



**Briefing Paper for OCIMF Member Companies**

# **Guidelines for Transiting the Turkish Straits**

**August 2007**



*The OCIMF mission is to be the foremost authority on the safe and environmentally responsible operation of oil tankers and terminals, promoting continuous improvement in standards of design and operation.*

Oil Companies International Marine Forum

### **Notice of Terms of Use**

The advice and information given in this briefing paper ("Paper") is intended as purely guidance to be used at the user's own risk. No warranties or representations are given nor is any duty of care or responsibility accepted by the Oil Companies International Marine Forum ("OCIMF"), the membership or employees of OCIMF or by any person, firm, company or organisation (who or which has been in any way concerned with the furnishing of information or data, the compilation or any translation, publishing, supply or sale of the Paper) for the accuracy of any information or advice in the Paper or any omission from the Paper or for any consequence whatsoever resulting directly or indirectly from compliance with, adoption of or reliance on guidance contained in the Paper even if caused by failure to exercise reasonable care on the part of any of the aforementioned parties.

## PURPOSE AND SCOPE

The purpose of this briefing paper is to provide guidance for OCIMF member companies when considering the transit of their tankers through the Turkish Straits. The paper does not make judgements on whether or not these transits should be undertaken, but provides additional guidance to assist with member companies' own risk assessment processes.

*For the purpose of this document, and for consistency with relevant Turkish regulations, international treaties and the International Maritime Organization (IMO) recommendations, the Turkish Straits are defined as comprising the Strait of Istanbul (Bosporus), the Strait of Çanakkale (Dardanelles) and the Sea of Marmara.*

## BACKGROUND

### Regulatory Regime

The Montreux Convention (1936) established the general principle of freedom of navigation through the Turkish Straits, for all merchant vessels, by day and night. The Turkish authorities have certain powers to control transit vessels, but pilotage and towage are specifically cited as remaining optional.

To be considered a "vessel in transit", the vessel must not be bound for a Turkish port, nor have a stopover of more than 48 hours, excluding involuntary waiting time.

Following a number of serious incidents in the Turkish Straits, in 1994 Turkey proposed a Traffic Separation Scheme (TSS), which was adopted by IMO in 1995. To improve navigational safety, Turkey also introduced, in 1994, regulations for navigation in the Straits. These were updated by a revision in 1998, and 'New Instructions' in 2002 including, among other things, the suspension of all traffic in conditions of poor visibility, the implementation of one-way traffic during the transit of certain types of vessels and the restriction of large vessels carrying hazardous cargo to daylight-only transit.

At 12.00GMT on 31 December 2003, Turkey implemented a Vessel Traffic Service within the Turkish Straits to further improve navigational safety.

These measures are further described in the Appendix to this briefing paper.



## INTRODUCTION

The Turkish Straits are among the busiest waterways in the world. On average, some 55,000 vessels transit the Straits every year and 80 per cent of these are less than 150 metres in length. There is also a very high volume of small ferries, fishing boats and pleasure craft crossing the Strait of Istanbul.

### **Istanbul Strait (The Bosphorus)**

The Istanbul Strait is about 18 nautical miles in length and just 700 metres wide at the narrowest point. It contains several significant turns, which can serve to obscure oncoming traffic, and require course alterations of up to 80 degrees.

Currents in the Strait may be strong and variable in direction. The general surface current flows from the Black Sea to the Mediterranean at speeds which typically average 2 - 4 knots, but can reach 7 knots in the event of strong northerly winds. Strong southerly winds can weaken or even reverse the surface current. (The reverse current is known as the "Orkoz".) A northbound sub-surface current, caused by the lower density of the Black Sea compared to the density of the Aegean Sea, flows between 2 and 9 metres below the surface at speeds of up to 3 knots. Significant turbulence and eddies occur where the currents mix. This can result in unpredictable navigational conditions and consequent closure of the waterway.



The Strait bisects the City of Istanbul (population 10 million). Ferries and other local traffic conduct some 2,400 crossings a day. The conurbation extends along the Strait and results in considerable background light at night in which the navigation lights of vessels may be obscured. Ferries and local craft are required to give way to transiting vessels. Fishing takes place within the Straits (although not permitted in the designated traffic lanes) both by day and night.

### **Çanakkale Strait (The Dardanelles)**

The Strait of Çanakkale is about 38 nautical miles long. The passage is generally straightforward, with the exception of two significant turns, near the City of Çanakkale, where the Strait reaches its narrowest width (about 1,300 metres). Navigation is consequently less hazardous than in the Strait of Istanbul, although strong currents (up to 5 knots), numerous eddies and counter currents are experienced throughout the Strait.

A limited number of passenger and car ferries run daily between Çanakkale on the Asian side and Eceabat and Kilitbahir on the European side. The remainder of the Strait passes through a sparsely populated region, with very little on-shore background lighting at night.

### **Open Sea Approaches**

The open sea approaches to the entrance of each Strait pose no significant geographical hazards. However, current VTS Rules require vessels to enter a 'Controlled Zone' in order to register their arrival for passage through the Straits. Vessels may then anchor or proceed back out to sea, while awaiting their allotted transit. The anchorages and offshore waiting areas are exposed to the prevailing weather and are subject to significant congestion in the event of closure of the Straits - e.g. due to

poor visibility. The largest congregation of waiting vessels tends to be at the Aegean entrance to the Çanakkale Strait.

The Black Sea entrance to the Istanbul Strait has only limited anchorage areas available, all of which are unprotected from prevailing weather conditions. Large tankers approaching this entrance are generally fully loaded and usually await their allotted transit well offshore.

