Report on the investigation of

the grounding of

mv Coastal Bay

Church Bay, Anglesey

on 21 July 2000

Marine Accident Investigation Branch
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Southampton
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Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

Regulations 1999

The fundamental purpose of investigating an accident under these Regulations is to determine its circumstances and the cause 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.

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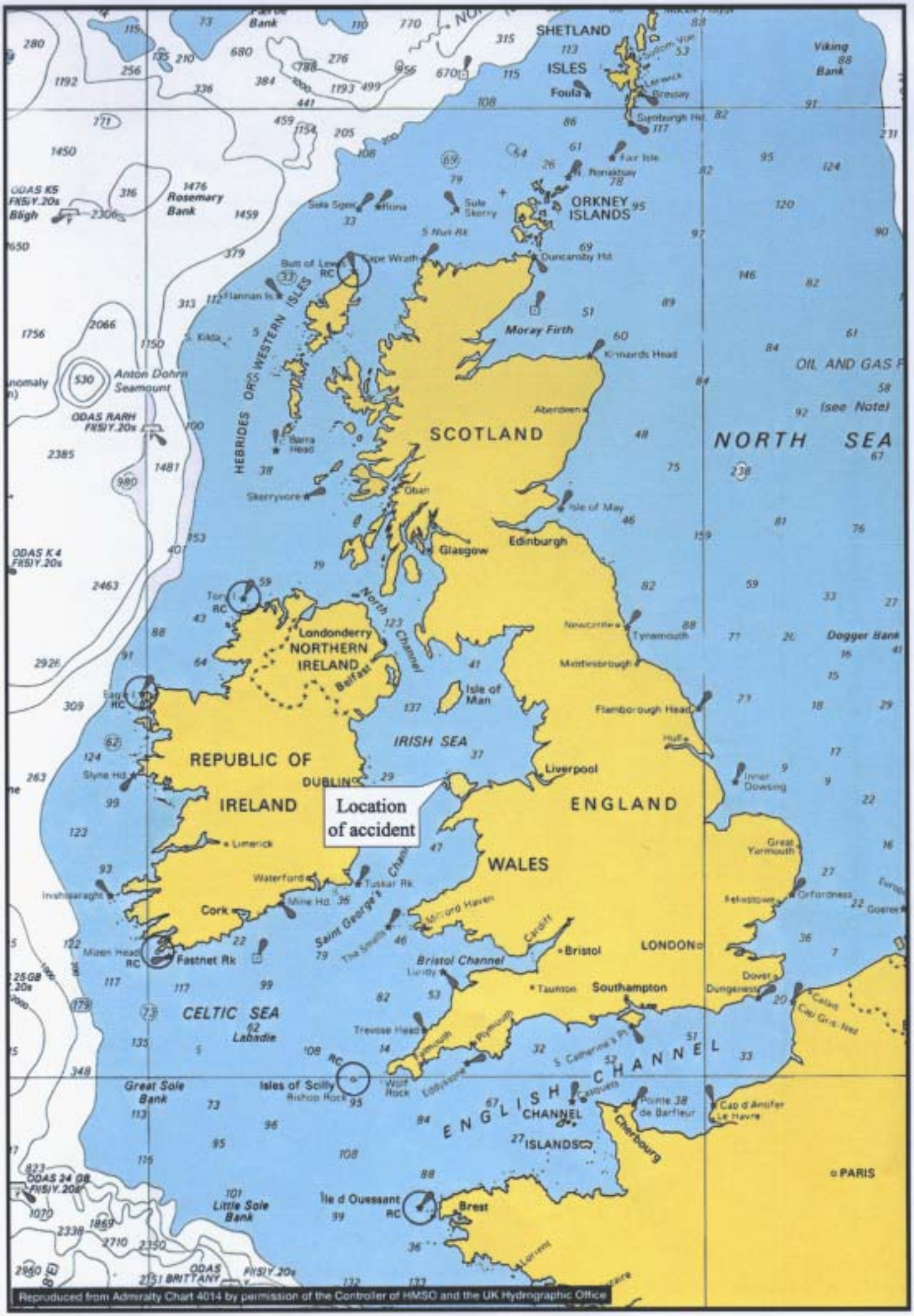
GLOSSARY OF ABBREVIATIONS AND ACRONYMS

BA	-	British Admiralty
DGPS	-	Differential Global Positioning System
GPS	-	Global Positioning System
ISM	-	International Safety Management
kW	-	kilowatt
MCA	-	Maritime and Coastguard Agency
MGN	-	Marine Guidance Note
MIN	-	Marine Information Note
MSN	-	Merchant Shipping Notice
OOW	-	Officer of the Watch
PEC	-	Pilotage Exemption Certificate
SOSREP	-	Secretary of State's Representative
STCW 95	-	International Convention on Standards of Training, Certification and Watchkeeping incorporating the 1995 Amendments
TSS	-	Traffic Separation Scheme
UTC	-	Universal Co-ordinated Time
V	-	Volt


