A STUDY OF SHIPPING INDUSTRY AND ASSESSMENT OF ENVIRONMENTAL IMPACTS IN TURKEY

by

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ABSTRACT

In recent years, the importance of the environmental concerns at shipping and the related standards/safety measures have become subject to clear understanding and acceptance of each country at international platforms. The aim of this study was to evaluate/investigate the reflections of the international standardization developments at Turkey and the ways for reaching the very strict and internationally requested standards at her shipping industry at once. For this purpose; general evaluation of the prospective Turkish Shipping Industry, its development during the recent years, its current performance in the terms of conforming with the international standards and ways for reaching these standards with a better conformance have been investigated. The necessary steps that Turkey should immediately take during this period have been evaluated by specifically studying the problems of the Turkish Ports that can be defined as evident indicators of the economic power of a country. The results were expressed by analyzing the economic, commercial and technological means of overcoming the substandardization at Turkish Shipping/Ports. Moreover, 'Pipe-Line' alternative has been suggested instead of 'Straits' alternative with social cost/benefit analysis of marine pollution and other environmental effects that have been studied by evaluating the effects of tanker accidents on environment and human nature.

ÖZET

Denizcilikle ilgili çevre değerlerin ve ilgili standartların/güvenlik uygulamalarının önemini her ülkenin açıkça anladığı ve kabul etmiş olduğu, son yıllarda, uluslararası platformlarda istenmektedir. Bu çalışmanın amacı; uluslararası standardizasyon gelişmelerinin Türkiye'ye yansımalarını ve uluslararası platformlarda istenen çok sıkı standartlara denizcilik endüstrisinde ulaşmanın yollarını değerlendirmek/araştırmaktı. Bu amaçla; Türk Denizcilik Endüstrisinin genel durumu, son yıllardaki gelişimi, geldiği yerin uluslararası standardlarla ne kadar uyum içinde olduğu ve anahtar platformlarda bu standartlara nasıl daha etkili olarak ayak uydurması gerektiği incelenmiştir. Türkiye'nin bu süreçte biran önce atması gereken adımlar, ülkenin ekonomik gücünün göstergeleri sayılabilecek limanlarının sorunlarıyla özellikle değerlendirilmiştir. Sonuçlar; Türk Denizciliğinde/Limanlarında düşük standart sorununun üstesinden gelmenin nasıl bir ekonomik, ticari ve teknolojik ilişki ifade ettiğinin analiziyle elde edilmiştir. Ayrıca, Türk Boğazlarındaki tanker kazalarının çevre ve insan üzerindeki etkilerinin değerlendirmesi yapılmıştır. Deniz kirliliği ve diğer çevresel etkilerinin sosyal maliyet/fayda analiziyle de 'Boğazlar' alternatifi yerine 'Boru Hattı' alternatifi önerilmiştir.

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B/C	=	Benefit Cost Ratio
DWT	=	Dead Weight (the weight the ship can carry)
GRT	=	Gross Tonnage (the official tonnage of the ship)
IRR	=	Internal Rate of Return
NPV	=	Net Present Value
PV	=	Present Value
ppm	=	parts per million
R/SRR	=	Social Rate of Return

1. INTRODUCTION

The significance of the ports has increased in accordance with rapid developments of shipping industry and with increased cargo flow. Turkish Shipping Industry came a long way since 1982 and is in a very sensitive period in the terms of being able to maintain its growth / development in a very competitive world market of merchant fleets. Besides the competition among the merchant fleets of the countries, Turkey should also aim a progress about the international standards such as conventions and codes before letting them to put her in a very difficult position with the penalties. The point is that, Turkey must take into account the great importance of these international standards/applications of environmental concerns at this very sensitive term of shipping sector. Because; besides the current standards, which have not been implemented in a proper way by Turkey, world-wide implementations of very strict safety measures are also on the way just at the second half 1998 and Turkey has no alternative but to apply the current international standards properly at first and then must be ready for the coming ones which are totally more definite not only about the standards to be newly applied (not allowing countries to underestimate) but also about the penalties to be charged.

The intensive sea traffic has started to put Turkey in a difficult situation due to the ever increasing inbound / outbound traffic and transit traffic being loaded at her ports. The ports play a key role in the foreign trade of Turkey and its transportation system, working as a gate opening to the world outside. Turkey is a natural land bridge and, therefore, her ports act as intersection points between eastern and western markets. When this is the case, the port operation should be conducted as smoothly as possible. However, serious problems such as insufficient storage capacity/port area, reception facilities, hazardous cargo handling, inspection procedures, maintenance, training, port structure, port development and port administration are being faced at Turkish Ports. It is high time for Turkey to take the development steps at her ports while very strict safety measures to be implemented world wide are right on the way. Therefore, developments / rehabilitation projects at Turkish Ports (at existing infrastructure facilities/services) should be realized at once. When this is the case, Turkey must always be ready for the up-to-date

environmental safety measures and, therefore, must become more aware of the environmental concerns while enjoying the benefits of the increasing ship traffic at her ports.

When the Navigation - Shipping at Ports / Straits of Turkey are investigated, it is clearly observed that local applications of international requirements, both positive and negative, are missing. Transportation by sea at Dardanelles and Bosphorus Straits is causing an intensive sea traffic which has detrimental effects on the environment. Since this intensive sea traffic is also including the transportation of hazardous cargoes and oil/oil products, one must also take into account the social cost/benefit analysis of the case (replacement / compensation costs). Therefore, private, environmental and social costs should be taken into account.

The major idea of the thesis is defining the risks that Turkish Shipping Industry may get involved in the terms of compliance with the safety measures and, therefore, with the development steps in advance. In other words, in order for Turkey to maintain her rights to trade, there is a prompt need of taking the development steps at Turkish Shipping Industry against substandard shipping and its inferences. At this study, in this respect, it is aimed to define the growth and problems of major Turkish Ports (İzmir Port and Haydarpaşa Port), to survey the application of pollution and safety measures against environmental pollution at Turkish Shipping Industry and to study the resulting gains for Turkey. From the economic point of view of the safety / accident risk at the Turkish Straits, the effects of tanker accidents have been explained by studying the social cost/benefit analysis of marine pollution at Turkish Straits and other environmental aftermaths. Since the shipping industry has an interdisciplinary character, this thesis study means a piece of work that includes the evaluation of various aspects of the exercises such as political and scientific. Therefore, Turkish Shipping Industry has been evaluated with a wide framework including safety measures, ports, policies, etc.

It is hoped that present and prospective concerned parties will have a better understanding of the necessary steps to be taken at Turkish Shipping Industry on the way of becoming a successful country at industrial and technological shipping developments that co-exists with a great environmental awareness.

2. TURKISH SHIPPING INDUSTRY

Since 1982, Turkey now has a shipping sector earning around 5 billion U.S. Dollars for the country, a merchant fleet with a capacity of 11 million DWT (Dead Weight), 99 ports and harbors including 14 general purpose and seven special purpose ports. The significance of sea transportation for Turkey derives from both its contribution to the economy of Turkey and, therefore, its essential support for the other economic activities. The shipping sector in Turkey is generating major indirect effects which are felt throughout all the sectors of the economy (Günsoy, 1993).

The development of the Turkish Shipping Industry can briefly be summarized as follows; in 1982, Turkey had a fleet having a capacity of 4.105.996 DWT. The number of vessels was fixed at 675, between 1980 and 1984, the policies encouraged ship purchases and the constructing of new ships by way of apportioning the sector funds from domestic resources, in 1984, a recession in the shipping sector has been experienced. The adverse affects of the recession on the development continued until 1989, in 1989, foreign credit provision requirements eased and the fleet increased by 25 per cent, in 1992, Turkey's fleet reached to a capacity of 6.503.705 DWT, in 1994, a development has been observed; the capacity has increased to 8.454.445 DWT, in 1996, the number of vessels in the fleet reached 1177 (it was a mere 675 in 1982). This growth increased total capacity to 10.893.603 DWT. Moreover, Turkey now can export vessels to countries like Germany, England, Norway, Holland and Greece. To ensure further progress, Turkey needs a reasonable increase in ship constructing credits as well as to settle the problems regarding the provision of guarantee funds (Turkish Shipping World, 1997).

2.1. A Structural Outlook of the Turkish Merchant Fleet

As of 1997; Turkish Merchant fleet comprising 1177 vessels having a total tonnage of 10.893.603 DWT. 705 vessels out of the total 1177 were constructed locally and 472 were imported from other countries. Turkish Merchant Fleet is shown at Table 2.1. (Turkish Shipping World, 1997).

Table 2.1. Turkish Merchant Fleet (Turkish Shipping World, 1997)

Vessel Type	**Imported** *(vessel)*	**Built** *(vessel)*	**Total** *(vessel)*
Bulk Carrier	165	6	171
Oil Tanker	35	67	102
Chemical Tanker	29	11	40
Container Ship	3	4	7
Ro-Ro	25	-	25
Others	215	617	832
Total	**472**	**705**	**1177**

Based on DWT, the fleet is composed of 60 per cent bulk carriers, 14 per cent oil tankers, 14 per cent dry bulk carriers, nine per cent Oil-Bulk-Ore (OBO) type vessels. The share of the container ships is very low. As of early 1996, there were only three container ships having a total capacity of 13.975 DWT in the fleet. As of May 1997, the fleet includes seven fully-fledged container ships having a total capacity of 48.231 DWT. There has been a 29 per cent increase in container DWT in one year. As of early 1997, the private sector owns 94 per cent of the Turkish Merchant fleet and the public sector owns 6 per cent. The average age of the fleet is approximately 19 years.

In the world scale, the Turkish Merchant Fleet has jumped to the 17th rank with 10.8 million DWT in 1997 from the 23rd rank with 6.5 million DWT in 1992 (Turkish Shipping World, 1997).

2.2. The Development of the Turkish Tanker Fleet

Despite the tanker fleet have achieved 162 vessels by 19 per cent increase between 1992 and 1996, there has been a four per cent decrease based on DWT. Furthermore, the share of the tanker fleet in the total fleet also decreased to 16 per cent. More than half of the tanker fleet is composed of oil tankers followed by 20 per cent chemical tankers. The share of Liquefied Petroleum Gas (LPG) tankers in the fleet is extremely low and there are no Liquefied Natural Gas (LNG) tankers. The development of the tanker fleet between 1992 and 1996 is shown at Table 2.2. (Turkish Shipping World, 1997).

Table 2.2. The Development of the Turkish Tanker Fleet (Turkish Shipping World, 1997)

	Fleet		Tanker	
Years	**DWT**	**Pieces**	**DWT**	**Share (%)**
1992	6.502.705	136	1.847.658	28
1993	8.255.182	142	2.163.041	26
1994	8.545.455	148	1.772.792	21
1995	10.310.811	153	1.822.690	18
1996	10.893.603	162	1.777.985	16

Some statistical data about the cargo lifting performance of Turkish Shipping Sector in recent years are given in Appendix A.

2.3. Turkish Ports Operated by Turkish State Railways (TCDD)

Seven major ports of Turkey, Turkey's gateways to the world, namely; Samsun on the Black Sea, Haydarpaşa (İstanbul), Derince, Bandırma on the Sea of Marmara, İzmir on the Aegean Sea and Mersin and İskenderun on the Mediterranean Sea, all of which are linked to the national railway system, are operated by General Directorate of Turkish State Railways (TCDD) and play a key role in the transport system of Turkey. All these ports enjoy good access both by rail and road, and most are within easy reach of airports. They have a significant potential where transit trade through Turkey is concerned.

The principal services offered by the ports are: pilotage, towage, line handling, fresh water supply, solid and liquid waste collection, loading / unloading and shifting, terminal services, storage and weighing. They serve 24 hours seven days a week on three shifts basis even in holidays without any additional charge to the customers.

The port plans of Mersin Port, İskenderun Port, İzmir Port, Bandırma Port, Derince Port, Samsun Port and Haydarpaşa Port are given in Appendix B.

With considering the worldwide trend of steady growth of containerized cargo and progress of containerization in cargo packing mode, modern container terminal facilities and specialized container handling equipment have been acquired to efficiently cope with the containerized cargo at Haydarpaşa, İzmir and Mersin Ports. This project, which can be considered as the beginning of efficient container services in the ports, must be supported by subprojects in order to keep pace with the developing technology and the service quality and must be improved to the level of the modern container terminals of the world.

On the other hand, as combined transport is gaining more and more significance especially between Europe and Middle East, a rail-ferry terminal has been constructed at Mersin Port. It is expected that this terminal will respond to such a need by serving the rail-way-maritime-railway combined transport through the rail-ferry line to be established. Meanwhile, also Samsun Port has rail-ferry facilities which is very important now in terms of the transport between the Black Sea Economic Corporation (BSECR) member countries.

As for the investments for the ro-ro transport, a new ro-ro terminal has been constructed at Haydarpaşa Port (now in service) and a ro-ro berth at Derince is also in service. Now, generally the ports have adequate ro-ro facilities and there are regular ro-ro services between Derince-Constanza-Derince and between Haydarpaşa-Trieste-Haydarpaşa.

Parallel to the steady growth and diversification in cargo traffic, Turkish Ports must further evolve to a level whereby they can operate applying modern management techniques by the substantial investments mentioned above. Now the ports generally have adequate capacity and ship waiting time is satisfactory, if there is not any congestion. If there is (during the peak seasons), ship waiting time is at tolerable level. However, the modernization and expansion program is needed in order to keep the capacity ahead of expected traffic. Because rising demand as the Southeastern Anatolia Project (GAP) has phased into operation, regional economic developments, opening of the Main-Danube Canal, the Black Sea Economic Cooperation Agreement, transhipment potential of Eastern Mediterranean ports and similar factors all point to further increases in transport requirements. On the other hand, construction of a container terminal at İskenderun is planned, while at Mersin extension of container berths has already commenced and computerization of port services is underway.

Mersin Port, with its convenient location on the international routes, is a candidate for being a transhipment hub port in the East Mediterranean. In order to develop the port only into a container distribution and collection center, the berths no.9 and 10 will be extended about 270 m with an alongside depth of 14 m. On the other hand, berths 3 and 6 will be extended about 175 m in their own direction with an alongside depth of 12 m meanwhile berths 17-18-19 will be expanded with an alongside depth of 12 m.

In order to cater for the projected future container traffic growth destined to Marmara Region, a container terminal with a total length of 980 m and with 15 m alongside depth is planned to be constructed at Derince Port. The feasibility study which constitutes the basis for the terminal construction has already been completed. According

to analysis conducted in the study, Derince is the most convenient port to establish a container terminal considering that the destination of the cargo is mainly Kocaeli region where the port is located, it is very close to the industrial areas, ideally located near the transit highway and has a good rail access for the terminal construction.

2.4. The Problems of the Turkish Ports / Straits

The international aspects of "Shipping and the Environment" and the methods for raising the safety standards against "Ship-Generated Pollution" (both accidental and operational) have become so important that all the shipping sectors worldwide are now dealing with the safety measures in order to maintain their rights to trade. Dangerous industrial and domestic wastes and intensive air, sea and road traffic began to pollute the air, sea and land, damaging the ecological equilibrium. Nevertheless, shipping is one of the most environmentally friendly modes of transport (other mode could be 'pipe transport' which is only for liquid commodities) while there is a significant increase in the demand for transport services. Nevertheless, transportation by sea causes intensive sea traffic in narrow waterways such as straits and channels, on port entries and on rivers (Miert, 1994).

Turkey, where surrounded by seas on three sides and by 8.300km of coastline, is situated uniquely at the junction of Europe and Asia (an intersection point of the world trade routes) and may be defined as a natural land-bridge. Since this intersection point/Turkey is in a position to be capable of handling the cargo flow properly between eastern and western markets, transportation at sea, railway and land routes plays a key role for both the region and Turkey. However, serious problems can be observed at Turkish Ports such as insufficient storage capacity/port area, reception facilities, hazardous cargo handling, inspection procedures, maintenance, training, port structure, port development and port administration. Turkey is surrounded by seas on three sides and by 8.300km of coastline but has only seven major ports which means potential serious problems for Turkey if Turkey manages to get a bigger share from the world merchant fleet and increase

her cargo flow evermore in advance. Besides, the structures of the Turkish Ports are extremely inconvenient for the mother vessels to berth/sail. Regular mother vessel operation can be handled only at İzmir Port in Turkey. The cargoes have been carried by feeder vessels from various transhipment ports to the remaining ports of Turkish State Railways and this is affecting the ocean freight rates for the trades routed to Turkey (increasing the ocean freight rates). The feedering costs have been included by the ocean freight rates and this falls on the account of whole Turkish Industry. For sea transportation both exporters and importers are paying more which is not reasonable. In parallel to the ever-increasing sea traffic, applying an international standardization for superstructure, technical equipment and devices used in port administrations is a must for Turkey. As per previously mentioned details about the lifting capacity of Turkish Ports; it can be said that, the increasing cargo flow at Turkish Ports is already pushing the limits. For an instance, Haydarpaşa Port, as one of the major ports of Turkey, can no longer expand in İstanbul. Actually, it has already pushed the limits so far. Because, an additional port area is now under operation for container storage purposes at Göztepe where located around 20 km far from Haydarpaşa. Distance is causing the opeating costs incurring so high due to the trucking operation/expenses. It can be said that, this problem has derived from the beginning, at the installation of the port where a cost/benefit analysis, most probably, has not been conducted. Another problem is belonging to İzmir Port where insufficient dredging facilities are not allowing vessels having a draft exceeding 10 meters to enter the port. Because underwater peaks causing water depth to decrease down to 10,5-11 meters from 13 meters at the port. When this is the case; it can be said that, action on development and maintenance especially at major ports of Turkey must be taken immediately and set as main targets. Nevertheless; it can be observed that, reception facilities at Turkish Ports are quite poor. There are only oil-water separators located within the port areas and these facilities are insufficient alone to deal with the whole port reception as per international requirements. With respect to supervision and control functions regarding port administration / standardization, carrying out the duties of training the personnel and maintaining a qualified technical vehicles/equipment in a correct manner as per the international agreements/standards is also needed. The point is that; these development steps should be taken immediately in order for Turkey be on the safe side on international basis regarding very strict safety measures to be implemented world-wide at the second half of 1998.

When the Navigation / Shipping in the Ports / Straits of Turkey are investigated, it is clearly observed that local applications of international practices are missing. Turkey has defects about being able to pay enough attention to the conventions/policies/codes at her shipping industry. Besides, an international water-way is passing through Dardanelles and Bosphorus Straits and an increased traffic at these regions has adverse effects on the environment. The Straits of Turkey are one of the most dangerous areas of navigation in the world due to the meteorological conditions and geographical structure. The intensive transit traffic at the Straits means a potential danger for the region (especially due to the tankers carrying petroleum products such as oil/oil products, LPG, gasoline and fuel). 'Pipeline' alternative makes sense as a solution.

3. THE INTERNATIONAL STANDARDS ABOUT MARINE POLLUTION PREVENTION

3.1. Marine Pollution

Until the beginning of the 20th century oil was used only for the purpose of having light. As the time goes by, it has also been used as a synthetic material. Oil production capacity has reached to a level of 870 million tons in 1950s from a level of 278 million tons in 1938. Following the progress obtained at industry, transportation of the products from the refinery plants to the places they get used has started. As a result of this, world has met with a new type of pollution due to the increased sea traffic (Belen, et. al., 1983). It is commonly believed that the main cause of the sea pollution is the oil spills caused at collisions, it is not true, because the seas are polluted around 95 per cent because of industrial and domestic wastes and around five per cent because of sea traffic and sea collisions. It is observed that sea pollution by oil products is increasing every single day and it can be said that this increase has a direct relation with increased rate of oil consumption worldwide. 1,5 – 3 million tons of oil is dicharged at Gulf Area (Hayes and Gundlach, 1977; Golub, 1980) and, hard to believe that, this is representing around 50 per cent of the whole oil discharged into the all seas (Outsdam, 1980). The main feature of that five per cent is that, oil spills occur suddenly and large quantities of oil immediately enter the marine environment.

It is important to distinguish between operational pollution and accidental pollution. Accidental pollution is directly linked with ship safety. Ship accidents cause pollution and the only way to minimize it is by raising the safety standards. Dealing with operational pollution, for example the deliberate dumping of polluters into the sea is quite different, because in this case there is a room for preventive actions which will result, of course, with a raise in the safety standards in advance.

3.2. The International Maritime Organization (IMO)

The International Maritime Organization (IMO) is a specialized agency of the United Nations dealing with technical aspects of shipping. IMO; established in 1958, responsible for over 30 international conventions and agreements and has adopted numerous protocols and amendments such as the International Convention for the Safety of Life at Sea of 1948, the International Convention for the Prevention of Pollution of the Sea by Oil of 1954, the slogan/motto of the organization 'safer shipping and protection of the environment', responsible for ensuring that the majority of the conventions were kept up to date, given the task of developing new conventions when the need arose.

