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The Bosphorus : Growth of Oil Shipping and Marine Casualties

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Abstract

The Turkish Straits, for the last 10 years at least, have been turned into one of the key shipping foci of the world seaborne oil trade. Nearly 123 million tons of oil passed through the Strait of Istanbul in 2002, representing 5 per cent of the world oil trade by sea. Number of crude carriers passed through the Strait that period, up or down, was 6022.

The Strait of Istanbul is the most congested sea lanes in the World. On a daily basis an average of 142 vessels (or nearly 12 vessels an hour) navigates through the Strait. When local or domestic traffic is taken into account, almost another 2.000 crossings a day must be added to the figure above.

Shipping traffic in the Strait was 4125 transits in the year 1841. There are now an average of 25.000 transits per year *in each direction* including inter alia, tankers, chemicals, product tankers, LNG and LPG carriers - the largest size passing through being 150 to 160.000 tonners fully laden or vessels of around 300 metres in length partly laden. Almost one-third of the total transits are the local ships passing through the Strait.

Oil tanker is the ship which appears most likely to cause major environmental damage. In the case that one of the ships involved in a collision accident is a tanker or a vessel carrying dangerous cargo major pollution problem is likely to occur. Similar incidents have also occurred in the Bosphorus, such as with the World Harmony, Peter Zoranic, Norborn, Lutsk, Independenta, Nordic Faith, Blue Star, Nassia, Jambur to mention a few. Around 200.000 tonnes of oil has been spilt into the Bosphorus and its approaches from these casualties alone.

Whatever the nature of a casualty, it takes more serious shape and effect in a confined area.

Shipping accidents of today have become more "environmental" and the issue has been though than ever for all parties concerned. Potential risks and perils already exist in the Bosphorus. With current heavy shipping traffic and growing crude oil shipping, not only is the risk of pollution increasing, but also the probable impact of a tragic disaster. Ships of increased size and carrying hazardous cargo bring further implications on the safety issue.

Keywords : Bosphorus, marine casualties, pollution, tanker.

Introduction

1. Bosphorus: A leading North-South shipping corridor

The Strait of Istanbul is a Turkish waterway of economic and strategic importance, and its navigation regime is regulated by the Montreux Convention in force since 1936. It separates the two Continents, Asiatic and European Turkey, and is also the integral part of the Turkish Straits which comprise the Dardanelles, Sea of Marmara and Bosphorus, the whole area being known as the Turkish Straits Region (TSR).

Montreux Convention regarding the regime of the Turkish Straits sets forth the principle of the freedom of passage and navigation for merchant vessels under any flag and with any kind of cargo. The Convention also lays down in its Annex the compulsory transiting charges and dues payable by merchant vessels.

The Seaway constitutes second busiest shipping artery in the World, after the Straits of Malacca, with its dense and international as well as local shipping traffic. The Turkish Straits,the Bosphorus in particular, follow with an average of 132 vessel transit (passage) a day, local traffic exclusive.

There are sixteen headlands which affect the navigation. The trends and width of the Strait permit a significant range of visibility at many parts of the navigable channel (Akten, 1968). Several sharp turns within the Strait exist in areas such as Umuryeri, Yeniköy, Kanlıca,Kandilli and Kızkulesi (45° at Kandilli, 80° at Yeniköy,70° at Umur Bankı or Umuryeri) (Chapman and Akten, 1998).

The Strait is a singularly tricky strip of water. The angular windings, transits, up or down, require at least 12 major alterations of course as much as 80°, with severely limited vision around these bends. Shape of the Strait limits to have an extended sight for a proper look-out particularly beyond several headlands, except a few, as those close the view behind, while proceeding through the current traffic lane allocated for the vessel (Akten, 2002).

Table -1: Unique characteristics of the Strait of Istanbul (Istikbal 2001, Akten, 2004)

- It has a winding and quite narrow geographical structure,
- It is 17 nautical miles in length,
- Among the straits of the World it is the narrowest, constricting to a mere 0.4 nautical mile (700 metre) between Kandilli and Bebek, leaving only a vessel's length of free-way on either side in an area densely populated,
- It has numerous bends requiring 12 course alterations for some of these alterations are very sharp, about 80 degrees,
- At the bends (Kandilli and Yeniköy) where major course alterations have to be made, rear and forward visibility is totally obstructed prior to and during manoeuvring.
- It is the only strait in the world on which an international convention for merchant vessels was laid with regard to navigation regime based on the principle of the freedom of passage and navigation.

