

2. OVERVIEW OF THE MAJOR PORTS IN EL SALVADOR

2.1 Port Locations and Major Functions

1. El Salvador has coastal lines only on the Pacific side. Two major international cargo ports, the Port of Acajutla and the Port of Cutuco, and other ports are located there.
2. The largest international port of El Salvador, the Port of Acajutla (CEPA, Ministry of Public Works), is located 85 km by road and 105 km by railroad southwest of the capital city of San Salvador. The cargo volume handled in 1996 is 1,686,997 ton, including containers of 28,000 TEU. Major cargoes handled here are grain and fertilizer for import, and agricultural products such as sugar and coffee for export.
3. In the eastern region of the country, the Port of Cutuco (FENADESAL, CEPA) is located a few kilometers away from La Union city, which faces the Gulf of Fonseca. From the capital, it is 185 km by road (the Pan-american highway (CA-1) or the Litoral highway (CA-2)) and 252 km away by railroad, respectively.
4. It once enjoyed better days, exporting traditional agricultural products such as coffee and raw cotton, but has been closed since September, 1996 for fear that its old structure could collapse because of insufficient maintenance during the civil war. The cargo volume handled drastically decreased to 63,058 t in 1995 from 235,549 t in 1975.
5. The Port of Punta Gorda (CORSAIN, Ministry of Economy) lies about 800m east of the Port of Cutuco. It was originally constructed as a fishing port for tuna with the support of France around 1980. However, it has not been able to successfully serve as a tuna base to any extent because of a miscalculation. As a result, it has served as an inshore fishery port for shrimp and other marine products.
6. Since the Port of Cutuco is under emergency rehabilitation, the Port of Punta Gorda is taking its place as well. In addition, the Port of Punta Gorda is now expected to play an original role with the reopening of tuna fishing in a neighboring area.
7. From San Salvador, the Port of La Libertad is located 35 km to the south. Today, it is known as a small fishing port with tourist spots and seafood

restaurants, although it played an important role as a commercial port several decades ago. As well, a similar port, called the Port of El Triunfo is located 90 km east of the capital.

8. Major part of cargo to/ from the east coast of North America and Europe is now handled at the ports on the Caribbean Side of neighboring Guatemala and Honduras, for this country has coastal lines only on the Pacific side as aforementioned.

2.2 Administration, Management and Operation

2.2.1 Port Administration Organization in El Salvador

1. In El Salvador, ports are divided into three groups, commercial ports, fishing ports and naval ports. Commercial ports are administrated by CEPA and it's department FENADESAL which are under the control of Ministry of Public Works (MOP). Fishing ports are under the control of Ministry of Agriculture and Cattle (MAG) and Ministry of Economy (MOE). Administration of Naval ports, navigation safety and territorial sea area in El Salvador belongs to Ministry of Defense (MOD). Table 2-2-1 shows the port administration organization in El Salvador.

Table 2-2-1 Port Administration Organization in El Salvador.

Ports in El Salvador	Administration Organization	Supervisory Organization
1. Commercial ports		
*Port of Acajutla	Executive Autonomous Port Commission (CEPA)	Ministry of Public Works (MOP)
*Port of Cutuco	El Salvador's National Railroad (FENADESAL)	MOP
2. Naval Ports		
*Port of Punta Ruca	National Marine	Ministry of Defense
3. Fishing Ports or Others		
*Pier of Acajutla	CENDEPESCA	Ministry of Agriculture and Cattle (MAG)
*Pier Puerto El Triunfo	CENDEPESCA	Ministry of Agriculture and Cattle (MAG)
*Pier Puerto Parada	In progress	-----0-----
*Pier of La Libertad	City of La Libertad	-----0-----
*Fishing port of Punta Gorda	CORSAIN	Ministry of Economy

Source : CEPA

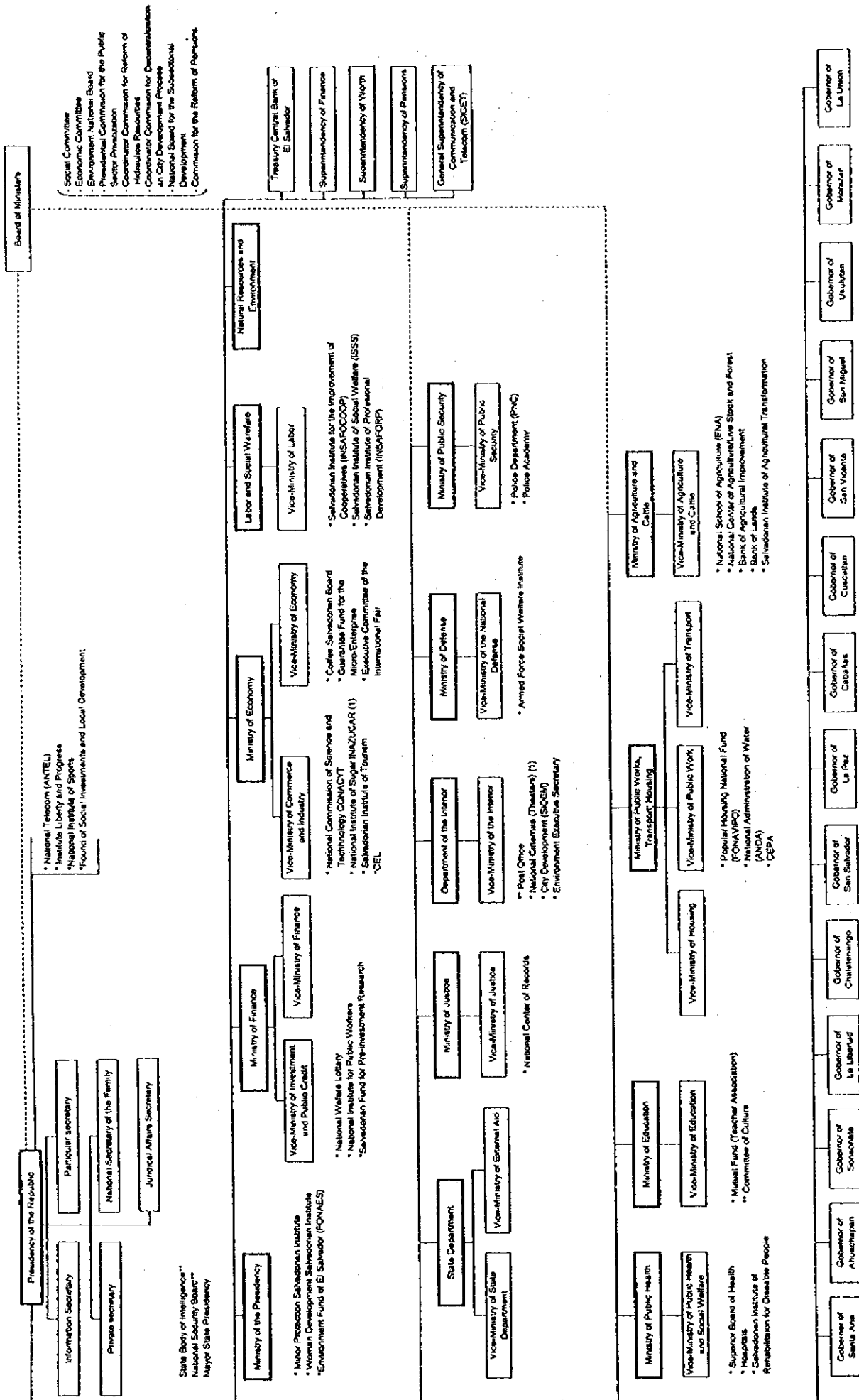


Figure 2-2-1 El Salvador Government Organization Chart

(1) In Liquidation/Shift

** Autonomous Institute
 ** Are not Judicial Autonomous

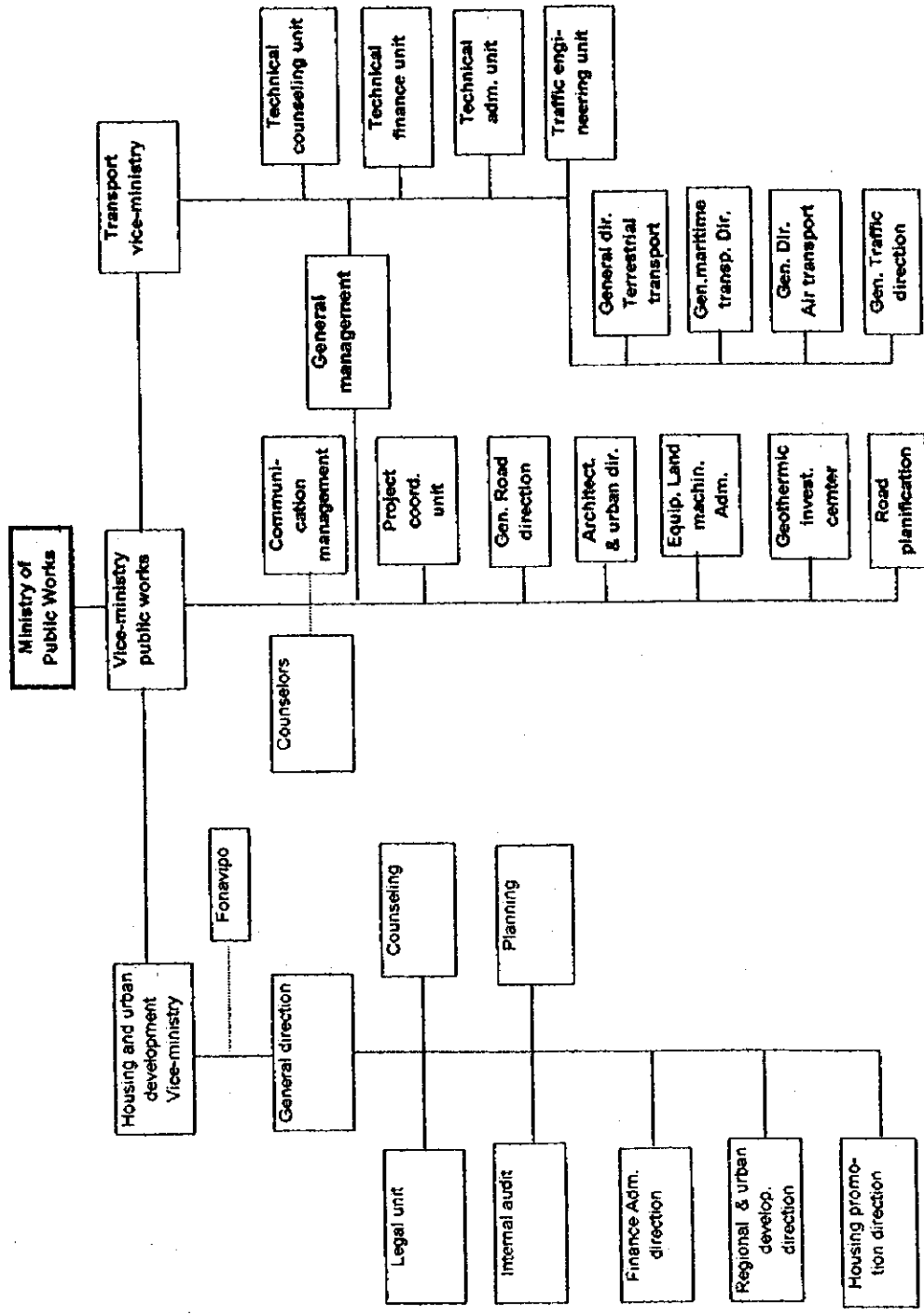


Figure 2-2-2 Organization Chart of MOP

Source: MOP

2.2.2 Management of the Water Area

(1) Control of Activities in the Water Area

2. Utilization of and activities at the Port of Acajutla water area are controlled by CEPA. When other entities intend to build or use the water area, the entity has to present some detailed plans and drawings. CEPA examines whether the work to be carried will out may obstruct or interrupt port activities, and if not, CEPA gives permission. CEPA inspects the work as it proceeds to make sure it follows the approved plans. An administrative sea area boundary is not fixed around the Port of Acajutla.

(2) Management of Navigation Safety

3. Salvadorean water zones are divided into four areas: La Union, Puerto El Triunfo, La Libertad and Acajutla. For each water area, there is one Port Captain who belongs to the Ministry of Defense. Port Captains administrate the navigation safety and territorial sea area. Each one of them controls the foreign ships that enter and leave the area assigned under their responsibility.

2.2.3 National Privatization Policy

(1) National Privatization Policy

4. As part of the effort to increase the efficiency levels of the economy, a program to privatize public institutions whose activities are more suited to the private sector is being implemented. As of 1990, a series of factories such as sugar and coffee mills and basic grain trading companies and other state owned enterprises that by nature belong to the private sphere have been privatized. Also, the financial system that had been nationalized in the eighties was privatized.

5. Currently a series of services at the airport and seaports, the telecommunications company (ANTEL) and the distribution of electricity are in the process of being privatized. The efficiency of these sectors is crucial for the nation to respond effectively to the challenges of global markets. To this end, a presidential commissioner for state modernization has been appointed to oversee these matters. At the moment, a draft of an

Anti Trust Law and regulatory framework are being elaborated to ensure that public service companies operate under conditions of free competition once they pass to private sector administration.

(2) Modernization Program in El Salvador

6. The aim is to transform public administration into an efficient and effectively managed organization, capable of generating the conditions necessary to introduce the country into a highly competitive world.

7. The public sector reform process aims at reducing governmental regulation and control, establishing clear rules and freeing State resources for investment in human capital, development, health, education and infrastructure, which are the basic elements for achieving high productivity levels.

Table 2-2-2 Modernization Plan in El Salvador

1- AN EFFECTIVE GOVERNMENT	2- OPENING TO COMPETITION	3- PUBLIC SERVICE QUALITY
<ul style="list-style-type: none"> • Institutional Restructuring • Integrated financial Management • Reform of the Tax and Customs Administration. • New Procurement and Contracting Management System • Improvement of the Government Control System. 	<ul style="list-style-type: none"> • Private Sector Participation in Public Services: <ul style="list-style-type: none"> - Telecommunications - Electricity - Ports and Airports - Roads • Improvement of the Delivery of Basic Education and Health Services. • Reform of Water Sector. 	<ul style="list-style-type: none"> • Debureaucratization. • Decentralization. • The New Public Servant Human Resources Reform System.

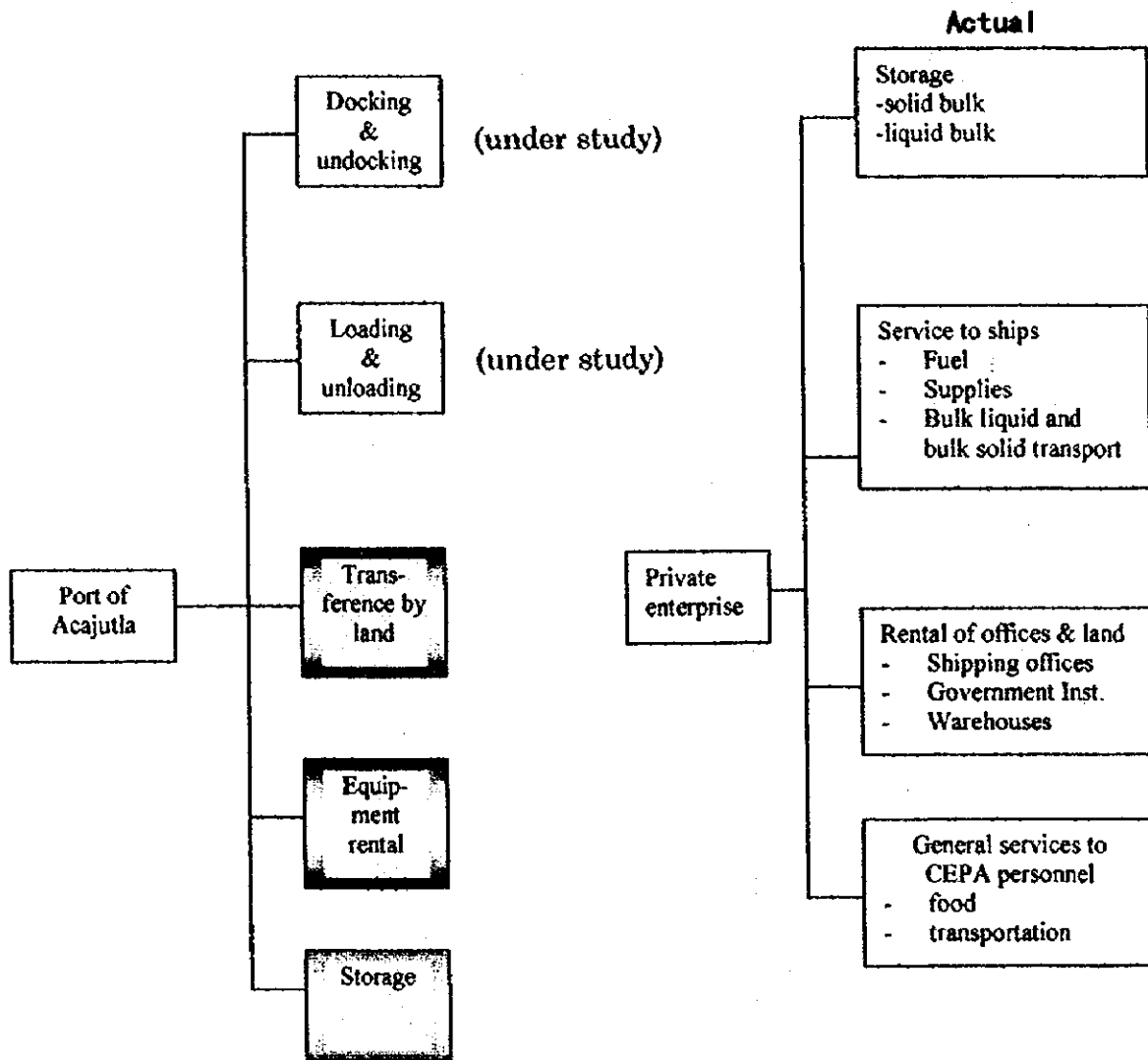
Source: Presidential Commission for Public Sector Modernization

2.2.4 Port Privatization

8. The Presidential Commission on Modernization has started to study private participation in port services. At present, Port of Acajutla port services such as pilotage, towage, water supply, cargo handling and warehousing are provided mainly by CEPA. The port offices were established originally to provide these services.

78 At present, privatization of port of operational services, such as cargo handling, is being considered to heighten efficiency and quality and to reduce the national expenditure.

JOINT PARTICIPATION OF CEPA AND PRIVATE ENTERPRISE

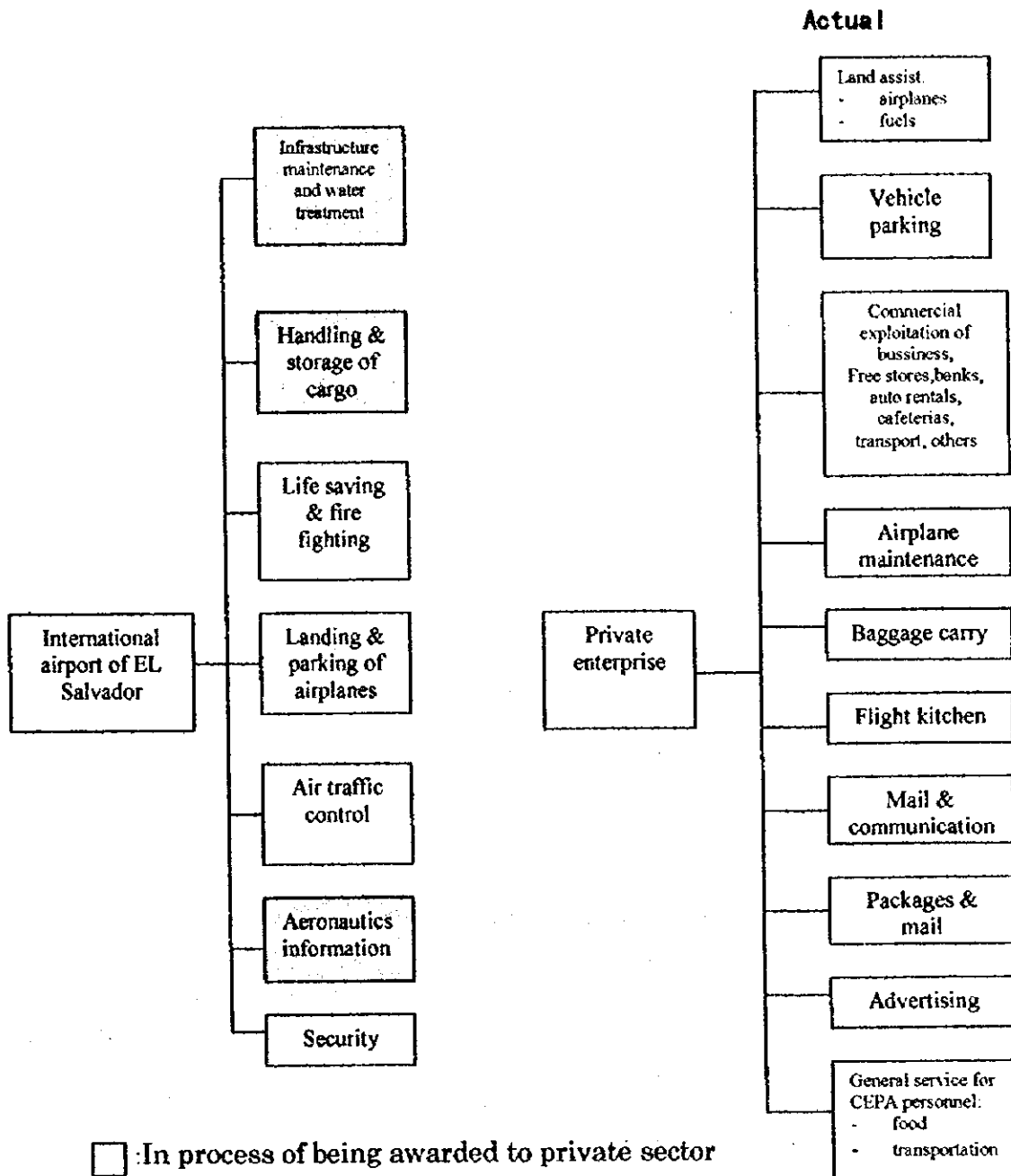


: IN PROCESS OF BEING AWARDED TO PRIVATE SECTOR

Source : CEPA

Figure 2-2-3 Joint Participation of CEPA and Private Enterprise
(Port of Acajutla)

**JOINT PARTICIPATION OF CEPA AND PRIVATE ENTERPRISE IN
THE INTERNATIONAL AIRPORT OF EL SALVADOR**



Source : CEPA

**Figure 2-2-4 Joint Participation of CEPA and Private Enterprise
(International Airport)**

2.2.5 Executive Autonomous Port Commission (CEPA)

10. The Executive Autonomous Port Commission (CEPA) was created in May of 1952 to originally execute a seaport development program. It also took control of airports and railroads in 1965.

11. Currently CEPA is responsible for the management of port of the Acajutla and Cutuco seaports, the national railroads, property of the Salvadoran government and the international airport. CEPA is accountable to the Executive Branch through the ministry of Economy. As one of the country's most important and dynamic entities, CEPA is in the midst of the largest expansion plan ever seen in El Salvador, that of the international airport.

12. CEPA is a national institution under the Ministry of Public Works(MOP). It has its head office in San Salvador and a port office in the Port of Acajutla. Its organization and function is based on the law "Ley organica de la Comision Ejecutiva Portuaria Autnoma".