SHETLAND ISLES
Foula
Viking Bank
ORKNEY ISLANDS
Rosemary Bank
Anton Dohrn Seamount
ODAS RARH FI(5)Y.20s
ODAS K5 FI(5)Y.20s
ODAS K4 FI(5)Y.20s
ODAS 24 GB FI(5)Y.20s
HEBRIDES OR WESTERN ISLES
SCOTLAND
Moray Firth
Aberdeen
Edinburgh
Glasgow
NORTH SEA
OIL AND GAS
(see Note)
Dogger Bank
NORTHERN IRELAND
Londonderry
Belfast
North Channel
Isle of Man
IRISH SEA
REPUBLIC OF IRELAND
DUBLIN
Location of accident
ENGLAND
WALES
Liverpool
Limerick
Waterford
Cork
Fastnet Rk
Saint George's Channel
Bristol Channel
Bristol
LONDON
Southampton
CELTIC SEA
Labadie
Great Sole Bank
Isles of Scilly
ENGLISH CHANNEL
ISLANDS
Cherbourg
PARIS
Ile d Ouessant
Brest
Little Sole Bank
BRITTANY
Reproduced from Admiralty Chart 4014 by permission of the Controller of HMSO and the UK Hydrographic Office

SYNOPSIS

On 21 July 2000, HM Coastguard and SOSREP informed the MAIB that the container-feeder vessel *Coastal Bay* had grounded off Anglesey, Wales. An investigation began three days later.

Coastal Bay was on passage from Dublin to Liverpool. Her planned route was via The Skerries Traffic Separation Scheme (TSS). Shortly before 2300 on 20 July, the chief officer relieved the master on the bridge; about thirty minutes later he fell asleep. A planned alteration of course taking the vessel into the north-east bound lane of the TSS was missed, and the vessel ran aground at 0020 the next day.

The investigation highlighted three key factors:

1. The chief officer fell asleep through fatigue.

2. The chief officer was alone on the bridge.

3. The bridge watch alarm was not in use.

These factors were the result of serious shortcomings in the management of *Coastal Bay*, and the failure to comply with the requirements of STCW 95, regarding watchkeeping arrangements and bridge manning at night.

Recommendations to the MCA and the Antigua and Barbuda administration are aimed at ensuring the requirements of STCW 95, regarding watchkeeping arrangements and bridge manning at night, are understood by all vessels operating in UK waters. Others, to the vessel's management company, aim to improve watchkeeping arrangements and vessel management.

PARTICULARS OF *COASTAL BAY* AND ACCIDENT

Vessel details

Registered Owner	:	Astor Schifffahrtsges mbH and Co KG MS "SAGITTA J"
Manager	:	Jungerhans
Port of registry	:	Haren/Ems
Flag	:	Antigua and Barbuda
Type	:	Container Feeder/General Cargo
Built	:	1991 – Estaleiros Navais de Viana do Castelo SA -Viana do Castelo
Classification society	:	Germanischer Lloyd
Construction	:	Steel
Length overall	:	87.42m
Gross tonnage	:	2,481
Engine power and type	:	1320kW – Diesel
Service speed	:	12 knots
Other relevant info	:	Bow thruster, single controllable pitch propeller
Accident details		Grounding
Time and date	:	0020 (UTC +1) 21 July 2000
Location of incident	:	Church Bay, Anglesey - 53° 22'0 N 004° 34'0 W
Persons on board	:	7
Injuries/fatalities	:	0
Damage	:	Buckled and indented plating, split in ballast tank, distorted propeller blades, indentations in skeg and rudder.

Figure 1

Coastal Bay aground in Church Bay

SECTION 1 - FACTUAL INFORMATION

All times are UTC +1. All courses are gyro.

1.1 BACKGROUND INFORMATION

The German owned *Coastal Bay* was on a bareboat charter to Atair Shipping Company and was registered in Antigua and Barbuda. The vessel was managed by Jungerhans and Company in Germany, and had been time chartered to Coastal Container Lines of Belfast for about the previous three years, to transport containers between Liverpool and Dublin with occasional runs to Greenock, Belfast and Cardiff. She was not ISM accredited.

The MCA conducted a port state control inspection on the vessel in Liverpool on 8 January 2000; no deficiencies were highlighted. Germanischer Lloyd conducted annual safety construction and safety equipment surveys on 27 June 2000, when the vessel's certification was re-validated.