Two types of current are dominant in the Bosphorus – the main surface (or canal) current and the undercurrent. The main surface current is a slope current – the primary cause being the level of the Black Sea which is higher than that of the Sea of Marmara by about 0.4 metre - due to excessive flow of water into the Black Sea, discharged by the rivers. The undercurrent however is of density type (Akten.2002).

Geographical and oceanographic conditions as well as navigational constraints make transiting through the Strait risky and difficult. Deep and steep coastal structure, which grants poor visibility at nights for ships passing through, narrowness, numerous course

alterations, day-to-day changing currents and bad weather conditions are the main parameters of such risky navigation through. In addition, since passage through the Seaway entails a run by about 17 nautical miles all the way and takes almost two hours, utmost vigilance is necessary in order to maintain safe standards of navigation and to conduct vessels.
Turkey introduced the traffic separation schemes, in full compliance with the Rule 10 of the International Collision Regulations, ColRegs 72, in the Turkish Straits Region, the Strait of Istanbul inclusive, to enhance safety of navigation. The new schemes have been in use since 01 July 1994.

Implementation allows two-way traffic to ensure the "innocent passage" of any vessel. However, when a large vessel is enjoying the freedom of passage afforded by the Strait, an authoritative intervention of some sort is needed to avoid a potential collision.

As an integral part of the Turkish Straits, the Bosphorus is kept open for two-way traffic and all merchant ships enjoy freedom of navigation through it. For large vessels which cannot comply with the requirements of the schemes, the temporary suspension of two-way traffic, when needed, is envisaged by the Rules to ensure a "no-collision" situation in order to protect the interests of vessels passing through, as well as the safety of local inhabitants and the environment. Because, keeping to the lane and coming over the centre of the channel when rounding a narrow bend with a following current, particularly in the narrowest part of the Bosphorus, namely Rumelihisarı - Anadoluhisarı area, is quite impossible for vessels of such size (Chapman and Akten, 1998).
Traffic Separation Schemes (TSS) are implemented to ease and regulate traffic flow, and prevent ships approaching head-on to each other in the busy seaways where the shipping traffic is dense and the sea-room is rather restricted or relatively insufficient. It also helps to greatly enhance the pilot's ability.
New traffic separation schemes have been approved by IMO and were formally adopted on 25th November 1995. According to the schemes, a transit route divided into north and south bound traffic

lanes, has been established all the way through the Strait and vessels, during transit of the Strait, shall not overtake, nor attempt to overtake, other vessels unless forced to do so and not to cross the median line of the transit route.

A Notable feature of the Turkish TSSs in the winding and narrow Strait is that vessels larger than 200 metre in length are often unable to remain completely within the appropriate traffic lane, so that the relevant Turkish Administration temporarily suspends the two-way traffic before and up until a very large vessel to transit clears the Strait and regulate one-way traffic to maintain a safe distance between vessels.

The current application of the Turkish Regulations with regard to larger vessels is as follows:

- Tankers of 200 metre and above in length can effect their passage through the Strait during daytime only,
- Tankers of 250 to 300 metre range in length can only pass through after temporarily suspension of the two-way traffic and hence one-way traffic is regulated,
- Vessels of 300 metre and above in length are subject to specific terms and conditions based on the safety measures of the Turkish Administration. The same would apply for vessels under towage.

One of the contemporary safety measures that Turkish Republic has taken recently is to install the VTMIS, Vessel Traffic Management and Information System. The system based on 7 radar stations is fully operational as from 01 July 2003.

The Strait of Istanbul faces dense shipping transits. Any time in any day nearly 100 "floating bodies" use the Strait – either crossing or proceeding up or down.

The following table shows the development of shipping traffic in the Bosphorus in 1994-2002-end period, within which the TSSs regime have been applicable:

Table-2: Development of shipping traffic in the Bosphorus (Akten:2004)

Year	Number of vessels passed	Ship tonnage : (GT)	
		Total Average Million	
1994	*18720*		
1995	*46954*		
1996	*49952*	*156.1*	*3125*
1997	*50942*	*281.1*	*5518*
1998	*49304*	*276.8*	*5614*
1999	*47906*	*293.3*	*6122*
2000	*48079*	*309.4*	*6435*
2001	*42637*	*318.2*	*7463*
2002	*47283*	*389.4*	*8241*
Yearly average	*47264*	289.2	*6024*

Large vessels use the Strait although there exists navigational constrains for such vessels - figure wise constituting nearly 5 percent of the total traffic. Large vessel is specified in the Turkish Byelaw as "a vessel 200 metre or more in length". Development of *large vessel traffic* in the Bosphorus is shown in Table-3.

