



United Nations
Environment
Programme



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DEVELOPMENT OF PORT RECEPTION
FACILITIES IN THE MEDITERRANEAN



UNITED NATIONS ENVIRONMENT PROGRAMME



INTERNATIONAL MARITIME ORGANIZATION

1. The prevention of marine pollution by hydrocarbons caused by discharges from ships is a common goal of UNEP and IMO. It is reflected in the Convention for the protection of the Mediterranean Sea against pollution (Barcelona, 1976) as well as in the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978, which is generally referred to as "MARPOL 73/78".

2. The entry into force of MARPOL 73/78 makes it imperative that facilities to receive wastes in ports be provided, both at crude oil loading ports for ballast water reception, and at nearly all ports for the reception of sludges and residues from both dry cargo ships and tankers. This is particularly important in the Mediterranean Sea, designated as a Special Area in the Convention.

3. By Regulation 10 of Annex 1 of MARPOL 73/78 a special area is defined as "... a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required".

4. The following States, Parties to the Barcelona Convention, have ratified MARPOL 73/78:

<u>State</u>	<u>No. of tankers over 10,000 dwt</u>	<u>Percentage of world fleet at 31.12.83</u>
France	58	3.67
Greece	254	7.46
Israel	-	-
Italy	76	2.18
Lebanon	1	-
Spain*	55	2.34
Tunisia	-	-
Yugoslavia	5	0.12
	449	15.77

5. The remaining nine States, Parties to the Barcelona Convention, that have not ratified MARPOL 73/78 account for a total of 99 tankers and 2.86 per cent of world fleet.

* entry into force October 1984

6. Considering that a majority of the Mediterranean ports does not meet the reception facilities required by MARPOL 73/78, there have been three major studies undertaken to review the situation: the first was carried out in 1978 under a joint IMO/UNEP project (FP/0503-78-01(1372), which covered a total of 16 countries and 73 ports; the second was carried out in 1981 by the E.E.C. through Snamprogetti of Italy and covered 11 countries and 52 ports; the third was carried out during 1982/83 by IMO with support from UNDP (project RAB/79/015) and covered four countries.

7. The final reports and detailed recommendations arising from these studies have been submitted to the Governments concerned.

8. These studies have identified the need for installations to receive and treat oily ballast waters, as well as sludge and bilge wastes. A summary of the estimated costs associated with proposals made for shore facilities under the EEC/Italy and IMO/UNDP projects appears in Annex I. A more detailed breakdown of existing and proposed reception facilities in ports of the eleven countries included in the EEC/Italy project is shown at Annex II.

9. The case can also be made for the use of strategically located vessels as waste collection stations as a temporary measure for the reception of dirty ballast and tank washing water in the Mediterranean Sea area (see Annex III).

10. Finally, standard reception facilities in ordinary ports (i.e. other than repair ports or oil loading ports) for the effluents of ships other than oil tankers have been proposed by the IMO/UNEP project referred to in paragraph 6 above (see Annex IV).

11. The following tables present in summary form the recommendations and cost estimates of port reception facilities contained in the studies referred to in paragraph 6 above.

12. Since the studies were produced by different teams of Consultants at different times, the cost estimates are not strictly comparable (i.e. due to the effects of inflation, etc.). In any case all proposals should be reviewed with regard to costs before final tenders are agreed.

13. While the total cost involved to equip 58 ports in 15 countries is undoubtedly high, the cost of individual installations is not beyond the reach of Mediterranean coastal States desirous of meeting their obligations under MARPOL 73/78 and the Barcelona Conventions. The protection of the Mediterranean from pollution by petroleum hydrocarbons represents a sound investment for the protection and development of tourism, aquaculture, fisheries and recreation and should qualify for financial support from bilateral and multilateral sources.