1.2 THE CREW

The crew of seven comprised the master, chief officer, chief engineer, two able seamen, an ordinary seaman, and a cook. The safe manning certificate for the vessel, issued in March 1999, required a minimum of three deck ratings in addition to the three officers. The cook was carried in excess of the requirements of the safe manning certificate.

1.3 THE MASTER

The master had been at sea since 1963, and was first appointed as master in 1978. He joined *Coastal Bay* in 1996, and normally served onboard for periods of between 3 to 4.5 months, followed by a 6-week break. Apart from Greenock, the master held PECs for the remaining ports in the Irish Sea routinely visited by the ship, and conducted the pilotage of the vessel when entering and leaving these ports.

1.4 THE CHIEF OFFICER

The chief officer had been at sea since 1983 and became an officer in 1996. Since 1997 he had served as chief officer on container-feeders on contracts of 5 to 6 months' duration. He joined *Coastal Bay* on 27 April on a 4-month contract. He was in good health, and not taking any form of medication at the time of the incident. The chief officer did not drink alcohol and had never fainted or experienced a blackout. There was no medical history of such occurrences within his family.

1.5 NARRATIVE

The master stood the bridge watch on sailing from Dublin at 1924 on 20 July, accompanied by a rating as lookout. The lookout was stood down and left the bridge at approximately 2008, after the master had set a course of 088° on the autopilot when passing the North Burford buoy. The rating was put on

stand-by to return to the bridge as lookout, if required. The chief officer relieved the master at 2256. The master informed the chief officer that: the autopilot had been adjusted to 091° to counter a northerly setting tidal stream; speed made good over the ground was 12.5-13 knots; and the ship would arrive at the next waypoint, indicating an alteration of course to 048°, at approximately 2350.

After taking the watch, the chief officer worked on stability calculations and marked the hazardous cargo (a single container of firelighters), on the stowage plan on the chart table at the back of the bridge. At 2320 he checked the ship's position on the DGPS display, adjusted the course set on the autopilot to 098° to offset the increasing tidal set, and calculated *Coastal Bay* would be at the next course alteration at about 2345.

He then spent about 1 to 1.5 minutes on the port bridge wing before returning inside the wheelhouse. The chief officer's next recollection is seeing lights close ahead of the ship. He immediately put the propeller pitch astern and telephoned the master. A main electrical power failure followed, and the chief officer put the propeller pitch to zero. It was then 0020. The master arrived on the bridge almost immediately, and his initial thoughts were that the ship had suffered a total electrical failure in the TSS. However, he quickly became aware that the ship was not moving. Various engine alarms were sounding, but the DGPS cross track/waypoint alarm was not; the autopilot was set to 098° and ship's head was 098°. The master realised the vessel was aground, and confirmed this by checking the position on the DGPS display. He ordered the chief officer to muster the crew on the bridge and, although the general alarm was not sounded, this was quickly achieved.

The crew was divided into two teams to check the vessel for damage both internally and externally, and Holyhead Coastguard was informed of the ship's position. The vessel was stable and the draught marks (2.2m forward and 4.8m aft, compared to 3.6m forward and 4.2m aft on sailing from Dublin) confirmed the vessel was aground. After confirming there had been no breach of watertight integrity between 0140 and 0205, the master attempted to refloat *Coastal Bay* using the engine. This was unsuccessful. A second attempt was made from 0215 to 0240; this time with the assistance of Holyhead lifeboat, but again without success.

The tug *Trafalgar,* tried to refloat *Coastal Bay* at high water on the afternoon of 21 July, but this too failed. Finally in the early hours of 22 July she was refloated, towed clear of the shoreline, and anchored off Holyhead where she was surveyed. She then proceeded to Liverpool for repairs.

The owner was subsequently charged by the MCA under Section 100 of the Merchant Shipping Act 1995 for failing to ensure the safe operation of its vessel. It was fined £20,000 and ordered to pay £6,106 costs. *Coastal Bay* spent approximately four weeks in dry dock undergoing repair.

1.6 THE CHIEF OFFICER'S ACTIONS

The chief officer cannot remember what happened between returning to the bridge at about 2325 until seeing the lights ahead of the ship at 0020. He is not sure if he was sitting down or standing up during this period, but he might have fallen asleep. There was no evidence, such as abrasions or bruises, to indicate that he had fallen down.

1.7 EMPLOYMENT CONTRACTS

The crew was employed by Marlow Navigation in Limassol, Cyprus. Contracts varied in length between 3 to 10 months. Officers were paid a lump sump to compensate for their extended working hours; they were not paid overtime. As a result, the ship's manager did not monitor the hours worked by officers. The remaining crew was contracted to work eight hours per day Monday to Friday, and for four hours on a Saturday; they were paid overtime for any additional hours worked.