Table – 3: Large vessels traffic in the Bosphorus (Akten, 2003).

Year	Bosphorus traffic total	Large vessels total	Daily average
1994	18720	-	-
1995	46954	-	-
1996	49952	3720	10
1997	50942	6487	18
1998	49304	1943	5
1999	47906	2168	6
2000	48079	2203	6
2001	42637	2453	7
2002	47253	3013	8

Tankers constitute one of the leading ship types using the Bosphorus. Number of petroleum tankers for the year 2002 was 6022. Table-4 indicates shipping traffic in the Strait by main ship types, tanker traffic inclusive:

Table-4: Shipping traffic by vessel type (1997-2002-end)

Ship type/ year	*1997*	*1998*	*1999*	*2001*	*2002*
Break-bulk	24302	24931	26429	24254	28162
Petroleum tanker	***4303***	***4100***	***4452***	***5188***	***6022***
Dry bulker	2794	3148	3052	3437	4029
Coaster	10824	10161	7914	3832	2643
Container	1928	1587	1273	1448	1654
Passenger	3054	2456	1862	1503	1591
Chemical tanker	628	597	577	782	860
LPG tanker	438	445	475	548	545
Reefer ship	342	349	338	384	420
Ro/ro ship	882	513	283	265	294
Tug boat	258	224	352	247	270
Livestock carrier	418	205	442	225	201
LNG tanker	-	-	-	-	-
Others	771	588	457	526	595
T o t a l	*50942*	*49304*	*47906*	*42637*	*47283*

Source : Turkish Chamber of Shipping (1997 through 2003) : Shipping Sector Reports, Table- 38,48,49, p.82,99

2. Growth of oil trade through the Strait

Beginning of the seaborne oil trade goes back to 1861, two years after the first oil well was drilled in Titusville, Pennsylvania. The brig Elisabeth Watt was the first ship loaded 224 tons of oil in barrels in Philadelphia and carried all the way through the Atlantic Ocean, bound for London.

The seaborne oil trade grew steadily as the years went by, reaching almost 2 billion tons in the year 2002, while 35 million tons in the early 1920s.

The Turkish Straits, for the last 10 years at least, have turned into one of the key shipping foci of the world seaborne oil trade, such as the Suez Canal, the Straits of Malacca and the Straits of Dover. It was previously the same in 1892. In that year, oil cargoes loaded in the Black Sea port Batumi were delivered by tankers to their customers in the Far East destination(s), all passing through the Turkish Straits.

Nearly 123 million tons of oil passed through the Turkish Straits in 2002, [1] representing 5 per cent of the oil traded by sea. Number of tankers passed through the Strait of İstanbul, up or down, was 6022 in the same year. In other words, 16 tankers a day, large or small, sailed through the Bosphorus, laden or in ballast. Similarly, 1405 tankers carrying LPG and chemicals further used the Bosphorus, which means additional 4 tankers a day - but smaller in size.

Tanker traffic that the Strait witnessed by vessel type in 1997-2002 period is shown in Table-5:

Table -5: Tanker traffic by vessel type (1997 – 2002)

tanker type	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Petroleum	4303	4100	4452	4937	5188	6022
LPG	438	445	475	474	548	545
Chemical	628	597	577	682	782	860
LNG	-	-	-	-	-	-
Total	*5369*	*5142*	*5504*	*6093*	*6518*	*7427*

Source: Turkish Chamber of Shipping (1997 through 2003) : Shipping Sector Reports, Table- 48, p.82

[1] Relevant figures for previous years are as follows : In 1997, 63 million tons, in 1998, 69 million tons, in 1999
82 million tons, in 2000, 91 million tons, and in 2001, 101 million tons respectively.

Shipping traffic in the Strait was 4125 transits in the year 1841 and almost tripled in 1856, during the Crimenian War. There are now an average of 25.000 transits per year *in each direction* including inter alia, tankers, chemicals, product tankers, LNG and LPG carriers - the largest size passing through being 150 to 160.000 tonners fully laden or vessels of around 310 metres in length partly laden. Almost one-third of the total transits is the local ships passing through the Strait.

Shipping accidents and oil pollution in the Bosphorus

1. Shipping casualties.

The Strait faced 461 marine casualties of different types in 1953-2002 period, accounting 24 percent for the "left-side up scheme", 58 percent for the "right-side up scheme" and the remaining 18 percent for the "traffic separation schemes" respectively(Akten, 2004).

