

2.3 Land and Water Area Use Around the Port of Balboa

81. In the Canal Zone, there are many areas under the administration of PCC or the US Armed Forces around the ports which had been under the US administration for a long time. These areas have been gradually transferred to the Government of Panama in a process that will be completed by the year 2000 according to the Panama Canal Treaty. These reverted land areas are basically taken charge of by the Authority of the Interoceanic Region (ARI).

(1) General

82. The utilization of the water area of the port of Balboa is rather simple, because the entire water area surrounding the wharves in front of the approaching channel leading to the Miraflores lock of the Canal (Pacific Entrance) is now under the administration of APN. The entire water area is around 134 ha wide (See Figure 2-3-1 and 2-3-2).

83. The north part of it is, however, also used as inner mooring area for the relatively small vessels waiting to transit the Miraflores lock now. PCC seems to have an intention to dredge this area for further utilization. Closer coordination among each other is required regarding the utilization of this water area.. Besides, PCC has two spoil dumping areas: one is on the east of the causeway of Amador, which protects the Pacific channel from the waves; the other in front of the west bank of the Pacific Entrance.

84. On the other hand, the present situation of land use in and around the port of Balboa is very complicated because of the scattered facilities and wharves belonging to PCC and US Armed Forces (See Figure 2-3-2, 2-3-5 and 2-3-6).

85. The existing land area around wharves owned by APN now is approximately 179 ha wide, including PCC facilities within this area, the south part of the old Albrook Air Force Base (20ha) and the Balboa tank farm area (32ha, see Table 2-3-1). In addition, the south part of Corozal Area (38ha), on the north of Diablo Heights, was already reverted to Panama according to the Canal Treaty in 1979.

86. This area is totally limited in the south side by Sosa Hill presently under administration of PCC and other military facilities. To the east side is located the old Albrook Air Force Base, the major part of whose area will be soon reverted to Panama. It seems appropriate to expand the port area to this area where there is

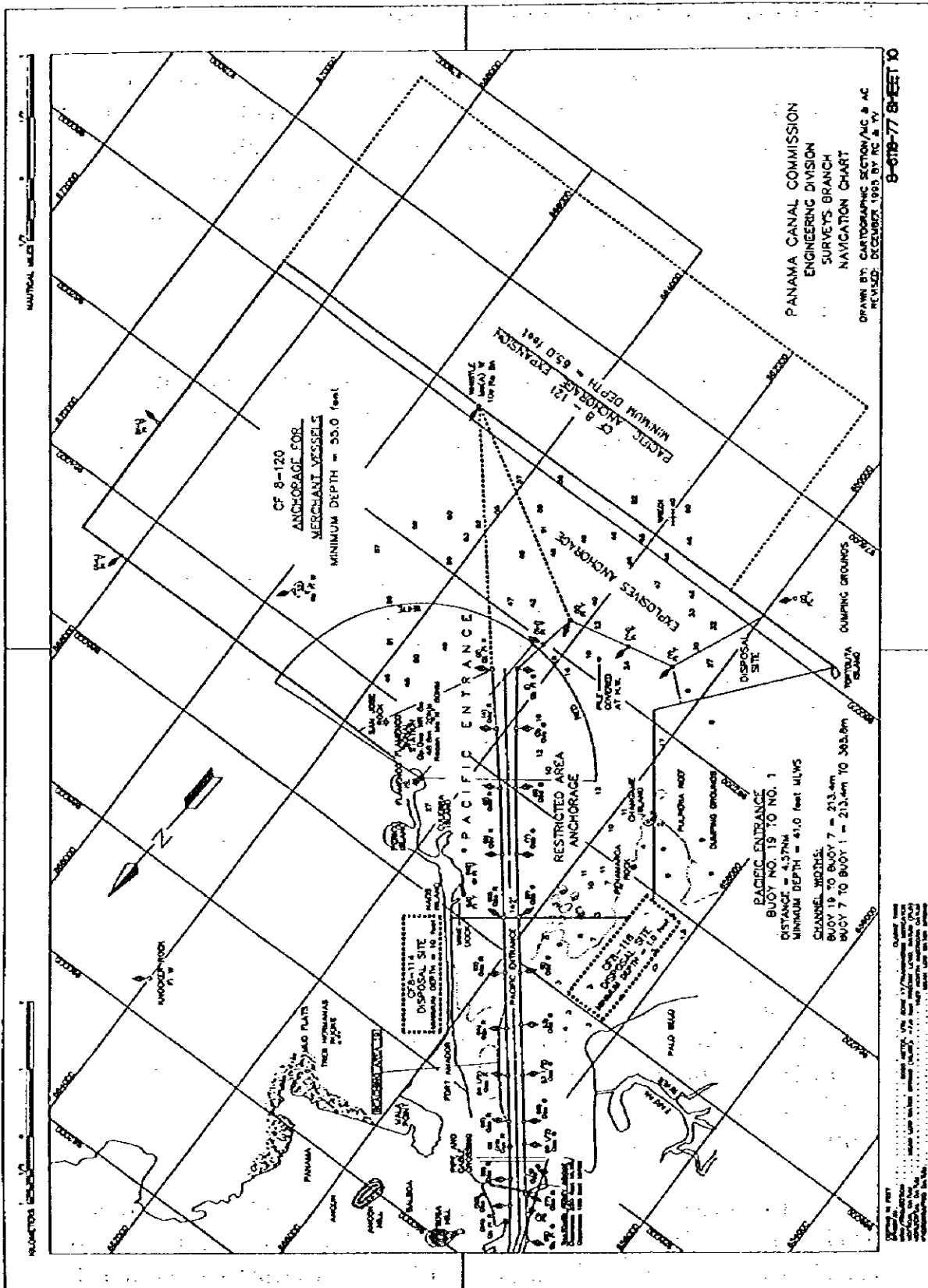


Figure 2-3-1(a) Navigation Chart around the Port of Balboa
 (Source: Panama Canal Commission)

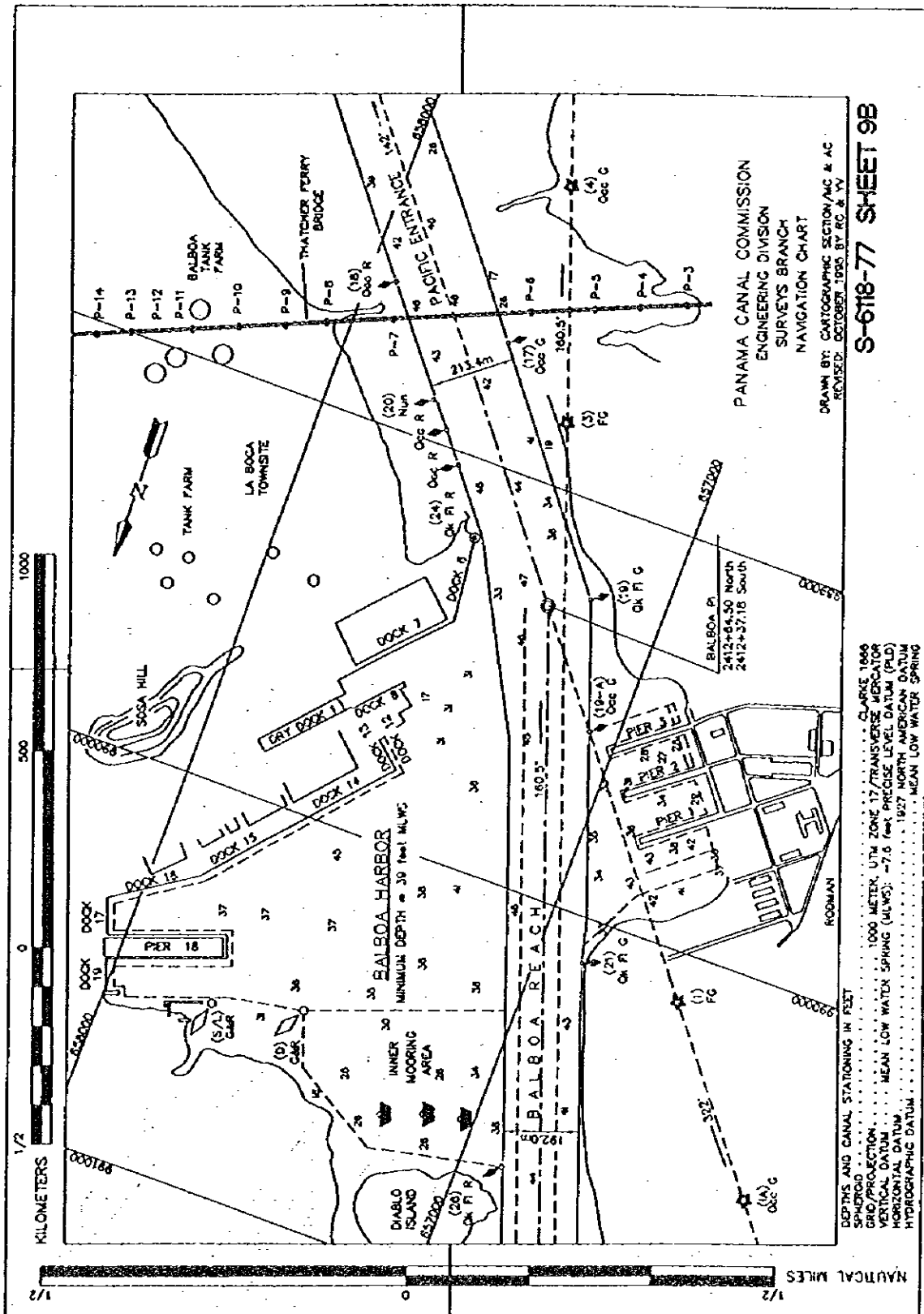


Figure 2-3-1(b) Navigation Chart around the Port of Balboa
(Source: Panama Canal Commission)

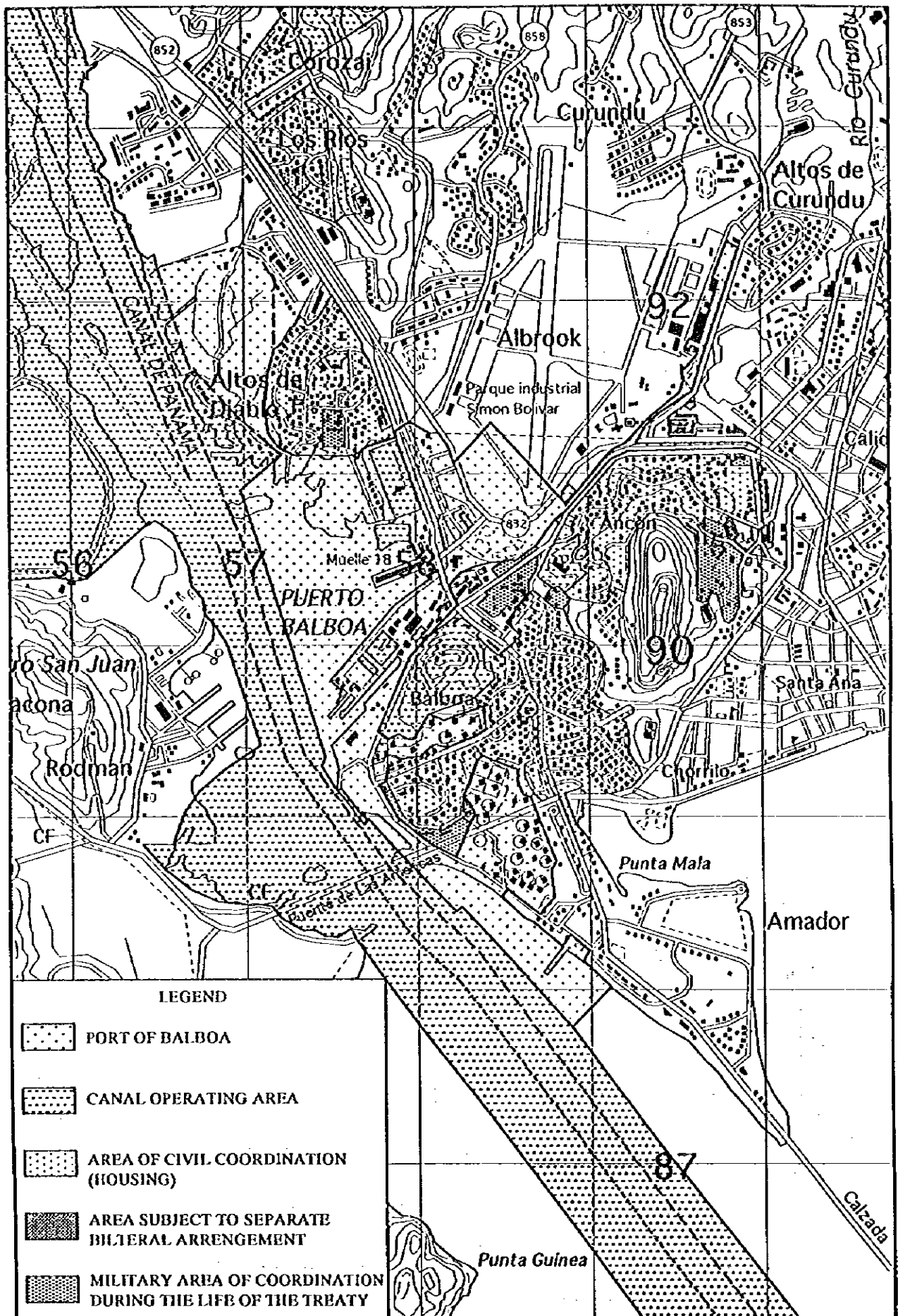


Figure 2-3-2 Port Area of Balboa

Table 2-3-1 Installations in the Balboa Tank Farm
(Source: Autoridad de la Region Interoceanica)

Tank No.	Capacity (barrels)	Maximum Height (m)	Diameter (m)	Product	User
1					
2					
3	61,994	10.2	35.2	F.O.	ESSO
4	80,232	12.2	36.6	F.O.	CHEVRON
5	49,653	9.6	32.4		A.P.S.A.
6	15,106	12.3	16.0	AVGAS	ESSO
7	19,320	11.9	18.2	MIBK	EXXON
8	78,485	12.6	35.6	F.O.	CHEVRON
10	24,624	9.0	23.6	L.D.O.	ESSO
13	53,161	9.0	31.6	L.D.O.	SHELL
14	51,062	9.0	35.0	F.O.	SHELL
15					
17	78,580	12.6	35.6	F.O.	ESSO
18	79,898	12.3	36.4	F.O.	TEXACO
20					
21	43,104	10.8	28.5	I.P.A.	EXXON
22	62,604	14.5	29.6	L.D.O.	ESSO
23					
24					
33					
53					
54	58,853	11.9	31.8	L.D.O.	CHEVRON
55	24,378	12.0	20.3	L.D.O.	CHEVRON
56	29,761	9.6	25.2	L.D.O.	CHEVRON
57	66,073	14.0	31.0	L.D.O.	CHEVRON
58	31,056	8.2	29.2	L.D.O.	CHEVRON
59	33,787	8.5	28.4	L.D.O.	ESSO
60	65,582	11.9	33.6	L.D.O.	TEXACO
61	49,678	9.6	32.4	F.O.	A.P.S.A.
62	79,125	12.6	35.8	F.O.	MOBIL
63	79,211	12.6	35.8	M.D.O.	MOBIL
64	79,125	12.6	35.8	F.O.	MOBIL
65	54,632	8.7	35.8	F.O.	MOBIL
66	79,170	12.6	35.8	L.D.O.	SHELL
101	41,130	10.5	28.2	L.D.O.	A.P.S.A.
102	41,130	10.5	28.2	L.D.O.	A.P.S.A.
103	54,194	9.0	35.0	JETA.	ESSO
105	19,695	12.2	18.0	F.O.	A.P.S.A.
110	5,272	7.2	12.2	VARVOL	ESSO
111	505	3.4	5.5	F.O.	A.P.S.A.
112	3,791	7.3	10.1	TOLUENO	EXXON
113					
124					
	(Total) 1,699,874				

Source: ARI (Autoridad de la Region Interoceanica)

no definite plan of the government on the land use of it. On the north side it is also neighboring the Diablo Heights Residential Area, the major part of which was also reverted recently, and is available for future expansion of the port. Corozal Area is on the north of Diablo Heights. The Balboa tank farm areas are on the south of Sosa Hill, the south part of which is almost lost with being used for gravel of the railroad.

(2) Stockyards Outside the Port of Balboa

87. Following to APN, about ten private stockyards operate and compensate the lack of capacity of the port of Balboa, through concession from APN, since this port does not have enough space inside. Many of these private yards mainly store and transport containers and vehicles.

88. At present the yards play important roles in supporting the container cargo movement in this area. The scale and facilities of these yards vary from each other, but form a group in almost one place in the south of the old Albrook Air Force Base.

89. Since the business circumstances of these yards can easily change responding to the fluctuation in demand and are not necessarily operated in good condition, it is hard to grasp the situation in detail. The location and the names of these container yards are shown in Figure 2-3-3 and Table 2-3-2 respectively. (The area between Panama Railroad and the old Albrook Air Force Base, where 7 concessionaires are involved, is called Area 300, which APN sometimes uses for the storage of containers.)

90. The total area of these stockyards exceeds 15 ha, which is more than five times the existing container yard in the port of Balboa. It is important to take the role of these yards and neighboring large spaces into consideration in order to elaborate a future development plan of container terminals.

(3) Existing Master Plan for the Port Area

91. In 1992, APN made a master plan, on trial, for the land use of the vicinity area around the port of Balboa including the existing territory and the area owned by PCC or US Armed Forces which would be reverted in the near future according to the Canal Treaty. This master plan is now under negotiation among the organizations concerned of the Government of Panama, including ARI.