13 CEPA owns the land and all the facilities of the Port of Acajutla except private oil buoys. CEPA is in charge of the administration of the entire coastal and sea area of the Port of Acajutla. The sea area boundary of the Port of Acajutla is not limited. In order to meet its objectives, CEPA has the following functions:

- 1) Planning, construction and management of port facilities.
- 2) Arranging the pilotage affairs.
- 3) Administration of cargo handling operations, storage, transportation of cargo in the port area.
- 4) Installation and operation of navigational aids on the sea.
- 5) Receiving port dues and charges including those for cargo handling, transport and storage.
- 6) Determination of the utilization and setting of rates for services, operations and equipment of the port.
- 7) Investigation and study of port affairs.
- 8) Preparation and execution of programs for the following year and for the long term.
- 9) Operation of the railroad in the port.
- 10) Issuing of authorizations for the construction of piers and other facilities

- 11) Issuing of authorizations for the construction of offices, restaurants and storage facilities.
- 12) To give in concession to competent private sector parties some of the port services
- 13) Lowering freight rates by adequately equipping the ports
- 14) Others

(1) The Board of Directors

14. The Board of Directors, located at the top of the organization chart, is composed of five members as shown below:

- 1) Ministry of Public Works
- 2) Ministry of Economy
- 3) Ministry of Defense
- 4) Private Sector (Association A)
- 5) Private Sector (Association B)

15. The Board of Directors is the superior decision-making organization of CEPA, whose functions are described below.

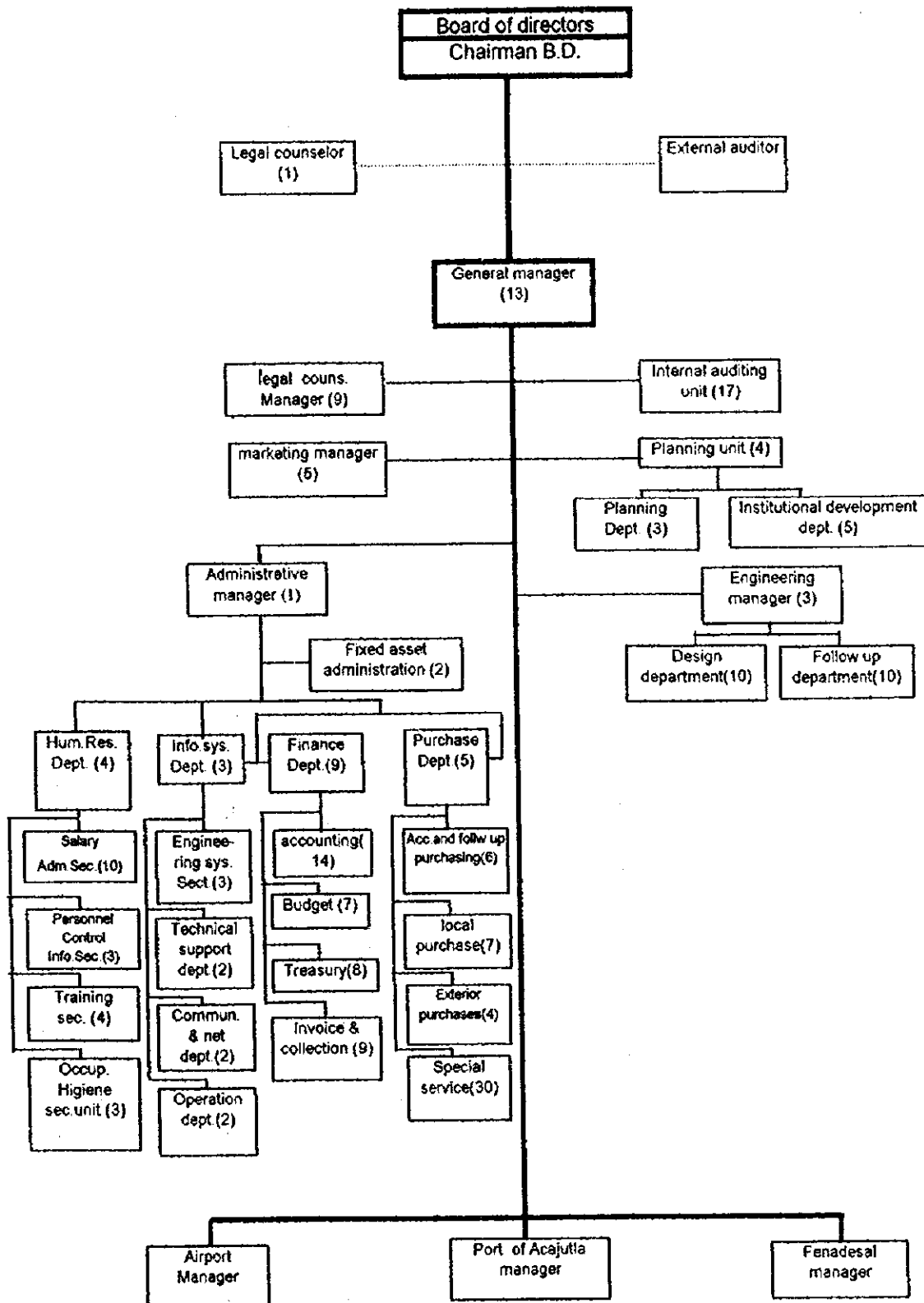
- 1) To determine the general policy of CEPA.
- 2) To approve with the port tariffs proposed by the concerned authorities.
- 3) To approve the budget of CEPA.
- 4) To approve the annual report of CEPA.
- 5) To obtain and approve loans.
- 6) To approve the organization chart, department and job descriptions and requirements for employment with CEPA.
- 7) To approve the internal regulations of CEPA.
- 8) To determine the salaries for the members of the Board of Management.
- 9) Others

(2) The General Manager

16. The General Manager, who reports to the Board of Directors, is the legal representative of CEPA. His functions are described below.

- 1) To perform the administrative, technical and financial duties, to carry out the items which the Board of Directors approve.

- 2) To employ, suspend or dismiss the CEPA employees and determine their jobs, salaries and promotions
- 3) To open bank accounts and to issue payments.
- 4) To represent CEPA as the person with the Power of Attorney.
- 5) To prepare financial reports and report on current affairs, submitting these to the Board of Directors.
- 6) To obtain local loans.
- 7) To fix and change the working hours of each department of CEPA.
- 8) To delegate some of his tasks to members of the Board of Directors or CEPA staff.



Note () : Number of Employee , Cafeteria of 4th,5th,6th,7th,11th floor and basement not included(8people)

Source : CEPA

Figure 2-2-5 CEPA Central Office Organization Chart

(3) The Manager for each Division

17. In order to provide support services to The General Manager, advisors, inspectors and officers who have specialized skills are called upon to direct the Legal Counseling division, Internal Auditing division.

18. In addition, four main divisions, namely Administrative, Engineering, Planning and Marketing division, are established and each is headed by one of the four Managers.

- 1) The Administrative division has four departments concerning general administration matters and financial and fiscal matters.
- 2) The Engineering division has two departments concerning technical matters.
- 3) The Planning division has two departments concerning port investment planning and organization.

2.2.6 Personnel

(1) Number of Personnel

19. CEPA Central Office has a staff of 226 representing 16% of total CEPA personnel. It should be noted that the Port of Acajutla has 1,153 employees. As mentioned previously, the port office employs its own staff to provide cargo handling services.

(2) Retirement Age and Working Condition

20. The working conditions of CEPA personnel are regulated by the Labor Code, National Employment Law and CEPA internal regulations. According to these laws and regulations, the mandatory retirement age is 60(55) or after having worked for CEPA for 20(20) years. Note. () :
Women

2.2.7 Labor Union of CEPA and FENADESAL

21. In the Port of Acajutla, the "Port Industry Syndicate of El Salvador" (SIPES) exists, with 1,116 members, which consists of 1,063 from Port of Acajutla and 53 from the Central Office. Relations with the

syndicate are.

22. In the International Airport of El Salvador, there exist a "workers syndicate of the International Airport of El Salvador" (SITE-AIES) which has 295 members that represent 54% of the total employees.

Table 2-2-3 Relationship between the union (SIPES) with respect to the personnel of the port of Acajutla and Central Office.

CONCEPT	TOTAL PERSONNEL	MEMBERS OF UNION	RELATIONS
Port of Acajutla	1,153	1,063	92%
Central office	226	53	23%
TOTAL	1,379	1,116	81%

Source : CEPA

2.2.8 Port Planning

(1) Planning Organization

23. CEPA is an institution which performs activities of great importance to the economy of the country, performs some plans of interest, involved bodies / institutions like the Executive Branch of the Republic, State secretaries and other institutions related.

(2) Planning Process among CEPA

24. In CEPA, the planning is done according to the needs, priority of activities, research and for projects. The three companies managed / exploited by CEPA ceding port services (sea, air, and railway) analyzing / grading its necessities independently and are submitted to the superior administration in order to take the corresponding means.

25. In this way, each company in coordination with CEPA central office conducts planning of the following aspects:

- 1) Annual working plans
- 2) Pre-investments and investments
- 3) Monthly income / expenses planning in order to make cash flow.

4) Others.

2.2.9 Construction

(1) Executive Organization

26. Once the need for research / project is identified and prioritized, meetings are held with international bodies. If financing is needed, the projects go under analysis and evaluations, respecting the following phrases:

- Idea
- Profile
- Pre-feasibility
- Design

Investment: execution of physical work, equipment supply, etc.

Operation: project on going

27. The meetings are held whenever it is necessary to expedite the execution process. Having previously made the terms of reference, detailing the characteristic and requirements of the project, national or international bidding is conducted, depending on need.

- CEPA selects the most advantageous technical and economical proposal.
- The project is awarded to winning bidder
- The contract is made and signed
- The project commences

(2) Management of Construction Work

28. The managing work of construction, supplies and equipment rehabilitation, repairing infrastructure, etc. is run by technical personnel of CEPA, belonging to the engineering and the technical secretary of the airport extension project.

(3) Procurement

29. Some equipment has been obtained by means of fellow country donations, while some has been bought by means of financing. The general procedure for conducting large scale construction work starts with the Engineering and Development Department of CEPA Central Office requesting proposals and then contracting for the detailed design and supervision of the construction work. After preparation of the detailed design, construction work is contracted out through a tendering process. At present, each port office can let contracts.

30. Small scale construction work is carried out by the Maintenance and Repair staff of the Civil Works Department of each port office.

2.2.10 FENADESAL

(1) FENADESAL

31. The state's railroad system "National Railroads of El Salvador" (FENADESAL), which includes the Cutuco seaport, is managed by the Comisión Ejecutiva Portuaria Autónoma (CEPA). FENADESAL was created in May, 1975, after the fusion of the two existing railroad companies in the country prior to said date.

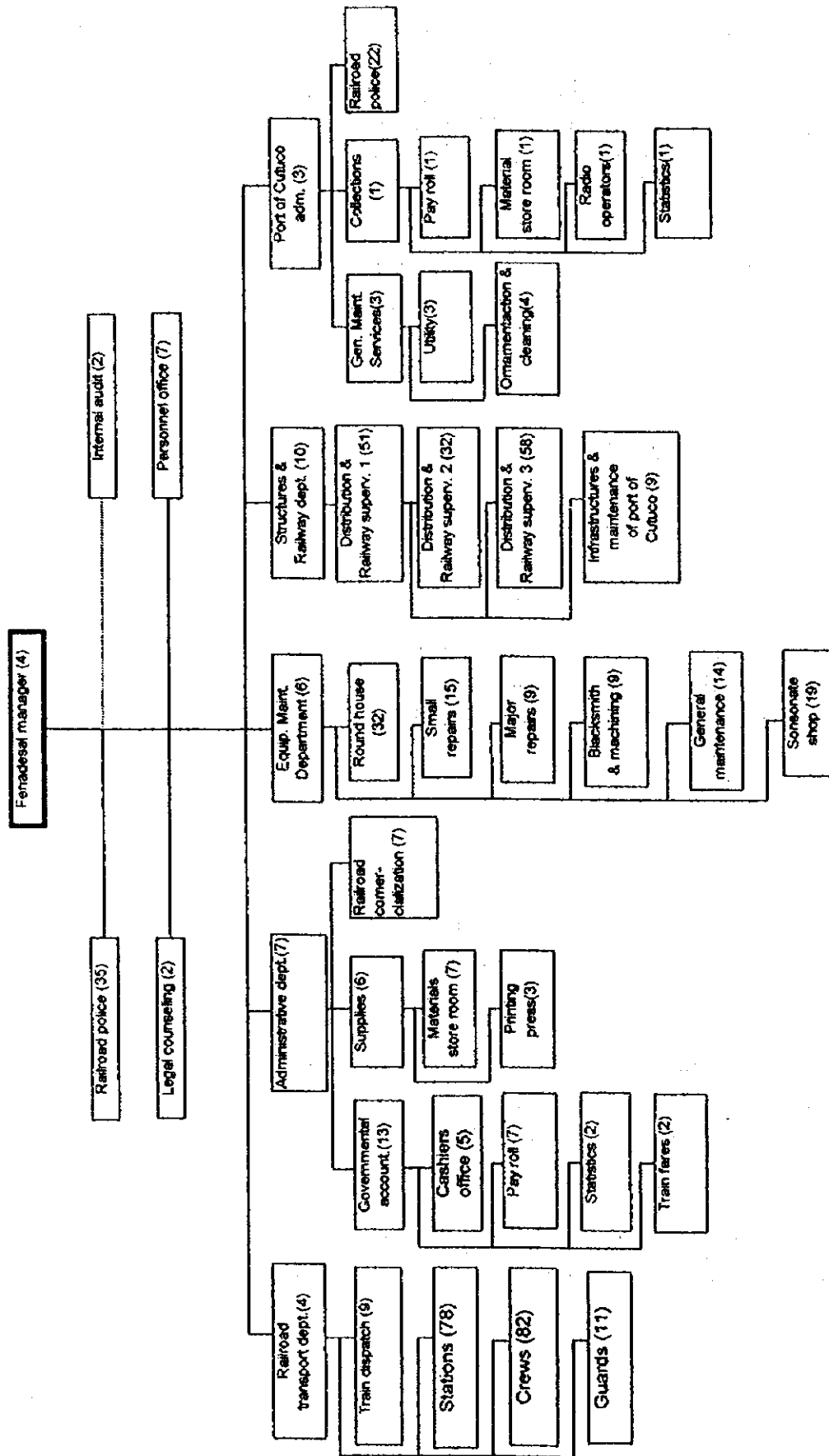
(2) Functions of FENADESAL

32. FENADESAL transports import and export cargo to the Salvadoran seaports of Acajutla and Cutuco, as well as to the Puerto Barrios seaport in Guatemala and to the Tecún Umán border between Guatemala and Mexico; it is also used for travelling and for the transport of local cargo within the country.

33. The normal train service operates daily; there are also special traing services when necessary, depending on the amount of cargo to be transported. All the trains are operated by electric-diesel engines, with the exception of the tourist service, which uses steam engines.

34. The railroad's regular service is available year round, except Friday, and operates 24 hours a day when necessary. FENADESAL has

NATIONAL RAILROADS ORGANIZATION CHART OF EL SALVADOR FENADESAL



Source : CEPA

Figure 2-2-6 Organization Chart of FENADESAL

agreements with truck companies for the transport of cargo from the main stations to the place of delivery (door to door service).

35. In FENADESAL, there exists an association of railroad employees, of 419 members, which represent approximately 74% of total employees.

2.2.11 CORSAIN

36. The Salvadorian Corporation of Investments, CORSAIN, is an autonomous institution of promotion and investments, of undefined duration, with legal capacity with its own patrimony, that enjoys autonomy in the economic and administrative spheres.

(1) Objectives of CORSAIN

37. CORSAIN is the state's instrument to promote and develop societies and companies engaged in the following activities;

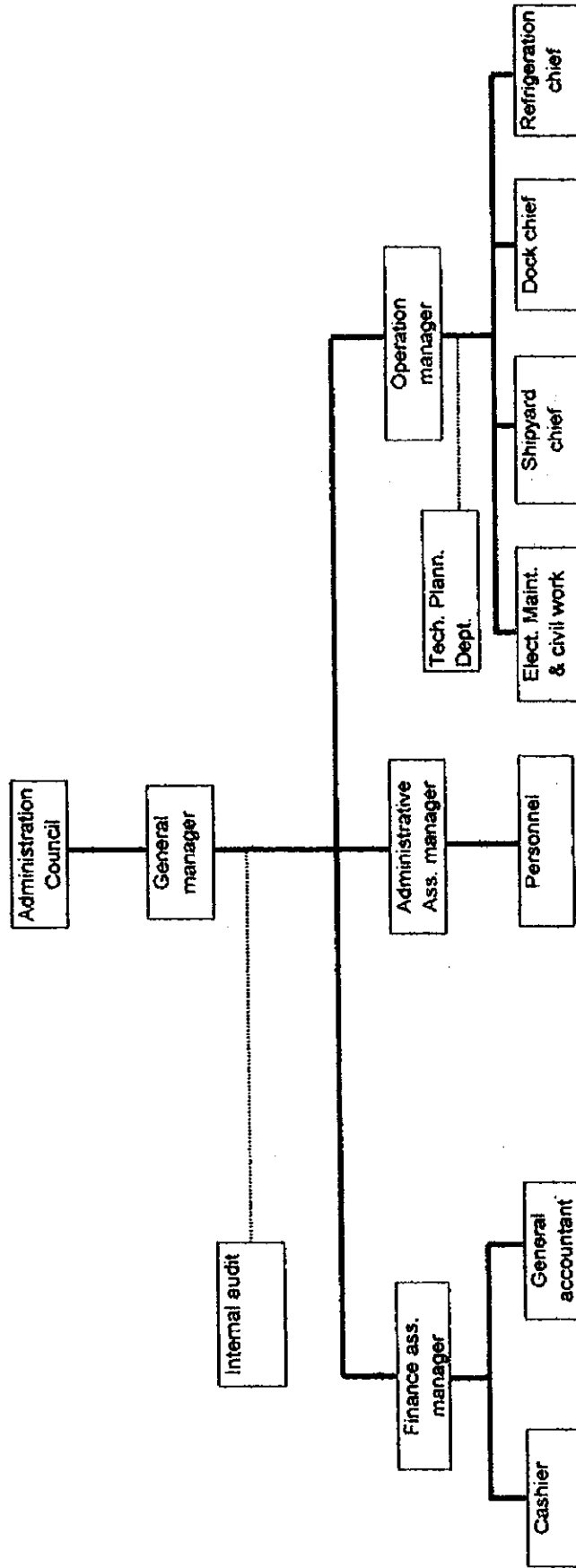
- Manufacturing
- Agribusiness
- Mining extractions
- Tourist promotion

It is an organism linked essentially to the industrial and financial sectors, above all considering its functions of business administration and stock market.

(2) Functions of CORSAIN

38. Presently, CORSAIN is playing a key role in economic reactivation through the sale of state such as Presidente Hotel, and the Coffee Roasting Plant, which belonged to the dissolved National Institute of Coffee. Shares of these companies were sold on the stock market.

ORGANIZATION CHART OF THE INDUSTRIAL FISHING COMPLEX - CORSAIN



Source : CORSAIN

Figure 2-2-7 Organization Chart of CORSAIN

personnel cost to expense in each year was 73.1% (maximum) and 64.3% (minimum). The working ratio decreased from 96.6% to 76.3% in a recent six years period (1991-1996). In order to secure sound operation efficiency, this figure should be lower than normal ratios of 50 - 60%. Also, the personnel expense increases with the increase of operating revenue.

Table 2-3-1 Port of Acajutla Income Statement
for the years of 1991/1996

unit : colones

PERIODS	1991	1992	1993	1994	1995	1996
OPERATION INCOME						
General Cargo	37,030,342	44,170,911	49,168,237	48,048,934	50,125,452	30,467,959
Solid Bulk Cargo	25,741,220	26,863,608	27,392,683	35,694,717	39,078,195	41,759,800
Liquid Bulk Cargo	3,236,743	4,285,701	5,107,088	6,793,854	7,880,035	5,361,775
Service to Ships	11,137,129	13,178,722	14,312,766	17,308,351	19,445,892	22,183,705
Other Income	4,467,479	6,291,381	6,112,248	13,946,769	15,399,572	27,143,877
Container Services	12,255,776	11,831,080	18,064,855	18,908,286	22,163,679	20,229,474
TOTAL INCOME	93,868,689	105,621,403	120,157,877	140,695,911	154,092,825	147,146,590
OPERATION EXPENSES						
Salaries	54,477,745	56,542,487	51,635,089	64,840,502	67,445,699	68,035,260
Pay	14,964,989	13,865,967	13,053,062	15,956,160	14,050,291	12,024,778
General Benefits	2,475,111	4,669,899	4,881,496	4,721,317	4,344,067	4,160,330
Consumable Products and Materials	7,692,391	8,490,805	10,293,411	8,255,354	7,495,517	8,352,943
Pay to external Service	10,306,069	10,621,394	9,552,208	11,556,110	13,245,962	19,217,049
Depreciations	4,364,647	8,898,912	10,521,018	11,397,769	10,706,700	10,934,470
Amortizations	540,000	595,000	600,000	342,297	100,000	225,000
Travel and Representation	199,539	112,970	100,192	140,806	168,725	233,261
Inventory Adjustment	0	0	0	44,081	16,471	11,991
TOTAL OPERATION EXPENSES	95,020,491	103,797,434	100,636,446	117,264,396	117,573,432	123,195,082
PROFIT (LOSS) OF OPERATION	(1,151,802)	1,823,969	19,521,431	23,441,515	36,519,393	23,951,508
OTHER EXPENSES						
Expenses Previous Years	5,948,200	1,096,016	2,402,354	1,732,743	(325,153)	1,671,861
Financial Expenses	8,906,851	8,411,813	7,162,754	4,589,521	(1,349,739)	6,066,753
TOTAL OTHER EXPENSES	14,855,051	9,507,829	9,565,108	6,322,264	1,674,892	7,738,614
Profit (Loss) Before Administrative Expenses	(16,006,853)	(7,683,860)	9,956,323	17,119,251	34,844,501	16,212,894
Distributed Expenses Central Administration	6,376,372	(7,338,621)	8,033,522	11,007,826	11,480,036	14,880,899
Net Profit (Loss) of Division	(22,383,225)	(15,022,481)	1,922,801	6,111,425	23,364,465	1,331,995
Income Tax	0	0	1,071,912	1,951,667	6,587,899	750,401
26% Legal Contribution to Government	0	0	813,312	1,463,751	5,031,587	563,363
Net Profit	0	0	37,677	2,696,007	11,744,979	18,231
OPERATING RATIO (%)	101.2	98.3	83.8	83.3	76.3	83.7
WORKING RATIO (%)	96.6	89.8	75.0	75.2	69.4	76.3
PERSONNEL COST TO INCOME (%)	74.0	66.7	53.8	57.4	52.9	54.4
PERSONNEL COST TO EXPENSE (%)	73.1	67.8	64.3	68.9	69.3	65.0

Source : CEPA

Table 2-3-2 Port of Acajutla Balance Sheet

unit : colones

Period	1992	1993	1994	1995	1996
Assets					
Current Assets	63,533,540.45	94,813,872.76	91,674,830.47	134,121,045.86	100,084,019.38
Fixed Assets	94,602,621.33	98,054,918.79	96,552,384.80	122,853,506.42	156,341,580.14
Deferred Assets	1,951,220.74	2,342,271.53	1,985,680.64	3,642,760.28	3,839,988.15
Other Assets	6,794,412.89	11,237,693.86	46,904,856.62	32,240,331.93	5,089,522.32
Operational and Financial Expense	120,643,884.00				
Total Assets	287,525,679.41	201,448,756.94	237,117,752.53	292,857,644.49	265,355,109.99
Liabilities					
Current Liabilities	61,546,051.97	70,880,169.55	82,178,022.99	95,062,373.07	60,774,405.49
Long Term Debt	77,778,144.56	77,778,144.56	68,815,537.52	66,943,944.74	69,835,269.35
Equity	42,580,079.88	52,790,442.83	86,124,192.02	130,851,326.67	134,745,435.15
Product	105,621,403.00				
Total Liabilities and Equity	287,525,679.41	201,448,756.94	237,117,752.53	292,857,644.48	265,355,109.99

Source : CEPA

2.3.3 Method for depreciation of fixed assets

7. The policy of depreciation of fixed assets is based on the straight-line method. This method is more suitable for ports which require an enormous amount of initial investment than the fixed percentage method, because the depreciation of assets can be calculated on even bases annually over a comparatively long time. Durable years of major assets in Port of Acajutla are shown in Table 2-3-3.

Table 2-3-3 Durable years of major assets for depreciation

Major assets	Standard Durable years
Pier	33
Office Building	50
Warehouse	20
Crane	10
Pavement	20
Wheeled equipment (Tractor)	5
Wheeled equipment (Payloader)	10

Source : Port of Acajutla

2.3.4 Tariff system

8. CEPA will propose to the Executive branch in the Public Work Department, the determination or modification of tariffs, charges, rights and other charges for the services or works done by their companies, for the use of their installations or donations or for any other concept. When setting the tariffs, charges, rights and reference charges, the following items will be covered:

- A) The maintenance and extension of the port and railroad installations.
- B) The equipment maintenance and replacement expenses.
- C) The amortization emitted bonds, loans made and other comitment, plus the payment of their interest and
- D) The funds reserved for the purpose the law.

9. All the services provided by CEPA should be paid with the respective standing fares. The free service is prohibited to any natural or

legal person, the same form as the ones of reduce or exemptions not mention in the pertinent laws and regulations; But should establish preferential fares for public beneficence or social service companies. The comparative tariffs of neighboring ports are shown in Table 2-3-4.

Table 2-3-4 Comparative Table of Tariffs in Dollars Port:
Acajutla, Quetzal and Santo Tomas de Castilla

CONCEPT	ACAJUTLA PORT		QUETZAL PORT		SANTO TOMAS DE CASTILLA PORT	
	Load - Unloading	Mooring	Load - Unloading	Mooring	Load - Unloading	Mooring
Service to ships	0.37 /TRB		0.17 /TRB		0.24 /TRB	
Loading/unloading	3.43 /TM		4.04 /TM		4.60 /TM	
Stay	day or fraction					
	Load - Unloading	Mooring	Load - Unloading	Mooring	Load - Unloading	Mooring
	Total	Total	Total	Total	Total	Total
GENERAL CARGO						
- Import and export merchandise	8.58	13.23	5.17	8.79	4.31	5.95
- Iron steel structural	3.31	3.60	2.58	8.79	4.31	5.95
- Cargo in sacks (Unloading)	8.58	8.68	4.83	8.79	4.73	4.31
- Cargo in sacks (Loading)	8.58	17.26	3.45	8.79	4.73	4.31
- Sugar in sacks (Loading)	8.58	15.42	3.45	8.79	4.31	5.95
- Palletizes homogeneous cargo	8.58	21.81	2.58	8.79	4.31	5.95
- Vehicles	21.38	37.25	3.45	28.96	8.46	9.47
	38.60 b/	45.65	21.55	64.64	24.46	36.84
CONTAINERS a/						
- Full	-	5.56 TM c/	-	4.31 /TM	-	2.69 /TM
- Empty	39.60	19.40	-	-	24.46	8.95
SOLID BULK						
- Loading unit (Import)	1.5	2.72	-	-	-	-
- Transport bands	-	-	-	-	-	-
(Sugar with warehousing, export)	1.5	3.82	-	-	-	-
- Transport bands	-	-	-	-	-	-
(Sugar without storage, export)	1.5	2.28	1.72	4.31	3.33	3.07
- Conventional means (import)	3.85	1.51	1.72	5.79	3.33	3.56
BULK LIQUID						
- Liquid by pipe	-	1.81	0.34	5.27	0.28	0.33
- Liquid by tank truck	-	3.76	-	-	-	-

a) By movement of container

b) Assignable to shipping company

c) Assignable to consignee on shipper

Source : CEPA

3. PORT ACTIVITIES RELATED TO MAJOR PORTS

3.1 Ports Activities in Major Ports

3.1.1 Port of Acajutla

1. The port of Acajutla is the leading port of El Salvador, both in terms of the scale of the port and the volume of cargo handled. Located on the Pacific Coast 85 km away from the capital city San Salvador. The hinterland of port is the whole country of El Salvador.