Three main categories, for which IMO is responsible, regarding the majority of the conventions are; the first group is concerned with maritime safety, the second with the prevention of marine pollution, the third with liability and compensation, especially in relation to damage caused by pollution. Outside these major groupings, IMO is also dealing with; facilitation, tonnage measurement, unlawful acts against shipping and salvage (BIMCO Review, 1996).

3.2.1. Marine Pollution (MARPOL 73/78) Convention

For the prevention of pollution from ships, in 1973, IMO (The International Maritime Organization) adopted the International Convention for the Prevention of Pollution from Ships, and five years later modified the Convention by adopting a Protocol in 1978, collectively known as MARPOL 73/78. MARPOL 73/78; applies to all ships entitled to fly the flag of a signatory to the Convention, addresses the problem of pollution from ships, and controls the disposal of huge volumes of waste materials resulting from the movement of cargoes and people in ships, calls for the establishment of reception facilities ashore in ports and terminals, aims at completely eliminating intentional pollution of the marine environment by oil and other harmful substances, and the minimization of accidental discharge of such substances including chemicals, sewage and garbage.

The MARPOL Annexes do not completely prohibit the disposal of wastes at sea, but they do control what can be thrown overboard in terms of concentration, content and location.

The Convention has five Annexes which contain regulations for the prevention of various forms of pollution:

Annex I: Prevention of pollution by oil,
Annex II: Control of pollution by noxious liquid substances,
Annex III: Prevention of pollution by harmful substances carried in packaged form, or in freight containers or portable tanks or road and rail tank wagons,
Annex IV: Prevention of pollution by sewage,
Annex V: Garbage (BIMCO Review, 1996).

The status of this instrument/convention with its annexes for Turkey is mentioned at Table 3.1. (BIMCO Bulletin 4, 1992).

Table 3.1. The Status of MARPOL 73/78 with Its Annexes for Turkey (BIMCO Bulletin 4, 1992)

Country	Date of Signature or Deposit or Instrument	Date of Entry into Force	MARPOL 1973/78 Annexes					Remarks
			I	II	III	IV	V	
Turkey	Oct/10/90	Jan/10/91	yes	yes	no	no	yes	Accession

The IMO is currently considering adding two possible new annexes to MARPOL, which would cover; noxious solid substances in bulk and air pollution from ships (BIMCO Bulletin 4, 1992).

The Turkish Government asked the Maritime Safety Committee of the IMO to review the lack of safety considerations within the Montreux Agreement and to recommend amendments to the 50 years old rules. No sound progress has been achieved so far. Since MARPOL 73/78 requirements and Montreux Agreement is conflicting, amendments to the 50 year old rules must be applied at first in order to review the lack of safety considerations within the Montreux Agreement. At the Straits, it can be said that ships probably significantly influence air quality, and similarly, on a local scale, harbors and their surroundings (where Turkey is a country located at a 'Special Area').

With the help of this Convention and others and, therefore, with an increased environmental awareness, oil pollution resulting from shipping operations has decreased during the past three decades. MARPOL 73/78 had a report on which it is calculated that the input from shipping activities declined from 1.47 million tones in 1981 to 0.54 million tones in 1989 (BIMCO Bulletin 4, 1993).

3.2.1.1. Reception Facilities of MARPOL 73/78

Ships are obliged to comply with all international and many local rules and regulations covering the discharge of oil and other harmful substances into the sea, but are often faced with difficulties in port when wishing to dispose of oily/chemical mixtures, residues and garbage. Port reception deals with residues and oil mixtures (waste oil on board, oil residues, oily bilge water, tank cleaning water, oily/chemical mixtures) and garbage. The reception facilities are inadequate in some ports, including Turkish Ports, despite the Convention obligations. The Baltic and International Maritime Council (BIMCO) is in the process of building up a complete picture of the reception facilities at

the ports. Specifically members are asked to report on the extent of present reception facilities and their adequacy. Members are also invited to submit comments on the action they consider as necessary to provide adequate facilities at their own ports. Since the reception facilities are very poor at Turkish Ports, the report of Turkey would not be satisfactory for the BIMCO at the moment (BIMCO Bulletin 4, 1992).

3.3. The Baltic and International Maritime Council (BIMCO)

The Baltic and White Sea regions entered the first years of the 20th century with a major recession and crisis which was hitting the merchant fleets hard (it was impossible to find freight causing the prices to drop). Being worried that the crisis might become even worse, a group of shipowners joined together in an effort to lift back the prices to a reasonable level. In 1905 a meeting held in Copenhagen resulted in the launch of an organization named The Baltic and International Maritime Conference. 20 years later, the organization adopted the name of 'Council' rather than 'Conference'. The organization has developed into a giant, non-political union of shipowners and shipbrokers representing 70% of the world's merchant fleet. BIMCO is having 2750 members in 80 countries representing 65% of the world merchant fleet. BIMCO has 132 active members from Turkey (Turkish Shipping World, 1997).

3.3.1. BIMCO's Objectives

BIMCO's objectives can be listed as follows; to unite shipowners and other companies and individuals involved in shipping, to be spokesman for the industry, to give advice on matters affecting the industry, to gather and disseminate information useful for its members, to develop charter parties and other shipping documents by means of friendly negotiation with the interested parties and to adopt as approved documents, other shipping

documents issued by similar organizations, to meet with charterers, shippers, merchants, receivers, shipowners, shipbrokers and other engaged in the industry and with their representatives, to cooperate with and to support other organizations working in the interest of the shipping industry (Turkish Shipping World, 1997).

BIMCO endeavors to make the world sea trade more standardized, compatible and transparent. The organization also offers educational support and documentation. BIMCO is instrumental in facilitating and regulating the relations among the companies and institutions in the shipping sector. BIMCO pursues the target of uniting shipowners working in the shipping sector. The organization acts as spokesman for the sector and offers consultation services to its members whenever the need arises. BIMCO distributes the data it gathers from various sources among its members so as to keep them informed about vital developments occurring in the world shipping industry. A good example is the on-line service in the organization maintains on the Internet. Members have instant access to information through a Web page whose contents are kept fresh with the help of a non-stop background feed-back operation. BIMCO is also acting as a referee, mediating trade disputes. When companies are unable to settle the conflicts between them, they can pass on to BIMCO whatever documents they have regarding the problematic issue and expect the organization to get back to them with a verdict within 24 hours (Cerrahoğlu, 1997).

3.3.2. BIMCO 1997 İstanbul

BIMCO held its General Council meeting in İstanbul between June 2-4, 1997. More than 1100 delegates have joined the General Council meeting of BIMCO. The large membership base is the significance of BIMCO. Membership is highly prestigious worldwide.

Remarks about BIMCO 1997 İstanbul

Some remarks about BIMCO 1997 İstanbul Meeting have been gathered as follows; the meeting has served as a very important platform where the problems of the Bosphorus was comprehensively analyzed, the previous meetings were held in countries such as England, Norway, U.S.A., Denmark, France, Italy, Greece and Spain. İstanbul being included to the list of cities where the Council Meetings have been held shows not only the advances achieved by Turkish Shipping Industry but also the strategic importance Turkey has gained, the foreign participants have had the chance to see Turkish Shipping Industry personally, the increased popularity the Turkish Shipping Industry has enjoyed in the own media of Turkey was an advantage of the meeting, Turkey has had the chance of having a fuller picture of what has been happening in the shipping business worldwide, holding the meeting in İstanbul shows the interest of the organization in Turkey and its appreciation of her achievements, BIMCO membership enables Turkey to learn the conditions of vessels, ports and water passages, to be notified of the problems a ship may face in ports and to take the necessary precautions to understand the national and international legal sanctions and requirements, the meeting has enabled Turkey to evaluate the world shipping strategies and its future projections through BIMCO's point of view as well as Turkey's point of view, throughout the history, Turkish Shipping sector has suffered because of not integrating with the world. But now, and with BIMCO meeting held in İstanbul, Turkish Shipping Industry is seemingly recovering from the deficiencies of the past, due to the small tonnage and that Turkey's relatively old fleet, Turkey were looked down in many of the world's ports in the past. Turkey's Shipping Community has increased its prestige and creditworthiness in the eyes of major international banks financing the world's shipping industry, the need for taking the necessary precautions that will save İstanbul (where around 15 million people live under the danger of accidents, fires and sea pollution) has been brought up on the agenda at the BIMCO '97 meeting by doing at least some lobby work regarding the Turkish Straits issue (Countries hosting BIMCO are not given the privilege to make separate speeches and submit opinions on their own problems). It has been underlined that, the Aegean coast, the shores of the Dardanelles, the Marmara Sea, the Bosphorus and the Black Sea coast are international natural passageways as well as being the territorial waters of Turkey and the responsibility of ensuring the safety of life, property and environment and preventing accidents / disasters must be assumed by all the

foreign vessels operating in these territories. With this respect, it has been emphasized at the lobbies of BIMCO '97 that the Turkish government is right in its thesis regarding the Straits issue (The Turkish Straits region is under Turkey's national sovereignty, therefore it is not only Turkey's right and duty to safeguard the freedom of transit through this region, it is Turkey's natural obligation. In this respect, attempts for giving this responsibility to an international consortium cannot be allowed), it has been mentioned at BIMCO '97 meeting that the hazards exposed by the oil tankers transiting through the Bosphorus (the oil down to the Mediterranean) must be transported via a pipe line, it has been emphasized that with the transportation of Caspian oil via Nagorsky port, the tanker traffic at Turkish Straits will be further intensified

Holding the General Council Meeting of BIMCO in Turkey was significant in the contributions it has taken to Turkey's tourism, economy and in the promotion of Turkey internationally.

4. DISCUSSION OF INTERNATIONAL SAFETY MANAGEMENT, PORT STATE CONTROL AND STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING

Substandard shipping has developed worldwide in recent years but, on the other hand, IMO has continued to develop uniform international rules and standards. However, ensuring the full compliance with these rules and standards on national / regional basis is quite hard. Besides the effective development of the policies, the significance / need of implementing the worldwide standards for safety, such as International Safety Management -ISM- Code, International Convention for Training and Watchkeeping for Seafarers -STCW- and Port State Control -PSC-, at Turkish Shipping Industry in a proper way is undeniable.

No matter how advanced the technological means, crew of the ship always plays a key role in the safety of a ship. Since 1992, Turkey has been a cosigner of International Convention for Training and Watchkeeping for Seafarers (STCW' 78). International Convention for the Safety of Life at Sea (SOLAS), the International Safety Management Code (ISM Code) and Port State Control (PSC) also aim to ensure the safety of life and property at sea, the prevention of injury and loss of life and the preservation of the environment (Gül, 1998).

4.1. The International Safety Management (ISM) Code

The ISM Code deals with the quality management of safety and pollution prevention matters. The ISM Code for the Safe Operation of Ships and for Pollution Prevention prescribes rules for the organization of the management of a shipping company through the development of a Safety Management System (SMS). According to IMO requirements, the ISM Code is to become mandatory for most ships (passenger ships, tankers, gas and chemical carriers, bulk carriers) at the second half of 1998 (a phasing-in

period begins in July 1998) and for all others above 500 GRT by 2002. Countries have no choice but to implement it. Compared to other quality initiatives, such as the ISO 9000 series, the ISM Code is an internationally agreed standard specially devised for the safe management of shipping companies and ships, which is expected to greatly reduce the risk of human error (if properly implemented). To succeed, the ISM Code requires the commitment from all levels in the company, and in particular from top management, which need to draw up the company policy.

The objectives established by the ISM Code depend on; a certifiable, formal set of procedures for the maintenance of safe operating practice and a safe working environment, the establishment of safeguards against identified risks, the methods to continuously improve safety management skills aboard ship and ashore (management of safety and pollution matters).

Evidence of compliance with the provisions of the Code, documented through a SMS Manual, will be provided through a Document of Compliance issued to the company and a Safety Management Certificate issued to the ships of the company under the authority of the flag state. Periodic verification will be carried out by the authorities.

The system will affect all ships and all shipping companies over the next few years, putting pressure on verification authorities and those offering quality services. Shipping companies should embark upon the process without delay. Approximately, a minimum period of six to 18 months may be required to develop and implement the procedures, although this will depend upon the organization at the start of the procedure, the size of the organization and the resources that are committed.

The SMS involves a clearly defined and understood structure of responsibilities, tasks and activities within the shipping company. Companies which operate 'informally', or those which rely on the experience of an individual, might find themselves facing a change in management policy. The SMS specifies a process of continuous auditing and improvement.

In maritime circles, it is frequently asked whether ISO 9000 embraces ISM Certification and removes the need for it. It does not, but the ISM Code and ISO 9000 are complementary and despite differences, there are undoubtedly advantages in dual certification and it is possible to establish a program that would enable a company to obtain both forms of Certification simultaneously. The information has been collected during an interview of which the details are given in Appendix D (3).

4.1.1. Cost-Benefit Analysis

On the financial point of view, funding is to be considered as one of the most important issues for the management who will be in a position to take into account the costs and benefits. A lot of hard work and money is required in setting up a SMS according to ISM requirements but it is a must because there is simply no way around it because the code is mandatory as of July 1, 1998. Complying with the code will incur costs. An important cost element often not appreciated is the cost of time. For most companies, it takes around between six and 18 months to put an SMS in place. On the contrary, provided the minimum standard of safety set by the code is met, it is up to the company to determine the level of safety at which it is prepared to operate. Management, therefore, must strike an economic balance between the level of safety required and the level of service it is prepared to offer. That is, in identifying which safety costs are worth controlling and monitoring as part of a safety management system, management would have to consider the balance between costs and benefits (Hawkins, 1995). Striking a Balance between Safety and Cost has been shown at Figure 4.1. (Hawkins, 1995).

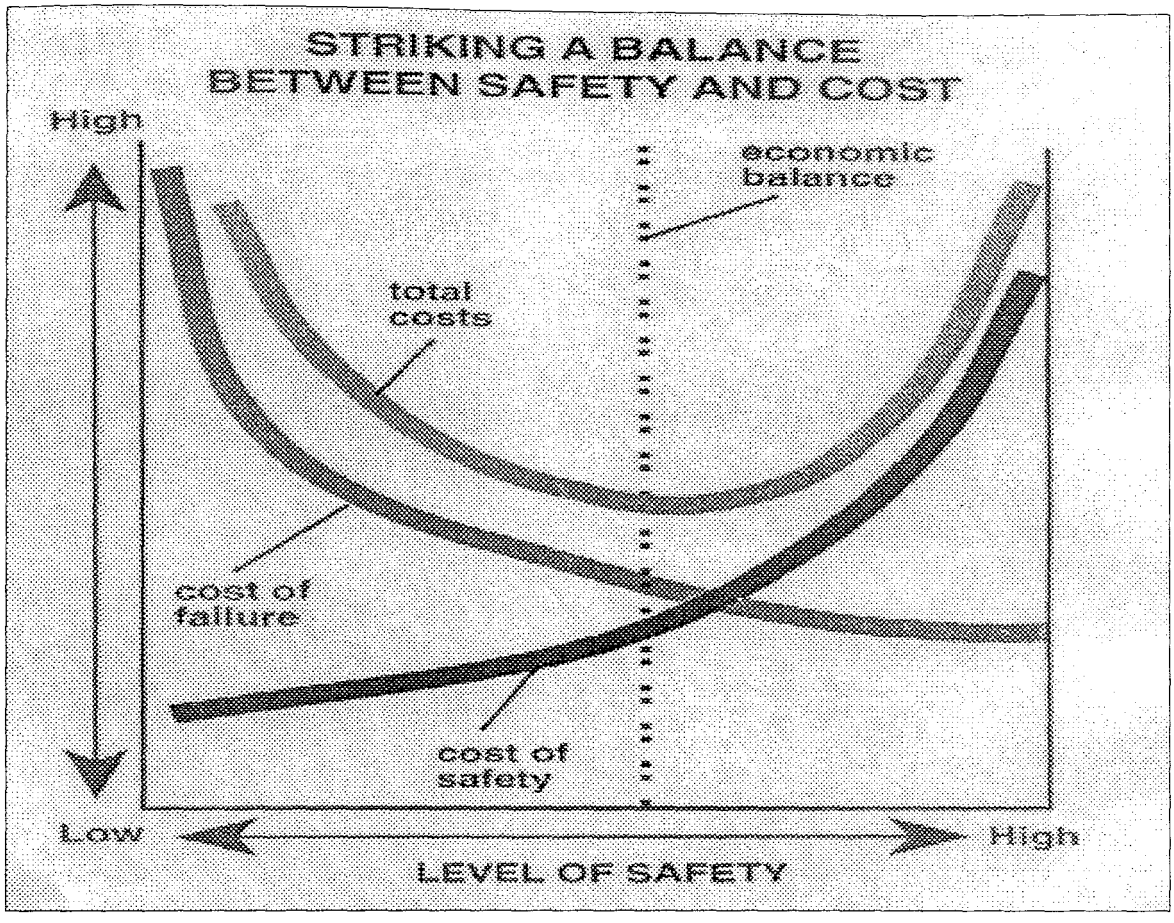

Figure 4.1. Striking a Balance between Safety and Cost (Hawkins, 1995)

The lower the safety level, the higher the failure costs.
The higher the safety level, the higher the safety costs.

Failure Costs are;

.Costs associated with getting something wrong and putting it right again (waste, rework, out of service time, time spent on customer complaints, liability claims, etc.).

Safety Costs are;

Costs incurred to reduce the costs associated with failure and when verifying compliance to mandatory standards, rules and regulations (developing safety management system, quality assurance, management reviews, inspections, etc.) (Hawkins, 1995).

4.1.2. The International Safety Management (ISM) Code and the International Organization for Standardization (ISO 9000/9002)

The ISM Code deals with the quality management of safety and pollution prevention matters, whereas the scope of ISO 9000 standards is wider and covers also customer-oriented requirements. Both are relevant to the management and organization of companies, and the ideal solution would be to combine them under a single quality umbrella (incorporation of both ISM Code and ISO 9000 objectives). This would be too great a burden for a company embarking on quality management for the first time (like the companies in Turkey). Therefore, to keep the ISM Code initially separate from ISO standards is recommended, unless the company intends to do otherwise. The natural follow-on would be to extend the system to cover ISO 9000 requirements on the basis of experience gained. Most of the elements of the ISO 9000 series of quality assurance standards are included in the ISM Code, which is why implementing both the ISM Code and ISO 9000 series of quality standards has been suggested to the organizations. The commercial advantage is much greater than the extra work involved. As safety measures become standard practice and become a part of the company, people develop a safety culture within the organization. This safety culture inspires customer confidence, increases productivity and efficiency, and creates an attractive public image for the company. Then, all these lead to cost savings - reduced insurance premiums, fewer liability claims and compensation, greater productivity - and greater commercial gains.

4.1.3. The Significance of the International Safety Management (ISM) Code

The ISM mandates forming organizational structures both on land and on the vessel and describing the responsibilities of individuals. According to the estimates, in the last two months of 1998, around 70 per cent of the world merchant fleet will qualify for ISM Certificate. This figure shows that, as of second half of 1998, the remaining 30 per cent of the total merchant fleet tonnage will not be able to enter ports, meaning the end of their life

of business. A 30 per cent decrease in tonnage will have a positive impact on freight charges in favor of ships holding ISM Certificates. On the other hand, because the tonnage of the world's merchant fleet is expected to increase by 1-2 per cent over the next 10 years, the resulting tonnage shortage will further aid to rise of freight charges. It can be said that, unless the ISM delays the deadline, the positive impact of a 30 per cent tonnage shortage will continue at least a year. According to OECD reports, the ISM Practice and all other safety rules will introduce a 1-2 million U.S. dollars additional cost per vessel per annum. This additional cost, which will affect shipowners in the short term, will hit the charterers and the customers using the ships in the long term. It is very difficult for companies to afford vessels costing millions of dollars relying solely on their own assets. Therefore, banks are very important. Vessels and companies having ISM Certifications will stand a better chance in finding credits as the banks will then be confident that their money would return to them. They may even keep the interest rate lower. As of the second half of 1998, Turkish shipping companies and vessels must also have the ISM Certification. If the required formalities can not be implemented in advance, the shipowners will either hand over their ships to ship operators having the certificate or have to abandon the business (Alıcı, 1998).

4.2. Port State Control (PSC)

Port State Control is increasingly regarded as an effective method of policing standards of shipping. There is a political support for PSC because a country can ensure that foreign shipping entering her port can be policed / inspected. All countries have the right to survey the ships visiting their ports to ensure that they meet IMO requirements on safety and the environment.

