. Maps of the lake including its shore terrain features are available and would be very useful in piloting craft by day. There are reported to be no operational navigational aids for night navigation or patrol. Under these circumstances, radar would be an extremely useful aid to a ship master if radar spare parts and service personnel were available.

No driftwood, water hyacinth or other flotsam, which might prove hazardous to jet engine or outboard engine operations, were observed.

The surface of the lake can be quite rough, especially during the months of May and June. Wave heights of 4 m are reported. Navigation of 20 m Swifts under such conditions is not advisable.

X. DESCRIPTION OF WEST SHORE OF LAKE TANGANIKA TO KALEMIE AND FACILITIES OF OTRACO AT PORT KALUNDU

On December 14 the survey team departed Kalemie for Port Kalundu about 150 nautical miles north to inspect the facilities of OTRACO with the view of possibly establishing a CRLG secondary base in the Kalundu area.

Just north of Kalemie, the shores began to rise abruptly from the lake, seldom less than 500 m and attaining heights of 3,300 m within

40 kilometers of the lake. Only two sheltered anchorage areas were sighted between Kalemie and Kalundu. The first, or Ile Kavolo, anchorage has been considered by the Congolese as a potential naval base. The Kavolo anchorage is well sheltered from any point. It is large and is formed by a number of off-lying islands. No roads, railroad, electricity, or other improvements exist in this desolate area. A track or trace meanders through the scrub-covered mountains adjacent to the base and about 400 m above the lake.

Another large potential anchorage, assuming water is not too deep to anchor, was observed in well-sheltered Burton Bay, 100 nautical miles north of Kalemie. This very large bay is bounded by 1,500 m high mountains on east and west sides with lesser heights on its south side. The bay is open to the north. Very few beaches worthy of mention were seen along the lake shores except in the Kavolo and Burton Bay area. No towns or villages were seen, and apparently the rugged landscape is pierced by no mode of transportation except trails from the lake shore. Even the railroad, which used to extend south to the limestone quarries from Kalundu, has been abandoned.

Port Kalundu, about 140 nautical miles north of Kalemie, is a small OTRACO lake port facility. The small port is oriented generally north to south. It contains a water area of about 10 acres, and is formed by a dredged finger of land comprising the harbor's east side. The leeward side has been faced with granite blocks and affords about 160 m of berthing space. Near its outer end a 30 ton A-frame type stiff leg derrick with 180° swing is located. The west side of

the OTRACO harbor has also been quayed. The quay face consists of solid masonry blocks. It is about the same length as the east side. A series of connecting transit sheds, some 130 m long x 10 m deep, is used for general cargo storage, and one portion as a Customs Office. About one acre of open storage space is available at the south end of the harbor. The north end of the port comprises the marshalling yard and repair shops of the now-abandoned railroad. Some 14 abandoned houses are located adjacent to OTRACO's port. One or more of these could be used for administration offices or barracks by the CRLG if it is determined that patrol operations and a small headquarters building should be established there. There appears to be ample room for the CRLG.

The sister ship of the 12 m utility boat inspected by the survey team in Kalemie's CFL yard, was observed at Kalundu. It is not in operating condition, although crews were working on its engine.

Depth of water in the OTRACO port was reported to be about 7 m.

The OTRACO facility offers good, immediately available, potential as a minor support base for the Kalemie CRLG major operations base.

XI. SHIPBUILDING CONTRACT BETWEEN SWIFTSHIPS, INCORPORATED AND THE DEMOCRATIC REPUBLIC OF THE CONGO

Review of the contract between Swiftships and the DRC places new light on certain features which should be emphasized. They refer specifically to delivery of the spare parts, the work program, available electric power, and capability of the railroad-highway bridge which must be crossed to reach Kalemie port from the airport. A description of these various facets follows:

1. The Contract for Spare Parts, Art. 5, Delivery - p. 17 of the Contract.

The contract states that shipment of spare parts (total value $582,626) shall commence with delivery of first hull, that all spare parts shall be in country upon delivery of the sixth and last hull, and that destination of the spare parts as well as the hulls is Kalemie. The spare parts are extremely attractive pilferage items. The Public Safety Division, USAID/Congo, should exercise a responsibility for the reception, warehousing, stowage, orderly cataloging control and security of the spares prior to their arrival in country and for an indeterminate period thereafter of at least two-four years.

If a Marine Engineer or Maintenance Advisor (U.S.) is not available at the time of arrival of spare parts at Kalemie, it is urged that a qualified marine engine advisor such as Messrs. Loreg or Napier of OPS (Vietnam) or Campbell of OPS/W perform TDY at Kalemie prior to arrival of the hardware, to secure a building in Kalemie for storage, distribution and cataloging of the spares. The building should be provided with a locked cage as well as securely locked doors. It should be under 24-hour guard if at all possible. Because of the ever present danger of inundation by the lake and rust damage from proximity to the water, a warehouse in Kalemie is recommended rather than storage at the CRLG base location on the CFL quay.

2. Article 6: Changes and Modification - p. 19(a) of the Contract.

The 65' Swift cannot dock at any of the villages along the Congo shore of the lake, yet it is imperative that the villages be contacted

during patrol operations. Review of the boat building contract indicates no provision for a dinghy or skiff to be carried aboard the larger vessel for communication with the shore. A modification of the Swiftships, Inc., building contract would satisfy this need.

