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**DEPARTMENT OF STATE**

**Washington, D.C.**

**REPORT OF TECHNICAL ASSISTANCE**

**RENDERED TO**

**LEBANON RECONSTRUCTION PROGRAM**

**BEIRUT PORT**

**January, 1977**



**FREDERIC R. HARRIS, INC.**  
**Consulting Engineers**  
**New York, New York**

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## LEBANON RECONSTRUCTION PROGRAM

### BEIRUT PORT

#### 1. INTRODUCTION

Under the provisions of Contract No. AID/otr-C-1298, Work Order No. 14, effective January 4, 1977, between the Agency for International Development, Washington, D.C. and Planning Research Corporation, Los Angeles, California, contractor, the contractor was to provide the professional services of a Senior Port Operations Specialist in connection with the Lebanon Reconstruction Program. This is the report of Mr. Ernest E. Ball, Senior Port Operations Specialist assigned to the project, and covers the period between January 7, 1977 and January 24, 1977 when the initial evaluation phase of the program was completed.

#### 1.1 OBJECTIVE

The objective of the project assignment was to assess urgent rehabilitation requirements of the Port of Beirut as necessitated by damage to the port resulting from the recent hostilities.

#### 2. SCOPE OF WORK

The Port Operations Specialist participated as a member of the AID Assessment Team in Lebanon during the second week of January 1977 with specific responsibility for surveying the damage to the Port of Beirut and reviewing with port officials the initial estimation of equipment and warehouse requirements for 1977 re-activation of the port, and of initial emergency equipment requirements. With this information, the specialist participated during the following week in Washington, D.C. in the preparation of the Final Report by the AID Assessment Team of the Lebanon Relief Rehabilitation and Construction Assessment. Additional work performed in connection with this project will be covered by subsequent reports.

#### 3. FINDINGS, EVALUATION AND RECOMMENDATIONS

The report of the Port Specialist was incorporated in the Final Report of the Team, as assembled by the Team Leader and was classified for Limited Official Use. A copy of the report is available to appropriate officials at the following location:

Agency for International Development  
Office of Middle East Affairs  
Near East Bureau, Room 5316  
Mr. Blaine C. Richardson, Deputy Director  
(Team Leader, AID Assessment Team for Lebanon)

Preliminary equipment lists, together with estimated costs, are contained in Appendix Items 1 and 2. A copy of the report of the joint U.S.-Lebanese Subcommittee for Ports is contained in Appendix Item 3.

4. PROCEDURES

4.1 Summary of Activity

The Port Specialist arrived in Washington on Friday morning, January 4, 1977, for briefing sessions with AID and IBRD. The team departed for Beirut that evening, arriving in Lebanon on Sunday evening, January 9. The team was taken to the residence of Lebanon's Prime Minister, Dr. Hoss, for a briefing on the Lebanese Government's preliminary plans for reconstruction. Commencing Monday, January 10, the team met daily in subcommittee meetings with Lebanese counterparts for the purpose of gathering information and for the preparation of subcommittee reports to the joint U.S.-Lebanese Committee chaired by Dr. Salah Salman, Minister of Housing and Cooperatives. The Lebanese composition of the committee is shown on Table 4.1. The Subcommittee for Ports met Tuesday at the port after a tour of the devastated areas and did not meet on Wednesday in order that port officials could prepare a list of requirements and responses to port questionnaire while the Port Specialist prepared a draft of the Subcommittee Report (Appendix Item 3). A second Subcommittee meeting was held in the port on Thursday, at which time were held interviews with other individuals concerned with the port. A final Committee meeting was held on Friday, January 14, at which the Subcommittee Report was presented by the Port Specialist. Work then commenced on the preparation of the port segment of the AID Assessment Team's preliminary report. On Saturday, the Team went to the Presidential residence for a meeting with President Sarkis, and departed Lebanon on Sunday, January 16.

Preparation of the Final Report took place in Washington, D.C. between January 18 and January 24. The Port Specialist completed work on the initial evaluation phase after a meeting with IBRD Monday afternoon, January 24, 1977.

