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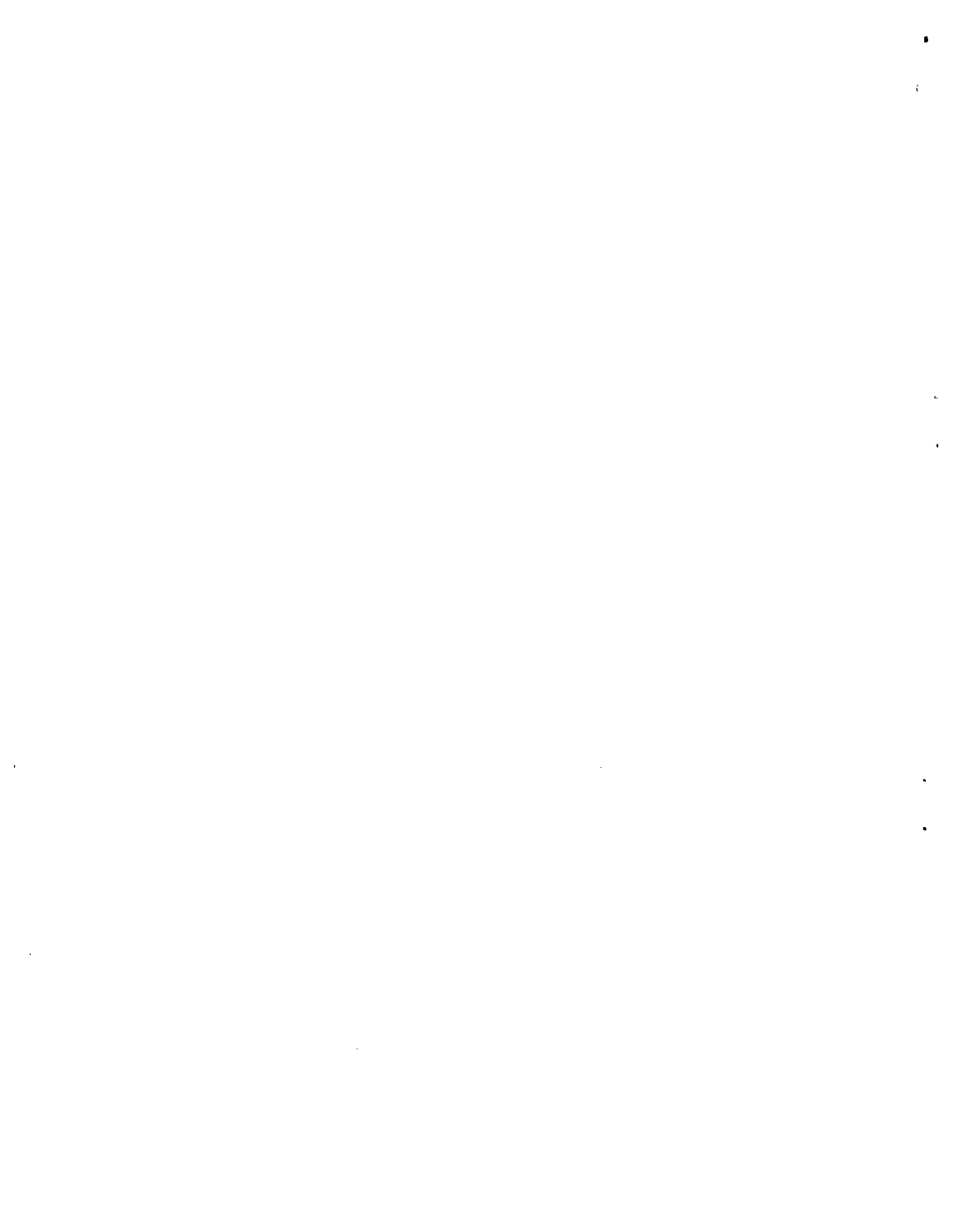
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GUIDELINES FOR THE EVALUATION OF TRANSSHIPMENT OPPORTUNITIES:
THE CASE OF ST. LUCIA



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PREFACE

The Government of St. Lucia made a request (see: Annex I) to the Subregional Headquarters for the Caribbean of the United Nations Economic Commission for Latin America (ECLA) at Port of Spain, Trinidad and Tobago, for a maritime transport specialist to visit the ports of Castries and Vieux Fort in order to make a preliminary evaluation of existing infrastructures in the light of Government plans and studies, and subsequently to offer suggestions on how they might carry out their mandates in trade promotion and transshipment. During the gathering of information for this document, which took place at Castries and Vieux Fort, St. Lucia, 25-26 July 1983, and at Miami, Florida, 27 July 1983, the following organizations and persons made important contributions:

Port Council of St. Lucia - George Girard.

Port of St. Lucia - Lednald Monplaisir, Robin Seals and Simon Hippolyte.

Port of Vieux Fort - Oliviere Cadet.

Regional Co-operation in the Development of Shipping (UNSHIPRO)
- Jose Zuloaga and Enrique Molina-Vallejo.

Concorde-Nopal Line - Roland Malins-Smith.

Tropical Shipping Company - Jean Purol.

I. Introduction

(a) General characteristics of the port of Castries

The port of Castries is a natural harbour located in the northern part of St. Lucia on the leeward coast or side of the island sheltered from the wind. The entrance channel is 400 feet wide and has a minimum water depth of 21 feet. The tidal range is one and one-half feet. The port consists of sixteen acres and has six berths of approximately 450 to 720 feet in length with 18 to 25 feet of water alongside. It should be highlighted that berths two to six usually have 27 to 35 feet of water depth. The reason for the reduction in water depth at those berths is the lack of maintenance dredging to remove accumulated sedimentation, the last of which took place two and one-half years ago. The bucket dredge employed by the Port Authority is currently inoperative and lacks hopper barges to facilitate removal of dredged material.

The covered storage capacity is 100 000 square feet and is divided into three warehouses; the first serves berths one, two and three, a second serves berths four and five, and the last berth six. It should be noted that berth six is utilized by car carriers to discharge automobiles, as St. Lucia is a regional distribution centre for certain Japanese manufacturers, and banana vessels to load their cargo. As a result of the latter activity, the warehouse adjacent to that berth is devoted almost exclusively to the storage of newly cut bananas for export.