Figure wise, 209 collisions, 138 groundings, 77 stranding, 28 fires / explosions and 9 others (such as rudder blockade, vessel's list, or engine breakdown), totalling 461 accidents and casualties occurred in the Bosphorus. Table-6 indicates the breakdown of the casualties occurred in the area for this period in terms of main casualty groups: i.e. collision, stranding, grounding, foundering, and fire / explosion.

Table – 6 : Marine casualties in the Bosphorus *(1953-2002)*(Akten, 2004)

Navigation scheme	Period	Collision	grounding	Stranding	Fire/ explosion	others	Total
"left-side up"	1953-1982	79	17	14	None	-	110
"right-side up"	1982-1994	105	89	50	25	-	269
Traffic Separation Schemes	1994-2002	25	32	130	3	9 **a**	82
Total	1953-2002	209	138	77	28	9	461

a includes rudder blockade, vessel's list and engine breakdown.
Source : Turkish Maritime Undersecretariat, casualty records, İstanbul area, 1994 to 2002, Ankara

Ships spend quite long time from one port to others, are exposed to various external hazards like darkness, different visibility conditions which one way or another contribute to marine casualties.
The numbers of casualties known to have occurred in parts of the day, i.e. in darkness and daylight, are shown in Table – 7 according to main casualty groups (Akten,2004).

Table – 7: The Bosphorus: marine casualties in darkness and daylight (Akten, 2004).

Type of casualty	Darkness	Daylight	Darkness / daylight ratio
Collision	17	8	2.1
Grounding	24	8	3.0
Stranding	8	5	1.6
Fire/explosion	-	3	0.0
Others	4	5	0.8
Total	53	29	1.8

Grounding and stranding are the major casualty types occurred in the Bosphorus and constitutes 56 percent of all casualties – the main risk factors being currents, sharp turns and darkness.

Yeniköy and Umuryeri are the two main crucial areas in the Bosphorus where most of the stranding and grounding casualties take place, mainly due to complex and day-to-day changing character of the prevalent currents as well as large course alterations that vessels have to make with or against the main current. Most of such casualties occur when vessels with current taking sharp turns lose their manoeuvrability. More than half of the grounding and stranding casualties in the Bosphorus in TSSs period occurred at these two critical points. Figure wise, 26 such casualties took place in Yeniköy and Umuryeri areas (13 in Yeniköy, 13 in Umuryeri) out of the total 45 (Akten, 2004).

The localities with high risk for grounding / stranding in the Bosphorus are: Umur Bankı, Yeniköy, Bebek, and Kandilli; for collisions however the evidence suggests that critical areas are Bebek, Kandilli, Kanlıca, Yeniköy, Beykoz and Sarıyer.

2. Pollution cases in the Bosphorus

Shipping accidents of today have become more "environmental" and the issue has been though than ever for all parties concerned. Potential risks and perils already exist in the Bosphorus. With current heavy shipping traffic and growing crude oil shipping, not only is the risk of pollution increasing, but also the probable impact of a tragic disaster.

Increasing size of ships to an incredibly larger scale to achieve economies in transport costs has brought in higher risks and ultimately more costly actions in case of emergency. Oil is the most important pollutant and pollution incidents are caused mostly either by ship operations or tanker accidents, like collision, grounding or stranding.

Oil pollution from ships was first recognized as a problem during the First World War, but there was no attempt to introduce effective measures concerning accidental and operational oil

pollutions, or to deal with pollution by other substances until the Torrey Canyon disaster occurred in 1967.

Oil pollution incidents are caused mostly by shipping activities; either by *ship operations* such as loading or discharging of oil, bunkering, oil transfer etc.(operational pollution) or *ship accidents*, mostly by tankers, such as collision, grounding, hull failures, fire and explosion (accidental pollution). The consequences of an accident can have negative impacts on the affected area, particularly if the accident occurs close to the coastal area (Lusted, 1996).

Oil tanker is the ship which appears most likely to cause major environmental damage. In the case that one of the ships involved in a collision accident is a tanker or a vessel carrying dangerous cargo major pollution problem is likely to occur. An example to this is the Atlantic Express disaster off Tobago in 1979, where 276.000 tonnes of oil was spilt as a result of the casualty. Similar incidents have also occurred in the Bosphorus, such as with the World Harmony, Peter Zoranic, Norborn, Lutsk, Independenta, Nordic Faith, Blue Star, Nassia, Jambur to mention a few. Around 200.000 tonnes of oil has been spilt into the Bosphorus and its approaches from these casualties alone. Whatever the nature of a casualty, it takes more serious shape and effect in a confined area.