1.8 OPERATING CYCLE AND WATCH ROUTINES

The vessel was chartered to operate seven days a week throughout the year, including bank holidays. Although timings vary, typically, the vessel arrived in port between 0600 and 0700 and conducted cargo operations throughout the day until sailing between 1900 and 2000.

The master and chief officer shared the sea and harbour duties. In approximate terms, the chief officer stood the 2300 to 0500 watch on the bridge at sea and supervised cargo operations alongside from 1200 until departure. The master conducted the pilotage from 0500 until arriving alongside, and was then available for routine administration and supervision of cargo operations until 1200. He then stood the bridge watch from departure until 2300. The operations schedule for 13 - 20 July is shown in the table below.

***Coastal Bay* Schedule of Operations 13 - 20 July 2000**

Thursday 13 July	Liverpool
Friday 14 July	Dublin
Saturday 15 July	Liverpool
Sunday 16 July	Dublin
Monday 17 July	Liverpool
Tuesday 18 July	Dublin
Wednesday 19 July	Liverpool
Thursday 20 July	Dublin

1.9 REST PERIODS

Opportunities for the crew to rest varied according to the ship's schedule and local circumstances. The master and chief officer usually had the opportunity to sleep during two periods within a 24-hour cycle. The master had the opportunity to rest from 1200 until 1500, and again from 2330 until 0530. However, due to interruptions and routine administration, he rarely achieved more than two hours sleep in the afternoon and 5 hours sleep at night. The chief officer could usually rest from about 0600 until 1130, and again from 1900 until 2330. On 20 July, he had the opportunity to sleep between 0600 until 1130, and again from 2030 until woken by the master at 2240.

1.10 STCW 95 - REST PERIODS AND LOOKOUT

The provisions of STCW 95 include a mandatory code regarding manning and operational matters. The code addresses watchkeeping at sea, and sets out certain principles to be observed when keeping a navigational watch, including keeping a lookout. Relevant parts of the text read as follows:

Regulation VIII/1

"Each Administration shall, for the purpose of preventing fatigue;

establish and enforce rest periods for watchkeeping personnel; and

require that watch systems are so arranged that the efficiency of all watchkeeping personnel is not impaired by fatigue and that duties are so organised that the first watch at the commencement of a voyage and subsequent relieving watches are sufficiently rested and otherwise fit for duty."

Section A-VIII/1

"All persons who are assigned duty as officer in charge of a watch...shall be provided a minimum of 10 hours rest in any 24 hour period.

The hours of rest may be divided into no more than two periods, one of which shall be at least 6 hours in length.

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

...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 rest are provided each seven day period."

Section A-VIII/2.Part 3

"The duties of the lookout and helmsperson are separate and the helmsperson shall not be considered to be the lookout 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 lookout. The officer in charge of the navigational watch may be the sole lookout in daylight provided that on each such occasion:

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

b. *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*
   - *the attention necessary when navigating in or near traffic separation schemes; and*

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

Relevant text from the recommended guidance regarding these provisions, is as follows:

Section B-VIII/1

"In applying regulation VIII/1, the following should be taken into account:

Provisions made to prevent fatigue should ensure that excessive or unreasonable working hours are 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.

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; and

The provisions may be varied for ships on short sea voyages providing safety arrangements are put in place."

1.11 BRIDGE MANNING

In open water, the master and chief officer routinely stood their bridge watches alone. Other than when in pilotage waters, an additional lookout was

closed up on the bridge, but only if the officer on watch considered it necessary. Circumstances in which an additional lookout might have been posted included restricted visibility, bad weather, and high traffic density.

Neither the ship's manager, nor the master, were aware of the requirement to have an additional lookout posted on the bridge during the hours of darkness. This requirement is laid down in STCW (1995) Code Section A-VIII/2. Part 3 (cited above) and was brought to the attention of *"all companies having registered their flag of Antigua and Barbuda W.I."*, and *"all ships registered under the flag of Antigua and Barbuda W.I."*, by the Antigua and Barbuda Department of Marine Services and Merchant Shipping in a circular issued in December 1998. This highlighted that *"ships are prohibited from operating with the officer of the navigational watch as the sole lookout during periods of darkness"* and was also published on the Antigua and Barbuda Registry web site (www.antiguamarine.com/circular01_002.html). The requirement for a second lookout during the hours of darkness is also contained in MGN 137 issued by the MCA, which is available on hard copy or via the internet at (www.mcagency.org.uk).

The ship's manager expected the master to operate the vessel in accordance with STCW 95, a copy of which was held onboard. It was not aware of the existence of either the circular from the Antigua and Barbuda registry or MGN 137.