While container storage capacity is estimated to be 3 500 twenty-foot equivalent units (TEUs) ^{1/}, it is necessary to understand that the number of containers stored depends upon space available, whether block or row storage is utilized, and the container handling/stacking equipment. In this sense, the port of Castries has evolved container handling procedures based upon three pieces of equipment; that is, a mobile crane with a capacity of 140 tons, chassis and one 20 ton forklift truck without a spreader. Basically, containers which do not have forklift pockets or exceed 20 tons gross weight are unloaded directly from vessels by either the ship's own

^{1/} The acronym TEU or twenty-foot equivalent unit refers to a Series I International Organization for Standardization (ISO) container of 6 000mm length, 2 438mm width and 2 438mm or 2 591mm height (20 feet x 8 feet x 8 feet or 8 feet 6 inches) and is commonly utilised as a base measure for, inter alia, vessel carrying capacity and port productivity.

gear or the mobile crane onto waiting chassis for movement to the storage area. While 3 500 TEUs with forklift pockets and weighing less than 20 tons might be stacked two high in that area, the estimate would have to be reduced where each container must be placed on a chassis.

The importance of adequate space and facilities, i.e., refrigeration outlets, fork-lift trucks, cranes, etc., to handle and store containers as well as to provide services for cargoes carried cannot be overstated. With reference to the space needed for container storage, it is interesting to note that Sea Land Services, Inc., recently changed its Pacific Northwest container terminal from Seattle to Tacoma, Washington, United States of America (USA), due to the latter port having adequate land for terminal development and for future expansion 2/. Similarly, in the Caribbean the Port of Bustamante, Jamaica, has dedicated 45 acres to container handling/storage operations and has plans for expansion 3/, while at Port of Spain, Trinidad and Tobago, it has been found that the container storage area --which can hold up to 4 492 TEUs-- is insufficient due to that country's trade flow imbalance and, hence, large number of empty units awaiting return cargoes 4/.

In common with many city ports of the Caribbean such as Santo Domingo, Dominican Republic, Port of Prince, Haiti, and Port of Spain, Trinidad and Tobago, Castries has topographical and urban restrictions for expansion. Not only is the port surrounded by mountains but also a city of approximately 30 000 inhabitants, which is nearly 25 percent of the population of St. Lucia. As was noted in a study entitled Development of the free port industrial zone, "...the port of Castries cannot achieve its full potential without additional land for port related activities..." 5/. Based upon these restrictions the opportunities for growth at the port of Castries are limited and must, therefore, be carefully evaluated to ensure a maximum benefit for the national economy as a whole.

2/ Fairplay International Shipping Weekly, 23 June 1983, p. 18; 19 August 1982, p. 11; and 8 July 1982, p. 14.

3/ National Magazine Company, Containerisation International Yearbook 1982, p. 137.

4/ Cargo Systems, August 1982, pp. 27, 29.

5/ U.N. Consultant Team, Cul-de-Sac Valley, Development of the Free Port Industrial Zone, 1 December 1978, p. 1.

(b) General characteristics of the port of Vieux Fort

The port of Vieux Fort is on the leeward coast at the southern extremity of St. Lucia. The port is located in a "U" shaped bay and is separated from the windward side of the island by a narrow neck of land with low hills which do not impede the wind. However, as the prevailing winds at Vieux Fort are offshore or come from the island, they do not create any major problems for vessels approaching the pier. The port itself consists of a single pier 1 000 feet long, of which 535 feet are used by deep-sea merchant vessels. The section of the pier utilized by such vessels is 54 feet wide, is partially covered with a roof to protect cargoes such as banana boxes from rain during loading operations and has a minimum water depth of 28 feet. It should be noted that a single "finger" pier of this nature does not present a wide enough apron for the placement of cranes and other cargo handling equipment such as the berths at Castries. Further, even if mobile cranage were available, it would require removal of the roof to permit placement on the deep-sea vessel section of the pier. Due to the width of the pier, traffic for most cargo-carrying vehicles is one way and time consuming. As a result, cargo-grouping operations are largely carried out at the shoreside warehouse. For example, in response to this situation the movement of bananas from shoreside to Geest vessels is accomplished manually; that is, the women of Vieux Fort are employed to carry the boxes from storage to the ship's cranes and the men of that village store banana boxes in the refrigerated cargo holds.

While the village of Vieux Fort is approximately 3 kilometres from the port, thereby eliminating urban limitations such as those experienced by Castries, there are, nonetheless, topographic restrictions which severely limit the space available for expanding port services. Vieux Fort Bay is surrounded by steep hills which restrict the amount of level ground which might be used for the storage of containers and general cargo. It is estimated that the distance between the beach and hills is not more than 300 metres and largely occupied by a diesel-electric power generation plant, a small warehouse with a low ceiling which limits cargo storage and handling operations, a port maintenance building, an access road and an inoperative flour mill. It would appear, therefore, that for Vieux Fort to be utilized as a transshipment centre for containers, large investments would be required to alter the existing topography and develop new physical port infrastructures.

(c) St. Lucian trade flows

As can be seen from the table number 1, St. Lucia's commercial exchanges are principally with the countries of Europe, North America and the Caribbean --in order of declining trade volumes. The most vigorous export trade is largely composed of bananas to the U.K. However, banana exports declined 26.1 percent in 1980 due to a

prolonged drought during the latter part of the year, particularly in the south of the island, and inadequate supplies of inputs 6/. Other export trades of St. Lucia are minimal, except those within the Caribbean area. The intra-Caribbean trade for St. Lucia varied greatly between the three reporting periods, as can be seen in table number 2. For example, the volume of intra-Caribbean trade doubled in 1979 from the level reported in 1978 and then during 1980 decreased by 59.6 percent thereby eliminating all of the 1979 gain as well as 7 321 metric tons of the 1978 trade volume. It is instructive to note that this trade has had an important impact on the economy of St. Lucia. For example, during 1980 the intra-Caribbean trade of St. Lucia amounted to EC\$ 112.8 millions (US\$ 39.6 million) 7/ and generated 3 000 jobs, according to the Prime Minister of St. Lucia, Mr. John Compton 8/. The other principal import trades, with North America, the north coast of South America and the Far East, show signs of stability. However, the exports of St. Lucia to those markets are approximately one percent of the import volumes. Due to the unbalanced nature of St. Lucian commercial exchanges, it would appear important to evaluate domestic trade flows, as is explained in more depth in part II (a) and (b) of this document, to determine if a trade basis exists to attract transshipment cargoes to Castries and Vieux Fort, St. Lucia, prior to making investments in additional port infrastructures.