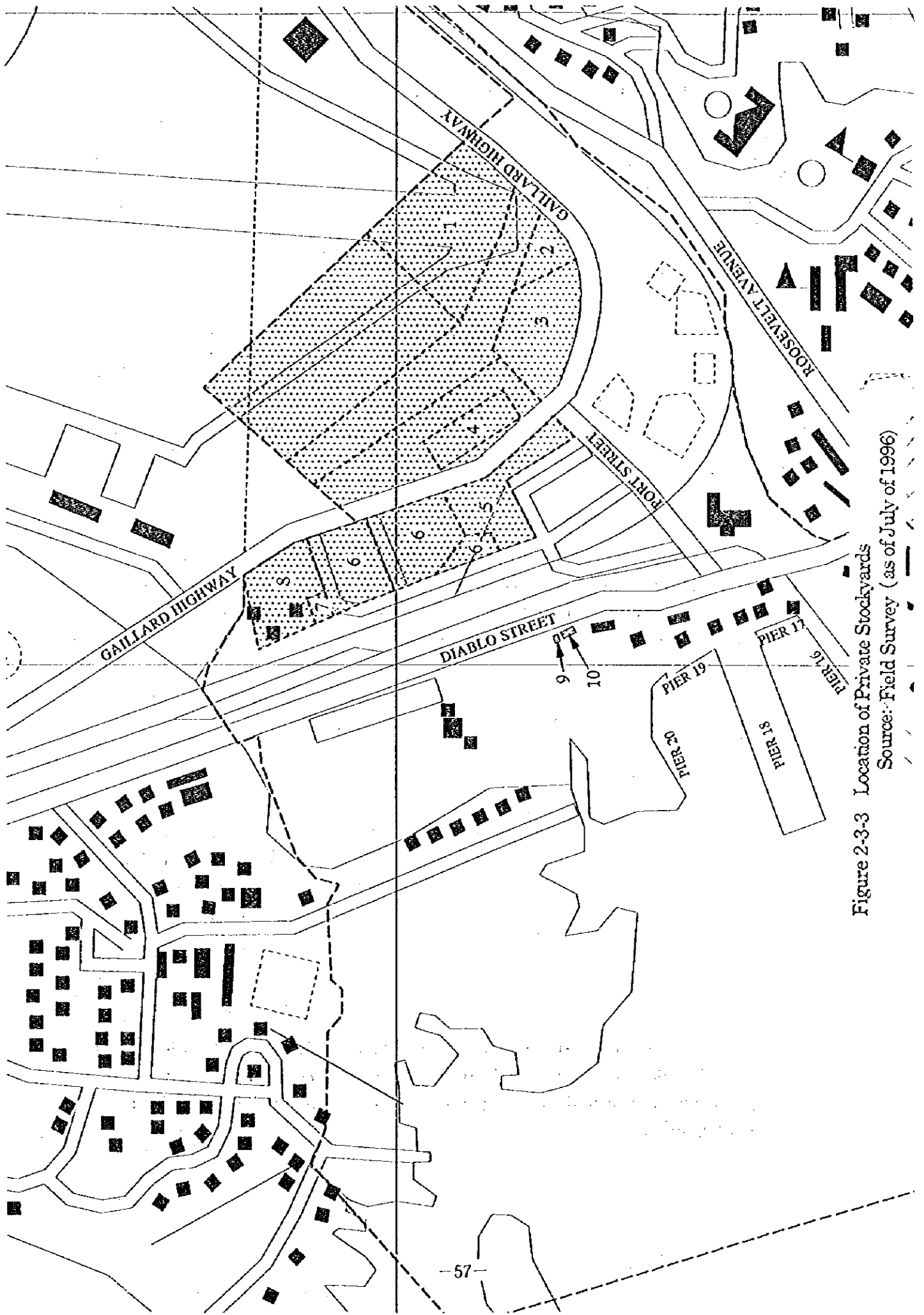


Figure 2-3-3 Location of Private Stockyards
 Source: Field Survey (as of July of 1996)

Table 2-3-2 List of Private Stockyards and their Areas(Concession)
 (Source: Autoridad Portuaria Nacional as of May of 1996)

No.	Name of Private Company (Concession)	Use	Area(m2)
1	Patio Container	Containers	35,106.8
2	Panama Bond	Vehicles and Merchandise	24,326.8
3	Transbal	Vehicles and Containers	44,529.5
4	Balboa Abastecedora, S.A.	Vehicles	9,362.4
5	Super Bond	Vehicles	1,923.4
6	International Sea Land Terminal	Containers	24,441.1
7	Pacific Bond (P.B.)	Vehicles	5,261.8
8	Trucking & Towing. Inc. (T&T)	Containers	3,970.0
9	Moters Marinos (M.M.)	Repair Workshop of Marine Motor Engines	1,492.0
10	Casamar de Panama	Repair Workshop of Fishing Net	14,813.5
		(Total area)	165,227.3

Source: APN

92. Based upon this plan, the Area for this study was determined between APN and the JICA preparatory study team in December, 1995. The Area will, however, not be limited in case that new land acquisition becomes necessary for the future port activities after consultation with APN.

93. The master plan proposes five different zones corresponding to their major functions within the various port activities (See Figure 2-3-4).

1) Port Operation Zone

94. This area is approximately 234 ha including a water area specialized for port operation activities. The main function of this area is for cargo and ship movement. It includes the wharves and their related land areas, the ship repair facilities, passenger terminal and railroad facilities. This area is almost the same as the existing port area around the wharves.

2) Cargo Stacking Zone

95. This area of approximately 133 ha will be exclusively used for stacking the cargo handled in the port. It includes warehouses, hangers, container stockyards, motor pools and oil storage tank farms. This area will be conceded to private companies.

96. It covers 19.9 ha of the Albrook area on the east side of the port operation zone and the existing two tank farms. The playing fields located near the port should be relocated away from this area, which should be dedicated to cargo management.

3) Port Administration Zone

97. It is approximately 44 ha wide. The headquarter of APN and the administration office of Balboa Port will be moved to this area. Two alternative sites were proposed for this area; the site of the Panama Canal College and the site of Balboa High School. The offices related to the port activities such as shipping agents, banks, insurance company, law offices and agents for foreign enterprises will be also located in this area.

4) Industrial Area

98. This area with approximately 168 ha is designated for the manufacturing industries which are necessary to be located close to the port, such as international distribution center of autos and Multisectoral Zones for Exportation. It covers almost all of the Corozal Area.

5) Port Related Area

99. This is an expansion area for companies related to port activities with approximately 181 ha. This area might not necessarily belong to the port area, but will be in close relation to the utilization of the area. This area includes the existing Diablo Residential Area.

100. In this master plan, APN points out that the access from the port to the Panama Railroad and the Transisthmian Highway is the most vital factor for securing maximum utilization of those areas.

101. Considering that the port has a tremendous property value and great potential as an economic booster, it is quite reasonable to use the surrounding area of the port so that the port can give full play to its ability.

102. It seems desirable to develop the Sosa Hill as a park or tourist point, because it provides a splendid view point for visitors of the port and the Panama Canal.

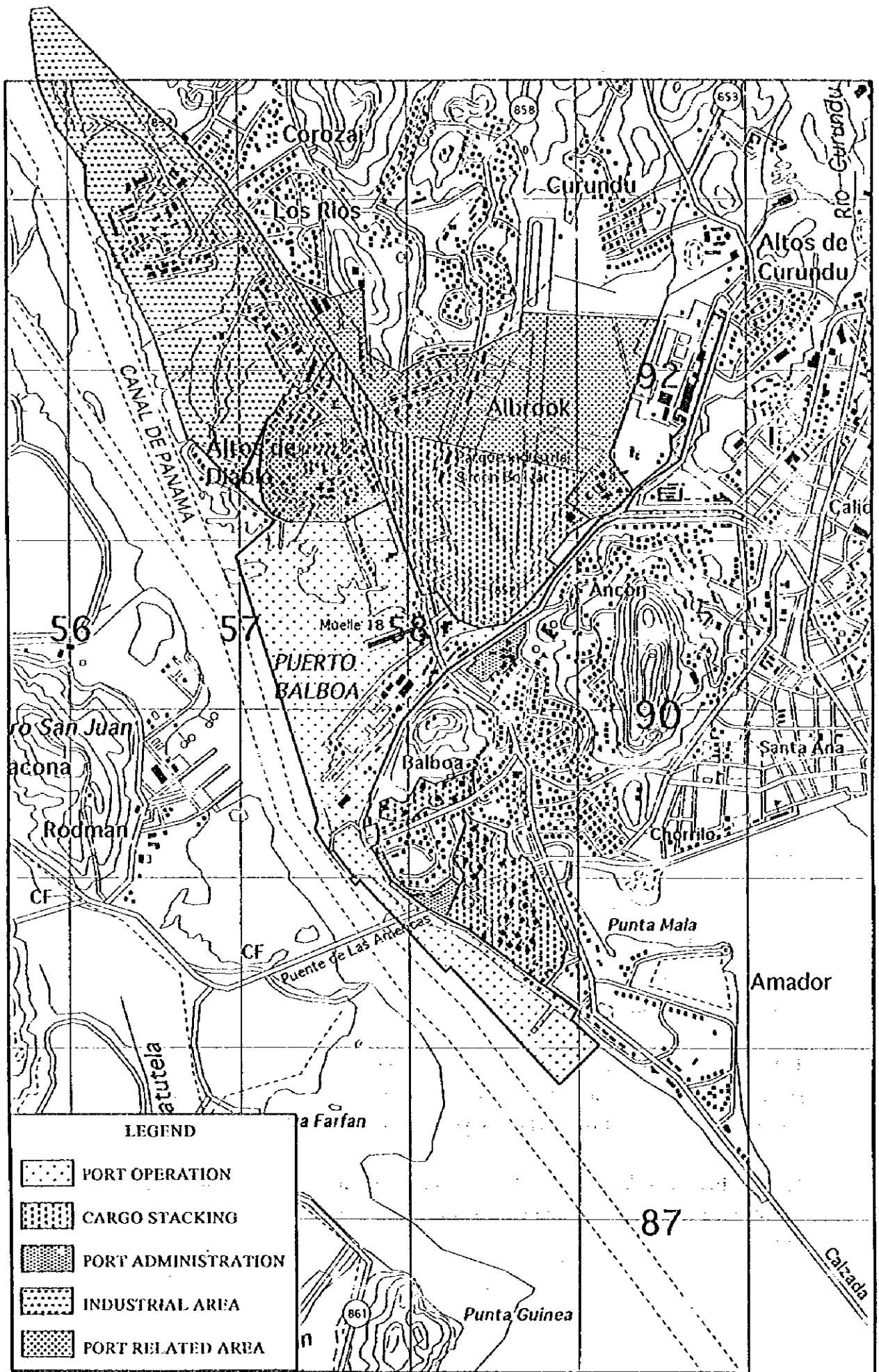


Figure 2-3-4 Future Land Expansion Plan of Balboa

(4) Details of the Current Use around the Port

103. The current Use in the port of Balboa is shown as Figure 2-3-5 based on Plan SK 529-25-4 Balboa Industrial Area, PCC. And the major buildings by administration are shown in Table 2-3-3.

104. Around the dry dock complex, the south part of the area between Pier No.14 and Dry Dock No.1, and the area between Dry Dock No.1 and the Roosevelt Avenue, are almost occupied by the buildings administrated by the dry dock complex (Astilleros Braswell) through concession from APN. Since the dry dock is one of the main activities of the port of Balboa, and related facilities are too large and heavy, the areas around the current dry dock will be secured for its future expansion, if necessary.

105. Major part of the north part area behind Pier No. 14 and the neighboring area behind No.15 are exclusively used by PCC for the purpose of apprentice school, workshop, storehouse, offices and so on, which is expected to be transferred to Panama gradually by 2000. At that time, the areas behind Pier No.14 to 16 are desirable to be utilized primarily as expansion yards for cargo handling. For the major functions of these PCC buildings are expected to move to other facilities with similar function, located in the vicinity of US military area; for example, the workshops and storehouses will be relocated to Corozal, where there are several military workshops of heavy equipment, and the apprentice schools are planned to move to the elementary school of Los Rios, located to the north of Corozal soon. Besides, most buildings are of hanger of steel structure, and are relatively easy to demolish, if necessary.

106. Behind Pier No.16, there exists the workshop of railway cars administrated by APN. And the buildings in the area from here to the Roosevelt Avenue are almost all administrated by PCC, too.

107. In addition to the facilities of APN and PCC, there are several small offices and restaurants around Pier No.17 - 19, which are also concessionaires under APN.

108. To the north of here, there are two fairly round spaces administrated by PCC. One of them is a large storage yard of around seven hectares. In front of it, there exists the land like a sandbar, connecting Diablo, where many boathouses were built by about 20 concessionaires under APN, but appears to be being developed disorderly. The southeast of Diablo is occupied by a yacht club (Diablo

Spinning Club) , which is also a concessionaire under APN. This area is significant from the viewpoint of the future development of a new port neighboring the current one.

109. Almost all the other parts of the related areas, including the play grounds in front of the main entrance of the port, are under control of APN. Good coordination among the various port activities, including the use as expansion yard for cargo handling, will be necessary to make good use of it.

110. Major part of the housing area (for the PCC workers) around the port, such as Diablo on the north side and La Boca on the south side, are already reverted, and only the workers near their place of work remain there. In addition, the elementary school in Diablo, the Balboa high school in front of the port entrance, and the college on the south of La Boca, under the American Bridge, will be transferred to Panama by 2,000. Not only Americans but also Panamanians go to these school now.

111. It would be natural to utilize the existing housing for workers and the school might be converted to a training center. However, the same function could be alternated in other facilities of the near reverted area, in case that the very basic port activities, such as expansion of container terminal or new plan for the pier, need these areas.

(5) Interoceanic Region (Panama Canal Zone)

112. The Interoceanic Region, previously known as the Panama Canal zone, includes land, water, infrastructure and buildings, and the Canal itself. According to the Panama Canal Treaties, all these assets will be returned to Panama by Dec. 31, 1999. By September 1995, 225,511 acres of a total of 364,078 had been turned over to Panama. The current land use around the port of Balboa, which is based on General Map of the Lands and Waters of the Canal Treaty and modified by the latest information, is shown as Figure 2-3-6.

113. In the next five years, Panama will receive the US military bases comprising 69,160 acres, and the Canal operation area, another 66,690 acres, essential for Canal functioning. Additionally, there are 3,952 acres dedicated to tropical research.

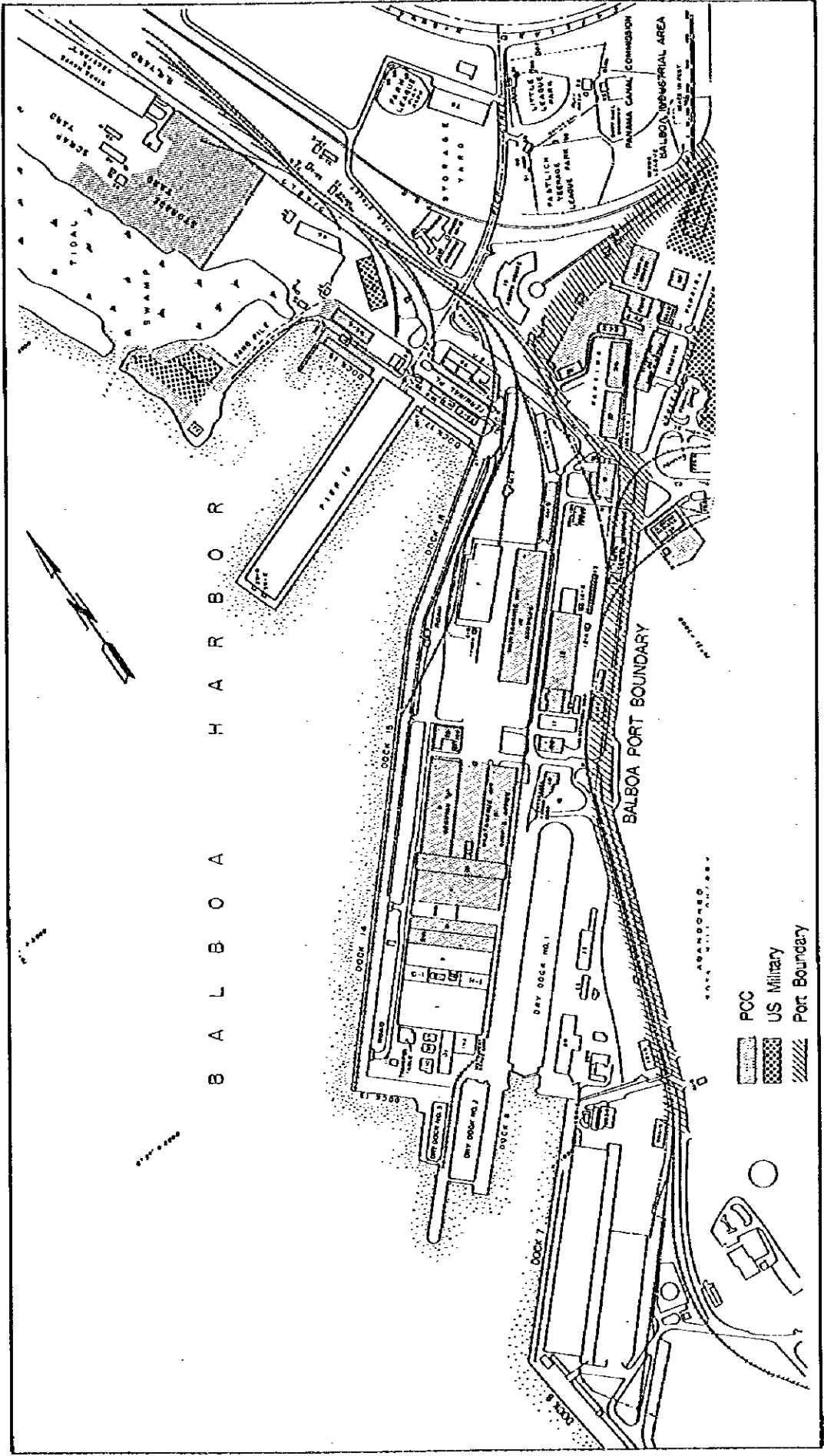


Figure 2-3-5 The current Use in the port of Balboa
 (Source: Autoridad Portuaria Nacional)

Table 2-3-3 Buildings by Administration in the Port of Balboa
(Source: Autoridad Portuaria Nacional and Autoridad de la Region
Interoceanica)

No.	Admin	Conces.	Description	Use	Area(m ²)
1	APN	A.B.	Hangar of steel structure 107.8m x 58m	Workshop of metal	6,252.4
1 G	APN	A.B.			
1 H	APN	A.B.	Hangar of steel structure 107.8m x 20m	Workshop of metal and wood	2,156.0
1 J	APN	A.B.	Hangar of steel structure 26m x 26m	Workshop of metal	676.0
2	APN		Hangar of steel structure 107.8m x 29m	Workshop of mechanic, division of Astilleros Braswell	3,126.2
2 A	PCC		Hangar of steel structure 108m x 18.5m	School apprentice	1,938.0
3	PCC		Hangar of steel structure 108m x 18.5m	School apprentice	1,938.0
4	PCC		Hangar of steel structure 108m x 37.2m	Storehouse, the division of General Services	4,018.0
5	PCC		Hangar of steel structure 122.7m x 37.2m	Storehouse and office	4,561.5
7	APN		Building of steel structure 97m x 41m	Workshop of railway cars	3,977.0
8	PCC		Hangar of steel structure 122.7m x 37.2m	Warehouse, maintenance office	4,561.5
9	PCC		Hangar of steel structure 42.75m x 22.3m	Workshop of refrigeration	953.3
10	PCC		Hangar of steel structure 167.3m x 37.2m	Warehouse of heavy equipment	6,223.6
11	APN		Building of concrete 67m x 17m	Office and warehouse, APN	1,139.0
11 X	APN		Hangar of steel structure 30m x 17m	Concession	510.0
12	PCC		Hangar of steel structure 97m x 37.2m	Workshop and office	3,608.4
14	PCC		Hangar of steel structure 31.6m x 18.6m	Workshop of repair	588.0
19	PCC		Hangar of steel structure 115m x 18.5m	Storehouse, the division of General Services	2,127.5
25	APN	A.B.	Building of concrete 30m x 6m	Warehouse	180.0
28	PCC		Building of concrete 37.2m x 30.5m	Office, the division of General Services	1,131.7
29	APN	A.B.	Building of concrete 76m x 19m	Office and warehouse	1,411.0
29 B	APN		Building of concrete and steel structure 37m x 15m	Office of engineer	655.0
29 X	APN		Building of concrete 37m x 22m	Concession	811.0
31	APN	A.B.	Hangar of steel structure 54m x 15m	Office and workshop	810.0
32	APN	A.B.	Building of concrete 32m x 17m	Warehouse	541.0
39	APN		Building of concrete 44.7m x 13m	Office of administration	581.1
40	PCC		Building of concrete 30m x 17m	Office	510.0
44 A	APN		Building of steel structure 74.4m x 11m	Warehouse	818.4
44 B	PCC		Hangar of steel structure 74.4m x 13m	Warehouse of materials	967.2
56	APN		Building of concrete 15m x 7m	Concession	105.0
				(Total area)	
				APN	11,626.6
				A.B.	12,062.4
				PCC	33,255.7

Note 1: A.B. is Astilleros Braswell (concession from APN).