(1) Cargo Handling Volume

2. Total cargo handling volume throughput by packing type at Acajutla port is shown in Table 3-1-1. and Figure 3-1-1. During the civil war of the 1980s total cargo handling volume stagnated. After the peace agreement in 1992, total cargo handling volume has increased yearly except in 1996. In 1995, cargo volume reached 3.1 million tons including crude and refined oil. Statistics as of October 1997 show an upward tendency for accumulated cargo volume. Following a favorable growth in GDP, the volume of cargo in Acajutla has increasing rapidly.

3. Acajutla's total import cargo volume share is in the range of 84% and 93 %, and its share of export is in the range of 7% and 16%. It should be noted that import cargo has experienced a remarkable increase while export cargo is rather stagnant. Import and export cargo volume throughput by commodity are shown in Table 3-1-2 and 3-1-3. Major exports in 1996 were sugar (79 thousand tons), molasses (72 thousand tons), coffee (68 thousand tons), ethyl alcohol (34 thousand tons) and sugar in bag (29 thousand tons). Major imports were cereal (422 thousand tons), fertilizer (246 thousand tons), soybean flour (111 thousand tons), iron and steel (105 thousand tons), industrial products (13 thousand tons), food (11 thousand tons), crude oil and refined oil (1278 thousand tons), diesel oil (152 thousand tons)and butane gas (67 thousand tons).

4. Annual changes in cargo volumes by commodity show imports of petroleum and derivatives occupying the largest share of all items with a constantly increasing volume to a record 1.28 million tons in 1996. Cereals, soybean flour, food, butane gas, iron and steel show a similar

upward trend. Fertilizer import volume fluctuated showing a maximum of 323 thousand ton. Industrial products hit an import volume of 30 thousand tons in 1990, declining to 13 thousand tons in 1996. Chemical products and electrical products reached a maximum import volume of 3 thousand ton in 1984, 14 thousand tons in 1985, then declining to 5.3 thousand tons, and recently to 1.3 thousand tons in 1996. Import volume

Table 3-1-1 Acajutla Port Cargo Handling Volume Throughput by Packing Type

Year	Import					Export					Total						
	General Cargo	Bulk Cargo	Liquid cargo	Oil	Total	share(%)	General Cargo	Bulk Cargo	Liquid cargo	Oil	Total	share(%)	General Cargo	Bulk Cargo	Liquid cargo	Oil	Total
1984	224,378	522,567	48,145	591,913	1,387,003	86.2	104,181	86,380	787	0	240,318	14.8	878,569	607,947	48,902	891,913	1,627,921
1985	207,238	611,337	54,284	644,213	1,517,067	84.2	130,830	130,519	12,842	10,134	284,325	15.8	338,063	741,856	67,126	804,347	1,801,892
1986	232,270	616,118	74,836	677,961	1,601,184	86.3	93,374	99,240	14,928	47,095	255,207	13.7	325,644	715,336	89,763	725,626	1,866,391
1987	240,361	605,908	64,295	696,563	1,607,527	90.4	115,227	37,787	6,082	11,884	171,086	9.6	355,588	643,695	70,377	708,947	1,778,607
1988	227,900	571,262	76,227	727,624	1,603,013	89.2	101,786	78,106	0	13,947	193,838	10.8	329,686	649,367	76,227	741,571	1,796,851
1989	191,132	564,648	81,665	701,368	1,538,814	92.7	75,706	29,100	5,180	11,421	121,387	7.3	266,838	593,748	86,826	712,789	1,660,201
1990	159,615	705,561	110,985	745,720	1,722,864	88.4	125,926	47,936	41,596	10,506	250,627	11.6	285,544	754,496	152,581	756,326	1,948,947
1991	190,789	702,626	134,781	890,835	1,919,029	88.4	108,926	60,390	69,596	11,715	250,627	11.6	299,715	763,016	204,377	902,648	2,169,656
1992	208,774	582,260	201,794	961,183	1,944,011	86.3	128,306	100,007	80,021	10,900	308,334	13.7	337,040	682,267	281,815	951,183	2,252,345
1993	237,735	597,767	348,377	997,703	2,181,482	86.8	164,614	78,277	76,660	10,900	330,461	13.2	402,349	676,044	424,937	1,008,603	2,511,833
1994	261,820	771,283	539,601	934,686	2,507,501	89.2	114,661	91,372	97,374	0	303,307	10.6	376,381	862,657	636,966	934,805	2,810,808
1995	293,787	788,094	645,626	1,067,887	2,796,394	89.4	124,326	97,414	110,792	0	332,532	10.6	418,113	885,508	757,418	1,067,887	3,128,926
1996	198,719	811,836	377,825	1,279,809	2,667,689	87.3	112,884	79,617	106,216	86,831	387,548	12.7	311,603	891,333	484,041	1,368,240	3,065,937

Source: CSPA

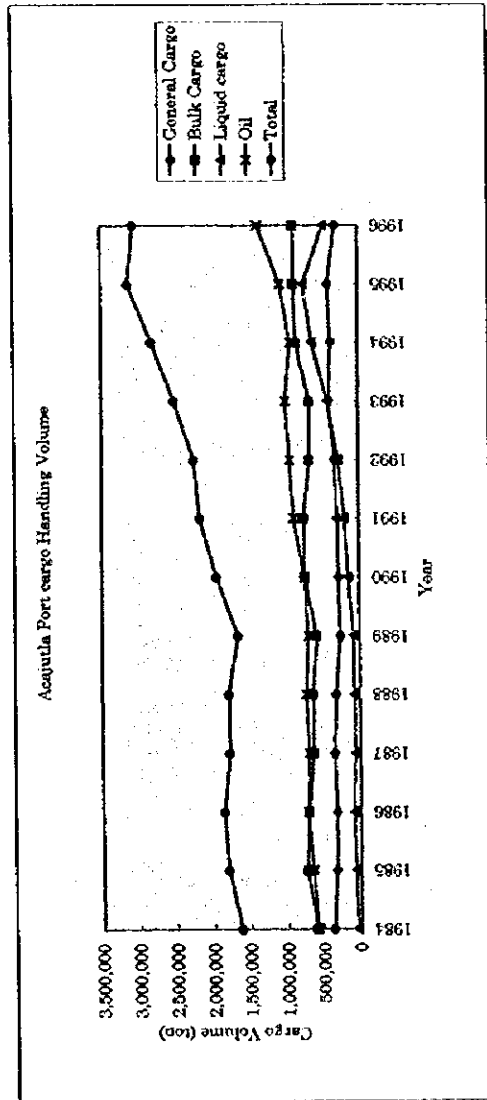


Figure 3-1-1 Acajutla Port Cargo Handling Volume Throughput

Table 3-1-2 Acajutla Port Import Cargo Commodity Volume

General Cargo

unit : ton

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1 Food	12,790	16,217	23,689	14,707	12,947	15,298	11,679	7,253	16,173	7,081	5,478	10,549	11,159
2 Fertilizer	21,941	1,580	2,062	1,215	288	4,621	2,765	6,011	820	9,225	17,149	25,346	8,104
3 Oils and Fats	1,587	3,699	3,362	1,368	1,369	1,187	408	2,942	704	4,187	340	1,476	479
4 Tableware	980	1,515	1,750	1,001	5,036	1,891	2,151	322	1,999	1,970	1,900	2,733	1,108
5 Printed Books	2,530	3,005	2,344	4,481	1,653	1,134	676	2,054	633	692	1,289	681	603
6 Animal Feed	1,860	1,296	15	73	14	0	0	0	0	0	0	0	0
7 Cereals in Bag	24,916	24,003	28,093	30,013	29,737	7,796	780	13,628	14,637	19,668	15,048	7,161	1,223
8 Container (laden)	9,402	6,938	7,922	9,864	11,531	9,682	10,102	11,111	10,475	11,764	13,237	14,082	10,160
9 Container (empty)	2,485	3,600	3,081	3,091	2,027	1,788	817	1,239	711	2,252	2,507	1,632	4,577
10 Hand Goods	311	662	998	179	186	234	130	258	351	830	443	528	570
11 Hand Goods	433	367	177	1,206	851	660	408	823	938	1,287	1,359	1,115	420
12 Hardware	3,184	4,034	3,306	5,009	4,003	3,683	2,822	4,659	4,144	4,908	7,452	6,689	2,887
13 Iron	41,681	36,737	56,031	77,778	69,779	59,677	42,765	55,028	73,909	92,469	83,652	109,814	105,897
14 Lubricants	1,254	573	726	164	295	456	520	481	532	938	302	185	255
15 Rubber Tyre	936	899	1,410	1,316	1,468	1,629	1,622	1,699	1,460	2,607	2,877	2,049	2,624
16 Timber	116	238	3,470	6,946	285	693	1,917	864	469	1,193	1,186	977	393
17 Machinery	1,352	803	962	2,074	4,728	2,495	2,026	3,259	3,926	3,653	7,037	8,594	2,178
18 Construction Material	1,158	1,390	1,124	428	630	50	311	419	749	1,124	17,741	21,144	16
19 Plastics	2,043	1,616	1,195	1,114	999	717	778	1,263	1,357	1,770	2,044	2,308	1,820
20 Minerals	2,076	728	2,041	1,758	3,026	2,262	1,534	1,771	2,009	9,117	3,635	901	393
21 Rolled Paper	22,168	14,720	11,147	8,890	18,400	11,167	13,073	14,884	10,203	1,502	845	1,173	388
22 Insecticide	871	1,214	1,360	372	407	787	455	395	721	460	244	270	280
23 Steel Products	1,479	7,242	9,232	6,729	1,107	9,355	1,266	574	1,259	2,424	4732	6,101	506
24 Industrial Products	27,495	26,190	24,275	22,649	20,653	19,414	30,438	26,073	18,977	19,264	17,148	15,356	12,755
25 Chemical Products	10,740	13,888	12,741	11,530	10,661	10,160	7,457	7,020	10,100	9,290	12,896	10,627	5,289
26 Spair Parts	2,120	3,319	3,373	3,903	3,754	2,919	3,517	4,791	5,309	5,656	5,952	5,617	4,429
27 Resin	1,880	1,667	1,648	1,432	1,376	563	515	251	201	337	927	397	396
28 Textile	1,600	1,373	1,144	1,052	1,029	954	1,180	1,778	1,266	4,133	4,468	4,048	4,355
29 Electorical Products	3,078	2,782	2,575	2,499	2,078	2,334	2,182	2,181	1,915	1,645	1,645	1,882	1,395
30 Vehicles	6,756	8,126	3,062	5,827	5,546	5,355	4,017	5,467	11,354	9,697	13,530	17,885	5,900
31 Glass	920	1,567	2,178	2,057	2,170	3,162	3,601	6,599	3,112	2,108	4,356	4,341	1,587
32 Other	6,593	7,098	4,108	5,870	8,911	8,302	4,565	6,145	8,033	6,258	6,759	7,227	6,313
33 Flour in Bag	6,731	8,147	11,696	4,171	956	909	3,151	0	0	0	3,462	0	0
Total	224,375	207,233	232,270	240,361	227,900	191,132	159,618	190,245	208,774	233,679	261,820	293,787	198,719

Dry Bulk

1 Fertilizer	154,463	290,901	250,289	248,666	235,102	244,622	323,472	273,264	250,881	238,369	267,671	291,315	246,000
2 Carbon Soda	7,069	11,848	13,023	5,652	16,377	12,872	0	2,998	1,170	3,335	4,273	58,630	1,941
3 Cereals	273,049	204,029	274,054	199,949	210,144	221,226	301,138	364,583	210,860	271,898	409,114	374,955	422,145
4 Corn Flour	0	93,429	0	122,402	2,610	4,255	1,760	4,102	6,291	6,091	6,913	14,659	20,765
5 Soybean Flour	79,540	11,130	45,903	29,239	101,262	79,073	77,400	67,679	88,355	58,074	80,703	108,535	111,337
6 Other	8,446	0	14,915	0	5,767	2,700	2,801	0	14,703	0	2,611	0	9,648
7 Slag	0	0	17,934	0	0	0	0	0	0	0	0	0	0
Total	522,567	611,337	616,118	605,908	571,262	564,648	706,661	702,626	682,260	597,767	771,285	788,094	811,836

Liquid Bulk

1 Diesel oil	0	0	0	0	0	0	4,067	23,296	61,816	168,760	333,310	370,685	152,252
2 Cotton Seed oil	3,400	11,928	24,811	12,267	19,368	24,049	30,720	31,093	38,720	31,977	27,948	43,585	29,538
3 Alcohol	0	0	0	0	0	0	0	0	0	31,920	38,887	69,679	21,337
4 Alkane	0	0	0	0	0	0	2,549	1,115	1,837	3,033	2,660	2,860	2,722
5 Butan Gas	0	0	0	0	12,481	18,525	17,891	21,810	25,509	38,710	53,727	65,965	66,662
6 Lubricants	3,666	4,026	7,183	4,649	7,354	0	0	0	0	5,540	18,471	14,344	11,765
7 Fatty Oil	26,693	32,567	40,463	30,493	32,655	31,456	47,582	48,551	41,076	46,171	28,770	35,843	18,962
8 Caustic Soda	0	1,700	0	0	0	0	0	5,385	0	7,073	12,150	7,893	7,441
9 Soya Oil	0	0	0	5,327	0	0	0	0	0	0	0	0	0
10 Other	14,386	1,063	2,372	11,559	4,369	7,636	8,176	3,531	32,837	15,094	23,668	35,772	67,146
Total	48,146	54,294	74,835	64,295	76,227	81,666	110,985	134,781	201,794	348,277	639,691	646,626	377,825

Oil and Refined Oil

1 Oil											803,490	712,688	628,958
2 Refined Oil											131,315	365,299	650,351
Total	591,913	644,213	677,961	696,963	727,624	701,368	745,720	890,833	951,183	997,703	934,805	1,067,887	1,279,309

Source : CEPA

Table 3-1-3 Acajutla Port Export Commodity Volume

General cargo

unit : ton

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1 Food	817	7,399	858	766	829	401	184	383	775	1,064	747	668	424
2 Sesami	4,867	5,375	5,089	2,190	5,746	2,373	2,967	9,113	1,293	2,122	1,101	380	369
3 Cotton	787	1,707	3,797	1,940	583	966	464	142	69	47	37	1,581	9
4 Sugar in Bag	0	0	0	0	0	0	0	7,481	40,261	40,879	11,752	33,308	29,267
5 Balsam	70	50	77	82	53	84	113	70	71	52	75	77	48
6 Coffee	123,141	96,292	67,908	94,332	76,956	54,481	107,313	76,802	72,658	100,313	76,651	69,987	67,744
7 Container (laden)	8,161	5,333	4,391	1,948	4,750	4,513	2,829	3,650	2,962	7,533	6,045	7,229	8,242
8 Container (empty)	4,872	5,093	5,724	6,572	8,994	7,609	6,949	7,198	6,140	6,552	9,953	8,644	5,583
9 Hand Goods	82	86	87	76	128	106	109	70	131	49	51	45	36
10 Hardware	96	43	78	98	70	14	174	123	35	74	59	58	49
11 Cotton Yarn	2,411	1,776	1,455	743	1,016	726	286	22	76	0	0	86	37
12 Machinery	1,604	1,364	144	20	35	793	59	495	762	2,128	2,103	170	89
13 Honey	2,024	1,746	1,817	2,314	705	958	1,155	1,456	641	170	0	470	181
14 Industrial Products	241	174	152	91	201	606	2,480	681	374	424	1,382	691	150
15 Chemical Products	8	58	152	98	74	50	27	315	22	8	12	39	65
16 Textile, Leather	368	32	35	98	258	55	90	194	430	1,005	1,713	330	248
17 Cereals in Bag	18	0	16	12	0	0	0	13	911	0	0	0	0
18 Fuzz	3,742	3,899	0	0	0	0	0	0	0	0	0	0	0
19 Fruits & Vegetable	250	219											
20 Other	919	184	1,594	857	1,620	1,772	727	526	622	2,194	2,899	569	313
Total	151,178	130,830	93,374	115,227	101,718	73,706	125,926	108,616	128,306	161,611	114,561	124,326	112,884

Dry Bulk

1 Sugar	85,381	111,670	99,240	37,787	78,105	29,100	47,935	60,390	100,007	78,277	91,372	70,786	79,517
2 Cereals	0	18,849	0	0	0	0	0	0	0	0	0	0	0
3 Other	0	0	0	0	0	0	0	0	0	0	0	26,628	0
Total	85,381	130,519	99,240	37,787	78,105	29,100	47,935	60,390	100,007	78,277	91,372	97,414	79,517

Liquid Bulk

1 Ethyl Alcohol	0	13,842	7,897	6,082	0	5,160	4,096	8,581	11,157	25,515	39,674	53,770	33,793
2 Syrup	0	0	7,031	0	0	0	37,501	60,966	66,470	51,145	57,700	57,022	72,423
3 Other	757	0	0	0	0	0	0	0	2,394	0	0	0	0
Total	757	13,842	14,928	6,082	0	5,160	41,596	69,547	80,021	76,660	97,374	110,792	106,216

Oil and Refined Oil

1 Oil													
2 Refined Oil													
Total	0	10,134	47,665	11,984	13,947	11,421	10,606	11,715	0	10,900	0	0	88,931

Source : CEPA

Table 3-1-4 Trade Partner Countries

Import Volume in 1997 accumulated by end of October

Commodity	1	2	3	4	5
Food	New Zealand	Chile	USA	Belgium	Germany
Iron and steel	Russia	Belgium	Holland	Spain	Trinidad
Industrial products	Colombia	Peru	Ecuador	USA	Canada
Chemical products	China	Belgium	Peru	Japan	USA
Electrical products	USA	Hong Kong	Taiwan	Korea	Mexico
Vehicle	Japan	Mexico	Korea	Colombia	USA
Fertilizer	USA	Russia	Belgium	Poland	Mexico
Cereals	USA	Argentina	Mexico	Belgium	Canada
Corn flour	USA				
Soabean flour	USA				
Diesel oil	Venezuela	USA	Holland	Argentina	
Cotton seed oil	USA	Argentina	Malaysia		
Butan Gas	USA	Venezuela	Trinidad	Bahamas	Holland
Fatty oil	USA	Italy			
Crude oil	Ecuador	Mexico	Venezuela	Colombia	Argentina
Refined oil	Ecuador	USA	Holland	Venezuela	Trinidad

Export Volume in 1997 accumulated by end of October

Commodity	1	2	3	4	5
Coffee	Germany	Japan	Belgium	Holland	Finland
Sugar in Bag	Sri Lanka	Chile	Kenya	Peru	Venezuela
Food	Korea	USA	Costa Rica	Japan	
Sesame	Japan	USA	Mexico		
Textile, Leather	USA	Mexico	Panama	Taiwan	Kong Kong
Sugar	USA	Morocco	Canada	Haiti	
Ethyl Alcohol	USA	Spain			
Molasses	Puerto Rico	Bahamas	Virgin Island	Barbados	USA

Source : CEPA

Note : Trinidad, Trinidad and Tobago

of vehicle has been increasing. In export, coffee fluctuated between 55 thousand and 123 thousand tons, showing a downward trend in the past 3 years. Molasses shows an upward trend in the last 3 years from 51 thousand to 72 thousand tons. Sugar and sugar in bag has maintained a stable volume of about 110 thousand tons in the past 4 years. Trade partner countries by main commodities are shown in Table 3-1-4

(2) Container Cargoes

5. Container cargo volume and containerized ratio are shown in Table 3-1-5 and Figure 3-1-2. Since 1992, container cargo volume and number of TEUs increased annaly except in 1996. In the period of 1992 to 1996, the total and export cargo containerization rate increased from 23% to 37% and from 16% to 56% respectively. The rate of import containerization has been stagnant at 25 to 28 %.

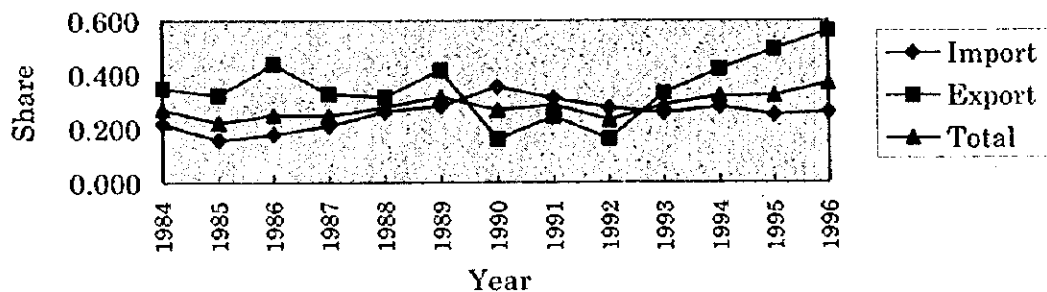


Figure 3-1-2 Port of Acajutla Containerization Ratio

Table 3-1-5 Acajutla Port Containerized Cargo Volume and Containerization Ratio

Year	Import Cargo			Export Cargo			Total		
	Containerizable Cargo volume ton	Containerized Cargo volume TEU	%	Containerizable Cargo volume ton	Containerized Cargo TEU	%	Containerizable Cargo volume ton	Containerized Cargo TEU	%
1984	212,493	4,330	0.212	141,147	49,283	0.349	353,640	94,268	0.267
1985	196,695	3,598	0.150	120,404	38,671	0.321	317,099	68,197	0.215
1986	221,367	4,215	0.176	83,259	36,443	0.438	304,626	6,745	0.247
1987	227,403	46,172	0.203	103,707	33,970	0.328	331,110	80,142	0.242
1988	214,342	54,844	0.256	88,042	27,897	0.317	302,384	82,741	0.274
1989	179,662	49,182	0.274	63,384	26,318	0.415	243,046	75,500	0.311
1990	148,699	51,271	0.345	116,148	18,738	0.161	264,847	70,009	0.264
1991	178,436	53,792	0.301	97,898	23,946	0.245	276,324	77,738	0.281
1992	197,588	51,459	0.260	119,204	19,168	0.161	316,792	70,627	0.223
1993	228,719	54,994	0.246	150,529	49,764	0.331	374,248	104,758	0.280
1994	245,986	65,360	0.266	98,562	41,376	0.420	344,548	106,736	0.310
1995	278,053	65,555	0.236	108,453	53,729	0.495	386,506	119,284	0.309
1996	183,982	46,554	0.253	99,059	55,595	0.561	283,041	102,149	0.361

Source : CEPA

Note : Empty Containers are not Included

Table 3-1-6 Acajutla Port Laden Container and Empty Container Throughput

year	Import			Export			Total		
	Laden	Empty	Total	Laden	Empty	Total	Laden	Empty	Total
	TEU share	TEU share	TEU	TEU share	TEU share	TEU	TEU share	TEU share	TEU
1984	4,330	1,129	5,459	3,976	1,722	5,698	8,306	2,851	11,157
1985	3,598	1,893	5,491	2,886	2,468	5,354	6,484	4,361	10,845
1986	4,215	1,684	5,899	2,530	2,730	5,260	6,745	4,414	11,159
1987	5,272	1,588	6,860	2,879	3,411	6,290	8,151	4,999	13,150
1988	5,962	907	6,869	2,281	4,691	6,972	8,243	5,598	13,841
1989	4,937	789	5,726	2,365	4,322	6,687	7,302	5,111	12,413
1990	5,173	494	5,667	1,593	3,786	5,379	6,766	4,280	11,046
1991	5,543	623	6,166	1,890	3,680	5,570	7,433	4,303	11,736
1992	5,794	3,024	8,818	5,052	3,706	8,758	10,846	6,730	17,576
1993	7,052	4,701	11,753	8,105	3,868	11,973	15,157	8,569	23,726
1994	8,808	6,917	15,725	9,255	6,187	15,442	18,063	13,104	31,167
1995	9,774	6,328	16,102	9,697	6,462	16,159	19,471	12,790	32,261
1996	8,090	6,556	14,646	7,480	6,083	13,563	15,570	12,639	28,209
Average	0.727	0.273		0.500	0.500		0.614	0.386	

Source : CEPA

Vessel calling

6. The calling vessel throughput at the Port of Acajutla is shown in Table 3-1-7. and Figure 3-1-3. The total number of vessel calling at Acajutla has stagnated in the past 3 years. The tendency of major types of the calling vessels is as follows.