TABLE 4.1

JOINT U.S.-LEBANON COMMITTEE

REVISED LEBANESE DELEGATION

AS OF JANUARY 12

CHAired BY

Dr. Salah Salman, Minister of Housing and Cooperatives  
Mr. Michel Doumit, Minister of Planning  
Dr. Ibrahim Cheaito, Minister of Water Resources and Electricity

SECRETARY GENERAL

Mr. Issam Haidar, Director of Economic Affairs, Foreign Ministry

SUBCOMMITTEE FOR THE PORT

Mr. Assem Salaam, Vice President of the Commission for  
Enlarging the Port  
Mr. Philippe Tawili, Director of the Port  
Mr. Selim Hatem, Maritime Engineer  
Mr. Joseph Khazen, Chief of the Technical Division of the Port  
Mr. Antoine Bechara, Chief Comptroller of the Port Company

SUBCOMMITTEE FOR HOUSING

Mr. Fouad Zebiane, Director General of Housing  
Mr. Raja Iliya, Professor of Civil Engineering (AUB)  
Mr. Marwan Mohsen, Chief of Service of Directorate General of  
Housing  
Mr. Georges Zoghbi, Chief of the Technical Cooperation Department,  
Ministry of Planning  
Mr. Edward Wardini, Department of Planning, Ministry of Planning

SUBCOMMITTEE FOR RELIEF AID

Mr. Mehdi Sadek, Director General, Office of Social Development  
Mr. Hesham Al-Hajj, Acting President of the Executive Committee  
of the Green Plan  
Mr. Michel Jorr, Chief of the Social Development Service of the  
Office of Social Development  
Mr. Camille Kobeh, Director General of Cooperatives  
Mr. Robert Saade, Director General, Ministry of Health  
Mr. Mohmoud Hallab, Chief of Sanitary Engineering, Ministry of  
Health  
Mr. Abdallah Baltajy, Head of Project Planning Department, Ministry  
of Health

4.2 Make-up of the Team

The AID Assessment Team for Leganon consisted of the following persons:

Mr. Blaine C. Richardson, Team Leader  
Mr. Christian Holmes, Disaster Relief Specialist  
Mr. Ernest E. Ball, Port Operations and Equipment Specialist  
Mr. Charles Dean, Housing Specialist  
Mr. James Stephenson, Engineering Specialist for Infrastructure.

4.3 Individuals Contacted for Port Information

A complete list of Lebanese Government and private sector port and shipping officials contacted during the survey is shown in Appendix Item 4.

5. SERVICES PROVIDED BY THE PORT SPECIALIST

5.1 Services in Connection with the Survey and Report

- On-Site Review of Conditions
- Preparation of Port Questionnaire
- Personal Interviews with Port Officials and Users
- Collection of Data (List of Data obtained is in Appendix Item 5)
- Preparation of Report of the Joint Subcommittee for the Port
- Presentation of the Findings of the Subcommittee to the Joint U.S.-Lebanese Committee
- Preparation of Preliminary Report of Conditions, Findings and Recommendations
- Assembled, Reviewed and Prepared Preliminary Cost of Estimated 1977 Equipment and Warehouse Needs to Reactivate the Port
- Also Reviewed and Prepared Preliminary Cost of Initial Emergency Start-up Requirements for the Port
- Prepared Preliminary Estimate of 1977 Port Capacity together with Preliminary Analysis Potential 1977 Volume
- Participated in preparation of Final Report

- Participated in Two Briefings of AID officials and Two Meetings with IBRD
- Participated in Press Conference in Beirut

## 5.2 Services to the Port

- Reviewed Port Questionnaire
- Provided Suggested Port Equipment Requirements Lists:
  - Frederic R. Harris, Inc. Suggested Standard List of Cargo Handling Equipment for a General Cargo Berth
  - DOD Suggested List of Cargo Handling Gear Required for Working a Five-Hatch Ship

(These lists are found in Appendix Item 6)

- Wrote Draft Report of the Subcommittee for the Port
- Conferred with Port Officials Concerning Organizational Structure, Tariff, and Port Regulation Procedures, and Redevelopment and Expansion Plans

## 5.3 Technical Publications and Engineering Services Provided

- At the request of Mr. George Lane, Charge d'Affaires, U.S. Embassy, Beirut, forwarded to his attention for Mr. Amin Bezri, Minister of Public Works, one copy of "Port Development" by Holden, published by Port Authority of New York and New Jersey.
- Reproduced six copies of Beirut Port Drawings, including Proposed Future Expansion.