1.12 BRIDGE ALARMS

A watch alarm was fitted, but was infrequently used. The master did not use it, and the chief officer only used it when he felt tired. The alarm was not in use when the grounding occurred; it was separate from the autopilot and could be switched off. When in use, the alarm produced an intermittent tone after 12 minutes and, if not reset by the OOW after about 3 minutes, alarms sounded on the bridge, engine room and cabins. While *Coastal Bay* was undergoing repairs in Liverpool, it was discovered that the second stage of the watch alarm did not activate on the bridge, so the alarm system was replaced. Neither the master nor chief officer were aware that the alarm had been defective. It is believed that the watch alarm was not tested during the vessel's annual surveys conducted by Germanischer Lloyd in June 2000. It is not known if the watch alarm was tested during the port state control inspection in January 2000.

The DGPS display, a Simrad CP40, worked from a 24-volt power supply with battery back-up, and was fitted with cross track error and waypoint alarms. The master had set the cross track error alarm to activate if the ship was off track by more than half a mile, and set the waypoint alarm to activate when the ship approached within half a mile of a waypoint. The DGPS alarm, although not loud, was high pitched and audible from all parts of the bridge.

A stand-alone GPS receiver with a waypoint alarm capability was also fitted on the bridge. It is not known whether the waypoint alarm facility of this receiver was in use.

1.13 OPERATING ORDERS

The ship's manager had issued orders for the operation of the vessel. They did not include instructions or guidance on watchkeeping arrangements, or watchkeeper's rest periods. Also, other than when operating in restricted visibility or in congested waters, they did not specify a requirement to post a lookout on the bridge in addition to the OOW. Furthermore, they did they not specify instructions regarding the use, or testing of, the watch alarm.

The master did not produce his own orders to supplement or expand upon the operating orders issued by the ship's manager.

1.14 PASSAGE PLANNING

The intended track from Dublin to Liverpool, along with other routes the vessel frequently used, were drawn on chart BA 1411. This is not the largest scale chart available for the area. When transiting from Dublin to Liverpool the master usually opted to follow a track which took her to the north of The Skerries TSS, and then into Liverpool Bay. Occasionally, however, he chose an alternative route, taking the vessel into Liverpool Bay via The Skerries TSS. On 20 July 2000, as the tidal streams in the vicinity of The Skerries were favourable and would facilitate a fast transit through the TSS, the master elected to use the latter. The initial track from Dublin Bay was 088°. The plan then required an alteration of course to 048° to join the north-east bound lane of The Skerries TSS, in position 53° 22'0N, 004° 51'0W. The tracks were input to the DGPS display, which was the primary aid to navigation used by the master and chief officer. It was not intended to use the larger scale charts available for the passage. The intended passage plan can be seen in **Figure 2**.