- Conventional break bulk vessel: The number of vessel decreasing since 1987.
- Container vessel: After hit a peak in 1993, the number tends to decrease.
- Dry bulk vessel: The number is stabled.
- Liquid bulk vessel: The number increasing remarkably since 1989.

Table 3-1-7 Port of Acajutla Calling Vessel Throughput

year	Conventional Cargo Vessel		Dry Bulk	Tankers	Total
	without Containers	with Containers			
1987	235	48	46	47	376
1988	224	60	48	45	377
1989	170	84	48	53	355
1990	143	83	55	64	345
1991	125	84	60	76	345
1992	157	83	56	103	399
1993	128	130	57	103	418
1994	138	121	70	126	455
1995	117	100	58	142	417
1996	96	92	63	163	414

Source : CEPA

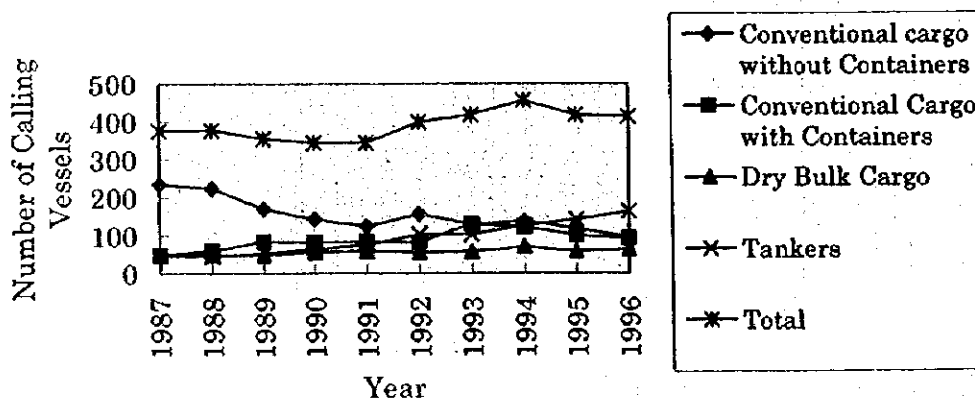


Figure 3-1-3 Acajutla Port Calling Vessel Throughput

7. The average size throughput of vessel calling by type is shown in Table 3-1-8 and Figure 3-1-4. From 1987 to 1996, the average size of each type of vessel, conventional cargo vessel, mixed cargo vessel, dry bulk cargo vessel and tanker have growing 41%, 56%, 25% and 92% respectively. The year to date calling record by October 1997 is shown in Table 3-1-9.

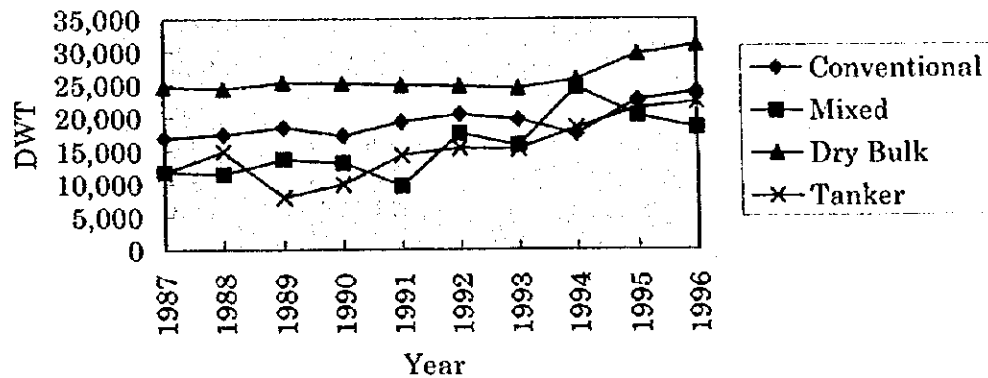


Figure 3-1-4 Acajutla Port Calling Vessel Average Size Throughput by Type

Table 3-1-9 Calling Vessel Throughput in 1997 by October

D.W.T.	Conventional Vessel		Dry Bulk	Tankers	Total
	with Containers	without Containers			
~700	1			4	5
~1,000					0
~2,000		1			1
~3,000					0
~5,000		6	2	8	16
~8,000	1	1	2	28	32
~10,000	18	1		13	32
~15,000	28	30	6	8	72
~20,000	30	15	11	6	62
~30,000	20	18	29	9	76
~40,000			21	24	45
~50,000			1	31	32
~60,000			1	4	5
~70,000				12	12
~80,000					0
Total	98	62	73	147	380

Source: CEPA

Table 3-1-8 Calling Vessel Average Size Throughput by Type

year	Item	Conventional	Mixed	Dry Bulk	Tanker
1987	Total GRT	2,270,768	460,350	546,739	116,987
	Number of Vessl	255	39	42	20
	Average GRT	8,905	11,804	13,018	5,849
	Average DWT	16,919	11,804	24,733	11,699
1988	Total GRT	2,431,503	320,037	604,215	171,553
	Number of Vessl	265	28	47	23
	Average GRT	9,175	11,430	12,856	7,459
	Average DWT	17,433	11,430	24,426	14,918
1989	Total GRT	2,108,468	589,631	640,755	99,806
	Number of Vessl	216	43	48	25
	Average GRT	9,761	13,712	13,349	3,992
	Average DWT	18,547	13,712	25,363	7,984
1990	Total GRT	1,672,214	671,524	623,652	182,531
	Number of Vessl	184	51	47	37
	Average GRT	9,088	13,167	13,269	4,933
	Average DWT	17,267	13,167	25,211	9,867
1991	Total GRT	1,775,061	436,703	603,075	323,111
	Number of Vessl	174	45	46	45
	Average GRT	10,202	9,705	13,110	7,180
	Average DWT	19,383	9,705	24,910	14,360
1992	Total GRT	2,363,344	565,117	602,070	540,955
	Number of Vessl	218	32	46	70
	Average GRT	10,841	17,660	13,088	7,728
	Average DWT	20,598	17,660	24,868	15,456
1993	Total GRT	2,503,998	347,311	761,266	566,061
	Number of Vessl	241	22	59	74
	Average GRT	10,390	15,787	12,903	7,649
	Average DWT	19,741	15,787	24,515	15,299
1994	Total GRT	2,210,945	639,759	911,089	913,183
	Number of Vessl	239	26	67	99
	Average GRT	9,251	24,606	13,598	9,224
	Average DWT	17,577	24,606	25,837	18,448
1995	Total GRT	2,459,820	344,237	919,487	1,233,989
	Number of Vessl	206	17	59	115
	Average GRT	11,941	20,249	15,585	10,730
	Average DWT	22,688	20,249	29,611	21,461
1996	Total GRT	2,315,039	166,070	1,027,909	949,461
	Number of Vessl	184	9	63	85
	Average GRT	12,582	18,452	16,316	11,170
	Average DWT	23,905	18,452	31,000	22,340

Source : CEPA

Note : Conversion Factor from GRT to DWT is 1.9, 1.0, 1.9, 2.0
for Conventional, Mixed, Dry Bulk and Tanker respectively

8. Figure 3-1-5 to 3-1-9 show the classified number of vessel by each type. TMM and NYK provide liner service between Acajutla port and North America or Far East. Nedlloyd provides the liner service only during the time that coffee is shipped from Central American countries. Container Liner calling at Acajutla are shown in Table 3-1-10. The liner companies serving Acajutla utilize combination vessels geared to carry both container and break bulk general cargo. These vessels are well suited to the market which is characterized by small cargo volumes handled at numerous ports with limited container handling equipment.

Table 3-1-10 Acajutla Port Container Liner in 1996

Container Liner	Frequency
TMM	4 times / month
NYK	2 times / month
Nedlloyd Line	3 times / month untill August

Source : CEPA

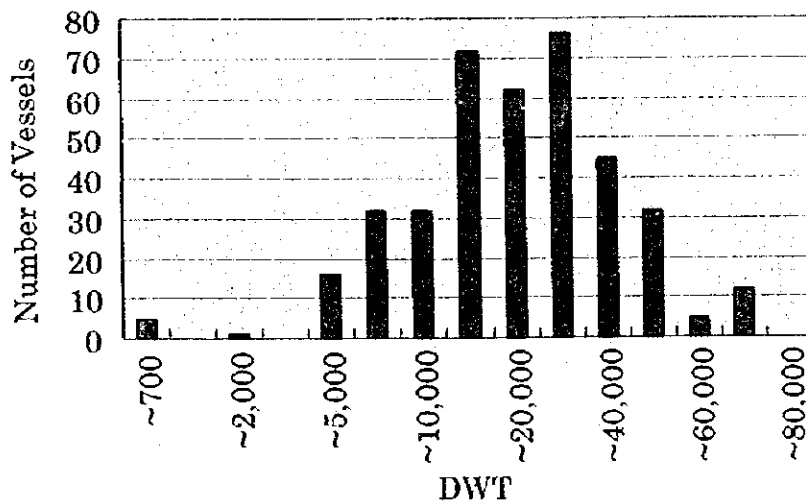


Figure 3-1-5 Calling Vessels Total in 1997 by October

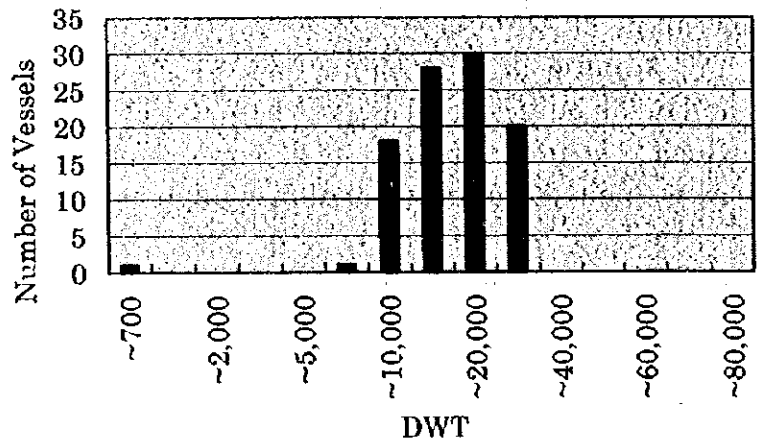


Figure 3-1-6 Conventional Vessels with Container Cargo

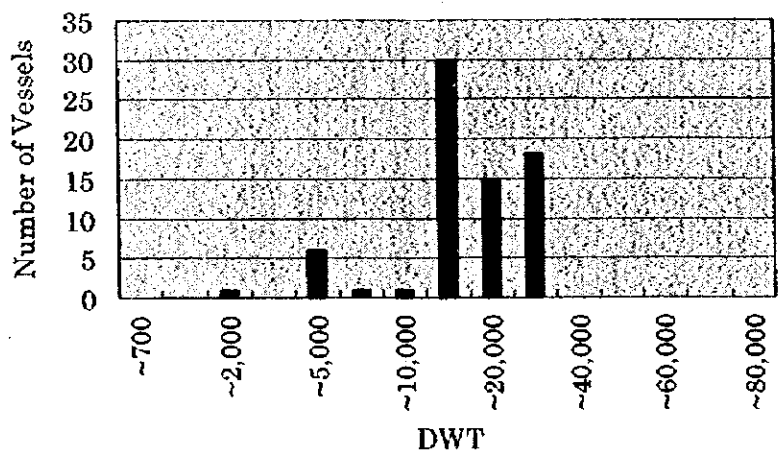


Figure 3-1-7 Conventional Vessels without Container Cargo

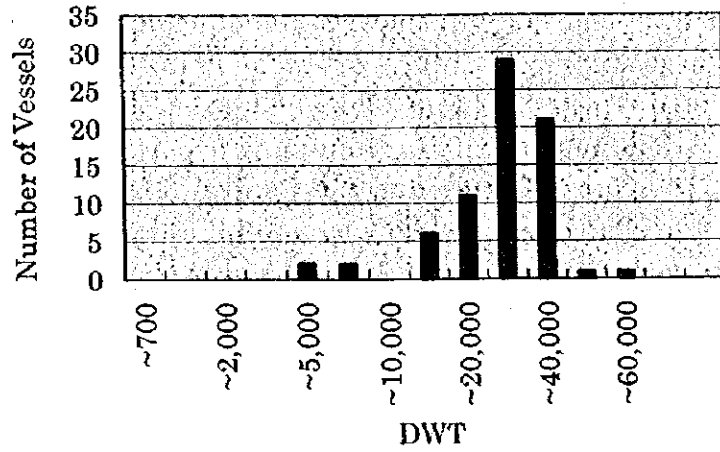


Figure 3-1-8 Dry Bulk Cargo Vessels

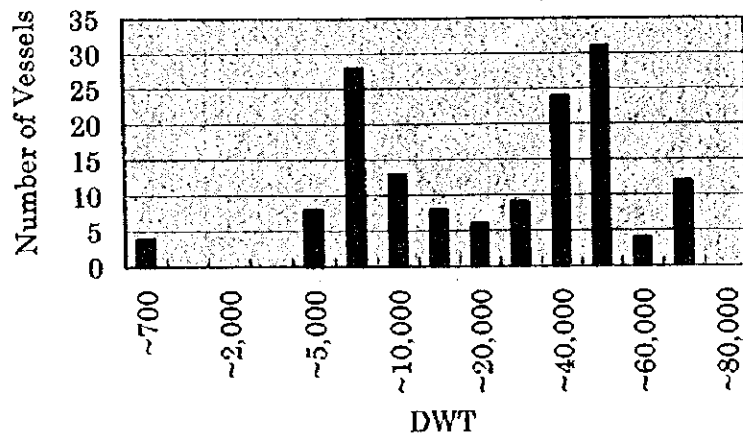


Figure 3-1-9 Tankers

3.1.2 Port of Cutuco

(1) Cargo Traffic Volume

9. 1978 was the peak year in cargo handling volume of the port of Cutuco. The cargo volume of Cutuco was heavily influenced by the civil war in the eastern region of El Salvador and started decreasing in 1978. Until the year 1979, import cargo volume and export cargo volume had well balanced. The port of Cutuco and the Central Region of El Salvador was connected with Panamerican highway and Litoral highway. However, road transportation came to a halt when 2 bridges over the Lempa river were destroyed by the guerrilla forces during the civil war. Effective 1992, export activity disappeared. Imports ceased in 1996. After the closure of Cutuco, fertilizer and butane gas imports started using the Punta Gorda fishery port.

10. The main commodities export were coffee and cotton, the main import commodities were fertilizer, liquid and general cargoes. Cargo handling volume throughput is shown in Table 3-1-11 and Figure 3-1-10. Coffee and cotton were mainly exported to USA. Main exporter of fertilizer were USA, Russia and Italy. Diesel was imported from USA, Mexico and Colombia. Cement came mainly from Cuba.

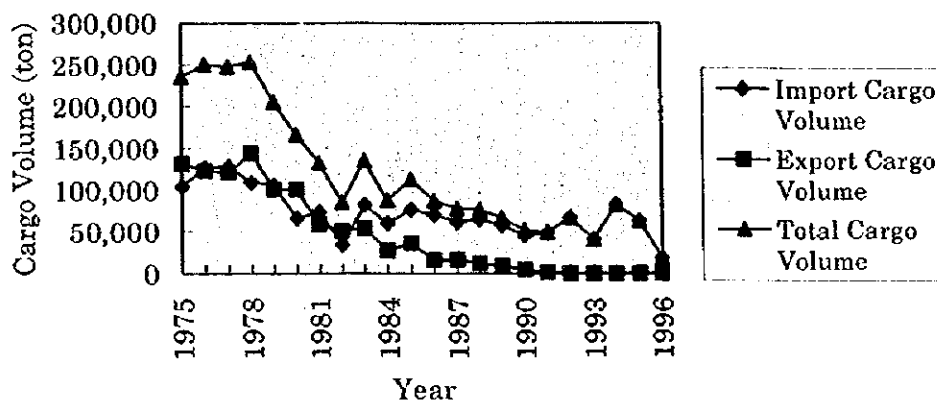


Figure 3-1-10 Cargo Handling Volume Throughput

Table 3-1-11 Cutuoco Port Handling Cargo Volume Throughput by Commodity

year	unit : ton										Total
	Import					Export					
	Fertilizer	Liquid	General Cargo	Total	Coffee	Cotton	Lamb	Liquid Cargo	General Cargo	Total	
1975	46,075	18,635	39,094	103,804	67,310	45,270	9,131	0	10,034	131,745	
1976	87,981	17,107	21,854	126,942	65,175	46,805	8,199	0	3,164	250,285	
1977	82,658	12,446	32,562	127,666	62,871	48,771	8,080	0	684	248,072	
1978	79,375	20,879	8,975	109,229	57,097	75,264	9,160	0	2,883	253,633	
1979	62,647	29,169	13,299	105,115	43,602	51,182	3,611	0	2,177	205,687	
1980	33,682	22,273	10,268	66,223	50,851	48,331	715	0	308	166,428	
1981	53,450	17,164	3,104	73,718	30,062	26,546	668	0	1,731	132,725	
1982	19,697	14,680	66	34,443	22,827	26,031	500	0	1,369	85,170	
1983	69,376	11,333	1,070	81,779	24,312	28,150	1,083	0	92	135,416	
1984	42,897	9,822	7,413	60,132	24,181	2,526	698	0	41	87,578	
1985	63,993	9,510	3,309	76,812	19,298	14,723	2,042	0	72	112,947	
1986	53,669	15,578	1,336	70,583	12,418	2,825	929	0	0	86,755	
1987	34,302	19,695	7,070	61,067	14,946	1,047	490	0	0	77,550	
1988	39,297	20,590	4,734	64,621	11,571	0	484	0	0	76,676	
1989	39,891	12,492	5,263	57,646	8,392	0	600	0	0	66,638	
1990	33,312	12,708	0	46,020	5,189	0	0	0	1,000	51,209	
1991	26,594	19,746	2,146	48,486	279	0	0	0	0	49,765	
1992	35,523	29,905	1,429	66,857	0	0	0	0	0	66,857	
1993	37,062	3,902	0	40,964	0	0	0	0	0	40,964	
1994	44,296	31,952	6,700	82,948	0	0	0	0	0	82,948	
1995	18,742	29,911	14,405	63,058	0	0	0	0	0	63,058	
1996	15,201	3,944	0	19,145	0	0	0	0	0	19,145	

Source: CEPA

(2) Vessel Calling

11. The calling vessel throughput at Cutuco is shown in Table 3-1-12. In 1992, export activity ended and the number of calling vessel started fluctuating. The average size of vessel calling throughput by type is shown in Table 3-1-13 and Figure 3-1-11. From 1992 to 1996, the average size of dry bulk vessels and tankers grew 21% and 29% respectively.

Table 3-1-12 Calling Vessel throughput

Year	Conventional	Dry Bulk	Liquid Bulk	Total
1992	1	7	10	18
1993	0	5	1	6
1994	1	8	12	21
1995	2	4	12	18
1996	0	3	2	5

Source : CEPA

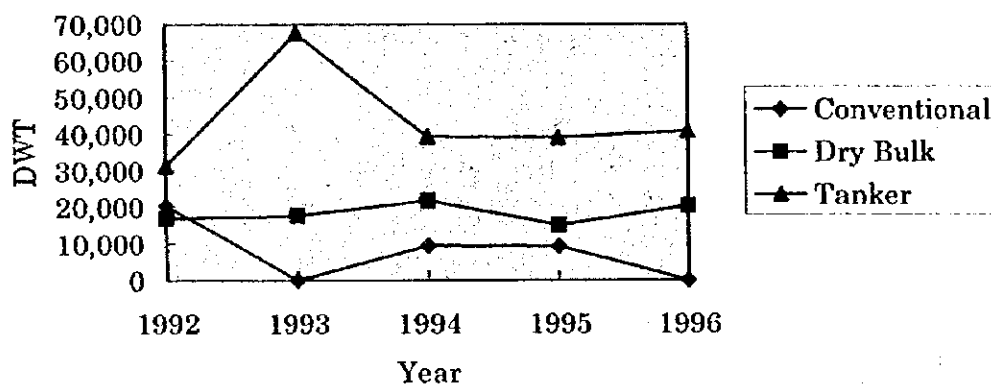


Figure 3-1-11 Port of Cutuco Calling Vessel Average Size Throughput by Type

**Table 3-1-13 Port of Cutuco Calling Vessel Average Size Throughput
by Type**

year	Item	Conventional	Dry Bulk	Tanker
1992	Total GRT	10,723	61,960	156,187
	Number of Vessels	1	7	10
	Average GRT	10,723	8,851	15,619
	Average DWT	20,374	16,818	31,237
1993	Total GRT	0	46,456	33,788
	Number of Vessels	0	5	1
	Average GRT	N.A	9,291	33,788
	Average DWT	N.A	17,653	67,576
1994	Total GRT	4,925	91,348	235,513
	Number of Vessels	1	8	12
	Average GRT	4,925	11,419	19,626
	Average DWT	9,358	21,695	39,252
1995	Total GRT	9,698	31,528	233,873
	Number of Vessels	2	4	12
	Average GRT	4,849	7,882	19,489
	Average DWT	9,213	14,976	38,979
1996	Total GRT	0	32,151	40,861
	Number of Vessels	0	3	2
	Average GRT	N.A	10,717	20,431
	Average DWT	N.A	20,362	40,861

Source : CEPA

Note : Conversion Factor from GRT to DWT is 1.9, 1.9, 2.0
for Conventional, Dry Bulk and Tanker respectively.

3.2 Cargo Flow through the Port of Acajutla

3.2.1 Total Cargo Movement

1. Table 3-2-1 shows the cargo movement (excluding oil and refined oil) by country in volume for the past five years ('92-'96). As for the import, dominant is U.S.A. whose share is more than a half (55.3%), followed by Belgium (4.5%), Russia (4.5%) and Venezuela (4.0%). As to the export, dominant is also U.S.A. the share of which is 38.1%, followed by Germany (15.2%), Venezuela (9.5%), Puerto Rico (7.3%) and Virgin Islands (5.7%). (See the Table 3-1-3 as to the volume by commodity.)

Table 3-2-1 Cargo Movement by Country in Volume for 1992-1996

Unit: metric ton							
Country	1992	1993	1994	1995	1996	Total	%
<i>Import</i>							
Belgium	51,842	43,810	99,610	61,625	52,604	309,491	4.5
Canada	13,115	34,672	14,672	24,305	63,835	150,599	2.2
U. S. A.	555,767	636,272	797,461	957,248	850,064	3,796,812	55.3
Japan	16,899	24,325	35,760	44,354	22,987	144,325	2.1
Russia	93,317	50,558	43,491	57,573	63,355	308,324	4.5
Venezuela	35,327	26,540	62,931	68,938	84,528	278,264	4.0
Others	226,531	367,602	518,771	514,464	251,007	1,878,375	27.4
Total	992,828	1,183,779	1,572,696	1,728,507	1,388,380	6,866,190	100.0
<i>Export</i>							
Germany	30,220	47,969	59,998	47,195	51,453	236,835	15.2
Belgium	3,447	20,760	6,377	7,800	11,272	49,656	3.2
U. S. A.	138,154	116,845	99,594	118,068	122,772	595,433	38.1
Netherlands	4,787	5,658	4,321	8,304	2,851	25,921	1.7
Virgin Islands	16,800	19,563	19,700	27,530	4,828	88,421	5.7
Japan	3,988	6,331	2,782	4,295	4,726	22,122	1.4
Puerto Rico	18,750	12,642	26,700	15,520	39,944	113,556	7.3
Venezuela	35,148	23,046	43,996	32,132	14,279	148,601	9.5
Others	57,040	66,737	39,839	71,688	46,492	281,796	18.0
Total	308,334	319,551	303,307	332,532	298,617	1,562,341	100.0

(Note) Oil and refined oil excluded

Source: CEPA

3.2.2 Container Cargo Movement

2. Table 3-2-2 shows the container cargo movement for the past five years '92-'96. As to the export, characteristic is coffee the share of which is 2/3 of the total (66.9%).

Table 3-2-2 Container Cargo Movement by Commodity
in Volume for 1992-1996

Unit: metric ton

Commodity	1992	1993	1994	1995	1996	Total	%
<i>Import</i>							
Foods	7,399	5,190	4,374	5,936	4,623	27,522	7.7
Glassware & Chinaware	1,874	1,921	2,061	2,009	1,237	9,792	2.8
Hardware	1,905	2,193	4,475	4,103	2,514	15,190	4.3
Machinery	1,324	2,908	4,834	3,192	1,126	13,384	3.8
Chemical products	2,879	2,852	5,783	5,308	2,904	19,816	5.6
Products for industry	6,520	5,821	7,167	10,131	8,696	38,335	10.8
Spare parts	4,268	4,617	5,175	4,849	3,778	22,687	6.4
Textile	1,128	3,958	4,501	4,024	4,670	18,281	5.1
Glass	2,972	2,055	4,203	4,338	1,423	14,991	4.2
Others	32,376	37,495	38,621	36,599	30,321	175,412	49.3
Total (TEU)	62,645 (8,818)	69,010 (11,771)	81,194 (15,725)	81,269 (16,102)	61,292 (14,646)	355,410 (67,062)	100
<i>Export</i>							
Foods	759	1,064	746	708	429	3,706	1.3
Sesame	1,119	1,322	1,101	360	368	4,290	1.5
Coffee	13,884	43,198	33,350	48,937	53,762	193,131	66.9
Products for industry	374	424	1,378	687	145	3,008	1.0
Textile, Leather goods	405	951	1,603	293	227	3,479	1.2
Others	11,729	16,890	19,197	18,597	14,507	80,920	28.1
Total (TEU)	28,270 (8,758)	63,849 (11,973)	57,375 (15,442)	69,602 (16,159)	69,438 (13,563)	288,534 (65,895)	100
Grand Total (TEU)	90,915 (17,576)	132,859 (23,744)	138,569 (31,167)	150,871 (32,261)	130,730 (28,209)	643,944 (132,957)	

Source: CEPA

3.2.3 Origin/Destination of Cargo

3. In the cargo manifest, the destination port of exports or the origin port of imports and the consignee and the shipper are described. Imported or exported cargo has usually been handled by the trading companies or the cooperatives, who usually have their office and warehouses in main cities but don't have any information as to the specification of the domestic origin/destination of the cargo.