Note 2: No. is based on Plan SK 629-25-4 Balboa Industrial Area, PCC

Source: Field Survey in 1996, ARI



Figure 2-3-6 The Current Land Use around the port of Balboa
 (Source: Autoridad Portuaria Nacional, Autoridad de la Region Interoceanica and
 Ministry of Foreign Affairs)

114. The current calendar concerning the transfer of U.S. Military Property to the Government of Panama is as follows;

- The year of 1996

Fort Amador (197.7 Acres)

115. This Area is located on the east side of the Pacific Canal Entrance, connecting the Amador causeway. Four buildings (1111, 1112, 1214 and 1219) in the area between Amador Road and Panama Bay were already transferred, which are now used for the offices of ARI. Other two buildings in this area, an administration office (1220) and a building for J-6 communication (1226), are to be reverted to Panama in 1999. The other facilities and lands of the said area and the neighboring area on the south, including Golf Club, Pool, Tennis Courts, were all reverted in September of 1996.

Fuel Storage Area at Arraijan (362.5 ha)

116. This fuel storage area is located at Arraijan to the west of the Rodman Naval Base, at the opposite bank of the port of Balboa. There are 36 fuel storage tanks with the capacity of 1,125,000 barrels of liquid. These facilities were transferred to Panama in September of 1996. Pier No.1 and No.2 of the base, which are connected with these tanks, are available to Panama for the continued operation under certain conditions. The conditions such as the continuation of the fuel supply for the US naval vessels are attached.

117. Potential uses, such as petroleum free zone, storage, stock and distribution of fuel, creation of oil refinery and/or electric power plant and a variety of related activities are expected to be decided on by ARI at present. The whole of the Rodman Naval Base will be transferred in 1999.

Empire Range (10,131.3 Acres)

118. Empire Range of total 52,702.5 acres is neighboring the Canal operation area on the west bank of the Canal between the Miraflores lock and the Gatun lake. Some part of the area is reverted in 1996. The other area will be reverted in 1999. The project of the reforestation concerning the protection of the Canal area is under consideration.

○ The year of 1997

Albrook Air Force Base (766 Acres)

119. This base is neighboring the port of Balboa to the east, which was considered one of the principal areas for the port expansion. The major part of air port function, including the main runway (2,000m) and the taxi ways, was already reverted to Panama in 1979 under certain conditions such as emergency use by US military helicopters. The area on the north of these runways, where there are around 500 houses, dormitories and recreational facilities for US soldiers and their families, will be transferred in 1997. Relocation of the Paitilla airport (1,500m) from the interior of Panama city to Albrook is contemplated, because of South Corridor planned to pass near the Paitilla area, future expansion of the airport, and noise pollution.

Golgas Hospital (74Acres)

120. Golgas Hospital is located at the east foot of Mt. Ancon. It consists of 10 buildings, 19 housing units, library, morgue and laboratories, emergency room, helicopter landing pad, and medical equipment. The hospital will be transferred in 1997.

○ The year of 1998

Quarry Heights (76.6 Acres)

121. Located at the west foot of Mt. Ancon is Quarry Heights, mainly for the use of the headquarters of the Southern Command of the U.S. It will be transferred in 1998.

Herrick Heights

122. This area is located near the Golgas Hospital, where there are Panama Canal College, Ancon communication and so on. It will be also transferred in 1998.

○ The year of 1999

Corozal (380.5 Acres)

123. This area is neighboring the port of Balboa to the north, over the area of

Diablo. It is also assumed to be one of the principal areas for the port expansion. There are several military workshops of heavy equipment in this area in addition to several tens of houses, dormitories and schools. By utilizing these facilities, therefore, PCC intends to integrate their scattered facilities around the port of Balboa, including the workshops just behind Pier No.14 to 15 of the port.

Curundu (185.33 Acres)

124. Curundu is neighboring Albrook Air Force Base on the north. There are houses, school, warehouses and recreational facilities. It will be reverted in 1999.

Fort Clayton (1,976.8 Acres)

125. This area is located on the east side of the Miraflores lock of the Canal and to the north of Albrook Air Force Base. There are a number of houses, dormitories and recreational facilities for US soldiers and their families, almost three times as many as those of Albrook Air Force Base. It will be transferred in 1999.

Rodman Naval Base (593 Acres)

126. It consists of an island communication center, a semaphore hill site (part of Caribbean Basin Radar Network), 86 homes, 3 ship docks, industrial area, recreational areas, and warehouses. As aforementioned, it will be reverted in 1999.

Cocoli (173 Acres)

127. Cocoli is located to the north of Rodman Naval Base. It has 162 housing units, and will be transferred in 1999.

Howard Air Force Base (5,189.2 Acres) and Fort Kobbe (6162.8 Acres)

128. This base occupies the major part of the west bank of the Pacific Canal entrance. The main facility is the international airport with a long runway of about 2,600 m. It is located only 7 km far from the port of Balboa to the west. And there are a lot of houses, dormitories, schools and so on. These areas will be transferred in 1999.

129. In the east part of the area, which is neighboring Farfan Beach on the

west bank of the Canal entrance, there is a huge damp ground of flat space, which have been a disposal site for the construction of the Canal. Recently, some military communication facilities have been relocated to part of the area. This area will be suitable not only for a large scale container terminal but also the future expansion of the port activities including the industry complex.

130. In addition, the airport will be expected to be utilized as one of the international transshipment cargo bases from sea to air or from air to sea in the future, if necessary.

131. In addition, the new access road of approximately 7 m wide with two lanes from the American Bridge was constructed recently, in order to serve as roundabout way around the international airport to Veraguas. The Farfan Beach is now used for swimming with some convenient facilities.

Fort Sherman (22,733.7 Acres)

132. This area is located on the west side of the Atlantic entrance of the Canal. It is the training area, including 12,355.25 Acres of tropical forest. It will be reverted in 1999.

133. The aforementioned calendar could be adjusted by the reasons of either the American side(ex. relocation of military facilities) or the Panamanian side (ex. preparation for the transition). Generally speaking, however, all the military areas are to be reverted by 2000. The important area for canal operation, among those areas, would be reserved as similar area like the current canal operating area.

2.4 Land Transportation Facilities Around the Port of Balboa

134. The road and railroad are the major and only facilities which connect the Balboa Port Area with its hinterland or other ports, and this applies to the Cristobal Port Area, too. In this section, the present situation and the future plan of these facilities are described.

135. The routes of the road and railroad between Panama City and Colon are shown in Figure 2-4-1. Centering around the port of Balboa run two national principal roads, the Transisthmian Highway (Panama-Colon Highway) from south to north and the Pan-American Highway from east (Panama city) to west (Costa Rica). The port has several local roads to access these principal roads. As

well, the Panama Railroad runs along the Canal from south to north. It also connects the port of Balboa with the port of Cristobal directly.

136. As not many cargoes are unloaded or loaded at the Port of Balboa at present, traffic congestion around the port is not observed during the first survey period.

137. Inside the port, for the same reason the traffic congestion is not observed. However, at Pier No. 15 and No. 16, containers are stacked on the apron, which narrows the passage, and jeopardizes the traffic movement. In addition, movement of the reach-stackers through the public road from the main gate to the newly built container storage near Pier No.7 is causing slight inconvenience to the general public.

2.4.1 The Road Network

(1) The Transisthmian Highway, the Pan-American Highway and the Local Road Network

1) The Transisthmian Highway and the Pan-American Highway

138. The Transisthmian Highway was built by the U.S. Army Corps of Engineers during World War II. Prior to the Panama Canal Treaties, they carried out a total rehabilitation of the pavement and other construction works in preparation for turning its responsibility over to the Government of Panama in 1973-75.

139. Since then, it has been the sole option for automobile transport between Panama City and the City of Colon. As well, it is an important link between Pacific and Atlantic ports and Panama's most important trading zones. It is approximately 70.5 kilometers long. It is comprised of two lanes for the most part, excepting some sections adjacent to Panama City and Colon with four lanes. During its fifty years of existence, it has suffered from greatly increased use and insufficient maintenance.

140. The traffic between Colon and Panama City is generally congested, especially in the morning and evening hours. The traffic in the vicinity of Panama and Colon City is considerably heavy. The majority of the vehicles are passenger cars and buses for commuters. It sometimes takes almost two hours from Panama City to Colon in congested conditions. The annual fluctuation of 24 hour traffic

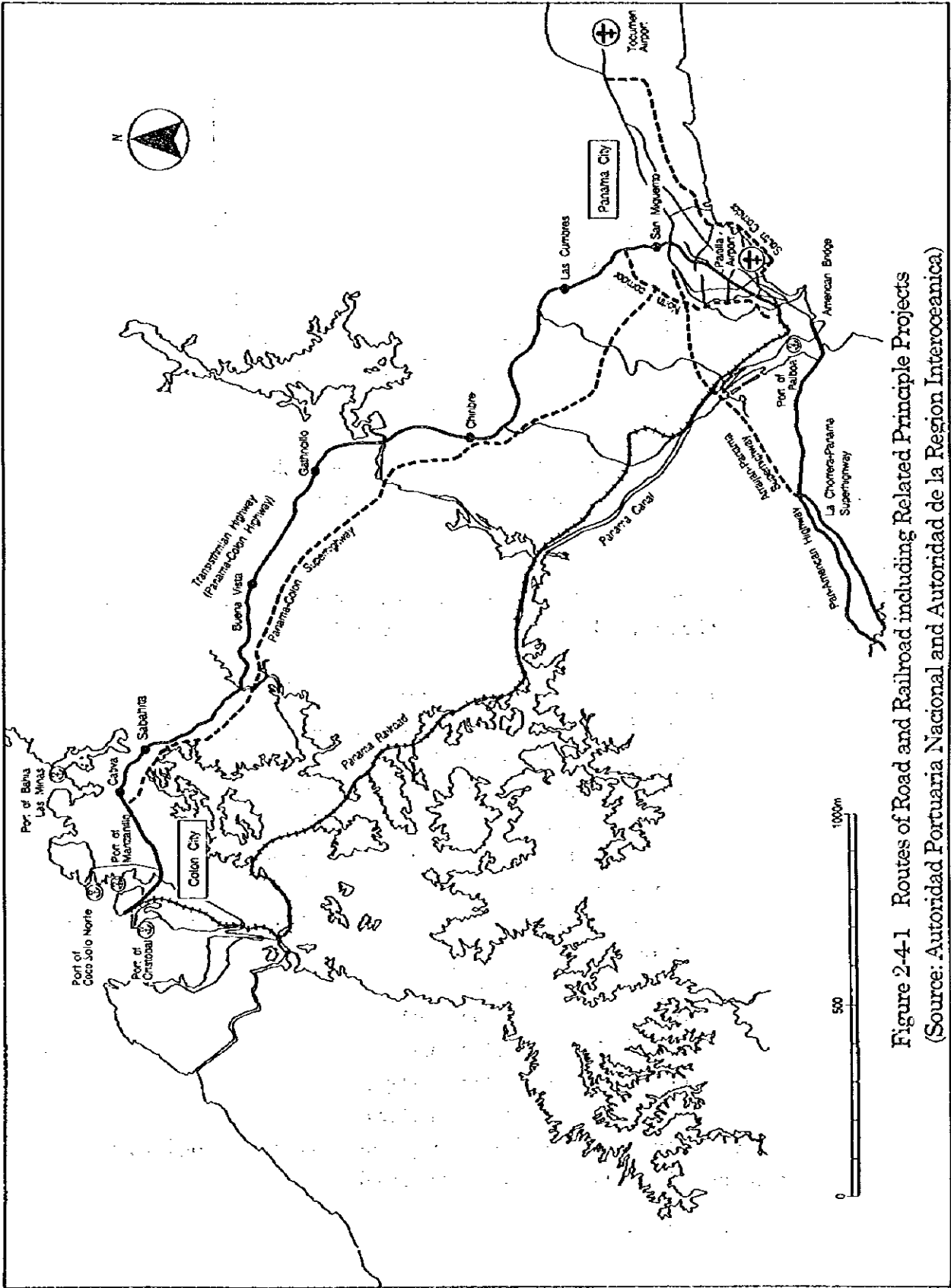


Figure 2-4-1 Routes of Road and Railroad including Related Principle Projects
 (Source: Autoridad Portuaria Nacional and Autoridad de la Region Interoceánica)

volume for 1972 to 1993, between San Miguelito and Colon is shown in Figure 2-4-2.

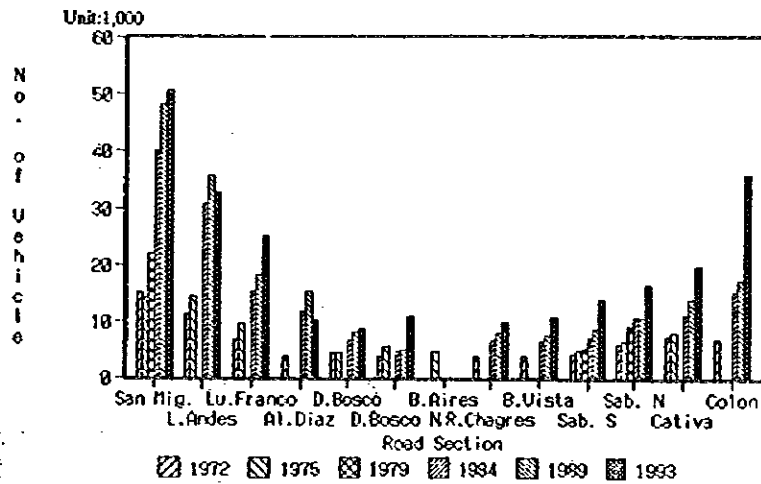


Figure 2-4-2 Annual Fluctuation of Traffic Volume
(Source: JICA Study of 1993)

141. The Characteristics of present goods transportation on the existing highway, obtained by the road side interview survey in 1993, are as follows;

- a) 59.2 percent of goods vehicles are empty.
- b) Petroleum products, other construction materials and pulp/ paper are heavy loads with average load weights of more than 10 tons.
- c) Average loaded weight of actually loaded goods vehicles is 6.9 tons.
- d) Major forms of loading are as follows;
 - as number of vehicles of more than 1,000 vehicles/day
 - Boxes (5 percent Total goods vehicles)
 - Others determined as mixed loading (15 percent Total goods vehicles)
 - as weights of more than 5,000 ton/day
 - Bulk (880 Veh./Day)
 - Liquids (580 Veh./Day)
 - Containers (335 Veh./Day)
 - Others (3,935 Veh./Day)
- e) The total weight of commodities transportation on the existing highway is estimated as approximately 60,000 tons/day.

142. Recently, the Ministry of Public Works started to survey the vehicle volume at various points of the city of Panama and the principal national roads by automatic measurement equipment. Among them, Table 2-4-1 shows the survey points and the average vehicle volumes on the Pan-American Highway. The traffic volume at the American Bridge registered around 30,000 vehicles, and at Divisa, 220km to the west of the Panama City, it decreased to about 5,000 vehicles in 1996.

Table 2-4-1 The Traffic Volumes (the Pan-American Highway)

No.	Road Section	Motorcycle	Passenger Car	Pick-up	Bus	Truck	Trailer	Others	Total	Remarks	
1	The American Bridge	Panama	185	13,171	1,264	3,240	2,105	628	7,200	27,793	Mar.16-22,1996
2	La Herradura	Chorrera	157	9,315	1,247	1,172	1,321	427	1,442	14,850	Jan.12-18,1996
3	El Espino	Chorrera	61	4,608	1,270	241	845	181	651	7,858	Jul.19-25,1995
4	Villa Rosario	Capira	130	4,591	874	419	740	353	1,031	8,141	Jan.12-18,1996
5	La Pita	Capira	196	4,011	754	399	653	337	1,191	7,540	Jan.12-18,1996
6	Campana	Capira	115	3,640	635	257	671	256	990	6,563	Jan.12-20,1996
7	Chame	Panama	163	3,132	891	151	729	265	624	5,955	Apr.23-29,1996
8	San Carlos	Panama	16	3,604	681	180	614	291	361	5,697	Jul.19-25,1995
9	Rio Hato	Cocle	29	2,271	768	73	541	227	311	4,219	May16-22,1996
10	Divisa	Herrera	24	3,156	494	238	431	75	545	4,964	Apr.4-6,1996 (Thu-Sat)

Source: Ministry of Public Works

2) The Local Road Network Around the Port

143. The ports of Balboa is connected with the Transisthmian Highway and the Pan-American Highway by the local road network as described below (see Figure 2-2-1, 2-4-3, 5-4-1 and 5-4-2).

144. Just behind and along the port run the Diablo Street (7.5 m wide with 2 lanes) on the north part and the Roosevelt Avenue (7.5 m wide with 2 lanes) on the south part, and from the main entrance of the port the Port Street (9 m wide with 2 lanes) is straightened to the east, which is connected with the Gaillard Highway.

145. The Gaillard Highway is approximately 10 m wide with two or four lanes, and runs for the Transisthmian Highway to the east. According to the ministry of public works, the 12 hour traffic volume of 1994 is more than 20,000 per day (truck volume is about 5 %). It also runs northward, in the other direction, to another road connecting the Transisthmian Highway as an alternative, part of which is, however, subject to restriction of weight because of the road structure.

146. The Diablo Street, the Roosevelt Avenue and the Gaillard Highway also link to the Pan-American Highway directly or indirectly.

147. At the major intersections of aforementioned roads, exclusive lanes for the turn are added. These roads are in rather good condition. However, the overall capacity of two lanes seems to fall short of the long-term demand. And it should be examined whether intersections between the port and the cargo storage yards neighboring the port or the access to the superhighway under construction might be the overpasses, in order to avoid the mutual interference with other vehicles which have nothing to do with port activities.

(2) The Related Principle Projects

148. There are various road development and/or construction plans related to the port of Balboa, as shown below (see Figure 2-4-1 again):

- (a) North Corridor
- (b) Panama-Colon Superhighway
- (c) Improvements of the Transisthmian Highway
(Panama - Colon Highway)
- (d) Widening of the American Bridge
- (e) Arraijan-Panama Superhighway
- (f) South Corridor
- (g) 3 de Noviembre Avenue

149. These projects are described in detail as below;

1) North Corridor

150. The North Corridor is an urban highway of 13.0 km length located in the northern side of Panama City and is now under construction. This highway has 10 intersections connected with the existing road network, including that of the vicinity of the port of Balboa (see Figure 2-4-3), and the Panama-Colon Superhighway. It consists of four (4) lanes of 3.6m with paved shoulders of 1.8m to 3.0m. It will be turned into that of six (6) lanes if necessary, and is well designed for a vehicle speed of 110.0 km/hr. The construction is carried out by a Mexican company, through concession with a period of 30 years to be retrieved by toll collection.