Traffic is suspended for vessels carrying hazardous cargo when visibility is less than 1 mile and for all vessels when visibility is less than 0.5 miles. When normal traffic resumes, vessels shaping up to assume their transit slot for entry to the Straits increases the collision risk.

## **Sea of Marmara**

The Sea of Marmara joins the Istanbul Straits to the Çanakkale Straits. The transit distance is about 110 miles, and does not pose any significant navigational hazards to vessels. The Sea of Marmara approaches to the two Straits tend to be more congested than the open sea approaches. The approach to Çanakkale Strait has limited anchorage space, and that space is close to the traffic lanes. This can result in hazardous conditions when, for example, a vessel drags its anchor in heavy weather. The approach to Istanbul Strait is adjacent to the port of Istanbul and is typically very crowded, with merging traffic lanes and a precautionary area in the immediate approaches.

## SAFETY (PREVENTIVE) MEASURES IMPLEMENTED

### Turkish Straits Vessel Traffic Service (TSVTS)

The TSVTS came into operation in 2003. The service currently covers the Straits of Istanbul in four sectors, and the Strait of Çanakkale in three sectors. Each sector is controlled by an operator. Work is in progress to incorporate coverage of the Sea of Marmara into the system, with the object of linking up all the sectors into a single VTS system. This should be accomplished in 2007.



The VTS provides information, navigational assistance and traffic organisation services. The objectives are to provide for the safety of marine traffic and protection of the environment. Duties include strategic planning, monitoring and managing traffic, the provision of information and assistance, and the coordination of rescue and salvage services.

### Traffic Separation Scheme (TSS)

A TSS was introduced throughout the Turkish Straits in 1995. The scheme provides two clearly-defined lanes for vessels utilising the Straits to help prevent vessels from meeting head-on. The TSS is monitored by the Turkish Straits VTS, which informs transiting vessels of the traffic situation in their vicinity.

The TSS has been adopted by IMO and is subject to Rule 10 of the International Regulations for Preventing Collisions at Sea (COLREG). Although some non-compliance with COLREG and TSS Rules has been recorded by the TSVTS, the working group was not aware of any significant 'rogue' traffic disregarding the schemes or transit rules.

### Navigation Aids

There are several leading lights and Racons within the Straits to assist safe navigation.

### Turkish Regulations

Navigation within the Turkish Straits is governed by the Maritime Traffic Regulations for the Turkish Straits and the Marmara Region. They were originally introduced by the Turkish Authorities in 1994<sup>[1]</sup> and were revised in 1998<sup>[2]</sup>. In 2002, "New Instructions for the Application of the 1998 Rules"<sup>[3]</sup> were issued and, together, these form the current legislative regime. A précis of the relevant points from these documents, which are of particular significance to tankers and other large vessels, is contained in the Appendix to this briefing paper.

The Regulations are designed to control traffic in the Straits to ensure the safety of navigation, life and property and the protection of the environment. The Regulations are intended to apply to all vessels in the region.

The Regulations define vessels carrying "dangerous cargo" as including those carrying petroleum and its derivatives, and those which are not gas-free following the carriage of such cargoes. Any such vessel which is 200 metres in length or more is also considered as a "Restricted Vessel".

## **IMO Recommendations 1995**

Following the adoption of the TSS in 1995, IMO made the following recommendations<sup>[4]</sup>:

- Vessels shall follow the TSS within the Straits.
- Vessels entering the Straits are strongly recommended to participate in the reporting system (TUBRAP) and to make use of the information broadcasts that are provided.
- Pilotage is strongly advised for masters in order to comply with the requirements of safe navigation.
- Daylight transit is advised for vessels with an overall length of more than 200 meters and a draught of 15 meters or more.
- Vessels may only transit under tow when the towing vessel is suitably equipped for the operation.
- Vessels may use the designated anchorages if required to do so.

Within the context of the IMO recommendations, the term "the Straits" was defined as "the Strait of Istanbul, the Strait of Çanakkale and the Marmara Sea". However it is not clear whether the authors of the recommendations envisaged that all of the above provisions were intended to apply throughout the entire waterway.

## **OCIMF Member Company Guidelines**

OCIMF member companies and some ship managers have introduced their own individual guidelines for transit of the Straits, some of which are based on detailed risk assessments. These vary according to the emphasis placed by the company but, in general, impose requirements that are additional to the Turkish Regulations, in certain areas.

The effect of the interaction of such measures with the regulations can be unhelpful to all parties (e.g. where vessels forego their allotted transit slots and interrupt scheduling, because transit conditions do not meet specific company criteria). In order to avoid this, OCIMF considers that it would be beneficial if members worked to the common criteria described in this document, which are consistent, acceptable to all and fully integrated with the Turkish Regulations.

## **Pilotage in the Turkish Straits**

There is a well-established system of Pilotage in the Turkish Straits, operated by Turkish Maritime Incorporated. The service employs 140 pilots from two stations in the Strait of Istanbul and two stations in the Strait of Çanakkale.

Pilotage within the Turkish Straits is compulsory only for vessels bound for or leaving Turkish ports, and/or for LNG vessels transiting the Strait of Çanakkale. Pilotage is recommended by IMO and the Turkish Authorities for all vessels transiting the Turkish Straits; a recommendation that OCIMF supports. Although almost all large tankers adhere to the recommendations of the IMO Resolution and employ a pilot, it is estimated that around 67% of all vessels transiting still do so without a pilot.