APPENDIX

<u>ITEM NO.</u>	<u>DESCRIPTION</u>
1	List No. 1: Estimated 1977 Needs for Reactivation of Basins 3 and 4, Port of Beirut, Lebanon, January 1977
2	List No. 2: Estimated In-Place Cost, Emergency Requirements for Initial Reactivation, Port of Beirut, Lebanon, January 1977
3	Report of the Subcommittee for the Port of Beirut, January 14, 1977
4	List of Persons Consulted, Survey of Port of Beirut, Lebanon, January 9-16, 1977
5	List of Port Data Obtained, Port of Beirut, Lebanon, January 1977
6	Suggested Port Requirement Lists

APPENDIX ITEM NO. 1

LIST NO. 1: ESTIMATED 1977 NEEDS FOR REACTIVATION OF  
BASINS 3 AND 4, PORT OF BEIRUT, LEBANON, JANUARY 1977

List No. 1 Summary

Estimated In Place Cost  
in Foreign Exchange and Local Currency

<u>Group</u>	<u>US \$ Purchase Cost</u>	<u>Spares</u>	<u>Freight &amp; Packaging</u>	<u>Misc. Exp. &amp; Insurance</u>	<u>Lebanese set up cost</u>	<u>Total</u>
A	10,058,000	5% 503,000	20% 2,012,000	10% 1,006,000	2% 201,000	13,780,000
B	2,500,000	- -	20% 500,000	10% 250,000	80% 2,000,000	5,250,000
C	1,965,000	5% 98,000	20% 393,000	10% 196,000	30% 590,000	3,242,000
D	1,450,000	5% 73,000	20% 290,000	10% 145,000	2% 29,000	1,987,000
E	500,000	- -	20% 100,000	10% 50,000	60% 300,000	950,000
	16,473,000	674,000	3,295,000	1,647,000	3,120,000	25,209,000
	Estimated Foreign Exchange					\$22,089,000
	Estimated Local Currency					(Lt 9,360,000)
						<u>3,120,000</u>
	Total					\$25,209,000

List No. 1

Estimated 1977 Needs for Reactivation of Basins 3 and 4

Port of Beirut, Lebanon January 1977

(Based on Information prepared by Beirut Port Organization)

<u>Item</u>	<u>Quantity</u>	<u>Estimated US\$ Purchase Cost</u>
A) <u>Mobile Equipment</u>		
<u>For General Cargo</u>		
Truck Cranes, 30/35 ton	4	960,000
Mobile Cranes, 15 ton	12	440,000
Forklifts, Diesel 10 ton	7	168,000
Forklifts, Diesel 5 ton	15	390,000
Forklifts, Diesel 2.5-3 ton	140	2,520,000
Yard Tractors (fifth wheel) 20 ton	30	1,080,000
Yard Trailers (fifth wheel) 20 ton	20	240,000
Cargo Pallets 1 and 2 ton	120,000	2,400,000
<u>For Container Handling</u>		
Truck Crane, 125 ton	1	420,000
Forklift, with spreader 30-35 ton	2	200,000
Straddle Carrier, 30-35 ton	2	400,000
Fifth Wheel Tractor (Hustler) 30-35	5	180,000
Container Trailers (yard) 30-35 ton	7	84,000
<u>General Uses</u>		
Front End Loader (Cat 950)	2	120,000
Fire Engine	1	60,000
Garbage Trucks (compactors)	4	120,000
Dump Trucks, 10 ton	17	255,000
Utility Trucks (Pickup)	16 <sup>a</sup>	96,000
Maintenance Truck	1	15,000
Land Rover Type Truck	1 <sup>a</sup>	10,000
	<b>Total</b>	<b>10,058,000</b>

<sup>a</sup>For Harbor Master, 1 each

(List No. 1 continued)

<u>Item</u>	<u>Quantity</u>	<u>Estimated US\$ Purchase Cost</u>
<b>B) <u>Buildings</u></b>		
Prefab Sheds (For Transit Sheds & Warehouses)	20	\$2,500,000
Dimensions said to be 40 meter span six meter head room, with 110-130 meters length. To be equipped with internal and external lighting, doors and windows. Conditions dictate ground level operation due to existing situation		
	<b>Total</b>	<b>\$2,500,000</b>
<b>C) <u>Miscellaneous Equipment</u></b>		
First Aid and Firefighting equipment for Warehouses (with Spares)	20	500,000
Tarpaulins and P/E Sheeting	2	100,000
Workshop Equipment (for Mobile Equipment, Metal work and wood working)	(Various)	400,000
Renew Lighting and Fendering in the Port (300 Finders, plus Lighting to be determined)		460,000
Conveyor belts, Mobile (for passenger baggage)	4	80,000
Concrete Mixer, ½CM	1	15,000
Air Compressors, mobile	2	40,000
VHF Communication (2 channel)	25	10,000
Harbor Launches (undescribed)	6	<u>360,000</u>
	<b>Total</b>	<b>\$1,965,000</b>

