Report on the investigation of

contact with Number 16 buoy by

Scot Venture

Drogden Channel, Denmark

29 January 2004

Marine Accident Investigation Branch
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Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

Regulations 1999

The fundamental purpose of investigating an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 1999 is to determine its circumstances and the causes with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.

NOTE

This report is not written with liability in mind and is not intended to be used in court for the purpose of litigation. It endeavours to identify and analyse the relevant safety issues pertaining to the specific accident, and to make recommendations aimed at preventing similar accidents in the future.

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AB	-	able seaman
AIS	-	Automatic Identification System
ARPA	-	Automatic Radar Plotting Aid
E	-	east
GPS	-	Global Positioning System
IMO	-	International Maritime Organization
Kw	-	kilowatt
Ltd	-	Limited
M	-	metre
MCA	-	Maritime and Coastguard Agency
MSN	-	Merchant Shipping Notice
N	-	north
OOW	-	Officer of the Watch
SOLAS	-	International Convention on Safety of Life at Sea
STCW	-	International Convention on Standards of Training, Certification and Watchkeeping incorporating the 1995 Amendments.
UK	-	United Kingdom
UTC	-	Universal Co-ordinated Time
VHF	-	Very High Frequency
VTS	-	Vessel Traffic Service

SYNOPSIS

All times are UTC (+1)

At 0755 on 29 January 2004, the UK registered general cargo vessel *Scot Venture* made contact with Number 16 buoy in the Drogden Channel, Denmark, in restricted visibility. The vessel then anchored clear of the channel until towed to Malmo, Sweden, for inspection. *Scot Venture*'s propeller blades were distorted; the buoy was subsequently found to have been severed from its moorings.

The contact occurred when *Scot Venture* was approaching the Drogden Channel from the south. The chief officer was the OOW. After the vessel passed to the east of the Drogden Channel Lighthouse, he altered course to head towards the Drogden Channel's southern entrance, in accordance with the voyage plan. The channel entrance was less than a mile away and marked by Numbers 16 and 17 lateral buoys. Soon after the alteration, visibility significantly decreased because of snow. The precipitation also degraded the radar picture to the extent these buoys were no longer displayed. Number 16 buoy was then sighted visually at close range off the starboard bow, and although avoiding action was taken, this was unsuccessful.

The investigation highlighted several contributory factors, including:

- The chief officer was alone on the bridge in an area close to navigational dangers, in restricted visibility, and potentially high traffic density.
- The chief officer was unfamiliar with the area and with handling the vessel in the loaded condition.
- The vessel had two watchkeepers, therefore it was difficult for the master to assess the chief officer's competency, and caused him to place more reliance on him to navigate in areas close to navigational dangers and with high traffic density, than might otherwise have been the case.
- An AB lookout was available, but was not used, because the chief officer thought the seaman was tired. He also considered ABs to be generally ineffective as lookouts.
- Navigation in the approaches to the southern entrance to the Drogden Channel can be difficult, due to strong cross-currents, the narrowness of the channel, and the presence of southbound traffic.

Recommendations have been made to the Royal Danish Administration for Navigation and Hydrography and the International Chamber of Shipping, for the purpose of making navigation in the southern approaches to the Drogden Channel safer, and encouraging the better use of lookouts.

Scot Venture

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *SCOT VENTURE* AND ACCIDENT

Vessel details

Registered owner	:	Scot Venture Shipping
Manager(s)	:	Intrada Ship's Management Ltd
Port of registry	:	Inverness
Flag	:	UK
Type	:	General cargo
Built	:	2002, Tille Holland
Classification society	:	Germanischer Lloyd
Construction	:	Steel
Length overall	:	89.98m
Gross tonnage	:	2594
Engine power	:	1950kW
Service speed	:	13.5 knots

Accident details

Time and date	:	0755 UTC(+1) on 29 January 2004
Location of incident	:	Number 16 buoy, Drogden Channel, Denmark. 55°33'05N 012°42'5E
Persons on board	:	7
Injuries/fatalities	:	Nil
Damage	:	*Scot Venture*'s propeller blades distorted and superficial damage to the hull coating. No 16 buoy broken away from moorings and light damaged.

1.2 BACKGROUND

Scot Venture was managed by Intrada Ship's Management Ltd based in Romford in Essex. She entered service in April 2002 and plied between the UK and Denmark or Sweden. At the time of the accident, *Scot Venture* was on passage from Karlshamn, Sweden to Belfast, Northern Ireland, with a cargo of 4857 tonnes of sawn timber, of which 1.5 tiers were carried on deck to a height of about 2m.

1.3 NARRATIVE

All times are UTC(+1) and all courses are true.

Scot Venture sailed from Karlshamn, Sweden at 2155 on 28 January 2004. At about 0200 the following morning, the chief officer relieved the master on the bridge. He was accompanied on the bridge by an AB lookout until the lookout was stood down at about 0715.

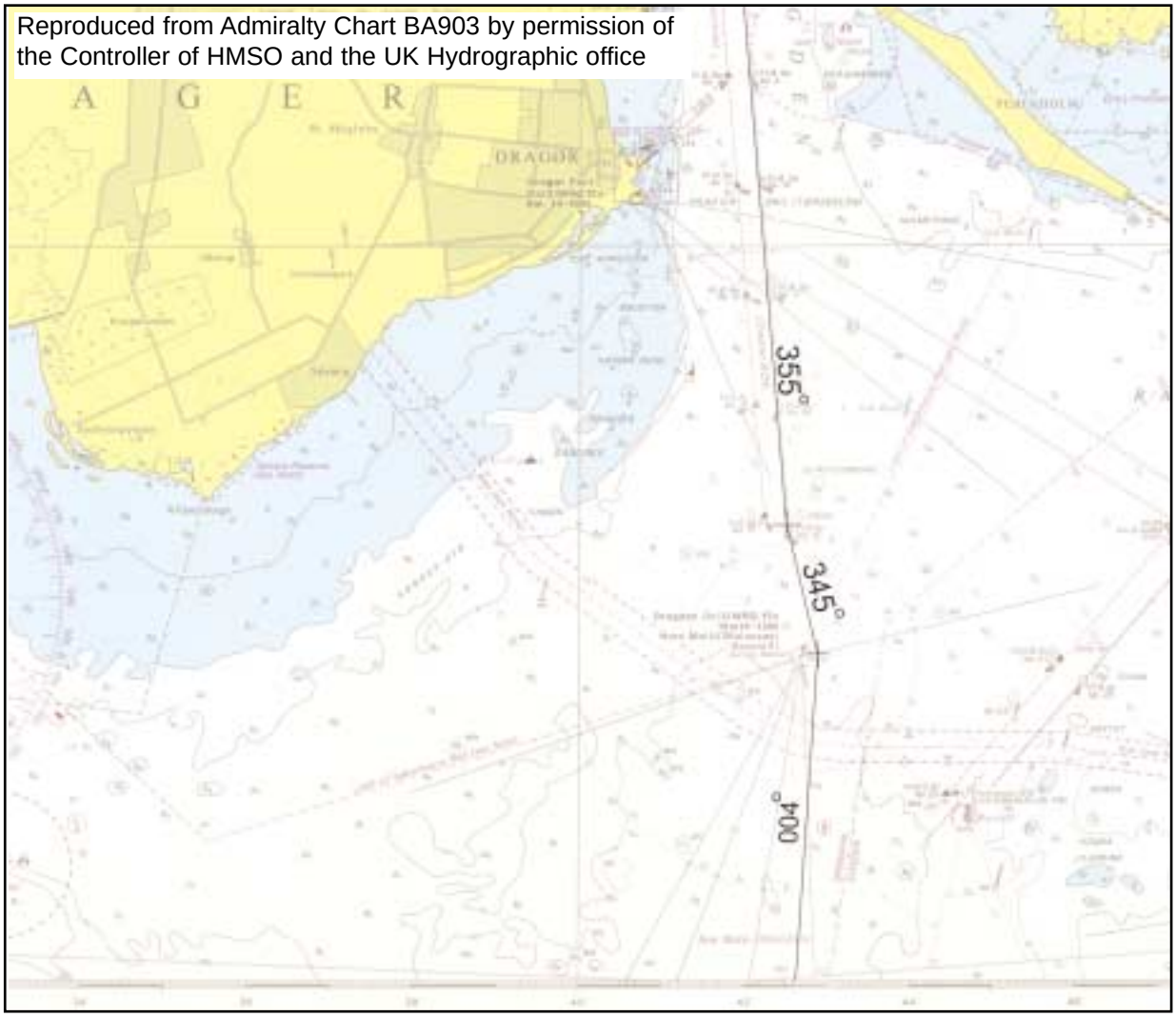
Scot Venture headed towards the Drogden Light on a course of 004° **(Figure 1)** in autopilot, with 100% propeller pitch applied, giving a speed over the ground of about 13.5 knots. The chief officer was content with the navigational situation. The two buoys marking the southern limit of the Drogden Channel, Numbers 16 and 17, were clearly visible on the radar, and had been acquired by ARPA on the starboard radar display. The chief officer, however, did not recollect sighting the buoys. Two southbound vessels in the Drogden Channel were also detected by radar, but were on the western side of the channel and therefore not interfering with the planned route.

At 0747, the chief officer called the master via intercom to wake him in preparation for taking over the watch at 0800. At about the same time, he recorded the visibility in the deck log, which he assessed to be about 2 miles, based on a recent sighting of a nearby vessel. At 0750, the chief officer altered course to 345° in accordance with the passage plan.

On completion of the alteration, the chief officer reduced the range scale on the port bridge radar display from 6 miles to 3 miles, and the starboard display from 3 miles to 1.5 miles. He did not detect any adverse weather conditions when doing so. Both radar displays were operating north up in relative motion, and were off-centred towards the south.

Minutes later, snow suddenly reduced the visibility to less than 100m, which also degraded the radar picture to the extent that Numbers 16 and 17 buoys were no longer displayed. The chief officer immediately changed to hand steering, reduced the propeller pitch control to about 80%, giving a speed of about 12 knots, and called the master via intercom to go to the bridge immediately.

Figure 1



Extract of chart BA 903 showing the planned passage through the Drogden Channel

At the time, the master was in his bathroom, but he managed to reach the bridge within about a minute. During this short period, the chief officer saw Number 16 buoy ahead at about 40m off the starboard bow, and applied port helm to manoeuvre the ship clear. He did this while watching the buoy; he did not monitor the amount of rudder used, or the rate the ship was turning. The manoeuvres were conducted while the chief officer was standing behind the starboard radar display **(Figure 2)**, from where the buoy was seen to be passing very close down the starboard side.

When the master arrived on the bridge he was immediately told by the chief officer, who was looking to starboard, “I see it, I see it, I see the buoy”. As a result, the master went to the starboard bridge wing to try to see the buoy for himself. Meanwhile, the chief officer realised the vessel was now swinging to port and applied starboard helm in order to check this movement, and keep the stern clear of the buoy. The master could not see the buoy from the starboard wing, and immediately returned to the bridge. Several seconds later, a loud noise was heard from aft. The ship was then steadied on a course of about 280°.

Figure 2

Photograph of the bridge

The master saw the two southbound contacts on radar at about 7 cables approaching from the north, and instructed the chief officer not to turn back to starboard towards the planned course. Number 17 buoy was then sighted visually close off the starboard bow and, shortly after, *Scot Venture* cleared the channel. The two southbound vessels passed very close astern.

Once out of the channel, the master confirmed the ship's position and tried to manoeuvre *Scot Venture* towards the planned track. However, with the propeller pitch at 100%, he saw that the ship's speed by GPS was only 2 knots. The master issued a warning to all vessels on VHF radio channel 16, stating that *Scot Venture* was disabled in the vicinity of Number 17 buoy, and requesting a wide berth.

The ship was slowly manoeuvred towards the east, and speed gradually increased to about 5.5 knots. *Scot Venture* anchored to the east of the channel, south west of Saltholm Island. En route to the anchorage, the master telephoned the Operations Director of Intrada and told him what had happened. At this point, the chief officer was adamant that no contact was made with the buoy and, as there was no evidence of vibration from the propeller, the master and operations director considered the difficulty of manoeuvring was possibly due to reasons other than hitting the buoy. The vessel was at anchor between 0900 and 1340, after which a tow was secured from the tug *Sigyn,* and *Scot Venture* was taken to Malmo.

Figure 3

Photograph of the damage to the propeller blades

On arrival in Malmo at 1800, an underwater inspection by divers revealed that the ship's propeller blades were distorted. The master immediately informed Lyngby Radio that the vessel had hit a submerged object in the Drogden Channel.

Scot Venture was later towed to Valkenburg, where she was dry-docked for repair. Damage to the propeller was confirmed **(Figure 3)** and marks were evident along her starboard side **(Figure 4)**, which were consistent with the vessel having made contact with the buoy.

Figure 4

Photograph of marks to ship's starboard side

1.4 ENVIRONMENTAL CONDITIONS

Morning civil twilight was at 0717 and sunrise at 0758. The vessel's log indicated that the wind was force 6 from the south west, and the sea state was moderate. A current meter, located just to the south of the Drogden Light, recorded the tidal stream at the surface at 0748 at 035° at a rate of 0.95 knots. At a depth of 2.8m, the tidal stream was recorded at 089° at a rate of 2.44 knots.