Annex I

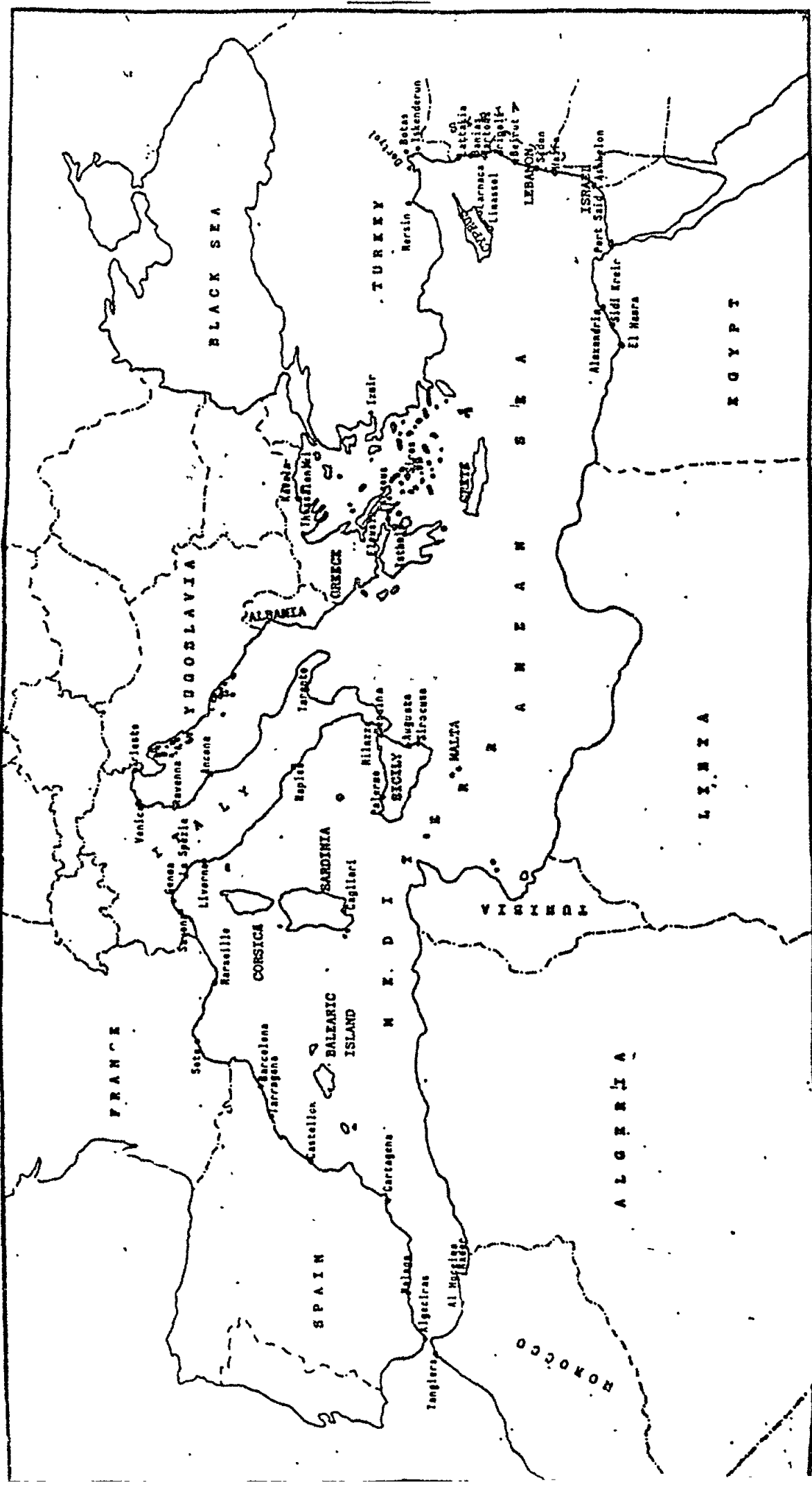
Proposed port reception facilities for dirty
ballast and other oily wastes from ships

<u>Country - Port</u>	<u>Cost estimate in US dollars</u>
ALGERIA - Arzew ¹ / - Skikda - Algiers - Oran - Annaba - Mostaganem	not costed " " " " "
CYPRUS - Limassol - Larnaca	600,000 280,000
FRANCE - Marseille - Lavera - Sète	650,000 650,000 250,000
EGYPT - Alexandria - Port Said (Suez Canal)	1,040,000 1,700,000
GREECE - Piraeus - Eleusis: Refinery A Refinery B Shipyards - Thessaloniki	900,000 1,000,000 650,000 3,000,000 600,000
ISRAEL - Haifa	550,000
ITALY - Savona/Vado - Genoa - Livorno - Naples - Palermo - Taranto - Ancona - Ravenna - Venice - Trieste	50,000 13,000,000 6,100,000 1,100,000 16,000,000 1,100,000 50,000 700,000 2,200,000 6,100,000