(List No. 1 continued)

<u>Item</u>	<u>Quantity</u>	<u>Estimated US\$ Purchase Cost</u>
D) <u>Harbor Master Equipment</u>		
Fire Fighting Tug	1	1,200,000
Launch, twin screw, 300HP	1	120,000
Launch, twin screw, 130HP	1	60,000
Communication Equipment	(as required)	
HF (550-700 Watt), Marine Frequency		20,000
VHF (60 Watt), Marine Frequency		
Navigation Lights		
Fixed, on Breakwater	2	20,000
Floating	1	30,000
(Buoy, Green Flash)		
	<b>Total</b>	<b>\$1,450,000</b>
E) <u>Grain Silo</u>		
Conveyor Gallery	180 meters	500,000
(Twin belt enclosed Steel Truss linking unloader to silo)		
Buhler Dwg RBU10048-1(12/7/68)		
	<b>Total</b>	<b>\$500,000</b>
<b>GRAND TOTAL</b>		<b><u>\$16,473,000</u></b>

APPENDIX ITEM NO. 2

LIST NO. 2: ESTIMATED IN-PLACE COST, EMERGENCY REQUIRE-  
MENTS FOR INITIAL REACTIVATION, PORT OF BEIRUT, LEBANON,  
JANUARY 1977

List No. 2 Summary

Estimated In Place Cost 1)  
Emergency Requirements for Initial Reactivation  
Port of Beirut, Lebanon January 1977

<u>Group</u>	<u>Purchase Cost</u>	<u>Plus Spares</u>		<u>Freight &amp; Packaging</u>		<u>Misc. Exp. &amp; Insurance</u>		<u>Lebanese Assembly etc.</u>		<u>Total</u>	
A	1,906,000	5%	95,000	20%	381,000	10%	190,000	2%	38,000	2,510,000	
B	420,000	-	-	20%	84,000	10%	42,000	30%	126,000	672,000	
C	290,000	5%	15,000	20%	58,000	10%	29,000	2%	6,000	398,000	
D	230,000	5%	12,000	20%	46,000	10%	23,000	2%	5,000	316,000	
E	500,000	-	-	20%	100,000	10%	50,000	60%	300,000	950,000	
F	100,000	-	-	-	-	-	-	10%	10,000	110,000	
<hr/>		3,446,000		122,000		669,000		334,000		485,000	5,056,000
<hr/>											
Estimated Foreign Exchange										\$4,571,000	
Estimated Local Currency										(Lt 1,455,000)	<u>485,000</u>
<hr/>											
Total										\$5,056,000	
<hr/>											

1) These costs are not in addition to those shown on Table 1.1, except for Short Term Technical Assistance.

List No. 2

Emergency Requirements for Initial Reactivation

Port of Beirut, Lebanon January 1977

These Requirements are Not in Addition to Those on List No. 1

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<u>Item</u>	<u>Quantity</u>	<u>Estimated US\$ Purchase Cost</u>
A) Equipment Needs to Initiate Effective Cargo Handling Operations:		
Forklift Trucks, Diesel, 2.5-3 tons, Pneumatic	26	468,000
Forklift Trucks, Diesel, 5.0 tons, Pneumatic	3	78,000
Container Forklift, Diesel, 30-40 tons	1	100,000
Truck Crane, 30-35 tons	1	240,000
Mobile Cranes, 15-20 tons	3	330,000
Fifth Wheel Tractors (Yard Hustler)	2	72,000
Fifth Wheel Trailers (for containers) 30 tons	4	48,000
Lorries, 10 ton	4	60,000
Pickup Trucks	5	30,000
Cargo Pallets, 1 and 2 ton	24,000	480,000
	Total	<u>\$1,906,000</u>
 B) Warehouses and Sheds for Cargo Storage, with initial equipment		
Transit Sheds, Prefabricated (size to be determined)	4	400,000
Tarpaulin Covers and P/E Sheeting		20,000
	Total	<u>\$420,000</u>
 C) Miscellaneous Items including Service Equipment		
Fire Engine	1	60,000
Front End Loader, CAT 950	1	120,000
Air Compressor, Mobile	2	40,000
Rubber Fenders for Ships Berths	100	60,000
Communications Equipment for Port - VHF 2-channel stationary units	25	10,000
	Total	<u>\$290,000</u>