The weather forecast with regard to visibility issued at 1900 on 28 January, by Stockholm Radio for The Sound, which covers the area of the Drogden Channel, stated:

At times snow with moderate or poor visibility

The chief officer heard this forecast issued on VHF by Stockholm Radio, as well as a similar one issued by Lyngby Radio. He confirmed it did snow overnight but stated that it had not adversely affected visibility until the accident. A crewman recalls seeing moderate snowfall when looking out of his cabin window between 0730 and 0745. The visibility at the time of the accident was probably less than 200m.

1.5 THE BRIDGE WATCHKEEPERS

1.5.1 The master

The master first went to sea in 1975. He was awarded his mates' certificate of competency in 1981, followed by his command endorsement in 1988. He joined Intrada in January 1998 and, aside from serving his first 2 weeks with the company as chief officer, had served as master throughout this period. He had been a regular master of *Scot Venture* since the vessel entered service in 2002, and had generally worked a pattern of 8 weeks on board, followed by 4 weeks leave. Since 1 January 2004, this pattern had been adjusted to 10 weeks on board and 5 weeks on leave. At sea, the master kept the 0800-1400 and 2000-0200 bridge watches, and on this occasion, had been on board since December 10 2003.

1.5.2 The chief officer

After spending 9 years as a rating in the Royal Navy, the chief officer first went to sea in the merchant marine in 1977. He gained his Class 4 deck certificate in 1981 and his command endorsement 10 years later. The chief officer had spent most of his merchant career operating around the UK, but had also spent brief periods in the Baltic Sea and between northern Europe and the west coast of Spain. His last period at sea as master was between June and September 2001.

After joining Intrada in September 2003 as a chief officer, he spent one month on board *Scot Ranger* operating between Sweden and the UK, and one month on board *Highland Carrier*, which was anchored off the West Coast of Scotland for most of this time. He joined *Scot Venture* on January 13 while the vessel was undergoing repair in Swansea, Wales. On joining, a one-day handover was conducted with the off-going chief officer, during which the chief officer completed the familiarisation tasks required by Intrada **(Annex A)**.

After sailing from Swansea on 20 January, the vessel called at Fraserburgh, Udvalla, and Varburg before arriving in Karlshamn. During the passage through the Minch with the ship in ballast, the chief officer spent about 10 minutes steering the ship in hand steering in open water, but did not conduct any significant manoeuvring. This was the only occasion he had steered the ship in manual steering before changing to hand steering on the morning of 29 January. He had a lot of previous experience in shiphandling and was aware that vessels generally handle differently with a full deck cargo than when in ballast.

The chief officer stated that he did not feel tired during his watch, and had not consumed any alcohol since the ship's visit to Udvalla. At sea, he kept the 0200-0800 and 1400-2000 bridge watches. Other than his bridge watchkeeping duties, he was responsible for cargo operations, the maintenance of the ship's navigational charts and publications, deck equipment and fittings, and survival and fire-fighting equipment. He was also the ship's safety officer. The chief officer had assisted with cargo operations from 1200 on 28 January, but was stood down by the master later in the evening, along with one of the ABs, to ensure that they were rested. The chief officer was in bed from about 2000 until 0150, when he got up to relieve the master on the bridge at 0200. A record of the chief officer's hours of rest since joining is at **Annex B**.

1.6 MANNING

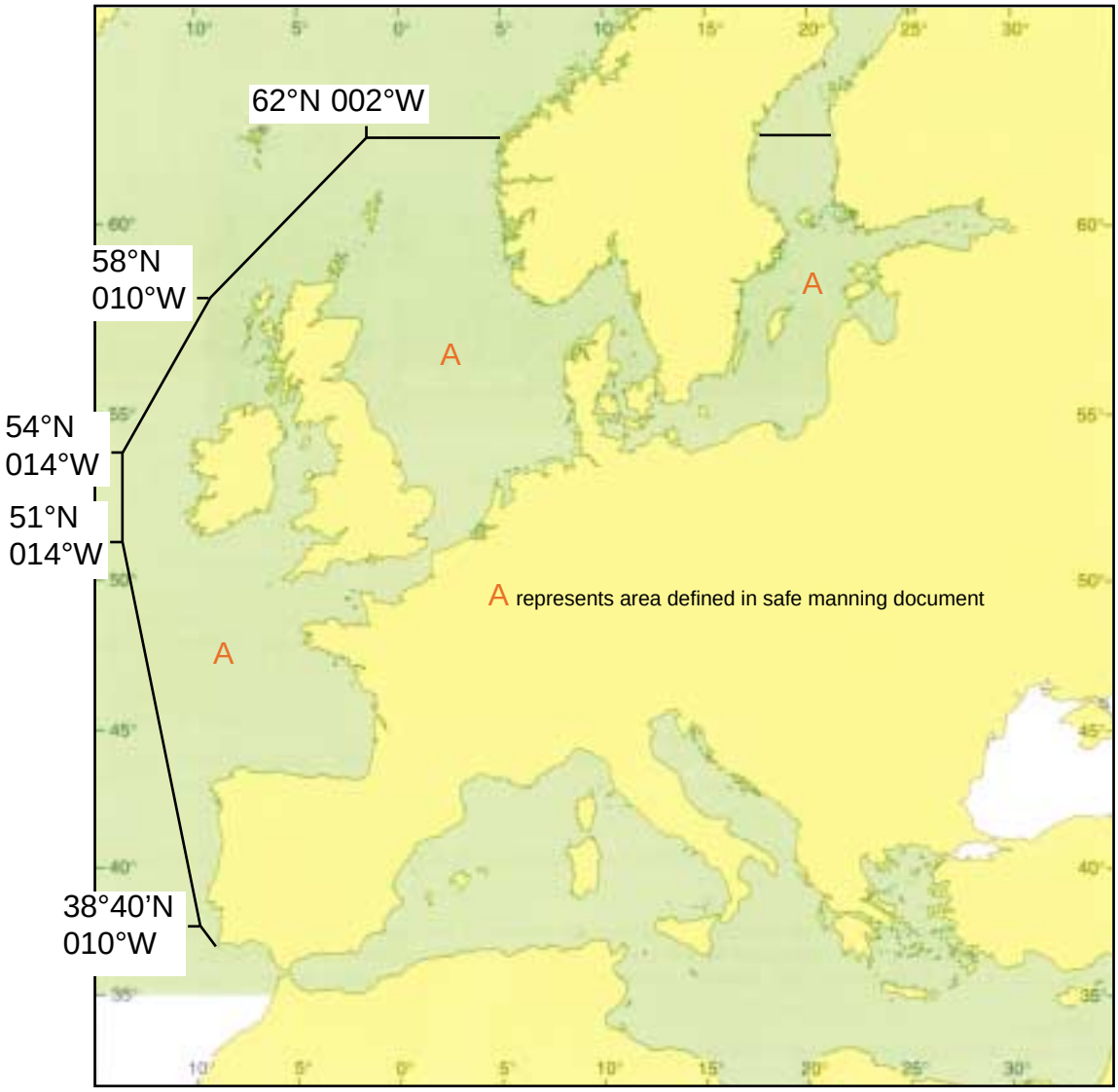
1.6.1 Safe Manning Document

In addition to the master and chief officer, who were British, *Scot Venture's* crew comprised a Croatian chief engineer, a motorman, a cook, and two ABs. All of the ratings were Filipino. The level of manning was in accordance with the requirements of the ship's Safe Manning Document applicable for voyages:

> *within the area bounded by a line from a point on the Norwegian coast in latitude 62° North to a point 62° North 02° West; thence to a point 58° North 10° West; thence to a point 54° North 14° West; thence to a point 51° North 14° West; thence to a point 38° 40' North 10° West; thence to Cape St Vincent including the Baltic Sea*.

This area is shown at **Figure 5**. When operating outside this area, the ship was additionally required to carry a second engineer and an ordinary seaman. The ship's Safe Manning Document was re-issued on 11 February 2004, also making the carriage of an additional OOW (deck) a requirement when operating outside the area outlined above.

Figure 5



Area defined in the safe manning document

1.6.2 Principles of safe manning

The principles of safe manning are laid out in IMO Resolution A.890 (21) and SOLAS Chapter V, Regulation 14. Responsibility for applying these principles rests with the relevant Administration, and ships' owners and managers. Guidance on the application of these principles is provided by the MCA in MSN 1767(M), which also contains guidance on hours of rest and watchkeeping. Included in both the IMO Resolution and the MSN is the requirement:

> *Except in ships of limited size, the provision of qualified deck officers to ensure that it is not necessary for the master to keep regular watches by adopting a three watch system*

MSN 1767(M) also provides guidance on the numbers of certificated deck and engineer officers appropriate to the sizes of ships, tonnages and trading areas **(Annex C)**.

Guidance on the application of the principles of safe manning is included in Annex 1 of the Resolution, in which article 1.2 states:

> *The Administration may retain or adopt arrangements which differ from the provisions herein recommended and which are especially adapted to technical developments and to special types of ships and trades. However, at all times the Administration should satisfy itself that the detailed manning arrangements ensure a degree of safety at least equivalent to that established by these guidelines.*

1.7 EMPLOYMENT OF ABLE SEAMEN ON THE BRIDGE

The ABs were always available to provide an additional lookout, but unless the conditions dictated, they were rarely used for this purpose during daylight. When employed on the bridge, they were seldom used to steer the ship in hand steering. The AB lookout on watch with the chief officer had been stood down at about 0715 as it was getting light, and the chief officer considered that there was little for him to do. The chief officer also assumed that the AB must have been tired, and was aware that the master was in his last hour of rest and could get to the bridge very quickly if needed. In addition, the chief officer had calculated that *Scot Venture* would pass Number 16 buoy at about 0800, by which time the master would already have been on the bridge.

The chief officer considered that ABs were generally not conscientious when used as lookouts, and were of little value. His experience in other companies was that the use of lookouts, in addition to the OOW, was seen as a waste of time by many masters, and were not always used, even during darkness or in busy shipping areas. This view was shared by many bridge watchkeepers interviewed in recent years by the MAIB.

1.8 MASTER/CHIEF OFFICER RELATIONSHIP

During the watch handover between the master and chief officer at 0200 on 29 January, the master informed the chief officer that he expected to be back on watch by the time the ship reached the Drogden Channel. He also instructed him to call him if he felt it necessary in the event of the ship arriving there earlier than expected. The master and chief officer briefly discussed the channel with the master, explaining that, although it was narrow, it was not difficult to navigate, and there was always the option of navigating outside the channel if there was a lot of traffic.

The master was aware of the depth of the chief officer's previous experience. The chief officer had also informed him that he was well practised in handling ships in restricted waters, and that he had operated in the area in the past, although not specifically the Drogden Channel.

1.9 COMPANY AND MASTER'S ORDERS

Company standing orders to the master included:

> *Ensure that the radar is used only as an aid to navigation. Use of the radar does not lessen any of the statutory requirements, which cover a vessel's movements in conditions of reduced visibility, or the requirements to consider increasing the number of persons on watch.*
>
> *Ensure that the person standing watch is competent to do so, and also that the recommended minimum number of persons on watch at any time is complied with at all times.*

The master's night orders for 28 January were:

> *Please observe all preceding directives. Courses as per passage plan. Ensure safe minimum passing distance for oil/gas installations. Keep sharp lookout for small fishing vessels. Adjust course and speed for safe navigation at all times. Ensure relevant VTSs are informed when passing appropriate positions. Call me if required.*

A copy of the master's standing orders is at **Annex D**.

1.10 THE PASSAGE PLAN

The passage from Karlshamn to Belfast was a voyage regularly undertaken by *Scot Venture*. The passage plan had originally been made by a previous chief officer, and approved by the master.

The master had transited the Drogden Channel many times and was aware that *Scot Venture* was able to navigate outside the channel for much of its course. He had occasionally done so on previous passages when high levels of traffic had been encountered.

During previous passages, however, the master did not usually make any special provision for being on the bridge when transiting the Drogden Channel outside his own watch periods. He considered that a chief officer should be capable of navigating the ship through this area, but had always emphasised to his officers that he should be called whenever they were in any doubt or difficulty. The master was routinely on the bridge outside his normal watchkeeping periods when in pilotage waters such as entering and leaving harbour, and when transiting the Pentland Firth when strong tidal streams were predicted.

1.11 THE DROGDEN CHANNEL

1.11.1 Details

The Drogden Channel, which has about 40,000 ship movements each year, is shown at **Figure 1**. It is dredged to a depth of 8m and pilotage is not compulsory for transiting vessels. The channel is about 300m wide between 16 and 17 buoys at its southern end, where the current generally sets north-east or south-west. To the north of these buoys, the current sets north or south, along the general axis of the channel. The direction and strength of the current is affected by many factors including wind, bottom contours, the disposition of islands, and salinity, which makes prediction difficult. A current meter is sited at Drogden Light from where real-time readings are monitored and recorded. This information is available on request to Drogden Light, although this service is not promulgated in Sailing Directions.