The tanker *Torrey Canyon* which grounded off the Scilly Isles just 36 years ago was the first major incident of its kind resulting in extensive oil pollution. The Norwegian tanker *Orange Star* went aground in December 1997 in the same spot as the bulk carrier *Friendly* a year previously in the Bosphorus (Chapman and Akten, 1998). Similarly, the Greek tanker *Sea Salvia* with 81000 tons of Russian crude onboard, and en route for the Aegean Sea ran aground in July 1998 in the same point as the other Greek tanker *Crude Gulf*, loaded with 140800 tons of crude of the same origin, almost a month after, on August 25, when both in the wrong shipping lane at the southern exit of the Bosphorus, even blocking the shipping movement for quite some time to and from the Haydarpaşa container terminal.

The dangers created by today's tanker accidents are incomparable to those in the past. The Turkish Straits, Bosphorus in particular, unfortunately, have also seen their share of serious accidents. The following are but a few examples:

1. The 1960 collision of the 'World Harmony' and the 'Peter Zoranic' resulted in the 'Peter Zoranic' burning for days after hitting the shore near several crude oil tankers at Kanlıca.

2. In 1966 the collision between two USSR ships, the 'Lutsk' and the 'Kransky Oktiabr', off the shore of Üsküdar poured gallons of burning crude oil into the Strait completely destroying a Turkish ship and a large floating pontoon

3. The 1979 collision between the Romanian tanker Independenta and the Greek cargoship Evriali resulted in the death of 41 Romanian crewmen, the partial burning of a grounded tanker, and millions of dollars in damage to the environment

4. The 1990 collision between the tankers "Da Tung Shan" and "Jambur" poured 2,000 tons of crude oil into the Strait of İstanbul.

5. The 1994 collision between the tanker 'Nassia' and the dry bulk carrier 'Shipbroker' resulted in the burning for days of the Nassia and the death of over 30 crewmen. The "İstanbul Bogazı" was forced to close for seven days and over 500 ships had to wait for passage (Aybay and Oral, 1998).

Accidents ended up with pollution have occurred in the Bosphorus and its approaches, and almost 200.000 tons of oil spilled into the sea. Major collision accidents took place in the Bosphorus region is as follows:

Table 8: Major collision accidents in the Bosphorus

date	Vessel name and flag	Accident area	Accident type and if oil spilt
14.12.1960	World Harmony (Greek)v.Peter Zoranic (Yugoslav)	Kanlıca	Collision and fire: 18000 tons oil spilled
15.09.1964	Norborn(Norwegian) v.wreck of Peter Zoranic	Kanlıca	Contact:fire and oil spilled
01.03.1966	Lutsk(USSR) v.Kransky Oktiabr (USSR)	Kızkulesi	Collision and fire: 1850 tons oil spilled
15.11.1979	Independentia (Romania) v.Evriali (Greek)	Haydarpaşa	Collision and fire:94600 tons oil spilled
09.11.1980	Nordic Faith(British) v.Stavanda (Greek)		Collision and fire
29.10.1988	Blue Star (Malta) v.Gaziantep (Turkish)	Ahırkapı	Contacted mt Gaziantep:1000 tons ammonia spilled
25.03.1990	Jambur(Iraqi) v. Da Tung Shan(Chinese)	Sarıyer	Collision : 2600 tons oil spilled
14.11.1991	Madonna Lilly(Philippines) v.Rabunion 18 (Lebanese)	Kanlıca	Collision:20.000 live animals drowned
13.03.1994	Nassia(Philippines)v. Shipbroker (Philippines)	Sarıyer	Collision and fire:9000 tons oil spilled;20.000 tons oil fired
30.12.1999	Volganeft(Russian)	Ahırkapı	Collision: 1200 tons oil spilled
07.10.2002	Gotia (Greek)	Bebek	Collision and stranding : 22 tons oil spilled

Source:Akten,Ustaoğlu, Rodopman (1995):Marine casualties in the Turkish Straits and their implications for the environment, ITU Maritime Faculty, İstanbul.