(List No. 2 continued)

<u>Items</u>	<u>Quantity</u>	<u>Estimated US\$ Purchase Cost</u>
D) Immediate Needs as Indicated by Harbor Master		
Harbor Craft		
Launch, twin screw, 300HP	1	120,000
Launch, single screw, 130HP	1	60,000
Communication Equipment		
HF (550-700 watt), Marine Frequency		20,000
No. 2 VHF (60 watt), Marine Frequency		
Navigation Buoy Lighted Green Flash, painted green	1	<u>30,000</u>
	Total	\$230,000
E) Reactivating of Grain Silo		
Reconstruct Conveyor Gallery (Buhler Dwg RBU 10048-1 Dept TR4 Date 12/7/68)	180 meters	<u>500,000</u>
(needed to connect silo with pneumatic unloader located at Quay 8. Steel truss structure containing two horizontal conveyors, original supplier was Buhler Corporation, Switzerland)	Total	\$500,000
F) Technical Assistance for Start Up		
Port Reorganization and Procurement	Total	\$100,000
Preparation of Tariffs, Rules and Regulations		
		<u>                    </u>
GRAND TOTAL		<u><u>\$3,446,000</u></u>

APPENDIX ITEM NO. 3

REPORT OF THE SUBCOMMITTEE FOR THE PORT OF BEIRUT,  
JANUARY 14, 1977

REPORT OF THE SUB COMMITTEE FOR THE PORT OF BEIRUT

JANUARY 14, 1977

1. Present Conditions:

1.1 Marine:

Harbor approaches are unhampered, and there are no restrictions to entering or leaving port. Basin No. 1 has one small ship and four wooden small craft sunk perpendicular to the South Quay (#2). These do not now constitute a hazard as this basin is not used for cargo at present, except by small coastal vessels. Port officials plan to utilize the western half of Basin No. 1 (Quay No. 1 and half of Quay No.2) for service craft in the future. Pilotage, which is a private operation, is functioning, but is in need of harbor craft. Lighterage, also private, is available, but not presently required, due to reduced volume.

1.2 Cargo Handling:

Cargo handling is being concentrated at Moles No. 2 and 3 (Basins 2, 3 and 4). All transit sheds and virtually all warehouses have been totally destroyed. Likewise virtually all cargo handling equipment was destroyed. See table 2.1 for the status of existing and salvageable equipment. The grain silo is not seriously damaged, but the conveyor from the Pneumatic unloader to the silo was totally destroyed. (Steel

.../...

trestle supporting twin conveyor belts, approximately 180 M, "600 ft"). Cargo handling activity is not yet heavy, averaging only 3 to 4 ships per day, and 20,000 tons of cargo during this first month of operation, but it is expected to increase rapidly to about 1,000,000 tons in 1977.

1.3 Port Administrative Buildings:

Port administrative buildings have been damaged but are serviceable and in operation.

2. Findings:

2.1 Immediate Steps for Reactivation:

2.1.1. Port Equipment:

The following items are urgently needed in order to bring Beirut port to the full present capability for deepwater vessels, in Basins No. 3 and 4. Items required are shown on table ~~2-1~~<sup>2.1</sup>, and consist of cargo handling equipment, harbor craft maintenance shop equipment and supplies and tools, plus communication equipment and necessary equipment to reestablish port lighting. Estimated cost is LL 34 million U.S. \$ 11,333,000.

.../...

2.1.2. Transit Sheds and Warehouses:

The prompt construction of prefabricated buildings for use as transit sheds and warehouses is required, in order to reestablish a storage and warehousing capability at Beirut Port, for the protection of cargo and the return of liner traffic. Buildings should be of the standard steel quick assembly type, with the approximate dimensions as shown on table <sup>2.1</sup>~~2.2~~. See attached map for locations being studied.

Estimated cost LL 40,000.00 US \$ 13,3 million.

2.1.3 Technical Assistance:

Technical assistance is needed for the following areas:

- Technical assistance in reconstruction planning and equipment procurement. . . .
- Technical assistance in preparation for Beirut Port of a new tariff of rules, regulations, procedures and charges in the interest of establishing at this time of renewed activity in the port, a system of fair but compensatory charges, designed to increase the flow of goods through the Port. Port organization and operation also would be studied.