1.11.2 Routing

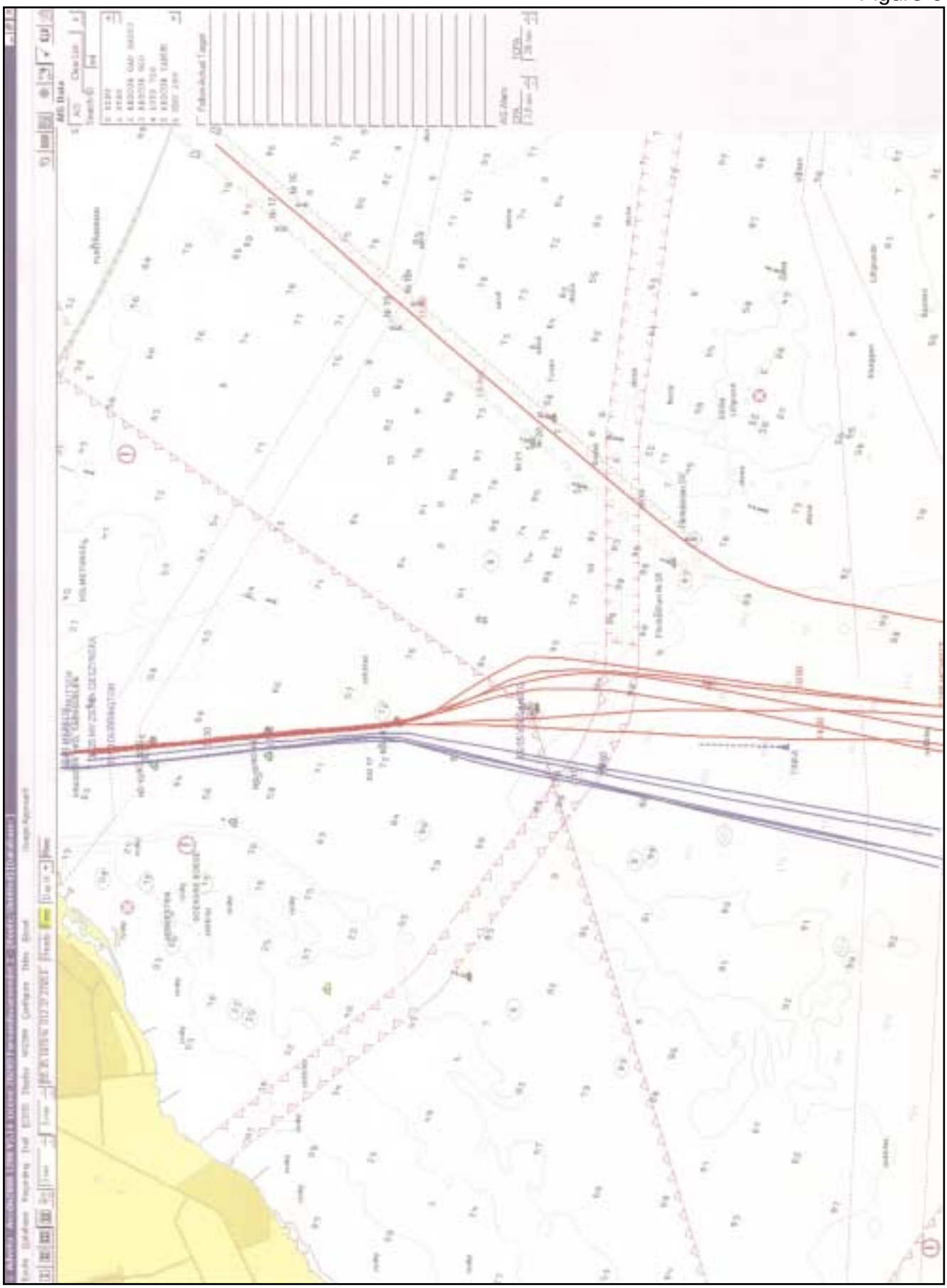
When approaching Drogden Channel from the south, no guidance is provided either on the chart or in the relevant Sailing Directions regarding routing. Ships can opt to pass to the west or to the east of the Drogden Light. **Figure 6**, which is based on AIS information plotted over a 24-hour period since the accident, illustrates that northbound vessels do use both of these options. *Scot Venture*'s master stated that he felt it customary to pass to the east of the Drogden Light, when northbound, because all of the southbound traffic stayed to the west of Number 16 buoy.

Following the accident on 29 January, the keeper of Drogden Lighthouse reported that the light on Number 16 buoy was not working, and that the buoy had become detached from its mooring. The buoy's mooring was found to be in its correct position.

The contact *Scot Venture* made with Number 16 buoy was the ninth recorded by the Royal Danish Administration of Navigation and Hydrography since January 2000. A further collision with No 16 buoy also occurred on 22 February 2004. Two collisions with Number 17 buoy were also recorded in the last 2 years.

Number 16 buoy is 7m in total height, with about 3.2m being above the waterline. A photograph of the buoy is at **Figure 7**.

Figure 6



Extract of AIS plot

Figure 7

Photograph of Number 16 Buoy

1.12 SHIP MANAGEMENT

Intrada Ships Management Limited was formed in 1977 and managed all six ships owned by Scot Line, which was formed in about 1979. All of these vessels were UK flag, and operated chiefly within the short-sea trade, spending about 2 days on passage and 12 hours in port. In addition to a master and a chief officer, all carried an engineer officer, although *Hohebank, Scot Trader* and *Scot Pioneer* were not required to do so. None carried an additional OOW. Each vessel had a number one master and a relief master, who were a mix of UK, German and Croatian nationals. All foreign nationals employed by Intrada were recruited via an agency.

It was company policy to retain the same personnel on board the same ships in order to maintain continuity and promote familiarity, but the company indicated that it was increasingly difficult to find and retain reliable chief officers. It tried to interview all masters and chief engineers before they took up a contract, but stated that it was not possible to do the same for its chief officers.

Intrada was of the opinion that its vessels were generally manned at a level one man higher than the vessels of many of its competitors.

1.13 BRIDGE WATCHKEEPING STANDARDS

Section A-VIII/2 Part 3.1 of STCW 95 details the principles to be observed in keeping a navigational watch. Extracts are at **Annex E**.

SECTION 2 - ANALYSIS

2.1 AIM

The purpose of the analysis is to determine the contributory causes and circumstances of the accident as a basis for making recommendations to prevent similar accidents occurring in the future.

2.2 DROGDEN CHANNEL

The Drogden Channel is maintained at a depth of 8m and provides a safe, marked route, for both north and southbound vessels. Only vessels with draughts requiring such a maintained depth need use the channel. Other vessels with lesser draughts, including *Scot Venture*, could navigate safely outside the channel for much of its course. However, given that the channel clearly delineates a tract of safe water available, it is not surprising that the majority of vessels opt to use it. Indeed, as there are no restrictions placed on its use, passage via the channel could be expected to be the norm, rather than the exception.

The ten contacts in the last 4 years between ships and Number 16 buoy indicate that ships are occasionally finding the approach to the southern entrance of the channel difficult. Other than the contact by *Scot Venture*, in which the state of visibility was pivotal, the MAIB has no details of the other accidents, but considers that several factors contribute to making navigation in this specific area of the channel problematic. These include, the direction and strength of the current, the width of the channel, the direction of approach to the channel usually adopted, and the presence of southbound vessels. While most of the contacts probably only resulted in damage to the buoy, this accident damaged the ship's propulsion, which, together with the ship's swing to port across the channel, had the potential to lead to a far more serious accident, given the visibility and close proximity of southbound vessels.

Ships can pass to the east or to the west of the Drogden Lighthouse when approaching the Drogden Channel from the south, and it is evident, from **Figure 6**, that both options are used. Both have advantages and disadvantages. Ships opting to pass to the east of the lighthouse, such as *Scot Venture*, use the lighthouse as a natural divide between north and southbound traffic. The use of this approach might also be influenced by the position of the charted pilot embarkation point, which is sited to the south of the lighthouse but with a bias to the east. After passing Drogden Lighthouse, however, the distance to Number 16 buoy is only 8.5 cables. This allows watchkeepers very little time to join a 300m wide channel at an offset angle, particularly when experiencing a strong cross-current, and when possibly trying to pass Number 16 buoy as close as possible because of southbound traffic within the channel. Passage to the west of the lighthouse enables a more direct approach towards the channel, and gives much more time to allow for the effects of the current. Its disadvantage is that southbound traffic is encountered in the vicinity of the lighthouse, where sea room to starboard is obstructed by the lighthouse itself.

2.3 ACTIONS OF THE CHIEF OFFICER

As the chief officer altered course towards the southern entrance to the Drogden Channel, he was in control of the situation: despite snow falling, visibility had recently been measured at 2 miles; the first two buoys marking the channel were visible by radar; the two southbound radar contacts were on the western side of the channel and were sufficiently far north not to pose a problem; and the master had been called in readiness to take over the watch. However, very quickly the snow worsened and reduced the visibility to about 100m. This degraded the radar picture to the extent that the channel buoys were no longer discernible.

When navigating in snow, visibility is prone to reduce very quickly as the precipitation intensifies. However, as it is likely the chief officer would have recalled seeing Numbers 16 and 17 buoys from the course alteration at 0750 when at a range of 8.5 cables, had they been visible, it is possible that the visibility had already reduced to less than one mile by then. The reduction in visibility was, therefore, possibly not as sudden as perceived by the chief officer. Also, as it is usual for such intense precipitation to be detected by radar, particularly in this case where the quality of the information displayed was severely degraded, it is probable the approach of the precipitation showed on the radar displays, but was not noticed by the chief officer.

Having lost all visual reference to his position as he approached a narrow channel, the chief officer took the immediate action of changing to hand steering, calling the master to the bridge, and slowing down. Although these actions were positive, they failed to prevent contact with Number 16 buoy. This was probably due to several factors.

First, the reduction in speed, caused by moving the pitch control lever from 100% to 80% would have only been about 1.5 knots. As a result, S*cot Venture* continued to close the channel at about 12 knots, so reducing the chances of the master reaching the bridge in time to influence the action and decisions required to be taken.

Second, the chief officer was aware that the ship’s track passed very close to Number 16 buoy, but remained on the planned course despite knowing there was sufficient water to the east. He also did not make any adjustment to the planned course to allow for the tidal stream.

Third, by changing to hand steering, with no-one else on the bridge to take the helm, the chief officer had to monitor the position of the buoy from near the centreline over the timber deck cargo. He was unable to move to the starboard bridge wing, from where a more accurate assessment of the ship’s movement and proximity to the buoy could have been made.

Fourth, as soon as the buoy was sighted, and port helm applied, the chief officer’s concentration on the relative position of the buoy was at the expense of monitoring the position of the rudder and the movement of the ship’s head via the rudder and gyro compass repeaters.

Finally, when taking avoiding action, too much port helm was initially applied, and opposite helm was applied too little and/or too late to prevent the vessel's stern from swinging into the buoy. The chief officer also lost his awareness of the relative position and proximity of the two vessels which were southbound in the channel.

These factors indicate the chief officer would have been better placed to cope with the sudden worsening of the visibility, if he had been more familiar and practised with manoeuvring the vessel, and had not been alone on the bridge.

2.4 FAMILIARISATION

The chief officer completed a one day handover and familiarisation with the outgoing chief officer in accordance with company policy, but the only item applicable to his bridge watchkeeping duties, required by the familiarisation record **(Annex A)**, was:

> *Where appropriate, assigned designated watch & familiarised with any equipment or machinery to be used during that watch & made aware of relevant duties*

This training was completed in harbour, and although the chief officer later spent about 10 minutes maintaining a course in hand steering on passage with the ship in ballast, he had no experience of handling the ship when loaded. Practical experience of manoeuvring in different conditions under the guidance of the master, was not a company requirement, but would have better equipped the chief officer when manoeuvring to avoid Number 16 buoy.

2.5 BRIDGE MANNING

2.5.1 The master's responsibility

The company's written orders to the master regarding bridge manning, which reflected the lookout and composition of a navigational watch requirements in STCW 95, were:

> *Ensure that the person standing watch is competent to do so, and also that the recommended minimum number of persons on watch at any time is complied with at all times.*

This instruction, along with the fact that it is not usual for the management to interview its chief officers before taking up a contract, and its difficulty in retaining good ones, places a great onus upon its masters to vet and monitor the competency of its chief officers. *Scot Venture*'s master had only known the chief officer for 16 days, and during this time the ship had only been operational for the last 9. It would, therefore, have been very difficult for him to gauge the chief officer's competency in such a short time frame, particularly when working opposite bridge watches in a 6 hours on – 6 hours off routine. His assessment of the chief officer's suitability to keep bridge watches, therefore relied largely on the fact that the chief officer had previously worked on other company vessels and had been retained, along with the fact he gave the impression that he was experienced and comfortable navigating in restricted waters.

2.5.2 Navigation in restricted waters

Even when an OOW's competency is not in doubt, it is usually prudent for masters to be on the bridge when on passage close to navigational dangers, in restricted visibility, and areas of high traffic density. This is a precautionary measure, taken to enable their experience and knowledge to be immediately at hand. In ships operating in the short-sea trade with two watchkeepers, however, masters are inevitably reliant on chief officers being capable of navigating in the majority of such situations without their assistance. Otherwise, the master's periods of rest would be frequently disrupted, and the risk of fatigue increased. It was therefore not unexpected that the master of *Scot Venture* had not made special provision to be on the bridge for the transit through the Drogden Channel, on this, or many previous occasions. It is probable that many masters of similar vessels, in similar situations, would have done likewise.