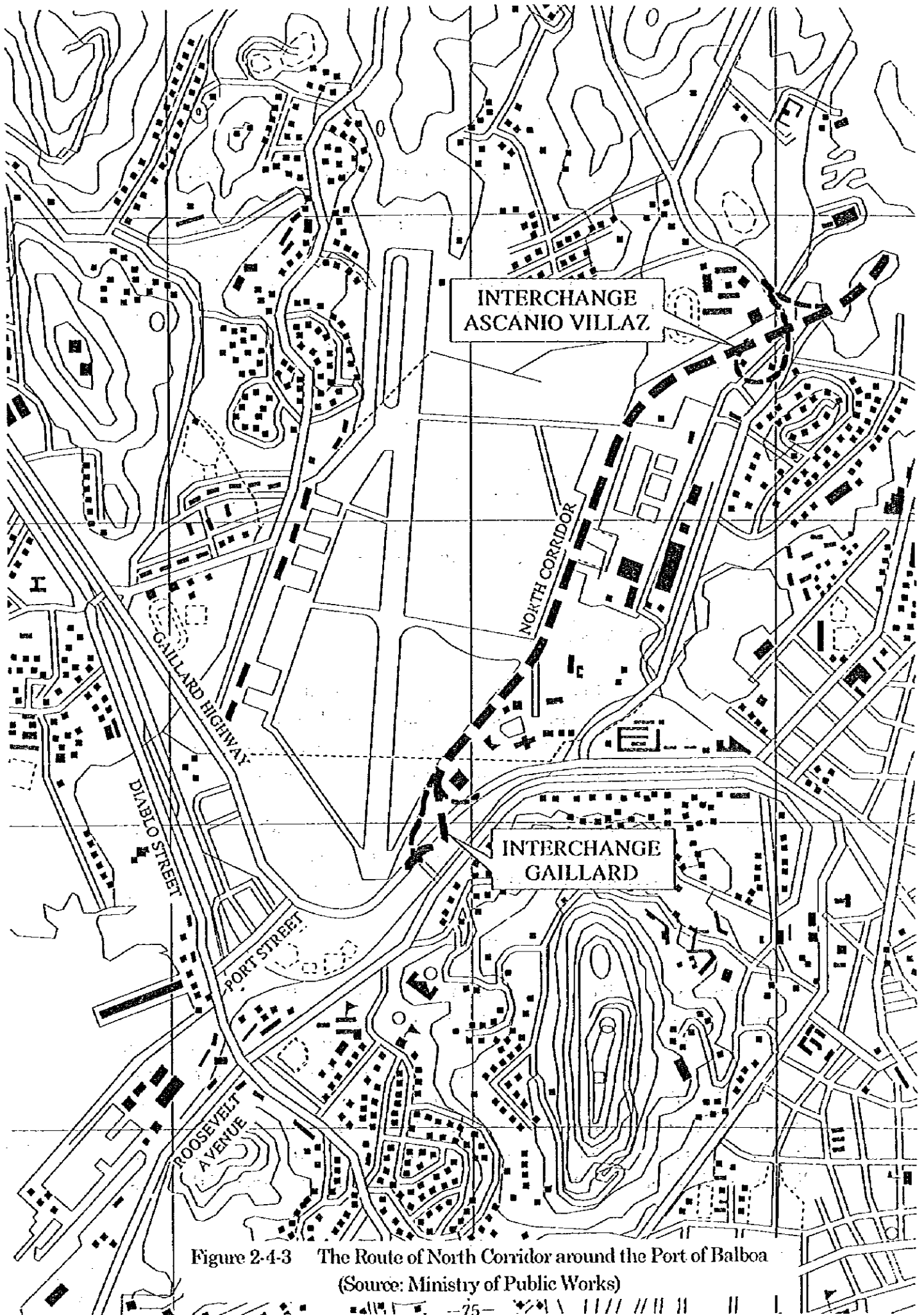


Figure 2-4-3 The Route of North Corridor around the Port of Balboa
 (Source: Ministry of Public Works)

2) Panama-Colon Superhighway

151. This superhighway also forms the part of the concession of the North Corridor. It starts at the intersection with North Corridor in the area of Patacon and ends in the town of Cativa with a length of 53.0km. It is the same as the North Corridor, with four (4) lanes and paved shoulders of 1.8m and 3.0m, of the maximum gradient of 6 percent and designed for a vehicle speed of 110.0 km/hr. This project includes the interchanges: one in the area of Alcalde Diaz, 5 km; and another at the intersection with Madden Road, 14.0km from the beginning of the North Corridor.

3) Improvements of the Transisthmian Highway

152. The project is the rehabilitation of the pavement, the construction of additional climbing lanes for hard slopes, the enlargement of intersections, and the installation of traffic signals from the town of Alcalde Diaz to Sabanitas (51km). The first stage of the project, Gatun River-Sabanitas (8km) was carried out in 1994.

4) Widening of the American Bridge

153. The American Bridge is the only way of permanent communication over the Canal between the western region of the country and the cities of Panama and Colon, the main centers of consumption and employment of the country. The lane number of the bridge is now four (4), with each access road having two (2) main lanes and one (1) additional climbing lane. One (1) additional lane in each access will allow the traffic capacity to increase. The construction work was started in 1994, and will be finished in 1999. This seems, however, to be a short term solution, and is expected to cope with the demand until the year of 2000.

5) Arraijan-Panama Superhighway

154. This Arraijan-Panama superhighway will connect the east end of the Chorrera-Arraijan superhighway at the west beginning, to comprise the continuation of the superhighway between Arraijan and Panama City. It consists of a superhighway of four lanes, a new bridge over the Panama Canal at 1.0 km north of the Miraflores Locks, and two connections with the local network of Panama City, which will be located at the Ricardo J. Alfaro Avenue (Cerro Patacon road) and the Transisthmian highway (Tinajitas). It will be expected to lighten the burden of the traffic jam on the corresponding section of the Pan-

American Highway including the American Bridge.

155. It has a total length of 22 km and six interchanges. The configuration of the connections with the local network, however, is to be adjusted with the final alignment adopted by the North Corridor. In the same way, the traffic capacity, especially the new bridge over the Canal will be reviewed in the light of the growth of the city, the project of the third locks of the Canal and so on.

6) South Corridor

156. The South Corridor is the urban superhighway of 21km length, four lanes and eight interchanges. It will run along the coast of Panama Bay, from Balboa Avenue on the west side of Panama City to Panama Viejo on the east side of the city, where it will go through the swamp area and back to the firm land around the Sur de Juan Diaz, and end at the intersection of Domingo Diaz Ave. and the Pan-Americana Highway. The project will be made up for by the toll income and the land related with the reclamation in the coastal area. The construction will be carried out by another Mexican company through concession.

7) 3 de Noviembre Avenue

157. The 3 de Noviembre Avenue is planned to be reconstructed as a urban artery of four lanes, which will connect the Balboa Avenue near the Seafood Market with the Los Martires Avenue, which leads to the North Corridor directly. This artery will set up a circuit between the North and the South Corridor, together with the access from the American Bridge.

2.4.2 Panama Railroad

158. This trans-isthmian railroad was constructed by the U.S. and opened for service in 1855 as the first transcontinental railroad in the Americas. It was transferred to the Government of Panama in 1979 according to the Panama Canal Treaties.

159. The Panama Railroad, the management body of this railroad, was established in 1980 as an affiliated organization of APN. It became virtually independent from APN by a decree in 1991.

(1) Major Facilities

1) Track

160. The railroad is an unelectrified single lane and runs 78.5 kilometers, parallel to the Panama Canal and connects the two main cities in Panama, Panama City and Colon.

161. Track gauge is 1,524 m.m., which is different from the international standard. Most of the track traverses dry land, however, a considerable portion in the middle section runs on piles over areas flooded by the construction of the Panama Canal.

162. Panama Railroad recognizes that the track is fairly superannuated and most of the cross-ties have rotten due to the ill condition of ballast which is mixed with bed soil. The rail condition is classified roughly as follows: good 0.0km; regular 14.9km; bad 32.1km; and critical 29.5km. On the other hand, tunnels and bridges are in fairly sound condition.

2) Terminal

163. There is only one cargo handling yard managed and operated by the railroad in Curundu in Panama City.

164. It has a container yard and a freight station for general cargo. The container yard with a width of 8,830 m² handles approximately 30 containers per day on average. The maximum capacity of the yard is 342 boxes of 20 ft-containers and 132 boxes of 40 ft-containers. There are eight forklifts and one container crane deployed in this terminal.

165. There is one more cargo handling point in Balboa accessing the port facilities, however it is not equipped with major facilities. The repair facilities for the railway cars and freight cars are deployed in Balboa.

166. In the port of Cristobal, there are sidetracks on Pier No.8 and at the back side of CFS in the port container terminal. One container crane and three forklifts are deployed in Cristobal.

3) Rolling Stock

167. The railroad has 4 locomotives, 8 coaches, 13 freight cars and 60 open wagons. Three GM600 type locomotives with 1200 HP are 30 years old and one ALCO900 type locomotive with 1600 HP is 40 years old.

(2) Operation

168. All of the general and container cargoes are transported between two of the three cargo handling points. There is no fixed timetable and a diagram is not used. One trip from Panama to Colon and vice versa are operated daily. One train has ten cars in maximum. It takes two hours and 15 minutes to run between Panama and Colon on average.

169. The freight rate on containers is fixed for each size and pair of terminals, and is a little bit lower than that of automobile transport.

170. Passenger transportation service was terminated in 1989 due to the decrease of demand. In December of 1992, however, it re-opened on weekends as a tourist train from Panama to the Park of Summit. It transported 40,782 passengers (477 operations) in 1995.

(3) Cargo Volume

171. The railroad transported 50,642,851 tons of cargo (480 operations) in 1995. And the number of transported containers was 2,028 TEUs in the year. The container cargo volume has been gradually decreasing since 1986. The volume of general cargo has been decreasing for a long time. The major cargo is imported goods transported from Colon to Panama City.

(4) Potential for Container Transportation

172. Generally speaking, the railroad facilities for container transportation from or to the port should be planned carefully from various points of view. In case of the port of Long Beach, for one example, it is reported that the traffic of containers just behind the wharf is sometimes in confusion, because it is intercepted by the trains forming the line.

(5) Modernization of the railroad (related to section 1.6)

173. After evaluating the various concession projects related to the modernization of this railroad, the government of Panama determined to adopt the proposal submitted by Kansas City Southern Railroad on June 24th, 1996.

III PORT ACTIVITIES OF PORT OF BALBOA AND OTHER PORTS

1. This chapter indicates ports activities mainly in the port of Balboa, and other major ports (Cristobal, Coco Solo Norte, Bahia Las Minas, and Manzanillo International Terminal), focusing on cargo and passenger movement.

3.1 Cargo Volume Handled and Passenger Movement

3.1.1 Cargo Volume Handled

2. Table 3-1-1 and Figure 3-1-1 show the cargo handling volume in Panama (21 ports under APN including public ports and Manzanillo International Terminal) for the last 12 years. The total cargo volume in Panama has steadily increased since 1988 at the average annual growth rate of 12% after it decreased sharply in 1988 to 85% of the previous year due to the direct influence of the economic sanctions imposed by the U.S. Government. In 1995, the cargo volume of public ports decreased because of operation in MIT.

Table 3-1-1 Past Records of Cargo Volume in Panamanian Ports

Year	Unit: Metric ton		
	Total	Public	MIT
1984	2,159,132	2,159,132	
1985	2,450,904	2,450,904	
1986	2,456,715	2,456,715	
1987	2,590,245	2,590,245	
1988	2,178,284	2,178,284	
1989	2,351,192	2,351,192	
1990	2,741,667	2,741,667	
1991	3,151,637	3,151,637	
1992	3,471,521	3,471,521	
1993	3,738,434	3,738,434	
1994	4,068,810	4,017,478	21,332
1995	4,703,698	3,814,463	889,235

Source: Autoridad Portuaria Nacional (APN)

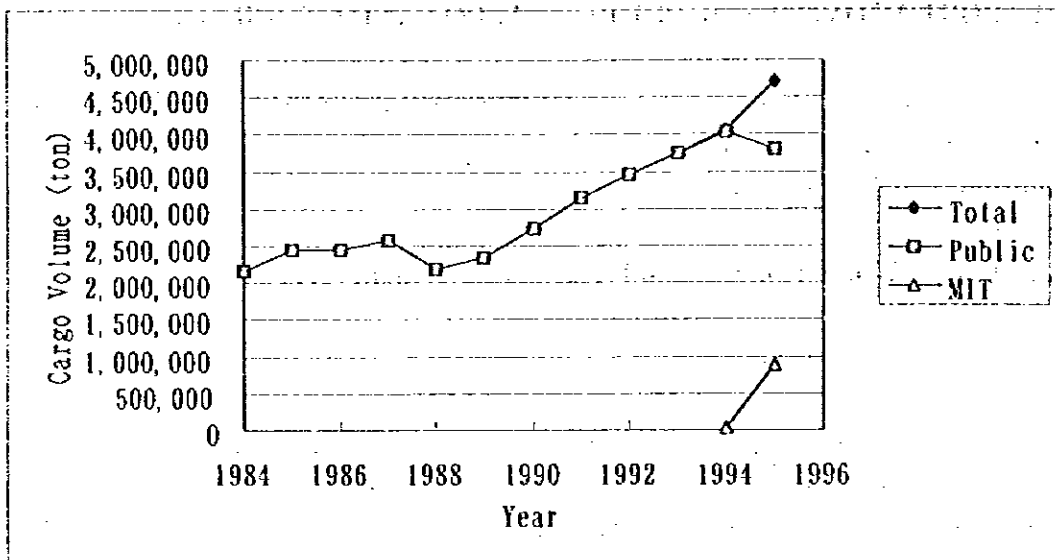


Figure 3-1-1 Cargo Volume in Panamanian Ports

(1) Port of Balboa

1) Cargo Handled

3. Table 3-1-2 and Figure 3-1-2 show the transitions of cargo volume by unloading/loading operations. The cargo volume handled has fluctuated and gradually increased since 1988 when the lowest volume was recorded. The average annual growth rate from 1984 to 1995 is 5.3%. The share of the total cargo in APN's ports was 19% in 1995. With regard to cargo movement by unloading(import) and loading(export), 91% of cargo volume was imported in 1995 (the highest share among the four ports).

Table 3-1-2 Cargo Volume Handled by Operations at Port of Balboa

Unit: Metric Ton

Year	Total	Unloading	Loading
1984	404,268	364,568	39,700
1985	460,622	387,186	73,436
1986	449,329	368,957	80,372
1987	338,590	306,485	32,105
1988	264,678	235,524	29,154
1989	285,895	259,810	26,085
1990	328,400	301,046	27,354
1991	398,331	353,361	44,970
1992	502,686	446,329	56,357
1993	534,821	486,548	48,273
1994	685,064	637,196	47,868
1995	714,501	652,215	62,286

Source: Autoridad Portuaria Nacional (APN)

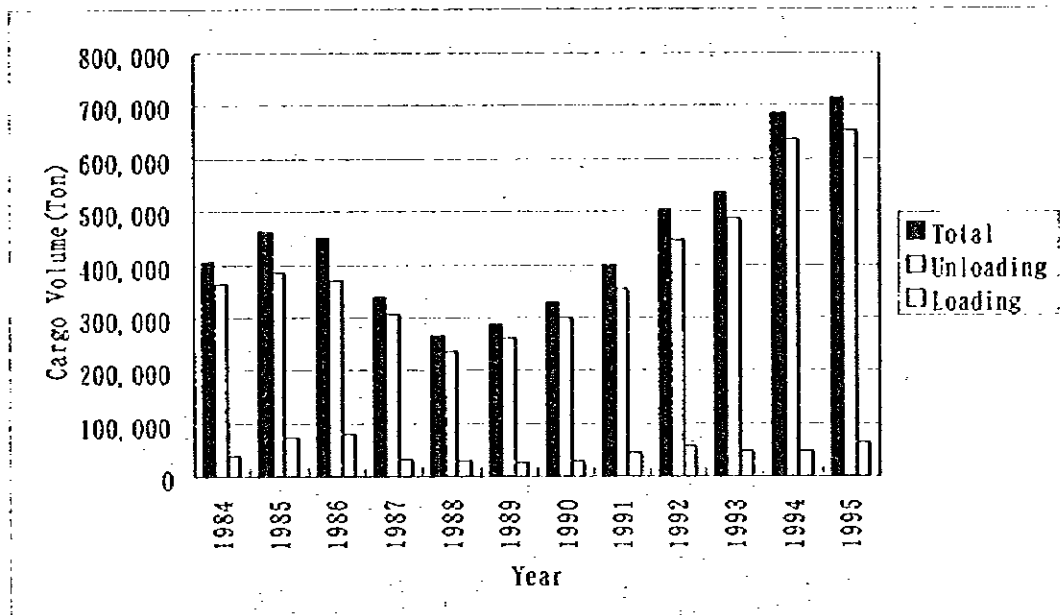


Figure 3-1-2 Cargo Volume Handled by Operations at Port of Balboa

4. Table 3-1-3 and Figure 3-1-4 show the transitions of cargo volume by packing types. The share of bulk cargo has been dominated since 1988 and it marked 63% in 1995. Container cargo has fluctuated strongly and the share of that was 30% in 1995. The share of general cargo was only 7% in 1995.

5. Bulk cargo has steadily increased from 1989 and the highest volume of 448 thousand metric tons was recorded in 1995. The major commodities of the

bulk cargo are lubrication oil, soybean oil, and alcohol in liquid bulk, and wheat, corn, and soy bean flour in solid bulk.

Table 3-1-3 Cargo Volume Handled by Packing Type at Port of Balboa

Unit: Metric Ton				
Year	Total	Bulk	Container	General
1984	404,268	146,111	216,112	42,045
1985	460,622	181,596	236,283	42,743
1986	449,329	195,813	210,143	43,373
1987	338,590	205,229	90,528	42,833
1988	264,678	191,704	52,436	20,538
1989	285,895	189,489	82,886	13,520
1990	328,400	243,444	55,338	29,618
1991	398,331	276,383	74,036	47,912
1992	502,686	336,051	118,712	47,923
1993	534,821	360,060	125,546	49,215
1994	685,064	411,015	208,814	65,235
1995	714,501	448,306	213,769	52,426

Source: Autoridad Portuaria Nacional (APN)

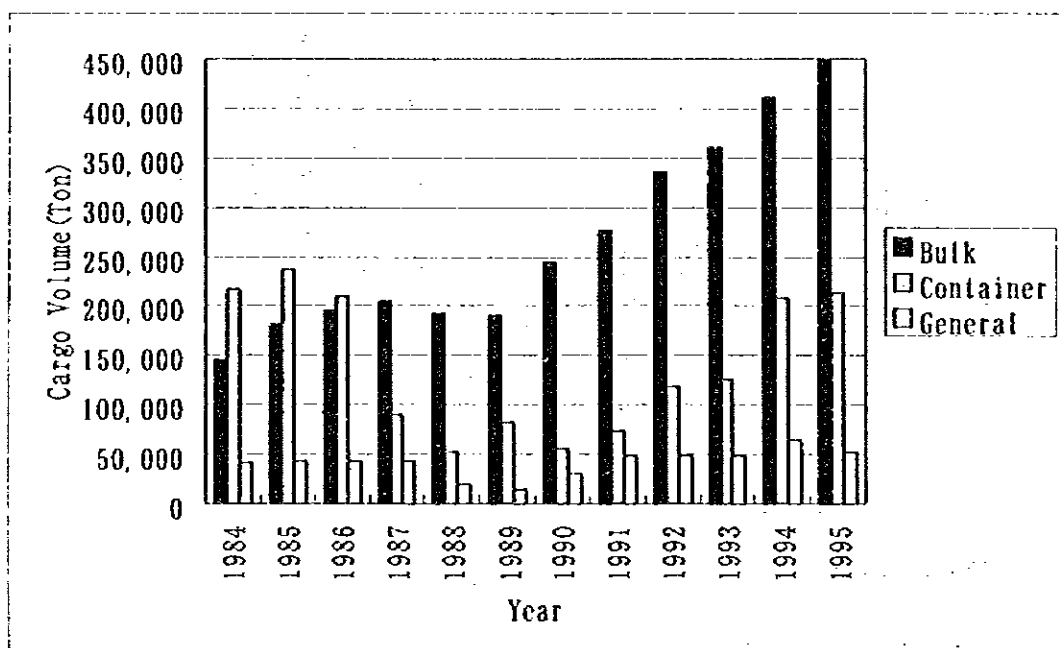


Figure 3-1-3 Cargo Volume Handled by Packing Type at Port of Balboa

6. General cargo consists mainly of agricultural products, iron and steel products, and wood, and is imported. The Table 3-1-4 show the past records of vehicles handled. The handling of vehicles largely decreased in 1988 and 1989.