1.15 POLLUTION

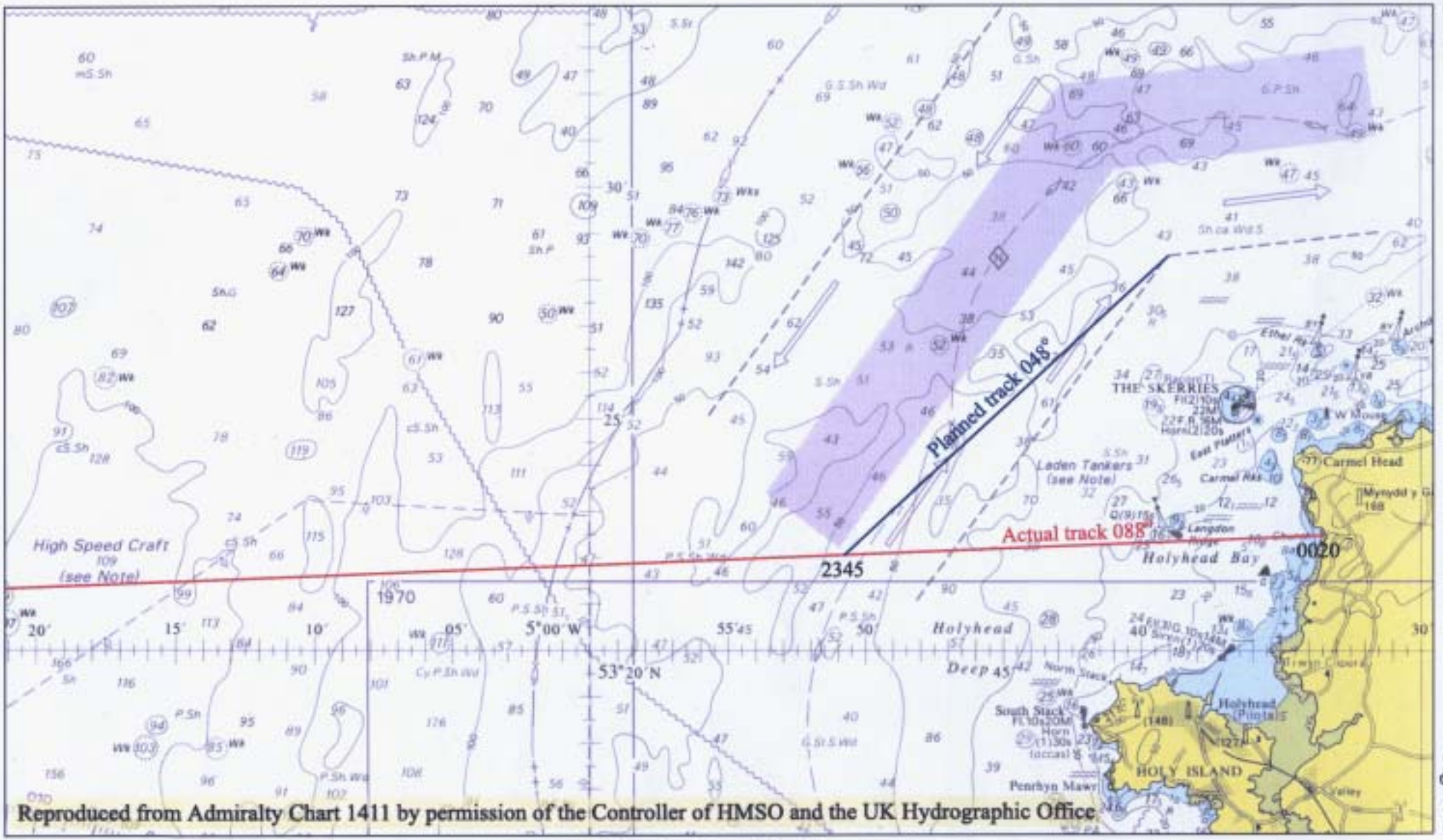
It is estimated that 250 litres of ballast water containing 20-50 litres of gas oil were lost into the sea following the grounding. It is assessed this amount would have dispersed quickly, and had little impact on the environment. No clean up was required.

1.16 ENVIRONMENTAL CONDITIONS

It was a fine, clear night with good visibility. The wind was southerly force 1 to 2 and the sea state was smooth. Sunset was at 2130, civil twilight at 2215, and nautical twilight at 2322. Moonrise was at 2329 and it was a 19-day gibbous moon.

High water at Holyhead was at 0150 on 21 July with a height of 5.3m. It was 64% spring tides, predicted tidal stream was northerly at approximately 1.5 knots, and the predicted height of tide at the time of grounding was 4.8m.

The temperature on the bridge was between 10° and13° C. The port bridge wing door was open and the starboard door closed; the heaters were off.



Reproduced from Admiralty Chart 1411 by permission of the Controller of HMSO and the UK Hydrographic Office

Figure 2

Planned and actual track

1.17 ACTIONS FOLLOWING THE GROUNDING OF *CITA* IN 1997

As a result of the grounding of *Cita,* another Antigua and Barbuda registered vessel, in the Isles of Scilly, under similar circumstances to this case, the MAIB made a number of recommendations. Several of these were pursued by the MCA whose actions included:

1. The insertion of a section in the 'Instructions to Surveyors on Inspection and Enforcement' regarding the assessment of written instructions provided by owners for watchkeeping arrangements and the correct functioning of watch alarms.

2. The issue of MGN 137 in May 2000. This was a "*Note to shipowners, operators, masters, skippers, deck officers and crews of all UK ships anywhere, and other ships operating in UK waters*" reminding them " *of the legal requirements for keeping a proper lookout, especially during the hours of darkness*".

3. The publication of all new MSNs, MGNs and MINs on the MCA internet site.

It was also in response to the grounding of *Cita* that the Antigua and Barbuda Registry issued its circular in December 1998, entitled *'Lookout During Periods of Darkness'*.

SECTION 2 - ANALYSIS

2.1 OPERATING CYCLE AND FATIGUE

The chief officer's recollections of the incident are vague. There is no physical or medical evidence to indicate why he lost consciousness between 2325 and 0020. He had no injuries, did not drink alcohol, was not taking any form of medication or drugs, did not report any medical problems immediately after the incident, and has no family history of blackouts or fainting. Accordingly, it is assessed that he fell asleep through fatigue.