The total movement of containers, both import and export, for St. Lucia was 4 037 TEUs during the 1981/1982 reporting period. This number of containers was only 15 TEUs greater than the amount for the previous reporting period. As is common with most developing countries, the use of containers in St. Lucian trades is almost totally unbalanced. The number of containers utilised for the import of goods amounted to 2 019 during that reporting period and, according to the St. Lucia Port Authority, almost all departed empty. In response to such imbalances, container owners such as leasing companies and shipping lines require importers and other users to pay for repositioning costs incurred. One container leasing company charges lessees US\$ 25 to 625 9/, depending on the degree of imbalance

6/ Ministry of Finance, Planning and Statistics, St. Lucia, Economic Review 1982, March 1983, p. 17.

7/ CARICOM, Heads of State Magazine, 3 July 1983, p. 3.

8/ Express, 4 July 1983.

9/ CEPAL, An evaluation of the circumstances under which it would be feasible to establish container repair and maintenance enterprises (E/CEPAL/L.257), p. 11.

and distance to next use, to relocate empty containers. This empty container relocation cost usually results in an increase in the price of imports to pay for such "dead freight". To avoid such extra costs, every effort should be made to utilise arriving containers in St. Lucian export trades. In order to better understand the quantity of cargo that these import container movements represent, it can be reasonably assumed that each container carries an average of 12 tons of cargo. As a result, 2 019 TEUs would represent 24 228 tons of cargo or approximately 45.3 percent of the imported goods which might be containerised (see: table number 3). Thus, while the total number of containers utilised in St. Lucian trades is small, the percent of imported goods arriving in containers is significant.

Table 1
CARGO MOVEMENTS a/
FOR
ST.LUCIA b/

	1978	1979	1980
IMPORTS			
USA ATLANTIC COAST	22 785	21 666	28 358
USA-GULF COAST	8 235	10 836	4 654
CENTRAL AMERICA	3 804	5 270	54
CARIBBEAN AREA <u>c/</u>	45 836	77 932	56 690
N.COAST SO.AMERICA	20 556	16 043	16 474
E.COAST SO.AMERICA	49	70	1 101
FAR EAST-ASIA	826	14 490	7 631
OCEAN AND NES.	14	132	120
MEDIT.EUROPE			97
WEST COAST N.AMERICA		20	
N.EUROPE/SOCIALIST BLOCK		1 161	1 579
UK			6 378
W.COAST SO.AMERICA		88	
AFRICA		3	

TOTAL IMPORTS	102 105	147 711	123 136
EXPORTS			
CARIBBEAN AREA <u>c/</u>	1 657	21 537	15 944
CANADA ATLANTIC		1	238
USA-ATLANTIC COAST	32	540	267
USA GULF COAST		377	
N.COAST SO.AMERICA	2 765	2 375	1 633
E.COAST SO.AMERICA		2	
UK-EUROPE	45 795	81 698	60 406
NO.EUROPE		30	13
FAR EAST ASIA		36	
CENTRAL AMERICA			10
MEDIT.EUROPE			2
OCEAN AND NES.			10
AFRICA	17		

TOTAL EXPORTS	50 266	106 596	78 510

a/ All cargo movement figures in metric tons.

b/ Source: UNSHIPRO, Interim Cargo Movement Information System for Selected Caribbean States (UNCTAD/SHIP/506).

c/ The Caribbean area includes - Antigua, Bahamas, Barbados, Belize, Br. Virgin Islands, Cayman Island, Cuba, Dominica, Dominican Republic, Grenada, Gouadeloupe, Guyana, Haiti, Guyana, Haiti, Jamaica, Martinique, Monserrat, Netherlands, St. Kitts, Nevis, Anguilla, St. Lucia, St. Vicent, Suriname, Trinidad and Tobago, U.S. Virgin Islands, and Venezuela.

Table 2
 INTRA-CARIBBEAN TRADE a/
 OF
 ST. LUCIA b/

	1978	1979	1980
IMPORTS	45 836	77 932	24 228
EXPORTS	1 657	21 537	15 944

	47 493	99 496	40 172

Table 3
 CONTAINERIZABLE IMPORTS a/
 OF
 ST. LUCIA b/ FOR 1980

IMPORTS COUNTRIES	REFRIGER.	CARGOES GEN. CARGO	OTHER DRY
USA ATLANTIC	3 878	13 980	4 210
USA GULF		36	786
CENTRAL AMERICA		54	
CARIBBEAN AREA	4	5 928	102
N. COAST SO. AMERICA		15 963	208
E. COAST SO. AMERICA		701	
U.K.	575	3 057	312
N. EUROPE	209	1 227	102
MEDIT. EUROPE		94	3
FAR EAST/ASIA		324	1 654
OCEAN AND NES.	58	62	

	4 724	41 426	7 377
			53 527:12=4 460

a/ All cargo movements figures in metric tons.

b/ Source: UNSHIPRO, Interim Cargo Movement Information System for Selected Caribbean States (UNCTAD/SHIP/506).

II. General considerations for establishing transshipment centres

With the exception of certain vessels utilised as floating storage or transshipment centers, ships are generally considered in useful production only when moving goods toward their destinations. The productivity of a modern container ship in terms of tons-miles per annum is between five to eight times that of a conventional cargo liner, and the productivity of a crew member on a large container ship in terms of ton-miles per seaman is approximately ten times that of a person on a conventional liner vessel in 1965 10/. As the large amounts of capital required for container ships and other high-technology vessels mandate their intensive use to generate an adequate return on investment, the possibility of them calling at small ports for limited amounts of cargo is restricted. As a result, the tendency today is for these ships to call at fewer ports at each end of the voyage 11/ and to utilise equally capital-intensive cargo handling infrastructures to reduce port stay times to a minimum. Increasing importance, therefore, must be placed not only on the utilisation of transshipment and feeder transport services, but also on an evaluation of the factors which make such services viable from the point of view of developing countries. While there are many factors which should be taken into consideration when making a preliminary evaluation of the infrastructures at Castries and Vieux Fort for the transshipment of containers, some of the more important are (a) domestic cargo flows, (b) geographical location and (c) external factors.

(a) Domestic cargo flows

It should be understood from the outset that a port is not an entity that can be viewed in isolation. Its successful development depends on factors such as geography, the international economic situation, economic policies of major trade partners, the size and extent of its hinterland, the activities of other ports, the establishment of industries, agricultural production, the efficiency of its cargo handling facilities, sources of financing for

10/ Alexander, Sir Lindsay, The Challenges to British Shipping 1965-1990, the 13th Blackadder Lecture 1979, published by the North-East Coast Institution of Engineers and Shipbuilders, Newcastle-upon-Tyne.