## MITIGATION MEASURES

### Oil Spill Response

Turkey passed oil spill legislation in 2004 and has subsequently adopted secondary legislation to begin implementation of this Law. The Ministry of Environment and Forestry has overall authority but is working in very close partnership with the Undersecretariat for Maritime Affairs. There are various projects underway to develop the national contingency plan, which include risk assessment, sensitivity mapping and the establishment of regional (i.e. regions within Turkey) centres for pollution response.

Tier 1 response capabilities are reported at the government-run Directorate General of Coastal Safety (DGCS). SESMEKE (a joint venture between SEACOR and MEKE) and Istanbul Municipal Council also have Tier 1 response capabilities. These resources have been utilised at various relatively small spills in the Straits. However, the strong currents in the Straits generally limit the ability for on-water oil containment.

The marine terminals in Izmit Bay also have Tier 1 equipment and there is reported to be a mutual aid agreement that provides a Tier 2 capability.

There is a substantial quantity of equipment in Turkey dedicated to the Baku-Tbilisi-Ceyhan (BTC) pipeline (4 bases). However, these are situated in the East of the country and release and mobilisation to incidents in the Straits has not been tested.

There has been discussion about the need for establishing an additional Tier 2 capacity in the Black Sea region, possibly in the Istanbul area. Progress with discussions about such a capability is dependent on the initial development of an effective National Plan.

In the event, it is unlikely that any significant spill could be contained with resources presently available locally.

OSRL/EARL's base in Southampton, UK would be the primary source for international resources to support any major (Tier 3) incidents, possibly supported from their Bahrain base, with additional resources available from Briggs in Baku, SEACOR at BTC and SESMEKE at Ceyhan. It is likely that the OSRL/EARL resources could be mobilised and deployed quicker than support from localities in the region. There are precedents of successful response by OSRL/EARL to incidents in 1994 (*Nassia* spill in the Istanbul Straits) and 1999 (earthquake induced spill in Izmit Bay).

### Emergency Response - Towage, Salvage and Lightering

There are several strategically-positioned Emergency Response Vessels (ERV) within the Straits. These vessels have towage, fire-fighting and oil spill response capabilities.



Turkish Legislation assigns the Directorate General of Coastal Safety (DGCS) the sole right to conduct salvage in the Turkish Straits and all resources have to be made available through the DGCS. Such salvage services are usually undertaken on the Turkish Salvage Form of salvage agreement (“TOF”). The Turkish Salvage agreement is a very different document to Lloyds Form of Salvage Agreement (LOF2000). Once signed, both LOF2000 and the TOF prevent a shipowner from contesting that the services provided under the contract were in the nature of salvage. Under the TOF, the Salvor cannot be held liable for any loss or damage suffered by salvaged property. It would appear that the salvor is free to make demands for security at whatever level he, the salvor, considers appropriate. The Master of the vessel salvaged exposes himself to a personal liability if cargo is discharged before the salvage security is provided by cargo interests. The shipowner is jointly and severally liable to the salvor for the payment of the salvage award and costs and expenses.

If the shipowner and salvor are unable to agree the level of the salvage award, each may appoint an arbitrator who will determine the level of the salvage award. If the 2 arbitrators are unable to agree the level of an award, the Maritime Court in Istanbul will appoint a third arbitrator. The arbitrators fees are based on a percentage of the amount they award. Where 2 arbitrators are appointed, each receives a fee based on 5% of the salvage award and where there are 3 arbitrators each receives a fee based on 4% of the salvage award.

The DGCS has a limited number of salvage tugs as per table below, operated out of different locations in the Straits:

Name of Vessel	Location	Date of Build	Bollard Pull
Alemdar 2	Istanbul / Büyükdere	1966	45 Ton
Gemi Kurtaran	Büyükdere	1984	75 Ton
Kurtarma 1	Çanakkale	2000	52 Ton
Kurtarma 2	Harem	2000	53 Ton
Kurtarma 3	İstinye	2005	67 Ton
Kurtarma 4	Harem	2005	65 Ton
Söndüren 10	Tuzla Tersane	1986	32 Ton
Söndüren 4	Çanakkale/Akbaş	1982	29 Ton
Söndüren 5	Haydarpaşa	1982	27 Ton
Söndüren 6	Pendik Tersane	1983	25.5 Ton

The above table is correct as at July 2007. For the latest information, reference should be made to the DGCS website at [www.dgcs.gov.tr](http://www.dgcs.gov.tr).

Additional large salvage tugs are also available from Greece. It is highly likely that any external tug brought to bear will be engaged under the direction of DGCS.

While ship-to-ship (STS) transfer equipment is not available in the Straits for major operations, it is available in the Black Sea. STS service providers maintain equipment at Sevastopol and additional equipment is available in Piraeus.

Repair facilities are available at Tuzla Shipyards, where the dry-dock can accommodate vessels up to VLCC size.

Slop reception facilities are available at Çanakkale with barges also servicing vessels waiting at both ends of the Strait. Slop reception is also available at Tuzla Shipyards and limited facilities exist at Istanbul anchorage.

## ANALYSIS

### Impact

Subsequent to the implementation in 2002 of the “New Instructions for the Application of the 1998 Rules” (“New Instructions”), through traffic in the Straits has comprised 'normal' two-way flow at night, with the daylight being reserved for the "Restricted Vessel" transits.

The current regulations call for one-way traffic navigation for vessels of 150 metres or more in length in the Strait of Istanbul and Strait of Çanakkale. In practice, however, the authorities are currently implementing the rule for vessels of 200 metres or more in length in both Straits.