Coastal Bay ran to a tight schedule. Operating seven days a week, sailing overnight, conducting cargo operations by day, and with the bridge and harbour duties divided between just the master and chief officer, fatigue was a predictable result. At best, working six on and six off, watchkeepers can expect two periods of six hours rest in a 24-hour period. In reality, this is almost impossible to achieve. Vagaries of the operating schedule, the need to eat, conduct personal administration and domestics, along with unplanned interruptions, considerably reduces the time available in which to sleep. Furthermore, there is no guarantee an officer will be able to sleep during the time available. On 20 July, the chief officer achieved a maximum of 5.5 hours sleep in the morning, and 2 hours and 10 minutes in the evening. This falls short of the minimum requirement of ten hours rest in any 24-hour period, including one rest period of at least six consecutive hours, set by STCW 95. Having experienced similar sleep patterns since joining 84 days earlier, the cumulative effects of a lack of sleep were significant, and contributed to the chief officer's inability to remain awake during his watch in the early hours of 21 July.

The fact that neither the master, nor chief officer were able to meet the rest requirements of STCW 95 indicates weaknesses in both onboard and vessel management. The master did not inform the ship's manager of his inability to comply with STCW 95, and the ship's manager did not ensure an effective system was in place to monitor crew working hours. As the officers were paid a lump sum to compensate for their excessive working hours, there was no monetary requirement for the ship manager to monitor its working patterns. Furthermore, it did not provide written instructions regarding watchkeeping arrangements and rest periods, or guidance on action to be taken if the rest periods laid down in STCW 95 could not be achieved.

The ship was manned with the minimum number of officers required by her safe manning certificate. However, a vessel can only be operated safely with the minimum number of officers if international codes such as STCW 95 are adhered to. If, by meeting the terms of the charter party and resultant operations schedule with two deck officers, the requirements of STCW 95 could not be met. The ship's manager was responsible for revising the vessel's manning and/or organisation, or renegotiating the charter party accordingly.

2.2 BRIDGE MANNING

By operating with a single bridge watchkeeper during the hours of darkness, the vessel was again in contravention of STCW 95. This was normal practice on board *Coastal Bay*. STCW 95 allows an OOW to be the sole watchkeeper by day but not by night; although the wording of the text makes this only implicit. Despite this, the standing orders provided by the ship's manager only required an additional lookout to be posted when operating in restricted visibility, or in congested waters. Had a second man been present on the bridge on the night of 20 July, he would probably have prevented the chief officer from falling asleep for a prolonged period.

The owner, ship's manager and master claim not to have received a copy of the Antigua and Barbuda circular, drawing attention to the requirements of STCW 95 regarding lookout requirements at night. It is not certain why this was so, but, with the owner, bareboat charterers, and ship manager in the line of communication, the likelihood of this correspondence failing to reach the appropriate destination is increased. In addition, the management company did not hold a copy of MGN 137; it did not subscribe to the Merchant Shipping Notices from the MCA, nor was it required to do so. Furthermore, although both the circular and the MGN are available via the internet, it is unreasonable to have expected the ship's manager to have known this without formal notification. However, had the ship's manager been aware of the contents of either document prior to the grounding, it is not possible to determine whether action would have been taken to ensure an additional lookout was posted at night.

2.3 BRIDGE ALARMS

The bridge watch alarm was switched off, not only on the night of the accident, but for most of the time. The master never used it, and the chief officer only used it when he felt tired. Neither the ship's manager nor master provided instructions regarding its use. As the watch alarm was later found to have an intermittent fault, it is impossible to determine whether the alarm would have functioned correctly, even if it had been switched on. However, had the alarm been switched on and functioning correctly, it probably would have woken the sleeping watchkeeper in time to prevent the ship grounding.

The waypoint and cross track error alarms on the DGPS video plotter were both in use. However, neither the master nor chief officer can remember the DGPS alarm sounding or being reset. It is feasible that the alarms were not set correctly, failed to activate, or were subconsciously reset by the chief officer while half asleep. It is also possible the master or chief officer, amid the confusion on the bridge shortly after the grounding and power failure, reset the DGPS alarm without registering their action. Assuming the alarms activated when the vessel approached 5 cables of the planned course alteration, or when 5 cables off the planned track, although the alarm is audible throughout the bridge, it is high pitched and may not have been loud enough to have woken the chief officer. Such alarms are designed to be an aid to a busy watchkeeper, not to wake a sleeping one.

2.4 SUCCESS OF MEASURES POST *CITA*

In 1997 *Cita* grounded in UK waters after a lone, fatigued, bridge watchkeeper fell asleep; the bridge watch alarm was switched off. Despite the actions taken by the MCA in response to MAIB recommendations aimed at preventing a similar accident, *Coastal Bay* grounded in UK waters just over three years later, in almost identical circumstances. The lack of written instructions regarding watch arrangements was not highlighted during *Coastal Bay*'s port state control inspection in January 2000, and the vessel was not aware of either MGN 137 or the Antigua and Barbuda circular dated December 1998. Ships are still sailing in UK waters with just two deck officers on board, neither of whom are able to take adequate periods of rest, but stand bridge watches alone at night without the assistance of an additional lookout, or the safeguard of a correctly functioning bridge watch alarm.