4. Under the circumstances, the origin or the destination of the cargo in Tables 3-2-3 and 3-2-4 shows the location of these organizations to/from whom the commodities are directly transported to/from Acajutla Port. The imported or exported goods are distributed or collected not only to/from their district but also to/from the other districts. Therefore, the share of San Salvador is dominant both in the import and the export.

Table 3-2-3 Origin of Exported General Cargo at Acajutla Port
(January-October 1997)

Unit: metric ton

District	Main Commodity	*Contr.	Non-Cont	Total
Ahuachapan	Coffee	786.87		786.87
Ahuchapan	Coffee	382.03	173.65	555.68
Antig. Cuscatlan	Foods	89.83		89.83
Apopa	Sugar; textile	13.80	17238.86	17252.66
Chalchuapa	Coffee	1,544.72	17.37	1,562.09
Colon	Personal effects	282		282
Ciudad Barrios	Coffee	354.11		354.11
Guatemala	Sesame	18.34		18.34
Juayua	Coffee	902.54		902.54
La Libertad	Coffee; instant coffee	107.19		107.19
San Marcos	Textile; cloth	58.57		58.57
San Miguel	Coffee	62.44		62.44
San Salvador	Sugar; Coffee; timber; sesame; honey; industrial machinery; iron or steel plate	14,611.78	43,053.74	57,665.52
Santa Ana	Coffee	527.56	642.64	1,170.20
Santa Tecla	Coffee; confectionary	380.46	1,272.23	1,652.69
Soyapango	Rolled paper; cotton waste	13.41	369.76	383.17
Total		19,856.47	62,768.25	82,624.72

*The volume of the contents only
Source: CEPA

Table 3-2-4 Destination of Imported General Cargo at Acajutla Port
(January-October 1997)

Unit: metric ton

District	Main Commodity	*Contner.	Non-Contner.	Total
Ahuachapan	Iron, steel and its products; plastics; raw material	636	2940	3576
Antig. Cuscatlan	Hardware; Iron or steel plate; raw material	51871	23110	74981
Apopa	Textile; artificial fiber; raw material	1,005.09		1,005.09
Ciudad Merliot	Pharmaceutical product; insecticide		5.14	5.14
Conjutepeque	Car parts	275	122	397
Colon	Textile; raw material	65.56		65.56
Esquint. Guatemala	Raw material	708.60		708.60
Guatemala	Rubber tire; chemical products	24.49	0.22	24.71
Ilopango	Textile; equipment parts; plastic board	306.62	3.91	310.56
La Libertad	Iron, steel & its products; plastic toys; foods; car	210.78	538.60	749.47
Lourdes	Equipment parts	0.96		0.96
Mejicanos	Textile; hardware; wire;	119.75	9.45	129.20
Quezaltepeque	Iron, steel & its products; chemical products; zinc	42.10	16,378.34	16,420.44
S. Antonio Abad	Textile; plastic goods; cotton thread	546.58		546.58
San Bartolo	Hardware	3.81		3.81
San Juan Opico	Hardware; iron, steel & its products	26.08	20.21	46.32
San Marcos	Raw material; textile	27.43		27.43
San Miguel	Iron, steel & its products; hardware; car parts	222.29	141.72	364.01
San Salvador	Iron, steel & its products; iron or steel plate; sulfate of ammonia; chemical products; car; raw material	36,313.04	137,391.30	173,704.34
Santa Ana	Iron, steel & its products; raw material; acid	417.35	1,416.19	1,833.54
Santa Tecla	Hardware; equipment parts; wire; iron & steel part	612.32	12.83	625.15
Santo Tomas	Chemical products; acid		174.14	174.14
Soyapango	Tin plate; raw material; textile; hardware	2,346.43	2,262.36	4,608.79
Tonacatepeque	Car; chinaware	13.15	174.89	188.04
Total		43,540.28	158,791.17	202,331.45

* The volume of the contents only
Source: CEPA

4. THE PORT OF ACAJUTLA

4.1 Existing Port Facilities

4.1.1 Major Port Facilities

1. The Port of Acajutla consists of three(3) major piers A, B and C, along which eight(8) nominal berths are arranged, as shown in Figure 4-1-1 and Table 4-1-1. These piers were constructed in order of A, B, and C from 1960 to 1974.
2. An oil refinery(RASA: Refineria de Acajutla, S.A.), an oil distribution plant(Coastal Technology Salvador, S.A.), grain silos(ALCASA) and other industries related with port cargoes forms an industrial complex around the port. There is also a fishing port close to it.
3. Pier A is 310m long and 37m wide with a depth of 10-12 m. Parallel to Pier A on the land side, Pier B is arranged, which is 370 m long and 28m wide with a depth of 10-12 m. Pier C is extended from Pier A, forming a breakwater to protect the port area. It is 307 m long, 19 m wide and 14 m deep.
4. Two private buoy systems with a depth of more than 15 m and suited for a 60,000 DWT oil tanker are installed away from these piers on the sea side. These buoy systems are connected with two oil plants via submarine pipes.
5. All types of cargo are able to be handled at these piers with the exception that Pier B isn't equipped for liquid bulk cargo. General cargo, dry bulk and container cargo are handled by ship gear. A dry bulk handling system is installed in Pier B, connected via conveyor belt to silos on land. Pier A has a transit shed (4,500 m²), and two small, old cranes which are out of service.
6. CEPA has no facilities for waste oil nor countermeasures against oil spills.

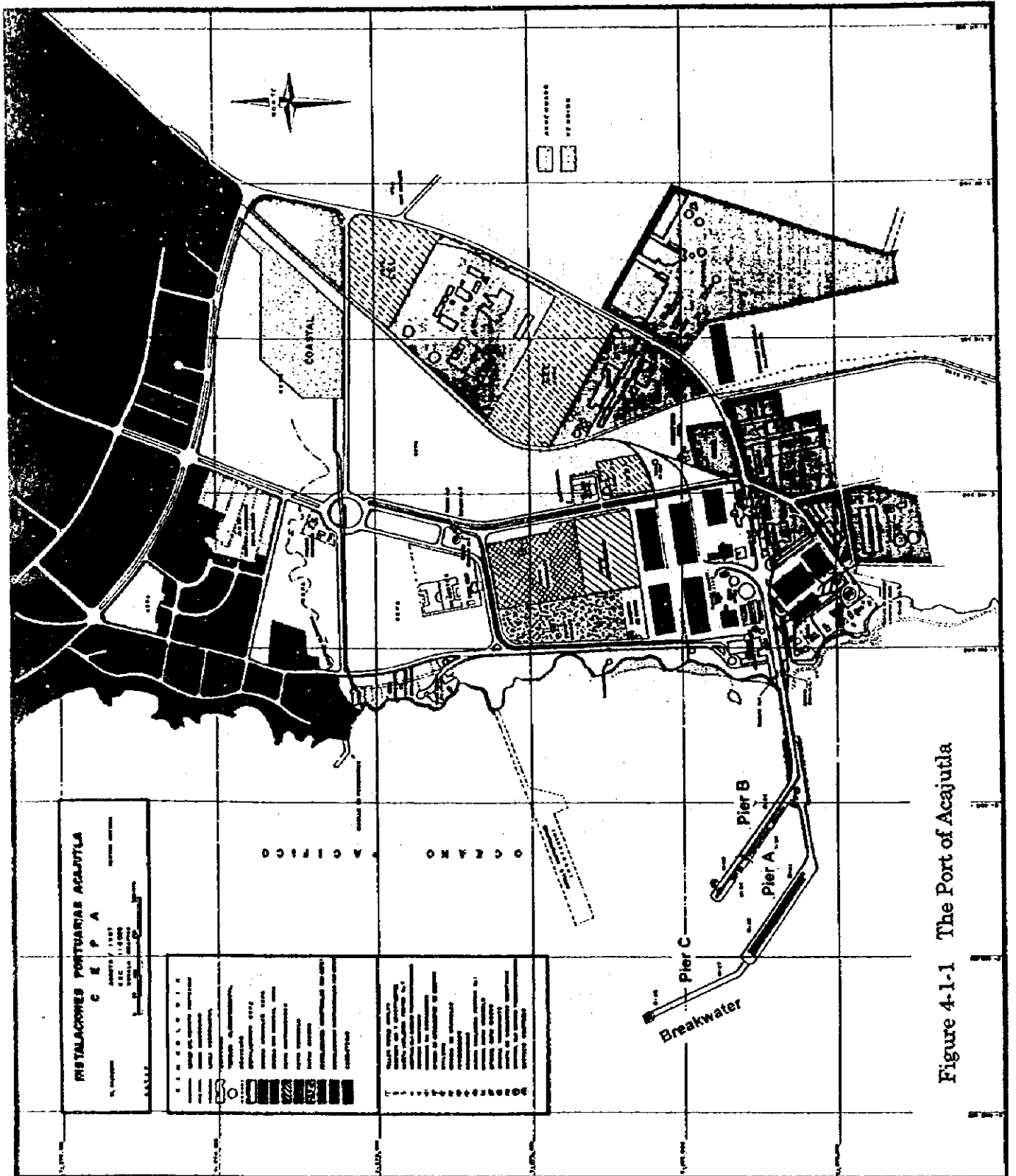


Figure 4-1-1 The Port of Acajutla

Table 4-1-1 Major Facilities and Cargo Type Handled at Each Facility

Pier Berth	Length (m)	Width (m)	Depth (m)	Major Cargo Type Handled
Pier A	310	37		(and works as Breakwater)
A-1			10	General and Dry Bulk Cargo
A-2			12	General, Dry and Liquid Bulk Cargo
Pier B	370x2	28		
B-3			10	General and Dry Bulk Cargo
B-4			12	General and Dry Bulk Cargo
B-5			10	General and Dry Bulk Cargo
B-6			10	General and Dry Bulk Cargo
Pier C	307	19		(and works as Breakwater)
C-7			14	General, Dry and Liquid Bulk Cargo
C-8			14	General, Dry and Liquid Bulk Cargo

Source: CEPA

4.1.2 Ship Priority and Cargo Handling

7. Generally speaking, the ships are served on a "first come first serve" basis with one exception. Ships carrying butane gas have priority over other ships as butane gas is indispensable to the daily lives of the people (on average, 2 ships arrive every month, requiring a full day to off-load). Equipment to handle butane gas is installed at the end of Pier C.

8. Pier C is the deepest and occupies a good position in the port. So it is primarily assigned for larger ships, usually for dry bulk ships, which can't moor at the other piers. As to dry bulk handling, however, Pier B has the efficient dry bulk handling system, so dry bulk ships which can moor at Pier B prefer it to Pier C. There are around 15 movements of ships a year from Pier C to Pier B for these two reasons.

9. Many ships carrying container and/or general cargo moor at Pier A. A transit shed is available for these cargoes, if necessary. In many cases, containers are transported by mixed general cargo/ container ships along the Pacific coast of Central America. Liquid bulk ships moor at Pier C or Pier A.

10. The cargo type related to each pier is summarized in the previous Table 4-1-1. In addition, the current cargo handling system for major cargo is summarized in the Table 4-1-2.

Table 4-1-2 Cargo Handling System for Major Cargo at Pier

Commodity	Packing Type	Main Equipment	Average Productivity	Other Remarks
For Import				
Grain	Dry bulk	Dry bulk handling system	200-250 t/hr	Pier B
	Dry bulk	Ship gear	20-25 t/hr/gear	Pier C
Fertilizer/ Material	Raw	the same as Grain		
Diesel Oil	Liquid bulk	Pipeline	300 t/hr	Pier A,C
Flour(Soybean)	the same as Grain			
Iron and Steel	General	Ship gear		Pier A,B,C
Butane Gas	Liquid bulk	Pipeline	100 t/hr	Pier C
For Export				
Sugar (Well-refined)	Dry bulk (50kg Bag)	Ship gear and palette	20-25 t/hr/gear	Pier A
	Container	see Container below		
Sugar(Refined)	Dry bulk	Dry bulk handling system	200-250 t/hr	Pier B
Coffee	General (70kg Bag)	Ship gear and palette	20-25 t/hr/gear	Pier A
	Container	see Container below		
Molasses	Liquid bulk	Pipeline	300 t/hr	Pier A
Ethyl Alcohol	Liquid bulk	Pipeline	300 t/hr	Pier A
Container		Ship gear (17worker/gang)	5 box/hr/gear	Pier A

Source: Interview with CEPA

11. Based on observation by the Study Team, the productivity of container handling at the pier was 12-14 boxes/hr/gear. These containers were carried by a 32,000 DWT general ship almost full-loaded, and the cargo handling was executed by two ship gears. According to CEPA, the relatively high productivity was accomplished because the ship was relatively large and stable at the pier.

12. Even in this case, some containers had to wait for the chassis to come under them. Only six chassis are now available in the port, which have to go back and forth around 2 km every time between the pier and the on-land container stocking yard. The productivity could be easily increased by simply adding more chassis.

13. The port has five tugboats: 1380HP, 1200HP, 1200HP, and two 250HPs. The two small ones are used as pilot boat and working boat. CEPA has three pilots here.

4.1.3 Land Area for Port Activities

14. More than one(1) km away from above piers on land, four(4) warehouses with an area of 4,800 to 6,000 m² serve as the principal enclosed storage area for general cargo and/or LCL cargo.

15. Container storage is provided at a 3.0 ha parcel located just north of these warehouses. Average dwelling time of container was 5.6 days for export, and 16.5 days for import in 1996.

16. Adjacent to the container yard are two other open storage yards: one is a 3.6 ha parcel for vehicles, the other is a 3.0 ha for iron.

17. To the south of the above-mentioned warehouses, an administration building and three workshops are located at the entrance of the piers. Silos, oil and chemical tanks are found in close proximity to one another, further south.

18. The port has two gates. The total traffic volume there was 400-600 trucks/day in 1996 (container, general cargo, dry bulk, and liquid bulk). Average load carried by them is around 11 ton/truck(dry bulk).

4.1.4 Port Maintenance and Improvement

19. The port is undergoing the following rehabilitation and improvement with the support of Germany. The structure (access road) between Pier A and B, and the electrical facilities along Pier A are under rehabilitation. The modernization of electric devices and mechanical parts of the existing dry bulk handling system on Pier B will be finished next January, 1998. Average productivity is expected to increase to more than 300 t/hr from 200-250 t/hr.

20. As well, a German firm is conducting a feasibility study on the installation of a new dual-purpose crane on Pier C. This crane handles container /general cargo, and is equipped with a conveyor system for dry bulk cargo. A similar plan was also studied by a US consultant several years ago.

4.1.5 Other Remarks

21. In spite of the improvements aforementioned, the following are generally pointed out as bottlenecks especially in container handling at the port;

- a) Insufficient space on the piers. Pier C is so narrow that sufficient space for efficient container handling can't be assured. A 40' container is 12 m long, so a semi-trailer needs at least a 20 m long space to turn around smoothly. The situation of Pier B is similar, taking into consideration the space required for access road. Pier A is relatively wide, but there is a transit shed on it.
- b) It takes a long time to carry containers 2 km from each pier to the container yard on land. The access road to each pier is so narrow with the other traffic that it limits the capacity for container handling.
- c) In addition, this port is easily affected by winds, waves and currents, since it faces the Pacific Ocean directly. Especially in the change of seasons, a swell generated outside often causes mooring vessels to pitch and roll even with Pier C acting as breakwater. (In 1984, a high wave reached the transit shed on Pier A.) It takes a lot of time to handle containers from the ship onto a chassis and on to land. It's also cost wasting as handling sometimes has to be suspended (15 days a year, on average).

(Note)

The motions of moored vessels were also analyzed in detail by English consultants in the report "Puero de Acajtla Estudio de Factibilidad Para Contenedores" (October, 1975)" (Association of Livesey & Henderson and Coopers & Lybrand Associates Ltd), when Pier C was under construction, as follows;

- Wave action at the port is found to consist of swell waves(with periods of 10 to 20 seconds), and much longer waves of the order of 100 to 200 seconds duration.
 - The construction of a new breakwater (north of the existing breakwater) would only reduce long wave motions by 1/4 of those present after completion of Pier A extension.
- d) This is the main reason why some major container shipping lines finally gave up calling at this port several years ago. Instead, they have been handling the corresponding containers at the Port of Quetzal of Guatemala.

22. In addition, some users find the port inconvenient for the following

reasons;

- a) Users prefer Pier C since it is the deepest and can serve large ships. However, it is so busy that other ships are forced to wait.
- b) The conveyor belt system runs along Pier B and then crosses the main access road, where the cargo height is limited to 6 m. Some cargo has a height greater than 6 m.
- c) The loading capacity of Pier A is 22 tons. Some heavy containers can't be handled at this pier.

4.2 Utilization of the Port Facilities

4.2.1 Current Utilization

1. CEPA prepares its own port statistics every year and calculates various indexes related to port utilization as shown in Table 4-2-1. This table shows port utilization for the last 5 years.
2. Total cargo movement has increased favorably except in 1996. Based on the latest information as of October, 1997, total cargo movement for 1997 is expected to reach the same level as 1995, 2,000,000 tons or to slightly surpass this amount.
3. In proportion to the increase in cargo, the volume of cargo carried by one ship and the average ship size have increased too. In 1995 and 1996, the cargo movement/ship is around 5,000 tons.
4. As to port staying hours, port entrance-pier hours, on-berth hours, working hours on berth for cargo handling, non-working hours on berth (both inactivity and delay), and pier-port exit hours per ship, a clear tendency has not been observed in the recent five years. However, pier-pier hours per ship have increased to around 5.0 from 1.0 hours.
5. Pier-pier hours is the time required for a ship to move from one pier to another for some reason. For example, a large dry bulk ship moves from deep Pier C to Pier B equipped with the dry bulk handling system, after unloading a certain volume of cargo to meet the depth of Pier B.

6. Characteristically, pier-pier hours are greater for liquid bulk cargo. Liquid bulk ships carrying butane gas call at Pier C with butane gas handling equipment. Sometimes, they cannot unload all the cargo at one time because of constraints placed by tank capacity on land. Therefore, they are forced to free Pier C for another ship and wait until the tank on land is ready.
7. Generally speaking, cargo movement efficiency has improved in cargo movement/port staying hours, on-berth hours and working hours per ship. Cargo movement/working hours at the pier, namely net cargo handling efficiency at the pier, increased to around 130-140 t/h/ship.
8. This might be reaching the level of the existing cargo handling capacity as long as the existing cargo handling equipment and system are adopted without any improvement and modernization. Concerning the port capacity, it will be evaluated in detail later.
9. Table 4-2-1 is the breakdown of port utilization by ship type in 1996. A mixed ship is defined as a general and dry bulk cargo ship. Containers are carried by general cargo ships.
10. Cargo carried on average: 1,500 t by 13,000 G.T general cargo ships; 14,000 t by 16,000 G.T. dry bulk ships; 5,500 t by 11,000 G.T., and 5,500 t by 18,000 G.T. by mixed ships. General cargo ships could call the port without a full draft because they call other ports beforehand and afterwards.
11. Port entrance-pier hours consist of net ship movement and some waiting time for it. Among ships of four types, that of dry bulk ship is relatively long (about 22 hours), but it is less than one day. Similarly, non-working hours is the most for dry bulk ship. (They sometimes have to wait for quarantine approval.) However, it is almost two days (42 hours), and should be improved as soon as possible.
12. Average port staying time is around 1 day for general cargo ship, 6-7 days for dry bulk ship, and 2-3 days for liquid bulk cargo ship and mixed ship. Totally, it is 2-3 days.
13. Reasons for working delays include ship waiting for mooring and non-working time in cargo handling on berth (see Table 4-2-3). Delays

caused by CEPA represent 22% of the total. This should be improved as soon as possible.

4.2.2 Preliminary Evaluation of Port Capacity

14. The capacity of the Port of Acajutla is referred to in the Plan of Economic and Social Development (1994-1999) of the government. It states that the port handled 1,060,000 t in 1989, which is 70% of the port capacity, and that the cargo volume handled in 1993 is 1,650,000 t, which means the port would be saturated in the near future.

15. The cargo volume exceeded the level of 2,000,000 t in 1995. However, the basic infrastructure of the port remains the same. The port capacity also depends on other factors such as cargo handling system and equipment.

Table 4-2-1 Recent Port Utilization from 1992 to 1996

	Unit: Cargo(t), Hour(h)				
	1992	1993	1994	1995	1996
Total Cargo Movement (A)	1,301,162	1,503,330	1,876,003	2,061,039	1,686,997
Total Calling Ships (B)	366	396	431	397	341
Cargo Movement/ Ship (A)/(B)	3,555	3,796	4,353	5,192	4,947
Average Ship Size (G.T.) (C)	11,124	10,552	10,846	12,487	13,075
Port Staying Hours/ Ship (1)	62.95	51.89	54.21	68.80	66.79
Port Entrance-Pier Hours/ Ship (2)	10.36	6.09	8.23	12.04	10.17
On-Berth Hours/ Ship (3)	50.17	44.20	44.01	51.69	50.97
Working Hours/ Ship (4)	33.86	31.16	31.96	38.55	36.73
Non-Working Hours/ Ship (5)	16.31	13.04	12.05	13.14	14.24
Pier-Pier Hours/ Ship (6)	1.70	1.05	1.23	4.70	4.93
Pier-Port Exit Hours/ Ship (7)	0.72	0.55	0.74	0.37	0.72
Cargo Movement/Port Staying Hours/Ship (A)/(B)/(1)	56.5	73.2	80.3	75.5	74.1
Cargo Movement/On-Berth Hours/Ship (A)/(B)/(3)	70.9	85.9	98.9	100.4	97.1
Cargo Movement/Working Hours/Ship (A)/(B)/(4)	105.0	121.8	136.2	134.7	134.7
Port Entrance-Pier Hours/Port Entrance-Pier Hours/Ship (2)/(1)	16.5%	11.7%	15.2%	17.5%	15.2%
On-Berth Hours/Port Entrance-Pier Hours/Ship (3)/(1)	79.7%	85.2%	81.2%	75.1%	76.3%
Pier-Pier Hours/Port Entrance-Pier Hours/Ship (6)/(1)	2.7%	2.0%	2.3%	6.8%	7.4%
Pier-Exit Hours/Port Entrance-Pier Hours/Ship (7)/(1)	1.1%	1.1%	1.4%	0.5%	1.1%
Working Hours/On-Berth Hours/Ship (4)/(3)	67.5%	70.5%	72.6%	74.6%	72.1%
Non-Working Hours/On-Berth Hours/Ship (5)/(3)	32.5%	29.5%	27.4%	25.4%	27.9%

Source: Annual Statistics: The Port of Acajutla (CEPA)

Table 4-2-2 Port Utilization by Ship Type in 1996

	Unit: Cargo(t), Hour(h)				
	General	Dry Bulk	Liquid Bulk	Mixed	Total
Total Cargo Movement (A)	273,304	886,253	478,742	48,698	1,686,997
Total Calling Ships (B)	184	63	85	9	341
Cargo Movement/ Ship (A)/(B)	1,485	14,068	5,632	5,411	4,947
Average Ship Size (G.T.) (C)	12,582	16,316	11,170	18,452	13,075
Port Staying Hours/ Ship (1)	29.09	167.68	73.85	64.67	66.79
Port Entrance-Pier Hours/ Ship (2)	4.83	21.59	13.89	4.44	10.17
On-Berth Hours/ Ship (3)	23.05	139.00	45.21	59.89	50.97
Working Hours/ Ship (4)	15.36	96.51	38.42	39.11	36.73
Non-Working Hours/ Ship (5)	7.69	42.49	6.79	20.78	14.24
Pier-Pier Hours/ Ship (6)	0.41	6.29	14.22	0.11	4.93
Pier-Port Exit Hours/ Ship (7)	0.80	0.80	0.53	0.23	0.72
Cargo Movement/Port Staying Hours/Ship (A)/(B)/(1)	51.0	83.9	76.3	83.7	74.1
Cargo Movement/On-Berth Hours/Ship (A)/(B)/(3)	64.4	101.2	124.6	90.3	97.1
Cargo Movement/Working Hours/Ship (A)/(B)/(4)	96.7	145.8	146.6	138.4	134.7
Port Entrance-Pier Hours/Port Entrance-Pier Hours/Ship (2)/(1)	16.6%	12.9%	18.8%	6.9%	15.2%
On-Berth Hours/Port Entrance-Pier Hours/Ship (3)/(1)	79.2%	82.9%	61.2%	92.6%	76.3%
Pier-Pier Hours/Port Entrance-Pier Hours/Ship (6)/(1)	1.4%	3.8%	19.3%	0.2%	7.4%
Pier-Exit Hours/Port Entrance-Pier Hours/Ship (7)/(1)	2.8%	0.5%	0.7%	0.4%	1.1%
Working Hours/On-Berth Hours/Ship (4)/(3)	66.6%	69.4%	85.0%	65.3%	72.1%
Non-Working Hours/On-Berth Hours/Ship (5)/(3)	33.4%	30.6%	15.0%	34.7%	27.9%

Source: Annual Statistics: The Port of Acajutla (CEPA)

Table 4-2-3 Reasons for Working Delays in 1996

Reasons	Delay Hours	(%)
CEPA: Equipment malfunction during operation and breakdown by CEPA workers (i.e.) Malfunction of the dry bulk handling system, lack of equipment, workers, etc.	1,651	26
Users: Suspension of operation by users (i.e.) Cargo or documents not properly prepared, lack of trucks	1,127	18
Uncontrollable: Accidents (i.e.) Rain and swell, lack of electric energy	1,408	22
Ship: Malfunction of ship equipment or waiting order by a ship captain or shipping agent (i.e.) Malfunction of ship equipment, lack of documents, etc.	802	13
Personnel: Shift change, meal and coffee break by CEPA personnel	1,389	22
Total	6,377	100

Source: Annual Statistics: The Port of Acajutla (CEPA)

(1) Estimation by US consultants

16. A detailed capacity estimation was executed by American consultants in the report "Port of Acajutla Container Terminal Feasibility Study Update (January, 1992)" (Frederic R. Harris, Inc.).