Ship accidents have a distinct effect on the marine ecosystem. After the collision accident occurred in 1979 between the Romanian tanker Independenta and the Greek cargo ship Evriali, 64.000 metric tons of crude oil out of the total 94.000 metric tons spilled into the sea. As a consequence of the rapid evaporation of the light components, the spilled crude oil sank rapidly to the sea bottom and the bottom area of approx. 5.5 km in diameter was fully covered with a thick tar coat of mean concentration of 46 g / m2. On the m.t Nassia case occurred in 1994, 9000 metric tons of oil was discharged into the sea. The marine environment was greatly affected. Most bays and beaches in the Bosphorus were covered with oil and pitch. At least 1500 sea birds coated with oil - although this figure is probably underestimated.
On the m.v Rabunion-18 case, 20.000 live sheep sank with the ship after the collision accident in the Bosphorus. The sunken sheep decomposed at the bottom and caused hypoxia. Due to the hypoxia, the populations of some organisms showed mass mortality. Dissolved oxygen level was measured at 2 mg/l and water transparency value as 0.5 m (Öztürk *et al.*, 2001).

3. How about if a LPG casualty occurs?

Istanbullers have lived with the threat of so many atomic bombs. An LPG tanker of 30.000 tonnes dwcc may have an effect of 11 times as much as that of the bombs dropped Hiroshima and Nagasaki. The Bosphorus has faced many such dangerous assets passing through almost any day. In the year 2002, as an example, totally 545 LPG vessels, almost 2 vessels any day, enjoyed the freedom of navigation, up or down, through the Strait.

Dangers and environmental threats did not exist long ago; but it does today. Nothing is impossible; it may be argued that a LPG tanker whatever the size is safe and secure enough and petroleum gases carried in cargo tanks in liquefied form do not explode easily; but it can not be measured beforehand how physical or environmental changes can give rise to a violent collision ending up with a very serious threat or how a large fire affects the gas leaking or escaping from a cargo tank.

Without jumping into chemical equations, the energy emitted due to successive explosions in an LPG tanker of 30.000 tonnes dwcc can be calculated as is explained below:

Lower heating value of the LPG carried in tanks:

QLPG (total) = 30.000.000 kg x 40.000 KJ/kg = 1.200.000.000.000 KJ

As 1 kg of dynamite generates energy of 5434 KJ;

1.200.000.000.0 KJ: 5434 = abt. 220.000.000 kg of dynamite = 220.000 tons of dynamite.

The atomic bombs dropped onto Hirosima on August 5, 1945, was equal to 20.000 tons of dynamite (Doğru, 1989). Therefore, a LPG tanker of 30.000 tons dwcc can generate energy equivalent to approximtely 11 atomic bombs of Hiroshima size.

Another aspect of LPG in case of gas escaping or leakage is the toxicity. As specified in the relevant safety guide, petroleum gas produces narcosis on human being. "The symptoms include headache and eye irritation with dizzines similar to drunkenness. At high concentration these lead to paralysis, insensibility and death" (ICS, OCIMF and IAPH, 1984).

The human body can tolerate gas concentrations up to 0.2 per cent and irritation of eyes occurs. When the concentration reaches to a level of 0.7 per cent however, drunkenness within 15 minutes takes place and immediate death happens when the concentration is of 2 per cent or 20.000 ppm (ICS, OCIMF and IAPH, 1984).

4. The "Prestige" case and the Spanish reaction to marine pollution

"The Prestige is our Chernobyl" said one of the Spanish Government Officials.

November 13, 2002 was a special day for Spain. A single-hulled tanker named Prestige, bound for Singapore with more than 77,000 metric tons of fuel oil on board, suffered from the high winds and

turbulent sea very near the Spanish coast and began to spill fuel on that day.

On November 13, 2002, a severe storm hit the north-western tip of the Iberian Peninsula, the Galician coast in Spain. Heavy rains and high winds of over 120 km/h were observed over the region, and especially over the maritime area near the Atlantic coast of Galicia. Various factors contributed to the increasing magnitude of the disaster, but the most important one was undoubtedly the "weather connection.

"This was the start of one of the worst ecological disasters ever recorded in Galicia, in Spain, in Europe, and even worldwide. The Prestige was transporting twice as much of oil as the infamous Exxon Valdez, which went aground in Alaskan waters in 1989" (Diaz, 2002).

"As a consequence, "black tides" of highly toxic fuel oil began to reach the coastal areas, driven by high westerly winds during the next two weeks. The oil slick virtually destroyed one of the most beautiful and richest areas for fishing in Europe, affecting the economy and the basis of many fishermen's livelihood. Hundreds of beaches were destroyed, and the wildlife has been severely damaged, which affects the crucial economic activities such as tourism.

However, some lessons have to be learned. On a national level, Spain did not have a preparedness plan for this kind of disaster. Although these kinds of events are not unusual in Galicia, the magnitude of this event forced the national government to take urgent action.