Since implementation of the New Instructions, there has been strict application of traffic grouping for vessels of 200 metres or more in length transiting in one direction per day, if sufficient vessels are available at the entrance. If not, a shift in transit direction takes place to maximise the use of daylight hours. Transit intervals of at least 75 minutes between “Restricted Vessels” are now applied and the rules allow non-dangerous cargo vessels to be accommodated between these slots.

The application of the New Instructions, even without the strict application to vessels of 150 metres or more in length, has resulted in substantial delays to tankers, and thus has commercial implications. These are not addressed in this paper, as such considerations are beyond the remit of OCIMF. However, awareness of the effects of application of these rules is important in order to understand the factors which influence the decisions of charterers and other third parties in relation to marine transportation activities within the Straits and the potential for impact on safety and environmental protection.

The implementation of the New Instructions has resulted in the total number of transits of 'Restricted Vessels' being limited, during the months of shortest daylight, to a maximum of seven per day. Periods of poor weather, particularly fog, also exacerbate the problem by further restricting passage within the permitted daylight hours. During the months of long daylight, the number of 'Restricted Vessels' is usually capped at about 9 or 10 per day to prevent prolonged closure to other vessels including smaller “dangerous cargo” vessels.

The delays result in overcrowding in the various anchorages and surrounding areas at the ends of each Strait comprising the Turkish Straits. This increases the risk of collision between vessels.

The risk assessment studies identified that many casualties originated from equipment or human failures on vessels carrying non-dangerous cargo, registered with Flag States associated with lower safety standards. Consequently, efforts to improve the quality of vessels that transit the Turkish Straits would reduce overall casualty risk in the Straits. This suggests that a robust regional inspection regime to enforce international Conventions and regulations would be of benefit.

Increased use of tankers of under 200 metres in length, which are not affected by the current implementation of the rules for ‘Restricted Vessels’, is undesirable because, for a given volume of cargo, it will have the unwanted effect of increasing the density of traffic in the Straits and therefore the risk.

The current system requires that 'Restricted Vessels' and other vessels carrying hazardous goods must clear specific points in the respective Straits - i.e. substantially complete the transit - before similar vessels can enter from the opposite direction.

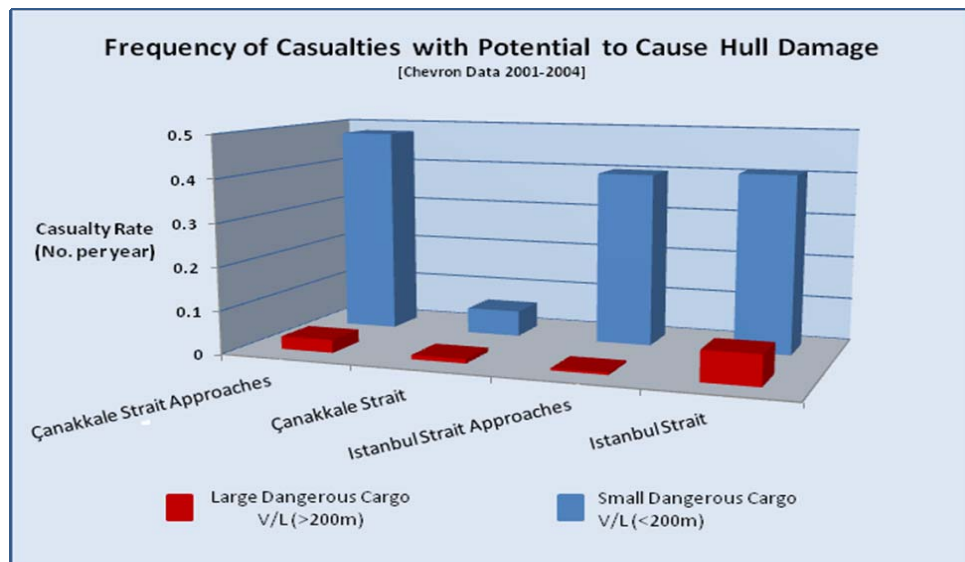
As the Strait of Çanakkale is twice the length of the Strait of Istanbul, it follows that the changeover from one direction of transit to the other takes correspondingly longer. Thus, if there is a change of transit direction during the day, fewer Restricted Vessels can pass the Strait of Çanakkale within the given daylight period. This is exacerbated by the fact that, for Restricted Vessels calling at ports in the Marmara Sea, approximately 13% more gain access via the Strait of Çanakkale than use the Strait of Istanbul. Further obstruction to consistent traffic scheduling and transit direction flow is caused by the priority given to Restricted Vessels bound for Turkish ports. While LNG vessels bound for Marmara ports have a stated priority in the Turkish Rules, other vessels do not.

The Strait of Çanakkale is thus the 'critical path' in terms of traffic flow, rather than the more navigationally-hazardous Strait of Istanbul. Experience has demonstrated that operating Restricted Vessel transits in a single direction on alternate days has significantly eased the Çanakkale choke point.

## Risk Assessment Conclusions

Members have recently undertaken or updated assessments of the risks associated with transit of the Turkish Straits. From these assessments, a number of conclusions have been drawn, which are summarised as follows:-

- The present combination of the TSS, traffic rules and VTS overview make the likelihood of a casualty in the Straits involving tankers of over 200 metres in length much lower than before these measures were put in place.
- While vessels of 200 metres or more in length obviously have the potential to produce the largest spills, casualty data shows that the frequency of incidents and the overall pollution risk associated with these vessels is significantly lower than that of smaller vessels. The reasons for this are attributed to the current Straits' Rules, requiring one-way traffic transit, and the generally higher quality of operation of these vessels. With one-way transit, the hazards arising from third party vessel actions are largely removed and risk management is therefore much more within the control of the operator, and the influence of the charterer, through the vetting process.
- Analysis of incident data shows that spills are more frequently associated with tankers of less than 200 metres in length. Tankers of less than 200 metres in length are subject to less rigorous restrictions, similar to non-dangerous cargo vessels, and they generally transit as part of that population. They therefore experience casualties at approximately the same rate as non-dangerous cargo vessels. Thus, although they only account for about 10% of the transiting population, they represent 80% of the expected oil pollution risk.
- The additional environmental protection afforded by double hull vessels is a significant factor in mitigating pollution risks.