Several reports indicate that the questionable development of ports and harbor authorities performing safety checks and inspections, normally accompanied by unacceptable fees for these services, is a wide spreading problem. IMO has recently recommended that PSC inspections may only be undertaken by authorized and qualified

PSC Officers and ships should not be charged for the first PSC inspection during a port call. For the time being, so many substandard Turkish vessels have been inspected at foreign ports and got punished with big amounts of money against repairing/maintenance, etc service. There is some hope that PSC may become more refined and less of an imposition and there is also hope that other methods of improving and auditing the quality of shipping, such as ISM Code, will effectively reduce the need for PSC (Holmes, 1997).

4.3. Standards of Training, Certification and Watchkeeping (STCW) Convention

STCW (1978, 1995) means the standardization of training, administration, certification and examination procedures and is becoming mandatory. Any country that fails to achieve this could find itself unrecognized elsewhere, meaning that ships could be refused to enter to ports and seafarers could find themselves ineligible to work. Levels of skills and competence that have to be demonstrated in order to qualify for each certificate, are set out; "management", "operational" and "support". This different levels of required competence facilitate alternative methods of certification. It can be said that, training is the key word at the full name of this Convention. Turkey has recently given the necessary importance to this Convention and re-arranged the course programs for the seafarers accordingly. However, technological competence is also a must for Turkey such as simulators because simulators for training to use radar and automatic radar plotting aids, will be mandatory. Crews are to receive training in the technical problems inherent in the type of ship and also in crowd management and human behavior, to enable them to deal better with the emergencies. The revised STCW (1995) has provided a significant basis for improved training, introducing specific standards and clearer methods for evaluation of the competency and skills of all seafarers. STCW 1995 requires a mandatory minimum rest of 10 hours a day, which may be divided into two periods, one of which must be six hours. Recognizing the operational demands of a ship, the 10 hours a day may be reduced to not less than six consecutive hours for not more than two days, provided that not less than 72 hours rest are provided each week.

Parties to the revised convention (including Turkey) will be required to submit to the IMO a detailed documentary information concerning all the administrative measures that are in place within that country, to ensure compliance (time is running short for Turkey). Nevertheless, states will be given technical assistance, if desired, to raise their standards to the necessary level of compliance. Flag states must take full responsibility for the validity of the certificates of their seafarers and the standard of training.

In the future, the administration will hold the companies responsible for the assignment of seafarers to fulfil the provisions of the 1995 Convention such as: holding appropriate certificates applying to safe manning requirements keeping records of experience, training medical firmness and competency, enforcing shipboard familiarization prior to the assignment of on board duties and ensuring crew co-ordination. Furthermore, in accordance with the revised STCW Convention, Port State Control inspectors can require the seafarer to demonstrate the related competency at the place of duty (Holmes, 1997).

4.4. Evaluation of the Vessel Inspection Process

Since tankers carry potentially polluting and highly combustible cargoes, tanker safety goes along with the shipping industry and the administration. Excessive loading rates (deteriorating the steelwork), poor maintenance and inadequate crew training for all types of ships may result with big losses. An age of a vessel, its design and construction, proper application, crew, maintenance and repair programs are the main parameters.

Organizing the ship-management both ashore and onboard is very important. In this respect, the total safety can be secured by providing comprehensive safety information on the ship, its management and crew. In other words, Port State Control (PSC), International Safety Management Code (ISM), Standards of Training, Certification and Watchkeeping Convention (STCW) and vessel inspection process must go hand in hand (Keefe, 1995).

It is crucially important to check that all on board personnel are fully aware of the company's safety and environmental policies and procedures and they perform in full compliance with them (Tsakos, 1994).

4.5. Hazardous and Noxious Cargoes

Hazardous wastes exhibit the characteristics of toxicity, carcinogenicity, infectiousness, corrosivity, flammability and reactivity. Sources of hazardous wastes are: industry, households and imports (it is cheaper to export certain hazardous wastes than to dispose them at the source) (Furman, Yenigün, 1996). Nevertheless, there is a moral in all this. Actually, hazardous waste is often no more hazardous than many routinely traded products. It may provide a valuable source of secondary raw materials for third countries but extreme care is necessary when shipping such material to avoid the legislative trap (Stone, 1996).

4.4.1. The International Carriage of Dangerous Goods by Sea

The Basel Convention is aimed to deal with the management of hazardous waste and other wastes including their transboundary movements and disposals. Besides the disposal purposes, the carriage of the hazardous/dangerous cargoes has been dealt also by the International Maritime Organization (IMO). The international conventions dealing with the safety of the consignments can be listed briefly as follows: the SOLAS Convention 'International Convention for the Safety of Life at Sea' – 1974 (which includes the International Maritime Dangerous Goods –IMDG- Code), the MARPOL Convention 'International Convention for the Prevention of Pollution from Ships' and ADNR Regulations 'the Carriage of Dangerous Substances on the Rhine'.

It can be said that, briefly carriers may be guided by the following; the shipper/consignee should be obliged to warrant that the goods must be sufficiently packed/treated to remain physically and chemically stable during transit. Any type of packing must be suitable for sea transportation and multiple handling, if the consignee tenders a false or incomplete or incorrect declaration or documentation for the goods or performs an improper packing, the carrier should be exempted from all cargo damage and carriage liability and be entitled to compensatory damages (whether incurred in direct or indirect consequence), the consignee should be obliged to take an active role for the coordination of the discharge and delivery of his cargo with all relevant authorities prior to arrival of the vessel (Ludwig, 1995).

4.6. Evaluation of the Safety Standards for Cargo-Handlers

The role of 'human error' is very important. The acts of the personnel may adversely affect the successful performance of a particular task. The key points of the case are 'the equipment and the human operator' and 'the procedures the crew and management follow'. Understanding the consequences of every action affecting safety or the prevention of pollution clearly is the first step. Besides, decisions made at sea are as important as the ones made at shore. Nevertheless, safety can also be secured on the board and at the port area simply by writing the 'caution' phrases with capital letters (such as 'NO SMOKING', 'BE CAREFUL' and 'DON'T TAKE RISK') on the boards where every seafarer/port worker is able to see while working (Compton, 1996).

For on the board cases, the role of the captain is crucially important while making decisions about the emergency cases such as fire on-board. In order for captain to get the rid of the burning cargo (flammable dangerous cargo) from the board easily by throwing it away to the sea, the stuffing of the dangerous goods/containers must be made always on the top of the deck. Unfortunately, the cargo handling on board is sometimes lacking especially for the dangerous goods. Sometimes, the required label for dangerous cargo is

being removed from the dangerous good/container at the port of loading for receiving some cost reduction on shipper's account and the load is being stuffed underdeck which is very dangerous for all the cargo handlers. The improper handling at Turkey can be observed during the unloading operation of the dangerous cargo/container (especially at Haydarpaşa Port). The case will be studied at Chapter 5 'Growth and Problems of Turkish Major Ports: A. İzmir Port B. Haydarpaşa Port'.

5. GROWTH AND PROBLEMS OF TURKISH MAJOR PORTS: A. İZMIR PORT B. HAYDARPAŞA PORT

Serious problems can be observed at Turkish Ports such as insufficient storage capacity/port area, reception facilities, hazardous cargo handling, maintenance, training, port development and port administration. Some main problems of major Turkish Ports (İzmir Port and Haydarpaşa Port) have been studied as follows:

5.1. Port Capacity and Reception Facilities

A. İzmir Port

İzmir Port is situated in the Western coast by the Aegean Sea. İzmir is the third largely populated city of Turkey and it is a business center. The port has a vast agricultural and industrial hinterland. It is the main port for the industry and agriculture of Aegean Region and it plays a vital function in the fast growing ports.

Port Capacities (Theoretical):

Total Ship Receipt	:	3635 ships/year
Passenger	:	1246 ships/year
Cargo	:	2389 ships/year

Loading / Unloading Capacity:

The container terminal of İzmir has seven berths which have an alongside depth of 13 m. The total length of the berths is 1050 m. The terminal covers an area of 152.000 sq.m and the holding capacity is 7047 teus. Container operations at the quays are carried out by two gantry cranes of 40 tons capacity. The operations at the container yard are carried out by six rubber tyred transtainers and four reach stackers of 40 tons capacity together with 12 container forklifts of up to 42 tons capacity. Reefer facilities for refrigerated containers are also available.

Reception Facilities:

The port has a waste water purifying facility with a capacity of 35.000 cub.m in accordance with the IMO requirements. The most efficient oily-water separator system, with a mentioned capacity, is located at İzmir Port

B. Haydarpaşa Port

Haydarpaşa Port is situated on the Anatolian side of Bosphorus in İstanbul (a city with over 10 million inhabitants, the most important business and cultural center of Turkey). The port serves a hinterland which is the most industrialized area of Turkey. Also, it has a great importance being a gateway to the world as the biggest container port in the Marmara Region. The port constitutes an important gateway for the trade with the countries having a coast on the Black Sea. Further, being a convenient passage, it also represents a great importance for the transports between Central and North European countries and Middle East through Rhine-Main-Danube Canal and Black Sea. The port has two breakwaters so as to protect the vessels from all kinds of effects caused by the sea.

Port Capacities (Theoretical):

Ship Receipt : 2213 ships/year

Loading / Unloading Capacity:

Total : 4.913.400 tons/year

General Cargo : 3.585.300 tons/year

Container : 1.328.100 tons/year

Reception Facilities:

An oily-water separator system is available at the capacity of 10.500 cub.m/year to clean the bilge water in regular conformity with the IMO regulations (Günsoy, 1993).

5.2. Some Specific Problems and Suggested Solutions

A. İzmir Port

The main feature of İzmir Port is its enough wide breakwaters. İzmir Port is one of the few ports in Turkey where mother vessels are able to berth and sail. However, there is a problem being faced at İzmir Port about insufficient dredging facilities which are not allowing big/mother vessels having a draft exceeding 10 meters to enter the port. Because underwater peaks causing water depth to decrease down to 10,5-11 meters from 13 meters at the sea bottom of the port. High tonnage bulk carriers and high-tech container ships cannot enter the port and services are maintained by using feeder ships. The implementation of a project for having a smooth 13 meters deep water passage at the port can both contribute ship traffic and make it possible for high tonnage ships to use the port conveniently (Erkasap, 1998). Maintenance, theoretically, should be paid out of the annual income; dredging to maintain existing water depths is an annual maintenance charge, to be paid out of income. Basic economics of dredging is shown at Figure 5.1. (Bird, 1971).

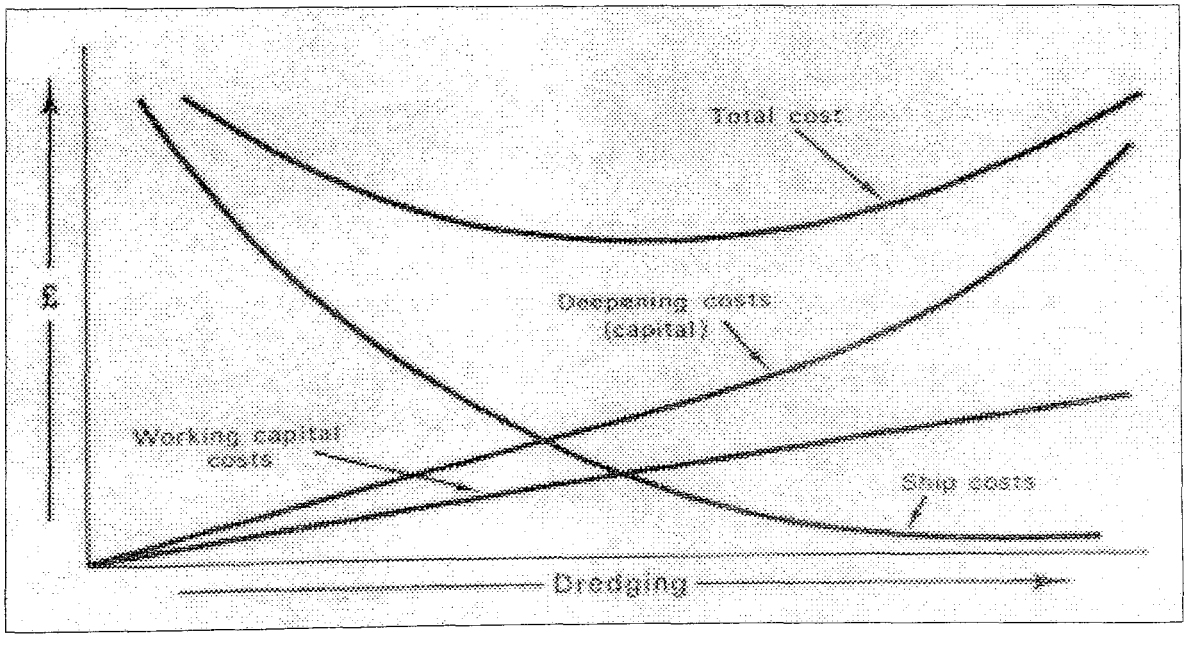

Figure 5.1. Economics of Dredging (Bird, 1971)

There are different optional techniques can be applied for the different port structures and most of them are spreading the maintenance costs to the wide periods with a constant and scheduled work which is allowing the port administration to maintain this facility in a cost-effective way.

İzmir Port is not suitable for expansion due to the current geographical formation of the bay area. It is expected that, İzmir Port will become unable to meet the regional demand by 2000. It is therefore necessary to start the construction of a new port which must be able to cope with the demand in the 2000s. İzmir Port has enjoyed a leading a role in the terms of handling capacity until now but the capacity lack has started to become an important issue in recent years. Transferring the port to the private sector can ever-increase the quality of the service rendered for the intensive ship traffic at İzmir Port. Nevertheless, it is quite uncertain whether a serious buyer could be found for such a huge port. Therefore, it is necessary to form an autonomous management which can involve the local public authorities and port customers. This system is under implementation at the ports such as London, New York, Rotterdam, Antwerp and Hamburg. They are all run by a city council formed by state departments, municipalities, vocational chambers, private and state-owned shipping institutions. This administrative method would be suitable both for İzmir Port and for the others (especially for Haydarpaşa Port).

B. Haydarpaşa Port

Haydarpaşa Port, as one of the major ports of Turkey, can no longer expand. Actually, it already pushed the limits so far. Because, as an indicator, an additional port area is now under operation for container storage purposes at Göztepe where is located around 20 km far from Haydarpaşa. Distance is causing the opeating costs so high due to the trucking operation/expenses. This is a problem of port installation which have not been conducted during the construction in the terms of cost/benefit analysis. Finding out new alternatives for Haydarpaşa Port is a prompt action to be taken because allocation of the resources/facilites are not dynamically efficient at Haydarpaşa Port.

In Turkey, in order for consignee to receive a cost reduction on the port expenses, the labels are being removed from the dangerous goods/containers during the sailing which is very dangerous for the cargo handlers both on-board and at the port area. Moreover, these goods/containers are sometimes being stored with the non-hazardous cargoes/containers (even sometimes with food stuff) at Turkish Ports (especially at Haydarpaşa Port). There is no area for dangerous cargo storing at Haydarpaşa Port and, therefore, are two ways to handle dangerous goods/container; either by conducting a sous-palan/ex-tacle delivery operation (unloading the dangerous good/container from the board right on the truck which can carry the load to the receiver's premises) or by carrying the load to Tuzla / Aydınlı Dangerous Cargo Warehouse where receivers can unstuff the container. The information has been collected during an interview of which the details are given in Appendix D (1).

Since Haydarpaşa Port is welcoming mostly the feeder vessels (port structure is not allowing mother vessels to enter the port), which are usually not the high-tech ones and subject to inspection/PSC, the quantity of the mixtures/substances/residues, subject to reception facilities, are respectively higher at Haydarpaşa Port than at İzmir Port. However, for an instance, the capacity of the oily water separator is only 10.500 cub.m.

Privatization is also needed at Haydarpaşa Port in the same manner as suggested for İzmir Port.

For the port development, it is now remarked worldwide that, subsidizing is not beneficial. In this respect, 'privatization' is the most convenient real life decision for Turkey. The keyword is 'self-maintenance'. At this point, there is also a question of profit-making dues or non-profit-making dues depending upon circumstances. If the economic location of a port and other factors promise a reasonable amount of success in advance, it may well be a sound policy on the part of the state or municipality to reduce the fees to a point that would mean a loss in the operation of the port for a period of years. By doing so; in the return, commerce may be started flowing through the gateway and kept flowing until it is of sufficient volume and momentum to maintain itself. Gemlik Port, a private port, has implemented this policy and there is not any increase at fees/charges for almost two years. Port has accomplished a development (Bird, 1971).

6. POLLUTION AND SAFETY MEASURES APPLIED AT TURKISH PORTS / SHIPPING INDUSTRY

The shipping business, ports and operations are very important international activities. Turkey boasts great geopolitical and geostrategic importance. Nevertheless, the developments of Turkish Shipping Industry are insufficient in the terms of current regulations and practices. Furthermore, Turkey faces heavy losses because of not being able to keep up with the international regulations/standards such as ISM, PSC and STCW. Therefore, it is necessary to initiate work to increase productivity in Turkish Shipping Industry and in Turkish Ports. To enhance the Turkish Ports and port operations; a ministry of shipping should be formed without losing time, the regulations are outdated and do not comply with international standards and today's requirements. Updating these regulations is a prompt need, education must be given utmost importance, either the existing laws should be enforced or new ones should be drawn up to prevent the disorganized urbanization which is affecting the Turkish coasts badly (therefore the ports).

6.1. Some Main Problems of Turkish Shipping Industry and Suggestions for Their Solutions

The main problems of Turkish Shipping Industry mentioned here and the solution suggestions for them have been evaluated together in the following sections.

6.1.1. The Launch of a Ministry of Maritime Affairs

The reconstruction of the Undersecreteriat of Maritime Affairs under the title of a 'Ministry' (Ministry of Maritime Affairs) is indispensable, if Turkey wants administrative

consistency. The launch of a ministry would monopolize the administrative power matters concerning safety and fire fighting and all related activities in the shipping practice on internal water passages and lakes. All the parties in the sector have some expectations in this regard. Soon reconstruction of the Undersecreteriat of Maritime Affairs under the title of a ministry will make efforts to solve the pending problems of Turkish shipping sector as its sole authority. The launch of such a ministry can fulfil the legal arrangements. (Turkish Shipping World, 1997).

6.1.2. The Privatization of Turkish Ports and Its Implications

The Privatization is needed at Turkey because it helps to carry out the developments efficiently. The advantages of privatization of the ports for Turkey are; they get run as a commercial enterprise and with flexible administrations aiming to maximizing the profits of ports. The disadvantage of privatization of the ports for Turkey is; they may not be operated to public advantage. The need of privatization of ports for Turkey can be explained as follows. The terminals are insufficient, the rails are old and the trains are slow. Railway transportation in Turkey has a very little share in the overall transportation business of Turkey. However, constructing a railway network between the interior parts of Turkey and the ports can allow the administration of Turkish State Railways to render a well-integrated transportation service (especially at container traffic). Turkish State Railways is facing heavy losses each year; it is compansating the loss / gap, affording the fuel for the trains, maintenance costs of the rails / stations and the wages of the workers. It tries to realize / achieve these payments from the income got from the port services which is, of course, only to some extent. Therefore, privatization would be suggested as a good solution for gaining profit and for attaining a maximum efficiency because the private sector has better facilities to render a port service. For an instance, in the case of ship grounding, which needs to be handled with an utmost care, it is best to transfer cargo of subject ship to another vessel. Turkish State Railways is unable to realise this transfer due to the its ships with incapable sizes. However, the private sector has enough large carriers and ships to carry out rescue activities. Another example can be given as; the old tug boats

of Turkish State Railways have extremely limited tugging capabilities. However, the tug boats of private sector are in much better condition. And as last example; the discharging operation of the load from the board of ships, especially bulk carriers, can be carried out by the private sector with a much shorter time than the Turkish State Railways (approximately five times shorter). All the political groups plus everyone in shipping sector are in favor of privatization. Nevertheless, it is observed that some privatization campaigns are not progressing smoothly. One example is the current privatization of ports belonging to the Turkish State Railways. The Turkish State Railways Administration invited tenders for the modernizing of their ports and for the purchase of new equipment by violating the decisions regarding privatization which had previously been made. The Chamber of Shipping (DTO) warned the administration about the adverse affects of their attitude, saying that inviting new tenders is against the nature of privatization and that they had to refrain from that practice. In fact, it is necessary to focus on privatization in all areas to be able to realize the ideal of maintaining profitable shipping organizations functioning productively with the help of administrative efficiency. From the economic point of view, using the profit coming from the port services to the development of the ports can be achieved only by 'privatization'. In this respect, 'subsidy' will be out of question because there will be a 'self-maintenance'. Gemlik Port (GEMPORT) is a very good example that is proving the productivity with efficiency. (Turkish Shipping World, 1997). The information has been collected during an interview of which the details are given in Appendix D (2).