11/ CEPAL, Survey of Hawaiian inter-island maritime transport systems in the light of their significance for Caribbean inter-island transport (E/CEPAL/1085), p. 2.

improvements and political factors, particularly the politics of investment.

(i) Sources of demand for transshipment services. A number of Caribbean and Latin American countries have established or have made plans to establish transshipment facilities. The demand each seeks to satisfy arises from one or a combination of different sources. For example, certain transshipment centres were established in response to congestion at other ports, the lack of facilities for large vessels and their cargoes at neighboring ports, the lack of ports in the case of land-locked countries, the need of extra-regional manufacturers to establish local distribution centres and the reduced volumes of cargoes destined for other ports. As each of these and other sources of demand for transshipment services gives rise to investment proposals for additional port infrastructures, it should be understood that the domestic cargo flows of a port play a pivotal role in determining the long-term viability of a transshipment center and, hence, justification for such investment proposals.

It is important to note that two shipping lines, Concorde-Nopal and Tropical Shipping Company, have demonstrated an interest in the use of Castries as a transshipment centre. While these shipping lines are considering the use of that port for transshipment purposes, each seeks to satisfy different needs. Concorde-Nopal Line (CNL), on the one hand, seeks to avoid congestion and waterfront labour problems at Port of Spain, Trinidad and Tobago, through the transshipment of containers bound for that country at Castries or other appropriate Caribbean locations. Previously, CNL has utilised Boca Chica, Dominican Republic, for such operations and its vice president of marketing and planning, Mr. R. Malins-Smith, indicated that utilisation of Castries is not actively pursued but remains an option depending on the situation at Port of Spain. On the other hand, Tropical Shipping Company indicated that it is studying the use of Castries for the transshipment of containers coming to this region from the Middle East. These demonstrations of interest in the use of Castries as a container transshipment centre should be carefully evaluated to determine their characteristics, i.e., whether such lines are responding to short or long-term demand, estimated monthly flow of containers, foreseeable increases in the number of containers to be transshipped, other transshipment alternatives and ease with which they might be utilised, etc., and the availability of back-haul cargoes, so that shipping lines might avoid unremunerative ballast voyages.

(ii) Transshipment centres at Curacao, Jamaica and Puerto Rico. Of the Caribbean transshipment facilities which might provide insights into an evaluation of Castries and Vieux Fort as possible centres, the experiences of Curacao, Jamaica and Puerto Rico would seem relevant. The Curacao transshipment facility was established both for domestic cargo flows and in an effort to complement similar activities for

liquid-bulk cargoes moving between North, Central and South America. Since that time, free zones have accompanied the container transshipment facility in order to participate in the assembly and elaboration of products. It should be understood that a major part of the current demand for container transshipment services at Curacao arises for cargoes moving between Europe and North America and Venezuela. While Venezuela has plans for construction of container handling facilities at its ports, until they are completed Curacao should remain a focal point for the movement of its containerised goods. In response to the current world economic recession and the need to generate new sources of employment, Curacao is investing US\$ 48 million to enlarge its facility so that transshipment traffic can be attracted not only for the North Coast of South America but also for the countries of the Eastern Caribbean. This new facility is scheduled to be operational by the end of 1983 12/.

Both regional and extra-regional carriers, e.g., Sea Land Services, Inc., and the West Indies Shipping Corporation (WISCO), utilize Jamaica as a container transshipment centre for their cargoes bound for the Central American Isthmus. However, in comparison with the destination ports served by Curacao, the transshipment of containerised cargoes at Jamaica for Central America is not based on the lack of appropriate port facilities in those countries, as Central America has at least 17 ports with container handling/storage facilities, but rather on reduced cargo volumes those carriers have to that area. While the ratio of transshipped cargo to domestic cargo for Jamaica in 1976 was 1 to 3, by 1980 that ratio was completely reversed 13/. During 1981 the Port Authority of Jamaica recorded 95 000 container moves, of which 65 000 were transshipment traffic 14/. With reference to the relationship between domestic and transshipment cargo flows, Mr. N. Hylton, Chairman and Chief Executive, Port Authority of Jamaica, stated that "It is easier to attract transshipment cargo if the domestic cargo base is strong. When Jamaica's imports fell, due to the shortage of foreign exchange, it became more and more difficult to persuade the shipping lines to use the port for transshipment." 15/. In recognition of the need for

12/ Cargo Systems, October 1982, pp. 66, 67.

13/ Seatrade, January 1982, p. 105.

14/ Cargo Systems, August 1982, p. 25.

15/ Hylton, N., A container terminal and its role in a developing economy - transshipment and the concept of the 'free zone', Containerisation and the developing world, pp. 57-62, Containerisation International, London, 6-7 October 1980.

a strong domestic cargo base to attract shipping lines and, hence, transshipment cargoes to the port of Hampton Roads, Virginia, USA, the Virginia Port Authority is trying to encourage more small to medium sized local businesses to trade internationally 16/. It should be understood, therefore, that the ratio of transshipped to domestic cargo is a most important indicator of the long-term viability of a transshipment centre.

Finally, Puerto Rico accounts for approximately 50 percent of all seaborne cargo handled in the Caribbean 17/. To attract transshipment traffic, the facilities at San Juan and Ponce have been expanded and free trade zones opened. As Puerto Rico has a large domestic import and export movement of containers between its ports and those of Europe and North America, many shipping lines serving that country have made commercial decisions to utilize its ports for the transshipment of containers bound for other Caribbean countries which have lesser flows. For example, during 1981 it was estimated that San Juan had a throughput (import and export) of 416 200 containers -99 percent of which were 35 and 40 foot units 18/. If this number of containers is converted into TEUs, the port of San Juan would have handled over 800 000 units, which qualifies it as one of the world's leading container ports. Thus, the source of demand for transshipment services and the relation between domestic and transshipment cargo flows is most important and must be carefully evaluated to ensure that port investments needed to satisfy such demand can be fully justified in both the short and long-terms.