- The diagram above shows that a significant contribution to the risk of transit of the Turkish Straits arises from collision due to congestion in the various approaches to the Straits. Although a significant number of incidents actually occurred in the Çanakkale Strait during the period under assessment (2001 to 2004), two-thirds of those incidents comprised disabled vessels which were safely managed without escalation into collision or grounding. It would be reasonable to infer that the additional channel width of the Çanakkale Strait gives a good margin to recover from such incidents.

- Tankers transiting in ballast, mainly northbound, pose little risk of pollution. This is due in part to the minimal quantity of cargo on board northbound tankers, plus the added manoeuvrability and ease of anchoring, when navigating against the prevailing currents.
- Allowing for the transit of the Strait of Çanakkale by large vessels over the 24 hour period (i.e. lifting the constraint on night time transit for Restricted Vessels) would reduce the overall risk profile, particularly that arising from congestion at the entrances to the Straits.
- Active escort (i.e. tug made fast to the vessel) in the Istanbul Straits could significantly reduce the potential consequences in the event of machinery or steering failure. Currently, tugs accompany vessels of more than 250 metres in length carrying dangerous cargo, but are not made fast. Should tug assistance be required, considerable time would be lost making a connection before the tug would be able to effectively influence the speed and direction of the vessel, thus greatly reducing the potential effectiveness of the tug in averting or mitigating the effects of an incident. Active escort would be of even greater potential benefit for southbound (laden) vessels where rudder control is significantly reduced and steering made more difficult by the following current.



- The major contribution to safety made by the Turkish Straits pilots is acknowledged. However, information from OCIMF Members indicated that there are elements of the Turkish Straits pilotage service which would benefit from improvement, including:
  - Formal pilotage scheme, including training and certification.
  - Adoption of Bridge Team Management practices.
  - Pilots boarding and disembarking sufficiently far to seaward of the entrances to the Straits to enable a proper master/pilot exchange to take place before the vessel is committed to entry, and disembark such that the support provided by the pilot is available throughout the full extent of the Straits.
- The VTS operators and pilots are fluent in English. However, communication between them takes place in Turkish. While this may be convenient for those individuals, it increases the likelihood of incidents, as the Bridge Team and any non-piloted vessels in the vicinity would probably be unable to understand the communications.
- Reducing the current spacing between Restricted Vessels during the periods of one-way traffic could be implemented without significant impact on safety. Indeed, it may facilitate the more widespread use of one-way traffic, and reduction of congestion at the approaches to the Straits, both of which should have a significant positive impact on safety.
- Due to the improved manoeuvrability of vessels navigating into the current, similar levels of risk can be achieved with a significantly shorter interval between Restricted Vessels, as compared to those navigating with the current.
- Similarly, the results of the risk assessments identified a number of local conditions within segments of the Straits that present opportunities to balance risks through changes in application of the rules.



# RECOMMENDATIONS FOR PASSAGE OF THE TURKISH STRAITS

*This Section comprises:*

- *Strategic considerations for high level risk management .*
- *Tactical (operational) considerations relating to passage planning and the preparation of the vessel for the transit.*
- *Additional issues arising from the risk assessments for further consideration and coordinated approach by OCIMF.*

## **Strategic Considerations**

Even with planned Turkish Straits bypass pipelines, petroleum and other hazardous goods from Black Sea ports are expected to continue to pass through the Turkish Straits on their way to world markets. With the overall regional development, it is expected that the number of transits of smaller tankers will increase.

Experience shows that passage of the Turkish Straits can be conducted safely. However, because of their topography and marine traffic densities, the Straits present unique navigational challenges. The risks can be minimised with appropriate selection of vessels and good navigational planning.

OCIMF recommends:

- Adoption of vessel selection processes which take full account of the additional environmental protection afforded by double hulled tankers.
- The use of a formalised system to ensure that all vessels employed in this trade are of a good standard and that senior navigating officers have an appropriate level of knowledge and experience of the Turkish Straits.
- Maximised utilisation of tonnage, avoiding part cargoes wherever practicable, to reduce the number of transits for a given mass transport of material.
- The optimisation of shipment size such that cargoes are shipped, insofar as possible, to make capacity use of Suezmax tonnage for crude oil. This minimises the number of tanker transits required through the Straits, and therefore will contribute towards minimising transit risks.
- Consideration of member experience which indicates that a conventional Suezmax class tanker with a length of around 275 metres is the maximum size which can safely navigate the Strait of Istanbul with acceptable margins under normal circumstances. As a result, OCIMF suggests that this is the maximum size vessel for this Strait, *and strongly recommends against employing conventional tankers greater than 300 metres length for the Straits of Istanbul.*
- Establishment of clear expectations that an appropriately trained pilot should be used for north and south bound transits of the Istanbul and Çanakkale Straits.
- That best endeavours are used to ensure that the pilot is embarked and disembarked at IMO-designated pilot transfer locations.
- That vessels are appropriately trimmed to optimise manoeuvrability during transit of the Straits. In the laden condition, this will generally mean a slight stern trim, when squat at transit speed is considered.
- That Passage Planning and Bridge Team work (with particular emphasis on position monitoring) are carried out in accordance with best practice throughout passage of the Straits.