The number of vehicles was 15,538 (14,869 imported and 669 exported), and 19,357 metric tons were handled in 1995. Passenger cars are dominated.

Table 3-1-4 Cargo Movement of Vehicles at Port of Balboa

Year	Number of Vehicles			Cargo Weight (ton)		
	Unload	Load	Total	Unload	Load	Total
1986	14,827	1,650	16,477	19,311	2,736	22,047
1987	14,354	902	15,256	18,114	1,959	20,073
1988	2,269	1,224	3,493	3,159	1,291	4,450
1989	3,928	990	4,918	5,438	1,296	6,734
1990	11,290	2,611	13,901	13,620	2,911	16,531
1991	15,563	10,542	26,105	17,535	12,796	30,331
1992	21,013	4,988	26,001	28,155	6,031	34,186
1993	16,057	3,879	19,936	20,716	3,934	24,650
1994	17,354	1,126	18,480	22,696	1,576	24,272
1995	14,869	669	15,538	19,357	1,527	20,884

Source: Autoridad Portuaria Nacional (APN)

2) Container Cargo

7. Table 3-1-5 and Figure 3-1-4 indicate summary of container cargo handled at the port of Balboa. The cargo volume has fluctuated between 50 thousand and 80 thousand metric tons from 1987 to 1991. Then, the cargo volume increased remarkably in 1994 by 83 thousand metric tons from the previous year and reached 209 thousand metric tons. 214 thousand metric tons and 44,268 TEUs were handled in 1995. Major commodities in container are food, textiles, wood, papers, chemical products, and household appliances. According to the cargo volume in Table 3-1-5, most of the containers were imported and the share of importing cargo was 74% in 1995.

Table 3-1-5 Cargo Movement of Container Handled at Port of Balboa

Year	Cargo Volume (ton)			No. of Container (TEU)			No of Laden Cont. (TEU)		
	Unload	Load	Total	Unload	Load	Total	Unload	Load	Total
1987	74,150	16,378	90,528	9,287	8,965	18,252	9,141	2,675	11,816
1988	37,632	14,804	52,436	4,840	5,131	9,971	4,364	2,367	6,731
1989	63,050	19,836	82,886	7,750	6,335	14,085	7,430	3,130	10,560
1990	35,430	19,908	55,338	5,181	5,543	10,724	4,635	3,094	7,729
1991	46,857	27,179	74,036	6,896	5,612	12,508	5,040	4,071	9,111
1992	72,479	46,233	118,712	8,651	7,926	16,577	6,467	5,763	12,230
1993	84,824	40,722	125,546	10,411	10,419	20,830	8,650	5,237	13,887
1994	167,901	40,913	208,814	24,455	20,334	44,789	22,686	5,878	28,564
1995	158,086	55,683	213,769	21,529	22,739	44,268	20,625	7,566	28,191

Source: Autoridad Portuaria Nacional (APN)

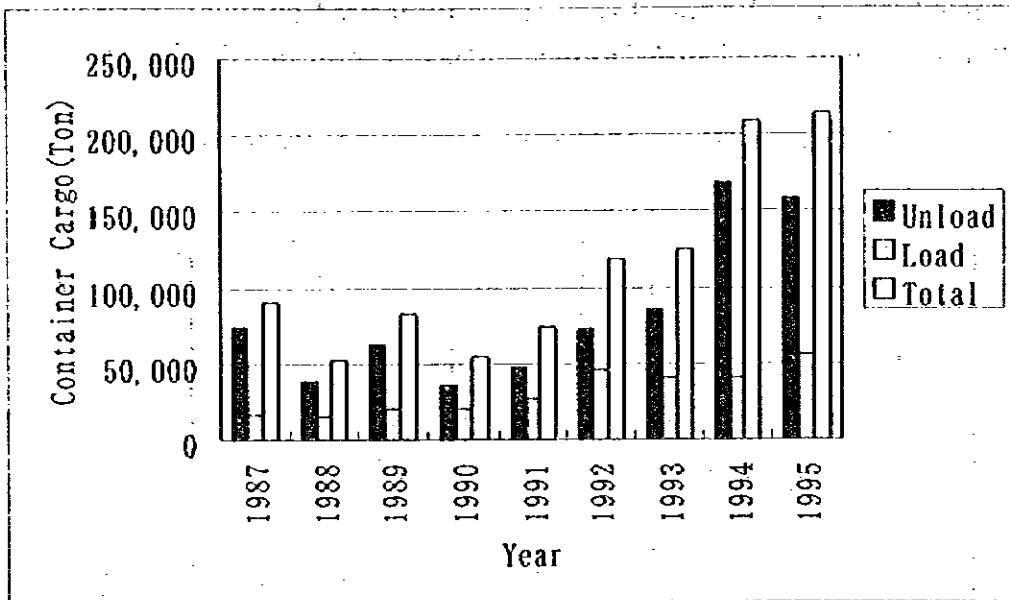


Figure 3-1-4 Cargo Movement of Container by Operation at Port of Balboa

8. Table 3-1-6 shows average weight and ratio of laden container cargo. In 1995, ratio of laden containers (28,191 TEUs) was 64% to the total of 44,268 TEUs. In addition, the ratio of unloading laden containers was very high and recorded 96% in 1995 in contrast with 33% for the ratio of loading laden containers. Average weight of laden container was 7.6 metric tons/TEU in 1995.

Table 3-1-6 Characteristics of Laden Containers at Port of Balboa

Year	Aver. Weight (ton/TEU)			Ratio of Laden Cont.		
	Unload	Load	Total	Unload	Load	Total
1987	8.1	6.1	7.7	98%	30%	65%
1988	8.6	6.3	7.8	90%	46%	68%
1989	8.5	6.3	7.8	96%	49%	75%
1990	7.6	6.4	7.2	89%	56%	72%
1991	9.3	6.7	8.1	73%	73%	73%
1992	11.2	8.0	9.7	75%	73%	74%
1993	9.8	7.8	9.0	83%	50%	67%
1994	7.4	7.0	7.3	93%	29%	64%
1995	7.7	7.4	7.6	96%	33%	64%

Source: Autoridad Portuaria Nacional (APN)

9. Table 3-1-7 shows the past records of FCL(Full Container Load) and LCL(Less Than Container Load) ratios for container cargo. The FCL ratio has recently increased up to almost 100% of laden containers with 99.5% in 1995.

This high FCL ratio has been stable in these years. The ratio of refrigerated cargo to the total volume was 4% in 1994.

Table 3-1-7 FCL/LCL Ratio of Laden Containers at Port of Balboa

Year	FCL		LCL		Total (TEU)
	(TEU)	(%)	(TEU)	(%)	
1987	6,613	56.0%	5,203	44.0%	11,816
1988	6,432	95.6%	299	4.4%	6,731
1989	10,327	97.8%	233	2.2%	10,560
1990	7,451	96.4%	278	3.6%	7,729
1991	8,776	96.3%	335	3.7%	9,111
1992	12,070	98.7%	160	1.3%	12,230
1993	13,807	99.4%	80	0.6%	13,887
1994	28,499	99.8%	65	0.2%	28,564
1995	28,048	99.5%	143	0.5%	28,191

Source: Autoridad Portuaria Nacional (APN)

(2) Port of Cristobal

1) Cargo Handled

10. All cargo handled in the port of Cristobal is for overseas trade. Table 3-1-8 and Figure 3-1-5 show the transitions of cargo volume by unloading/loading operations. The cargo volume had rapidly increased from 1988 to 1994 with the average annual growth rate of 19%. In 1995, however, the cargo volume sharply decreased by 13% of the previous year. The average annual growth rate between 1984 and 1995 was recorded at 10%. With regard to cargo movement by unloading and loading, 71% of the total cargo volume was imported in 1995. The cargo volume share of this port was 31% in 1995. This means that the port of Cristobal plays a very important role in Panama.

11. Table 3-1-9 and Figure 3-1-6 show the transitions of cargo volume by packing types. Shares of each packing type were 78% for container cargo, 12% for bulk cargo, and 10% for general cargo in 1995. Bulk cargo has been handled continuously since 1989. While the cargo volume of containers has increased steadily from 1988 to 1994, the volume of bulk cargo and general cargo decreased in 1995.

Table 3-1-8 Cargo Volume Handled by Operations at Port of Cristobal

Unit: Metric Ton

Year	Total	Unloading	Loading
1984	416,021	356,784	59,237
1985	482,645	417,886	64,759
1986	626,026	523,810	102,216
1987	704,890	595,424	109,466
1988	477,709	377,685	100,024
1989	616,095	492,417	123,678
1990	672,026	557,471	114,555
1991	945,103	753,822	191,281
1992	1,050,170	827,688	222,482
1993	1,294,072	1,030,709	263,363
1994	1,372,065	1,064,755	307,310
1995	1,198,811	850,731	348,080

Source: Autoridad Portuaria Nacional (APN)

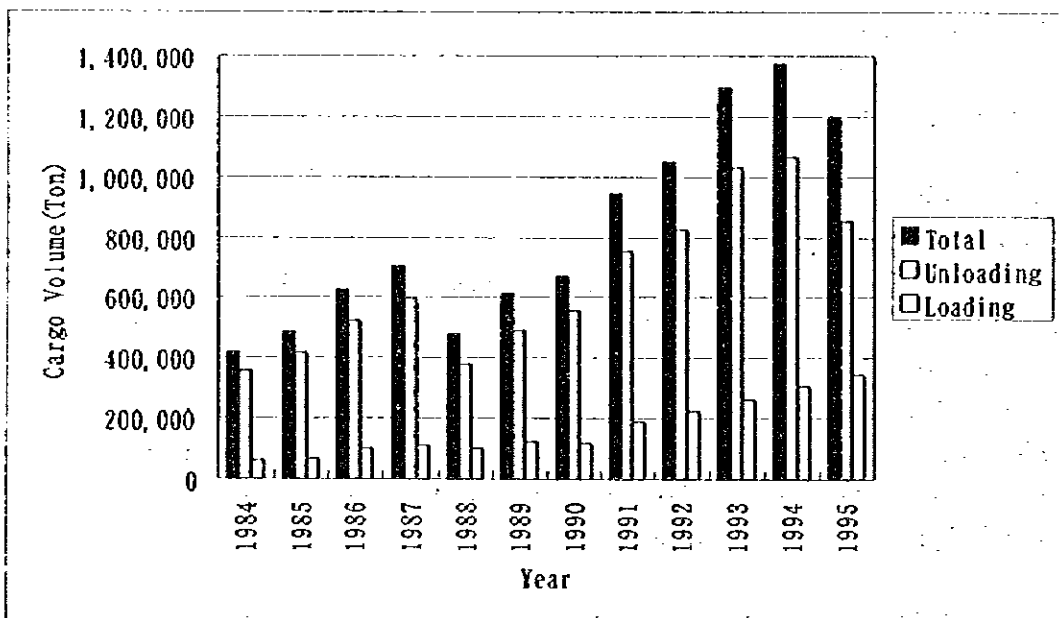


Figure 3-1-5 Cargo Volume Handled by Operations at Port of Cristobal

Table 3-1-9 Cargo Volume Handled by Packing Type at Port of Cristobal

Unit: Metric Ton				
Year	Total	Bulk	Container	General
1984	416,021	9,909	271,042	135,070
1985	482,645	0	320,242	162,403
1986	626,026	15,777	462,392	147,857
1987	704,890	0	531,710	173,180
1988	477,709	0	378,299	99,410
1989	616,095	4,201	505,021	106,873
1990	672,026	15,957	547,991	108,078
1991	945,103	93,397	704,630	147,076
1992	1,050,170	91,624	752,829	205,717
1993	1,294,072	216,078	868,819	209,175
1994	1,372,065	264,164	919,217	188,684
1995	1,198,811	151,345	931,672	115,794

Source: Autoridad Portuaria Nacional (APN)

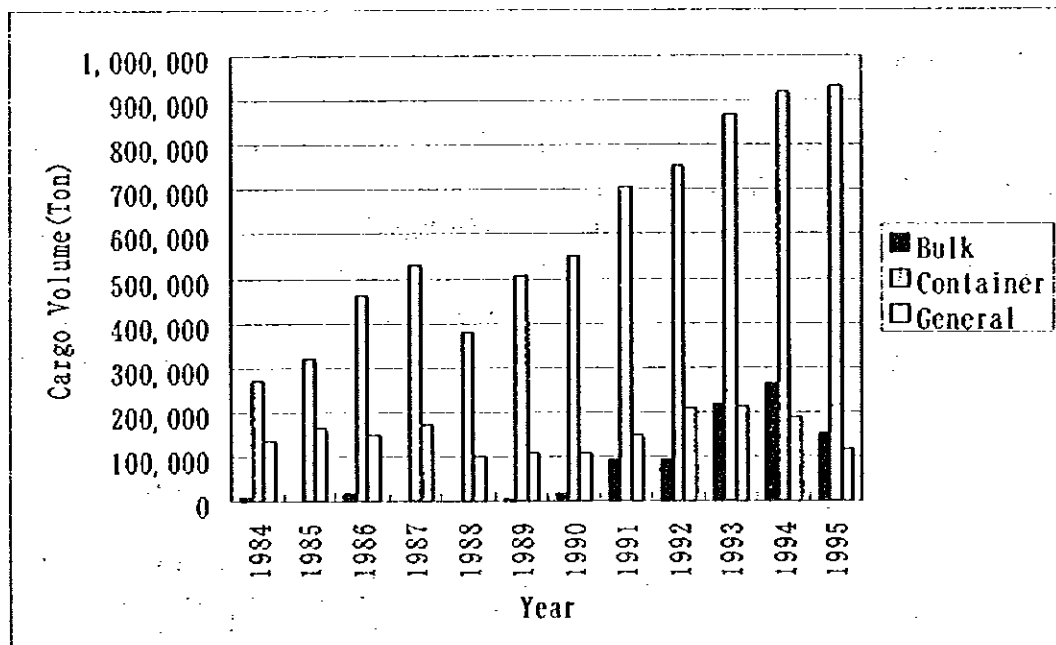


Figure 3-1-6 Cargo Volume Handled by Packing Type at Port of Cristobal

12. General cargo consists of agricultural products (fruit and its products), iron and steel materials, construction materials, and vehicles, and most of them were imported. Exports are agricultural products such as coffee. Table 3-1-10 shows the past records of vehicles handled. The cargo volume of vehicles dramatically decreased in the past two years.

13. Transshipment cargo has sharply increased in 1995 by 174% of the previous year with the share of 25% to the total volume of the port.

Table 3-1-10 Cargo Movement of Vehicles at Port of Cristobal

Year	Number of Vehicles			Cargo Weight (ton)		
	Unload	Load	Total	Unload	Load	Total
1986	6,719	3,969	10,688	9,238	5,823	15,061
1987	10,010	1,638	11,648	13,123	3,123	16,246
1988	95,156	4,063	99,219	11,353	4,767	16,120
1989	16,446	5,620	22,066	18,345	6,013	24,358
1990	11,246	6,032	17,278	17,122	7,182	24,304
1991	25,347	10,626	35,973	31,643	16,174	47,817
1992	48,344	35,190	83,534	59,577	40,302	99,879
1993	42,300	34,168	76,468	47,758	37,410	85,168
1994	10,201	8,908	19,109	14,503	12,546	27,049
1995	1,874	938	2,812	3,656	1,871	5,527

Source: Autoridad Portuaria Nacional (APN)

2) Container Cargo

14. Table 3-1-11 and Figure 3-1-7 indicate summary of container cargo handled at the port of Cristobal. The cargo volume have steadily increased since 1988, but the number of containers decreased in 1995 by 11% of the previous year. 926,580 metric tons and 169,121 TEUs were handled in 1995. Major commodities in container are food, textiles, wood and papers, chemical products, household appliances. Most of the containers were imported and the share of importing cargo volume was 63% in 1995.

Table 3-1-11 Cargo Movement of Container Handled at Port of Cristobal

Year	Cargo Volume (ton)			No. of Container (TEU)			No of Laden Cont. (TEU)		
	Unload	Load	Total	Unload	Load	Total	Unload	Load	Total
1987	430,822	100,888	531,710	63,507	65,075	128,582	60,276	14,931	75,207
1988	290,226	88,073	378,299	42,139	40,309	82,448	39,142	12,175	51,317
1989	395,657	109,364	505,021	53,110	49,593	102,703	51,453	14,017	65,500
1990	447,011	100,980	547,991	61,156	62,108	123,264	59,092	14,577	73,669
1991	538,823	165,807	704,630	83,267	79,179	162,446	75,921	24,565	100,486
1992	581,312	171,527	752,839	86,662	91,228	177,890	79,106	26,442	105,548
1993	650,786	218,033	868,819	93,876	98,289	192,165	84,978	29,665	114,643
1994	638,834	280,383	919,217	93,205	97,854	191,059	82,538	37,116	119,654
1995	580,329	346,251	926,580	85,131	83,990	169,121	72,188	41,524	113,712

Source: Autoridad Portuaria Nacional (APN)

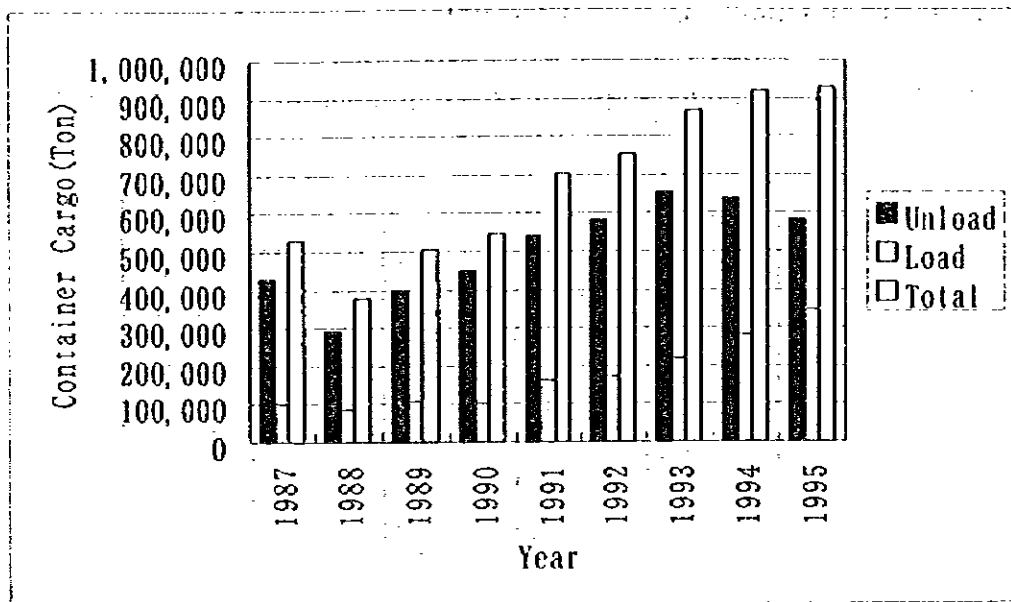


Figure 3-1-7 Cargo Movement of Container by Operation at Port of Cristobal

15. Table 3-1-12 shows average weight and ratio of laden container cargo. In 1995, ratio of laden containers(113,712 TEUs) to the total(169,121) was 67%. In addition, the ratio of unloading laden containers was high and recorded 85% in 1995 in contrast with 49% for the ratio of loading laden containers. Average weight of laden containers was 8.1 metric tons/TEU in 1995.