(b) Geographical location

(i) Proliferation of Caribbean transshipment centres. Based upon the advantageous geographical proximity of the Caribbean to important markets in North, Central and South America, and major trade routes utilizing the Panama Canal, an increasing number of countries of that subregion offer transshipment services for container, RO-RO and liquid-bulk cargoes. For example, during February 1983 the US Virgin Islands dedicated a US\$ 23 million container/RO-RO port which has 30 acres of storage space, 1 000 feet of dock, a computerised container location system and a 35 ton gantry crane, and seeks to become a major transshipment centre for the Caribbean and possibly Central and South America 19/. By the end of 1983 Aruba will complete a US\$ 30 million

16/ Containerisation International, August 1983, p. 65.

17/ Cargo Systems, August 1982, p. 11.

18/ Containerisation International Yearbook 1982, p. 139.

19/ Seatrade, March 1983, p. 13.

expansion of its port and seeks to offer transshipment services for incoming cargoes from Europe to other Caribbean islands and outbound cargoes from South America to the USA 20/. The Government of Panama is investing an estimated US\$ 48 million in its Atlantic coast ports of Cristobal and Coco Solo to develop the former as a major container transshipment centre for Caribbean and Central American countries, and the latter as a RO-RO and general cargo port 21/. Similarly, other countries of the Central American Isthmus have made plans to or are constructing pipelines, railroads and ports to offer transshipment and landbridge services between the Atlantic and Pacific Oceans 22/. It should be highlighted that competition for Caribbean transshipment traffic is not limited to countries of that subregion but also includes continental USA ports such as Miami, Florida, which opened up a new container terminal during 1982 for that specific purpose. As a result of the large number of transshipment centres in and around the Caribbean, it would appear important that a careful evaluation be made of the competition created by such centres to determine what part of the transshipment market is not served by them or might be more adequately served at a St. Lucian facility.

(ii) Relation between geographical location and domestic cargo flows. The Mexican landbridge between the ports of Salina Cruz on the Pacific Ocean and Coatzacoalcos in the Caribbean offers both transshipment and landbridge services, and would appear to present a working example of the relationship between geographical location, domestic cargo flows and the demand for transshipment services. This landbridge was originally established in 1905, but fell into disuse when the Panama Canal opened in 1914. As part of the National Industrial Development Plan of that country, it was decided to rehabilitate and modernize the landbridge in order to provide an alternative cross-continent route to the Panama Canal. Since this landbridge would reduce the sea distance between, for example, San Francisco and New York by 3 800 kilometres, with a corresponding savings of time and fuel, it was projected that 70 000 to 90 000 containers would be handled during the first year of operation 23/. Nonetheless, according to Servicio Multimodal Transismico, which operates the landbridge, as was reported in Containerisation International, June 1983, pages 67-69, during the first year since its

20/ Cargo Systems, October 1982, p. 66.

21/ International Construction, September 1982, p. 3.

22/ Seatrade, Latin American Shipping/IEMMI, 1983, pp. 92, 112, 129.

23/ Seatrade, Latin American Shipping/IEMMI, 1981, p. 65; and Cargo Systems, April 1981, p. 36.

inauguration on 1 April 1982, the landbridge has not be utilised.

While the lack of demand for landbridge/transshipment services in Mexico could be due in a large part to the current world economic recession, it is necessary to understand that there exists a relation between geographical location, domestic cargo flows and the demand for transshipment services. Of the many possible sources of demand for the Mexican landbridge, it was originally envisioned that during 1982 approximately 10 percent of the liner vessels trading between the Far East and Europe might unload their containers at Salina Cruz to be reembarbed on other vessels at Coatzacoalcos, with percentage increases to 25 in 1990 and 50 by the year 2000 24/, thereby avoiding the Panama Canal and reducing the overall transit time and distance. As the hinterland surrounding Salina Cruz generates only a limited amount of containerisable cargo, such vessels continue to utilise the Panama Canal or call at other ports for which they have larger cargo consignments and can, at the same time, provide transshipment/landbridge services if so desired.

In response to this situation, the national shipping line of Mexico, Transportación Marítima Mexicana S.A. (TMM), is considering the linking up of its Mexico/USA/Far East and Europe container services to utilise the Salina Cruz/Coatzacoalcos landbridge. This would involve the movement of containers from the USA ports of Oakland and Long Beach to Salina Cruz for rail transport across the Isthmus of Tehuantepec to Coatzacoalcos, and then loading on vessels which serve Europe 25/.

An appropriate geographical location is a fundamental prerequisite for the establishment of a container transshipment centre. However, once satisfied it merely becomes one factor taken into account by shipping lines when making a commercial decision whether to use a particular facility. In fact, it would appear that shipping lines evaluate the quantity of their cargo consignments to a port to determine whether that port will be used as a transshipment centre for other cargoes carried. Thus, a careful evaluation should be made to determine if Castries and Vieux Fort have appropriate geographical locations and whether there are sufficient domestic import and export cargo flows to justify the use of those locations as transshipment centres.

24/ Container News, October 1980, pp. 20, 21.

25/ Containerisation International, August 1983, p. 31.

(c) External factors

There are a number of factors outside the control of a port desiring to provide transshipment services which must be understood and evaluated prior to establishing a centre. These factors include the world economic situation, commercial decisions of shipping lines with reference to areas such as service frequency, ports of call and types of vessels dedicated to the service, i.e., whether they will have their own container handling equipment, port costs and dues of competing transshipment centres, trade and shipping documentation requirements, freight rates for direct shipments to out ports sought to be served as compared with those for transshipment, plans of the countries and ports sought to be served in areas such as industry, agriculture and energy --as growth in trade results in a shift from indirect to direct shipments, types and volumes of cargoes to be transhipped, frequency and quality of feeder transport systems between the transshipment centre and out ports, and many others.

(i) World economic situation. It should be understood that the world economic situation determines both the volume and direction of trade and, hence, the demand for transport and transshipment services. This is most readily seen by the changes which have occurred to the demand for petroleum products in the USA and its effect on the demand for transshipment services in the Caribbean. As will be recalled, during October 1973 the Organization of Petroleum Exporting Countries (OPEC) decided to raise the price of crude oil from US\$ 1.88 to US\$ 3.15 per barrel and on 1 December of the same year to US\$ 11.65 per barrel ^{26/}. Based upon these as well as subsequent increases in the price of crude oil, worldwide demand for petroleum began to stabilize and finally decrease. Prior to this period of rapid crude-oil price increases, the size of vessels was increasing. For example, as recently as 1965 there were practically no ships in the world which had a dead weight (dwt) of more than 100 000 tons. But as the demand escalated for liquid bulk cargoes and as economies of scale became apparent, vessel sizes began to increase, ultimately reaching slightly more than 500 000 dwt. Due to the lack of deep-water ports in the USA for vessels of this size, many Caribbean islands began to offer petroleum transshipment and refining services. Nonetheless, with the reduction in demand for petroleum in the USA the impact on Caribbean liquid-bulk transshipment centres was immediate. In fact, due to the current situation in the international market for petroleum, there is every indication that the Hess Oil Company is having serious reservations about proceeding with the construction of a refinery to

^{26/} Mullen, J.W., World oil prices: Prospects and implications for energy policy-makers in Latin America's oil-deficit countries, Cuadernos de la CEPAL, 1978, pp. 15-16.

complement the oil storage and transfer facility at Cul-de-Sac Valley, St. Lucia 27/.