Had the master been on the bridge as the ship passed the Drogden Lighthouse, his knowledge of the ship's handling characteristics, and the area, would have undoubtedly been beneficial as the visibility decreased.

2.5.3 Use of lookouts

The chief officer was alone on the bridge when the visibility decreased. He had stood the lookout down, despite being aware of forecasts predicting poor visibility in snow. The ship was also due to enter a narrow channel within 45 minutes, and was likely to come into close proximity with other shipping and navigational buoys. Although STCW 95 requires such conditions to be taken into account when determining the need for an additional lookout, the AB was sent below because the chief officer thought that he was tired and was of little use. In taking this action, he deprived himself of a person who might possibly have given earlier warning of the approaching blizzard, or monitored the position of the buoy from the starboard bridge wing, or have been used as a helmsman. Any of these actions might have helped to prevent the contact with the buoy.

The chief officer's view regarding the usefulness of lookouts is thought to be prevalent among many bridge watchkeeping officers. The presence of a lookout on the bridge is often seen as a token gesture aimed at meeting regulatory requirements, at the expense of deck maintenance and other tasks. Consequently, when additional lookouts are on the bridge, many are not used effectively or valued by OOWs. There is evidence that some OOWs do not even speak to the AB with whom they are on watch, particularly when differing nationalities are involved. If a lookout is required to do nothing, it is likely he will be inclined to do nothing. This defeats the purpose of him being there. Such a situation is detrimental to the safety of ships. A lookout is a valuable bridge resource. This resource, however, must be properly trained, be effectively managed by the OOW, and be fully integrated within the bridge team, if it is to contribute to bridge efficiency and ship safety.

2.6 SAFE MANNING

2.6.1 Master – chief officer relationship

Scot Venture was manned in accordance with her Safe Manning Document, which required only two bridge watchkeepers to be carried in the area she was operating. Although fatigue, which is frequently used as an indicator of inadequate manning levels, was not a contributing factor in this accident, it is considered that the burden of the master's watchkeeping duties probably was.

Operating with two watchkeeping officers on short-sea routes is very demanding for both officers. In addition to the 12 hours per day they are expected to be on watch, they are also expected to complete the wide-ranging tasks they have in relation to a vessel's safe management, maintenance, and operation. The physical and mental demands of this work pattern are also intensified by disruptions such as port entry and departure, the increasing number of inspections and audits, berth shifts, cargo operations, and bad weather.

Within this environment, it is extremely difficult, if not impossible, for masters of such vessels to be able to fulfil some of the functions required of them by regulation with regard to their responsibilities as master, without unacceptable consequences for their own levels of fatigue. As a result, when a master shares the burden of the watchkeeping duties, it is not unnatural for more reliance to be placed on the competency of chief officers than should be the case. The absence from the bridge of *Scot Venture*'s master, as the vessel approached an area of restricted waters, under the control of an OOW who was not fully familiar with its handling characteristics, is therefore considered to have been symptomatic of the number of watchkeeping officers carried.

The level of competency of chief officers should really be assessed during the recruitment phase, rather than leaving it to the master on duty. This is because masters are highly dependent on chief officers when no other watchkeepeers are carried, and high demands are made on officers' time in this working environment. It is also important to ensure that both masters and chief officers are made fully familiar with all of the fundamental aspects of the ship's operations as soon as possible after joining.

2.6.2 Requirement for an additional watchkeeper

The revision of *Scot Venture*'s Safe Manning Document in February 2004, to require the vessel to carry an additional bridge watchkeeper, was in accordance with the guidance issued at **Annex C** for vessels between 500 and 3000grt. However, it is not clear why the requirement is only applicable when the vessel was operating outside the area shown at **Figure 5**. An additional bridge watchkeeper would contribute more to the overall safety of the ship within the North European trading area, where high levels of high traffic density and frequent port visits are encountered. Voyages outside this area usually involve longer passages, in more benign waters, on which fewer disruptions to sleep and watch patterns are likely.

2.6.3 Application of principles

The principles of safe manning contained in IMO Resolution 890(21), although comprehensive, are not prescriptive or mandatory, and converting them into a set number of persons on a particular ship requires many subjective assessments to be made by vessels' owners and managers, and the approving Administrations. Latitude therefore exists when determining safe manning levels, and given the commercial pressures derived from the cost of manpower, it is inevitable that variations in the manning levels of ships of similar size engaged in similar trade in the same area, result. This was shown by the examination of the Safe Manning Document of a vessel of similar size to *Scot Venture*, engaged in the same trade in the same operating area, but registered with another European Administration. Whenever *Scot Venture* required a crew of seven, the other vessel required a total crew of five, comprising a master, a chief officer (who was also required to be a qualified chief engineer), an OOW, and two deck ratings. Such inconsistencies raise questions on the effectiveness of the current methods of determining safe manning levels.

2.7 DAMAGE TO NAVIGATION AIDS

It is in the interests of safety of all mariners that aids to navigation, such as buoys, are working and in their charted positions. Although the chief officer was adamant that *Scot Venture* had not made contact with Number 16 buoy, the ship's proximity to the buoy when the loud bang aft was heard, along with the degradation of propulsion that quickly followed, was sufficient evidence to indicate that contact had indeed been made. Had the master informed the Danish authorities, immediately following the accident, that contact with the buoy had possibly occurred, this would have allowed a navigational warning to be quickly issued to other ships in the area, and a more rapid inspection of the buoy.

2.8 FATIGUE

Although the contact with the buoy occurred within the last minutes of the chief officer's watch, fatigue is not considered to have been a factor. He had been working a 6 hours on – 6 hours off routine, but this had only been for about 9 days, and he had about 6 hours rest before taking over the watch; he did not feel tired. The master's awareness of the need to take measures to prevent the onset of fatigue was demonstrated by his decision to stand down the chief officer and the AB from cargo duties during the evening of 28 January 2004. This action was well considered.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES

The following are the safety issues identified in the MAIB investigation. They are not listed in any order of priority, but are in the order they appear in the analysis.

1. Ten contacts in the last 4 years between ships and Number 16 buoy, indicate that ships are occasionally finding the approach to the southern entrance of the Drogden Channel difficult. [2.2]

2. The factors making the approach to the southern entrance to the Drogden Channel problematic include: the direction and strength of the current, the width of the channel, the direction of approach to the channel usually adopted, and the presence of southbound vessels. [2.2]

3. The damage to *Scot Venture*'s propulsion, and the ship's swing to port across the channel, had the potential to lead to a far more serious accident, given the visibility and the close proximity of southbound vessels. [2.2]

4. When approaching the southern entrance to the Drogden Channel, visibility reduced to about 100m in snow, and Numbers 16 and 17 buoys were no longer visible on the radar displays. [2.3]

5. It is possible that the reduction in visibility was not as sudden as perceived by the chief officer, and it is probable that the approach of the precipitation was shown on the radar displays. [2.3]

6. The chief officer did not move the main engine pitch control sufficiently to cause a significant reduction of speed. [2.3]

7. The chief officer remained on the planned course despite knowing there was sufficient water to pass to the east of Number 16 buoy. [2.3]

8. After changing to hand steering, the chief officer had to monitor the position of the buoy from near the centreline over the timber deck cargo. [2.3]

9. When applying port helm to avoid Number 16 buoy, the chief officer focused on the relative position of the buoy and did not monitor the rudder angle or the movement of the ship's head via the rudder and gyrocompass repeats. [2.3]

10. Too much port helm was initially applied, and opposite helm was applied too little and/or too late to prevent the vessel's stern from swinging into the buoy. [2.3]

11. The chief officer would have been better placed to cope with the sudden worsening of the visibility if he had been more familiar and practised with manoeuvring the vessel, and had not been alone on the bridge. [2.3]

12. Practical experience of manoeuvring in different conditions under the guidance of the master was not a company requirement, but would have better equipped the chief officer when manoeuvring to avoid Number 16 buoy. [2.4]

13. It would have been very difficult for the master to gauge the competency of the chief officer in the time the chief officer had been on board, particularly with the two officers working opposite bridge watches in a 6 hours on – 6 hours off routine. [2.5.1]

14. In ships operating in the short-sea trade with two watchkeepers, masters are inevitably reliant on chief officers being capable of navigating in areas such as the Drogden Channel without their assistance. [2.5.2]

15. Had the master been on the bridge as the ship passed the Drogden Lighthouse, his knowledge of the ship's handling characteristics, and the area, would have been beneficial as the visibility decreased. [2.5.2]

16. By allowing the only AB lookout to leave the bridge, the chief officer deprived himself of a person who might possibly have given earlier warning of the approaching blizzard, or monitored the position of the buoy from the starboard bridge wing, or have been used as a helmsman. Any of these actions might have helped to prevent the contact with the buoy. [2.5.3]

17. When additional lookouts are on the bridge, it is considered that many are not used effectively or valued by OOWs. Such a situation is detrimental to the safety of ships. [2.5.3]

18. The absence from the bridge of *Scot Venture*'s master, as the vessel approached an area of restricted waters, under the control of an OOW who was not fully familiar with its handling characteristics, is considered to have been symptomatic of the number of watchkeeping officers carried. [2.6.1]

19. A requirement to carry an additional bridge watchkeeper when operating within the European Area **(Figure 5)** would contribute more to the safety of the vessel than a requirement to carry one outside this area. [2.6.2]

20. The application of the principles of safe manning is inconsistent between Administrations. Such inconsistencies raise serious doubt on the effectiveness of the current methods of determining safe manning levels. [2.6.3]

21. Had the master informed the Danish authorities that contact with the buoy had possibly occurred immediately following the accident, this would have allowed a navigational warning to be quickly issued to other ships in the area, and a more rapid inspection of the buoy. [2.7]

SECTION 4 - ACTION TAKEN

The MAIB has recently published a Bridge Watchkeeping Study, which focused on the effects of bridge manning and watchkeeping arrangements with regard to accidents. The study highlighted the problems associated with operating vessels on short-sea trade with just two bridge watchkeepers, and made recommendations to improve manning levels in this respect. The study also made recommendations with regard to the keeping of a proper lookout, including making better use of the manpower available.

A recommendation made to the MCA by the MAIB in its report of the grounding of *Jambo* on 29 June 2003, was for the findings of an MCA research project into Safe Manning Requirements in near coastal waters in Europe to be taken forward to IMO. The research project was proposed within the MCA because of evidence indicating varying levels of manning requirements and different approaches to setting manning levels in Europe and other countries worldwide. Since the MAIB report was published in December 2003, however, it is understood that no progress has been made with this project.

Recommendations have recently been made to the UK Chamber of Shipping, the International Chamber of Shipping and the International Shipping Federation in its report on a near miss involving the *Hoo Finch* and *Front Viewer,* which call on these organisations to:

> "*Remind members that a separate lookout is needed at night in all cases and during the day when: in reduced visibility, in an area of high traffic density, or, in close proximity to land or navigational hazards. While in coastal waters, it should only be in exceptional cases that the lookout is stood down during the day*."

In June 2004, Intrada issued a directive to its fleet detailing more thorough familiarisation procedures for OOWs, and encouraging the use of navigational watch ratings by day as well as by night.

SECTION 5 - RECOMMENDATIONS

The Royal Danish Administration for Navigation and Hydrography is recommended to:

2004/222 Review the positioning of the lateral marks at the southern end of the Drogden Channel, along with the information and guidance available with regard to tidal streams and routing, with the purpose of reducing the high number of contacts between ships and Number 16 buoy.

The International Chamber of Shipping is recommended to:

2004/223 Encourage its member companies, particularly those operating lean-manned ships, to promote a more effective use of additional lookouts via the provision of basic training in bridge equipment and procedures, and by training OOWs to manage this resource.

Marine Accident Investigation Branch
September 2004

ANNEX A

Copy of the familiarisation record

Intrada Ships Management Ltd

Familiarisation Record

M.V. Scot Venture	Date & Place Joined:-	Previously on vessel? Yes / No If yes date & rank
Name:-	Rank:-	

	Confirmation of Training & Familiarisation Carried Out	Initials Mentor	Initials Joiner	Date T&F completed
1	Aware of the Company's Safety Management System, Policies, Designated Person and the requirements of the ISM Code			
2	Made aware of the Muster list, Lifeboat stations and Abandon ship duties.* Aware of the location of personal lifejacket and immersion suit.*			
3	Aware of duties in the event of fire and emergencies.(Including Man Overboard) Responsibilities if a member of fire fighting or emergency response team. Be able to locate open/close fire, watertight & weather tight doors. Be able to raise the alarm. *			
4	Aware of position of emergency exits and fire fighting equipment with respect to the individuals place of duty and accommodation.*			
5	Issued with safety clothing,hard hat,overalls,shoes/boots, gloves and any other items of Personal Protective Equipment that may be required to undertake their duties safely.			
6	Aware of the safe working practices and the procedures as detailed in the CSWP & Company SMS			
7	Where appropriate, assigned designated watch & familiarised with any equipment or machinery to be used during that watch & made aware of relevant duties.*			
8	Aware of the Company's SOLAS & Fire Training Manual.			
9	Aware of the Company's Drug & Alcohol Policy			
10	English Adequate (YES) / (NO) *(delete as appropriate)* (If no contact the Personnel Department immediately)			

Prior to vessel sailing from port of embarkation.