Table 3-1-12 Characteristics of Laden Containers at Port of Cristobal

Year	Aver. Weight (ton/TEU)			Ratio of Laden Cont.		
	Unload	Load	Total	Unload	Load	Total
1987	7.1	6.8	7.1	95%	23%	58%
1988	7.4	7.2	7.4	93%	30%	62%
1989	7.7	7.8	7.7	97%	28%	64%
1990	7.6	6.9	7.4	97%	23%	60%
1991	7.1	6.7	7.0	91%	31%	62%
1992	7.3	6.5	7.1	91%	29%	59%
1993	7.7	7.3	7.6	91%	30%	60%
1994	7.7	7.6	7.7	89%	38%	63%
1995	8.0	8.3	8.1	85%	49%	67%

Source: Autoridad Portuaria Nacional (APN)

16. Table 3-1-13 shows the past records of FCL(Full Container Load) and LCL(Less Than Container Load) ratios for container cargo. The FCL ratio has been stable between 95% to 96% in the past five years. The ratio of refrigerated

cargo to the total volume was only 1.4% in 1994.

Table 3-1-13 FCL/LCL Ratio of Laden Containers at Port of Cristobal

Year	FCL		LCL		Total (TEU)
	(TEU)	(%)	(TEU)	(%)	
1987	69,638	92.6%	5,569	7.4%	75,207
1988	47,959	93.5%	3,358	6.5%	51,317
1989	61,774	91.3%	3,726	5.7%	65,500
1990	69,324	94.1%	4,345	5.9%	73,669
1991	95,362	94.9%	5,124	5.1%	100,486
1992	100,040	94.8%	5,508	5.2%	105,548
1993	109,465	95.5%	5,178	4.5%	114,643
1994	115,305	96.4%	4,349	3.6%	119,654
1995	108,975	95.8%	4,737	4.2%	113,712

Source: Autoridad Portuaria Nacional (APN)

(3) Manzanillo International Terminal (MIT)

1) Number of Vessel Calls

17. The total number of vessel calls in 1995 was 429. The maximum number per one month recorded was 57 in November.

2) Container Cargo

18. Table 3-1-14 shows the movement of container cargo in 1995. The total number recorded in 1995 was 105,046 boxes (161,679 TEUs). The number of imported container recorded was 53,735 boxes (82,551 TEUs) and the number of exported container was 51,311 boxes (79,128 TEUs). The share of import and export in TEUs was 51% and 49%, respectively.

3) Vehicles

19. The total number recorded in 1995 was 38,781 units in sum of cars (37,091) and buses (1,700). The number of imported vehicles recorded was 18,875 units and the number of exported vehicles was 19,916. The share of import and export was 49% and 51%, respectively.

Table 3-1-14 Movement of Container Cargo in MIT (1995)

	Unload	Load	Total
Full Container			
20'	19,764	13,433	33,197
40'	19,440	12,739	32,179
45'	1,364	250	1,614
Sub Total (Boxes)	40,568	26,422	66,990
(TEU's)	61,713	39,474	101,187
Empty Container			
20'	5,525	10,410	15,935
40'	7,526	13,334	20,860
45'	116	1,145	1,261
Sub Total (Boxes)	13,167	24,889	38,056
(TEU's)	20,838	39,654	60,492
Total (Boxes)	53,735	51,311	105,046
(TEU's)	82,551	79,128	161,679

Source: Autoridad Portuaria Nacional

3.1.2 Passenger Movement

20. Panama has maintained its status as the key gateway in international maritime transportation. Nature abounds and there are many well known places in the country. It can be said that Panama is blessed with tourism resources. In recent years, however, the negative conditions such as political instability and worsened security have made tourists hesitate to come. The security of Colon just behind the port of Cristobal has worsened in particular and thus international cruise ships have been reluctant to call at the port.

21. The transportation of passengers can be classified into three types; by air, by land and by sea. In Panama, 88% of the total passenger movement was by air in 1994 (preliminary), followed by 10% by land and 2% by ship. Tendency of the total passenger movement shows a gradual increase since 1990.

22. Table 3-1-15 shows the past records of passenger movement in the major ports and Figure 3-1-8 illustrates the passenger movement at the port of Balboa. The number of passengers by ships has slightly fluctuated. Most passengers have used the ports of Balboa and Coco Solo Norte. While a number of cruise ships have called at the port of Cristobal, the number of passengers at the port has dramatically decreased since 1988 because of security.

Table 3-1-15 Passenger Movement by Sea in Major Ports

Year	Balboa			Cristobal			Coco Solo			National Total		
	Arrive	Leave	Total	Arrive	Leave	Total	Arrive	Leave	Total	Arrive	Leave	Total
1985	3,806	3,524	7,330	2,558	2,686	5,244	0	0	0	8,015	8,218	16,233
1986	4,016	3,624	7,640	3,388	2,118	5,506	0	0	0	9,267	7,525	16,842
1987	4,020	3,881	7,901	2,031	1,797	3,828	0	0	0	8,335	7,777	16,112
1988	3,959	3,409	7,368	836	963	1,799	0	0	0	7,001	6,679	13,680
1989	7,649	5,302	12,951	306	506	812	762	756	1,518	12,875	10,505	23,380
1990	3,614	2,984	6,598	1,021	1,459	2,480	1,296	939	2,235	10,968	9,610	20,578
1991	4,034	3,333	7,367	491	431	922	4,849	4,279	9,128	15,536	12,795	28,331
1992	3,964	3,584	7,548	567	571	1,138	2,582	1,463	4,045	11,945	9,268	21,213
1993	3,498	3,610	7,108	206	348	554	2,539	2,135	4,674	11,430	10,521	21,951
1994	2,739	3,286	6,025	262	534	796	4,259	3,826	8,085	11,253	10,531	21,784

Source: Immigration Office of Republic
 † All figures in 1994 are preliminary.

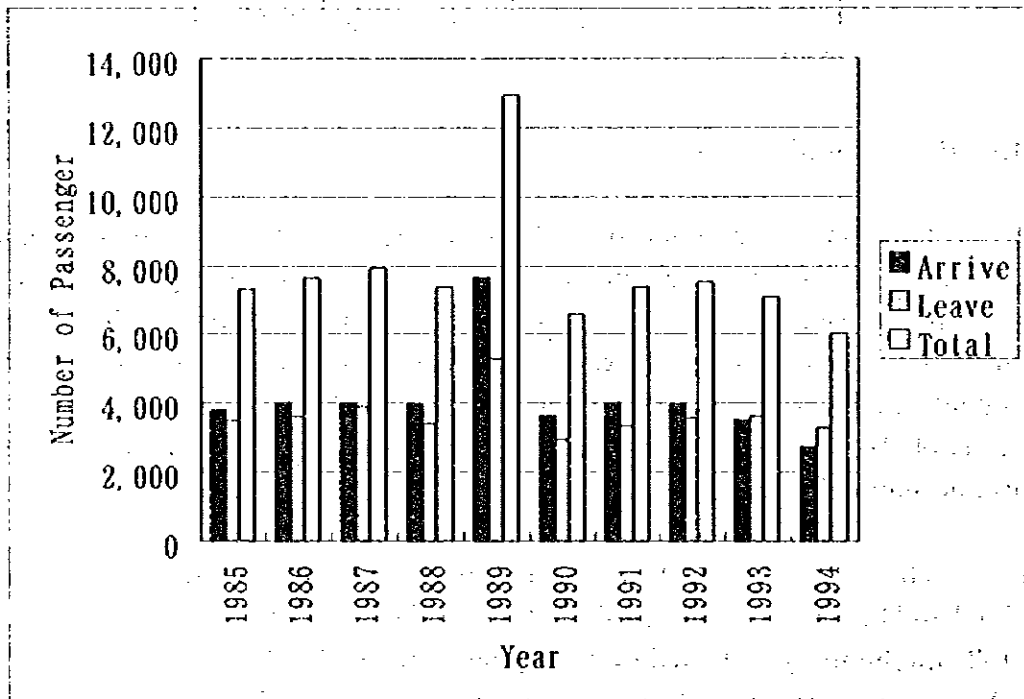


Figure 3-1-8 Passenger Movement by Sea at Port of Balboa

(1) Port of Balboa

23. The port of Balboa has a large commercial area in its hinterland, that is the city of Panama, the capital of Panama. This port, as the entrance of the Panama Canal on the Pacific side, is often compared with the port of Cristobal on the Atlantic side.

24. The number of passengers at the port has been stable in the past 5 years. The share of passengers in the port was 28% in 1994.

(2) Port of Coco Solo Norte

25. The number of passengers at the port has increased since 1989 and it reached 8,085 persons in 1994 which is the largest number in Panama. Most of passengers come from the South America such as Colombia, Venezuela, and Aruba, mainly for business.

26. Since the port is located near the Free Zone in France Field expanded from the Colon side, there is a potential to attract visitors (tourists) from the Free Zone.

3.2 Current Situation of Cargo Movement

3.2.1 Origins and Destinations of Cargo

(1) Port of Balboa

1) Import

27. Major origins of imported cargo are the South America, the North America, the Central America, and the East Asia.

28. Table 3-2-1 and Figure 3-2-1 show the past records of imported cargo by destinations at the port of Balboa. Most cargo was bound for local areas with a share of 86% in 1995 and this tendency has been stable recently. The shares of the Colon Free Zone and transshipment were 11% and 3% in 1991, respectively. The cargo volume for the U.S. Army has been decreasing and negligible in the past four years.

29. Most of bulk cargo is for local consumption. Most of container cargo is for the Free Zone and local areas.

30. Cargo movement through the Balboa port in recent eight months (from October 1995 to May 1996) is described more in detail in APPENDIX based on the survey of "Bill of Lading" through the Balboa port during the same term mentioned just before. Some of major facts are summarized as follows.

Table 3-2-1 Movement of Imported Cargo by Destinations at Port of Balboa

Unit: Metric ton

Year	U. S. Army	Local	Transship	Free Zone	Total
1986	26,674	254,412	62,028	25,843	368,957
1987	32,857	253,565	13,434	6,629	306,485
1988	6,186	213,565	8,960	6,813	235,524
1989	16,835	222,161	5,353	15,461	259,810
1990	8,442	275,783	12,300	4,521	301,046
1991	3,156	332,188	7,604	10,413	353,361
1992	45	411,613	26,229	8,442	446,329
1993	26	447,059	20,038	19,425	486,548
1994	207	524,968	15,659	96,362	637,196
1995	41	560,394	19,212	72,659	652,306

Source: Autoridad Portuaria Nacional (APN)

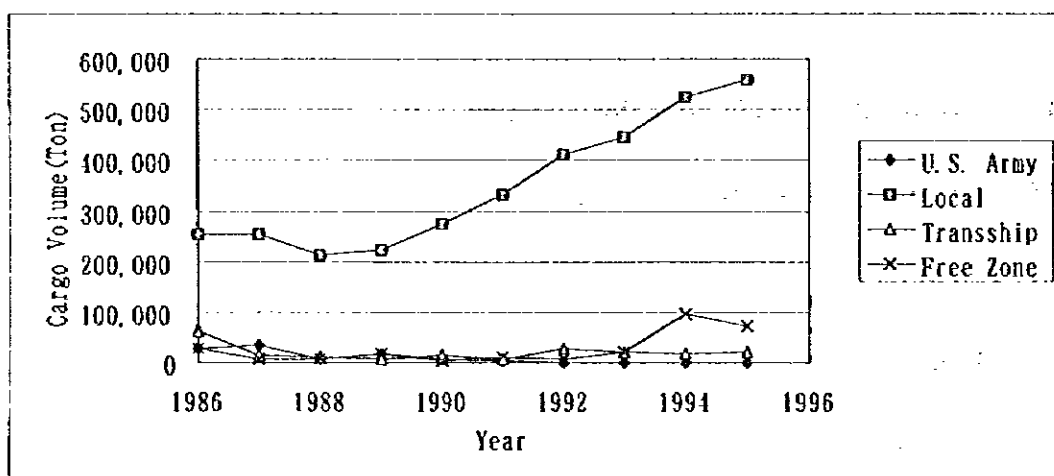


Figure 3-2-1 Movement of Imported Cargo by Destinations at Port of Balboa

31. As for import, container cargo amounts to 60,000 tonnage followed by refrigerated container cargo of 1,300 tonnage, bulk liquid of 12,300 tonnage, bulk solid of 92,000 tonnage, and general cargo including vehicles of 19,500 tonnage.

32. About 30 % of the imported container cargo go to the Colon Free Zone and are processed there to be exporting goods. But the monthly number of containers imported to the Free Zone through the Balboa port have decreased to almost half of that before last October, when the new Manzanillo port started its full operation.

33. Container cargo (mainly daily use necessities and industrial materials) are imported from major ports: Hong Kong, Vancouver, San Antonio, Manzanillo

(Mexico), Busan, Callao, Confort, Buenaventura, Guayaquil, Long Beach, Gdynia, Yokohama, Lazaro Cardenas, Shanghai and Kobe.

34. Refrigerated cargo (fresh fruits and frozen fish) of containers are imported from the ports: San Antonio, Manzanillo, Callao, Buenaventura, Yokohama and Long Beach.

35. Bulk liquid cargo (soy crude oil, caustic soda, and isopropane alcohol etc.) are imported from Houston, New Orleans, Rosario, San Lorenzo, Ulsan, Corpus Christi and Le Havre.

36. Bulk solid cargo (corn, wheat, flour of soy, and silica sand) are imported from Louisiana, Paulina, New Orleans, Convent, Portland, Port Manatee and Le Havre.

37. General cargo (vehicles, steel products, and construction materials) are imported from Bourgas, Antwerp, San Lorenzo, Nagoya, Murmansk, Gdynia, Manzanillo, Ulsan, Shanghai, Yokohama and Kobe.

38. As for transshipment, container cargo of 11,900 tonnage are transferred at the port of Balboa. Almost all cargoes to transship are container cargoes. Major pairs of ports to transship are combinations of Hong Kong, Busan, Xingang and Qingdao as origin-port and Buenaventura, Guayaquil and Callao as destination-port. Vancouver to Iquique is also one of major pairs for transshipment at Balboa.

2) Export

39. Table 3-2-2 and Figure 3-2-2 show the past records of exported cargo by origins at the port of Balboa. The shares of exported cargo were 42% from the Free Zone, 34% from transshipment, and 24% from local area in 1995. The cargo from local areas has been decreasing in volume. The cargo from the Free Zone dramatically increased in 1992 and it has fluctuated since then. The cargo from the U.S. Army has decreased and the volume in 1995 was only 9 metric tons and negligible.

40. Major destinations are the Central America, the South American, the North America, and the Caribbean.

Table 3-2-2 Movement of Exported Cargo by Origins at Port of Balboa

Unit: Metric ton

Year	U. S. Army	Local	Transship	Free Zone	Total
1986	2,222	22,610	52,972	2,568	80,372
1987	1,638	15,555	11,326	3,586	32,105
1988	1,431	18,280	4,401	5,042	29,154
1989	1,759	15,705	3,789	4,882	26,135
1990	2,622	14,386	2,951	7,395	27,354
1991	250	21,172	4,085	19,463	44,970
1992	245	13,534	22,244	20,334	56,357
1993	1,195	12,856	15,206	19,016	48,273
1994	24	16,545	9,905	21,394	47,868
1995	9	15,043	21,137	26,097	62,286

Source: Autoridad Portuaria Nacional (APN)

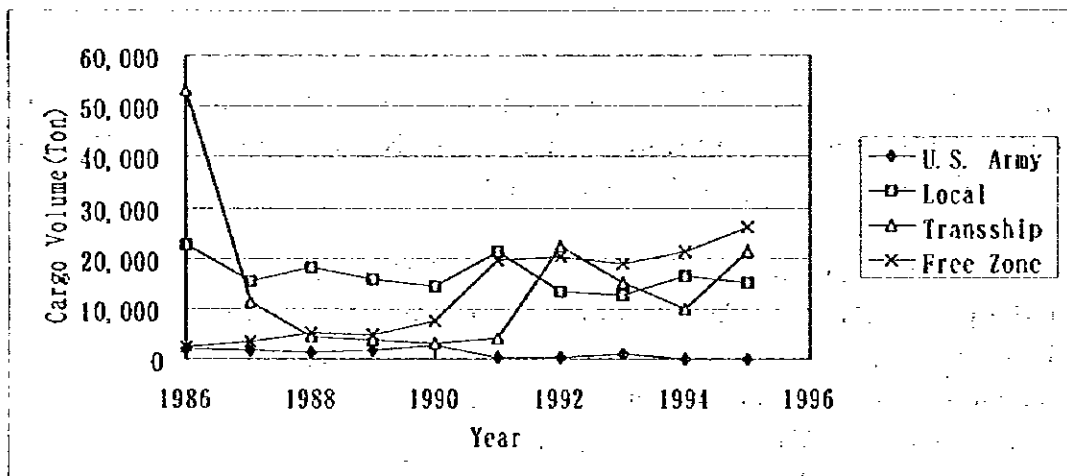


Figure 3-2-2 Movement of Exported Cargo by Origins at Port of Balboa

41. The shares of container cargo were 45% from the Free Zone, 30% from transshipment, 24% from local area in 1995.

42. Destination ports exported from the Balboa port are described according to the O-D survey on "Bill of Lading" during the recent eight months mentioned before..

43. About 2,400 tonnage of container cargo were exported to Iquique from the Balboa port, the most in this term. Callao, Acajutla, San Antonio, Buenos Aires, Guayaquil, Buenaventura, Monttevideo, Manzanillo and Valparaiso follow.

44. Very few refrigerated container cargoes were exported to New York and

Quetzal.

45. Various Vehicles from the Colon Free Zone and the local area in Panama city are exported to Callao, Valparaiso, Montevideo, San Antonio, Port Au Prince, and Pto. Principe.

(2) Port of Cristobal

1) Import

46. Major origins of imported cargo are the South America, the North America, the Central America, the Europe, and the Asia.