17. In the estimation, the following factors were considered;

- Total annual berth hours (24 hours/day, 358 days/year)
- Maximum acceptable berth occupancy based on UNCTAD guidelines (i.e. Maximum occupancy 34.0% for 2 berths, 49.0% for 3 berths, etc.)
- Seasonal peaking (i.e. General cargo (coffee) export peak between March and June)
- Percentage of berth hours spent working based on CEPA's most recent statistics (i.e. Working hours 62% and non-productive hours 38% at berth for dry bulk)
- Average productivity based on CEPA's 1990 statistics and field survey

18. Sample capacity calculations are shown below, based on the estimation of Pier A and C for general and container cargo, and Pier B for dry bulk cargo.

Table 4-2-4 Sample Capacity Calculation in 1992

Unit: thousand ton

Cargo type	Capacity	Average productivity (ton/ working hour)
General Cargo	268	60.4
Container	57,300(boxes)	6 (box/hr/gear)
Dry Bulk	563	200-250 for dry bulk handling system
	323	40.0 for ship gear
Liquid Bulk	-	84.8
Total	1,154	
	57,300(boxes)	

Source: "Port of Acajutla Container Terminal Feasibility Study Update (January, 1992)" (Frederic R. Harris, Inc.)

19. According to Table 4-2-4, the port capacity was 1,154,000 t and

57,300 containers. On the assumption that all containers loaded are on average 7 tons, in order to evaluate maximum capacity, the port capacity would be 1,555,000 t. If a portion of the above cargo is replaced with the existing liquid bulk, the port capacity would increase slightly due to its higher cargo handling efficiency.

20. The report states the port would be saturated before 2000 and proposes one dual purpose crane on Pier C for the short-term until the years 2001-2005 when a new terminal will be required. It would be available for cargo operations 2,500 hours per year with an average productivity of 285 t per working hour for dry bulk cargo and 8 containers for container handling. It was expected to increase the port capacity about 1,700,000 to 1,900,000 t (the weight of one container is assumed at 7 t).

(2) Estimation by German consultants

21. Potential capacity was also evaluated by German consultants in the report "Rehabilitation of the Port of Acajutla (October, 1994)" Association of Rhein-Ruhr Ingenieur-Gesellschaft Mbh(PRI) and Gesellschaft fur Organisation Planung und Ausbildung(GOPA).

22. According to this report, the potential capacity of the port was estimated at 1,945,000 t as follows. (The same consultants estimated the capacity at 1,560,000 in 1990.) As a result, the utilization of the port was calculated as 77%(1,503,000 t) in 1993, and 93% (1,815,000 t)in 1994.

Table 4-2-5 Port Capacity and Port Utilization (1993 and 1994)

Unit: thousand

ton

Port Capacity		Port Utilization			
Cargo type	ton/year	1993	(%)	1994	(%)
General Cargo	275	270	98	315	115
Container (28,600 boxes)	200	132	67	140	70
Dry Bulk	880	676	77	830	94
Liquid Bulk	590	425	72	530	90
Total	1,945	1,503	77	1,815	93

Source: "Rehabilitation of the Port of Acajutla (October, 1994)" ,
Association of PRI and GOPA

23. Based on the fact that the port was almost saturated then, the report proposed urgent measures to develop the port capacity by cargo type as follows. If all of these measures are executed, the capacity of the port will increase to around 2.5 million tons from around 2.0 million tons. (In addition, the capacity increase for liquid bulk should be taken into consideration if necessary.)

24. Recently, the same consultants have been dispatched by the government of Germany. The aforementioned report is being reviewed taking into consideration the recent circumstances of cargo movement.

Table 4-2-6 Proposed Port Capacity in 1994

Unit: thousand
ton

Cargo type	Proposed Measures	ton/year
General Cargo	(Existing potential capacity)	275
Container*	(Existing potential capacity)	200 (28,600 boxes)
	(Alternative A) + one swing-type crane (4 box/hr)	40 (5,700 boxes)
	(Alternative B) + one bridge-type crane (10 box/hr)	90 (12,900 boxes)
	(Expanded potential capacity)	240-290 (34,300 -41,500 boxes)
	Dry Bulk	(Existing potential capacity)
Dry Bulk	(Alternative A) + two crane	430
	(Alternative B) + one special crane for grain (250 t/hr)	450
	(Expanded potential capacity)	1310-1330
Liquid Bulk	(Existing potential capacity)	590
Total	(Existing potential capacity)	1,945 (28,600 boxes)
	(Expanded potential capacity)	2,415-2,485 (34,300 -41,500 boxes)

(Note) *: The weight of container cargo per box is 7.7 t in 1993 on average

Source: "Rehabilitation of the Port of Acajutla (October, 1994)", Association of PRI and GOPA

(3) Preliminary Estimation of Future Potential Capacity

25. The capacity of the port should be evaluated by three factors: berthing capacity, cargo handling capacity, and cargo storage capacity. However, a method that can evaluate port utilization as a whole, taking into consideration such facts that most piers are not dedicated to a specific type of cargo and vessels and containers are carried by container or mixed general/container vessels will be adopted here.

26. For that purpose, cargo movement per mooring length at the pier will be introduced as an index. To begin with, both cargo movement and mooring length will be converted on the following basis.

1) Converted Cargo Movement(t)

27. Taking into consideration the packing type of cargo, all types of cargoes could be classified into two major packing types of cargo: general cargo and bulk cargo.

28. The volume of these cargoes will be converted to that equivalent to general cargo. That is, the general cargo volume remains the same (1.0) as it is, while the volume of bulk cargo is converted with an appropriate coefficient (i.e. 0.5 or others).

29. The converting coefficient is 1.0 for the cargo carried by general cargo ships and mixed cargo ships (note: containers are handled mainly by mixed ships at this port and handling is carried out by ship gear); 0.2 for that of dry bulk ships; and 0.1 for liquid bulk ships (tankers). Two latter coefficients are set up, taking into consideration the performance in neighboring countries (i.e. 0.3 for the wharf of grain only with ship gear in Panama, 0.05 for the exclusive berth of large oil tanker in Costa Rica).

30. For example, the total cargo handled at the port in 1996 is 1,686,995 t. This volume is converted to 547,127 t equivalent volume to general cargo, as shown in Table 4-2-7.

Table 4-2-7 Total Cargo and Converted Cargo

Ship Type (Cargo Packing type)	Total Cargo (ton)	Converting Coefficient	Converted Cargo (ton)
General	273,304	1.0	273,304
Dry Bulk	886,253	0.2	177,251
Liquid Bulk	478,742	0.1	47,874
Mix	48,698	1.0	48,698
Total	1,686,997		547,127

Source: JICA Study Team

2) Converted Mooring Length (m)

31 In the same way as cargo movement, the mooring length will be converted based on the berth depth as follows:

Converting coefficient	
more than 7.5 meters of the depth	1
from 7.5 meters to 4.0 meters of the depth	2/3
from 4.0 meters to 2.0 meters of the depth	1/3

32. As explained in the previous section, the Port of Acajutla has eight(8) nominal berths along three(3) major piers(A, B and C) with depths ranging from 10-14 m. Taking into consideration that larger than forecast ships are calling the port, each pier is now capable of accommodating only one large ship.

33. Then, the effective mooring length of each pier for cargo ship is assumed as the appropriate one corresponding to the respective pier's depth (capacity) as follows;

Table 4-2-8 Effective Mooring Length of Each Pier

Pier	Berth	Length (m)	Depth (m)	Remarks
Pier A		240	(10-)12	A-1,2
Pier B	West	240	(10-)12	B-3,4
	East	170	10	B-5,6
Pier C		280	14	C-7,8
Total		930		

(Note) Based on Japanese Technical Standards (OCDI)

34. All the piers have a depth of more than 7.5 meters, so total converted mooring length is the same as the existing effective mooring length (calculated above as 930 m).

3) Index of Pier Utilization

35. Index of pier utilization can be conveniently calculated as follows:

$$\text{Index of pier utilization (t/m)} = \frac{\text{Converted cargo volume (t)}}{\text{Converted mooring length (m)}}$$

36. This index has been used as a very effective way to capture the general view regarding pier utilization of the port, although it cannot precisely reflect such factors as the packing type of cargo, the cargo handling method and its productivity(i.e. container, Ro-Ro, pipe handling for liquid cargo, etc.) and the backyard/terminal capacity. According to general experience, it is said that the index is less than 1,000 t/m for appropriate pier utilization.

37. The index value for 1996 is calculated by employing the results of above (a) and (b) as follows;

$$\begin{aligned} \text{Index of pier utilization (t/m)} &= 547,127(t) / 930 (m) \\ &= 588 (t/m) (1996) \end{aligned}$$

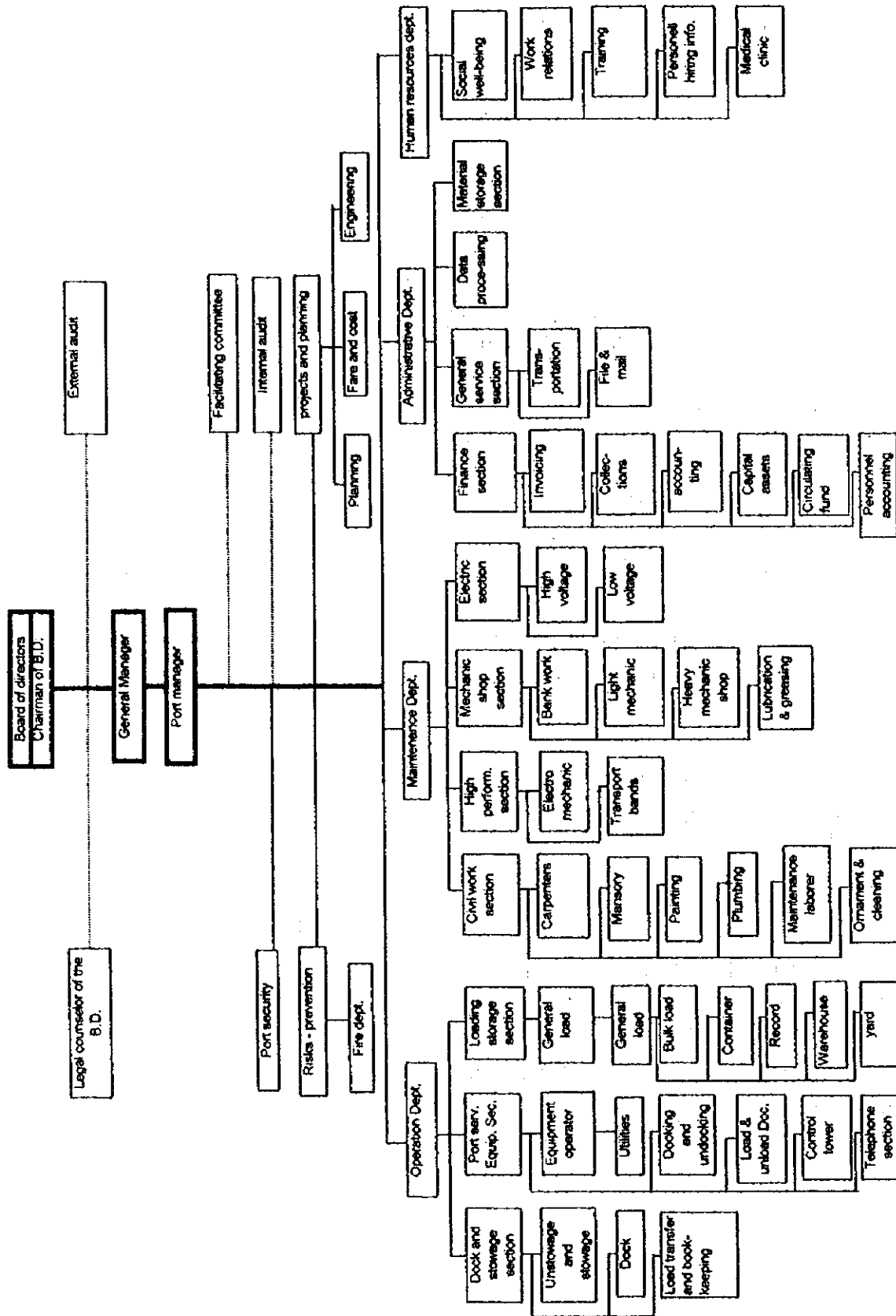
38. On the assumption that the cargo type mixture doesn't change, the appropriate capacity of the port is calculated as around 2,500,000 - 3,000,000 (t) (1,686,997 (t) / (588/ 1000) = 2,869,043 (t)).

4.3 Administration, Management and Operation

4.3.1 The Port of Acajutla

1. In decree No 43 "Regulations for the Port of Acajutla and Chapter IV", functions and attributions of the organic law of the Executive Autonomous Port Commission are defined. In what respects to the Port of Acajutla, the functions are the following:

- a) To develop the planing, construction, maintenance, improvement and extension of the port structures and other complementary installations of these, existent or future ones.
- b) To help the maritime navigation, buoying, meteorological and oceanographic installations.
- c) To administrate the acquisition, maintenance and improvement of the necessary equipment to the performance its functions.
- d) To administrate all the anchorage, anchors points in the bay.
- e) To coordinate that all the ships are or not attended by tugs in the maneuvers to berth or cast of in the docks. They will be assisted by a Pilot properly licensed by CEPA.
- f) To control that no ships enter the Port, when it has any faulty condition or a situation that could affect the secure navigation of this ship. Unless their captain had declared to the Port Manager, the faulty condition or the situation that the ship has and that the Port Manager in view of the circumstances had awarded the corresponding permission.
- g) To carry out the operations of loading and unloading of the ships, the decisions on the schedules in which they will be serviced.
- h) To make a judgement on the projects of construction, expansion, financing, exploitation; tariff regime, labor, etc., of the existing Ports and the ones that are built in the future.
- i) To give custody to the deposited merchandises in the pier and others installations and enabled yards; for such effects it possess a special group of port vigilance.



Source : CEPA

Figure 4-3-1 Organization Chart of Port of Acajutla

4.3.2 Personnel

(1) Classification of Employee by Type of Work

2. According to clause No 19 "Types of Workers", workers are classified into three types:

a) Permanent Workers.

3. The following personnel are obliged to lend their services during every workday of the year:

- | | | |
|------------------------------|----------------------|----------------------|
| - Port Manager | - Office personnel | - Messengers. |
| - Chiefs of Department | - Secretaries | - Painters |
| - Chiefs of Section | - Drivers | - Sandblasters |
| - Chiefs of Unit | - Port Security | - Plumbers |
| - Supervisors | - Warehouse checkers | - Brick layers |
| - Person in charge | - Firemen | - Gardeners |
| - Foremen | - Moorers | - Laborers |
| - Labor Relations assistants | - Tank ship crew | - Nurses |
| - Programmers- | - Utilitary | - Practical Pilots |
| - Control Tower operator | - Mechanics | - Clerk |
| - Equipment Operator | - Electricians | - Tug boat personnel |
| - Conveyor belt operator | - Carpenters | |

b) Permanent Workers in Temporary Works

4. This type refers to those workers who are obliged to lend their services when there is work to carry out in the operations of the ship. These workers are as follows:

- Stevedores.
- Dockers.

c) Permanent Workers in Permanent and Temporary Works.

5. This type refers to those workers who are obliged to work when the permanent workers are in temporary works.

(2) Number of Employees.

6. Table 2-2-4 shows the number of Port of Acajutla employees in 1997. It should be noted that the Port of Acajutla has 1,153 employees. As mentioned previously, the port office employs its own staff to provide cargo handling services. Table 2-2-4, shows the number of CEPA employees during the period 1994 to 1997. The total number of employees was reduced by 12% during this period.

**Table 4-3-1 TOTAL EMPLOYEES OF PORT OF ACAJUTLA
(YEARS 1994, 1995, 1996, 1997)**

SECTIONS/DEPARTMENT	YEAR 1994		YEAR 1995		YEAR 1996		1997
	JAN.	DEC.	JAN.	DEC.	JAN.	DEC.	MAY
MANAGEMENT	101	96	96	92	91	92	92
General management	4	4	4	4	3	4	4
Port security section	72	69	69	65	65	64	64
Risks prevention section	25	23	23	23	23	24	24
Internal auditory section	0	0	0	0	0	0	0
ADMINISTRATIVE DEPART.	56	57	57	61	62	60	62
Administrative management	3	3	3	3	3	3	3
Data processing section	1	2	2	3	3	3	5
Phone service section	1	1	1	1	1	1	1
Invoicing section	12	10	10	10	10	10	9
Cashier section	5	5	5	5	5	5	6
General accounting section	7	7	7	7	8	8	8
Material storage section	9	10	10	11	11	11	11
Personnel accounting section	7	8	8	9	9	8	9
Statistics section	4	4	4	4	4	3	3
File & mail section	4	4	4	4	4	4	4
Inventories section	2	2	2	3	3	3	3
Auditing dept. for the government	1	1	1	1	1	1	0
OPERATION DEPT.	839	776	773	775	774	766	760
Operation manager	3	3	3	3	3	3	3
Equip. & service section	615	554	547	557	556	546	539
Dock & stowage section	93	94	98	96	97	93	92
Storage room section	128	125	125	119	118	124	116
MAINTENANCE DEPT.	290	263	263	226	225	235	232
Maintenance manager	4	4	4	4	4	4	4
Construction section	136	123	122	88	89	87	87
Mechanic section	66	60	60	58	58	61	59
Electric section	21	19	20	19	19	23	22
High performance section	63	57	57	57	55	60	60
PERSONNEL DEPT.	18	16	16	16	16	17	16
Personnel manager	4	4	4	3	3	3	2
Labor relations section	2	2	2	3	3	3	3
Social welfare section	3	2	2	2	2	2	2
Statistics and control section	3	3	3	3	3	3	3
Nursing section	6	5	5	5	5	6	6
TOTAL	1304	1208	1205	1170	1168	1170	1152

Source : CEPA

(3) Retirement Age

7. The retirement age for the personnel of the Port of Acajutla is as follows:

- a) For men: Having turned 60 years old or have 20 years of continuous service, or that the sum of the work periods in the Port of Acajutla without having received any severance compensation is equal to 20 years.
- b) For women: Having turned 55 years old or have 20 years of continuous service, or that the sum of their work periods in the Port of Acajutla without having received any severance is equal to 20 years.

4.3.3 Working Condition

(1) Hours of Work, Change of Shift by Type of Work and Position.

1) Administrative Schedule

From Monday to Friday:

From 07: 00 to 12: 00 hours and 13: 00 to 16: 00 hours.

Lunch: From 12: 00 to 13: 00 hours.

Saturday and Sunday: Holiday.

2) Operative Schedule formed by 3 shifts of the following manner:

First shift: From 07: 00 to 15: 00 hours.

Second shift: From 15: 00 to 23: 00 hours.

Third shift: From 23: 00 to 07: 00 hours.

Change of shift.

First shift: At 07: 00 hours.

Second shift: At 15: 00 hours.

Third Shift: At 23: 00 hours.

Type of Work which adopts this schedule:

- Port Security
- Equipment Operators.
- Moorers
- Moorers of Tanker ships.
- Supervisors of loading and unloading
- Personnel of Tug boats
- Stevedores
- Dockers
- Permanent Workers in Permanent and Temporary Works.

(2) Vacations

a) Permanent Workers:

The CEPA concedes to this class of workers, fifteen days of paid vacation with base pay for every year of continuous work.

b) Permanent Workers in temporary works and permanent workers in Permanent and temporary works: vacation period remunerated with basic salary for every year of work, in the following manner.

- Less than 115 shifts, proportional to the number of works shifts of

115 shifts.

- Ten days, if the worked shifts are equal to 115.
- Eleven days, if the worked shifts are equal to 125.
- Twelve days, if the worked shifts are equal to 135.
- Thirteen days, if the worked shifts are equal to 145,
- Fourteen days the worked shifts are equal to 155
- Fifteen days, if the worked shifts are equal to 165.

NOTE: When the number of shifts effectively worked in the year falls between two terms of the scale, the closest to the number of worked shifts will apply.

4.3.4 Labor Union

(1) Number of Syndicates and Number of Their Constituents.

8. There is only one union, the Union of the Port Industry from El Salvador, or SIPES. The Board of Directors is composed of 5 workers of the Central Office and 6 of the Port of Acajutla.

Number of constituents: 1,062 in the Port of Acajutla.

(2) Current Relationship with the Unions

9. In clause No 3 "Relationships of the Commission with the Union" of the collective contract of work, the relationship between CEPA and SIPES is defined.

4.3.5 Training System for Employee

(1) The Section / Division in Charge of Training.

10. For the training of the personnel of the Port of Acajutla, a plan is prepared for every year. The section in charge of the training is the department of Human Resources of the Port of Acajutla in coordination with the training section of the Central Office and other private institutions dedicated to the fostering of human resources (FEPADE, ASI, L& L, Engineer)

(2) Types of Training at Present

- a) **Training in Port Operations:**
 - Training of winch operators
 - Training of multi purpose personnel.
 - Training of equipment operators
 - Basic operative port course
 - Port statistics and indicators of performance
 - Port operations for supervisors
 - Container terminal administration

- b) **Human Resources Administration:**
 - Mental health and human relationships
 - Supervision techniques
 - Leadership
 - Dealing with client and communication
 - Total quality
 - Strategic planning

- c) **Courses in the area of Industrial Maintenance.**
 - Basic and advanced hydraulics
 - Emergency plants maintenance and their electric stations
 - Refrigeration and air conditioning.
 - SIMATIC
 - Welding techniques

- d) **Handling of utility programs.**

- e) **Industrial hygiene and security.**
 - Basic course of industrial security.
 - Administration of the industrial security.
 - Industrial security in the storage.
 - Defensive handling.
 - Handling of dangerous merchandise.

4.3.6 Management of Safety, Entering and Departing Ships

11. Port Regulations of the Port of Acajutla govern ships entering and leaving the ports. All vessels entering, berthing or anchoring in the ports need permission of the Port Captain. When entering or departing, the required documentation and payment of port charges must be presented. All procedures are checked by the Port Captain staff. Vessels

must hoist their national flags and must carry a CEPA pilot on board except for small ships.

4.3.7 Berth Allotment

12. In assigning a berth, many factors such as the type of cargo, the ship's draft, tide, type of merchandise, whether storage is required while in transit, etc. are evaluated. If the conditions are favorable, it can be assigned in the following form:

- General load:
Can be worked in three docks
- Solid bulk load:
Primarily assigned to dock "B" or "C"
- Liquid Load:
Assigned to docks "A" and "C"

4.3.8 Port Services

(1) Cargo Handling Services

13. Cargo handling services are provided by the Port of Acajutla. As mentioned above, the Port of Acajutla provides cargo handling services on and off ships, stowage and cargo transport in the port area. Most berths are general cargo berths.

(2) Mooring, Water Supply and Bunkering

14. The Port of Acajutla provides mooring and water supply services. The Maritime Operation Department of each port office is in charge of these services.