The worldwide decline in demand for petroleum products is not an isolated case. It should be understood that during 1982 total seaborne trade declined by 8.4 percent as compared to a 4 percent reduction in 1981 28/. The continued decline of seaborne trade in 1982 was due largely to a reduction in world economic growth and to related factors such as the widespread use of import restrictions to overcome balance-of-payments difficulties 29/. As a result of the decline in seaborne trade, many vessels have been laid-up, i.e., placed at a safe berth or anchorage with a small maintenance crew until better trading conditions return. For example, during June 1981 17 305 000 dwt of both dry and liquid-cargo vessels were placed in lay-up and by May 1983 it had increased to 100 484 000 dwt 30/. It is instructive to note that with the decline in seaborne trade there has been a concomitant decline in the demand for transshipment services. For example, during 1982 the leading French port of Le Havre experienced a reduction of 76 227 TEUs or 12.4 percent, as compared with a total of 612 258 TEUs in 1981, which is attributed to the decline in transshipment traffic to and from the United Kingdom 31/.

(ii) Commercial decisions of shipping lines. While such decisions of shipping lines appear beyond the control of port authorities, such is not entirely true. Most ocean carriers incur costs not only for the line haul but also for carriage operations to final destinations. Where such operations involve an additional sea leg, port costs for unloading line-haul vessels at transshipment ports, subsequent reloading on feeder vessels for transport to out ports and the port costs at the final destination assume such proportions as to become the key to profitability for shipping lines. For example, Nedlloyd Lines (Antilles) N.V., has temporarily suspended its Caribbean services from the Atlantic and Gulf Coasts of the USA to Antigua, Aruba, Barbados, Curacao, Guyana, Suriname and Trinidad due to the high level of costs and low level of freight rates 32/.

27/ Ministry of Finance, Planning and Statistics, St. Lucia, Economic Review 1982, March 1983, p. 11.

28/ UNCTAD, Review of Maritime Transport, 1982 (TD/B/C.4/258), p. 1.

29/ OECD, Economic Outlook, No. 32, December 1982.

30/ Seatrade, July 1983, Market Review.

31/ Containerisation International, July 1983, p. 48.

32/ Via Port of New York-New Jersey, July 1983, p. 4.

Due to the high cost of loading and unloading vessels, the freight rates for goods moving to and from the Caribbean as well as within that area must be studied to determine if there are any situations in which a transshipment operation would result in a lower overall cost or provide a more rapid or higher quality service. While such situations might be thought not to exist, it should be noted that a direct shipment of 200 tons of coffee from Indonesia to the USA during April 1982 cost shippers US\$ 182 per ton instead of US\$ 150 per ton if it had been shipped to the USA with transshipment in Singapore 33/. As a result of the cumulative nature of costs when a transshipment operation is required, any port desiring to offer such services must ensure that its costs are as low as possible and its efficiency, in terms of both labour and infrastructure, is as high as possible. In this sense it is instructive to note that Antwerp, Belgium, a key transshipment port for continental Europe, had a container throughput in 1982 of 846 029 TEUs, an increase of 6.5 percent over 1981 34/, despite fierce competition from other similarly located ports. This increase is largely due to harmonious relations between its terminal operators and waterfront unions, and high labour productivity; that is, with regard to the latter, 2.8 tons are loaded at Antwerp per man hour compared with 2.4 at Rotterdam and 1.8 at Bremen and Hamburg 35/.

Assuming a port has low cargo handling costs, an efficient workforce and infrastructure, an adequate geographical location in relation to liner services and trade flows, sufficient domestic import and export cargoes upon which the establishment of a transshipment operation might be based and unutilised land to accommodate increases in demand, a analysis might be undertaken to determine possible users, i.e., shipping lines, shippers, consignees, feeder transport companies and out ports, of the transshipment centre and how, by using such centre, their operating costs would either be maintained or reduced and efficiency of services increased. Other areas which should be evaluated are freight rates for direct shipments to the out ports sought to be served as compared with those for transshipment, plans of the countries and out ports to be served, types and volumes of cargoes to be transshipped, and frequency and quality of feeder transport systems between the transshipment centre and out ports.

33/ Seatrade, June 1982, p. 4.

34/ Containerisation International, August 1983, p. 21.

35/ Seatrade, February 1983, p. 91.

(iii) Role of feeder transport systems. The offer of transshipment services might seem to be unrelated to feeder transport systems but such is not the case. In order to ensure adequate feeder transport services between the Port of Bustamante, Jamaica, and the out ports served, that country participates as a part owner in both Naviera Multinacional del Caribe (NAMUCAR) and WISCO, the two subregional-multinational carriers. Further, the Kingston Terminal Operators, the company which manages the Jamaica transshipment centre, have given serious consideration to the establishment of feeder services to the out ports not served by those lines. As was stated by Mr. N. Hylton, Chairman and Chief Executive, Port Authority of Jamaica, "...a developing country, with its limited resources, has to promote or participate in feeder services to ensure the success of its investment in transshipment facilities." 36/. While port authorities which seek to attract transshipment cargoes must be concerned with the availability of feeder transport services, so also must be shipping lines. For example, Evergreen Line of Taiwan is scheduled to commence an around the world container service 5 April 1984. Its immediate plans call for the establishment of a Caribbean/Central American feeder transport service with, possibly, Cristobal, Panama, as a transshipment centre 37/.