I have assisted this new crewmember in ensuring that they are aware of the above items
They have demonstrated their knowledge to my satisfaction.

Signed Mentor (Rank) Master

Acknowledged by:- (New crewmember)

ANNEX B

Copy of the chief officer’s hours of rest for January

Intrada Ships Management Limited

RECORD OF SEAFARERS DAILY HOURS OF REST

Name	Time> / Date	00:00 01:00	01:00 02:00	02:00 03:00	03:00 04:00	04:00 05:00	05:00 06:00	06:00 07:00	07:00 08:00	08:00 09:00	09:00 10:00	10:00 11:00	11:00 12:00	12:00 13:00	13:00 14:00	14:00 15:00	15:00 16:00	16:00 17:00	17:00 18:00	18:00 19:00	19:00 20:00	20:00 21:00	21:00 22:00	22:00 23:00	23:00 00:00	Total
Rank	1																									
	2																									
Month	3																									
January-04	4																									
	5																									
1 There shall be a minimum of 10 hours rest in any 24 hour period. There shall be a minimum period of 77 hours rest in any 7 day period. The maximum interval between consecutive rest periods shall be 14 hours.	6																									
	7																									
	8																									
	9																									
	10																									
	11																									
Joins 13.1.04	12																									
	13	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	15
	14	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	15
	15	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	15
	16	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	15
	17	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	15
	18	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	15
2 The Master may require a seafarer to work any hours necessary for the immediate safety of the ship.(After which the seafarer shall be provided with an adequate rest period.) Drills will be conducted to minimise the disturbance of rest periods and not to induce fatigue.	19	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	15
	20	X	X	X	X	X	X	X	X										X	X		X	X	X	X	15
	21	X	X							X	X	X	X	X	X							X	X	X	X	12
	22	X	X							X	X	X	X	X	X							X	X	X	X	12
	23	X	X	X	X	X	X	X												X	X	X	X	X	X	13
	24	X	X							X	X	X	X	X	X							X	X	X	X	12
	25	X	X							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	18
	26	X	X	X	X	X	X	X									1	·	X	X	X	X	X	X	X	14
	27	X	X	X	X	X	X							X	X							X	X	X	X	12
	28	X								X	X	X	X	X							X	X	X	X	X	11
	29	X	X							·	·	X	X	X	X	X	X				X	X	X	X	X	13
	30	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	13
Signed	31	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	15
A record of seafarers daily hours of rest will be maintained by the Master or a person authorised by the Master.																						Monthly Total				

ANNEX C

Copy of an extract from MSN 1767 (M)

Maritime and Coastguard Agency

MERCHANT SHIPPING NOTICE

MSN 1767 (M)

Hours of Work, Safe Manning and Watchkeeping Revised Provisions from 7 September 2002

Application of the Merchant Shipping (Hours of Work) Regulations 2002 and STCW 95

Notice to Shipowners, Companies, Managers, Masters, Deck and Engineering Officers and all seafarers on Merchant Ships

With effect from 7 September 2002, this Notice supersedes Merchant Shipping Notice MSN 1682(M) and should be read in conjunction with Merchant Shipping Notice MSN 1758(M), and Marine Guidance Notes MGN 50(M), MGN 137(M+F), and MGN 179 (M) (or subsequent amendments)

Summary

This Merchant Shipping Notice contains the detailed mandatory requirements specified by the Secretary of State under the Merchant Shipping (Hours of Work) Regulations 2002 which come into force on 7 September 2002, and Regulations 1-5 and 11-18 of the existing Merchant Shipping (Safe Manning, Hours of Work and Watchkeeping) Regulations 1997[1]. It gives guidance on the application of the Regulations.

The guidance is in 3 Sections with Annexes:

Section 1 - Hours of Work
Section 2 - Safe Manning
Section 3 - Watchkeeping

Key Points

Section 1 - The requirements of the new 2002 Regulations:

- apply to all seafarers (including masters) employed or engaged in any capacity on board a seagoing ship other than fishing vessels, pleasure vessels, offshore installations whilst on their working stations and tugs which do not ordinarily go beyond the limits of categorised waters
- provide for a minimum of 10 hours rest in any 24 hour period and 77 hours in any 7-day period and 4 weeks annual paid leave
- require records of hours of rest to be maintained (suggested pro-formas at Annexes A and B)
- provide for inspection and enforcement by the MCA

Sections 2 and 3 of this Notice, which supersedes MSN 1682(M), have been reissued to incorporate editorial amendments, to clarify the manning guidance tables (at Annexes C and D) and to incorporate International Maritime Organization Resolution A21/Res 890 on the Principles of Safe Manning.

[1] SI 1997/1320, as amended by SIs 1997/1911 and 2000/484

SECTION 1 - HOURS OF WORK

1.0 Introduction

1.1 The Merchant Shipping (Hours of Work) Regulations 2002, (referred to in Section 1 of this Notice as "the Regulations") which come into force on 1 September 2002, revoke Regulations 6 to 10 of the Merchant Shipping (Safe Manning, Hours of Work and Watchkeeping) Regulations 1997, as amended, and replace them with provisions on hours of work and annual leave which implement the Annex (the Social Partners' Agreement) to Council Directive 1999/63/EC of 21 June 1999 (the Maritime Working Time Directive). The requirements of clause 13 of the Annex, relating to medical certification, are implemented separately in the new Merchant Shipping (Medical Examination) Regulations 2002.

1.2 The Regulations also implement Council Directive 1999/95/EC concerning inspection and enforcement and provide for penalties in the event of non-compliance.

1.3 Regulations 1-5 and 11-18 of the 1997 Regulations remain extant and details of requirements are given in Sections 2 and 3 of this Notice.

2.0 Application

2.1 The requirements of the EU Directive apply to:

seafarers employed or engaged in any capacity on board every seagoing ship, whether publicly or privately owned, which is registered in the territory of any Member State and is ordinarily engaged in commercial maritime operations.

For the purposes of these Regulations, the terms a) "seafarer", b) "seagoing ship" and c) "commercial maritime operations" are considered below, in paragraphs 2.2-2.4.

2.1.1 The requirements of these Regulations do not apply to seafarers employed or engaged on fishing vessels, offshore installations whilst on their working stations and tugs which do not ordinarily go beyond the limits of categorised waters, as defined in Merchant Shipping Notice MSN 1758 (M).

2.2 **Seafarer**

2.2.1 A seafarer is a person employed or engaged in any capacity on board a seagoing ship on the business of the ship. This is taken to mean a person employed either directly by a shipping company or through a manning agency, whose **usual** place of work is on board a seagoing ship, and includes masters, crew members, resident entertainers and franchise employees on passenger ships. Boatmaster's licence holders operating on seagoing passenger vessels (carrying more than 12 passengers) are also covered.

2.2.2 The Regulations will ***not*** be taken to apply to those whose normal place of work is ashore but who are working on a seagoing ship on a temporary or short term basis eg fitters, guest lecturers and entertainers, research scientists, riding crews, trainees and volunteers on sail training ships who are not carrying out safety-critical roles (see para 2.4.2 below), provided such workers are covered by the requirements of the Working Time Regulations 1998[2]

2.3 **Seagoing Ship**

2.3.1 For the purpose of these Regulations a seagoing ship is one which is certificated under Merchant Shipping legislation for navigation at sea.

2.3.2 Vessels certificated under MCA Codes of Practice in terms of the Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) Regulations 1998[3], are covered by the separate provisions of those Regulations and the Codes to which they refer.

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[2] SI 1998/1833
[3] SI 1998/2771

2.4 **Commercial Maritime Operations**

2.4.1 All vessels engaged in trade, carrying cargo or fare-paying passengers are covered, as are sail training vessels. Government ships such as those operated by the Royal Fleet Auxiliary, which are not ordinarily engaged in commercial maritime operations, are not covered by the Regulations.

Sail Training Vessels

2.4.2 - For the purposes of the Regulations, "seafarers" on sail training vessels includes all contracted crew (or those listed on the Safe Manning Document, if applicable) and any person in charge of a navigational or engineering watch and/or with a safety-critical role. These seafarers will sign on the crew agreement. Volunteers and trainees who have no safety-critical responsibilities are **not** covered by the Regulations.

2.4.3 The Owner/Operator of a sail training vessel should make a declaration of the minimum manning requirement for contract crew, for approval by the Seafarers' Training and Certification Branch of the MCA (unless the vessel is already covered by a Safe Manning Document).

2.5 Definition of Hours of Work

2.5.1 For the purposes of the Regulations, hours of work are when seafarers are required to do work on the business of the ship.

2.5.2 On-Call Time - The Regulations provide that a seafarer whose normal period of rest on board ship is disturbed by a call-out, should have adequate compensatory rest. This is intended to cover situations such as when a seafarer, having set the alarms in an unattended machinery space, retires to his bunk but has his rest disturbed by a call-out to work. In such circumstances the seafarer is entitled to compensatory *rest* to make up for the rest time lost because he was called out to work.

3.0 General Duties (Regulation 4)

3.1 The Regulations require that any company (defined as the owner or any other person or organisation, such as the manager or bareboat charterer who has assumed responsibility for the ship from the owner), and the master must ensure that seafarers are provided with at least the minimum hours of rest. This will include the managers of franchises, who are responsible for the personnel working for the franchise, and any other employer of a seafarer working on board the vessel.

3.2 It is the responsibility of all seafarers to ensure that they are properly rested when they begin duty on a ship and that they obtain adequate rest when not on duty.

4.0 Minimum Hours of Rest (Regulation 5)

4.1 The hours of rest shall be not less than:

a) 10 hours in any 24-hour period; and

b) 77 hours in any 7-day period.

Note: Hours of rest may be divided into no more than 2 periods, one of which should be at least 6 hours long, and the interval in between should not exceed 14 hours.

4.2 It is expected that employers and employees will reach agreement on the arrangements for conducting emergency drills such as musters, fire-fighting and lifeboat drills, in a way which minimises the disturbance to rest periods and provides compensatory rest for seafarers whose normal rest is disturbed by call-outs for drills.

Exceptions to the Limits on Hours of Rest (Regulation 6)

4.3 Exceptions to the limits on the hours of rest may be allowed (Regulation 6) provided that they are the result of an agreement between employers and seafarers and have due regard to the general principles of health and safety of workers. Agreements can be made by "collective agreement" (between the employer and an independent trade union) or "workforce agreement" (Schedule 1 to the Regulations). Exceptions may take account of more frequent or longer leave periods or the granting of compensatory

leave for watchkeeping seafarers or seafarers working on board ships on short voyages.

4.4 A workforce agreement is made with elected representatives of the workforce in most cases (see below.) It can apply to the whole workforce or to a group of workers. To be valid, a workforce agreement must :

- be in writing;
- have been circulated in draft to all workers to whom it applies together with guidance to assist their understanding of it;
- be signed before it comes into effect either:
  - by all the representatives of the members of the workforce or group of workers; or,
  - if there are 20 or fewer employed by a company, either by all representatives of a workforce or by a majority of the workforce
  - have effect for a specified period of no more than five years.

4.5 Applications for authorisation of exceptions should be made in writing to any MCA Marine Office (listed at Annex E).

5.0 Posting-up of Table of Duties (Regulation 7)

5.1 Companies should ensure that a table or schedule of duties is produced setting out the hours of work and rest periods. The table should be in the same format as Annex A(i) to this Notice or in a format substantially like it. The table must be in English and in the working language of the ship, if that is not English, and should specify for every position at least:

- the daily schedule of duties at sea and duties in port; and
- the daily minimum hours of rest as required by the Regulations (see para 4.1 above) or any collective or workforce agreements in force.

In devising the schedule, operators should take account of factors such as:

a) trade and type of operation;

b) type and size of ship;

c) construction and technical equipment of the ship;

d) manning levels and changes in crew numbers due to crew changes and sickness;

e) the maximum period of continuous watchkeeping;

f) minimum rest periods;

g) total workload;

h) the seriousness of irregular working hours and their contribution to causing fatigue and the importance of scheduling reasonably stable working hours over a voyage.

5.2 Changes should not be made to the schedule of duties unless they can be justified by substantially altered work patterns made necessary, for example, by a change in trading pattern or other significant factor. Where it is known that a ship engages in an irregular trading pattern or that working hours are unlikely to be uniform, this can be taken into account and recorded in the schedule.

5.3 It is not necessary to draw up a new schedule of duties for each voyage, so long as it is applicable to the voyage in question and the composition of the crew for whom it was originally intended has not changed.

5.4 It is the responsibility of the master or authorised person to post up the table in a prominent and easily accessible place in the ship. Where there is more than one table, the master is responsible for ensuring that all tables are posted in a suitable place.