.../...



- No technical assistance is believed to be required for reactivating the grain silo system, nor for field assembly of sheds, other than suppliers erection engineer.

2.2 Longer Term Consideration:

In order that the program for the future port system of Lebanon be developed in accordance with the objectives of the Lebanese government and the changed flow of commerce resulting from the recent hostilities and destruction, a review of the Lebanese ports development program is desirable. Technical assistance is therefore suggested in the following area:

- Evaluating and updating the Lebanese ports expansion program, including study of the needs and requirements of and for the secondary ports and overland system. This evaluation should include a review of the structure of Lebanese port policy, including organization and responsibility, and master planning for the region through the year 2000.

TABLE 2.1

Report of Conditions and Needs  
Beirut Port - January 1977  
Prepared by Beirut Port Authority

PORT OF BEIRUT

LIST OF PRESENTLY WORKING EQUIPMENT

1- WORKING EQUIPMENT

- FLOATING CRANE - NO.1 50 TNS CAPACITY 40 YEARS OLD
- TUG BOAT - NO. 1 420 HP 20 YEARS OLD
- TRUCK CRANE - NO.1 MAKE PH 9125 TC NEW - 125 TNS
- TRUCK CRANE - NO.1 - MAKE LORAIN MC414 30 YEARS OLD  
12 TNS CAPACITY
- FORK LIFTS - NO.2 - MAKE S.D.-6.5 TNS CAPACITY - 15 YEARS OLD
- FORK LIFTS - NO.4 - VARIOUS MAKES - 2.5 TNS CAPACITY -  
5 YEARS OLD
- FIFTH WHEEL TYPE TRACTOR - NO.2- MAKE BEDFORD - 3 YEARS OLD
- FIFTH WHEEL TYPE TRAILER - NO.8- MAKE TASKERS - 3 YEARS OLD  
12 TNS CAPACITY+
- DUMP LORRY - NO.1 - MAKE FORD - 10 YEARS OLD 6 TNS.

2- REPAIRABLE EQUIPMENT

- SELF PROPELLED FLOATING CRANE - NO.1 - WAGNER BIRO MAKES-  
120/25 TNS CAPACITY - 7 YEARS OLD - ALL ENGINES, CONTROL  
COMMANDS AND MACHINERY MISSING - NEEDS LONG & COSTLY REPAIRS.
- QUAY POSTAL CRANES - NO.4 - TAKRAF MAKE - 6 TNS CAPACITY -  
8 YEARS OLD - MOVING ENGINES & FEEDER CABLES MISSING.
- FIFTH WHEEL TYPE TRAILER - NO.2 - 5 YEARS OLD  
TYRES & MINOR REPAIRS.

B- LIST OF ESTIMATED IMMEDIATE NEEDS FOR PORT EQUIPMENT

- 1- THIS LIST HAS BEEN ESTABLISHED FOR THE IMMEDIATE NEEDS OF  
OPERATING 15 BERTHING POSTS OUT OF A TOTAL OF 26 POSTS -  
I-E QUAYS NOS. 8,9,10,11,12 & 13 - REFER TO LIST NO.1.
- TRUCK CRANES - NO.4 - 30/35 TNS CAPACITY WITH CLAMSHELLS
- MOBILE CRANES - NO.12 - 10/15 TNS CAPACITY
- TRUCK CRANE - NO.1- 125 TNS CAPACITY (CONTAINER HANDLING)
- FORK LIFT (FRONTAL) NO.2 - 30 TNS CAPACITY (CONTAINER HANDLING)
- STRADDLE CARRIER - NO.2 - 30 TNS CAPACITY ( " " )
- FIFTH WHEEL TYPE TRACTOR - NO.5 - 30 TNS CAPACITY ( " " )

- FIFTH WHEEL TYPE TRAILERS - NO.7 - 30 TNS CAPACITY (CONTAINER HANDLING)
- FORK LIFT TRUCKS - NO.7 - 10 TNS CAPACITY
- FORK LIFT TRUCKS - NO.15 - 5 TNS CAPACITY
- FORK LIFT TRUCKS - NO.50 - 2.5 TNS CAPACITY
- FIFTH WHEEL TYPE TRACTOR (AUTOMATIC COUPLING) NO.30-  
20 TNS CAPACITY
- FIFTH WHEEL TYPE TRAILER - NO.90- 20 TNS CAPACITY
- LORRIES (DUMP TYPE) NO.17- 10 TNS CAPACITY
- UTILITY TRUCKS - VEHICLES - NO.15 - 1-2 TNS CAPACITY  
(ALL THESE EQUIPMENTS TO HAVE RECOMMENDED SPARE PARTS).