(iv) Distribution of the benefits from transshipment operations. Generally, it is assumed that the utilisation of transshipment centres can benefit all parties involved in such operations, i.e., exporters, importers, principal as well as out ports, shipping lines, feeder transport companies and consumers. In this sense it is instructive to note that the Melton Shipping Group of the U.K. has demonstrated that small vessels of about 2 000 dwt can compete effectively in a service between Europe and North America, notwithstanding prevailing very low freight rates in that trade. This service has been found not only economic but also to have the flexibility to provide direct services to ports with limited cargo flows. Furthermore, the North British Maritime Group is to commence a trans-Atlantic service with two mini-bulkers in the 2 000-3 000 dwt range 38/. With a futuristic viewpoint, the vice president of transport for AB Volvo, Mr. R. Sevansson, believes that the use of small vessels to provide more frequent and reliably timed deliveries can be justified by the

36/ Hylton, N., A container terminal and its role in a developing economy - transshipment and the concept of the 'free zone', Containerisation and the developing world, pp. 57-62, Containerisation International, London, U.K., 6-7 October 1980.

37/ Containerisation International, March 1983, pp. 65, 67;

38/ Fairplay International Shipping Weekly, 4 August 1983, p. 18.

saving achieved through reductions in the amounts of capital tied up in inventories, and that efforts to reduce the total flow of goods through materials administration techniques will result in revolutionary changes to transport systems 39/.

The use of small vessels is not limited to trades between developing countries, as the national shipping line of Paraguay employs similar vessels in its trade with European countries and has found them suited for this purpose and economic to operate. In fact, a principal reason for dedicating small vessels to the Paraguay/Europe trade was to avoid the costs of a transshipment operation, i.e., crantage, shore labour, dock fees, etc., at Buenos Aires, Argentina. As a result, it would appear advisable that a study be prepared which goes beyond the feasibility of establishing a transshipment centre at a specific location and seeks to determine the benefits, if any, which might be obtained from the transshipment of goods, the distribution of those benefits among the various parties to such an operation and the alternatives to transshipment.

39/ Containerisation International, June 1983, pp. 37-39.

III. Marine industries related to container transshipment

The favourable geographical position of countries that border on the Caribbean, with easy access to major markets of North, Central and South America, provides those countries with natural locations for many marine industries. While there are numerous marine industries which are related to the transshipment of containers, some of the more important might be (a) offshore banking and ship management services, (b) mobile vessel repair services, (c) establishment of a multinational dredging company, and (d) transshipment of dry-bulk commodities 40/.

(a) Offshore banking and ship management services

For any country considering the establishment of a transshipment centre, it would seem appropriate that the original evaluation also determine if the functions related to the administration and operation of such a centre could be expanded to include various offshore banking and ship management services. Offshore banking and finance is a little known area, and the benefits derived from such activities have generally been assumed to be relatively minor. However, a recent study prepared by the Stanford Research Institute has been much more positive in its assessment of the benefits to be obtained. This study estimates the revenue earned by the Netherlands Antilles in 1981 was US\$ 75 million which was double that of 1979 and amounted to 20 percent of all tax revenue. Since the tax rate on profits is approximately 3 percent, it was estimated that US\$ 35 billion in loans were made that year. Further, there are an estimated 5 000 jobs involved in offshore banking and finance, which is more than two refineries provide 41/. Other Caribbean countries such as the Cayman Islands 42/ and Panama 43/ offer these as well as other offshore services. It should be recognised that banks provide an important focal point of services to marine industries and that with adequate

40/ The ideas concerning mobile vessel repair services and transshipment of dry-bulk commodities were originally presented in the ECLA document entitled Marine project ideas for the Haitian port of Miragoane (E/CEPAL/R.333), pp. 12, 13.

41/ The Economist Intelligence Unit, Quarterly Economic Review of Venezuela, Netherlands Antilles, Suriname, No.1, 1983, p. 25.

42/ Seatrade, June 1981, p. 111.

43/ Seatrade, Latin American Shipping/IEMMI, 1983, p. 131.

tax incentives, a network of telephone and telex communications, airline services and an enjoyable work and social environment, many might consider locating in St. Lucia. Likewise, ship management companies depend on the same infrastructural services and, as they have been established in land-locked countries such as Switzerland 44/, might also give consideration to St. Lucia as an operational site. Historically, the nucleus of shipowners, managers and banks relied to a great degree on physical proximity for operational efficiency and for that reason London has been a maritime centre for at least four hundred years 45/. However, with the advent of satellite communications the possibility of locating companies such as these in countries with more favourable financial and natural climates has become a reality.

(b) Mobile vessel repair services

The opportunity to offer mobile repair services to the vessels of shipping lines which call at ports of this region stems from a number of factors such as dramatic reduction in vessel crew sizes, i.e., from over 40 crew members as late as 1970 to 18 and even less today 46/, and the length of time vessels spend in ports, i.e., from 5 days to discharge cargo to less than one day, as well as the increasing period of up to 3 years and even more between vessel haul-outs due to improved bottom paints 47/ and in-water surveys by classification societies. The reduction in the number of crew members has changed the nature of the mariner's trade from operate, maintain and repair vessels to that of operation with only limited maintenance. Moreover, the limited port stays and extended periods of navigation for vessels have considerably reduced the opportunities for carrying out preventive maintenance procedures on, for example, one or more cylinders of the main engine at each port and to make important repairs at, what was once, an annual haul-out. As much of the ships' routine maintenance is being carried out by shoreside crews 48/, a

44/ Seatrade, February 1983, p. 52.

45/ Seatrade, March 1983, p. 163.

46/ Fairplay International Shipping Weekly, 3 March 1983, p. 7; and Seatrade, February 1982, p. 23.

47/ Shipping World and Shipbuilder, March 1983, pp. 141-145; and Fairplay International Shipping Weekly, 30 September 1982, pp. 22-30.

48/ Fairplay International Shipping Weekly, 16 June 1983, p. 17; and 8 April 1982, pp. 22, 24.

British shiprepairer has created a mobile workshop in a standard 20 foot I.S.O. container to provide the repair and maintenance services required of vessels while in port and during cargo loading and discharge operations 49/.