5.5 When first drawing up a schedule of duties for a ship, companies should seek the views of the master, who should in turn seek the views of the officers, the ship's safety committee, or the seafarers or their representatives or a trade union as appropriate. The final decision on the schedule lies with the operator who will be responsible for ensuring that it is appropriate in relation to the safety of the ship and the performance of duties.

6.0 Exceptions for Emergencies (Regulation 8)

6.1 The Regulations recognise that situations may arise in which a seafarer may be required to work during scheduled hours of rest. These include emergencies which threaten the safety of the ship or the cargo or

put life at risk. In these circumstances, the limits may be exceeded provided compensatory arrangements are made to avoid fatigue.

7.0 Records (Regulation 9)

7.1 The master or authorised person is responsible for ensuring that records of hours of rest are maintained for each seafarer serving on the ship. The records should be completed monthly in arrears and these should be in the format at Annex B to this Notice or an equivalent format showing at least this information. Each record should be endorsed by the master or authorised person and the seafarer. A copy should be given to the seafarer.

7.2 In an emergency or when unforeseen events occur (as described in paragraph 6 above), changes may be unavoidable. In these cases records should reflect all deviations from the schedule.

7.3 All records should be kept for a minimum of one year and should be available for inspection by MCA surveyors at any time. If during the year, a company ceases to operate, the duty to retain the records remains with that company.

7.4 Checking the ship's documentation will be carried out by the MCA as part of the normal routine of vessel inspection and will include a check that the appropriate schedules are posted and records maintained. Following examination, the records will be endorsed as part of the process.

8.0 Night Workers (Regulation 10)

8.1 The definition of "night" relates to a period of 9 consecutive hours including the period between midnight and 5 am. Although the Regulations are expressed in "local" time, it is recognised that "ship's time" may be different when a vessel is at sea.

9.0 Young Persons (Regulation 5(5) and Schedule 2, paragraphs 1 and 4)

9.1 The Regulations prohibit the employment on a ship of any young person under the age of 16 by amending section 55 of the Merchant Shipping Act 1995. This supersedes the provision in section 55 which prohibits the employment of anyone under school leaving age.

9.2 The requirements of the Regulations do not override any of the provisions relating to young persons in the existing Merchant Shipping health and safety legislation relating to the employment of young persons.

10.0 Annual Leave (Regulation 12)

10.1 For the purposes of these Regulations, a seafarer is entitled in each leave year to a period of leave of at least four weeks, for which he is entitled to be paid at the rate of a week's pay in respect of each week of leave. It is considered that this entitlement to annual leave will be separate from, and in addition to, periods of rest and compensatory leave which seafarers receive as part of their working arrangements. However, it is for employers and seafarers to decide on the details of how this entitlement is to be provided by negotiation and arrangement between themselves.

10.2 Annual leave may be taken in instalments but may not be replaced by a payment in lieu except where the seafarer's employment is terminated.

11.0 Enforcement Provisions (Regulations 14-20)

11.1 Council Directive 1999/95/EC concerning enforcement provisions is also implemented in these Regulations. Compliance with the requirements of Regulations 4, 7 and 9 will be checked as part of the MCA's inspection regime. Inspection may also be triggered by a complaint from a person or body with a legitimate interest in the health and safety of the crew. In such cases the identity of the complainant will remain confidential.

11.2 Inspection will include a check that schedules of duties are posted up and that records of work and rest periods are being maintained. If an inspector has grounds for believing that seafarers may be unduly fatigued he will check in more detail that the hours of rest recorded conform to the standards and that they have actually been observed. If the evidence indicates that manning levels are so low that the schedules cannot be observed, the MCA will require that manning levels are adjusted so that the

vessel can be operated safely within the hours available. Where conditions are clearly hazardous to safety or health, the ship may be detained.

SECTION 2 - SAFE MANNING

12.0 Introduction

12.1 The Merchant Shipping (Safe Manning, Hours of Work and Watchkeeping) Regulations 1997, place responsibilities on companies owning or operating UK registered seagoing ships and other ships whilst in UK national waters, to ensure that their vessels are manned with personnel of appropriate grades who have been properly trained and certificated. The numbers of certificated officers, and certificated and non-certificated ratings must be sufficient to ensure safe and efficient operation of the ship at all times.

13.0 Responsibilities of Owners and Operators : General Principles

13.1 In fulfilling their responsibility to ensure that ships are safely and sufficiently manned, owners and operators should :

.1 make an assessment of the tasks, duties and responsibilities of the ship's complement required for its safe operation, for the protection of the marine environment and dealing with emergency situations;

.2 assess the numbers and grades/capacities in the ship's complement required for the safe operation and for the protection of the environment, and for dealing with emergency situations, including the evacuation of passengers where applicable;

.4 ensure that the manning level is adequate at all times and in all respects, including meeting peak workloads and is in accordance with the principles contained in this MSN;

.5 in case of changes in trading area(s), operations, construction, machinery, equipment or operation and maintenance of the ship, which may affect the manning level, review the manning level.

13.2 In conjunction with these factors the owner or operator should: -

.1 identify all the functions to be undertaken on board during a representative voyage or operational period, including determination of the number of personnel required to undertake the relevant tasks and duties under both peak and routine work load conditions;

.2 identify those functions that constitute a normal operation and determine the numbers of personnel required to undertake the concurrent tasks and duties safely;

.3 identify the skills and experience required to perform those functions;

.4 establish working arrangements to ensure that the master and crew are capable of undertaking concurrent and continuing operations at the appropriate level(s) of responsibility, as specified, with respect to their skills and training; and

.5 ensure that the working arrangements allow for sufficient rest periods to avoid fatigue and to comply with the Hours of Work Regulations 2002.

13.3 In applying these principles, proper account should be taken of the International Maritime Organization (IMO), International Labour Organization (ILO), International Trade Union (ITU), World Health Organization (WHO) and European Union (EU) instruments with respect to:

.1 watchkeeping;

.2 hours of work or rest;

.3 safety management;

.4 certification of seafarers;

.5 training of seafarers;

.6 occupational health and hygiene;

.7 crew accommodation.

14.0 Establishing Safe Manning Requirements

14.1 Specific factors to be taken into account in determining the safe manning level include :

.1 frequency of port calls, length and nature of the voyage;

.2 trading area(s), waters and type of operations in which the ship or vessel is involved and any special requirements of the trade or operation;

.3 number, size (kW) and type of main propulsion units and auxiliaries;

.4 size, type of ship, and layout;

.5 construction and equipment of ship;

.6 cargo to be carried or operational requirements;

.7 method of maintenance;

.8 extent to which training activities are conducted on board; and

.9 how the proposed complement will deal with various emergency situations that may arise;

.10 navigational duties and responsibilities as required by STCW 95 including the following:

.1 plan and conduct safe navigation;

.2 maintain a safe navigational watch;

.3 manoeuvre and handle the ship in all conditions and during all operations;

.4 safely moor and unmoor the ship; and

.5 maintain safety whilst in port.

.11 Cargo handling and stowage:

.1 plan and monitor the safe loading, stowage, securing, carriage and unloading of cargo.

.12 Ship specific operations:

.1 the nature and duration of the operation(s) the ship undertakes and local environmental conditions.

.13 Ship operations and care for persons onboard, and maintaining life-saving, fire-fighting and other safety systems in operational condition:

.1 maintain the safety and security of all persons on board and keep life saving, fire fighting and other safety systems in operational condition, including the ability to muster and disembark passengers and non-essential personnel;

.2 operate and maintain watertight closing arrangements;

.3 perform operations necessary to protect the marine environment;

.4 provide medical care on board;

.5 undertake administrative tasks required for the safe operation of the ship; and

.6 participate in mandatory safety drills and exercises.

.14 Marine engineering tasks and duties:

.1 operate and monitor the ship's main propulsion and auxiliary machinery;

.2 maintain a safe engineering watch;

.3 manage and perform fuel and ballast operations; and

.4 maintain ship's engine equipment, system and services.

.15 Electrical, electronic and control engineering duties:

.1 operate ship's electrical and electronic equipment; and

2 maintain ship's electric and electronic systems.

.16 Radio communications:

.1 transmit and receive information using ship communication equipment;

.2 maintain safe radio watch;

.3 provide communications in emergencies.

.17 Maintenance and repair:

.1 carry out maintenance and repair work to the ship and its machinery, equipment and systems, as appropriate to the method of maintenance and the repair system used.

14.2 In addition, the level of safe manning should also take into consideration:

.1 the management of safety functions of a ship underway, not underway or operating in near stationary mode;

.2 except in ships of limited size, the provision of qualified deck officers to ensure that is not necessary for the master to keep regular watches by adopting a three watch system;

.3 except in ships of limited propulsion power or operating under provisions for unattended machinery spaces, the provision of qualified engineering officers to ensure that it is not necessary for the chief engineer to keep regular watches by adopting a three watch system;

.4 the maintenance of applicable occupational health and hygiene standards on board; and

.5 the provision of proper food and drinking water for all persons on board.

15.0 Guidance on Appropriate Manning Levels

15.1 In determining what constitutes a minimum safe manning level, useful guidance may also be obtained by use of risk and hazard management tools such as formal safety assessment.

15.2 The minimum safe manning levels referred to in this Notice are those required for all reasonably foreseeable circumstances and working conditions to permit the safe operation of the ship under normal operational conditions.

15.3 The tables at Annexes C and D provide guidance on the numbers of certificated deck and engineer officers appropriate to different sizes of ships, tonnages and trading areas. As the watchkeeping arrangements for the engineering department and the demands placed on personnel vary significantly according to the level of automation, these tables only provide guidance; owners and operators must take all relevant factors into account before finalising their manning proposals.

15.4 The number of ratings required will be determined by the factors summarised in paragraphs 13 and 14 above.

16.0 Nationality Restrictions

16.1 The Merchant Shipping (Officer Nationality) Regulations 1995[4] do not permit foreign nationals (other than Commonwealth citizens, EEA nationals, or a national of a State other than an EEA State which is a member of the North Atlantic Treaty Organization) to serve as master of a strategic ship. This is defined as a UK ship of 500 gt or more which is a cruise ship, a product tanker or a ro-ro ship. There are no other nationality restrictions applying to the manning of UK registered ships.

17.0 Consultation on Safe Manning Levels

17.1 Owners and operators should consult with the master, seafarers' representatives and the MCA (where appropriate) on their proposed manning levels. Once agreed, a record of the consultation process should be retained by the owner or operator, together with a record of the agreed manning level.

17.2 If agreement cannot be reached between the owners or operator and master, and seafarers or seafarers' representatives regarding manning levels, the MCA will consider the views put forward and, if appropriate, require the manning levels to be revised. When disagreement occurs, it may be necessary to arrange a practical demonstration of the crew's ability to carry out the essential tasks in the context of the principles of safe manning.

17.3 The manning level need not be reviewed for each voyage or operational cycle provided it is applicable to the voyage or cycle in question and the composition of the crew for whom it was originally intended has not changed.

17.4 Changes should not be made to the manning level unless they can be justified by substantially altered work patterns made necessary, for example, by a change in trading pattern, operation or other significant factor. Where a vessel is known to

[4] SI 1995 / 1427

engage in an irregular trading pattern or have working hours that are unlikely to be uniform, this should be taken into account when considering the manning level.

17.5 Once agreed, the owner or operator should ensure the safe manning level is maintained and that ship operations are in compliance with the Merchant Shipping (Hours of Work) Regulations 2002.

18.0 Safe Manning Document

18.1 The Merchant Shipping (Safe Manning, Hours of Work and Watchkeeping) Regulations 1997 require owners or operators of all UK seagoing vessels of 500 gt or more to obtain and carry a Safe Manning Document specifying the minimum manning levels. Owners and operators of ships below 500gt may also choose to hold a Safe Manning Document.

19.0 Application for a Safe Manning Document

19.1 Any application for a Safe Manning Document should be made by the owner, or a person authorised to act on their behalf, on form MSF 4227 (or subsequent amended form), which can be obtained from any MCA Marine Office or the Seafarers' Training and Certification Branch. All applications, together with the appropriate fee, should be sent to the Seafarers' Training and Certification Branch at the address on the form.

19.2 When applying to the MCA for a Safe Manning Document, owners or operators should submit a clear and concise explanation of: -

1 how the proposed manning level has been determined;

2 how it takes account of the guidance of this Notice; and

3 how it takes account of the hours of work provisions in the Regulations.

20.0 Approval of a Safe Manning Document by the MCA

20.1 A proposal will only be approved and a Safe Manning Document issued provided the manning level fully satisfies the principles, recommendations and guidelines outlined in this Notice. The MCA may require an owner or operator to amend a proposal if, after evaluation, the proposal is considered inadequate.

20.2 When the MCA has agreed a proposal regarding manning of a particular ship, a Safe Manning Document will be issued for that ship in a format which complies with the requirements of SOLAS, as amended. It should be retained on board and be available for inspection by an authorised person, whenever required.

20.3 In the event of any change in equipment, construction or use of the ship, which may affect the safe manning level, the owner or operator should make an application for the issue of a new Safe Manning Document.

20.4 A Safe Manning Document of a ship may be withdrawn if an owner or operator fails to submit a new proposal where a ship changes trading area(s), construction, machinery or equipment, or operation and/or method of maintenance have changed, or a ship persistently fails to comply with the rest hours requirements.