6.1.3. The Secondary Ship Registry

Since the costs and competition is ever increasing at the international sea traffic, world merchant fleets are trying to trade under easily registered flags such as Panama, Liberia and Cyprus. The preventive action against this monopoly is to implement Secondary Ship Registry like Norway, Germany and Finland. The aims of this system are; to prevent the ships of Turkey to escape other countries' registrations, to attract other / foreign ships to the registration of Turkey and to increase the competitiveness against other merchant fleets. Therefore, realization of the secondary ship registry is very important for the Turkish Shipping Industry. The Secondary Ship Registry will be an

important stage in the effort made by Turkish shipowners to increase their bargaining power, to protect their market shares, and to find new markets. With the secondary registry, the interests of the financier, the shipowner and the operator will be protected. So that, many advantages can be gained, such as employing foreign seamen, ease of obtaining loan against ship lien, and better relations with auditing and classifying institutions. So that, financing, personnel employment, tax, insurance and accounting practices will run smoothly without being handicapped by outdated laws and regulations. In the end, this will create resources for the industry. This shows the government the proper way to support the shipping industry without the need of offering subventions or incentives. Furthermore, if this arrangement can be achieved, Turkey can gain an international respect for security and financing matters, and the open registry can make a significant contribution to the national economy (Turkish Shipping World, 1997).

6.2. The Reception Facilities at Turkish Ports

It is clear that there is a lack of reception facilities in many ports of parties to MARPOL 73/78 (if we underline it again; facilities for receiving ship-generated wastes are required by the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the protocol of 1978 relating thereto –MARPOL 73/78-, the wastes include oil, chemicals, sewage and garbage) including Turkey.

For a long time, discharges of wastes from ships into the sea have been a very real problem all over the world. Although signatories to the MARPOL 73/78 Convention are obliged to provide adequate port reception facilities for dirty ballast water, tank cleaning slops, waste oil and garbage, too many ports are still lacking facilities of the waste disposal arrangements. The interesting point is that, reception facility operators have also been known to overcharge for their services and advertise services that they are incapable of providing (like the ones in Turkey). Establishing waste-processing plants in ports sounds as a great solution like all the high-cost treatment projects which offer effective solutions to the problem. However, finding out the low-cost treatment projects is needed at the port

environment of developing countries and of Turkey. There are ways to keep costs down, because the reception of ship-generated waste is not so complicated as it first be seen. Most often, reception of ship-generated waste is run by private or public waste collection companies (in Turkey) whose economies are completely separated from that of the ports and who are inclined to make a profit of the waste they collect (Olson, 1996).

6.2.1. Some Technical Solutions for Processing Ship/Port-Generated Wastes

Engine Room Waste

Oily engine room waste may be collected by the use of tank-trucks, barges or other mobile tanks by the side of ships which is not very expensive. The waste should be collected alongside. The sludge should ideally be mixed into the fuel oil used in garbage incinerators or cement kilns where the high temperatures will take care of most of the harmful components.

Oily Ballast and Tank Cleaning Water

Oily ballast and tank cleaning waters are usually not contaminated by foreign matter and could easily be recycled by the oil refineries. Reception could be done by the use of pipelines at the jetties. Clean ballast from segregated tanks should be allowed to be discharged in port waters if not more than the permissible oil level of 15 ppm as per definition in the MARPOL 73/78 Convention.

Noxious Liquid Substances in Bulk

Cargo residues and tankwashings from chemical carriers are best handled by the consignees.The shipowners should have to recover the costs of sending the residues to special destruction plants by adding to the freight rates (therefore, consignees make reception facilities for noxious liquid bulk substances available free of charge).

Noxious Substances in Packaged Form

A receiver of the cargo somewhere down the line can take care of the residues if need should arise. If the receiver does not take action the port authority must, but the costs would be high.

Sewage

Sewage should be discharged to the shore only in some specially addressed areas.

Garbage

Garbage will be the most difficult ship generated waste to discharge in the future. Ports can require ships to separate garbage. Unseparated garbage will be expensive to dispose of and thus to discharge (Olson, 1996).

6.2.2. Financing Reception and Treatment

The illegal discharging of the mixtures/substances into the sea is polluting the marine environment because of the high cost (since many facilities charge fees are so high, ships prefer/tend to find less environmentally friendly ways of disposing of their wastes) or unavailability of the shore reception facilities. When this is the case, we can come to a conclusion that, the economic/financial aspects must be taken into account immediately. For this purpose, the options for cost recovery must be found out by collecting all the data on financing schemes for reception facilities already in use or considered for future implementation by the governments. Then the information can be used to develop guidance on different options for financing of reception facilities. Some systems under application worldwide are listed as follows:

The Direct Cost Recovery System

Ships either order the reception directly from a waste collection company and are invoiced by that company or from the port authority which forwards the order to such a company. Some ports operate their own collection companies. The Direct Cost Recovery System is applied in Turkey.

The No Special Fee System

Costs of reception and treatment or disposal are included in the harbor fees. The idea behind the system is that ships will use what they have already paid for. Norway is applying this system.

The Free of Charge System

Costs of reception and treatment or disposal are paid by the state or the community. The idea behind the system is that ships will discharge their wastes to reception facilities if they do not have to pay anything for this (Olson, 1996).

6.3. Shipping Education in Turkey

The foundations of "Türk Deniz Eğitim Vakfi" (TÜDEV) / "The Turkish Maritime Education Foundation" and "Turkish Marine Environment Protection Association" (TURMEPA) have been evaluated in the terms of their contributions to the proper implementation of the requirements of Standards of Training, Certification and Watchkeeping (STCW) Convention in Turkey as follows.

6.3.1. The Activities of "The Turkish Maritime Education Foundation" (TÜDEV)

'The Turkish Maritime Education Foundation' (TÜDEV) was founded on January 7, 1993 with the financial and moral support of 52 shipowners who are the members of the Chamber of Shipping. TÜDEV opens and runs educational facilities to train seamen who will serve Turkey's shipping industry and creates employment opportunities for them. The foundation also supports existing educational facilities by assisting them in improving their educational quality and buildings. Currently TÜDEV has 72 members on its board of trustees and maintains its activities.

STCW (1978, 1995), which has been translated into Turkish at İTU Shipping Faculty by TÜDEV, means the standardization of training, administration, certification and examination procedures and training is the key word at the full name of this Convention. Turkey has recently given the necessary importance to this Convention and re-arranged the course programs for the seafarers accordingly with the help of 'The Turkish Maritime Education Foundation' (TÜDEV). Since, in accordance with the revised STCW Convention, Port State Control inspectors may be requesting the Turkish seafarer to demonstrate the related competency at the place of duty, the necessary education must be given to Turkish seafarers as per required courses (STCW). For this purpose, TÜDEV has established the TÜDEV Educational Center offering a course program in accordance with the Standards of Training, Certification and Watchkeeping (STCW) Convention. TÜDEV Educational Center offers an educational program including a two-year theoretical program and a one-year practice at sea to train deck and mechanical officers as per STCW. TÜDEV has also established a school, which offers education in shipping management under a department of Dokuz Eylül University began training 35 deck officers complying with STCW standards. The seminars / panels of "New Changes Introduced by the 1995 Revision of the STCW 1978 Convention", "The Practice of the International Safety Management (ISM) Code" and "The Practice of Compliance with the Latest Revision to the STCW' 95 Convention" have been organized by TÜDEV in recent years (Turkish Shipping World, 1997).

6.3.2. The Activities of "Turkish Marine Environment Protection Association" (TURMEPA)

Turkish Marine Environment Protection Association (TURMEPA) describes its aim as "promoting environmental awareness among people" and the foundation has been striving for serving this purpose since 1994. The executives of the Foundation believe that the seas surrounding the world cannot survive without the support of human beings. The main aims of the Foundation are producing international solutions to maintain the cleanliness of the sea and spreading its ideas in various international platforms to ensure lasting achievements. The Foundation is trying to provide better cooperation among the shipping and tourism sectors and educators by continuously expanding the scope of its educational program in order to promote environmental awareness among people. The Foundation is currently making efforts to initiate an Information Center to base its activities on scientific methods for increased efficiency. The Foundation has an archive storing all kinds of information regarding the sea which will turn into a data bank open to individuals and organizations. One of the primary targets of TURMEPA is to form a fleet composed of various types of vessels. As of the end of summer of 1996, the marine sweeper DENİZTEMİZ I (a vessel outfitted with all the necessary equipment and means for sweeping solid and liquid waste and fighting fires at sea and on shore) anchored in the shore of Antalya and cleaned over 15 tons of organic waste. Since March 1997, DENİZTEMİZ II has been in service in the Bosphorus, where it contributed to the prevention of pollution in the region. The vessel has a deck size of 18 meters and 6 meters in width. It both fights pollution and is instrumental in fighting fires (Turkish Shipping World, 1997).

6.4. Models for Turkish Shipping Industry

In the case of evaluating the openness/liberalization at shipping sector, American Shipping Policy and Norwegian Shipping Policy have been analyzed separately and Norwegian Shipping has been suggested as a model for Turkish Shipping.

6.4.1. American Shipping Policy

In 1997, the world merchant fleet grew 2,9 per cent, while the world trade growth rate was 2,2 per cent. One effect of the difference between supply and demand on freight markets is that most countries are subsidizing their maritime sectors. On the other hand, the OECD Marine Transport Committee tries to liberalize and homogenize the world markets. While EU countries, Korea, Japan and Norway have signed the OECD treaties; the approach of U.S.A. is still negative. OECD treaties (suspending the support measures/subsidies to the shipping/ship building industry worldwide) have been signed by EU Countries, Korea, Japan and Norway but U.S.A. is negative about it. Although U.S.A. was fully supporting this treaty, now she is dragging her feet to act positively. Besides, U.S.A. is also implementing commercial restrictions to the countries, whose governments are benefiting from support measures / subsidies, while keeping on to have her new ships built with these support measures / subsidies (The shipbuilding industries of Korea, China and East European countries are still benefiting from support measures). As per estimations, the capacity of only 70 per cent of the world shipbuilding industry will be in charge in 2000.

Since the reform studies for 1984 U.S. Shipping Act is still (surprisingly) going on and the legal restrictions of Jones Act (the clause of having the American cargoes carried only by the vessels flying with U.S.A. flags) is still being implemented, it is easy to conclude that; the liberalization is obviously lacking in U.S.A. Moreover, other countries adopting these implementations of U.S.A. have been punished by U.S.A. severely. For an instance; in 1997, American ports were banned to Japanese lines simply because of the strict rate policies implemented at Japanese ports. In 1996, U.S.A. rejected the liberalization suggestions about her shipping policy and objected the discussions forwarded by other countries regarding the flexibility possibilities on Jones Act (not allowing foreign competitors/vessels flying with the flags of other countries to carry the American cargoes). It seems that, serious commercial conflicts will be going on between U.S.A. and other countries (Mançer, 1998).

6.4.2. Norwegian Shipping Policy / The Right Model for Turkish Shipping Industry

Shipping is a crucial sector for Norwegians. Norway's shipping industry developed in a way which Turkey has long wished to achieve. Rather than having a diversified fleet, they prefer having a limited number of vessel types that suit their need most. Another achievement of Norwegians concerns the great achievement they have had in improving their national flag. The country has a population of just 4,5 million. There are merely 70 thousand families involved in the shipping business.

Norway is supporting privatization and free competition. The government encourages businessmen and supports them. They set it their main target to promote their national flag as much as possible. So to perform all this work in perfect condition, they formed a ministry of maritime that would take charge of various issues which had previously been distributed to a number of ministries. In Norway, there are no direct government subsidies to the shipping sector. Instead, the government grants tax reductions. Ports in Norway are either owned by the private sector or by an autonomous organization formed by the municipalities. All the ports can determine their own tariffs to survive in competition. They do not need to have official confirmation for their tariff to take effect. Nevertheless, there are a number of rules that they must take into account. For example, they must apply the same prices to all flags. If they violate this rule, they may face legal prosecution. The Norwegian Government supports the shipping sector in a following manner: The government grants an exemption on the income tax for the sailors of Norway with an intention to ensure a just distribution of the national income. As a result, the country does not only supports her sailors, she also leaves enough headroom for her merchant fleet to continue her fast pace of development.

Norwegians devised a secondary ship registry in their country. As a result, the Norwegian merchant fleet has now become the largest fleet worldwide in terms of national flag vessels. Norway is now among the best performers of this proven system (Secondary

Ship Registry + National Flag Vessels = Success). Norway adopts a cautious policy as regards secondary ship registry as part of her plans to develop her shipping industry. For example, while foreign vessels are given the right to obtain secondary ship registries in Norway, the government imposes additional rules in order to protect the Norwegian flag vessels. Norwegians impose cabotage restrictions on foreign ships yet they offer tax exemption at the same time. While they grant work permits to foreign sailors, they require vessels to have Norwegian captains. All those decisions consistently serve the purpose of developing the merchant fleet of the country.

Turkey must accept the openness and adopt the development steps taken at Norwegian Shipping to her shipping industry, not the American model. Because there are similarities between Turkish Shipping Industry and Norwegian Shipping Industry in the terms of having their industries developed with the same stages. In other words, Norway has experienced the same stages that Turkey has tried to initiate. Some of which are; launching a ministry of maritime affairs, privatization, implementing secondary ship registry, launching a free trade zone for the Turkish ship yards, removing the outdated rules in the national regulations and making them compatible with international regulations. The advantages of 'launching a ministry of maritime affairs', 'privatization' and 'implementing secondary ship registry' have been studied at the section of 'Some Main Problems of Turkish Shipping Industry and Suggestions for their Solutions". Therefore, among all others, the Norwegian system is the one that sets an example for Turkey. Once Turkey adopts mentioned same development steps, the Turkish Shipping Industry will grow rapidly. It will also increase the one per cent share it takes from the shipping trade volume of the world (300 billion U.S. dollars) that corresponds to three billion U.S. dollars and maybe in future will realize huge earnings exceeding 30 billion U.S. dollars like Norway. In order to achieve a trade volume that huge, merchant fleet of Turkey must reach 30-40 million DWT (provided that the secondary ship registry is realized).

Turkish shipping industry must give even more importance to its own flag, following the Norwegian example. Turkey would like to see her merchant fleet develop

with vessels sailing under her national flag and become one of the largest ones like Norway. Because of this reason, the Norwegian example is the one that suits Turkey best. In order for Turkey to compete well in the world market, an increase at national flag vessels of Turkey is needed. It can be achieved by giving Turkish flag vessels as much attention as possible.

It is hoped that Turkey can achieve compliance with international practices and develop her shipping the way Norway has. If Norway having a population of 4,5 million can get a 10% share from the international shipping sector, Turkey having a population of 65 million people and one million families involved in shipping should be able to do even better than that. It is expected the government to do its best to accelerate this process by launching a ministry of maritime affairs, implementing secondary ship registry, removing the outdated rules in the national regulations and making it compatible with international regulations. When these steps are taken, all Turkish port administrations, local authorities, sea tourism, ship building industry and fishermen can come together and act in coordination to realize the target of grabbing a better share from the world's shipping trade in the 2000s. Consequently, the Norwegian example stands out among others as the one that must be adopted by Turkey.

6.5. Cost / Benefit Analysis for Upgrading the Existing Standards at Turkish Shipping Industry in the Case of Compliance with the Provisions of International Safety Management (ISM) Code

According to the estimates, in the last two months of 1998, around 70 per cent of the world merchant fleet will qualify for ISM Certificate. This figure shows that, as of second half of 1998, the remaining 30 per cent of the total merchant fleet tonnage will not be able to enter ports, meaning the end of their life of business. As of the second half of 1998, Turkish shipping companies and vessels must also have the ISM Certification. If the required formalities can not be implemented in advance, the shipowners will either hand over their ships to ship operators having the certificate or have to abandon the business.

Alternatives: Compliance
Non-Compliance

Over the next few years, the system will affect all ships and, therefore, shipping companies. In this respect, ship / vessel is the unit for which one can charge the cost of standardization (compliance with the provisions of ISM). Evidence of compliance with the provisions of the Code, documented through a SMS (Safety Management System) Manual, will be provided through a Document of Compliance issued to the company and a Safety Management Certificate issued to the ships of the company under the authority of the flag state. Periodic verification will be carried out by the authorities. ISM Code will effectively reduce the need for Port State Control (PSC).

The cost of one alternative is assumed to be the benefit of the other alternative and benefit of one alternative is assumed to be the cost of the other alternative. Complying with the code incurs costs. An important cost element is the cost of time. For most companies, it takes around between six and 18 months to put an SMS in place. Cost of Compliance with the Provisions of ISM and Benefits of Maintaining the Right of Trading and Costs of 'Non Compliance' Alternative have been evaluated at Table 6.1. and Table 6.2. (OECD Reports, Turkish Shipping World, 1997)

The estimated / average value of 'ship itself' has been obtained from the Chamber of Shipping by considering the vessel types as 'tankers (crude and clean carriers)' and 'bulk carriers' and the vessel age as 5 to 10 years old during sale / hand-over. The details are given in Appendix C.

Since maintaining the right of trading and the cost of 'non-compliance' alternative incurs so high (around 35 million U.S. dollars per vessel per annum), 'compliance' alternative becomes less costly (around 2 million U.S. dollars per vessel per annum). According to the estimates, in the last two months of 1998, around 70 per cent of the world merchant fleet will have the chance for obtaining the ISM Certificate (the remaining 30 per cent of the total merchant fleet tonnage means the substandard ones). For Turkey, the percentage is worse; it occurs around 60 per cent because most of the ships constructed in

Table 6.1. Cost of Compliance with the Provisions of ISM (OECD Reports, Turkish Shipping World, 1997)

Procedure	**Cost** (*approx.*) *(million U.S. dollars per vessel per annum)*
Compliance	2
- Developing Safety Management System (SMS), (Time Spent, Quality Assurance, Management Reviews, Inspections, etc)	

Table 6.2. Benefits of Maintaining the Right of Trading and Costs of 'Non Compliance' Alternative (OECD Reports, Turkish Shipping World, 1997)

Procedure	**Benefits** (*approx.*) *(million U.S. dollars per vessel per annum)*
Maintaining the Right of Trading	30
- Ship Itself	
Non-Compliance	5
- Disbursements Account (Penalties after Inspections, Port State Controls (PSC), Demurrage, Out of Service Time, Time Spent on Customer Complaints, Liability Claims, Cargo Value, etc.)	
TOTAL	35

Turkey are not in conformity with the required standards. Around 1177 vessels are operating at Turkish Merchant Fleet and 705 vessels out of it have been constructed in Turkey where the remaining 472 vessels have been imported. Since the remaining 472 vessels were newly built (while imported) as per international standards, it can be said that around 700 vessels may be in need of obtaining this certificate as per the most pessimist scenario. If the shipowners of these vessels prefer to obtain this Certificate, they will be in a position to afford its cost (around 2 million U.S. dollars per vessel per annum) which will mean around 1 billion 400 million U.S. dollars for the Turkish Shipping Industry. On the other side, if the owners of these ships do not prefer to have it (35 million U.S. dollars), then it means around 24 billion and 500 million U.S. dollars (for 700 vessels as per the most pessimist scenario) for the Turkish Shipping Industry. Even as per an optimist scenario, if only 30 per cent of the Turkish Merchant Fleet is subject to upgrading as per internationally estimated ratios, it costs 12 billion 355 million U.S. dollars for 353 vessels. Both scenarios for 'non-compliance' alternative do not seem reasonable. Therefore, Turkey has no alternative but (her shipping industry) to have this certificate at once. Otherwise, big losses are on the account of the economy.

6.6. Safety and Environmental Issues of the Straits at Marmara Sea

The region of the Turkish Straits, which is the only natural way separating Europe and Asia from each other and causing West and Central Europe, the countries of the Black Sea, the Caspian Sea and also Central Asia reach to Mediterranean, is under continuous threat by the sea traffic load increasing every single day. Of course, world seas, straits, channels and inland water ways will help mankind and shipping trade; however, these issues considered to help mankind should not threat human health and security (around 13 million people is living at this region).

6.6.1. Environmental Features of the Region

Many local characteristics such as how and where the currents and winds affect the ship maneuverings, where the local sea traffic is intensive and where to anchor in the event of a fault, are related with the local conditions;

Physical and Biological Features of the Environment and the Treatment of Natural Resources

The Bosphorus is a naturally twisted water way with strong currents. The ships crossing the Bosphorus in the direction of north - south or south - north have to change the route for at least 12 times. The region allows so many fish species to flow through one side to other, so that they migrate periodically as per their living conditions. Therefore, we can easily call this region as biologically rich one (of course, not as same as in the past).