- That no ballast transfer, tank cleaning or gas freeing operations are conducted during transit and all tank lids are secured.
- That the use of the Istanbul anchorage should be avoided unless specifically required.

Additionally, members may wish to consider approaching and working with the Turkish Straits pilotage service provider, Turkish Maritime Incorporated, to introduce 'choice' pilotage, wherein a small group of named pilots are assigned to pilot the Member's vessels, thus concentrating and enhancing their knowledge and skill base on these ship types, and the Member's Bridge Team operational methods. Such a system could also be used to promote (e.g. as a prerequisite) the use of English as the normal working language for communications between VTS and the ship's bridge.

OCIMF further notes that simulator studies and actual experience in an increasing number of ports and channels around the world have proved that tugs of suitable design and power are able to significantly assist in the control of laden tankers in the event of a loss of propulsion or steerage, when running connected at the stern of the vessel ("active escort"). Members' risk assessments have similarly made positive recommendations in respect of active escort. From this it is considered that a positive improvement to the safety of navigation and potential risks would result from the active escort of larger laden tankers. OCIMF considers that more detailed research needs to be done in this area, including modelling and simulator trials, and the Membership is encouraged to work towards this, in collaboration with the DGCS, TSVTS, pilotage services, local tug providers and other relevant industry organisations, e.g. ICS & INTERTANKO. In particular, consideration should be given to integrating bridge teams with pilots and tug masters on simulator and on-the-job training.



## Tactical Considerations - Passage Planning

When one-way traffic is imposed by the VTS in the Strait of Istanbul, the TSS is suspended. When this occurs, **all** vessels are no longer bound by the TSS as laid down on the chart, and may navigate in any part of the Strait in accordance with COLREG Rule 9.

The passage plan should be developed in accordance with the best practices described in the ICS Bridge Procedures Guide, with particular consideration to the following:

- Turkish Hydrographical Office Chart Nos. 9000 and 9001 - Strait of Istanbul, Sea of Marmara and Strait of Çanakkale TSS Routeing Guide and Planning Chart.
- Use of Turkish Straits Reporting System and Vessel Traffic Service (including reporting requirements and information obtainable from the service).
- Timings of staged arrival for critical areas, including the Straits of Istanbul and Çanakkale.



- Whether the vessel will be subject to one-way or two-way traffic regime.
- Whether the vessel will transit by day or night (selection of day or night conspicuous leading lines, head marks, transits, beam bearings, etc).
- Possibility of encountering restricted visibility once committed to the passage (selection of suitable parallel indexes, clearing bearings and ranges, contingency anchorages, etc).
- Use of ECDIS (selecting the appropriate no go areas/safety contour and the display of AIS information) or radar mapping of 'no go areas', if ECDIS is not carried.
- Vessel's manoeuvrability characteristics.
- Vessels navigating sharp turns with the current astern will tend to overshoot the bends, possibly drifting out beyond the channel centreline. With the current astern, the bow and stern of long vessels may be in significantly different current regimes as it negotiates a sharp bend. This may result in the stern of the vessel being swept out towards the centre of the channel and, consequently, the bow swinging in towards the shore, on the inside of the bend.
- Vessels navigating against a strong current will set rapidly to one side or the other if the ship's head is allowed to develop a significant angle to the stream. The effect is very noticeable in both Straits, particularly if the corners are cut ('straight-lining' the bends). For this reason, particular care should be taken to ensure a suitable track and adequate clearance from the grounding line when approaching the points forming the inside of sharp bends.
- Local and low-powered vessels, including passenger ferries, often congregate in the areas of weaker currents adjacent to headlands. Good clearance from these points avoids conflict with this traffic.
- Underkeel clearance - the Straits are generally deep but ledges and isolated dangers at lesser depths within the lanes could affect deeper draught vessels.
- Local traffic (ferry routes and fishing areas).
- Engine readiness, electrical power configuration, steering configuration.
- The minimum bridge management team should consist of the Master, officer of the watch, helmsman and lookout, in addition to the pilot, during any transit of either Strait.
- A senior engineer should be present in the engine control room during the entire passage and the propulsion equipment should be operated so that it can respond immediately to engine orders. Consideration should also be given to stationing a qualified member of the engineering staff in the steering flat when access from the engine room is difficult or other considerations warrant.
- Availability of additional personnel and control of fatigue.
- Weather, tide and current information (initial outlook and method of updates).
- Service, stores and crew relief requirements.

Due to the nature of the coastline in the area, and the possibility of navigational aids being obscured, parallel indexing should always be used to monitor the progress of the ship in relation to the passage plan, even where ECDIS is fitted.

The passage plan must be prepared well in advance of the pilot joining, and discussed in detail with him after boarding. In certain conditions, pilot boarding may be delayed, and the passage plan must make allowance for this.

A full master/pilot exchange should take place prior to the passage being commenced. Reference should be made to the International Best Practices for Maritime Pilotage, published by OCIMF, ICS and INTERTANKO.

As far as practicable, the engine/steering/power configuration should not be changed during transit of the Straits of Istanbul or Çanakkale. Any routine filter changes should be effected at least 24 hours before transit, and service and day tanks should be filled up and put into use well before the transit begins, to avoid the potential risks if such changes are made during transit.