SECTION 3 - WATCHKEEPING

21.0 General

21.1 The principles applying to the keeping of a safe watch are given in Chapter A-VIII of the STCW Code[5] and must be followed in order to comply with the Regulations.

21.2 The Regulations require the master of any ship to be responsible for the overall safety of the ship. He must also ensure that the watchkeeping arrangements are adequate for maintaining safe navigational watches at

5 Available from the Publications Department, International Maritime Organization, 4 Albert Embankment, London SE1 7SR

all times, including the provision of a lookout as required by the International Regulations for the Prevention of Collisions at Sea 1972, as amended. Masters, owners and operators are reminded that the UK does not consider it safe for the officer of the navigational watch to act as sole look-out during periods of darkness or restricted visibility.

21.3 The chief engineer officer of any ship is responsible to the master for ensuring that arrangements are adequate at all times for maintaining a safe engineering watch.

22.0 Further Information

22.1 Any queries relating to this Notice should be addressed to the MCA at :

- Seafarer Health and Safety Branch (for enquiries in relation to Section 1 on Hours of Work)

  Tel 02380 329216
  Fax 02380 329251
  Email: seafarer_H&S@mcga.gov.uk

  or

- Seafarers' Training and Certification Branch (for enquiries in relation to Section 2 on Safe Manning and Section 3, on Watchkeeping)

  Tel 02380 329231
  Fax 02380 329252
  Email: exams_section@mcga.gov.uk

Maritime and Coastguard Agency
Spring Place
105 Commercial Road
Southampton
S015 1EG

September 2002

File Reference MC 110/13/6

Safer Lives, Safer Ships, Cleaner Seas

Department for Transport

An executive agency of the Department for Transport

MODEL FORMAT FOR TABLE OF SHIPBOARD WORKING ARRANGEMENTS ([1])

Name of Ship: _____ Flag of Ship: _____ IMO number (if any): _____

Latest update of table: _____ ( ) of ( ) pages.

The maximum hours of work or minimum hours of rest are applicable in accordance with the Merchant Shipping (Hours of Work) Regulations 2002 issued in conformity with ILO's Seafarer's Hours of Work and the Manning of Ships Convention 1996 (No 180) and with any applicable collective agreement registered or authorised in accordance with that Convention and with the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978, as amended, (STCW 95) ([2]).

Minimum hours of rest: _____

Other requirements: _____

Position / rank ([3])	Scheduled daily work hours at sea		Scheduled daily work hours in port		Comments	Total daily rest hours	
	Watchkeeping (from–to)	Non-watchkeeping duties (from–to) ([4])	Watchkeeping (from–to)	Non-watchkeeping duties (from–to)		At sea	In ports

Signature of master: _____

([1]) The terms used in this model table are to appear in the working language or languages of the ship and in English.
([2]) See overleaf for selected extracts from ILO Convention No 180 and the STCW Convention..
([3]) For those positions / ranks that are also listed in the ship's safe manning document, the terminology used should be the same as in that document.
([4]) For watchkeeping personnel, the comment section may be used to indicate the anticipated number of hours to be devoted to unscheduled work and any such hours should be included in the appropriate total daily work hours

SELECTED TEXTS FROM ILO CONVENTION No 180 AND THE STCW CONVENTION

ILO Convention No 180

Article 5

1. The limits on hours of work or rest shall be as follows: (a) maximum hours of work shall not exceed: (i) 14 hours in any 24-hour period; and (ii) 72 hours in any seven-day period, or (b) minimum hours of rest shall not be less than: (i) 10 hours in any 24-hour period, and (ii) 77 hours in any seven-day period.

2. Hours of rest may be divided into no more than two periods, one of which shall be at least six hours in length, and the interval between consecutive periods of rest shall not exceed 14 hours.

6. Nothing in paragraphs 1 and 2 shall prevent the Member from having national laws or regulations or a procedure for the competent authority to authorise or register collective agreements permitting exceptions to the limits set out. Such exceptions shall, as far as possible, follow the standards set out but may take account of more frequent or longer leave periods or the granting of compensatory leave for watchkeeping seafarers or seafarers working on board ships on short voyages.

Article 7

1. Nothing in this Convention shall be deemed to impair the right of a master of the ship to require a seafarer to perform any hours of work necessary for the immediate safety of the ship, persons on board or cargo, or for the purpose of giving assistance to other ships or persons in distress at sea.

3. As soon as practicable after the normal situation has been restored, the master shall ensure that any seafarers who have performed work in a scheduled rest period are provided with an adequate period of rest.

STCW Convention (STCW 95)

Section A-VIII/1 of the STCW Code (Mandatory)

1. All persons who are assigned duty as officer in charge of a watch or seafarer on watch shall be provided with a minimum of 10 hours' rest in any 24 hour-period.

2. The hours of rest may be divided into no more than two periods, one of which shall be at least six hours in length.

3. The requirements for rest periods laid down in paragraphs 1 and 2 need not be maintained in the case of an emergency or drill or in other overriding operational conditions.

4. Notwithstanding the provisions of paragraphs 1 and 2, the minimum period of 10 hours may be reduced to not less than 6 consecutive hours provided that any such reduction shall not extend beyond two days and not less than 70 hours of rest are provided each seven-day period.

5. Administrations shall require that watch schedules be posted where they are easily accessible.

Section B-VIII/1 of the STCW Code (Guidance)

3. In applying Regulation VIII/1, the following should be taken into account:

    1. provisions made to prevent fatigue should ensure that excessive or unreasonable overall working hours are not undertaken. In particular, the minimum rest periods specified in Section A-VIII/1 should not be interpreted as implying that all other hours may be devoted to watchkeeping or other duties;

    2. that the frequency and length of leave periods, and the granting of compensatory leave, are material factors in preventing fatigue from building up over a period of time;

    3. the provision may be varied for ships on short sea voyages, provided special safety arrangements are put in place.

MODEL FORMAT FOR RECORD OF HOURS OF REST OF SEAFARERS ([1])

Name of Ship: _____ IMO number (if any): _____ Flag of Ship: _____

Seafarer (full name): _____ Position / rank: _____

Month and year: _____ Watchkeeper ([2]): yes ☐ no ☐

Record of hours of rest
Please mark periods of rest, as applicable, with X, or using a continuous line or arrow.

COMPLETE THE TABLE ON THE REVERSE SIDE

The following national laws, regulations and / or collective agreements governing limitations on minimum rest periods apply to this ship:
The Merchant Shipping (Hours of Work) Regulations 2002, _____

I agree that this record is an accurate reflection of the hours of rest of the seafarer concerned.

Name of master or person authorised by master to sign this record: _____

Signature of master or authorised person: _____ Signature of seafarer: _____

A copy of this record is to be given to the seafarer.

This form is subject to examination and endorsement
under procedures established by the
UK Maritime and Coastguard Agency

([1]) The terms used in this model table are to appear in the working language or languages of the ship and in English.
([2]) Tick as appropriate.

Please mark periods of rest, as applicable, with an X, or using a continuous line or arrow																										Hours of rest in 24-hour period	Comments	Not to be completed by the seafarer ([1])	
Hours 0	0 0	1 0	2 0	3 0	4 0	5 0	6 0	7 0	8 0	9 1	0 1	1 1	2 1	3 1	4 1	5 1	6 1	7 1	8 1	9 2	0 2	1 2	2 2	3 2	4			Hours of rest, in any 24-hour period ([2])	Hours of rest, in any 7-day period ([2])
Date																													
Hours 0	0 0	1 0	2 0	3 0	4 0	5 0	6 0	7 0	8 0	9 1	0 1	1 1	2 1	3 1	4 1	5 1	6 1	7 1	8 1	9 2	0 2	1 2	2 2	3 2	4				

([1]) For completion and use in accordance with the procedures established by the competent authority in compliance with the relevant requirements of ILO Convention No 180 on Seafarers' Hours of Work and the Manning of Ships Convention 1996.

([2]) Additional calculations or verifications may be necessary to ensure compliance with the relevant requirements of ILO Convention No 180 on Seafarers' Hours of Work and the Manning of Ships Convention, 1996 and the International Convention on Standards of Training, Certification and Watchkeeping, 1978 as amended. (STCW 95)

GUIDANCE ON APPROPRIATE MANNING LEVELS - DECK OFFICERS

Trading Area	Size of Ship (gt)	Number of Officers to be carried - STCW 95 Regulation			
		Reg II/2-Master	Reg II/2-Ch.Mate	Reg II/1-OOW	Reg II/3-OOW
Unlimited	3000 or more	1	1	2	–
Unlimited	500 or more but less than 3000	1	1	1	–
Unlimited	less than 500	1	–	2(a)	–
Near-coastal	3000 or more	1	1	1	–
Near-coastal	500 or more but less than 3000	1	1	1(b)	–
Near-coastal	Less than 500	–	–	–	2(c)

Key:

(a) may be 1 if the master keeps watch;

(b) need not be carried if the master keeps watch;

(c) one of these II/3 certificates must have an endorsement for the capacity of master.

GUIDANCE ON APPROPRIATE MANNING LEVELS - ENGINEER OFFICERS

Trading Area	Registered Power (kW)	Engineer Officers Requirements			
		Chief Engineer	Second Engineer	Engineer OOW	Total
Unlimited	3000 or more	C/E III/2 Unlimited	2/E III/2 Unlimited	1 x III/1	3
Unlimited	750 or more but less than 3000	C/E III/3 < 3000 kW	2/E III/3 < 3000 kW	1 x III/1	3
Unlimited	350 or more but less than 750	2/E III/3 < 3000 kW	MEOL (a)	-	2
Near-coastal	6000 or more	C/E III/2 Unlimited	2/E III/2 Unlimited	-	2
Near-coastal	3000 or more but less than 6000	C/E III/2 < 6000 kW NC	2/E III/2 < 6000 kW NC	-	2
Near-coastal	750 or more but less than 3000	C/E III/3 < 3000 kW NC	2/E III/3 < 3000 kW NC	-	2
Near-coastal	350 or more but less than 750	SMEOL	-	-	1

The above table assumes that the ship is classed as U.M.S. < = less than NC = Near-coastal

Key: (a) The holder may serve in a dual capacity, deck and engine room, provided the ship is not a tanker and the deck service is not as an essential watch-keeper or master

Notes: (i) All engine room watch ratings must hold watch rating certificates (STCW III/4 certification) issued by MCA-approved companies, except on vessels of less than 750kW.

(ii) The manning levels are subject to meeting the requirements of Section 1 of this MSN.

The following factors will be considered in varying the requirements given in the above table.
Restriction of the vessel's area of operation.
The trading pattern of the vessel.
The complexity of the machinery spaces.
The vessel not operating under U.M.S. conditions.
Technical complexity of the machinery including its control and monitoring systems.
Redundancy of the essential machinery.
The maintenance regime employed in the upkeep of the machinery and its control systems.
The level and availability of technical shore support.

ANNEX D

Copy of the master’s standing orders

MASTERS STANDING ORDERS

These orders are to be followed in conjunction with the Bridge-order Book.

I should be called under the following circumstances:

1. The visibility falls below 2 nautical miles
2. In the event of very heavy traffic,particularly fishing boats,yactchs
3. If the weather conditions deteriorate such to cause you concern.
4. You suspect any problems with deck cargo,or, lashings.
5. Distress or pan message is received by other vessels in our area.
6. Any failure,malfunction of steering,propulsion,nav equipment ect..
7. At any time you feel my presence is required on the bridge.

In the event of reduced visibility start the second radar,post lookouts and Comply with the collision regs.

Speed may be reduced at any time by gentle reduction of the pitch,however If more substantial speed reduction is required the enginerr is to be called to change Over from shaft to auxiliary alternator.

Monitor ships position at frequent intervals by all available means Le GPS Radar ect...

Complete the ch/ officers log book and GMDSS Radio log book as required.

Read and acknowledge by signing the bridge order book as appropriate.

Always make use of the bridge watch keeping alarm,day or night.

Never leave the bridge unattended when at sea.

Not withstanding any of the above,you should call master to the bridge if for Any reason you are unsure of.or don't feel confortable with a particlar Situation,but always in good time.

Remember you are still in charge of the watch dispite my presence on the bridge Until I inform you I have taken over the watch

MASTER

ANNEX E

Extract of Article VIII/2 Part 3.1 of STCW 95

9 The master of every ship is bound to ensure that watchkeeping arrangements are adequate for maintaining a safe navigational watch. Under the master's general direction, the officers of the navigational watch are responsible for navigating the ship safely during their periods of duty, when they will be particularly concerned with avoiding collision and stranding.

10 The chief engineer officer of every ship is bound, in consultation with the master, to ensure that watchkeeping arrangements are adequate to maintain a safe engineering watch.

Protection of marine environment

11 The master, officers and ratings shall be aware of the serious effects of operational or accidental pollution of the marine environment and shall take all possible precautions to prevent such pollution, particularly within the framework of relevant international and port regulations.

Part 3-1 – Principles to be observed in keeping a navigational watch

12 The officer in charge of the navigational watch is the master's representative and is primarily responsible at all times for the safe navigation of the ship and for complying with the International Regulations for Preventing Collisions at Sea, 1972.