Meteorological and Climate Features

The weather is calm in the summer time and is cold in the winter. Its meteorological nature changes by seasons even by days. Distance of vision affects the sea traffic in the Bosphorus seriously. Most of the shipwrecks occurred in the Bosphorus happened when the distance of vision fell to 0.5 mile or below because of fog or blizzard.

Geological Features

Morphologic nature has caused natural folds and sharp turns (at some places 45 or 80 degrees). Since the region is located on a tectonic part of the earth crust (quite dynamic one), earthquake bells have rung all the time.

Hydrological Features

In the Bosphorus, the speed of the upper current flowing from Black Sea to the Sea

of Marmara changes between 0.5 mile / hour and 4,8 miles / hour under normal conditions. Sometimes in this area, the strong north winds increase this up to 6-7 miles / hour. The Bosphorus main upper current turns backwards because of the strong south-west hurricanes and this is called Orkoz Current. Besides, in the bays eddy currents occur in the other direction of main upper current. These currents are very helpful for environmental preservation, because as a result of a pollution, say; an oil spill, these strong currents carry the oil / pollutants properly downstream / upstream.

Living Species at Seas and Inland Water Resources

In the past, so many fish species were living at the region but now it is hard to see the most of them. Nevertheless, there is still a huge fish flow in the Bosphorus. It is as intensive as sea traffic because they are migrating to other regions.

6.6.2. Navigation through the Straits at Marmara Sea

The Turkish Straits, and in particular the Bosphorus, are among the most difficult and dangerous to navigate. As the only outlet to Black Sea ports and oil refineries, the Bosphorus, where several sharp bends and strong currents take place, is heavily congested. Congestion increases the chance/possibility of accidents. Unfortunately, so-called friend countries still raise their voices and make objections by claiming that Turkey breaches free passing principles of Montreaux Treaty of 1936 when Turkey attempts to apply certain rules such as controlling traffic bands, speed limitations, dangerous cargo, prohibiting disposal of pollutants. Nevertheless, during the 53rd General Assembly Meeting of BIMCO, as per the conversations carried out among the members, following arguments were mentioned: "We do not recommend Turkey to change Montreaux Agreement, which enables the world trade ships to pass through the Turkish Straits free. This is unacceptable." And another member remarked; "However, no one can make any objection to your just reasons for preventing environmental pollution, and environmental protection". This is the right point that Turkey can strive for having other countries accepted the significance of the safety measures to be taken at Turkish Straits and her powers with

respect her sovereignty rights which goes along with the traffic control operation. Turkey has carried out several international marine conferences, meetings and increased the number of the friend countries / partners of the Turkish shipowners who are appointed in international organizations. It can clearly be said that, good relations between countries open doors. All the countries give their supports compulsorily about preventing environmental pollution, and environmental protection. Turkey should call all the countries of the world in order to protect the Turkish Straits and the surrounding areas which shelter millions of Turkish people and citizens of many countries. There are certain activities which should be carried out before starting transfer of Azerbaijan and Caucasia petroleum through Turkish Straits. Turkey should use films and photographs of the accidents of "Independenta" and "Nasia" tankers as firm evidences for environmental issues. Union of World Tanker owners, Tanker Insurers and all other international organizations, which may be affected from the pollution of the straits and the surrounding areas, may support Turkey in environmental protection issues. Freedom of the transits through the Turkish Straits expressed in the Montreaux Treaty covers specifically those transits which are done solely for the purpose of transiting without causing any harm. If a transit becomes harmful or if the coastal country evaluates it as harmful, the coastal country doubtlessly has the right of intervening with the transit in a stable manner. Therefore, Turkey has the right of intervening in the transit of a vessel if the transit causes harm or if she believes that it does. Turkey can exercise all her rights of sovereignty on the vessel if it insists on transiting. And also, therefore, if state executives interpret the rules of the Montreaux Treaty against Turkey in a restrictive manner, it is a clear violation of international law. Turkey has the right to oppose and intervene the transportation of Caspian Oil through the Turkish Straits via tankers, on the grounds that such a transit would threaten the safety of the country. In this respect, Turkey must put forward this idea very clearly and state that if, because of an international law, the safety of Turkish people is endangered and the sea environment possibly ruined, that international law is not applicable to Turkey. The Turkish Government must further state that the transit of oil tankers through the Turkish Straits can cost directly to İstanbul, one of the most beautiful cities in the world, by endangering around 15 million people living there. The government must not make any compromise on these claims. The rules of the Montreaux Treaty and widely accepted rules of international legislation give Turkey the right to do so (Baykal, 1997).

7. SOCIAL COST/BENEFIT ANALYSIS OF MARINE POLLUTION AT TURKISH STRAITS AND OTHER ENVIRONMENTAL EFFECTS

The effects of tanker accidents on environment and human nature and the social cost/benefit means of the case have been studied at this chapter. The UNIDO (1972) Guidelines considers Cost/Benefit Analysis as a tool for organizing information useful to decision makers (Marks, Papps, 1992) or it can be considered as a practical way of assessing the desirability of an activity (Beesley, 1965). The ship traffic at the Turkish Straits (Bosphorus and Dardanelles), where an accident is a very possible risk at any time, is the creator of the substantial environmental problems such as marine pollution, air pollution and loss of habitat. All these and the others are on the account of the people living at the surrounding area, the crew on the board, the owner of the vessel, etc. In this respect, social cost/benefit analysis of marine pollution at Turkish Straits and other environmental effects have been studied at this chapter by considering that social cost/benefit analysis is not a technique but an approach which provides a rational framework for project/activity (shipping) choice using national objectives and values. In this respect, private, social and environmental costs have been evaluated. In the terms of social cost/benefit analysis, externalities came into question due to the environmental pollution. Externalities mean the uncompensated costs or benefits of an economic activity (Samuelson, 1989). Marine/environmental pollution at the Straits is the externality of the shipping activity and the negative effects of this externality are on the account of the people who do not get involved in that economic activity such as fishermen, people living at the shores of the Straits and people walking near the shore. There is another point we can come across here that; a country, whose vessel discharging her bilge water/oily mixtures to the sea at the Straits without any reception facility, plays the role of 'free-rider'. Before studying further steps of the case, it is worth to underline that; the environmental costs should be calculated by estimation because there is no price that exists in the market for valuing environmental factors which are shared by everyone (Turkish Straits). When performing a social cost-benefit analysis, since there is a social point of view, one should take into account the interests and objectives of the public (welfare, security, etc.) (Türköz, 1996). It can be said that these parameters would be the pathways

of conducting a detailed study with further analysis. In order to have a smooth compensation application at the Straits, Turkey must first define her rights clearly and must act accordingly at international platforms (Dasgupta, Marglins, Sen, 1972).

7.1. Environmental Impact Assessment (EIA)

The EIA might include an economic valuation of environmental effects, depending on decision-makers preferences and data characteristics. Attention should be given to risk and uncertainty. From the start, the EIA should have a distributional focus: who benefits from environmental improvement and who faces the social costs of environmental degradation ? This refers to the distributional impact of compensating projects. In social cost/benefit analysis (SCBA), two criteria are taken into account – efficiency and equity. SCBA only requires that policy-makers are able and willing to express income distribution goals by valuing net benefit streams differently depending on who is affected. Cost/Benefit Analysis (CBA) prescribes which effects to include and which to exclude, and especially how to value them in the light of assumed social welfare goals. Valuation (monetarization) refers to the prices to be applied to environmental effects and prices used for man-made goods. However, environmental goods and services are not traded in markets and no prices are directly available (James, 1987). Individuals may be unable to put money values on certain important categories of environmental costs because of incommensurabilities (life, health – due to the stranding of a tanker). Many impacts on environmental amenities, one of the two determinants of social welfare, fall into this category. And also the free-rider problems (Turkish Straits) are leading to undervaluation of environmental amenities. If a quantitative assessment of ecological effects is impossible, it is in most cases possible to give qualitative indications. In other words, if ecological effects can not be valued easily due to the indirect relation with economic productivity (if complex ecosystems are affected such as Turkish Straits), then one must take into account the incorporation of risk and uncertainty. In that case, a positive Internal Rate of Return can be weighted against high risks or significant uncertainty (Pelt, Kuyvenhoven, Nijkamp, 1990).

The Straits (Bosphorus and Dardanelle) are the only natural ways separating Europe and Asia from each other and causing West and Central Europe. The countries of the Black Sea, the Caspian Sea and also Central Asia reach to Mediterranean via these straits. Economic importance of the Straits arises from their trade-way character and social importance of the Straits arises from the effects / impacts of the accidents / oil spills on the surrounding living environment.

7.1.1. Impacts / Effects of Accidents / Oil Spills on Environment and Living Creatures

Today, while the sea traffic passing through the region of Turkish Straits is very useful for the world generally, it is threatening not only the safety of life, health and environment of people living in this region but also the health of the other creatures. In the region of Turkish Straits, through where over 45 thousand of ships pass per year, there have been about 500 accidents in the last 50 years and the results were very frightening. Crashing to land can cause not only serious damages to buildings, but also deaths. Other creatures, such as fishes and birds, can also be affected badly. Fishes and other marine creatures can die due to the big oil spills at the Straits (the birds can also be affected indirectly). Moreover, there can be an air pollution resulting from the sulphur emissions of the ships at the Straits. Although shipping overall is not a major contributor to total sulphur emissions in Europe (for example, some estimates show that they only represent around two per cent in northern Europe.), there are data to show that these emissions are critical in certain congested areas such as the English Channel, the entrance to the Baltic, Gibraltar and, most probably, the Turkish Straits. This kind of air pollution also has adverse effects on the surrounding living environment at the Straits.

The impacts / effects of an accident / oil spills on environment and living creatures can briefly be listed as follows; Loss of property and human life can be seen after a tanker accident. Oil can pollute the coastline and the living environment. Fishing and tourism can be affected and an economic loss can be seen by the fishermen and concerned persons. Oil

can cover the feathers of the seabirds and affect the thermal insulation which results with deaths. Required level of sunlight by the marine organisms can be absent because the oil can cover the surface. Oxygen demand of the marine organisms increase because oil can cover their respiratory surfaces. Toxic effects on metabolism can be seen on marine organisms such as improper functioning of nerves and brains. Abnormal feeding, growth and behavior of marine organisms can be observed due to the petroleum concentrations in the water between 0,01 ppm and 10 ppm. Deaths of marine organisms due to the direct contact to the dissolved components can be observed where the petroleum concentrations range between 10 ppm and 20,000 ppm. Oil sunk to the bottom can damage to fish eggs and marine life at the sea bottom. The passenger transportation at the Straits can be affected. It may have negative impacts on boat services because of a possible decrease at the number of passengers. The ports can be polluted. Port services can be suspended for a while. It may cause congestion at the port entries (Türköz, 1996).

Methods for Cleaning the Oil Spills

The techniques for cleaning the oil spills can be briefly listed as follows: Mechanical barriers, air barriers and chemical barriers can be used for the prevention of the spreading of oil/oil products and its control. The oil/oil products can be collected with manpower, mechanical collectors, sorbents and saturators. Fire, biological treatment and dispersants, such as surface activated agents, can be used in order to exterminate/carry away the oil/oil products, which could not be collected (Kocasoy, Borak, 1992).

7.2. Transit Passing and Tanker Accidents through the Straits in the Sea of Marmara

A disaster is right on the way at the Straits due to the vessels transiting through while carrying big amounts of hazardous cargoes, oil/oil products. If a medium-sized LPG tanker explodes at the Straits, the surrounding area with a 20 km radian can be affected severely.

Some of the important accidents in the Bosphorus are listed as follows:

December 14, 1960; As a result of collision of the two tankers named as M/T World Harmony (Greek) - M/T Peter Zoranic (Yugoslavian) 20 seamen including the captain died, tons of petrol poured into the sea and fire started.

November 15, 1979; As a result of collision of a tanker and a dry cargo ship named as M/T Independenta (Roman) - M/T Evriyali (Greek) 43 seamen died, glasses of thousands of houses in Kadıkoy area crashed as a result of the explosion, damages occurred, 100 thousand tons of crude oil in Independenta burnt for days, poured into the sea and caused pollution,

October 28, 1988; Tons of liquefied ammoniac from tanker of Panama, M/T Blue Star, collided into a Turkish ship, M/T Gaziantep, poured into the sea and pollution occurred. Tons of ammoniac gas spreaded over Sea of Marmara because of the wind blowing from the north, but there was no group deaths,

November 14, 1991; Ships named M/V Madonna Lily (Philippines), carrying dry cargo, and M/V Rabinion 18 (Lebanon), carrying sheep, together with the ship itself, are in the deep of Bosphorus.

March 13, 1994; As a result of collision of M/T Nassia (South Cyprus) and M/V Shipbroker (South Cyprus) 13 thousand 500 tons out of 600 tons of crude oil burnt in the fire continued four days five hours 40 minutes and caused air, sea and environmental pollution, 29 seamen died, the Bosphorus stayed close to the sea traffic for a long time, hundreds of ships left in the entrance of the Straits and transport in the city life has been affected greatly.

The rule of cruising on the right side started in the Bosphorus has started after the incident of 'M/T Nassia – M/V Shipbroker' on March 13, 1994 (Turkish Shipping World, 1996).

The reasons for casualties through the Straits can be listed as follows:

The Ships not having a Pilot

50 per cent – 60 per cent of 120 - 130 daily sea traffic of the Bosphorus have a pilot. Usually the ships not having a pilot cause accidents.

Natural Structure

The Bosphorus is a naturally twisted water way with strong currents. The ships crossing the Bosphorus in the direction of north - south or south - north have to change the route for at least 12 times (at some places 45 or 80 degrees).

Current

In the Bosphorus, the speed of the upper current flowing from the Black Sea to the Sea of Marmara changes between 0,5 mile / hour and 4,8 mile / hour under normal conditions. Sometimes in this area, the strong north winds increase this up to 6-7 mile / hour. The Bosphorus main upper current turns backwards because of the strong south-west hurricanes and this is called Orkoz Current. Besides, in the bays eddy currents occur in the other direction of main upper current.

Distance of Vision

Most of the accidents occurred in the Bosphorus happened when the distance of vision fell to 0.5 mile or below because of fog or blizzard.

Local Conditions

The pilotage is crucially important at the Straits. Because, many local characteristics such as how and where the currents and winds affect, how the ship maneuverings are affected, where the local sea traffic is dense and where to anchor in the event of a fault, are known well by only pilots.

Fault and Deficient Equipment

In the considerable amount of the accidents occurred in the Bosphorus, defect of the engines, defect of the rudder or deficiency in the cruise equipment or an appropriate situation were seen as the reasons (Turkish Shipping World, 1996).

Types of the accidents can be listed as 'collision' (striking another ship), 'grounding' (touching sea bottom or touching an underwater wreck), 'stranding' (hitting, touching to the shore, house, etc.) and 'fire'(Akten, 1992, Türköz, 1996).

7.3. Costs of Tanker Accidents through Historical Data

In the terms of calculating the environmental costs (by assumptions / estimations), the past data of the accidents occurred can be used for estimating the effects of the oil spills (studying the relation between accidents and transit passing) (Türköz, 1996). The list of the main accidental pollution incidents occurred between 1967 and 1994 including the cost of damage for some of those and the quantity of the oil/oil products spilled into the seas on the vessel basis can be seen at Table 7.1. (Some quantity datas are varying due to the combination of two sources). (Kocasoy, Borak, 1992; Furman, Yenigün, 1996).

Table 7.1. Major Oil Spills / Accidental Pollution Incidents Occurred between 1967 and 1994 (Kocasoy, Borak, 1992, Furman, Yenigün, 1996)

Year	Date	Tanker Name	Country Affected	Qty of the Oil Spilled	Cost of Damage (million U.S. Dollars)
1967	18.03	Torrey Canyon	U.K.	120,000-120,200	21.0
1968	13.06	World Glory	South Africa	45,000	-
	08.11	Spyros Lemos	Spain	20,000	-
1969	05.11	Keo	U.S.A.	25,000	-
	25.11	Paocean	Bahrain	30,000	-
1970	.03	Ennerdale	Seychelles	49,000	-
	28.12	Chrissi	U.S.A.	31,000	-
1971	16.01	Oregon Standart	U.S.A.	7,750	15.0
	27.02	Wefra	South Africa	63,200	-
	29.03	Texas Oklahoma	U.S.A.	35,000	-
	30.11	Juliana	Japan	4,000	8.4
1972	28.01	Golden Drake	Azores	31,700	-
	01.04	Guiseppa Giulietti	Spain	26,000	-
	11.06	Trader	Greece	35,000	-
	27.07	Tamano	U.S.A.	3,666	15.6
	19.12	Sea Star	Gulf of Oman	115,000-120,300	-
1973	18.03	Zoe Colocoltroni	U.S.A.	8,000	19.6
	08.06	Napier	Chile	36,000	-
1974	15.06	Imperial Sarnia	Canada	600	5.1
	09.08	Metula	Chile	53,500	1.1
	-	Yugo Maru 10	Japan	50,000	-
1975	06.01	Showa Maru	Singapore	3,800	10.9
	10.01	British Ambassador	Japan	45,000	-
	29.01	Jakob Maersk	Portugal	84,000	2.8
	31.01	Corinthos	U.S.A.	40,000	5.9
	04.04	Spartan Lady	U.S.A.	25,000	-
	.04	Shell Berge No:2	U.S.A.	-	5.7
	-	Epic Colocoltroni	Dominican Republic	57,000	-
	-	Mitsu Maru 3	Japan	500	5.7
1976	06.02	Saint Peter	Colombia	33,000	0.9
	12.05	Urguiola	Spain	100,000-101,000	19.7
	23.06	Napco 140	U.S.A.	1,200	11.1
	12.07	Cretan Star	India	28,600	-
	14.10	Boehlen	France	11,000	20,3
	15.12	Argo Merchant	U.S.A.	28,000	2.5
1977	10.01	Irenas Challange	Pacific	34,000	-
	07.01	Borag	East China	4,000	15.6
	25.02	Hawaian Patriot	Honolulu (Pacific)	99,000	-
	27.05	Carribean Sea	Nicaragua	30,000	-
	16.12	Venoil	South Africa	26,000	5.4
	30.12	Grand Zenith	U.S.A.	29,000	-
1978	16.03	Amoco Cadiz	France	220,000-228,000	-
	06.05	Eleni V.	U.K.	3,000	10.6
	07.07	Cabo Tamar	Chile	60,000	4.2
	12.10	Christos Bitos	U.K.	5,000	13.1
	30.12	Esso Barnica	U.K.	1,160	9.8
	31.12	Andros Patria	Spain	20,000-47,000	6.4

Table 7.1. (Continued)

1979	08.01	Betelqeuse	Ireland	27,000	36.2
	28.02	Antonio Gramaci	Sweden,Finland,Russia	6,000	54.1
	02.03	Messlaniki Frontis	Greece	6,000	11.5
	15.03	Kürdistan	Canada	7,000	5.1
	28.04	Gino	France	42,000	0.8
	03.06	Ixtoc I	Gulf of Mexico	500,000	-
	28.06	Aviles	Saudi Arabia	25,000	-
	29.07	Atlantic Express	Tobago	276,000-300,000	1.5
	16.08	Ionnis Angelicoussis	Angola	30,000	-
	01.09	Chevron Hawai	U.S.A.	2,000	12.0
	01.11	Burmah Agate	U.S.A.	10,000-42,000	11.5
	15.11	Independenta	Turkey	94,600-95,000	17.2
1980	28.01	Princess Anne Marie	Cuba	6,000	51.7
	24.02	Irenas Serenada	Greece	102,000	12.5
	07.03	Janio	France	13,500	4.0
	29.12	Juan A. Lavellaje	Algeria	40,000	-
1981	07.01	Jose Marti	Sweden	6,000	6.7
	03.03	Ondina	Germany	500	7.0
	05.07	Cavo Cambanos	France	18,000	-
	22.11	Globe Assimi	Russia	16,000	-
1983	06.08	Castello de Bolver	South Africa	255,525	1.0
	20.09	Sivand	U.K.	6,000	5.0
	25.11	Faoso Ambassador	China	4,000	10.0
1984	07.01	Assimi	Oman	51,431	-
	10.12	Patricles GC	Qatar	46,631	-
1985	14.02	Neptunia	Iran	60,000	-
	06.12	Nova	Iran	71,120	-
1989	24.03	Valdez	Alaska	35,000-38,000	-
1991	.01	Gulf War	The Gulf	816,000	-
1992	03.12	Aegean Sea	Spain	70,000	-
1993	05.01	Braer	U.K.	84,000	-
1994	13.03	Nassia	Turkey	13,500	-

7.4. Estimation of Cost Incurred in the Case of a Tanker Accident

In the terms of estimation and, therefore, valuation of cost incurred in the case of a tanker accident, costs and benefits for shipping at Turkish Straits can be grouped as follows; cost savings to ship operators, increased revenue to ship operators, reduced generalized cost of transiting to ship operators, effects on congestion and accidents at the Straits, environmental impact, both direct and in terms of reductions on other modes, economic development benefits (Nash, 1992).