The skiff or dinghy requirement could be satisfied by installation of davits on the stern of the 65' Swift to carry a light aluminum dinghy about 15' in length. The dinghy should be equipped with thwarts, row locks, oars, hand pump, and a 35 horsepower outboard engine. The dinghy should be secured to the stern of the mothership so that it will not swing freely when the larger vessel is underway. If in the builder's view the stern position is not feasible, provision should be made for location of dinghy on port or starboard sides.

3. The Swiftships, Inc., Work Program and Related Information.

The airfield at Kalemie is located about 10 klms. north of the town. It is hardsurfaced and appeared to be about 4,000 feet long. A Radio Direction Finder station is located at the airport but according to pilots operating in the area it is not reliable. Electricity for the airport is generated by portable generators. Power lines from Kalemie cease at the textile plant some 5 klms. south of the airport.

A combination rail-highway bridge crosses the Lukuga River just north of Kalemie and lies between the airport and the CFL port facilities. The high water level of the lake in recent years has badly undermined the rail/highway bridge. Its safe load capability according to Mr. Stas, CFL Engineer Advisor, is about five tons. CFL plans reconstruction of

the bridge but it is doubtful that this can be accomplished before late 1971.

A 50' Swift was flown into Kalemie in 1965. The Swift was reported to have been assembled adjacent to the 25 to 50 ton heavy left crane at the root of the general cargo quay. Whether the 50' vessel was flown in with hull intact is not known. In view of the deteriorated condition of the R.R. bridge, it would probably be easiest to fly the 65' hulls intact, if possible, to the airfield for off loading and ~~shipping~~ SLIPPING into the lake for towing to the CFL heavy lift location and final assembly. A small boatyard was observed near the damaged R.R. bridge which may facilitate launching of the hull.

XII. RECOMMENDATIONS

1. That the currently used ANC Marine Base on the general cargo quay of the CFL at Kalemie continue as the major operations, administration, communications and maintenance base of the CRLG Force, and that permanent contractual arrangements be made to use the docks, diesel fuel storage, berthing, shops and other facilities.

2. That necessary land fill, seawall construction and required buildings be started as soon as possible so that the base can be made useable.

3. That shipbuilding contract between Swiftships, Inc., and GDRC be modified to provide a dinghy for each craft as suggested in para. ~~XI~~ subpara. 2, Article 6. Skiffs would provide means of transportation between the 20 m craft (which cannot be beached) and villages along the shore of Lake Tanganika. Skiffs will be carried in davits by the Swifts.

4. That complete aluminum welding set with necessary auxiliary tools be procured to perform aluminum repair work on new 20 m Swifts. No aluminum welding capability at CFL yard. This recommendation will not be necessary if Swiftships, Inc., in accordance with terms of contract, transfers to GDRC the welding equipment used in assembling the vessels at Kalemie.

5. That training and visual aids and necessary seamanship, piloting and engine maintenance textbooks be procured.

6. That the 4 PT patrol craft located at the CRLG base, Kalemie, be surveyed out since they are beyond economical repair. Other vessels should not be considered for overhaul at this time.

7. That buildings be provided at Kalemie base for storage and control of spare parts and tools, equipment maintenance, administrative offices, the Combined Operations Center and other requirements.

8. That hand tool sets be procured and a small machine shop equipped with the necessary hand, machine and power tools be constructed for the Kalemie CRLG base.

9. That life saving equipment, i.e., life rings, jackets, buoys, line and mooring wire, and cleaning gear, be procured.

10. That 20 m ANC logistics supply vessel, named Hermes, now located at Kalemie CRLG base be returned to the ANC control.

ANNEX 1

OFFICE CONCOLAIS DES CHEMINS DE FER
DES GRANDS LACS

LABOUR		
Expatriates	1 hour	Z. 4,00.00
Managerial Staff	1 hour	Z. 0,60.00
Craftsman	1 hour	Z. 0,25.00
Worker	1 hour	Z. 0,09.00
Small lathe utilization	1 hour	Z. 0,40,20
Large lathe utilization	1 hour	Z. 0,80,40
Vertical lathe utilization	1 hour	Z. 1,20.60
WORKS AS PER CONTRACT PRICES		
Rectification of valve grinder and seat, per unit		Z. 0,90.00
Cylinder rebore	per unit	Z. 2,79.20
Crank pin rectification	per unit	Z. 2,50.00
Bore big-end bearing	per unit	Z. 0,90.00
Injector rectification	per unit	Z. 1,29.60
Injection-pump reparation	per unit	Z. 1,86,80
Adjusting Injection-pump only		Z. 0,93.30
Battery charger (without supplying acid)		Z. 0,70.00
LUBRICANT		
Gas Super	per litre	Z. 0,07.00
Casoil	per litre	Z. 0,03.25
S.A.E. 40 Oil	per litre	Z. 0,18.00

(Net Price C.F.L.-free of transport

MARINE RAILWAY

Hauling up and hauling down	Z. 30,00.00
Per day	Z. 8,00.00

Increased invoice of 30% for admini: n fees.