Table 4-3-2 (1) Flow and Operational Condition of Handling System

TYPE OF CARGO	MANAGEMENT SYSTEM	UTILIZED RIGS	TYPE AND QUANTITY OF PEOPLE THAT PARTICIPATE FROM THE UNLOADING OF THE SHIP TO THE TRANSFERENCE
General Cargo	Crane, Stanchions or Open Booms of the Ship	Pallets, Bridles, Belt, Separators, Mesh, Protector, Steel Wires, Strobes	<p>Utilizing 2 Crews</p> <ul style="list-style-type: none"> - 16 Long shore-men, 4 winch operators, 2 water boys - 2 crew checkers, 2 multipurpose personnel - A chief of loading, checking and dock - A chief of long shore men and one of the dock - A loading assistant - A loading foreman and one for dock - 2 equipment operators on board of the ship - 2 equipment operators to the gang way - 8 Dockers - 8 equipment operators for the transference - An expeditor checker
Vehicles Ro-Ro	Ramp of the ship		<p>Only one crew is utilized</p> <ul style="list-style-type: none"> - 8 long shore-men, 2 winch operators, 1 water boys - 1 crew checkers, 1 multipurpose person - 4 dockers - A docker, checker and loading chief - A checker expeditor - An equipment operator for each 50 vehicles up to maximum of 5 operators per ship - An assistant for long shore-men - A foreman of loading and one of dock
Conventional	Idem to general loose cargo	Frames and or trapeze	<p>Utilizing 2 crews</p> <p>Idem for loose general cargo except:</p> <ul style="list-style-type: none"> - 2 equipment operators on board are not utilized - The number of operators for transference will depend on the number of vehicles
Containers	Crane, stanchions or booms of the ship	Steel hooks and dice with their respective extensions	<p>Utilizing 2 crews</p> <p>Idem for loose general cargo except:</p> <ul style="list-style-type: none"> - 2 operators on board ship

Table 4-3-2 (2) Flow and Operational Condition of Handling System

TYPE OF CARGO	MANAGEMENT SYSTEM	UTILIZED RIGS	TYPE AND QUANTITY OF PEOPLE THAT PARTICIPATE FROM THE UNLOADING OF THE SHIP TO THE TRANSFERENCE
Solid bulk cargos	Loading unit of the Port	Canvas	Utilizing 2 crews - 2 Operators of the loading unit - 8 dockers - 4 trimmers as minimum - 2 Transport band wheigher operators - 1 Weigher - 4 Equipment operators on board - 5 Mechanics - One Electrician - A loading chief, a dock chief and no chief of checkers - A foreman of dock and loading
	Trednets used for fishing	Canvas and tred used for fishing nets	Utilizing 2 crews Idem to the previous, plus 4 trimmers per crew as minimum and the equipment operators on board are not utilized.
Liquid bulk	Hoses and piping		Utilizing 2 crews 10 Long shore-men belonging to the tanker ship crew

4.3.9 Manifests / Documents

15. The person in charge of the ship presents the cargo manifest to the port. The manifest distribution is in the following form:

Original Manifest

- 1 For the cargo owner.
- 1 For the command of the ship or agency.
- 1 For whom ships the cargo at the source port.

Manifest copies

- 1 For the port of destination
- 7 For the general cargo unit of CEPA to give out in the different Warehouses
- 2 For the invoicing of CEPA
- 1 For the liquidator of CEPA
- 1 For FENADESAL
- 1 For the Revision manager of CEPA
- 1 For the police (P.N.C.) Finance Section.
- 1 For the shipping files of CEPA.

4.3.10 Custom Authorization

(1) Requested Documents / Period of Custom Authorization

16. In case of importation of merchandise or goods, the following documents must be submitted.

- Statements of merchandise
- Bill of lading
- Report from CEPA tally store

17. In case of importation of medicine, weapons; ammunitions, all above information as well as records, certificate authorization from the relevant institution must be submitted. Authorization is usually obtained from the following institutions:

- Ministry of Public Works
- Board of chemistry and pharmacology vigilance (control)
- Ministry of Defense

- Ministry of Agriculture and Cattle
- Ministry of Economy (petroleum and hydrocarbon)
- Ministry of Labor (machinery)
- Ministry of Finance
- Immigration general director
- CENDEPESCA **/Anti-narcotics direction
- Police Department

Exportation of merchandise:

- Submission of document copies:
- Statement of merchandise
- Shipment order
- Commercial invoice
- Bill of lading
- Permission from the ministry of work, depending on the merchandise.

(2) Transfer of Merchandise in Transit

18. Merchandise in transit is the one that moves along Salvadoran territory, in transit to other countries, and it has not paid any taxes.

(3) Allowing for Cargo in Transit

19. Merchandise in transit is covered by regulations of adjournment in order to be moved within the country. There are different kinds of regulations:

- Regulation of deposits (private warehouse), on for 12 months
- Regulation of temporarily importation (fairs, expositions), on for 6 months
- Regime of temporal allowance

20. The required document are the same to any other importation, the documents are signed / sealed for the customs agent. Custody is not given. A dispatch receipt is given.

(4) Import / Export Containers with Outside of The Port (Custom Authorization)

21. Non applicable. custom authorization of general cargo for import / export which is outside of the port are given only in the cases of liquid cargo, because the ships do not dock, as an example the ones which dock / land on buoys to unload fuels.

4.4 Natural Conditions

4.4.1 Location

1. The Port of Acajutla lies 20 miles SE of Paz river and is exposed to W winds from the Pacific Ocean. (Figure 4-4-1)

4.4.2 Weather Conditions

2. Strong winds usually raise a heavy sea at the exposed anchorage and cause surging at the piers. Moving lines are frequently parted. Chubascos, violent thundery squalls, are frequent during the wet period, May to October.

4.4.3 Tides

3. The tidal differences are about 2.0 m. at springs and 1.2 m. at neaps.

Table 4-4-1 Tide Level at Acajutla Port

High Water		Low Water	
MHLS	MHLN	MLWS	MLWN
2.0 m	1.6 m	0.0 m	0.4m

4.4.4 Currents

4. Tidal currents are the horizontal water movements ascribed to the influence of the astronomical tides. The duration and rate of the tidal currents during flood and ebb normally depend upon the relation between the daily and semidaily components of the tide. This relationship varies continually with the changes in phase and declination of the moon. When the semidiurnal components of the tide predominate, as in El Salvador the flood and ebb currents set in opposite directions for about 6 hours each. Here, the tidal currents are characterized by a difference in duration and rate between the two floods and/or the two ebbs each tidal day.

5. As a rule, the rate of the tidal currents vary in approximate proportion to the range of the tide. Along the coast the direction of the food is almost directly onshore, but close to shore the flood current is diverted by the coastline.

6. Table 4.4-1 shows the results of current surver at Acajutla Port. The currents in this table shows a rate of max. 0.68 ft/sec. The offshore current in this vicinity usually sets in an E direction at a rate of 0.5 knot. (Source: Un Estudio de los Puertos de la República, Agosto, 1954).

4.4.5 Waves

7. The term sea refers to waves caused by local winds, whereas swell refers to waves that have progressed beyond the influence of the generating winds. The direction of the sea is that of the local wind, whereas the direction of swell is essentially the same as that of the parent waves when they left the generating area. Sea and swell generally are present in a water area at the same time, although on occasion one may obscure the other.

8. Although ocean waves are generated as a direct result of wind action, other controls directly and indirectly affect their magnitude and direction. A general knowledge of some of these controls is as follows:

(a) *Currents.* When waves enter an area of strong opposing currents, the wave form steepens even to the point of breaking. However, when waves move with a component of the current, they increase in length and decrease in height.

(b) *Bottom topography.* For certain theoretical reasons, water is defined as shallow if the depth is less than one-half the surface wavelength. Differences in depth within this shallow-water zone produce velocity changes in various segments of a wave. This process, called wave refraction, is similar to the bending of light rays when they pass through various media. Wave velocity decreases as water depth decreases and, unless the direction of propagation is at right angles to the bottom contours, the portion of a wave entering shallow water moves more slowly than that portion of the same wave in deeper water.

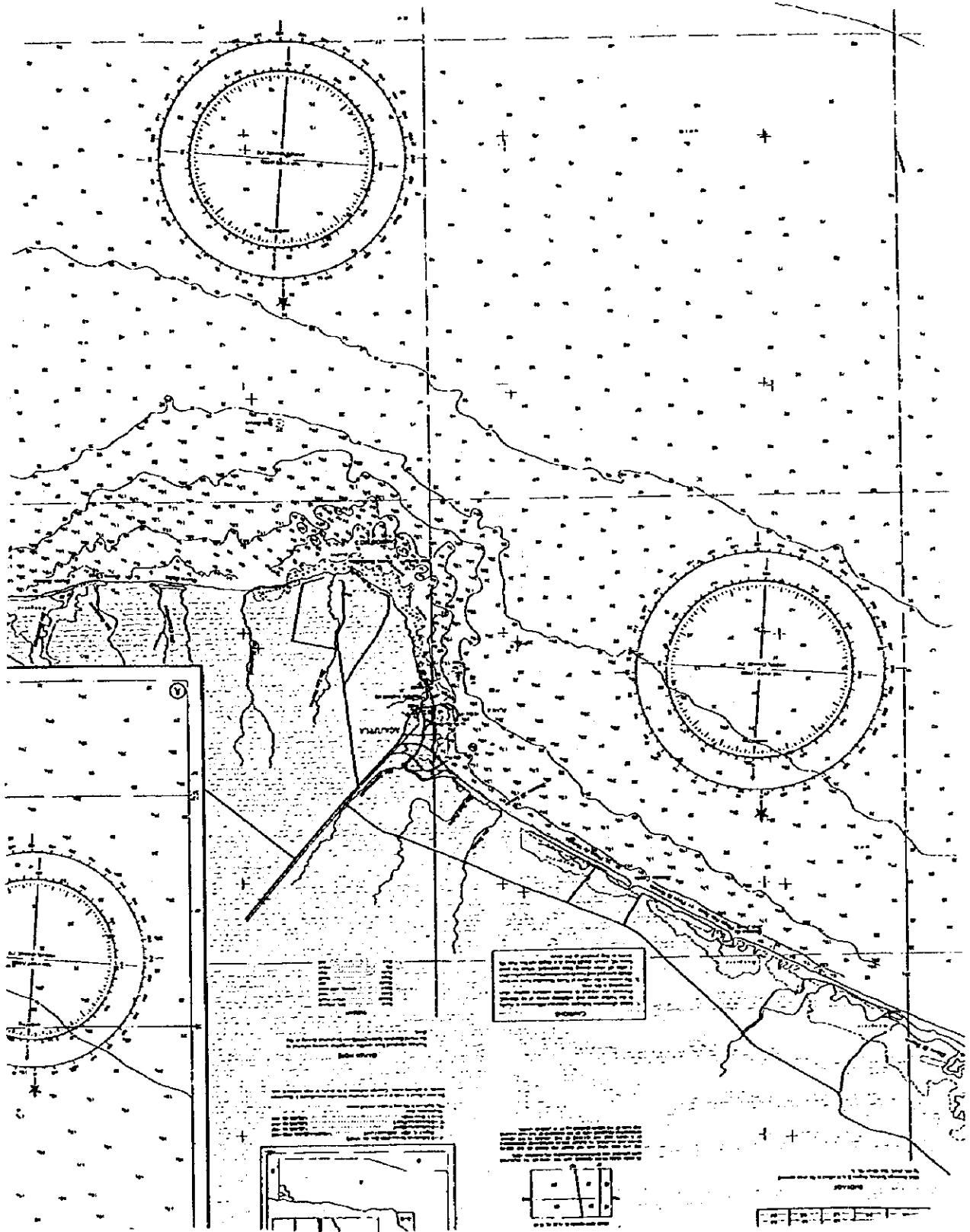
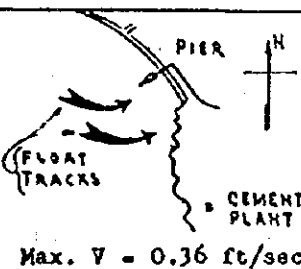
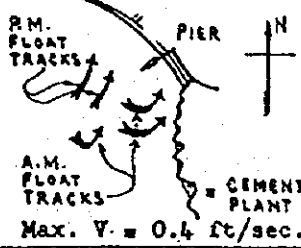
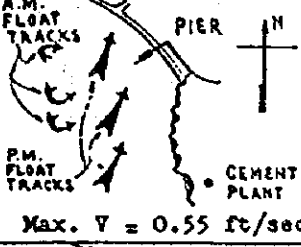
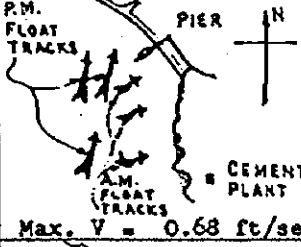
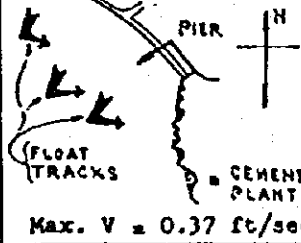


Figure 4-4-1 Sea Map for Acajutla

Table 4-4-2 Current Observation Records at Acajutla Port

CURRENT SURVEY - ACAJUTLA						
	Date & Time	Tides	Sea	Wind	Float Tracks	Remarks
1.	Jan 7th 1954 11.00 to 15.00 hrs.	High 04.24 Low 10.24 High 16.55	Calm. Slight swell from SW.	SW. 10 -15 m.p.h.		Slight southerly current at start of survey.
2.	Jan 25th 1954 09.45 to 15.00 hrs.	High 06.58 Low 12.53 High 19.25	A.M. Calm Slight swell from SW, P.M. 2 ft. waves from SW	A.M. WSW 5 - 10 m.p.h. P.M. SW 15 m.p.h.		Small northerly current in the afternoon.
3.	Jan 26th 1954 09.00 to 15.00 hrs.	High 07.37 Low 13.27 High 20.05	A.M. Calm Slight swell from SW. P.M. 2 ft. waves from south	A.M. East 0 - 5 m.p.h. 11.00 hrs SW 0 - 5 m.p.h. 14.00 hrs South 10 m.p.h.		Small northerly current in the afternoon.
4.	Jan 27th 1954 09.00 to 15.00 hrs.	High 08.20 Low 14.09 High 20.49	Calm Slight swell from SW.	A.M. WSW 5 m.p.h. P.M. SSW 10. - 15 m.p.h.		Small northerly current in the afternoon.
5.	Jan 29th 1954 09.45 to 11.30 hrs.	Low 03.53 High 10.03 Low 15.57	Calm Slight swell from SW.	A.M. NNE 10 - 15 m.p.h. 11.00 hrs SW 20 m.p.h.		No appreciable current in any direction. Wind effects only. Change of Direction at 11.00 hrs.

The portions of shallow-water waves passing over depressions on the bottom move faster than the portions on either side. Hence, wave crests stretch, and wave heights may indicate the approximate position of underwater ridges and depressions. Islands lying in the paths of waves cause refraction around their sides. Leeward of an island the waves may meet and pass through each other, producing a confused cross sea.

(c) *Local winds.* All sea areas near the shores of continents and larger islands are influenced by land and sea breezes. Modification of prevailing winds by onshore winds during the afternoon and offshore winds during the early morning causes corresponding increases or decreases in sea heights. Gravity winds result when dense cold air which accumulates on continental highlands flows rapidly down the slope and out over the sea and produces high waves for short distances from shore.

9. The characteristics of the deep water waves in the Pacific Ocean offshore the Central America are shown in Table 4-4-3 and Figure 4-4-2,-3 (Sources: Sailing Directions for South America, U.S. Naval Oceanographic Office). These data were based on the information of the ships passed by the certain zone. Data collection period were some five years, and it is assumed that the periods of swell and sea are 20 sec. and 10 sec. respectively.

10. Among these deep water waves, waves with direction S and SW are expected to affect the Acajutla Port. S and SW waves share the 46% of the total. They are transformed by wave refraction approaching to the Port. (Figure 4-4-4). In front of the Acajutla Port, they are transformed into the waves with directions SSW and WSW respectively.

11. Values of refraction coefficient for S and SW waves are estimated to be 0.603 and 0.756 respectively. Therefore, wave frequencies by wave height at the Acajutla Port are summarized below.

Table 4-4-4 Wave Frequency by Wave Height

Wave Height (m)	Frequency %		
	Total	SSW	WSW
0 ~ 0.5	72.6	29.0	43.6
0.5 ~ 1.0	17.2	6.9	10.3
1.0 ~ 1.5	6.1	2.8	3.3
1.5 ~ 2.0	2.5	1.4	1.1
2.0 ~ 2.5	1.2	0.7	0.5
2.5 ~ 3.0	0.4	0.2	0.2
Total	100.0	54.0	46.0

12. Above waves are transmitted by deep water waves and 36% of them are presumed to be swells. These swells oftenly cause the extra tractive force acting on the mooring ships.

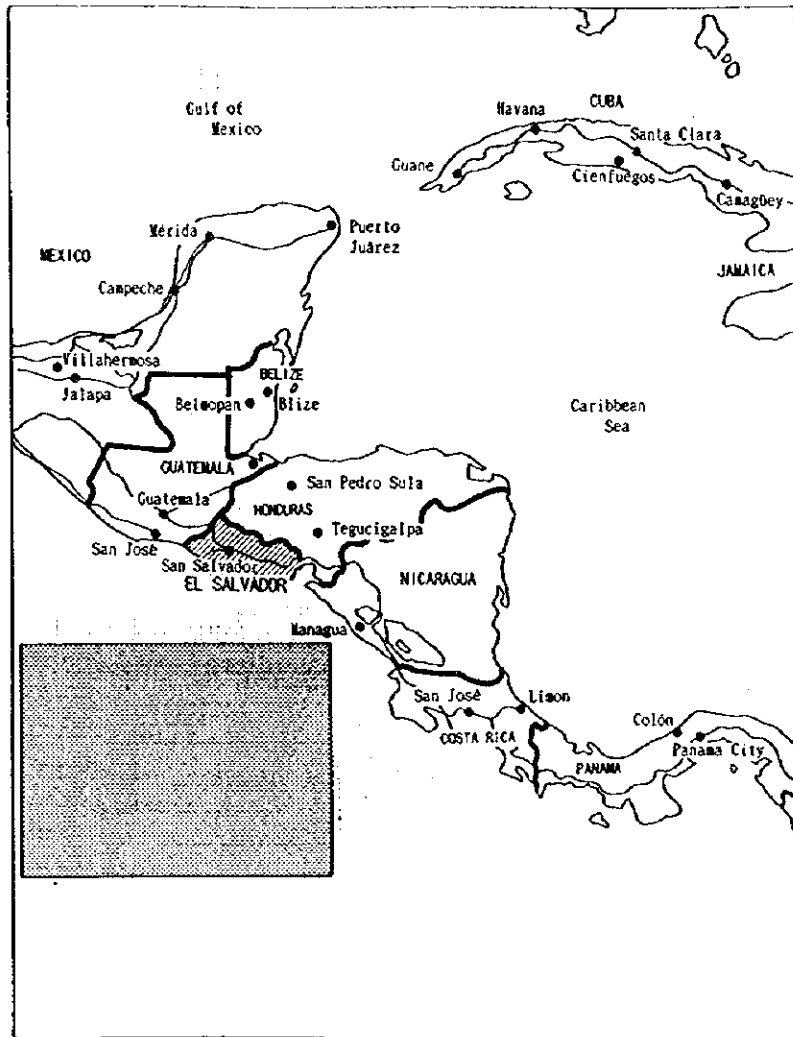


Figure 4-4-2 Data Collection Zone

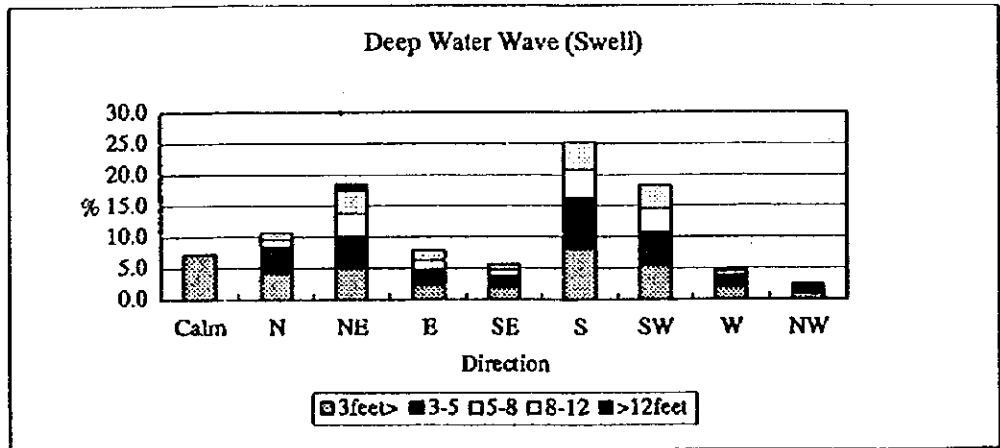
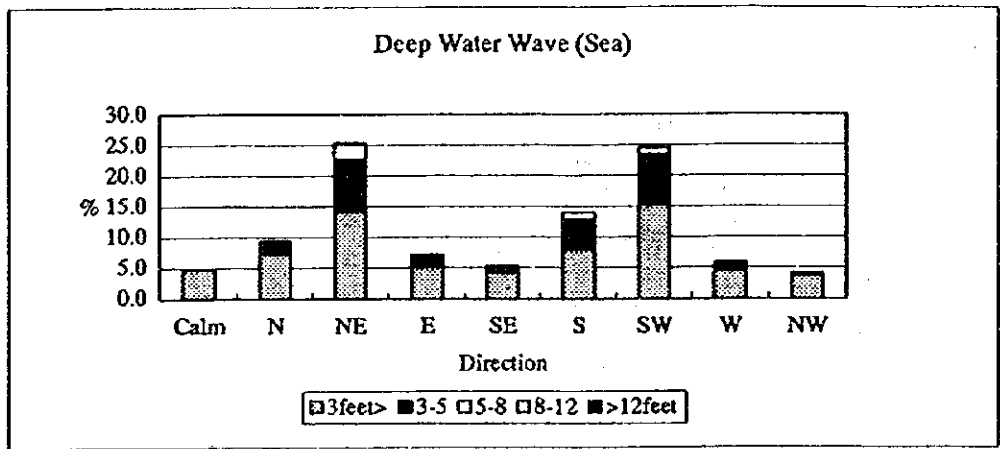
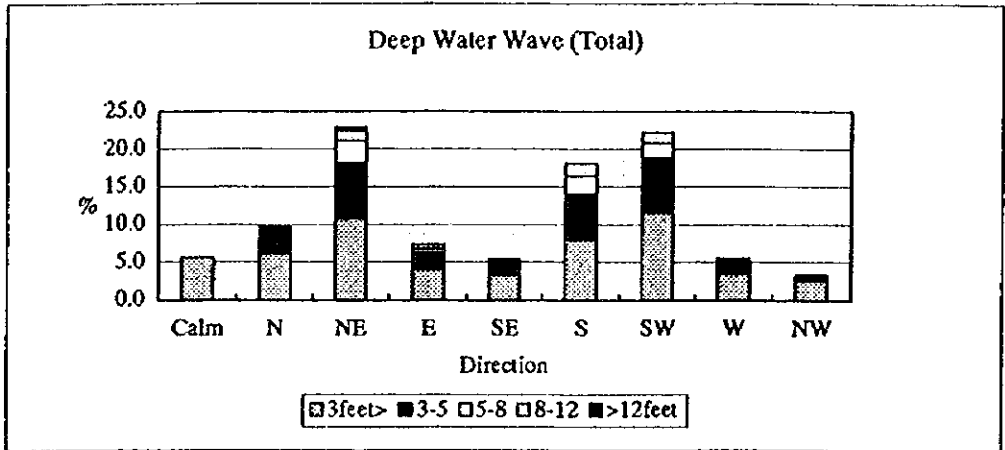


Figure 4-4-3 Deep Water Waves in the Pacific Ocean Offshore the Central America

Table 4-4-3 Deep Water Waves in the Pacific Ocean Offshore the Central America

Deep Water Wave(Total)

(Frequency)

	Calm	N	NE	E	SE	S	SW	W	NW	Total
3>	277	307	535	202	169	395	575	176	130	2,766
3-5	0	136	358	103	61	298	356	74	23	1,409
5-8	0	21	145	29	17	119	98	11	6	446
8-12	0	19	69	27	16	79	66	7	3	286
>12	0	0	15	0	0	0	0	0	0	15
Total	277	483	1,122	361	263	891	1,095	268	162	4,922

Deep Water Wave(SEA)

(Frequency)

	Calm	N	NE	E	SE	S	SW	W	NW	Total
3feet>	150	231	445	160	134	249	477	142	114	2102
3-5	0	61	269	61	29	154	262	40	9	885
5-8	0	0	77	0	0	37	30	0	0	144
8-12	0	0	3	0	0	0	0	0	0	3
>12feet	0	0	0	0	0	0	0	0	0	0
Total	150	292	794	221	163	440	769	182	123	3134

Deep Water Wave(SWELL)

(Frequency)

	Calm	N	NE	E	SE	S	SW	W	NW	Total
3feet>	127	76	90	42	35	146	98	34	16	664
3-5	0	75	89	42	32	144	94	34	14	524
5-8	0	21	68	29	17	82	68	11	6	302
8-12	0	19	66	27	16	79	66	7	3	283
>12feet	0	0	15	0	0	0	0	0	0	15
Total	127	191	328	140	100	451	326	86	39	1788