LEBANON	- Beirut	30,000
	- Sidon	18,500,000
	- Tripoli	17,000,000
MALTA	- Valletta (improved berthing/mooring facilities)	7,700,000
	- " (improved effluent treatment plant)	not costed
MOROCCO	- Tangiers	600,000
	- Nador	600,000
	- Al-Hoceima	20,000
SPAIN	- Barcelona	900,000
	- Tarragona	30,000
	- Algeciras	40,000
	- Alicante, Almeria, Valencia and Palma	100,000
SYRIA	- Lattakia	30,000
	- Tartous	18,500,000
	- Banias	17,000,000
TUNISIA	- Ashtart	not costed
	- Bizerte ^{2/}	"
	- Tazerka	"
	- Tunis	"
	- Sousse	"
	- Sfax	"
	- Gabes	"
TURKEY	- Dordyol	370,000
	- Iskenderun	560,000
	- Izmir	370,000
YUGOSLAVIA	- Kardeljevo (Ploce)	not costed
	- Bijela ^{3/}	400,000
	- Bar	not costed
	Total	141,020,000

-
- 1/ 60,000 cu.m. lagoon
2/ 12,000 cu.m. lagoon
3/ 30,000 cu.m. lagoon

Annex II



SUMMARY OF TABLES

LEGEND

1) Columns "Type of port" and "Traffic":

L means: loading

UN " : unloading

2) Columns "Type of reception facilities":

R means: receiving systems from ships (sealines, piping, hoses, etc.) plus holding tank(s) on land

P means: primary treatment only (API, TPI or similar) on land

S means: secondary treatment only (flotators, sand filters or other) on land

C means: complete plant (that is R+P+S using the symbols above said)

F means: floating station with complete treatment

B means: barge equipped for oily wastewaters collecting, or collecting and treating

3) Columns "Adequacy of reception facilities":

A means: completely adequate (no investments or provisions are necessary)

O means: not adequate for organisation or operation insufficiencies (no investments are necessary)

L means: not adequate for lack of installations (new investments are necessary)

4) In general:

X means: presence of an activity or necessity of a facility

(X) means: as above, but very limited

COUNTRY PORTS	RECEPTION FACILITIES										Costs (US\$.10 ⁶)								
	TYPE OF PORT					TRAFFIC (tonnes/year.10 ⁶)		OIL TANKER MAX SIZE (DWT. 10 ³)				EXISTING			PROPOSED INVESTMENTS				
	OIL PORT		SHIP REPAIR PORT	COMMERCIAL PORT	OTHER	TOTAL	OIL		CRUDE	REFINED		SHIP REPAIRS	BILGE TYPE	ADE- QUACY	BALLAST ADE- QUACY	A.I.M. BILG TYPE	TYPE	Stor. vol. m ³ 10 ³	Flow rate m ³ /h
	CRUDE	REFIN.					L	UN											
MOROCCO																			
Tangiers			X	(1)	0.6									X	C	0.3	10	1.22	
Nador			X		0.6									X	C	0.3	10	0.60	
Al-Hoceima				X	<0.1									X	B			0.60	
																		0.02	
SPAIN																			
Barcelona	(X)	X	X		17.7	<0.2 (2)	3.6 (2)	60			B	L	L	X	C	3	50	1.35(7)	
Tarragona:		X	X		(3)			20					A	X	B			0.90	
- ASEA Ref.		X	X					100					A	X				0.03	
- ENP Ref.		X	X					35					A	X				-	
Castellon (Petromed Refinery)		X	X		(3)			37					A	X				-	
Cartagena (ENP Ref.)		X	X		(3)			250					A	X				-	
Malaga (ENP depot)		X	X		(3)			50					(5)	X	B			0.04	
Algecirab (CEPSA ref.)		X	X		(3)			500	175				C	X	B			-	
Minor ports (6)			X		(3)									X	B			0.1	

Notes: (1) Passengers traffic (4) Under construction (7) 0.28 . 10⁶ US\$ included for
(2) Concerning CAMPSA DEPOT (5) Not important for this study oil monitoring systems in
(3) No informations for commercial traffic, (6) Alicante, Almeria, Valencia various ports
and Palma (however having no great importance)