47. Table 3-2-3 and Figure 3-2-3 show the movement of imported cargo by destinations at the port of Cristobal. Most cargo is bound for local areas and the Colon Free Zone just behind the port. The shares of local areas, the Free Zone, and transshipment were 50%, 31%, and 18%, respectively in 1995. While the cargo for transshipment increased suddenly in 1995, the cargo volume for local areas and the Free Zone sharply decreased in 1995. The cargo volume for the U.S. Army was very small and negligible.

48. All bulk cargo was for local consumption such as the Panama Cement Factory in particular. As for container cargo, 45% of the total container cargo was for the Free Zone followed by 29% for local and 26% for transshipment.

Table 3-2-3 Movement of Imported Cargo by Destinations at Port of Cristobal

Unit: Metric ton

Year	U. S. Army	Local	Transship	Free Zone	Total
1986	16,926	317,578	18,947	170,359	523,810
1987	19,729	328,546	29,713	217,436	595,424
1988	9,059	168,339	34,762	165,525	377,685
1989	1,083	207,364	51,964	229,006	492,417
1990	1,767	268,879	22,468	264,357	557,471
1991	235	371,894	38,975	342,718	753,822
1992	40	367,607	67,242	394,177	829,066
1993	743	538,529	64,117	427,319	1,030,708
1994	36	615,231	57,236	392,252	1,064,755
1995	19	424,078	155,429	261,118	840,644

Source: Autoridad Potuaria Nacional (APN)

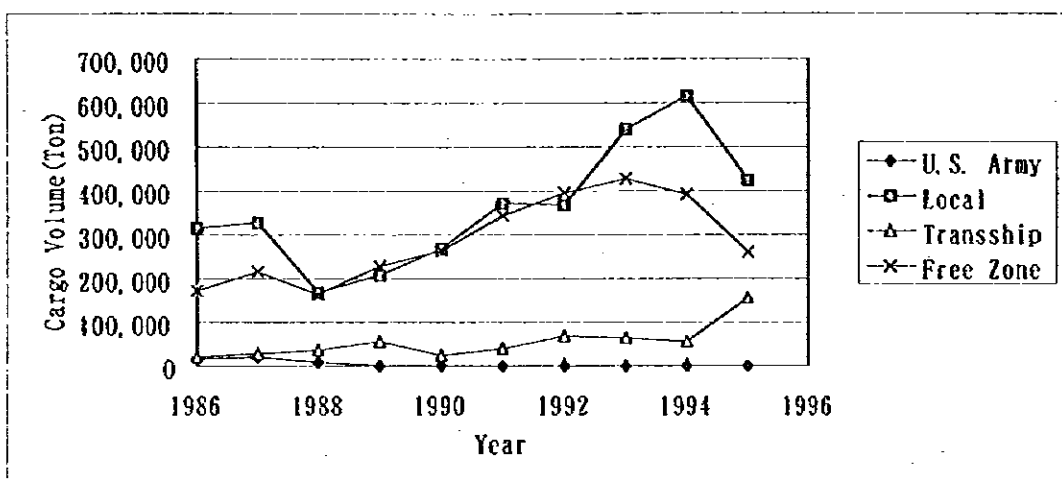


Figure 3-2-3 Movement of Imported Cargo by Destinations at Port of Cristobal

2) Export

49. Table 3-2-4 and Figure 3-2-4 show the movement of exported cargo by origins at the port of Cristobal. The shares of exported cargo were 50% from the Free Zone, 41% from transshipment, and 9% from local areas in 1991. Few cargo from the U.S. Army was exported.

50. Major destinations are the Central America, the South American, the North America, the Caribbean, and the Europe.

Table 3-2-4 Movement of Exported Cargo by Origins at Port of Cristobal

Unit: Metric ton					
Year	U. S. Army	Local	Transship	Free Zone	Total
1986	39	23,436	13,636	65,105	102,216
1987	13	27,410	12,177	69,866	109,466
1988	130	25,864	17,852	56,178	100,024
1989	45	24,541	38,171	60,921	123,678
1990	3	23,687	11,770	79,095	114,555
1991	7	37,838	20,729	132,707	191,281
1992	10	31,075	45,382	144,635	221,102
1993	4	34,183	54,361	174,816	263,364
1994	6	39,100	54,227	213,977	307,310
1995	3	34,630	144,462	176,317	355,412

Source: Autoridad Portuaria Nacional (APN)

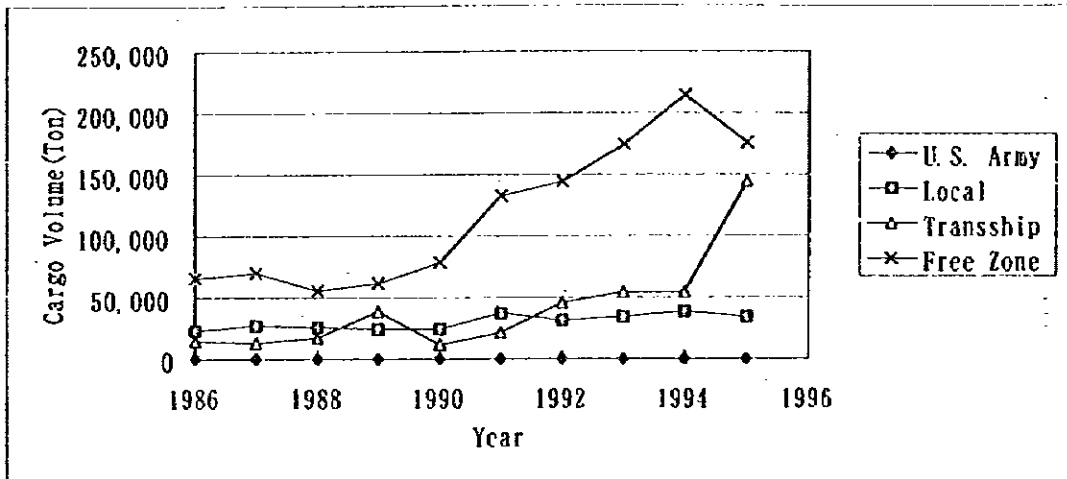


Figure 3-2-4 Movement of Exported Cargo by Origins at Port of Cristobal

51. The cargo volume from the Free Zone had sharply increased from 1990 to 1994, but it dramatically decreased in 1995. By contrast, the cargo for transshipment suddenly increased in 1995.

52. As for container cargo, 50% of exported cargo was from the Free Zone, and 41% for transshipment in 1995.

3.2.2 Cargo Movement in Port of Balboa

53. With regard to cargo movement in terms of distribution patterns of cargo handling on each pier at the port of Balboa, the following is found according to the records of 1995.

54. Distributions of cargo handling by piers are shown in Table 3-2-5, Figure 3-2-5 (for unloading cargo), and Figure 3-2-6 (for loading cargo) in 1995. The handling of bulk cargo in unloading was concentrated in Pier 6 and Pier 14. The handling of container cargo in unloading and loading was concentrated in Pier 15 and 16.

Table 3-2-5 Distributions of Cargo Handling by Piers at Port of Balboa (1995)

Unit: Metric Ton

Pier	Unloading Cargo				Loading Cargo			
	Bulk	Contain	General	Total	Bulk	Contain	General	Total
6	172,031	0	6,555	178,586	320	0	168	488
7	48,253	22	291	48,566	3,952	0	60	4,012
14	216,554	17,359	3,574	237,487	0	6,733	713	7,446
15	7,196	68,518	12,143	87,857	0	24,888	967	25,855
16	0	72,179	17,760	89,939	0	24,038	146	24,184
18	0	8	9,772	9,780	0	23	278	301
Total	444,034	158,086	50,095	652,215	4,272	55,682	2,332	62,286

Source: Autoridad Portuaria Nacional (APN)

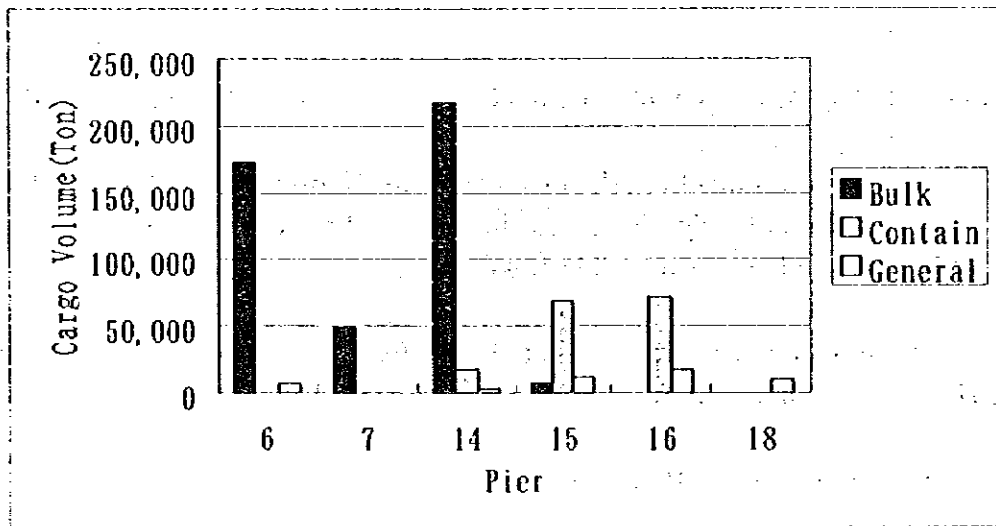


Figure 3-2-5 Distributions of Unloading Cargo by Piers at Port of Balboa (1995)

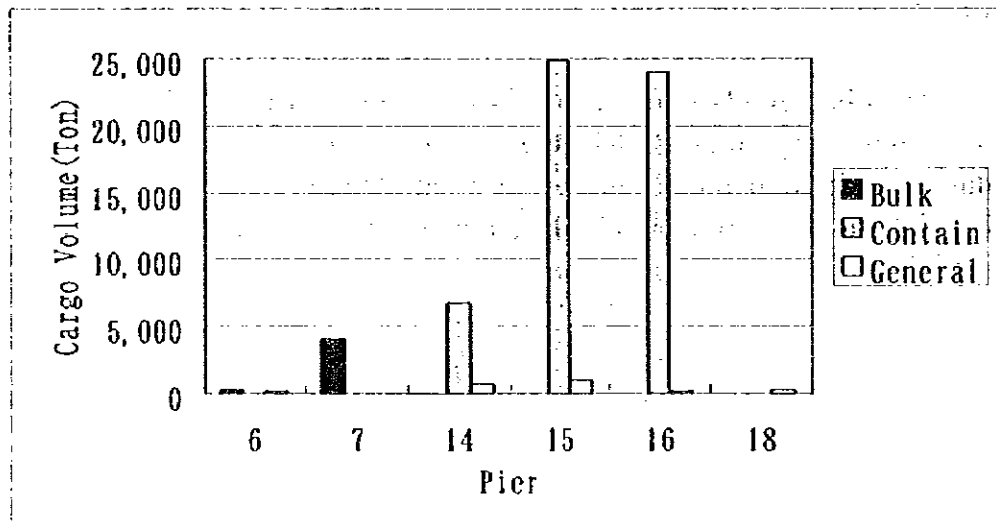


Figure 3-2-6 Distributions of Loading Cargo by Piers at Port of Balboa (1995)

3.3 Current Situation of Passenger Movement

3.3.1 Passenger Ship Services

55. There is no regular passenger ship service calling at Panamanian ports at present. According to the information from IPAT (Instituto Panameno de Turismo), only few passengers have stayed overnight in Panama recently when a ship calls there. Most passenger ships call at the ports of Balboa and Cristobal for supply of oil, water, and food.

56. The number of passenger ship calls and characteristics of ships at the port of Balboa are shown in Table 3-3-1. The number of ship calls has been stable in the past three years.

Table 3-3-1 Number and Characteristics of Passenger Ships at Port of Balboa

Year	No. of Ship	Average			
		Gross Ton	Length (m)	Breadth (m)	Draft (m)
1988	49	n/a	n/a	n/a	n/a
1989	18	n/a	n/a	n/a	n/a
1990	28	14,396	125	18	6.0
1991	26	11,156	111	17	5.4
1992	19	20,011	162	22	6.6
1993	32	27,567	169	32	7.2
1994	34	27,871	171	25	6.6
1995	33	24,053	160	24	6.6

Source: Autoridad Portuaria Nacional (APN)

3.3.2 Passenger Movement

57. Table 3-3-2 shows statistics of IPAT regarding the characteristics of passengers by ship such as nationality, origin, and destination. Looking for ships calling at the port of Balboa, most of cruisers connects between the port of Caldera in Costa Rica and the port of Cartagena in Colombia through the Panama Canal. Nationality of passenger is dominated in North American and European.

Table 3-3-2 Characteristics of Passenger by Ship (Fiscal Year 1994)

No.	Name of Cruise	Shipping Agency	Origin	Destination	Flag of Ship	No. of Passenger	No. of Crew	No. of People to Get Off Ship	Nationality of the Passengers	Port to Stay	No. of Pier
1	Vista Mar	Fenton	Nassau	Limon	Nassau	316	107	196	Alemannic	Cristobal	7
2	Britanis	Fenton	Miami	Cancun	British	556	497	815	North American	Cristobal	7
3	Aurora II	Pacific Dowell	Nassau	Caldera Port	Nassau	80	57	80	Bahamas	Cristobal	8a
4	Odessa	Fernie	Punta Arena	San Andres	Ukraine	239	267	215	German and Russian	Cristobal	7
5	Triton	Agencies Company	Limon Port	Cartagena	Greek	639	285	470	Various	Cristobal	8a
6	Triton	Agencies Company	Limon Port	Cartagena	Greek	670	280	282	Various	Cristobal	7
7	Stella Solaris	Ocean Trucking	Ocho Rios	Limon Port	Greek	528	299	379	North American	Cristobal	8a
8	Stella Solaris	Ocean Trucking	Ocho Rios	Limon Port	Greek	468	276	342	North American	Cristobal	8a
9	Mayan Princess	French Shipping	Miami	USA	USA	80	16	80	North American	Cristobal	8a
10	Aurora II	Pacific Dowell	Nassau	Bahamas	Nassau	95	54	95	Bahamas	Cristobal	7
11	Vista Mar	Fenton	Limon Port	Nassau	Nassau	294	106	208	German	Cristobal	7
12	York Tawn Clipper	Bovd Steamship	Miami	Limon Port	USA	129	42	98	North American	Cristobal	7
13	Sky Princess	Norton Lilly	Cartagena	Caldera Port	British	1206	530	1118	North American	Balboa	7
14	Carbera	Norton Lilly	Cartagena	Acapulco	British	1276	854	1200	British	Balboa	18
15	Maxin Gorky	Fernie	Bahamas	Caldera Port	Bahamas	619	352	235	German and Austrian	Balboa	7
16	Sky Princess	Norton Lilly	Cartagena	Caldera Port	British	1188	540	1166	German and Austrian	Balboa	7
17	Polaris	Fenton	Bahamas	Limon Port	Bahamas	80	57	80	Various	Balboa	6
18	Stella Solaris	Ocean Trucking	Grand Calman	Limon Port	Greek	548	301	374	North American	Cristobal	7
19	Windward	Fenton	Cartagena	Caldera Port	Bahamas	1125	517	1118	N. American, German, French	Balboa	16
20	Sky Princess	Norton Lilly	Cartagena	Caldera Port	British	1175	551	1180	North American	Balboa	15
21	Sky Princess	Norton Lilly	Cartagena	Caldera Port	British	1147	541	1135	N. American and British	Balboa	18
22	Azerbaijan Pan	Fernie	Nokuhiva	St. George	Ukraine	637	250	303	Russian	Balboa	7
23	Sky Princess	Norton Lilly	Acapulco	Cartagena	British	1215	541	1198	N. American and British	Balboa	15
24	Shin Sakura Maru	Bovd Steamship	Limon Port	Cartagena	Japan	366	91	174	Japanese	Balboa	16
25	Golden Odyssev	Fenton	Cartagena	Quetzal Port	Bahamas	446	165	430	Japanese	Balboa	7
26	Triton	Agencies Company	Limon Port	Cartagena	Greek	701	283	698	Canadians	Cristobal	7b
27	Sky Princess	Norton Lilly	Cartagena	Caldera Port	British	1200	495	1100	North American	Balboa	7
28	Sky Princess	Norton Lilly	Cartagena	Caldera Port	British	1194	551	1187	North American	Balboa	18
29	Britanis	Norton Lilly	Cancun	Miami	British	552	490	388	North American	Cristobal	7
30	Sky Princess	Norton Lilly	Caldera Port	Cartagena	British	1207	547	1195	North American	Balboa	18
31	Windward	Fenton	Caldera Port	Cartagena	Bahamas	1171	514	1167	N. American and European	Balboa	16
32	Regal Princess	Norton Lilly	Caldera Port	Cartagena	British	1608	694	1554	North American	Balboa	18
33	Independence	Norton Lilly	Honolulu	Virginia	British	1199	290	290	North American	Balboa	18
34	Sky Princess	Norton Lilly	Cartagena	Caldera Port	British	1199	537	1177	British	Balboa	18
35	Sky Princess	Norton Lilly	Cartagena	Caldera Port	British	1117	544	1125	British and N. American	Balboa	7
36	Sky Princess	Norton Lilly	Caldera Port	Cartagena	British	1132	546	1171	British and N. American	Balboa	18
37	Crown Odyssev	Fenton	Aruba	Caldera Port	British	987	467	720	North American	Balboa	18
38	Crown Odyssev	Fenton	Aruba	Caldera Port	British	678	480	565	North American	Balboa	18

* 206 cruisers past the Panama Canal, and 23 cruisers called at Balboa and 15 cruisers at Cristobal.
Source: Instituto Panameño de Turismo (IPAT)

3.4 Hinterlands and Inland Transportation

3.4.1 Hinterlands of Port of Balboa

58. According to the origins and destinations of the cargo handled in this port, the largest hinterland consists of Panamanian local areas. Since the port is located near the city of Panama, the Capital of Panama, the activities of the port are essential for the country. The other hinterland is the Colon Free Zone which has a great potential to generate foreign trade.

59. According to the Origin-Destination Survey on "Bill of Lading", locations of the major consignees and shippers generating cargo movement are mapped in Figure 3-4-1.

3.4.2 Inland Transportation

(1) Railway Transportation

60. The Panama Railroad has a function to transport cargo and passengers between the cities of Panama and Colon along the Canal.

61. Passengers has been transported by tourism train between the Balboa and the Summit Part on only Sunday. The number of passengers transported in 1995 was 40,782 and the number of trips was 477.

62. According to past records since 1982, the cargo volume transported by railway had been decreasing until 1988. It has fluctuated and increased since then and it was 50,643 tons in 1995. Because the number of trips in 1995 was 480, the efficiency of transportation was 105 ton/trip. This is a small transportation volume and will continue in the future unless all facilities are maintained properly.

63. In 1995, 90% of the cargo was transported from the port of Cristobal and almost all cargo was for local consumption. The cargo from the port of Balboa consisted of commodities for local consumption, the Free Zone, and transshipment.

(2) Road Transportation

64. There is no detailed information available on cargo volume transported by road, in particular, by route.

65. Regarding transportation between Colon and Panama, there is only one main route, namely, Panama Isthmus Highway. It is not too much to say that most cargo through the highway is transported to and from the Colon Free Zone and the ports of Cristobal, Coco Solo Norte, and Bahia Las Minas.