Look-out

13 A proper look-out shall be maintained at all times in compliance with rule 5 of the International Regulations for Preventing Collisions at Sea, 1972 and shall serve the purpose of:

.1 maintaining a continuous state of vigilance by sight and hearing as well as by all other available means, with regard to any significant change in the operating environment;

.2 fully appraising the situation and the risk of collision, stranding and other dangers to navigation; and

.3 detecting ships or aircraft in distress, shipwrecked persons, wrecks, debris and other hazards to safe navigation.

14 The look-out must be able to give full attention to the keeping of a proper look-out and no other duties shall be undertaken or assigned which could interfere with that task.

15 The duties of the look-out and helmsperson are separate and the helmsperson shall not be considered to be the look-out while steering, except in small ships where an unobstructed all-round view is provided at the steering position and there is no

impairment of night vision or other impediment to the keeping of a proper look-out. The officer in charge of the navigational watch may be the sole look-out in daylight provided that on each such occasion:

.1 the situation has been carefully assessed and it has been established without doubt that it is safe to do so;

.2 full account has been taken of all relevant factors, including, but not limited to:

- state of weather,
- visibility,
- traffic density,
- proximity of dangers to navigation, and
- the attention necessary when navigating in or near traffic separation schemes; and

.3 assistance is immediately available to be summoned to the bridge when any change in the situation so requires.

16 In determining that the composition of the navigational watch is adequate to ensure that a proper look-out can continuously be maintained, the master shall take into account all relevant factors, including those described in this section of the Code, as well as the following factors:

.1 visibility, state of weather and sea;

.2 traffic density, and other activities occurring in the area in which the vessel is navigating;

.3 the attention necessary when navigating in or near traffic separation schemes or other routeing measures;

.4 the additional workload caused by the nature of the ship's functions, immediate operating requirements and anticipated manoeuvres;

.5 the fitness for duty of any crew members on call who are assigned as members of the watch;

.6 knowledge of and confidence in the professional competence of the ship's officers and crew;

.7 the experience of each officer of the navigational watch, and the familiarity of that officer with the ship's equipment, procedures, and manoeuvring capability;

.8 activities taking place on board the ship at any particular time, including radiocommunication activities, and the availability of assistance to be summoned immediately to the bridge when necessary;

.9 the operational status of bridge instrumentation and controls, including alarm systems;

.10 rudder and propeller control and ship manoeuvring characteristics;

.11 the size of the ship and the field of vision available from the conning position;

.12 the configuration of the bridge, to the extent such configuration might inhibit a member of the watch from detecting by sight or hearing any external development; and

.13 any other relevant standard, procedure or guidance relating to watchkeeping arrangements and fitness for duty which has been adopted by the Organization.

Watch arrangements

17 When deciding the composition of the watch on the bridge, which may include appropriately qualified ratings, the following factors, *inter alia*, shall be taken into account:

.1 at no time shall the bridge be left unattended;

.2 weather conditions, visibility and whether there is daylight or darkness;

.3 proximity of navigational hazards which may make it necessary for the officer in charge of the watch to carry out additional navigational duties;

.4 use and operational condition of navigational aids such as radar or electronic position-indicating devices and any other equipment affecting the safe navigation of the ship;

.5 whether the ship is fitted with automatic steering;

.6 whether there are radio duties to be performed;

.7 unmanned machinery space (UMS) controls, alarms and indicators provided on the bridge, procedures for their use and limitations; and

.8 any unusual demands on the navigational watch that may arise as a result of special operational circumstances.

Taking over the watch

18 The officer in charge of the navigational watch shall not hand over the watch to the relieving officer if there is reason to believe that the latter is not capable of carrying out the watchkeeping duties effectively, in which case the master shall be notified.

19 The relieving officer shall ensure that the members of the relieving watch are fully capable of performing their duties, particularly as regards their adjustment to night vision. Relieving officers shall not take over the watch until their vision is fully adjusted to the light conditions.

20 Prior to taking over the watch, relieving officers shall satisfy themselves as to the ship's estimated or true position and confirm its intended track, course and speed, and UMS controls as appropriate and shall note any dangers to navigation expected to be encountered during their watch.

21 Relieving officers shall personally satisfy themselves regarding the:

.1 standing orders and other special instructions of the master relating to navigation of the ship;

.2 position, course, speed and draught of the ship;

.3 prevailing and predicted tides, currents, weather, visibility and the effect of these factors upon course and speed;

.4 procedures for the use of main engines to manoeuvre when the main engines are on bridge control; and

.5 navigational situation, including but not limited to:

.5.1 the operational condition of all navigational and safety equipment being used or likely to be used during the watch,

.5.2 the errors of gyro- and magnetic compasses,

.5.3 the presence and movement of ships in sight or known to be in the vicinity,

.5.4 the conditions and hazards likely to be encountered during the watch, and

.5.5 the possible effects of heel, trim, water density and squat on under-keel clearance.

22 If at any time the officer in charge of the navigational watch is to be relieved when a manoeuvre or other action to avoid any hazard is taking place, the relief of that officer shall be deferred until such action has been completed.

Performing the navigational watch

23 The officer in charge of the navigational watch shall:

.1 keep the watch on the bridge;

.2 in no circumstances leave the bridge until properly relieved;

.3 continue to be responsible for the safe navigation of the ship, despite the presence of the master on the bridge, until informed specifically that the master has assumed that responsibility and this is mutually understood; and

.4 notify the master when in any doubt as to what action to take in the interest of safety.

24 During the watch the course steered, position and speed shall be checked at sufficiently frequent intervals, using any available navigational aids necessary, to ensure that the ship follows the planned course.

25 The officer in charge of the navigational watch shall have full knowledge of the location and operation of all safety and navigational equipment on board the ship and shall be aware and take account of the operating limitations of such equipment.

26 The officer in charge of the navigational watch shall not be assigned or undertake any duties which would interfere with the safe navigation of the ship.

27 Officers of the navigational watch shall make the most effective use of all navigational equipment at their disposal.

28 When using radar, the officer in charge of the navigational watch shall bear in mind the necessity to comply at all times with the provisions on the use of radar contained in the International Regulations for Preventing Collisions at Sea, in force.

29 In cases of need, the officer in charge of the navigational watch shall not hesitate to use the helm, engines and sound signalling apparatus. However, timely notice of intended variations of engine speed shall be given where possible or effective use made of UMS engine controls provided on the bridge in accordance with the applicable procedures.

30 Officers of the navigational watch shall know the handling characteristics of their ship, including its stopping distances, and should appreciate that other ships may have different handling characteristics.

31 A proper record shall be kept during the watch of the movements and activities relating to the navigation of the ship.

32 It is of special importance that at all times the officer in charge of the navigational watch ensures that a proper look-out is maintained. In a ship with a separate chartroom the officer in charge of the navigational watch may visit the chartroom, when essential, for a short period for the necessary performance of navigational duties, but shall first ensure that it is safe to do so and that proper look-out is maintained.

33 Operational tests of shipboard navigational equipment shall be carried out at sea as frequently as practicable and as circumstances permit, in particular before hazardous conditions affecting navigation are expected. Whenever appropriate, these tests shall be recorded. Such tests shall also be carried out prior to port arrival and departure.

34 The officer in charge of the navigational watch shall make regular checks to ensure that:

.1 the person steering the ship or the automatic pilot is steering the correct course;

.2 the standard compass error is determined at least once a watch and, when possible, after any major alteration of course; the standard and gyro-compasses are frequently compared and repeaters are synchronized with their master compass;

.3 the automatic pilot is tested manually at least once a watch;

.4 the navigation and signal lights and other navigational equipment are functioning properly;

.5 the radio equipment is functioning properly in accordance with paragraph 86 of this section; and

.6 the UMS controls, alarms and indicators are functioning properly.

35 The officer in charge of the navigational watch shall bear in mind the necessity to comply at all times with the requirements in force of the International Convention for the Safety of Life at Sea (SOLAS), 1974.* The officer of the navigational watch shall take into account:

.1 the need to station a person to steer the ship and to put the steering into manual control in good time to allow any potentially hazardous situation to be dealt with in a safe manner; and

.2 that with a ship under automatic steering it is highly dangerous to allow a situation to develop to the point where the officer in charge of the navigational watch is without assistance and has to break the continuity of the look-out in order to take emergency action.

36 Officers of the navigational watch shall be thoroughly familiar with the use of all electronic navigational aids carried, including their capabilities and limitations, and shall use each of these aids when appropriate and shall bear in mind that the echo-sounder is a valuable navigational aid.

* See regulations V/19, V/19-1 and V/19-2.

37 The officer in charge of the navigational watch shall use the radar whenever restricted visibility is encountered or expected, and at all times in congested waters, having due regard to its limitations.

38 The officer in charge of the navigational watch shall ensure that range scales employed are changed at sufficiently frequent intervals so that echoes are detected as early as possible. It shall be borne in mind that small or poor echoes may escape detection.

39 Whenever radar is in use, the officer in charge of the navigational watch shall select an appropriate range scale and observe the display carefully, and shall ensure that plotting or systematic analysis is commenced in ample time.

40 The officer in charge of the navigational watch shall notify the master immediately:

.1 if restricted visibility is encountered or expected;

.2 if the traffic conditions or the movements of other ships are causing concern;

.3 if difficulty is experienced in maintaining course;

.4 on failure to sight land, a navigation mark or to obtain soundings by the expected time;

.5 if, unexpectedly, land or a navigation mark is sighted or a change in soundings occurs;

.6 on breakdown of the engines, propulsion machinery remote control, steering gear or any essential navigational equipment, alarm or indicator;

.7 if the radio equipment malfunctions;

.8 in heavy weather, if in any doubt about the possibility of weather damage;

.9 if the ship meets any hazard to navigation, such as ice or a derelict; and

.10 in any other emergency or if in any doubt.

41 Despite the requirement to notify the master immediately in the foregoing circumstances, the officer in charge of the navigational watch shall in addition not hesitate to take immediate action for the safety of the ship, where circumstances so require.

42 The officer in charge of the navigational watch shall give watchkeeping personnel all appropriate instructions and information which will ensure the keeping of a safe watch, including a proper look-out.

Watchkeeping under different conditions and in different areas

Clear weather

43 The officer in charge of the navigational watch shall take frequent and accurate compass bearings of approaching ships as a means of early detection of risk of collision and bear in mind that such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large ship or a tow or when approaching a ship at close range. The officer in charge of the navigational watch shall also take early and positive action in compliance with the applicable International Regulations for Preventing Collisions at Sea, 1972 and subsequently check that such action is having the desired effect.

44 In clear weather, whenever possible, the officer in charge of the navigational watch shall carry out radar practice.

Restricted visibility

45 When restricted visibility is encountered or expected, the first responsibility of the officer in charge of the navigational watch is to comply with the relevant rules of the International Regulations for Preventing Collisions at Sea, 1972 with particular regard to the sounding of fog signals, proceeding at a safe speed and having the engines ready for immediate manoeuvre. In addition, the officer in charge of the navigational watch shall:

.1 inform the master;

.2 post a proper look-out;

.3 exhibit navigation lights; and

.4 operate and use the radar.

In hours of darkness

46 The master and the officer in charge of the navigational watch, when arranging look-out duty, shall have due regard to the bridge equipment and navigational aids available for use, their limitations; procedures and safeguards implemented.

Coastal and congested waters

47 The largest scale chart on board, suitable for the area and corrected with the latest available information, shall be used. Fixes shall be taken at frequent intervals, and shall be carried out by more than one method whenever circumstances allow.

48 The officer in charge of the navigational watch shall positively identify all relevant navigation marks.

Navigation with pilot on board

49 Despite the duties and obligations of pilots, their presence on board does not relieve the master or officer in charge of the navigational watch from their duties and obligations for the safety of the ship. The master and the pilot shall exchange information regarding navigation procedures, local conditions and the ship's characteristics. The master and/or the officer in charge of the navigational watch shall co-operate closely with the pilot and maintain an accurate check on the ship's position and movement.

50 If in any doubt as to the pilot's actions or intentions, the officer in charge of the navigational watch shall seek clarification from the pilot and, if doubt still exists, shall notify the master immediately and take whatever action is necessary before the master arrives.

Ship at anchor

51 If the master considers it necessary, a continuous navigational watch shall be maintained at anchor. While at anchor, the officer in charge of the navigational watch shall:

.1 determine and plot the ship's position on the appropriate chart as soon as practicable;

.2 when circumstances permit, check at sufficiently frequent intervals whether the ship is remaining securely at anchor by taking bearings of fixed navigation marks or readily identifiable shore objects;

.3 ensure that proper look-out is maintained;

.4 ensure that inspection rounds of the ship are made periodically;

.5 observe meteorological and tidal conditions and the state of the sea;

.6 notify the master and undertake all necessary measures if the ship drags anchor;

.7 ensure that the state of readiness of the main engines and other machinery is in accordance with the master's instructions;

.8 if visibility deteriorates, notify the master;

.9 ensure that the ship exhibits the appropriate lights and shapes and that appropriate sound signals are made in accordance with all applicable regulations; and

.10 take measures to protect the environment from pollution by the ship and comply with applicable pollution regulations.