COUNTRY PORTS	OIL PORT			TYPE OF PORT			TRAFFIC (tonnes/year; 10 ⁶)		OIL TANKER MAX SIZE (DWT · 10 ³)			RECEPTION FACILITIES							
	CRUDE		REFIN.	SHIP REPAIR	COMMERCIAL	OTHER	TOTAL	L	UN	CRUDE	REFINED	SHIP	EXISTING		PROPOSED INVESTMENTS				
	L	UN	L	L	JN								BIDGE	BALLAST	AIM	STOR.	Flow	Costs	
	TYPE	TYPE	ADE- QUACY	TYPE	ADE- QUACY	TYPE	ADE- QUACY	TYPE	ADE- QUACY	TYPE	ADE- QUACY	TYPE	ADE- QUACY	TYPE	ADE- QUACY	vol. 10 ³ m ³	rate m ³ /h	(US\$. 10 ⁶)	
FRANCE																			
Marseille																			
- Marseille (cent. port)				X		X	103												
- Lavera (BP ref. etc)	X						4.4 (1)			80	10	550	B	A	R+P (4)	L			1.55
- La Pointe de Berre (Shell ref.)	X						1.5 (3)				50			X	S		300	0.65 (4)	
- La Mede (CFR ref.)	X						0.7 (1)	56.8 (3)			15			X	S		300	0.65	
- Fos (SPLSE depo ESSO ref. etc)	X						7.3 (2)			300	60								
Sete (Mobil ref.)	X					X	1.3	4	280	60			B	A	R+P	L			0.25
ITALY																			
Savona/Vado	X						14.5	7.6	250										47.40 =====
Ligure	X					X	1.2	31.2	500	80	370								0.05
Genoa	X					X	2.9	5.4	50	60									(6) 1.50
La Spezia	X					X	16.2	5.4	50	60	100								12.50

Notes: (1) Refined only
 (2) Crude + refined
 (3) Crude only
 (4) Gas freeing station
 (5) Future
 (6) Multido station
 (7) New tankers gas freeing station

COUNTRY PORTS	OIL PORT				TYPE OF PORT			TRAFFIC (tonnes/year, 10 ⁶)		OIL TANKER MAX SIZE (DWT, 10 ³)			RECEPTION FACILITIES								
	CRUDE REFIN.		L UN		SHIP REPAIR	COMMERCIAL	OTHER	TOTAL	L	UN	CRUDE	REFINED	SHIP TYPE	EXISTING		PROPOSED INVESTMENTS					
	L	UN	L	UN									BILGE TYPE	ADE-QUACY	BALLAST TYPE	BALLAST ADE-QUACY	AIM	STOR. vol. m ³ /10 ³	Flow rate m ³ /h	Costs (US\$.10 ⁶)	
Livorno	X	X	X	X	X		13.5	1.2	6.2	36	36	250	B	A	C (1)	A				-	
Naples	X	X	X	X	X	X	15.7	0.8	5.7	80	35	80	B	L	C (3)	A	X	C (2)	1000	6.10(2)	
Cagliari/Porto Foxi	X	X	X	X	X	X	28.5	11.5	14.3	280	170		B	A	C	A				-	
Messina	X	X	X	X	X	X	0.10					.70	B	A	C	A	X	C (4)	50	1.10(4)	
Milazzo (Milazzo ref.)	X	X	X	X	X	X	3.6	1.5	2.1	400	100		B	A	C	A				-	
Palermo	X	X	X	X	X	X	3.8		0.7			400 (5)	B	A			X	C (2)	2000	16 (2)	
Siracusa (ISAB ref. (7) and Magnisi)	X	X	X	X	X	X	0.3 (6)	10.2	10.2	400	55		B	A	C	A				-	
Augusta	X	X	X	X	X	X	30.5	10.9	15.5	600	90		B	A	C	A				-	
Taranto	X	X	X	X	X	X	32.8	2.7	6	260	34	100	B	L	C (8)	A				-	
Ancona	X	X	X	X	X	X	5	0.7	2.8	300	90		B	A	C (9)	A	X	C (4)	50	1.10(4)	

otes: (1) Darsena Ugione and New Darsena (already planned by STANIC ref.)
 (2) New gas freeing station
 (3) Mobil refinery station
 (4) New station for port and ship repairs needs
 (5) Future
 (6) Commercial only
 (7) Magnisi terminal
 (8) I.I.P. refinery plant
 (9) API refinery plant