## **Additional Considerations**

OCIMF notes and commends the continuing development of waterway management, in particular the implementation of the Turkish Straits Vessel Traffic System (TSVTS) by the Turkish Authorities, which should further reduce the risks associated with navigation through the Straits. OCIMF should encourage the Turkish Authorities to work with the IMO to promote mandatory application of the TSVTS, to further enhance the navigational safety and mitigation of marine risks.

OCIMF recommends that the Turkish Authorities should pro-actively encourage the use of English in all communications to and from the TSVTS. This should ensure that all vessels transiting the Straits are aware of the navigational situation ahead and can anticipate this accordingly. This is particularly so for vessels which do not have a pilot on board.

OCIMF acknowledges the very important contribution to maritime safety accomplished by the pilots of Turkish Maritime Incorporated. However, information provided by members indicates a number of areas where it is believed the service could be further improved. OCIMF therefore should consider working with the Turkish Authorities to enhance the Pilotage Service currently provided in the Turkish Straits and ensure that it reflects International Maritime Pilot's Association (IMPA) best practice, particularly IMO Resolution A960 (Recommendation on Training, Certification and Operational Procedures of Maritime Pilots).

OCIMF notes and commends the work currently in progress by the Turkish Authorities to develop a national contingency plan, including risk assessment, sensitivity mapping and the establishment of regional centres for pollution response. OCIMF should encourage and, where practical, facilitate the Turkish Authorities to work pro-actively with OSPRI (Oil Spill Preparedness Regional Initiative) and International Petroleum Industry Environmental Conservation Association (IPIECA) on this issue.

IMO has encouraged the establishment of regional Port State Control organisations and agreements on Port State Control. Memoranda of Understanding (MOUs) have been signed with coverage including the Mediterranean and Black Seas. Ships visiting a port in one country will often visit ports in other countries within the region. Close coordination between neighbouring states can ensure that as many 'high risk' ships as possible are inspected, whilst minimising unnecessary inspections. This results in efficient use of resources with a view to minimising the risk to Turkish Straits transit from sub-standard ships. OCIMF similarly welcomes the harmonisation and technical cooperation between the regional Flag States, Port States, and Classification Societies in their enforcement of international Conventions and regulations for safety and protection of the environment. OCIMF should continue to actively support these initiatives at IMO.

OCIMF member experience has demonstrated that risk reduction can be achieved by improvement in the quality of vessels through the use of ship quality assurance and selection processes. To further reduce the risks in the Turkish Straits, OCIMF therefore encourages and would support wider adoption of such initiatives by companies operating regional oil terminals.

## APPENDIX

### Turkish Regulations

Navigation within the Turkish Straits is governed by the Maritime Traffic Regulations for the Turkish Straits and the Marmara Region introduced by the Turkish Authorities and adopted by IMO in 1994<sup>[1]</sup>. The regulations were revised in 1998<sup>[2]</sup> by the Turkish Authorities in the light of experience. They comprise both general and specific instructions for the conduct of all vessels navigating the straits, and include, inter alia, the following summarised points, which are of particular significance to tankers and other large vessels:

- Vessels carrying dangerous cargo and all vessels over 500 tonnes GRT are required to report in compliance with the TUBRAB reporting system.
- Vessels restricted in their ability to manoeuvre within the traffic lanes, having a length of more than 150 metres or a draught of more than 10 metres and carrying dangerous cargo may not transit the Strait of Istanbul in opposite directions at the same time. In Çanakkale Strait such vessels cannot enter the strait until any similar vessel going in the same direction ahead has cleared the narrows at Nara Burnu.
- Vessels proceeding in the same direction must maintain a separation of 8 cables. The separation distance may be increased by the Traffic Control Centre according to vessel types.
- Overtaking is prohibited over a distance of about 3 miles (between Vanikoy and Kanlica) in the Istanbul Strait, and 4 miles (between Nara and Kiltbahir) in Çanakkale Straits.
- Local craft are required not to impede the safe passage of through traffic in the Istanbul and Çanakkale Straits.
- The Traffic Control Centre may exempt vessels carrying dangerous cargo which are restricted in their ability to manoeuvre within the traffic lanes from the requirement to follow the TSS.
- The rules preclude the passage of vessels carrying dangerous cargo, or with a length of 200 metres or more, or with a draught of 15 metres or more, when:
  - Visibility is less than 1 mile in any area within the straits.
  - The main surface current exceeds 6 knots or strong northerly (reverse) currents and eddies occur (for such vessels with a speed of more than 10 knots).
  - The main surface current exceeds 4 knots or any northerly (reverse) current occurs (for such vessels with a speed of 10 knots or less).
- The authorities may suspend traffic temporarily in the event of force majeure situations (collision, grounding, fire, public security, pollution, etc), surface or underwater construction works and in the case of navigational dangers within the Straits.
- Vessels of 300 metres or more length are subject to special conditions on a case-by-case basis.
- Vessels exceeding 58 metres air draft may not transit the Istanbul Straits.
- All transit vessels are strongly recommended to take a pilot.