For the first time, a "human-made" disaster has had a harsh impact on all stages of Galician social life, and even in all of Spain. The political consequences in the long term are very difficult to predict. The capacity of the European Union (EU) to exert a leadership role in environmental protection, following the US withdrawal from the Kyoto Protocol process, has also been called into question. The EU has maintained a very weak policy about ocean transport of

dangerous cargo, a policy forced by the economic interests of some EU members.

Currently, the Prestige is an ecological time bomb. Sunk 3,000 meters deep in the Atlantic Ocean, with 40,000 tons of fuel oil remaining in its tanks, it continues to represent a serious threat not only to Galicia, but to other locations in the Atlantic as well. Living marine resources in this part of the Atlantic could be damaged by the toxic waste; fishing industries of several countries could be impacted in a wider sense. The Prestige disaster might, for example, prove to be the beginning of the end for many parts of the rich fishing industry based in Galicia. It is also the beginning of the end of the old EU policy regarding the security of transportation in European seas and coastal areas. In any event, what the Prestige disaster MUST be the beginning of the end of a worldwide policy that relegates the environment to being held hostage to the economic interests in the name of human well-being. Thousands of Galician fishermen remain at risk, and the world must pay attention"(Diaz, 2002).

The seriousness such disasters pose for both human life and the environment cannot be overstated. Many other straits used for international navigation have equally witnessed calamitous accidents. States such as Italy have responded by suspending the passage of tankers completely, others such as France and Britain have implemented sophisticated technology in addition to traffic separation schemes. Turkey has adopted a traffic regulation scheme taking into account its obligations under international law and in accordance with its obligations to such international organisations as the IMO (Aybay and Oral, 1998).

Conclusion

During the five century rule of the Ottoman Empire and on into the 74 years of existence of the modern Republic of Turkey, the waters comprising the Turkish Straits have always been deemed by Turkey to constitute internal waters. The existence of an international convention did not alter this long-standing geographic

and political reality. The Turkish Straits have always been and continue to be considered an integral and inseparable part of Turkish territory. However, Turkey has recognised the principle of freedom of passage to apply to all vessels traversing the Turkish Straits. The basic principles regulating the regime for passage through the Straits were established by the 1936 Montreux Convention and with state practice have developed into a sui generis regime over a period of 61 years. Only Turkey retains the authority to interpret the Convention and adopt the necessary rules and regulations for administering the Straits. The 1994 Turkish Straits Regulations were adopted taking into account Turkey's responsibilities under Montreux, as well as trying to fulfil the international objectives of the IMO. So long as Turkey has met these obligations, Turkey is free to regulate traffic through the Straits (Aybay and Oral, 1998).

The Straits have significant importance as the only maritime route to and from the Black Sea markets of Bulgaria, Georgia, Romania, Russian Federation and then to the Caspian Sea and the central Asian markets of Armenia, Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan. The Black Sea is surrounded by Turkey, Bulgaria, Romania, Russian Federation, Ukraine, Moldavia and Georgia. All those Black Sea rim States except Russia and Turkey are dependent on the Turkish Straits for their seaborne commerce (İstikbal, 2001).

The Bosphorus in this regard is the most critical passage in the World for vessels passing through - mainly due to its narrowness, its twisting geography (i.e. its shape with several sharp turns, and headlands which limit to have an extended sight for a proper look-out and close the view behind), as well as complex nature of its currents.

The Strait is something like a risk generator from the point of view of maintaining a safe passage. Not only the state of currents, eddies, fog and strong winds (even sometimes gales) within the Strait, but also its shape which limits, or closes rather, the view behind headlands, to a great extent reduce the safety of navigation

and hence build up potential risks and perils for vessels to pass through. Ships of increased size and thus with reduced manoeuvrability bring further implications on the safety issue (Akten, 2002).

Turkey has genuine safety and environmental protection interests in the Bosphorus. As the Strait separates the metropolitan area into two almost equal parts, and due to the over-crowded character of the area (comprising one quarter of the total population), the consequence of any casualty is likely to be catastrophic. It is simply divine luck that the city, with its 15 million inhabitants, has so far escaped relatively undamaged (Chapman and Akten, 1998).

The volume of dangerous cargo traffic passing up and down through the Straits has already reached dangerous level due to ever increasing large tanker shipping. Similarly, the extent of the traffic congestion is expected to increase even more in the near future due to the following factors: (MFA, 2004).