COUNTRY PORTS	RECEPTION FACILITIES																		
	TRAFFIC (Tonnes/year. 10 ⁶)				OIL TANKER MAX SIZE (DWT . 10 ³)			EXISTING			PROPOSED INVESTMENTS								
	OIL		TOTAL	CRUDE	REFINING	SHIP REPAIR	BILGE TYPE	ADE- QUACY	BALLAST TYPE	ADE- QUACY	BILGE TYPE	AIM	SHIP TYPE	Stor. vol. m ³ .10 ³	Flow rate m ³ /h	Costs (US\$.10 ⁶)			
	L	UN																	
	OIL PORT		TYPE OF PORT																
CRUDE	REFIN.	SHIP REPAIR	COMMERCIAL	OTHER															
Ravenna	X	X	X	X	3.1	250	20	16								-			
Venice	X	X	X	X	11.8	120	60	75		B	A	C (1)	A	X	C	1.5	10	0.70(2)	
Trieste	X	X	X	X	25.9	160	20	180		B	A	C (3)	A	X	R+P (4)	20	50	2.20(4)	
					0.73	160	20	180		B	A	C (5)	A	X	C	24	1000	6.10(4)	
<u>SYRIA</u>																			
Lattakia		X												X	B+C	3	50	0.95	
Tartous	X					100								X	B+C	54	1000	11.7(7)	
Banias	X					120								X	C	108	2000	21.3(7)	
<u>LEBANON</u>																			
Beirut			X											X	B				35.53(10)
Sidon	X					150+								X	C	108	2000	18.5(7)	
Tripoli	X					200								X	C	108	2000	17 (7)	

Notes: (1) SAROM refinery plant
 (2) New station for port and ship repairs needs
 (3) IROM and AGIP plants
 (4) New station for ships repairs need
 (5) AGIP refinery plant
 (6) Commercial only
 (7) Offshore installations plus ballast treatment
 (8) No recent information
 (9) 1969 data
 (10) Rough estimate

COUNTRY PORTS	OIL PORT				TYPE OF PORT			TRAFFIC (tonnes/year, 10 ⁶)		OIL TANKER MAX SIZE (DWT, 10 ³)			RECEPTION FACILITIES								
	CRUDE		REFIN.		SHIP REPAIR PORT	COMMERCIAL PORT	OTHER	TOTAL	L	UN ⁶	CRUDE	REFINED	SHIP TYPE	EXISTING			PROPOSED INVESTMENTS			CosLs (US\$.10 ⁶)	
	I	II	I	II										BILGE TYPE	ADE- QUACY	BALLAST ADE- QUACY	AIM	TYPE	Stor. vol. m ³ .10 ³		Flow rate m ³ /h
	I	II	I	II										BILGE TYPE	ADE- QUACY	BALLAST ADE- QUACY	AIM	TYPE			
EGYPT	X						80(1)	80(1)		250											2.74
	X						1.2	1.2		100											-
		X			X		(3)	(3)	(3)	40	40	85		B	O+L	R+P	X	X	S+H	600	1.04
			X		X					150	25	(5)					X	X	C	20	50
ISRAEL							(3)	3			30	60		B	L	R+P	X	X	S	200	0.55
		X			X			(3)		150											0.55
	X						45	(3)													-
GREECE							14.3					500		F	A	F	A				6.15
		X			X	X								F	(7)	(6)	(7)	X	C	3(8)	50

Notes: (1) Max capacity
(2) Not adequate in case of traffic increasing
(3) No recent information

(4) Relevant to Suez Canal
(5) Max lifting capacity of the floating dock
(6) Tanker LESTE of Promoil S.A. Panama

(7) Probable improvement is necessary
(8) New station for port and shipyards needs
(9) Fueltide III of Skaramanga Yard