Evaluation method by transport mode, with enumeration of costs/benefits, is briefly shown at Table 7.2.

Table 7.2. Evaluation Method by Transport Mode, with Enumeration of Costs/Benefits (Lichfield, 1992)

Mode	Evaluation Method	Sector	Costs/Benefits
Shipping	Social Cost/Benefit Analysis	Ship operators	Time, accident, congestion, operating cost, maintenance cost, environmental/economic development, safety, economic well-being of Turkey, presence of a traffic

Strategic environmental assessment in the shipping activity at Turkish Straits by setting environmentally sustainable transport policy objectives;

Objectives	=	reduce accidents by x per cent
		reduce congestion by x per cent
		eliminate/reduce damage to wildlife and countryside
		reduce need to transiting
		reduce deaths/injuries
Options	=	investment in shipping at Turkish Straits
		increase interchange between transport systems
		capacity adjustment/load

An objective of 'reduce congestion by x per cent' could be expressed in a more quantitative way by 'reduce the number of ships transitted by x per cent'. Quantitative targets can not replace qualitative objectives. The setting of objectives and targets could be seen as a two stage process, with the initial setting of general, more qualitative objectives and subsequent setting of targets, such as specific goals within a certain time. For establishing targets for safety purposes and accident reduction, an object could be expressed as 'stabilization' of accident numbers to 1998 levels, for example, by 2005. Investment in Straits can be done by traffic management schemes. A transport policy based on environmental principles could seek to promote inter-change between transport systems (oil transiting via pipe line). The mix of options enables the objectives to be met in the most environmentally-sustainable way. International agreements and treaties are establishing targets and objectives for member countries. The incorporation of strategic environmental assessment in the shipping industry/policy is helpful for meeting these targets and objectives. Because it offers a systematic way to do this (Sheate, 1992). In the terms of estimation of cost incurred in the case of a tanker accident, valuing costs and benefits for shipping activity at Turkish Straits can be studied by distinguishing the 'private costs' and 'environmental costs':

7.4.1. Private Costs

In the case of a tanker accident at the Straits, also the private costs / additional private costs can get in to the picture. For an instance; a tanker can cause death / injury in

the case of 'stranding' or the oil spills can affect the marine environment badly which means the deaths of fishes and other marine creatures or, on the other hand, the tanker itself can run out of its cargo at the accident depending on the type such as stranding and fire. They all mean some private cost because compensation of the damage is the case such as the funeral expenses and the compensation for the loss of labor (manpower) for the economy for the deceased people or the medical expenses for the injured people or the compensation for the loss of income suffered by fishermen or the value of the cargo got lost. In the terms of 'private costs', following aspects of the case have been studied;

Cost of Oil Loss

The spilled or burnt oil/oil products at the Straits at the tanker accidents costs millions of dollars for the cargo owner.

Damage to Vessels

The tanker itself can hardly get damaged at the accident and it may also cost big amounts of money to the ship-owner (property).

Damage to Shore/Road/House

The stranding tanker can damage a road alongside the sea or the shore / land. It can damage also a house near the shore (property). It means some replacement cost because recovery of the damage / the maintenance/repairing of the road/house is the case.

Compensation for the Loss of Income Suffered by Fishermen

The harmful effects of marine pollution at the Straits on aquatic life is the case. In the case of an oil spill with a remarkable quantity, the harmful effects of the oil/oil products on marine environment/aquatic life can be observed. Fishes and other creatures can die and the ecological equilibrium can be disturbed. Because, 25 per cent of the oil spilled is evaporated in one or two days after the incident and the remaining part becomes

emulsion (saturation occurs) which threatens the aquatic life (Gündüz, 1994). Considering the problem of harmful marine organisms being transported in a ballast water has become a very important issue recently and it can also disturb the ecological equilibrium at the Straits. This pollution means a compensation to be secured for the fishermen at the region. Because, they may face a loss of income due to the scarcity of the fishes.

Compensation to Boat Owners at the Region

After an accident; the boats, yachts or fishing boats at the region can either face a damage due to the stranding or be contaminated by the spilled oil. The compensation must also be secured for the boat owners (property).

- Cleaning Cost of Contaminated Houses

Houses near the shore can get contaminated due to the spilled oil (property). It means some maintenance cost for cleaning the house from the oil/oil products.

- Compensation Cost of Deaths and Injuries

The stranding tanker can cause death / injury and the compensation of the loss/damage is the case such as the funeral expenses for deceased people/the compensation for the loss of labor (manpower) for the economy or the medical expenses for the injured people which may mean a loss of income because of staying away from work (Türköz, 1996).

7.4.2. Environmental Costs

When an oil spill occurs, it means a cleaning operation for the affected area and, therefore, it means a cost; a clean-up cost. Two types of clean-up can be conducted at the case of an oil spill which are; clean-up of oil burnt and clean-up oil spilled. Clean-up cost

for burnt oil is higher than for spilled oil. Nevertheless, the deliberate discharge of oily waste/oily mixtures into the sea can also be counted in the case of cleaning operation / reception facilities.

7.5. Present Value of Stream of Cost in the Case of Shipping Activities

There are generations living at the surrounding area of the Turkish Straits and each generation lives for many years. The social weight of future generations are discounted at the private discount rate. This verifies that PV (Present Value) systematically discounts the social value of future generations' welfare (Bellinger, 1991). PV means a method in which the costs and benefits generated by an activity, such as shipping, overtime are discounted and then summed to obtain an overall figure. If this figure is greater than zero, then the project in question becomes feasible; if not, it fails which means that it does not generate discounted benefits large enough to compensate the discounted costs. Achieving this figure as greater than zero in the case of shipping activities at the Straits would be the aim of the cost benefit analysis (the discounted benefits to be better-off against the discounted costs) for which one must take into account the discounted cash flow methods (The discount rate is used to convert stream of cash flows spread over different periods to a single unit as of today and which should reflect the investment productivity);

Net Present Value (NPV)

Net Present Value (NPV) is defined as the value obtained by discounting all periodic net cash flows at a predetermined rate of interest up to a point of time usually directly before the beginning of the investment. In other words, NPV defines stream of cash flows spread over time as of today by discounting. The NPV can be defined as;

$$NPV = \sum_{t=0}^{n} NCFt * (1+i)^{t}$$

where;

NPV = net present value

NCFt = net cash flow of the period t

i = implicit rate of interest

$(1+i)^t$ = discount factor

n = the number of periods

- Internal Rate of Return (IRR)

Another important criterion is the internal rate of return (IRR), defined as the discount rate which results in the net present value being zero. Projects with a positive/negative net present value are considered positive/negative. The internal rate of return for positive project should be higher than the required interest rate. The IRR can be defined as;

$$\sum_{t=0}^{n} \frac{Bt - Ct}{(1+R)^t} - Ic = 0$$

where;

Bt = benefits in year t,

Ct = costs in year t,

R = internal rate of return,

Ic = cost of initial capital

n = life of the project

In the terms of social cost/benefit analysis, R is defined as social rate of return (SRR).

- Benefit/Cost (B/C) Ratio

B/C is the NPV of benefits divided by the NPV of costs over the life of a project/activity. The benefit/cost ratio means the ratio of the activity's discounted benefits to discounted costs which must be greater than one. B/C can be defined as;

$$B/C = \frac{\sum_{t=1}^{n} B_t (1+i)^t}{\sum_{t=1}^{n} C_t (1+i)^t}$$

where;

B_t = benefits during year t

C_t = costs during year t

I = interest rate

As per these cash flow methods, the higher return (in the terms of a comparison such as between 'oil via tanker' and 'oil via pipe line') or the desired outcome (stabilizing the number of the accidents on yearly basis) can be assessed. It helps the deciding party to take the right action for an activity to remain beneficial both in the beginning and in advance. By discounting the stream of costs (in order to analyze the 'higher return' or 'desired outcome') as per above mentioned cash flow methods, one can have the chance for investigating the cost/benefit levels to be obtained from various alternatives. However, one must also take into account the social and environmental effects of the alternatives / activity which will be studied at the following and the Chapter 8 'Conclusions and Recommendations' (Kula, 1994, Sell, 1992, Türköz, 1996).

7.5.1. Comparison of the Alternatives of the 'Straits' and 'Pipeline'

Either a pipeline of around 1,700 km or two straits of Bosphorus and Dardanelles are needed to transport the Caspian Oil down to the Mediterranean Sea. While comparing the alternatives of the 'straits' and 'pipeline', 'discounting' must be done. By considering that first transportation of Caspian Oil will commence in 1999, cash flows can be discounted to 1998. As per estimations; if one considers the discount rate as 6 per cent[1] and

1. Actual Social Discount Rate in Turkey between 1985 and 1995 has been estimated between 6 per cent and 10 per cent (Karataş, 1998).

takes into consideration only the private costs, Present Value (PV) incurs at around 1,980 million U.S. dollars for 'pipeline' alternative and at around 1,415 million U.S. dollars for 'straits' alternative. However, if one also takes into account the social and environmental costs, such as clean-up costs, at the 'pipeline' alternative, then the PV of the 'pipeline' alternative can decrease to around 1,800 million U.S. dollars at the same discount rate. And if one also takes into account the social and environmental costs at the 'straits' alternative, then the PV of the 'straits' alternative can increase to an amount between around 5,325 million U.S. dollars and 9,770 million U.S. dollars because accidents cause environmental costs / clean-up costs to incur with big amounts. In this respect, from the cost/benefit point of view, the 'straits' alternative is more costly than the pipeline alternative. Because, the benefits of the 'pipeline' alternative comes from the transportation fee during the operation of the pipeline and the cost of the 'straits' alternative whereas the cost of one alternative is assumed to be the benefit of the other alternative. Since the cost of the 'straits' alternative incurs so high, with the inclusion of environmental costs, 'pipeline' alternative becomes less costly. Nevertheless, as per calculations; the Internal Rate of Return (IRR) of 'pipeline' alternative has been computed as 21,04 per cent which is above the cut-off / interest rate of 15 per cent which is valid for public projects in Turkey when market prices are used (Karataş, 1989, Türköz, 1996).

8. CONCLUSIONS AND RECOMMENDATIONS

Turkey will be coming across with some international standardization requirements as of the second half of 1998. Since these requirements are aimed to eliminate the substandard vessels of the world merchant fleet, it means a very competitive standardization period for the world shipping industries and, therefore, for Turkey.

The International Safety Management Code will become mandatory from the second half of 1998. The IMO points out that, although some countries and shipping lines are dragging their feet, they are likely to suffer if they do not get the code properly implemented at time. The application concerning ISM Code shall start worldwide on July 1, 1998. Therefore, necessary actions should be carried out, and the relevant certificates should be obtained immediately by the concerned parties at Turkish Shipping Industry. The action has been postponed so far due to a number of commercial and political reasons. It is very important for Turkey to expedite the enterprises for this purpose; because, for an instance, it shall not be possible for ships not having this certificate enter into U.S.A., Australia and North European countries, and some countries have already announced this fact. If the required formalities can not be implemented in advance, the shipowners will either hand over their ships to ship operators having the certificate or have to abandon the business. Since maintaining the right of trading and the cost of 'non-compliance' alternative incurs so high, 'compliance' alternative becomes less costly for Turkey.

Since the ships will get strictly policed evermore than before worldwide, the requirements of the Port State Control (PSC) should be carried out properly by the port administrations at Turkey and by our shipping companies who must do the needful for these requirements. Otherwise, they must take the full responsibility of their subtandards ships that can be policed at foreign ports. No matter of which flag states, shipowners, trade unions, maritime lawyers, charterers or port states, all parties should co-operate with the ultimate aim to stop the operation of substandard ships according to international conventions (such as MARPOL 73/78). ISM Code will effectively reduce the need for Port State Control (PSC)

Turkey should also implement the requirements of STCW Convention properly and without any delay. With this respect, port documents of personnel employed in ships should be obtained accordingly. Ship personnel should obtain this certificate from the relevant ports after completing the required courses. The completion of around eight courses is requested from the crew, deck officers and machinery officers. Unfortunately, 50 per cent of these certificates are not present at the shipping industry of Turkey; which means that; the actions required by STCW Convention must be taken at once. (List of courses, which should be attended, is available from Turkish Chamber of Maritime and ports). TÜDEV has noteworthy contributions about these attempts. In accordance with the revised STCW Convention, Port State Control inspectors can require the seafarer to demonstrate the related competency at the place of duty.

Dredging must be realized at all ports of Turkey, especially by İzmir Port, by considering the economic means of this operation and by arranging long-term schedules during the constant process of this deepening operation.

In the case of constructing alternative ports for İzmir Port and Haydarpaşa Port, port structure must be given utmost attention. The sufficient storage / port area, proper dredging schedules, capable port facilities / reception facilities / rescue facilities and good port administration are some of the points that must be given that attention. Before considering alternative ports for İzmir Port and Haydarpaşa Port, 'privatization' of Turkish State Railways can be suggested as the first stage as per existing conditions of Turkish Shipping Industry. When 'privatization' secures, realization of the mentioned points will also get expedited.

For the time being, Turkish Shipping Industry could not get any satisfactory help from the government. Reconstruction of the Undersecreteriat of Maritime Affairs under the title of a "Ministry" (Ministry of Maritime Affairs) will make efforts to solve the pending problems of Turkish Shipping Industry as its sole authority. The launch of such a ministry is a prompt need and has so long been desired.

Turkey must also achieve 'privatization' at Turkish State Railways and, thereafter, make investments on the port environment in order to maintain an economic growth at her shipping sector which will enable Turkey also to use the market-oriented instruments, such as permit system, properly. Since a real privatization is quite difficult for Turkey due the risky side of the business, which is the potentiality of scandals on failure, it is suggested that, the ports should have an autonomous management. In other words, partly privatization action can be suggested on the way of a real privatization and that they should be run by independent city councils formed by the private sector, state unions, municipalities and other such organizations. It is recommended private sector runs them via an autonomous management and gives the Turkish State Railways (TCDD) a stake from the interest. In order to prevent the formation of a set of problems during the privatization of the ports, it can be suggested that; it may be well to transfer a port by first dividing it into individual harbors, thus preventing the formation of the trust. This way, the state could maintain the control. Regarding the employees at Turkish State Railways, those wishing to work might continue working and new-trained personnel could be installed in the place of those who do not. When making future plans for the Turkish Ports, the economic objective of strengthening the positions of the Turkish Ports is linked to the simultaneous improvement of the environment. In the vision of the future, the economy and the environment are equal components. It must be the aim of Turkey to ensure that industry gives priority to prevention of damage to the environment.

In order for the ships of Turkey not to escape other countries' registrations, in order to attract other / foreign ships to the registration of Turkey and to increase the competitiveness against other merchant fleets, realization of the Secondary Ship Registry is needed for the Turkish Shipping Industry.

The governments have been unreasonably slow in establishing reception facilities for ship residues. It is sad because operational pollution could be eliminated if there were adequate reception facilities in all parts of the world. What is required, is an action to persuade the governments to fulfil their obligations under MARPOL and have such facilities in place. From the financial point of view, the reception/treatment facilities can be operated with a low cost, if the integration with the rest of the society can be achieved for

the ship-generated waste. Some oily waste can be treated in plants that normally are available in oil terminals and refineries at little extra cost or consignees of oil cargoes / bulk chemicals can be obliged to receive ballast water and tank cleaning residues. The No Special Fee system should be introduced on a worldwide basis also by Turkey regarding "Financing Reception and Treatment". Control systems for ships and ports are definitely needed for proper functioning of this system. For controlling the discharges, waste declarations must be completed by the ships at their arrivals to the ports. These declarations must state; 'when and where they discharged waste the last time', 'how much waste they have on board', 'the capacity of their waste tanks', 'when and where they intend to discharge the next time'. Then, these declarations can be forwarded to the next port of call of the ship by the port authority. If a ship has not discharged waste at the previous port of call, the system allows that ship to be inspected at the next port of call simply by checking whether the wastes have disappeared during the sailing (Olson, 1996).

The shipping sector is one of the few sectors where one can talk about a true process of globalization and, in this respect, Turkey can enjoy the benefits of it whereas the international waterways / straits and ports have become the main affected areas of both ship-generated pollution and land-based pollution that the governments of all countries should take into consideration. At Turkish Straits; the environment is at risk as long as the transportation of flammable, explosive, chemical, nuclear and similar hazardous load continues. First, therefore, the countries using the straits for their own commercial benefits must gradually decrease the amount of hazardous load they carry in accordance with a scheme. Turkey must encourage them to choose less dangerous ways to transport the hazardous loads by negotiating the commercial and political interests and by cooperating to take better safety precautions. Since all the countries give their support compulsorily about preventing environmental pollution and environmental protection, Turkey can request from other countries to exercise the desired practices at Turkish Straits as per internationally agreed environmental standards / safety measures regarding ship generated pollution. It can be suggested that; since the importance of the environmental concerns and the related standards/safety measures to be applied soon without any exception is now subject to clear understanding and acceptance of each country at international platforms, Turkey will automatically be in a position to defend the necessity of reaching these standards at the Ports/Straits and, in this respect, will also be able to use even the Montreaux Treaty against

other countries whereas the environment and its requested standards got into the picture. This would be the natural right of Turkey and the benefits of the international standardization for Turkey. In this respect; it can be said that, Turkey has the right of intervening in the transit of a vessel if the transit causes harm or if she believes that it does and Turkey can exercise all her rights of sovereignty on the vessel if it insists on transiting. Therefore, Turkey has the right to oppose and intervene the transportation of Caspian Oil through the Turkish Straits via tankers, on the grounds that such a transit would threaten the safety of the country and the environment. The rules of the Montreaux Treaty and widely accepted rules of international law give Turkey the right to do so.

Social cost / benefit analysis provides a rational framework for Turkey to evaluate / find out the arguments / alternatives of shipping activity being carried out at her Straits / Ports at international platforms by using national objectives and values. In order to have a smooth compensation application at the Straits, Turkey must first make her arguments clear and satisfactory by depending on the social cost / benefit analysis to define her rights and must act accordingly at international platforms. While studying the Social Discount Rate in Turkey, in the case of conducting a social cost / benefit analysis of marine pollution at Straits and its other environmental effects, Social Net Present Value (NPV) or Social Rate of Return or Social Cost / Benefit Ratio should be used as criteria. Social NPV and Social Cost / Benefit Ratio requires an estimation of discount rate / discounting. Actual Social Discount Rate in Turkey between 1985 and 1995 has been estimated between 6 per cent and 10 per cent (Karataş, 1998). Regarding the evaluation of the 'pipeline' alternative in the terms of conducting a cost/benefit analysis; if one takes into account only the private costs, the cost of the alternative projects for transiting the oil through the Straits by other types of transport would not be reasonable. However, when the social and environmental effects of the accidents / projects got into the picture and, with this respect, when the cash flow methods are taken into account in the terms of 'discounting', such as discounted present value of costs and benefit/cost ratio, the internal rate of return of an alternative project (pipeline) could increase. Because, now it represents a social rate of return which can positively change the results of an assessment on alternative projects, such as pipe line, even though it was assessed as a costly one without taking into account the additional private costs and environmental costs. The results of the social cost/benefit analysis show

that the current tanker traffic means many environmental costs and, therefore, there is an absolute need for realizing an another way of transiting the oil through the Straits, such as 'pipe line' alternative which is less costly, or achieving the stabilization of the accident numbers per year in the coming years at the same level which is a reasonable forecast.

Following precautions, which are considered to decrease the accidents and damages to the minimum and to provide fast and safe traffic, should be taken in the area of the Turkish Straits; all the ships that will pass through the Straits should obey the rules of sea traffic newly set in this area, "Ship Traffic Management System", which will organize the sea traffic in the area in a safe way from the entrance (provide its fast and safe flow and control them) should be established, the ship size which will be able to cruise safely within the Traffic Separation Orders set in this area without disturbing the lanes should be determined and the ships bigger than determined size should not be allowed to enter the Bosphorus in order for all the ships to be able to use the Straits equally, the pilot services, which is the most important element in order to provide safety of sea traffic, should be widespread and all the ships should be forced to have a pilot, the precautions should be taken to reach when there is an accident caused by the ships passing the Straits, the ships that are free to pass according to the international conventions but doubtful of passing without any damage, should be determined and not allowed to pass through, Black Sea Vessel Traffic Management System should be established by cooperating with Black Sea countries in order to organize, control the Black Sea sea-traffic that might affect the sea traffic in the area of the Straits and to prevent the damages that might come up, the highest insurance guarantee should be asked from the ships which will pass from this area as a precaution against the damages to the safety of life, possessions and environment that might be caused. The cost of sailing a laden through the Bosphorus should be revised at once because the cost of sailing a laden through the Bosphorus costs only 9000 U.S. dollars. If one investigates the cost of sailing a laden through other canals in the world, such as Panama Canal and Suez Canal, it can be observed that it costs more expensive. It costs approximately 80.000 U.S. dollars at Panama Canal and approximately 150.000 U.S. dollars at Suez Canal (Turkish Shipping World, 1996).