2- THE FOLLOWING ITEMS ARE OF IMMEDIATE NEEDS FOR WARHOUSING AND HANDLING EQUIPMENT.

- 10 METAL FRAMES WARHOUSES - 40 METERS SPAN 110 - 130 METERS LENGTH. EQUIPPED WITH INTERNAL LIGHTING - EXTERNAL LIGHTING - DOORS & WINDOWS.
- TARPOLIN COVERS FOR 50.000 M<sup>2</sup>
- FORK LIFT TRUCKS - NO.70 - 2.5 TNS CAPACITY
- WOODEN WARHOUSE PALLETS - NO. 120.000
- FIRST AID & FIRE FIGHTING EQUIPMENT FOR EACH WARHOUSE  
(WITH RECOMMENDED SPARE PARTS)

3- THE FOLLOWING ITEMS ARE IMMEDIATELY NEEDED FOR GENERAL PURPOSES:

- LAND MOBILE FIRE FIGHTING EQUIPMENT
- SEA MOBILE FIRE FIGHTING EQUIPMENT
- GENERAL FLOOD LIGHTING POSTS FOR THE PORT NO. TO BE DETERMINED BY TYPE PROPOSED
- VHF EQUIPMENT - 25 POSTS FOR PORT OPERATION
- SHOVEL WHEEL TRUCK NO.2
- GARBAGE COLLECTION LONIES - NO.4
- AIR COMPRESSORS (MOBILE) - NO.2
- MOBILE CONCRETE MIXER - NO.1 -  $\frac{1}{2}$  CUBIC METER
- CONVEYOR BELTS - NO.4 - SELF OPERATED - FOR PASSENGER LUGGER-  
6M. HEIGHT

(WITH RECOMMENDED SPARE PARTS)

- GENERAL WORKSHOP EQUIPMENT FOR METAL, WOOD, MECHANICAL AND VEHICULAR REPAIRS (SAW, LATHES, WELDING SET, ETC.....)
- MOBILE VEHICULE MAINTENANCE UNIT NO.1
- HARBOUR PORT SERVICING LAUNCHES - NO.6
- RADIO COMMUNICATION FOR HARBOUR MASTER
- NAVIGATIONAL LIGHT AT HARBOUR ENTRY (2 FIXED & 1 FLOATING)

#### 4- GRAIN SILOS

THE PRESENT GRAIN SILOS NEED THE CONVEYOR BELT LINK BETWEEN THE MAIN SILOS & THE QUAY TOWER. APPROXIMATE LENGTH 180M.

JANUARY, 1977

APPENDIX ITEM NO. 4

LIST OF PERSONS CONSULTED, SURVEY OF PORT OF BEIRUT,  
LEBANON, JANUARY 9-16, 1977

List of Persons Consulted

Survey of Port of Beirut, Lebanon

January 9-16, 1977

Ernest Ball

- Mr. Assem Salaam, Vice President of Commission for Port Development
- Mr. Philippe Tewili, Director of the Port Company
- Mr. Joseph Khazen, Chief of the Technical Division of the Port Company
- Mr. Antoine Bechara, Port Comptroller
- Mr. Henri Bey Phaeron, Chairman of the Port Company
- Mr. Joseph Baltazi, Pilotage Concession for the Port
- Mr. R. Farhat, Director of Maritime Transport (Representing Harbor Master)
- Mr. Maurice Muracade, President of Chamber of Shipping (Representing  
Steamship Agencies)
- Mr. J. Nuwayri, Engineer for the Ministry of Planning
- Mr. Assed Fawaz, Chief Officer of the Customs
- Mr. Farid Seaiby, Assistant Manager of Customs
- Mr. R. Touma, Manager of the Grain Silo (Silos owned by Ministry  
of Economy, but administered by  
the Port Company)

APPENDIX ITEM NO. 5

LIST OF PORT DATA OBTAINED, PORT OF BEIRUT, LEBANON,  
JANUARY 1977

LIST OF DATA OBTAINED 1)

PORT OF BEIRUT, LEBANON

JANUARY 1977

Brochure for the Port of Beirut (Latest Issue Published 1968-9)