66. According to the information from the Colon Free Zone, the cargo volume (for both imports and exports) transported by land was about 1.1 million metric tons (90% of the total trade of the Zone) in 1995, including cargo imported and re-exported through the Tocumen International Airport. The majority of cargo is considered to be transported through the Highway.

3.5 Current Situation of Ship Supply Services

3.5.1 Marine Fuel Supply Service

67. Table 3-5-1 and Figure 3-5-1 show the movement of marine fuel at the port of Balboa. The number of vessel calls and the volume of marine fuel have increased since 1988. The average annual growth rate of oil from 1988 to 1995 was 23%. This rapid growth of oil represents the importance of oil movement including bunkering operation.

Table 3-5-1 Movement of Marine Fuel Supply at Port of Balboa

Unit: Barrel

Year	Ship Calls	Unload (Barrel)	Load (Barrel)	Total (Barrel)	*Total (Met. Ton)
1986	825	2,200,000	2,200,000	4,400,000	656,716
1987	959	2,300,000	2,300,000	4,600,000	686,567
1988	682	1,800,000	1,600,000	3,400,000	507,463
1989	742	1,988,000	1,997,000	3,985,000	594,776
1990	1,074	3,098,000	3,020,000	6,118,000	913,134
1991	1,146	3,482,047	3,107,559	6,589,606	983,523
1992	1,241	4,090,742	3,880,385	7,971,127	1,189,720
1993	1,206	4,931,995	4,510,821	9,472,819	1,413,851
1994	1,397	5,712,642	5,792,531	11,505,173	1,717,190
1995	1,612	7,227,934	7,485,880	14,713,814	2,196,092

* Conversion factor from Metric Ton to Barrel is 6.70

Source: Autoridad Portuaria Nacional (APN)

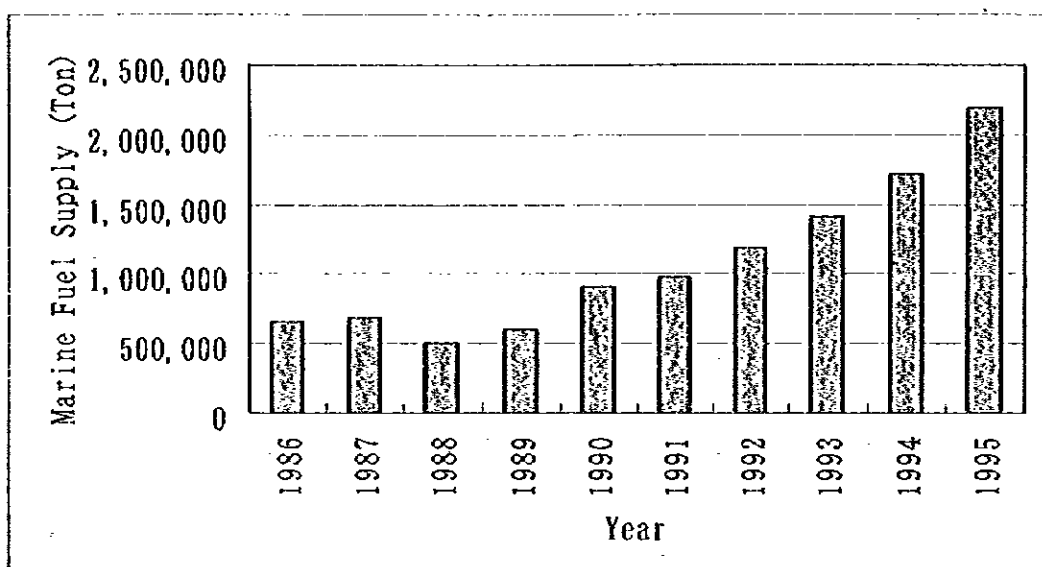


Figure 3-5-1 Movement of Marine Fuel Supply at Port of Balboa

3.5.2 Water Supply Service

68. Table 3-5-2 shows the number of ship calls and the cargo volume for water supply at the port of Balboa. The number of ship calls in 1995 was 413 with increase by 6% of the previous year. The volume of water was recorded 105 thousand tons in 1995 with increase of 5% of the previous year.

Table 3-5-2 Movement of Water Supply at Port of Balboa

Year	Ship Calls	Total (Gallon)	Total (Met. Ton)
1986	696	n/a	n/a
1987	691	n/a	n/a
1988	293	n/a	n/a
1989	256	n/a	n/a
1990	445	n/a	n/a
1991	286	n/a	n/a
1992	368	n/a	n/a
1993	373	n/a	n/a
1994	391	26,357,816	99,764
1995	413	27,673,917	104,746

Source: Autoridad Portuaria Nacional (APN)

3.6 Vessel at the Ports

3.6.1 Number of Calling Vessels

69. Table 3-6-1 and Figure 3-6-1 show the number of calling vessels in major ports. The number of vessels calling at the port of Balboa and Cristobal has decreased over the long term but has remained at a constant level in recent years. The number of vessels at Balboa sharply decreased in 1988 and after that there is no significant increase in the number of vessels in spite of remarkable increase in the cargo volume.

Table 3-6-1 Number of Ships Call

Year	Balboa	Cristobal	Coco Solo Norte	Bahia Las Minas	APN Total
1984	1,396	1,654	528	155	10,776
1985	1,259	1,496	560	158	11,053
1986	1,486	1,396	1,132	137	12,293
1987	1,509	1,613	1,090	165	12,260
1988	1,107	1,067	1,039	199	10,223
1989	1,210	1,015	931	200	10,878
1990	1,304	1,048	1,041	221	11,006
1991	1,220	1,153	1,101	207	11,865
1992	1,192	1,112	1,432	220	12,245
1993	1,115	1,302	1,454	222	12,726
1994	1,150	1,354	1,589	229	12,395
1995	1,259	1,228	1,321	168	12,647

Source: Autoridad Portuaria Nacional (APN)

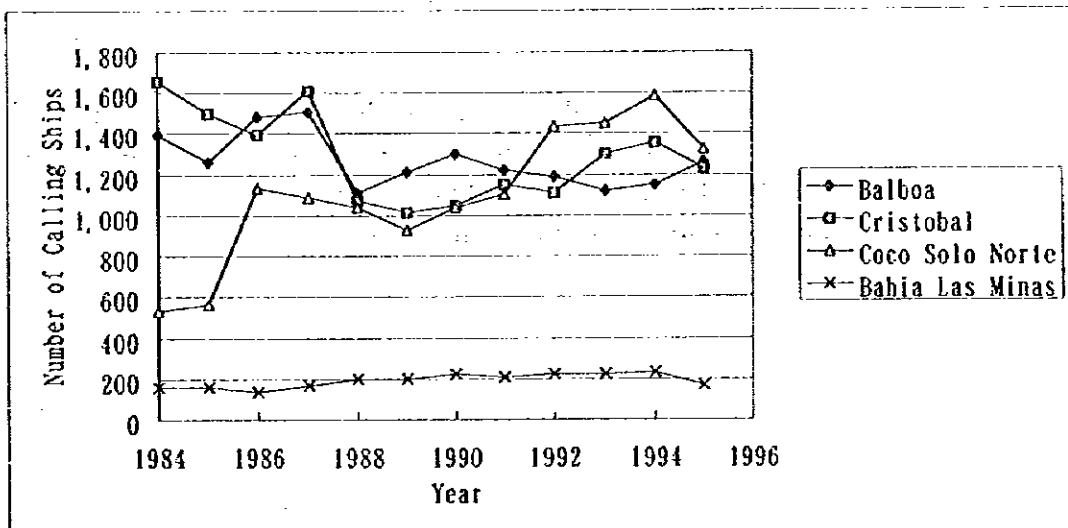


Figure 3-6-1 Number of Ships Call

70. The number of vessels at Bahia Las Minas has kept constant in recent years. At Coco Solo, the number of vessels increased sharply in 1986. It remained almost same, but the number exceeded the number of Cristobal or Balboa in 1992 when Sea Land Co. began containerized cargo handling at this port.

3.6.2 Type and Size of Ship

71. Table 3-6-2 shows the characteristics of ships by ship type at the port of Balboa in 1995. Tuna fishing boats made up a large part of the vessels but the average gross ton was smallest. The number of container ships was the second large and the number of oil tankers followed. The number of Ro-Ro ships is rather small but the average gross ton is the largest.

Table 3-6-2 Characteristics of Ships by Ship Type at Port of Balboa (1995)

Type of Ship	No. of Ship	Gross Ton	Net Ton	Length (m)	Breadth (m)	Draft (m)
Tuna Ship	368	963	401	59	11	5.4
Refer	22	5,739	2,783	122	17	6.0
Liquid Bulk	55	6,274	3,589	118	18	6.3
Solid Bulk	46	8,625	5,783	125	20	5.1
Multipurpose	58	5,967	3,110	108	16	5.7
Passenger	34	24,053	12,496	160	24	6.6
Oil Tanker	180	10,871	5,916	106	17	5.1
Container	204	15,344	8,247	161	25	7.5
Ro-Ro	75	26,889	10,511	172	28	7.2
Other	216	2,167	1,526	56	12	3.0
Total	1,258	7,874	4,070	100	17	5.4

Source: Autoridad Portuaria Nacional (APN)

72. Table 3-6-3 shows distribution of ship size in gross ton at the port of Balboa in 1995. It is remarkable that the size of container ships was concentrated between 10,001 to 20,000 gross ton and that the size of Ro-Ro was concentrated between 20,000 to 30,000 gross ton.

Table 3-6-3 Distribution of Ship Size in Gross Ton at Port of Balboa (1995)

Type of Ship	0-1,000	1,001-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001-	Not Specif.	Total
Tuna Ship	367	0	1	0	0	0	0	0	368
Refer	6	14	2	0	0	0	0	0	22
Liquid Bulk	15	31	7	2	0	0	0	0	55
Solid Bulk	16	10	18	2	0	0	0	0	46
Multipurpose	30	10	17	1	0	0	0	0	58
Passenger	7	4	4	6	3	8	1	1	34
Oil Tanker	90	17	28	25	19	1	0	0	180
Container	0	29	146	23	5	1	0	0	201
Ro-Ro	2	10	2	40	14	5	1	1	75
Other	180	23	9	2	0	0	1	1	216
Total	713	148	234	101	41	15	3	3	1,258

Source: Autoridad Portuaria Nacional (APN)

3.6.3 Use of Berth

73. The berth occupancy ratio is a useful index to know the situation of utilization in berths/ports. This ratio is calculated by dividing the actual berthing time of ships by the total available berthing time.

74. The time trend of the berth occupancy ratio for each port is shown in Table 3-6-4 and Figure 3-6-2. (For the port of Bahia Las Minas, the ratio was not reported in 1990)

75. The occupancy ratio for Coco Solo is surprisingly high because many small ships swarm at the same pier. They are often moored parallel to other ships on berth when berthing space is not available. On Pier No.1, in particular, they are sometimes moored even in three lines.

Table 3-6-4 Berth Occupancy Ratio

Year	Balboa	Cristobal	Bahia Las Minas	Coco Solo Norte
1990	68%	33%	n/a	411%
1991	55%	22%	46%	252%
1992	50%	39%	49%	302%
1993	57%	40%	32%	177%
1994	87%	23%	49%	244%
1995	96%	21%	n/a	n/a

Source: Autoridad Portuaria Nacional (APN)

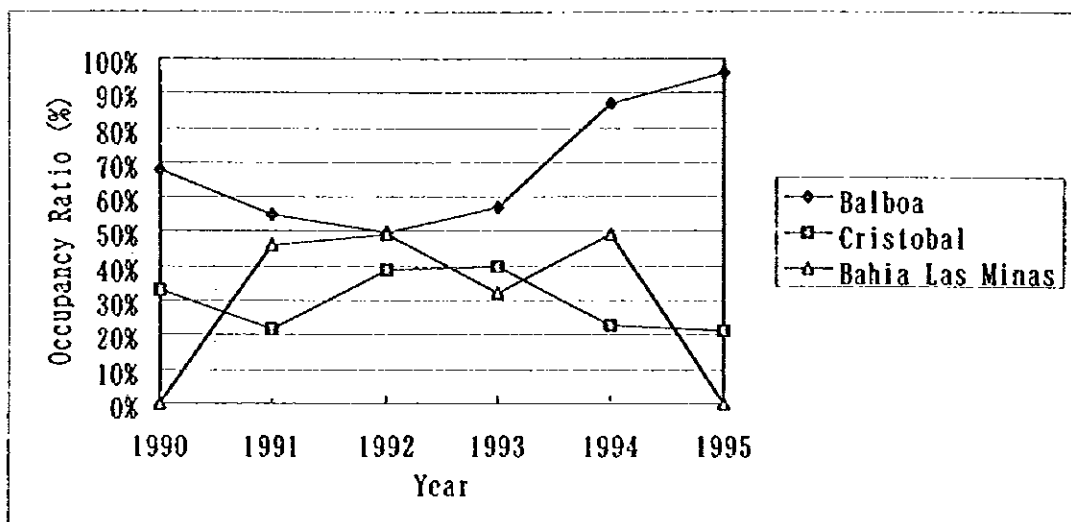


Figure 3-6-2 Berth Occupancy Ratio

76. The occupancy ratio for Cristobal has fluctuated between 20% to 40% and marked 21% in 1995. The low occupancy ratio in 1995 seems to accord to the decrease of cargo volume.

77. The occupancy ratio of Balboa has increased since 1992 and reached 96% in 1995.

78. The average waiting time of each port reported by APN is shown in Table 3-6-5 and Figure 3-6-3. The waiting time of Balboa has fluctuated in large more than ten hours. By contrast, the waiting time of Cristobal sharply increased and reached 18 hours in 1995.

Table 3-6-5 Waiting Time

Year	Balboa	Cristobal	Coco Solo Norte	Bahia Las Minas
1990	2.00	4.00	n/a	n/a
1991	17.00	5.50	n/a	10.20
1992	13.00	13.70	0.00	10.19
1993	12.00	8.71	0.00	8.00
1994	16.00	7.21	5.33	12.00
1995	10.00	17.79	n/a	n/a

Source: Autoridad Portuaria Nacional (APN)

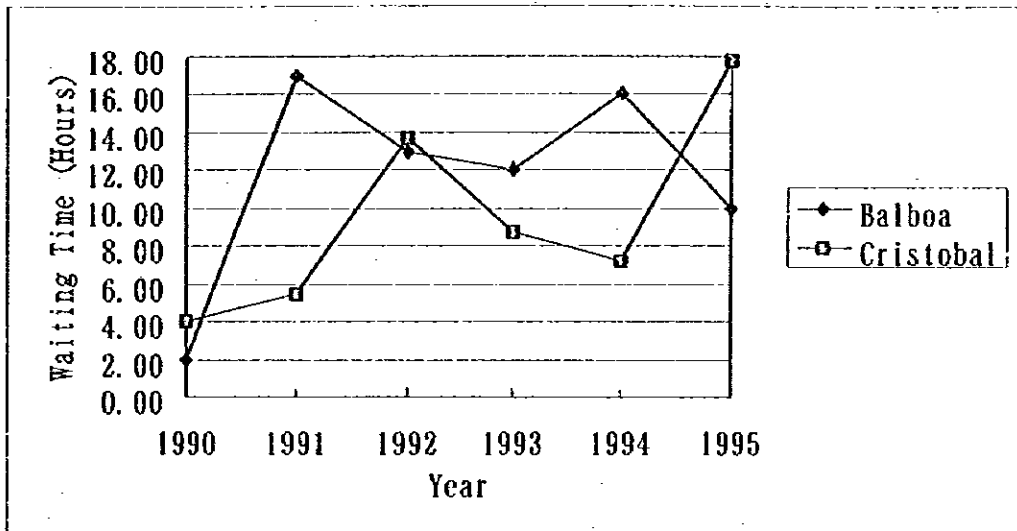


Figure 3-6-3 Waiting Time at Ports of Balboa and Cristobal

IV REGIONAL TREND OF INTERNATIONAL CONTAINER TRANSPORT

4.1 Worldwide Trend of Container Transportation

1. Worldwide maritime container demand has been increasing strongly over the past three decades. The containerization of general cargo started first in the developed countries in Europe, North America and Japan, followed in the newly industrializing countries of East Asia, and is now beginning to include the developing countries.

2. Because of growing global containerization and rising trade volumes, large vessels have been required more and more. These have placed demands on ports to continually improve their capabilities in terms of quay length and strength, gantry crane specification, berth depth and storage space. The most advanced ports are currently gearing themselves for 6,000 TEU vessels and are preparing for the possible future needs for larger vessels. Singapore, for example, is considering the possible requirements of 8,000 TEU vessels. Post-panamax container gantry cranes have become the norm and a number of ports are now investing in super-post panamax gantry cranes, capable of reaching across vessels with 18 container cells width.

3. The economics of operating large vessels require ship calls to be limited to large volume ports, and to be kept to the minimum length of stay. To maintain competitive, major ports have had to become extremely efficient, and new technology is being used increasingly at all stages of port operation to rationalize, automate, and accelerate processes.

4. At the same time, the system of port operation is being revolutionized. The concentration of mainline vessel calls at fewer major ports is creating "hub-and-spoke" operations, with mainline vessels being served by feeder vessels from surrounding lower-volume ports.

5. Because of the worldwide growth of maritime container market and the need to find ways of financing the heavy port investments needed to accommodate successive generations of container vessels, governments all over the world have been increasingly depending on the private sector to provide the solutions to economic needs. The trend of privatization in the port sector has been spread into North America, Europe, East Asia, Australasia, and Latin America.

6. While some ports have been privatized by themselves, the increasingly

popular model is the privatization of port services on long-term leases. So-called "build-operate-transfer" contracts have become typical all over the world.

7. The privatization trend has given stevedore companies the opportunity to make their expertise around the world. This has ranged from consulting projects to building and operating container terminals. The Singapore Port Authority is investing in build-and-management container terminal ventures in China. In America, the Seattle-based Stevedoring Services of America is part of the joint venture building and operating the new Manzanillo container terminal in Panama.

8. Some shipping companies are also involved in container terminal investment. P&O Australia is present in a number of developing country ventures in order to build up the containerized trades, while Sea-Land has invested in container terminal and landbridge operations in Russia and other former Soviet republics.

9. The development of worldwide container port throughput by region is shown in Table 4-1-1 and Figure 4-1-1. It is clear that the world market for container cargo handling has expanded very rapidly, with growth of 109 percent over 1986 to 1994 taking total throughput from 61.09 million TEUs to 127.51 million TEUs. Growth has been maintained through all major regions, but the most rapid development has been in the East Asia. The region contains four of the world's five largest container ports.

Table 4-1-1 Worldwide Container Throughput by Regions (1986-1994)

Region	Unit: Million TEUs								
	1986	1987	1988	1989	1990	1991	1992	1993	1994
East Asia	19.10	22.24	25.52	29.10	32.42	37.18	42.01	47.42	51.08
Europe	17.76	19.01	20.90	22.00	23.25	24.61	26.24	27.58	30.28
North America	13.42	14.24	15.00	16.01	16.49	16.96	17.95	18.48	20.31
Caribbean/C. America	2.68	3.01	3.06	3.28	3.56	3.08	3.42	4.59	5.05
South America	1.01	1.21	1.31	1.40	1.44	1.60	2.03	2.39	2.51
Total in the world	61.09	67.16	71.01	80.65	86.61	91.39	103.83	114.14	127.51

Source: Ocean Shipping Consultants Ltd.