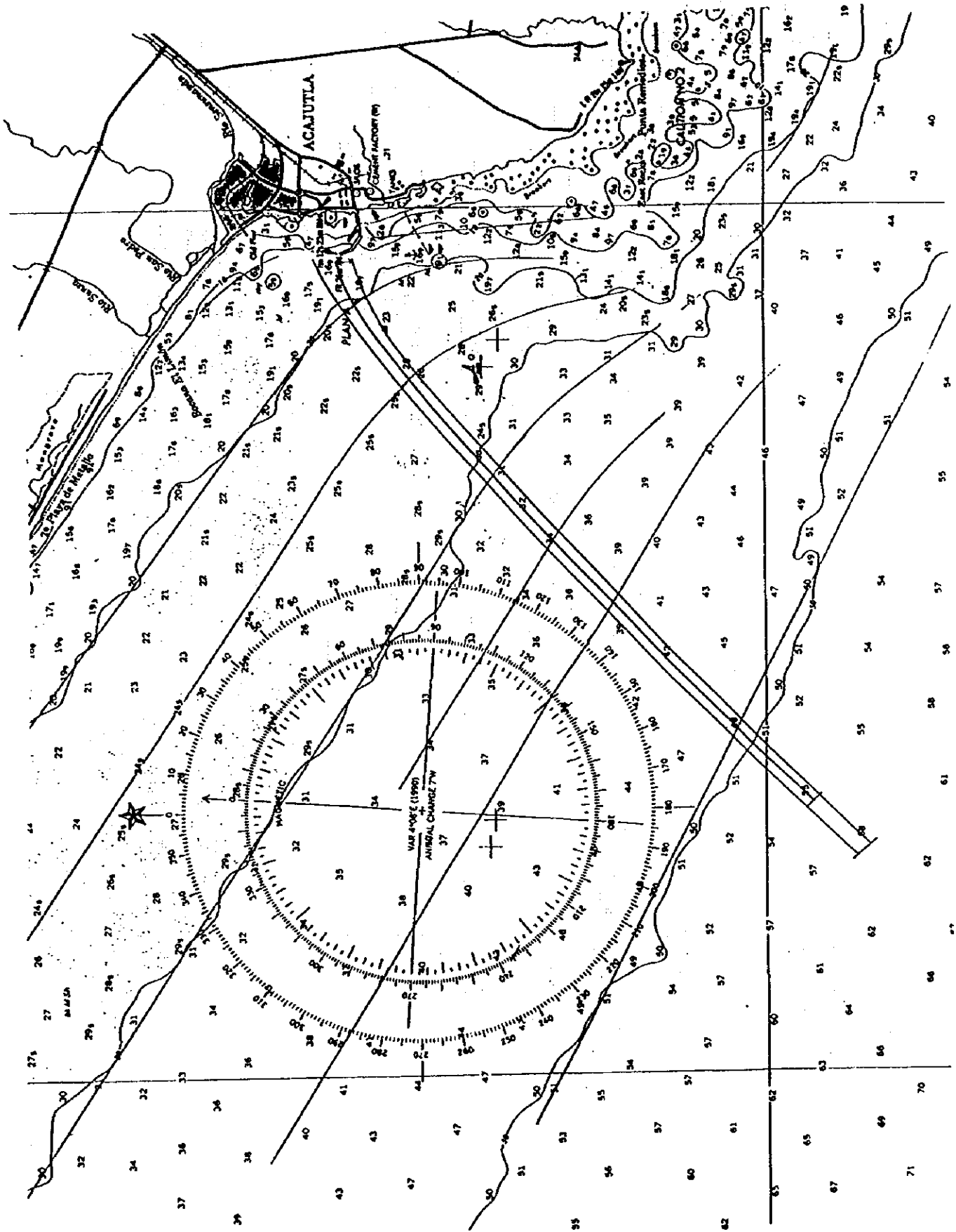


Figure 4-4-4 (1) Refraction Diagram for Acajutla Port-SW Direction

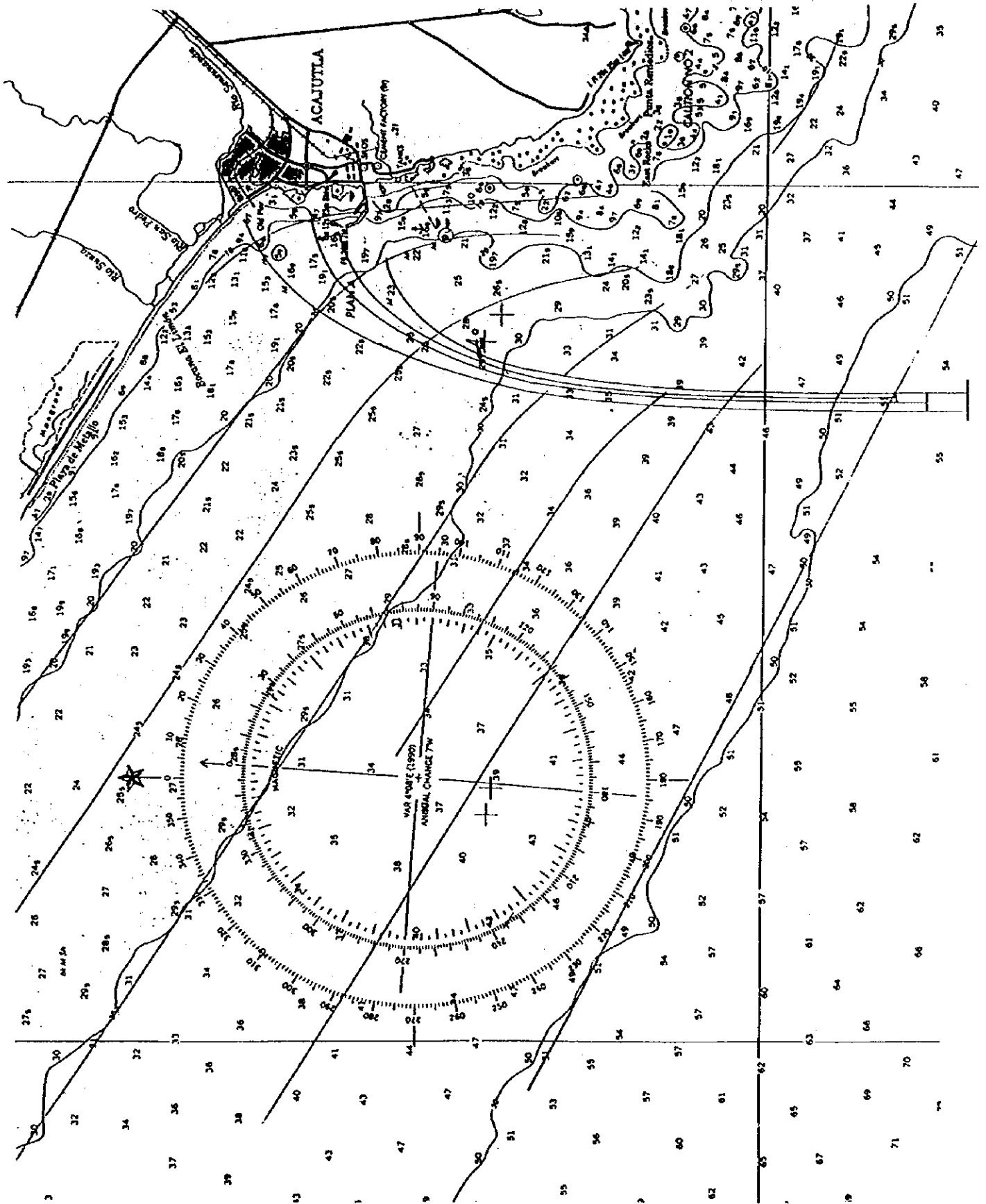


Figure 4-4-4 (2) Refraction Diagram for Acajutla Port-S Direction

4.5 Structure of the Port Facilities

4.5.1 Outline of Port Facilities

1. Acajutla Port Construction were planned in 1950's and started services in 1960's. The original layout of the Port was composed for Pier A and its access bridge.

2. In 1970, it was decided that the facilities were to be developed and cargo handling capacity were to be increased. So, CEPA built Pier B and a few years later completed its project with Pier C.

3. The mooring facilities have counted since then with eight berths, distributed among the three modern piers, these are equipped for the arrival of all types of ships. In addition, at the both sides of the Acajutla Port, there are specialized off shore mooring buoys connected with the oil pipelines owned and operated by private companies. Main dimensions of port facilities and sheds are listed in Table 4-5-1 and Table 4-5-2.

Table 4-5-1 Main Port Facilities (Acajutla Port)

<i>Area</i>	<i>Facilities</i>	<i>Dimension</i>	<i>Structural Type</i>	<i>Design Supervision</i>	<i>Contractor</i>	<i>Construction year</i>	<i>Main Use</i>
	Access Bridge	L=152m W=12m	Cellular-bulkhead type	Germany	-	1960s	
Pier A	MA-1	L=150, D=10m	Cellular-bulkhead type	Germany	-	1960s	General, Bulk
	MA-2	L=150m, D=12m	Cellular-bulkhead type	Germany	-	1960s	Liquid, General, Bulk
Pier B	MB-3	L=168m, D=10m	Open-type with concrete piles	CANADA, USA	-	1970s	General, Bulk
	MB-4	L=168m, D=12m	Open-type with concrete piles	CANADA, USA	-	1970s	General, Bulk
	MB-5	L=180m, D=10m	Open-type with concrete piles	CANADA, USA	-	1970s	General, Bulk
	MB-6	L=180m, D=10m	Open-type with concrete piles	CANADA, USA	-	1970s	General, Bulk
Pier C	MC-7	L=150m, D=11	Concrete caisson type	CANADA	-	1970s	Liquid, General, bulk
	MC-8	L=151m, D=14m	Concrete caisson type	CANADA	-	1970s	Liquid, Container, General, Bulk

* Water depth from average sea level

Table 4-5-2 Storage (Acajutla Port)

Area	Facilitie	Dimension	Structural Type	Construction Year	Main Use
Pier A	Transit Shed	4,500 m ²	Steel-framed steel shutter with concrete roof	1960's	General
Land Area	Warehouse No. 1	185m x 30m	Reinforced concrete pillar, concrete block wall with concrete roof	1960's	General
	Warehouse No. 2	185m x 30m	Reinforced concrete pillar, concrete block wall with concrete roof	1960's	General
	Warehouse No. 3	185m x 30m	Reinforced concrete pillar, concrete block wall with concrete roof	1960's	General
	Warehouse No. 4	185m x 30m	Reinforced concrete pillar, concrete block wall with concrete roof	1960's	General
	Warehouse No. 5	185m x 30m	Reinforced concrete pillar, concrete block wall with concrete roof	1960's	General
	Open Storage Yard	36,000 m ²	Asphaltic Pavement	1970's	General, Bulk
	Container Yard	30,000m ²	Asphaltic Pavement	1970's	Container

4.5.2 Port Facilities Assessment

(1) Pier "A"

4. It is 300 meter long and 37 meter wide; its depth varies between 10 and 12 meter, the height of the pier's deck is 6.1 meter above average sea level. Both berths can handle general, bulk and liquid cargo. Pier "A" has two electric cranes and pipes intalled in the pier, as well as a transit warehouse with a covered area of 4,500 sq. mts.

5. Pier "A" is composed of two rows of cellular-bulkhead with steel sheet piles. The diameter of cell is 12 m. This type of structure continues from the access bridge. Pier "A" plays a roll of breakwater and protects the inner water area from the wave attacks. (Figure 4-5-1)

6. Pier "A" has the crown height of 7.0 m. from the average sea level without wave breaking works. It is said that any wave overtopping are not observed so far. As mentioned in 4.4.5 it seems that the wave heights are not so big, but swells are coming from the Pacific Ocean almost throughout the year.

(2) Pier "B"

7. Its northern and southern sides are 360 and 336 meters long respectively, and 28 meter in width. Average depth varies between 10 and

12 meters, and the pier height is 4.8 meters above average sea level on its four berths. Although it can handle containers and general cargo, it serves mainly bulk cargo, hence the pier also has a movable crane that moves throughout the quay, delivering cargo via a system of conveyors. Structural type of Pier "B" is a open type with reinforced concrete piles of 0.85 m. in diameter. Piles are arranged in two rows. (Figure 4-5-2).

8. The embedded lengths of the piles are some 3 m only. So, the axial bearing capacity of piles is enough because of hard foundation, but the lateral bearing capacity of piles is supposedly insufficient. Additional H shaped steel piles (25 x 31 x 1.2 cm) are installed in the front line to suspend the fender system. These piles are connected with wooden beams having the rubber fender. This system seems to absorb the berthing forces of ships.

(3) Pier "C"

9. Pier "C" plays a roll of breakwater and protects the inner water area from the wave attacks as well as Pier "A". It was built after pier "A" and it allows the berthing of tankers. It has a length of 301 meters, and it is 19.0 meter wide at its beginning and 21.5 meters as its end.

10. This pier has two berths that can handle liquid cargo, as well as general cargo, bulk cargo and containers. Due to its position, this pier offers the greatest average depth, which varies between 13.5 and 19.0 meters; the height of the pier's deck is 5.0 meters above average sea level. Structural type of Pier "C" is a concrete caisson type, having a recurved parapet without wave breaking works.

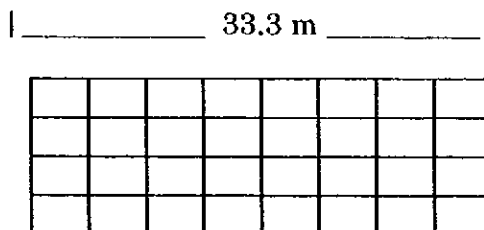


Figure 4-5-1 Bulkheads of Caisson

11. Dimensions of 1 caisson are 33.3 m. in length and 18.2 in width. It is presumed that this type of pier was chosen because of the hard foundation as same as pier "B".

(4) Access Bridge

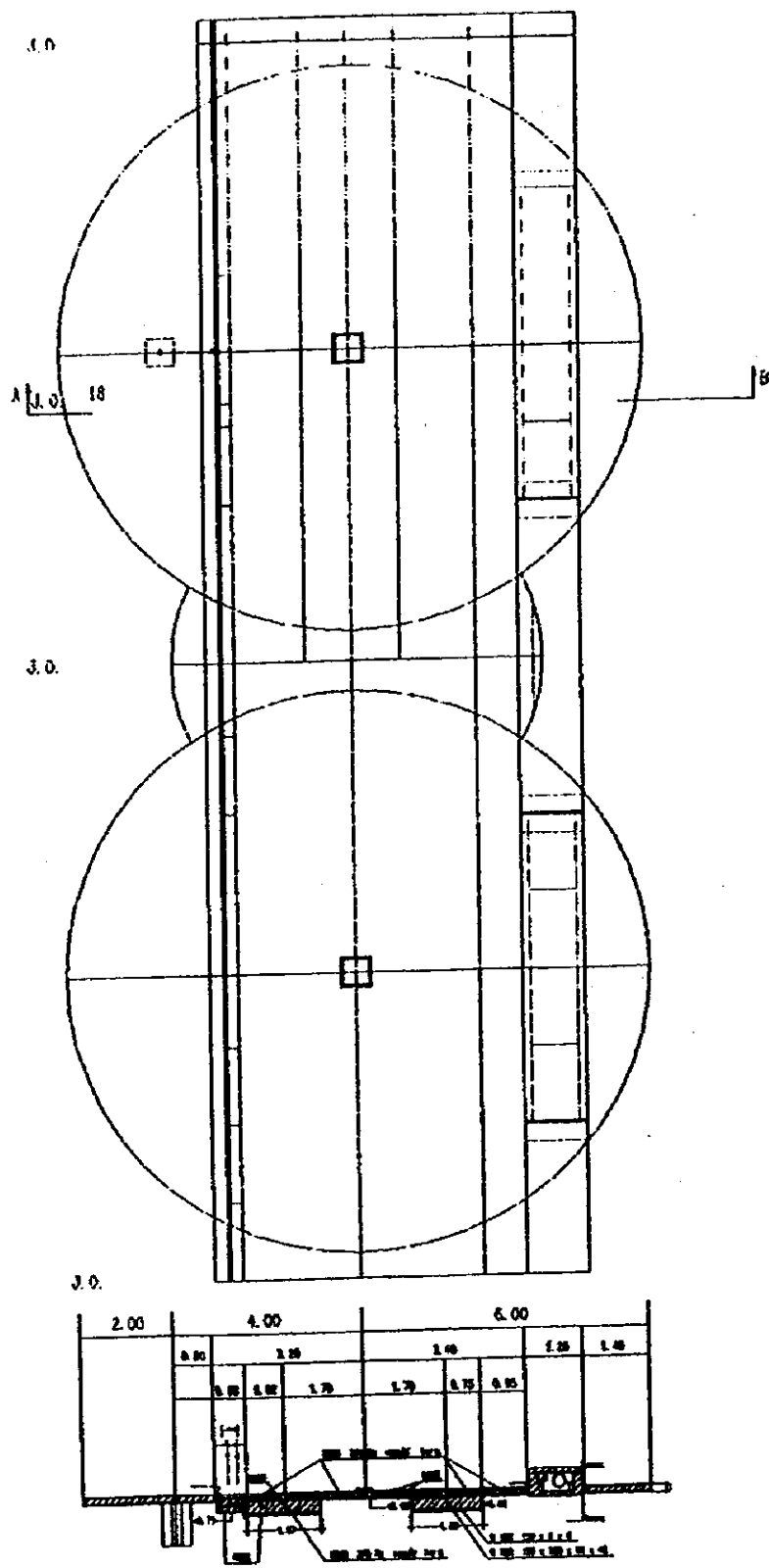
12. The structural type of access bridge is a cellular bulkhead with steel sheet piles. The diameter of a cell is 12 m. The access bridge crosses the wave breaking zone, and waves with directions S and SW converge at the root of the access bridge. Therefore, the access bridge is protected at the root by the armored stones and concrete blocks having the weight of 8 tons along some 150 m length. As the filling materials of the four cells are leaking out due to the corrosion, the improvement works are under construction at the root of access bridge.

(5) Maintenance

13. Maintenance costs for Acajutla Port fluctuate by year and their budget is not fixed. However, structures are maintained in good condition partially because of their hard foundation composed of hard subsoil materials. But the corrosion of the steel materials are in progress. The economic life takes into account the risk of obsolescence. Some facilities could be used longer because of good maintenance, but are no longer in use due to the evolution of marine transport techniques. The standard economic life are shown below.

Table 4-5-3 Average length of economic life port facilities and equipment

Facilities and ships	Average economic life (years)
Breakwaters	50
Wharves	
Concrete	40
Steel	25
Ruber fenders	10
Tugs	20
Pilot launches	20
Warehouses and sheds	25



SECCION A - B
 ESCALA 1:50

Figure 4-5-2 Standard Cross Section of Pier A

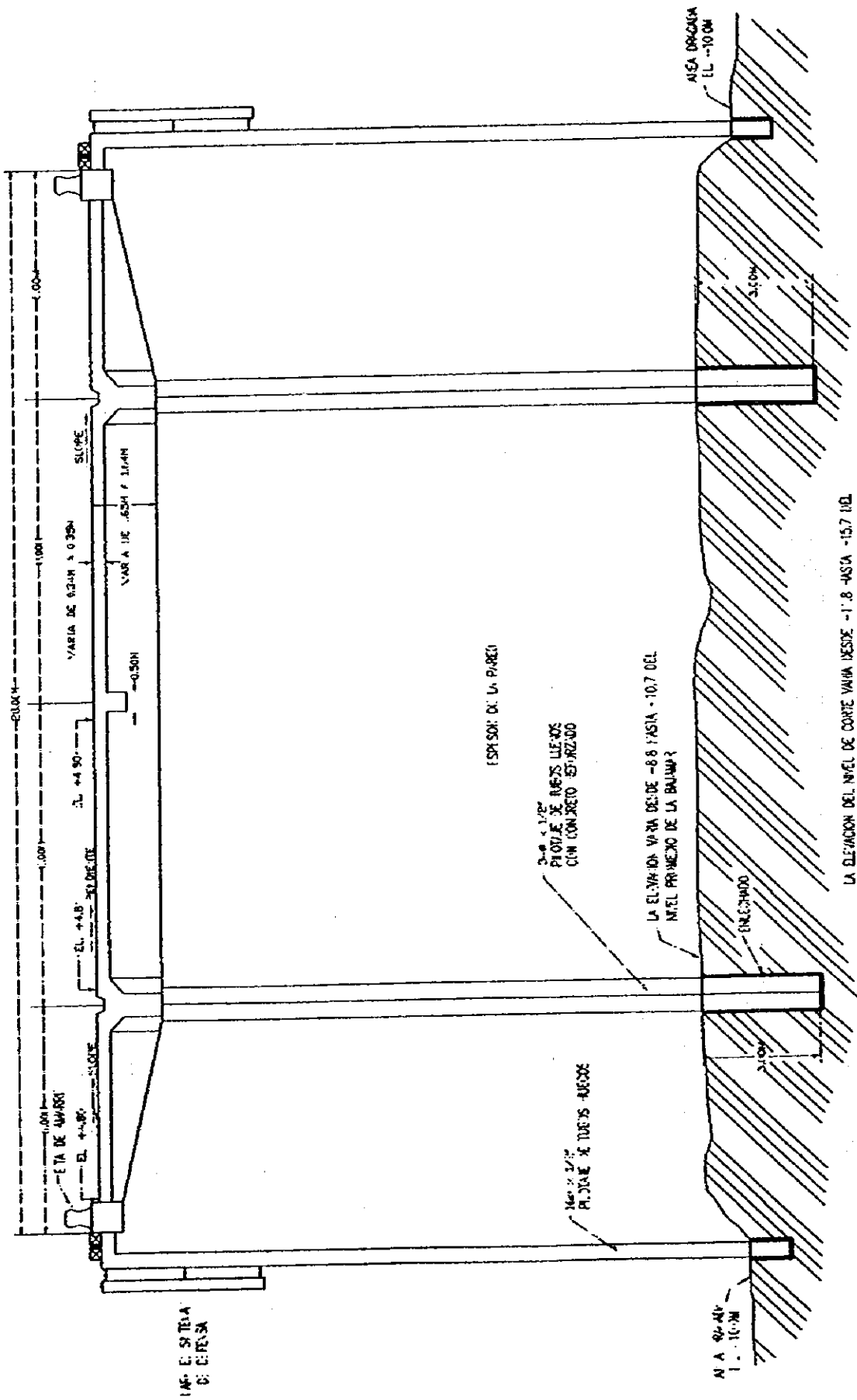


Figure 4-5-3 Standard Cross Section of Pier B

4.6 Future Development Plan

1. The concept of a new container berth was developed in 1979 by Frederic R. Harris, Inc. This concept was reviewed in the report of "Port of Acajutla Container Terminal Feasibility Study Update (January, 1992)" (Frederic R. Harris, Inc.), and included in the long-term plan.

2. In the study of 1979, the following three alternatives were evaluated and the Slip Concept was recommended because of the lower cost involved, the easier vessel approach, etc.

a) Slip Concept: A container berth with a length of 250 m equipped with a container crane is constructed parallel to Pier B on the land side. The slip width between Pier B and the new pier is 150-175m.

b) Finger Pier Concept A: The container berth is constructed approximately 800 m north of the existing port. The finger pier and access road are "elbow-shaped" for the existing port.

c) Finger Pier Concept B: This concept is essentially similar to Finger Pier Concept A except that the finger pier and access roadway are straight.

3. Following a review by the World Bank and CEPA, Finger Pier Concept B (see the dotted plan in Figure 4-1-1) was selected as the final plan. The construction cost was approximately \$60.85 million in 1991 dollars, including a container crane. The decision was based primarily on two considerations: new vehicle traffic is separated from existing traffic congestion; and a new slip berth for other cargoes can be easily developed adjacent to Pier B in terms of cost and vessel motions.

4. In addition, all of the alternatives mentioned above could likely not be perfectly protected from the affect of a swell of a relatively long period from W-SW-S, which diffracts inside the port easily. At least, Pier A, Pier B, the sub-structure of which is of open type and passes the wave easily, and Pier C would be under the same condition concerning the swell. Even Finger Pier Concept A and Finger Pier Concept B would be affected to some degree by the swell.

5. Construction has not proceeded due to technical and financial

reasons. The current government is emphasizing port reactivation in La Union in the eastern region rather than investing a lot in the Port of Acajutla. The concept of building a "dry canal" connecting the Port of Cortes on the Caribbean side and the port of La Union on the Pacific side by highway in place of the principal Port of Acajutla is a clear manifestation of the current government's thinking in this respect.

6. Another alternative was recently proposed in " Evaluacion Del Sector Infraestructura - Reporte Final Volme II Transporte (February, 1990)"(Tech International, Inc., Louis Berger International, Inc., and Edificaciones Choussy, S.A.). This is a marginal wharf parallel to the existing access roadway extended from the shoreline to Pier B. From the standpoint of container operations, it is an attractive one. However, the south side of Pier B which is busy at present would be lost, and other cargo handling wasn't evaluated.

7. At any rate, as analyzed in the previous section, the Port of Acajutla is almost saturated with the increasing cargo volumes. To cope with this situation, a new port should be planned and constructed as soon as possible. A plan to improve the existing port such as by reclamation, demolition or modification is not viable, since all piers are busy serving calling vessels. On the other hand, similar plans at other sites studied in the past still face the problem swells, and thus a very long breakwater would be required.

8. In fact, CEPA has no intention to make a new container terminal at the Port of Acajutla in the medium and long term, although it will improve the port with the support of Germany in the short term up to around 2000.