For the Bosphorus Safety, the rights of Turkey must be defended by emphasizing the environmental relations of the sea traffic and, on the same grounds, by discussing the impacts / effects of the marine pollution at the Straits.

There are mentioned risks that Turkish Shipping Industry may get involved in the terms of compliance with the safety measures during the second half of 1998. In order for Turkey to take the development steps in advance and to maintain her rights to trade, there is a prompt need of taking the mentioned development steps at Turkish Shipping Industry against substandard shipping and its inferences.

9. RECOMMENDATIONS FOR FURTHER STUDIES

Following subjects can be recommended for further studies:

Cost/Benefit Analysis for Alternative Port Projects in Turkey (for Haydarpaşa and İzmir Ports)

Operation of Pollution Catamarans

Operation of Oily Water Separator Systems at Turkish Ports

Turkey's Implementation Performance of the International Safety Measures in 1998/1999

Effective Port Management Model(s) at Turkish Ports by "Information Technology"

A Proper Implementation of Ship Traffic Management System(s) in the Turkish Straits

- Transportation Alternatives in Turkey
- Railway Transportation (Hydraulic Energy Potential in Turkey)

Effects of Air Pollution at the Turkish Straits due to the Shipping Activity

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APPENDIX A

Turkey's Foreign Trade Shipments Carried by Sea (Turkish Shipping World, 1997)

Types of Cargo	Total (ton)	Turkish Vessel ton	%	Foreign Vessel ton	%
Bulk Solid					
Cereals	3.898.876	707.978	18.2	3.190.898	81.8
Ore	8.006.803	3.068.395	38.3	4.938.408	61.7
Coal	10.680.063	4.738.602	44.4	5.941.461	55.6
Total	**22.585.742**	**8.514.975**	**37.7**	**14.070.767**	**62.3**
Bulk Liquid					
Crude Oil	22.802.778	13.390.546	58.7	9.412.232	41.3
Oil Products (Liq)	9.643.483	1.244.722	12.9	8.389.761	87.1
Liquid Gas	2.320.497	29.659	1.3	2.290.839	98.7
Other Liquids	1.296.485	180.661	13.9	1.115.824	86.1
Total	**36.063.243**	**14.845.587**	**41.2**	**21.217.656**	**58.8**
Mixed Cargo					
Industrial Products	28.945.060	11.921.046	41.2	17.024.014	58.8
Agricultural Products	1.032.628	91.296	8.8	941.332	91.2
Other Cargo	2.054.345	585.353	28.5	1.468.992	71.5
Total	**32.032.033**	**12.597.695**	**39.3**	**19.434.338**	**60.7**
Timber M^3 0.7 Ton	999.294	99.710	10.0	899.584	90.0
Grand Total	**91.680.312**	**36.057.967**	**39.3**	**55.622.345**	**60.7**

Yearly Distribution of Cargo Handling at Turkish Ports between 1986 and 1996 (Turkish Shipping World, 1997)

Years	Import Unloading (million tons)	Export Loading (million tons)	Cabotage (Load-Unload) (million tons)	Total Handling Quantity (million tons)	Annual Change (%)
1986	29.026	13.364	41.262	83.652	5.8
1987	35.588	12.941	46.747	95.276	14.4
1988	35.072	19.409	41.421	92.902	-2.5
1989	32.773	14.755	44.466	91.944	-1.0
1990	41.467	14.877	39.362	95.886	4.2
1991	47.439	19.165	29.671	96.275	0.4
1992	47.127	20.510	31.964	99.601	3.4
1993	60.003	17.379	34.313	111.695	12.1
1994	48.805	20.932	31.905	101.641	-9.0
1995	58.502	19.760	32.709	110.971	9.2
1996	65.290	18.035	34.208	117.102	5.5

(Excluding transit and Botaş)

Turkey's Sea Transportation between 1987 and 1996 (Turkish Shipping World, 1997)

				Share of Turkish Flag Vessels	
Years	**Total** *(ton)*	**Export** *(ton)*	**Import** *(ton)*	**ton**	**%**
1987	48.528.681	12.941.086	35.587.595	21.018.494	43.3
1988	52.517.767	19.707.519	32.810.248	19.704.929	37.5
1989	55.200.862	21.531.000	33.669.862	20.590.616	37.3
1990	59.117.087	15.238.654	43.878.433	22.307.334	37.7
1991	70.235.137	20.343.438	48.891.699	22.710.337	32.3
1992	72.419.133	21.915.110	50.504.023	29.539.326	40.8
1993	82.977.537	18.102.360	64.875.177	33.487.499	40.4
1994	74.743.615	22.112.827	52.630.788	39.986.641	49.5
1995	84.181.116	20.174.562	64.006.554	35.157.163	41.8
1996	91.680.312	18.846.238	72.834.074	36.057.967	39.3

Transportation of Turkish Flag Vessels between 1987 and 1996 (Turkish Shipping World, 1997)

Years	**Export** *(ton)*	**Share** *(%)*	**Import** *(ton)*	**Share** *%*	**Total** *(ton)*	**Share** *(%)*
1987	4.355.491	33.7	16.663.003	46.8	21.018.494	43.3
1988	5.015.831	25.5	14.689.098	44.8	19.704.929	37.5
1989	5.232.827	24.3	15.357.789	45.6	20.590.616	37.3
1990	4.719.129	29.4	17.588.205	40.1	22.307.314	37.7
1991	6.026.727	29.6	16.683.610	33.4	22.710.337	32.3
1992	8.285.979	37.8	21.253.347	42.1	29.539.326	40.8
1993	8.632.344	47.7	24.855.155	38.3	33.487.499	40.4
1994	10.501.462	47.5	26.485.179	50.3	36.986.641	49.5
1995	7.958.035	39.4	27.199.128	42.5	35.157.163	41.8
1996	7.442.071	39.5	28.615.896	39.3	36.057.967	39.3

Transportation of Foreign Flag Vessels between 1987 and 1996 (Turkish Shipping World, 1997)

Years	Export (ton)	Share (%)	Import (ton)	Share (%)	Total (ton)	Share (%)
1987	8.585.595	66.3	18.924.592	53.2	27.510.187	56.7
1988	14.691.688	74.6	18.121.150	55.2	32.812.838	62.0
1989	16.298.173	75.7	18.312.073	54.4	34.610.246	62.0
1990	10.519.525	69.0	26.290.228	59.9	36.809.753	52.0
1991	14.316.711	70.4	33.208.089	66.6	47.524.800	67.7
1992	13.629.131	62.2	29.250.676	57.9	42.879.807	59.2
1993	9.470.016	52.3	40.020.022	61.7	49.490.038	59.6
1994	11.611.365	52.5	26.145.609	49.7	37.756.974	50.5
1995	12.216.527	60.6	36.807.426	57.5	49.023.953	58.2
1996	11.404.167	60.5	44.218.178	60.7	55.622.345	60.6

Transit Transportation between 1987 and 1996 (Turkish Shipping World, 1997)

		Share of Turkish Flag Vessels	
Years	Total (ton)	ton	%
1987	55.813.507	-	-
1988	73.529.952	-	-
1989	71.652.623	-	-
1990	42.950.206	-	-
1991	973.848	66.486	6.9
1992	1.030.121	156.664	15.2
1993	470.882	99.938	26.9
1994	186.954	43.153	23.1
1995	314.593	133.425	42.4
1996	898.830	135.341	15.1

Yearly Distribution of Sea Transportation of Liquefied Petroleum Gas between 1992 and 1996 (Turkish Shipping World, 1997)

Years	**Export** *(ton)*	**Import** *(ton)*	**Total** *(ton)*
1992	46.550	1.213.034	1.259.584
1993	116.679	1.450.761	1.567.440
1994	91.769	1.632.951	1.724.720
1995	68.380	2.484.624	2.553.004
1996	24.124	2.296.373	2.320.497

Yearly Distribution of Sea Transportation of Oil between 1992 and 1996 (Turkish Shipping World, 1997)

Years	**Export** *(ton)*	**Import** *(ton)*	**Total** *(ton)*
1992	2.606.805	1.876.525	4.483.330
1993	3.071.249	4.297.393	7.368.642
1994	2.733.178	3.515.241	6.248.419
1995	2.440.128	3.680.702	6.120.830
1996	1.244.722	8.398.761	9.643.483

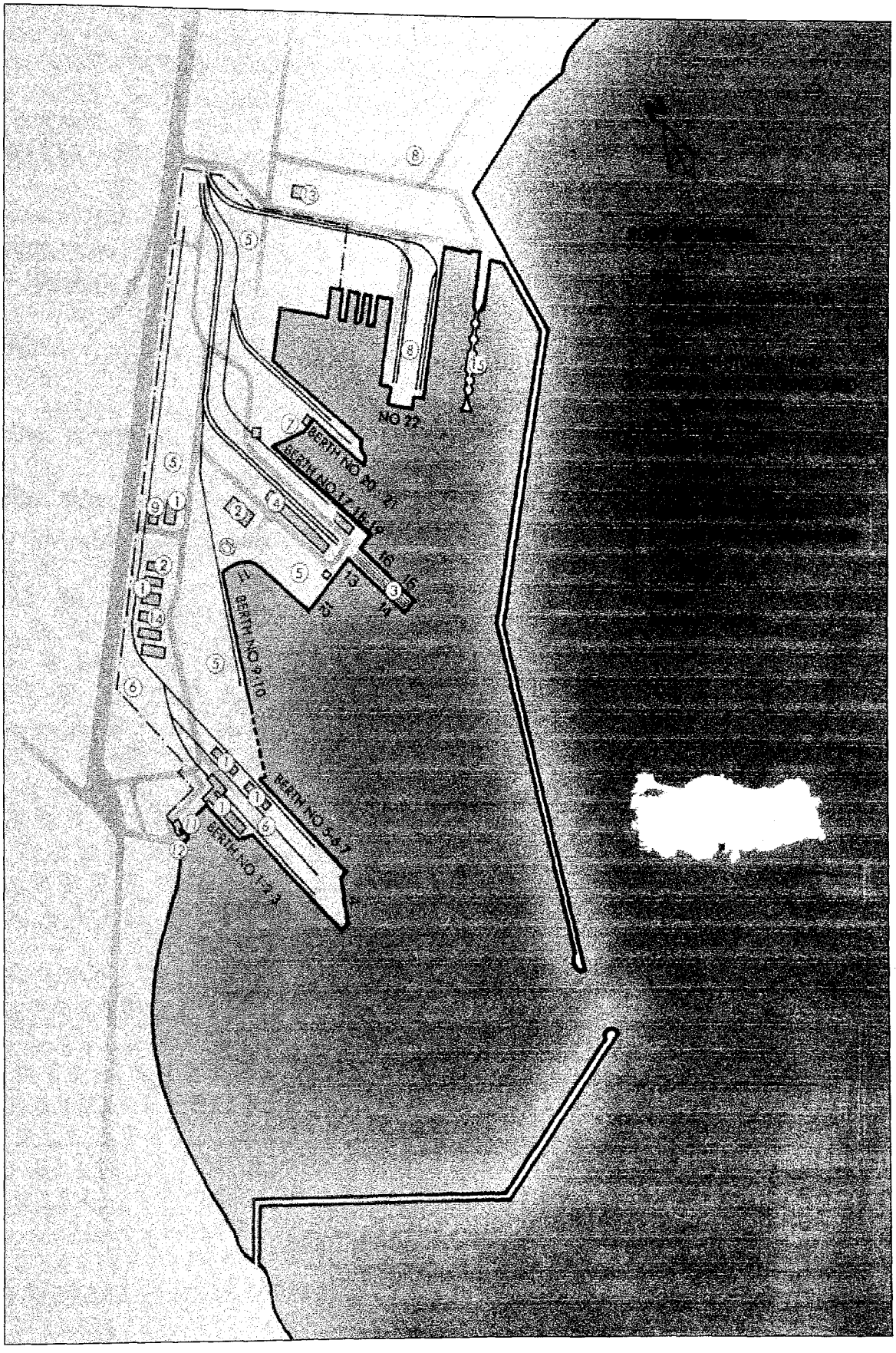
Yearly Distribution of Container Transportation between 1991 and 1996 (Turkish Shipping World, 1997)

Years	**Export** *(teu)*	**Import** *(teu)*	**Total** *(teu)*
1991	146.162	128.851	275.013
1992	187.090	172.302	359.392
1993	225.178	269.417	494.595
1994	247.577	221.965	469.542
1995	289.0224	276.138	565.160
1996	397.658	393.716	791.374

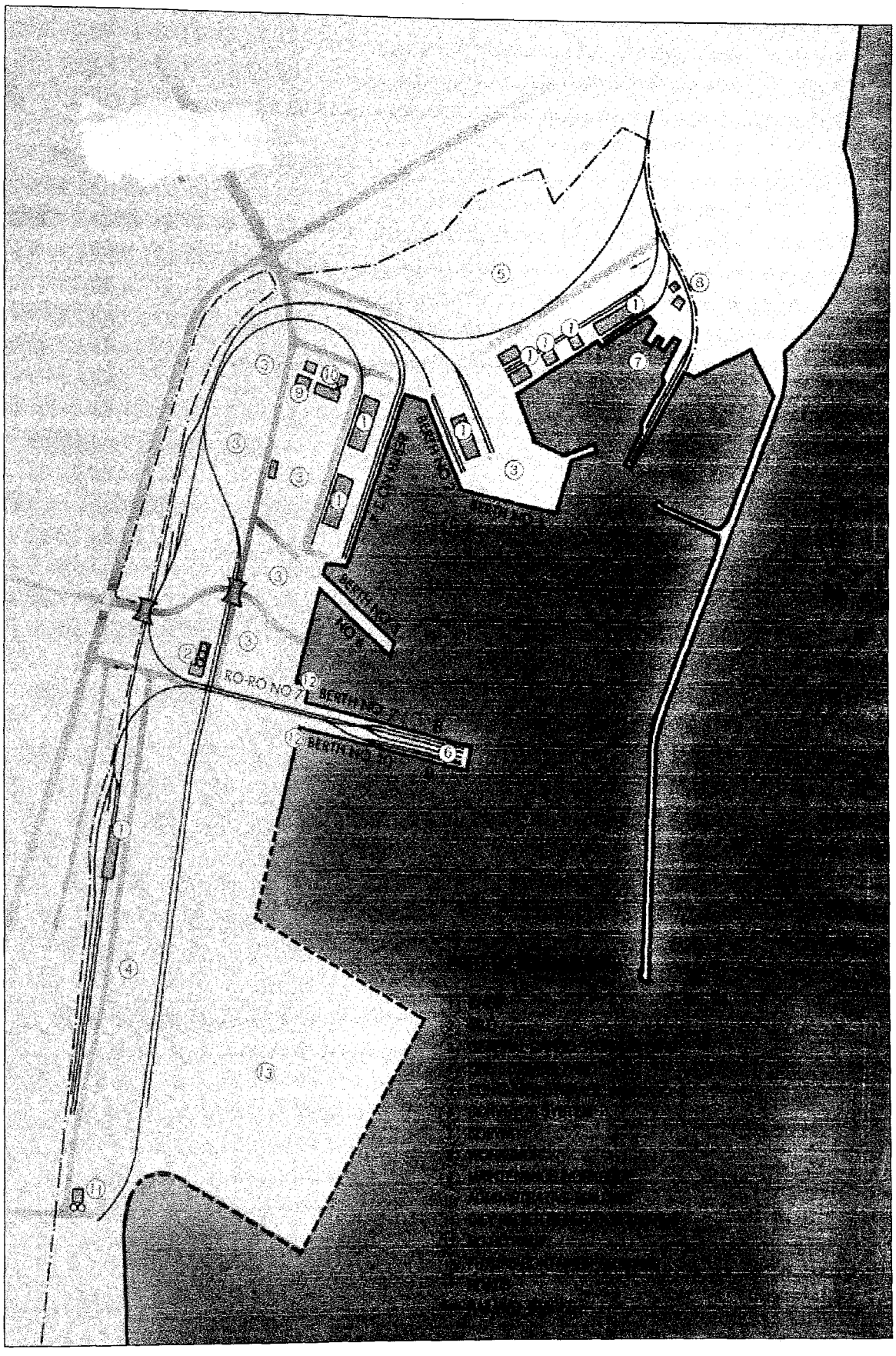
Seaborne Trade Volume in 1996 with BSEC Countries (Turkish Shipping World, 1997)

Countries	**Export** *(ton)*	**Import** *(ton)*	**Total** *(ton)*
Albania	19.258	31.878	51.136
Azerbeijan	3.306	9.518	12.824
Bulgaria	122.885	1.244.616	1.347.501
Armenia	-	-	-
Georgia	64.812	89.156	153.968
Moldovia	-	-	-
Romania	284.351	1.817.233	2.101.584
Russia	336.991	6.686.918	7.023.909
Ukraine	388.597	5.672.996	6.061.593
Greece	732.206	863.420	1.595.626
Total	**1.952.406**	**16.395.735**	**18.348.141**