COUNTRY PORTS	TYPE OF PORT				TRAFFIC (tonnes/year, 10 ³)		OIL TANKER MAX SIZE (DWT · 10 ³)			RECEPTION FACILITIES							
	OIL PORT		SHIP REPAIR	COMMERCIAL PORT	OTHER	TOTAL	L	UN	CRUDE	REFINED	SHIP	EXISTING			PROPOSED INVESTMENTS		
	CRUDE	REFIN.										BILGE TYPE	ADE- QUACY	TYPE	BALLAST ADE- QUACY	BILGE TYPE	AIM
		L	UN	TYPE	TYPE	TYPE											
Greece - Petrolia Hellas Ref.	X	X				3	4	80	35				X	S		600	1.00
Greece - Hellenic Aspropyrgos Ref.	X	X				4	5.4	600 (1)	32				X	S		300	0.65
Greece - Eleusis shipyards			X							100			X	F	20	150	3.00
Greece Isthmia (Motor oil ref.)	X	X				4	5	380	60								-
Greece Thessaloniki	X	X		X		0.9	4.3 (3)	100	22								
Greece Kavala (NACP oil field)				X		1.3 (5)	0.3	75					X	C (4)	0.3	10	0.60 (4)
Greece Syros Island			X							100							

Notes: (1) Pachi Bay terminal
(2) ESSO PAPPAS refinery
(3) Crude + refined
(4) New station for comm. port needs
(5) Kavala + Peramos + Keramoti (little commercial ports)

COUNTRY PORTS	RECEPTION FACILITIES																							
	TYPE OF PORT				TRAFFIC ⁶ (tonnes/year.10 ³)			OIL TANKER MAX SIZE ³ (DWT . 10 ³)			EXISTING		PROPOSED INVESTMENTS											
	OIL PORT		SHIP REPAIR		COMMERCIAL		OTHER		TOTAL	L	UN	CRUDE	REFINED	SHIP REPAIR	BILGE TYPE	ADE- QUACY	BALLAST TYPE	ADE- QUACY	BILGE TYPE	AIM	TYR	STOR. VOL. m ³	FLOW RATE m ³ /h	COSTS (US\$.10 ⁶)
	CRUDE	REFIN.	SHIP REPAIR	COMMERCIAL	OTHER	CRUDE	REFINED	SHIP REPAIR																
	L	UN	L	UN	L	UN	L	UN	CRUDE	REFINED	SHIP REPAIR	BILGE TYPE	ADE- QUACY	BALLAST TYPE	ADE- QUACY	BILGE TYPE	AIM	TYR	STOR. VOL. m ³	FLOW RATE m ³ /h	COSTS (US\$.10 ⁶)			
TURKEY BOTAS CEYAN)	X					35 (1)	35 (1)				350					C	A						1.30	
	X					3.5 (2)	3.5 (2)				80					R+P	L		X	S	100		0.37	
SKENDERUN BERSIN IZMIR						2.6	2.6			0.7									X	C	(3)	2-3	0.56	
						8.2	1.1			3.4	65	20				R+P	L		X	C	(3)	5-10	(4)	
						7.6	1.6			4	100	6		X	A	C	A		X	S	100		0.37 (5)	
CYPRUS LIMASSOL LARNACA						1.9	1.9																0.88	
						1.6	0.07			0.6	35	35				R+P (6)	L		X	C	0.3	10	0.60	
																							0.28	

Notes: (1) Max capacity 31.7 . 10⁶ t in 1982
(2) Max capacity 1.4 . 10⁶ t in 1982
(3) Not communicated
(4) Bilge waters station for commercial ports
(5) Secondary unit of the exist. plant in petroleum jetty area.
(6) Plant of LARNACA refinery

Annex III

Use of oil tankers as temporary reception facilities

Oil tankers in the size range of 30-40,000 dwt may be available at US\$ 6-7 per dwt per month per vessel. In addition bunker cost for operation should be added^{1/}.

Tanker collection stations would deliver wastes to shore facilities already available or deviate to the Atlantic.

1/ Data supplied by INTERTANKO

Annex IV

Standard reception facilities in ordinary ports

1. The effluents to be treated ashore fall into three categories:

- diluted bilge waters
- the contents of the sludge tank
- used lubricating oil

2. Facilities to be provided include:

- a storage capacity (usually a steel tank)
- a separation device producing effluents with less than 15 ppm of oil

3. Disposal of sludge by:

- dumping at appropriate location on land
- incineration
- mixing with quick lime

4. Indicative cost estimates per installation:

	US \$
- reception tank 200 cu.m.	60,000
- control basins	15,000
- separator	<u>95,000</u>
	170,000

excluding cost of land, levelling and fencing.