- The opening of the Main-Danube canal in September 1992 has linked the Rhine and Danube rivers, thereby creating a direct route between Rotterdam and Constanza,

- An increase has recently been observed in the traffic originating from the Volga-Baltic and Volga-Don canals and bound for the Mediterranean Sea and to Turkish ports,

- With the loss of its other harbours after the dissolution of the USSR, the foreign maritime trade of the Russian Federation is naturally shifting to its Black Sea ports. Coupled with this, economic recovery and foreign investment in the Russian

- Federation and the other successor states of the ex-USSR, which rely on the Straits and Black Sea for their maritime trade, are expanding the volume of traffic through the Straits.

Currently, navigational and environmental safety is the most pressing concern. What is at stake is the physical and environmental security of Istanbul with its 10 million inhabitants, as well as the safety of transit and navigation in the Straits.

However, it is all too obvious that due to the risky nature of the Straits especially for large vessels with regard to safe navigation, and the existing grave situation created by dense and large tankers traffic, the Turkish Straits cannot be considered as an oil transportation route. The Straits cannot carry the additional burden which will be brought by large amounts of oil shipments (MFA, 2004).

Safe navigation in the Bosphorus is a matter of vital importance to Turkey as well as to all nations using the Strait. Therefore, the dangers posed by ever increasing shipping traffic to the surrounding inhabited areas and to the environment have compelled Turkey to take immediate action and to reinforce existing regulations of maritime traffic in the Strait. [2]

"The increase in traffic density through narrow channels and also an increase in the size plying through straits have imposed heavy responsibilities on strait States for ensuring safe navigation and the protection of marine environment and that the potential for disastrous accidents in the narrow waters of straits have serious economic and social consequences for coastal communities" (Nandan, 1999).

Özet

İstanbul Boğazı,halk arasındaki adıyla da Boğaziçi, Türk Boğazlar Bölgesi içinde yer alan ve Karadeniz'i Marmara'ya bağlayan deniz geçididir. 17 Deniz mili (31 km) uzunluğu olan bu dar ve kıvrımlı geçit, günden-güne değişebilen akıntıları yüzünden de gemiler için kaza rizikosu yüksek bir su yolu olma özelliğine sahiptir.

İstanbul Boğazı uluslar arası deniz trafiğine açıktır. Montrö Sözleşmesiyle, bayrağı ve yükü ne olursa olsun, ticaret gemilerine barış zamanında transit

[4] The Montreux Convention and maritime traffic regulations in the Turkish Straits,
http:// www.byegm.gov.tr/YAYINLARIMIZ/newspot/2002/july-aug/n7.htm

(geçiş) ve seyir serbestisi tanınmıştır. Ancak bu serbesti, hem belli formalitelerin yerine getirilmesine (fener parası, sağlık resmi, tahlisiye ücretinin ödenmesi gibi), hem de "zararsız geçiş" koşullarına bağlıdır.

İstanbul Boğazından günde ortalama 132 gemi geçiş yapmaktadır. Montrö Sözleşmesinin yürürlüğe girdiği 1936 yılı deniz trafiği rakamı baz olarak alındıkta, günümüzdeki trafik, o dönemin 10 katı mertebesindedir. Hem de gemi boyları ve tonajlar artmıştır.

İstanbul Boğazından geçen tanker trafiğinde de artış vardır. 2002 Yılında dünya ham petrol tonajının %5''i İstanbul Boğazından geçen tankerler aracılığıyla taşınmıştır.

İstanbul Boğazında 1953-2002 döneminde 461 deniz kazası olmuştur. Bu kazaların 110 tanesi "sol seyir döneminde"(1953-1982), 269 tanesi sağ seyir düzeninde (1982-1994), 82 tanesi de trafik ayrım düzeni (TAD) uygulamasının başladığı günden bu yana olan dönemde (1994-2002) meydana gelmiştir.

İstanbul Boğazındaki deniz kazaları içinde "karaya oturma" ve "kıyıya çarpma" önde gelmektedir (%56). Yeniköy ve Umuryeri de, gemilerin oturma kazası yönünden Boğaziçi'nin en kritik iki yeridir.

İstanbul Boğazından yüzer atom bombaları da geçmektedir. 30.000 Ton taşıma kapasiteli bir LPG tankeri, bir deniz kazası sonrasındaki patlama durumunda Hiroşima veya Nagazaki'ye atılmış atom bombasının 11 katı şiddetinde enerji üretecektir.Dolayısıyla,400 km^2 lik bir alanda tek bir canlı dahi kalmayacaktır.

İstanbul Boğazında kazaların asgariye indirilmesi, dolayısıyla seyir güvenliğinin artırılması sadece İstanbulluların can güvenliği ve tarihi çevre için değil, dünya ticaretinin aksaksız yürümesi bakımından da çok önemlidir.

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