Assayad News Magazine - 5-11 January 1977 (Containing photos of Damage to the Port)

Port of Beirut Layout Drawing: General Arrangement (Including sketch of proposed expansion)

Study for the Modernization, Reorganization and Extension of the Ports of Beirut and Tripoli, Stage 1  
(By Peat Marwick and Mitchell, in conjunction with Coode Ltd. Completed study dated 1 April 1974)  
Six volumes, Sections A thru F

Port Questionnaire (containing responses to questionnaire prepared by Team Port Specialist)

Port Authority Record (cumulative record of tonnage handled)  
January 1977 (January 1 thru January 14)  
January 1975 (complete month)

Port Daily Vessel Traffic Report  
January 1, 1977 thru January 14, 1977

Annual Tonnage Records for Beirut by Commodity, Import and Export  
1970 thru 1974 (including translation from French, for 1974)

News Article: Beirut Port Chaos Reigns Supreme 2/24/74  
Description of 1974 Port Problems (still largely unresolved)

Magazine, L'Illustre du Proche Orient, 15 January 1977  
Description of a proposal for the Expansion of Beirut Port  
by French Engineer, Gabriel Cher

Sketch describing rubber fender previously used at Beirut Port

1) All items on this list are in the office of Mr. Blaine Richardson, Deputy Director, AID Office of Middle East Affairs, Near East Bureau.

APPENDIX ITEM NO. 6

SUGGESTED PORT REQUIREMENT LISTS

TABLE 2.23

CARGO HANDLING EQUIPMENT 1)  
FOR GENERAL AND BULK/GENERAL CARGO BERTHS

- 1 Mobile Crane 20 ton
- 2 Forklift Trucks 5 ton
- 10 Forklift Trucks 3 ton
- 6 Forklift Trucks 2.5 ton
- 1500 Stevedore Pallets
- 500 Warehouse Pallets
- 1 Unit Miscellaneous Stevedoring Equipment 2)
- 1 Unit Miscellaneous Warehouse Equipment 2)
- 1 Fifth Wheel type Tractor
- 1 Fifth Wheel type Trailer (20 ton)
- 2 Yard Tractors
- 4 Yard Trailers
- 1 Lorry - 5 to 10 ton
- 1 Utility Vehicle 1-2 ton (pickup truck)
- 6 Motor Scooters
- Plus
- 1 10 ton Forklift as may be specifically required

- 1) Requirements per berth
- 2) Miscellaneous cargo handling equipment as required for particular types of cargo (See attached)

DOD/ISA - Equipment Which Might be Needed at Beirut Port as  
Estimated by DOD

Construction/Clearing

- 1 - 3/4 yd. backhoe
- 1 - 3 ton wrecking balls
- 2 middle crane extension booms
- 1 jib crane boom
- 7 clam shell buckets
- 2 - 12 1/2 ton cranes
- 5 - 25 ton cranes
- 15 explosive demolition sets
- 6 - 1000 gal. water tanks
- 15 - 5 KW generators
- 10 - 10 KW gas engine generators
- 9 - 2 1/2 cu. yd. loaders (scoop type)
- 7 pneumatic tools w/compressors
  
- 3 Contract Maintenance Shop Equipment kits
- 2 - 3/4 cu. yd. front crane shovels
- 6 tractors w/bulldozers w/scarifs
- 3 - 5 ton dump trucks
- 20 - 20 ton dump trucks
- 9 welding shop trailers

Typical equipment package needed for cargo handling for five-hatch self-sustaining ship with five crews, one shift per day

- 8 extension booms
- 1 cleaning cargo set
- 1 cooping & cleaning cargo set
- 1 drum cargo set
- 5 hatch cargo sets
- 1 heavy lift cargo set
- 1 plate handling cargo set
- 1 riggers cargo handling set
- 1 timber cargo set
- 1 vehicle cargo set
- 10 gravity conveyor rollers
- 4 curved conveyor rollers
- 4 - 20 ton cranes w/booms
- 6 electric flood lights
- 6 - 5 KW generators
- 2 - 25 outlet light set generators
- 1 battery charger
- 1 - 3/4 cu. yd. tagline crane
- 5 - 6000 lbs. fork lifts
- 21 - 10,000 lbs. fork lifts
- 7 - 4000 lbs. fork lifts
- 1 trailer mounted welding shop
- 1000 pallets