## New Instructions - 2002

At the beginning of October 2002, the Turkish Authorities issued "New Instructions for the Application of the 1998 Rules"<sup>[3]</sup>, revising the interpretation of existing regulations regarding navigation of the Turkish Straits. The New Instructions included, inter alia:

- A definition of vessels carrying dangerous cargo to include vessels carrying petroleum and its derivatives and those which are not gas-free following the carriage of such cargoes.
- Vessels which cannot maintain a speed of 4 knots against the current must take tugs or await the slackening of the current for transit.
- The provision of a set of priorities to Traffic Control (now TSVTS) for various ship types when maritime traffic is resumed after a closure for any reason. Tankers (and particularly large tankers) are assigned the lowest priority of all ship types.
- Vessels with air-drafts between 54 and 58 metres and towage operations are subject to special conditions, including the provision of escort tugs.
- Northbound and southbound traffic will be suspended once each day for the passage of vessels exceeding 200 metres in length carrying dangerous cargo in the Istanbul Strait and in the Çanakkale Strait.
- The New Instructions also introduce a series of restrictions on vessels proceeding in opposite directions (meeting) in the two Straits, based on vessel length and whether or not the vessel is carrying dangerous cargo. The restrictions either prohibit simultaneous passage in opposite directions or require 'zoning' such that vessels may transit in opposite directions, provided they do not meet in the narrower parts of the straits (i.e. between Kanlıca and Vaniköy in the Istanbul Strait and between Kepez and Akbaş in the Çanakkale Strait). These restrictions are summarised in the following tables:

ISTANBUL STRAIT				PERMISSIBLE VESSEL IN OPPOSITE DIRECTION							
Vessel Type	LOA	Time		Non-Hazardous		Hazardous					
		Day	Night	<150	150-300	<100	100-150	150-200	200-250	250-300	LPG/LNG
Non-Hazardous	<150	Yes	Yes	Yes	Yes	Yes	Yes	Zoning	Zoning	Zoning	Yes
	150-300	Yes	Yes	Yes	Zoning	Yes	Zoning	Zoning	No	No	No
Hazardous	<100	Yes	Yes	Yes		Yes	Yes	Zoning	No	No	No
	100-150	Yes	Yes	Yes	Zoning	Yes	Yes	No	No	No	No
	150-200	Yes	Yes	Zoning	Zoning	Zoning	No	No	No	No	No
	200-250	Yes	No	Zoning	No	No	No	No	No	No	No
	250-300	Yes	No	No	No	No	No	No	No	No	No
	LPG/LNG	Yes	LPG		No	No	No	No	No	No	No
Any Vessel	>300	Special request/permission required									

	Non-hazardous meets non-hazardous
	Hazardous meets non-hazardous
	Hazardous meets hazardous

ÇANAKKALE STRAIT				PERMISSIBLE VESSEL IN OPPOSITE DIRECTION								
Vessel Type	LOA	Time		Non-Hazardous				Hazardous				
		Day	Night	<100	100-150	150-200	200-300	<100	100-150	150-200	200-300	LNG
Non-Hazardous	<100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Zoning	No
	100-150	Yes	Yes	Yes	Yes	Zoning	Zoning	Yes	Yes	Zoning	Zoning	No
	150-200	Yes	Yes	Yes	Zoning	Zoning	Zoning	Yes	Zoning	Zoning	Zoning	No
	200-300	Yes	Yes	Yes	Zoning	Zoning	Zoning	Yes	Zoning	Zoning	No	No
Hazardous	<100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Zoning	No
	100-150	Yes	Yes	Yes	Yes	Zoning	Zoning	Yes	Yes	Zoning	Zoning	No
	150-200	Yes	Yes	Yes	Zoning	Zoning	Zoning	Yes	Zoning	No	No	No
	200-300	Yes	No	Zoning	Zoning	Zoning	No	Zoning	Zoning	No	No	No
	LPG/LNG	Yes	No	No	No	No	No	No	No	No	No	No
Any Vessel	>300	Special request/permission required										

	Non-hazardous meets non-hazardous
	Hazardous meets non-hazardous
	Hazardous meets hazardous

- When a vessel of 150 metres or more, carrying dangerous cargo, is in transit of the Istanbul Strait, no other vessel carrying dangerous cargo of 150 metres or more may enter the Strait in the same direction until the said vessel has cleared the Bosphorus Bridge (if southbound) or passing Fili Burnu (northbound). In practice, this means a separation distance of some 13-15 miles between the vessels.
- When a vessel carrying dangerous cargo is in transit of the Çanakkale Strait, no other vessel of 200 metres or more carrying dangerous cargo may enter the Strait in the same direction until the said vessel has cleared the Nara region. In practice, this means a separation distance of some 25 miles between the vessels when southbound and 20 miles when northbound.
- In Çanakkale Strait, no vessel may follow within 20 miles of an LNG carrier.
- Where one-way traffic is imposed, certain vessels, including passenger ships, may be permitted to transit against the direction of one-way traffic, provided that they have a pilot on board.

**Note the above is a condensed summary of a translated document and the authorised text should be referred to for the definitive version.**



## REFERENCES

- 1) Maritime Traffic Regulations for the Turkish Straits and the Marmara Region 1994 - T.C. Basbakanlik Denizcilik Mustesarlig I.
- 2) Maritime Traffic Regulations for the Turkish Straits and the Marmara Region 1998 - T.C. Basbakanlik Denizcilik Mustesarlig I.
- 3) New Instructions for the Application of the 1998 Rules (September 2002) - T.C. Basbakanlik Denizcilik Mustesarlig I
- 4) IMO Resolution A.827(19)
- 5) Risk Analysis of Tanker Transits in the Turkish Straits Area for BP Shipping by DNV.
- 6) Turkish Straits Casualty Risk Assessment for ChevronTexaco by ABS Consulting, February 2005.
- 7) Assessing the Risk of Oil Spills in the Mediterranean: The Case of the Route from the Black Sea to Italy by Fondazione, Eni, Enrico Mattei, February 2006
- 8) The Turkish Straits, Maritime Safety, Legal and Environmental Aspects, published by Turkish Marine Research Foundation, Pub No. 25, 2006