It might appear that a small country such as St. Lucia would lack the critical mass of skilled technicians and equipment to repair deep-sea merchant vessels. However, since St. Lucia utilizes diesel motors as prime movers for the generation of all of its electricity, such is not the case. For example, at the port of Vieux Fort there is a diesel-electric plant for the needs of the nearby village which is operated, repaired and maintained by St. Lucians. It is in this sense, then, that the critical mass of skills and equipment utilized for the generation of electricity might be redirected toward the carrying out of similar functions aboard merchant vessels during cargo loading and discharge operations while at the ports of Castries and Vieux Fort. As the establishment of a mobile vessel repair service would seem to merit further study, discussions could be held with representatives of the major shipping lines --Bermuth, Concorde-Nopal Lines, Cunard, Marine Bulk Carriers, Nedlloyd, Pan Atlantic Lines, Saguenay Shipping Ltd., Samba, Tek, and Tropical Shipping Company, which serve Castries and Vieux Fort to determine their repair and maintenance needs and the possibility of having such needs fulfilled while at those ports.

(c) Establishment of a multinational dredging company

As was noted in part I of this document, due to the inoperable status of the bucket dredge and lack of hopper barges, the port of Castries has not had a maintenance dredging to remove accumulated sedimentation in two and one-half years. While most Caribbean countries require dredging services to maintain needed water depths for entrance channels and harbours, the majority of those countries lack a sufficient number of ports to provide continuous employment for a dredge and the funds for its acquisition. In response to this situation many Caribbean countries contract with extra-regional companies for dredging services. To avoid the outflow of foreign exchange that such contracting entails and, at the same time, create a basis which would provide a dredge continuous employment, the Port Authority of St. Lucia as well as other interested ports in the Caribbean might wish to jointly consider the advantages of forming a multinational enterprise for the purchase and operation of a dredge.

49/ Fairplay International Shipping Weekly, 11 March 1982, p. 39.

(d) Transshipment of dry-bulk commodities

Due to the proliferation of container and liquid-bulk transshipment centres in the Caribbean, it should be recognized that many of the countries of that subregion have certain locational advantages in relation to the trade flows of North, Central and South America as well as within the sub-region. Further, even though the Caribbean has such locational advantages, as yet, no major transshipment centre has been established for dry-bulk commodities. Since all Caribbean island nations have continuing import needs for dry-bulk commodities such as wheat and other cereals as well as fertilizers, it would appear opportune to evaluate the feasibility of establishing such a centre at either Castries or Vieux Fort. At that centre large dry-bulk vessels could discharge their cargoes into silos or other appropriate storage facilities, with transport to final destinations effected either in sacks as general cargo on break-bulk vessels or as bulk cargo on small dry-bulk vessels.

As there is a limited amount of space at both Castries and Vieux Fort for a shore-based transshipment centre for dry-bulk cargoes, the study should also evaluate the alternative of placing a floating terminal at one of those ports. While this might appear unusual, it should be noted that numerous ports such as New Orleans 50/, Buenos Aires and Rotterdam 51/ utilize floating grain terminals. Moreover, many surplus dry-bulk vessels could be modified for such service 52/ in periods of as little as six weeks. The advantages of floating dry-bulk terminals are that they can be on-site and operational in much less time than comparable shore-based facilities 53/, may be easily relocated in response to changes in trade patterns, utilise safe anchorages with adequate water depths for revenue producing activities, and rely less on shore-based services such as electrical power, housing and others of a social nature.

50/ Fairplay International Shipping Weekly, 2 December 1982, p. 20.

51/ Fairplay International Shipping Weekly, 16 September 1982, p. 13.

52/ Seatrade, May 1983, pp. 53, 55.

53/ Seatrade, May 1982, pp. 87, 89.

IV. Conclusions and recommendations

As indicated in the terms of reference for the preparation of this document, suggestions were to be made to assist the Port Authority of St. Lucia to evaluate the possibility of establishing transshipment centres at Castries and Vieux Fort. In compliance with these terms of reference study guidelines have been developed and examples given to assist the Port Authority with its mandate. Additionally, four project ideas which came to light during the gathering of information for this document are presented in part III, and might be given consideration by the Port Authority as areas for future investigation.

It is most important to understand that the critical mass of skills, equipment and infrastructure utilised at a transshipment centre require substantial investments, the training of personnel, genuine co-operation between the port authority, terminal operators and waterfront unions to ensure high productivity at a low cost, an appropriate geographical location in relation to liner services and trade flows, frequent feeder transport services which employ appropriate technologies, adequate domestic cargo flows and sufficient unutilised land to accommodate increases in demand. Since the reasons espoused by Concorde-Nopal Line and Tropical Shipping Company for utilising Castries, St. Lucia, as a transshipment centre appear valid, a study is needed to evaluate the areas highlighted in part II of this document to ensure that a decision to offer such services will bring maximum benefits to the national economy as a whole, both in the short and long-terms.

It has been generally assumed that all parties in the distribution chain are benefited from the transshipment of goods. For example, overall transport costs are said to be reduced as main line vessels which utilise transshipment facilities are permitted to reduce the number of ports of call and the time spent at each for cargo loading and discharge operations. However, as was discussed in part II (a) (iv) of this document, there are very real situations in which such benefits are either minimal or do not exist. While a study to determine the feasibility of establishing a transshipment center in a specific location would indicate the benefits and cost to the organisation or country involved, such a study would normally not indicate the benefits and cost to other parties such as out ports, consignees, etc., which could assist subregional planning efforts. In order to determine the circumstances under which transshipment operations might reduce or maintain transport costs, provide a higher quality or more rapid service, as well as the distribution of benefits among the parties to such an operation and the alternatives to transshipment, it is believed that further study should be directed towards the resolution of these areas.

Annex 1

NOTE FOR FILE

Note concerning request for Larry Burkhalter to visit St. Lucia

In response to a telex from Marco Antonio Mastrobuono, who was in St. Lucia, I made a telephone call to Mr. George Girard. In brief, Mr. Girard indicated:

1. that a law was in the process of being published concerning establishment of an authority to manage airports;
2. it was contemplated to merge that authority with the existing Port Authority;
3. major concerns of St. Lucia were for trade promotion and transshipment.

Their immediate interests are:

1. to set up machinery to administer the new authority;
2. to implement the transshipment project;

Mr. Girard would like Mr. Burkhalter to visit for discussions and to get a first-hand impression of the situation and the thinking of the St. Lucian Government Officials and subsequently to offer suggestions on how they could go about their mandates in the areas of trade promotion and transshipment. Mr. Girard also wanted to find out what assistance ECLA could render in the present context.

Mr. Girard's telephone number: 22296 and 22561 Ext. 49.

Following discussions with Mr. Burkhalter I spoke with Mr. Brown.

Telexed authorisation for Mr. Burkhalter's visit arrived this morning.

Wilfred Whittingham
Deputy Director

21 July 1983
Port-of-Spain