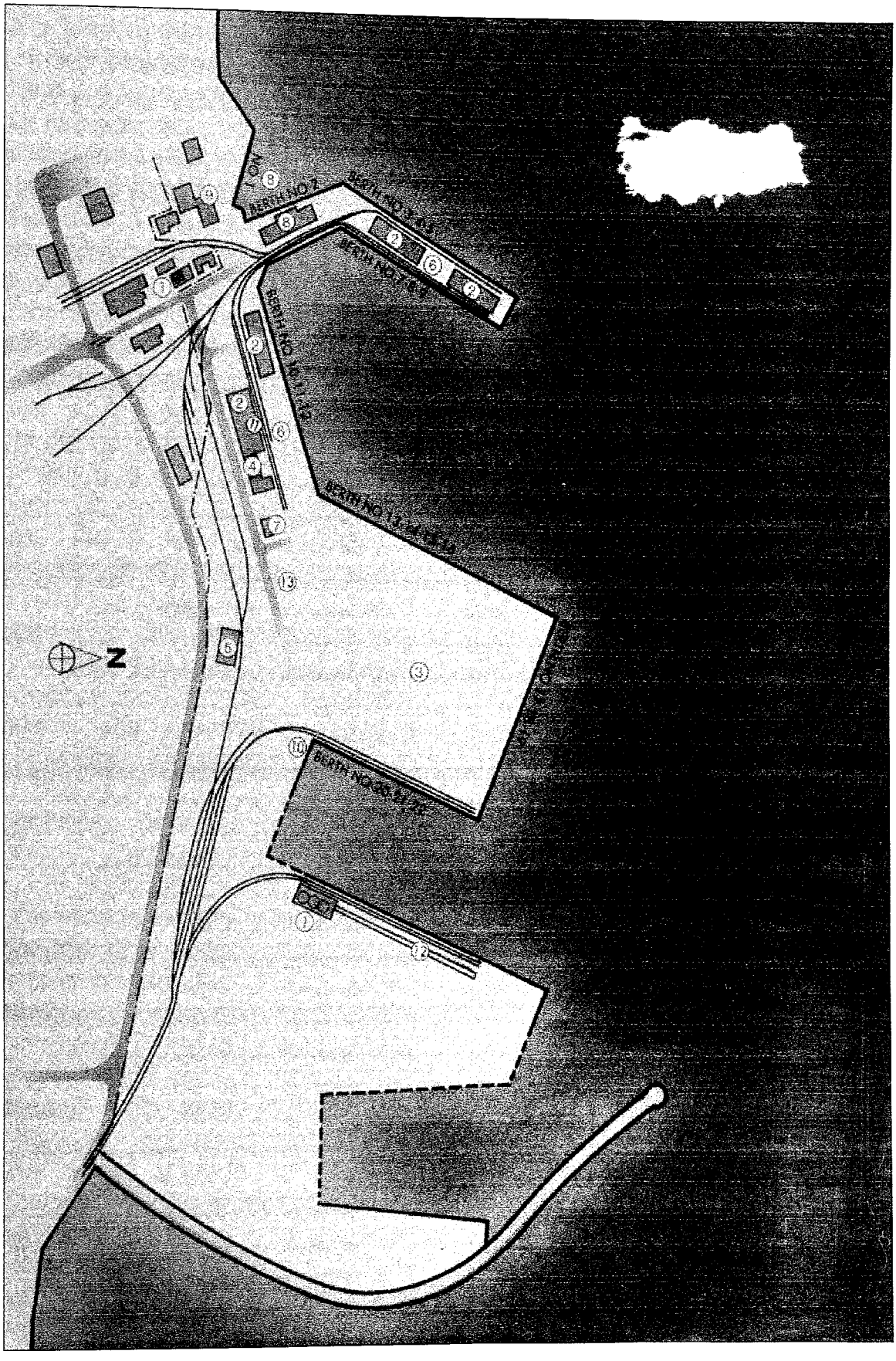
APPENDIX B



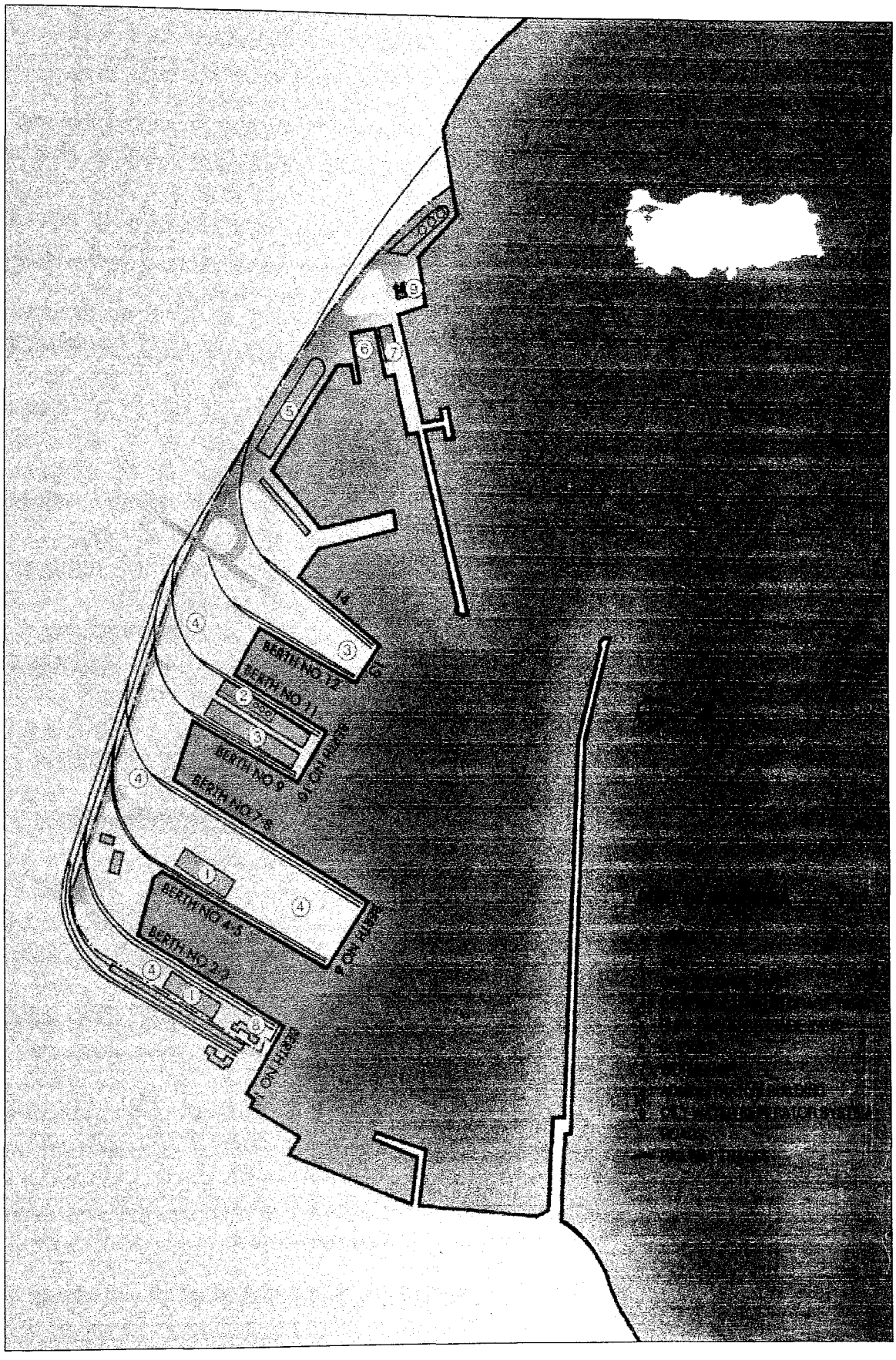
Mersin Port (Günsoy, 1993)



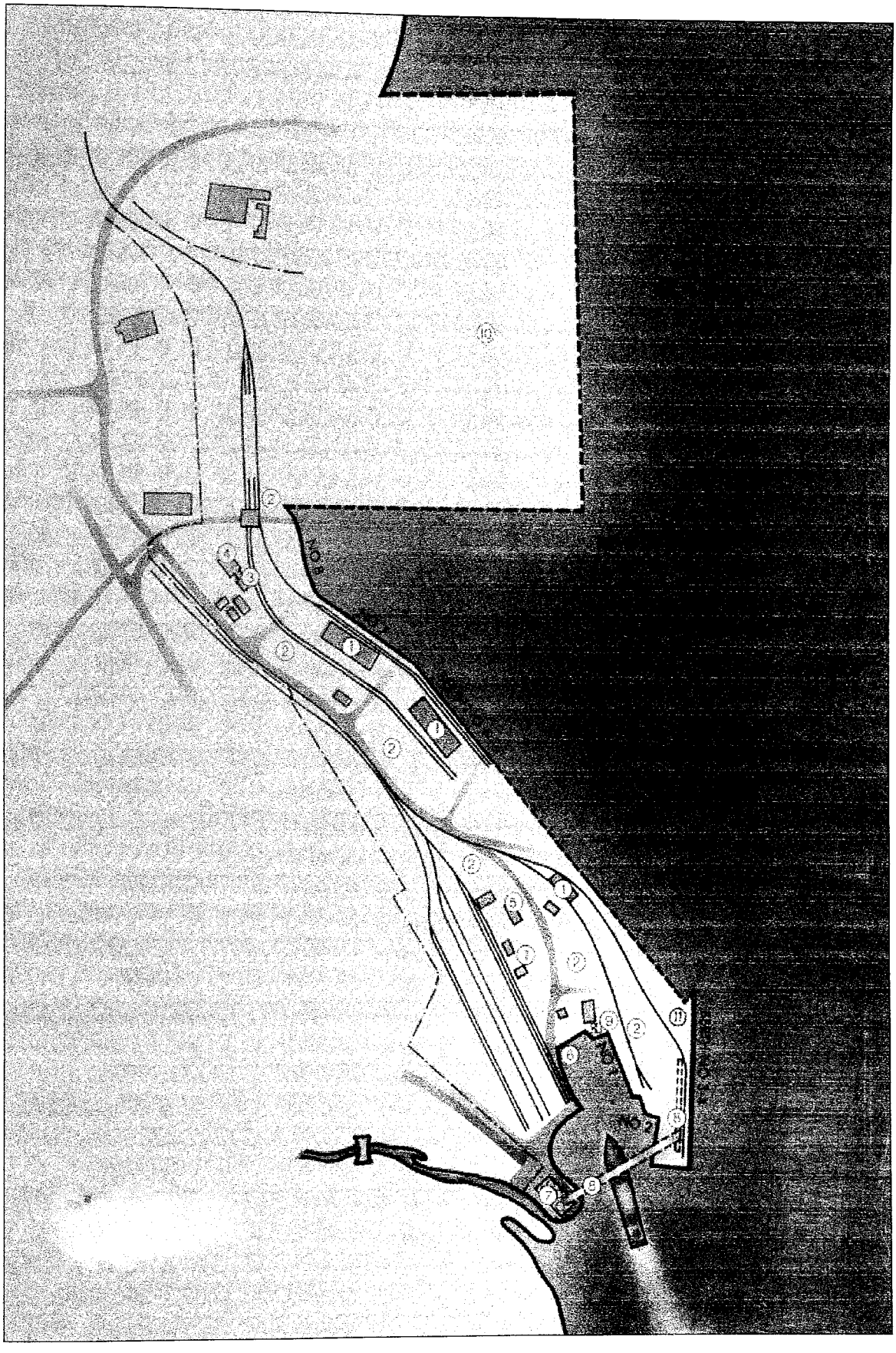
İskenderun Port (Günsoy, 1993)



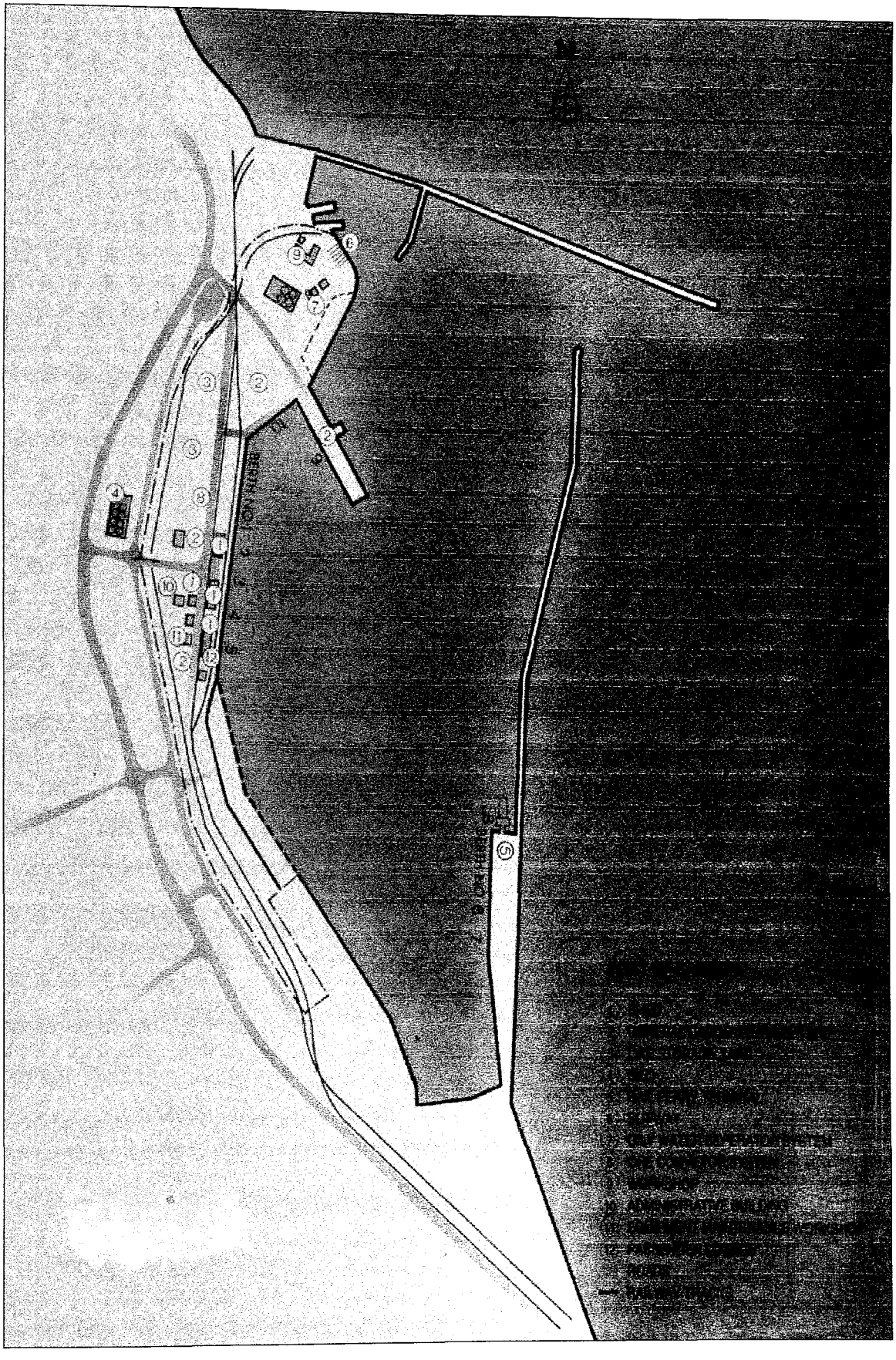
İzmir Port (Günsoy, 1993)



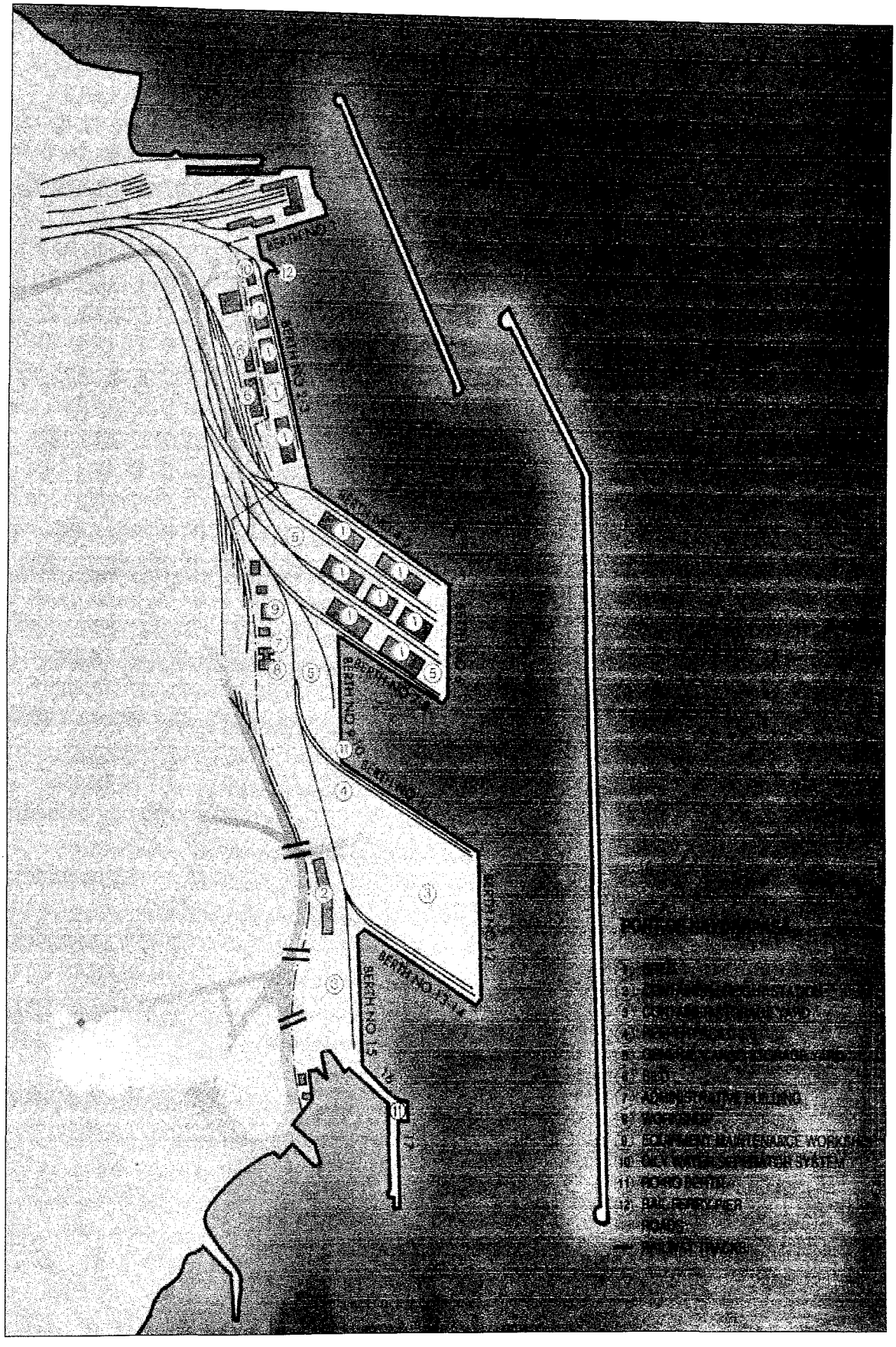
Bandırma Port (Günsoy, 1993)



Derince Port (Günsoy, 1993)

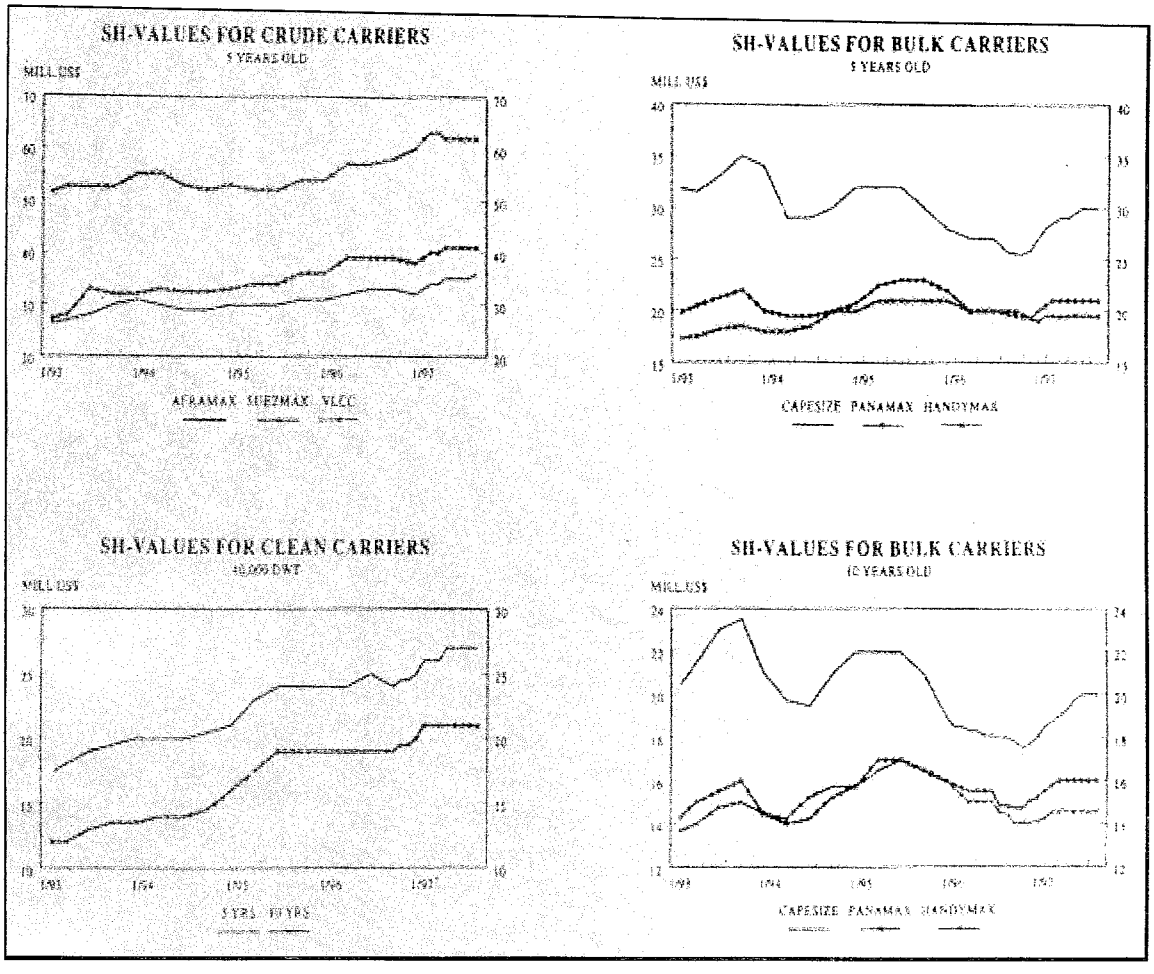


Samsun Port (Günsoy, 1993)



Haydarpaşa Port (Günsoy, 1993)

APPENDIX C



The Estimated / Average Value of 'Ship Itself' (for 'Tankers' and 'Bulk Carriers') during Hand-Over (Turkish Shipping World, 1997)

APPENDIX D

1.

WITH:	Semra Salihoğlu
POSITION:	Chief Advisor of Hazardous Cargo Department
PLACE:	Turkish State Railways (TCDD) Haydarpaşa Port in İstanbul
DATE:	January 1998
DURATION:	1,5 hours
SUBJECT:	Dangerous Cargo Handling at Haydarpaşa Port

2.

WITH:	R. Ayhan Çitfçi
POSITION:	Assistant General Manager of Gemlik Port and Warehousing Administration Co. Inc.
PLACE:	Gemlik Port in Bursa
DATE:	May 1998
DURATION:	1 hour
SUBJECT:	Port Location / Development and Privatization

3.

WITH:	James Hwang
POSITION:	Manager of Project Division / Westbound Dept. at Evergreen Marine Corporation (Taiwan) Ltd.
PLACE:	Gulf Agency Company, Karaköy / İstanbul
DATE:	October 1997
DURATION:	30 minutes
SUBJECT:	Standardization at Shipping Industry (ISM)