SECTION 3 - CONCLUSIONS

3.1 FINDINGS

1. Officer manning on board *Coastal Bay* was in accordance with her safe manning certificate. [1.2]

2. The ship operated seven days a week, including bank holidays. [1.8]

3. The master and chief officer were experienced and properly certificated. [1.3,1.4]

4. The master and chief officer shared the bridge and harbour duties. [1.8]

5. Both master and chief officer kept night watches on their own, contrary to STCW 95 Section A-VIII/2. [1.5,1.8 and 1.10]

6. Neither master nor chief officer was able to take adequate rest in accordance with STCW 95 Section A-VIII/1. [1.8,1.9 and 1.10]

7. The chief officer had been unable to take adequate rest since joining the ship 84 days before the accident. [1.4, 2.1]

8. The chief officer had two rest periods during the 24 hours prior to the grounding; the first lasting 5 hours 30 minutes, and the second 2 hours 10 minutes. [1.9].

9. The ship's manager did not monitor the hours worked by the master or chief officer. [1.7]

10. The chief officer was in good health at the time of the incident, and had no history of fainting or blackouts. He did not drink alcohol. [1.4]

11. The chief officer relieved the master on the bridge at 2256 and had charge of the ship for the period leading up to the grounding. [1.5]

12. The chief officer was alone on the bridge; no additional lookout was closed up. [1.5]

13. The chief officer probably slept between 2325 and 0020. [1.6]

14. A course alteration to 048° due at about 2345 was missed; the ship remained on a course of 098° and made good a course of 088°. **(Figure 2)**

15. Although fitted, the bridge watch alarm was not switched on. [1.12]

16. The watch alarm had an intermittent fault and may not have functioned correctly if it had been switched on. [1.12]

17. The passage plan was input to the DGPS display and waypoint and cross-track error alarms set to activate when the ship approached within 5 cables of a course alteration or deviated more than 5 cables off track. [1.12,1.14]

18. It is not certain whether the DGPS waypoint or cross-track alarm activated. In any event, it did not wake the chief officer. [2.3]

19. Operating orders issued by the ship's manager did not specify a requirement for an additional bridge lookout during the hours of darkness, guidance on watchkeeping arrangements or rest periods, or instructions on the use and testing of the bridge watch alarm. [1.13]

20. The master did not produce his own orders to supplement or expand upon the orders issued by the ship's managers. [1.13]

21. The actions recommended by the MAIB and taken by the MCA and Antigua and Barbuda Registry, following the grounding of *Cita* in 1997, did not prevent *Coastal Bay* grounding in near-identical circumstances.

3.2 CAUSES

1. The chief officer fell asleep and the planned course alteration was missed. [1.5,2.1]

Underlying Factors:

1. The chief officer was fatigued due to a lack of rest; he had been unable to take the minimum rest periods required by STCW 95 Section A-VIII/1 since joining 84 days earlier. [2.1]

2. He was alone on the bridge; an additional lookout required by STCW 95 Section A-VIII/2, as well as the UK and Antigua and Barbuda authorities was not posted. [2.2]

3. The bridge watch alarm was not in use. [2.3]

4. The ship's manager did not provide the master with written instructions regarding watchkeeping arrangements and minimum rest periods, the requirement for an additional bridge lookout to be posted at night, or the use and testing of the bridge watch alarm. [1.13,2.1,2.2]

5. The lack of written instructions regarding the watchkeeping arrangements was not detected by the MCA during the port state control inspection in January 2000. [2.4]

6. Neither the ship manager nor master held copies, or were aware of the content, of either MGN 137 or the Antigua and Barbuda circular. Additionally, neither had received formal notification informing them of the availability of these documents via the internet. [2.2]

7. The master did not inform the ship manager that the requirements of STCW 95 regarding rest periods could not be complied with.[2.1]

SECTION 4 - RECOMMENDATIONS

The Maritime and Coastguard Agency is recommended to:

1. Instruct surveyors to target vessels engaged in the short-sea trade and carrying only two bridge watchkeepers, and to vigorously implement the guidance for the assessment of written instructions provided by owners for watchkeeping arrangements and the correct functioning of watch alarms.

2. Continue to investigate methods of widening the distribution of Merchant Shipping Notices to ensure Notices applicable to non-UK flagged vessels operating in UK waters, are indeed received by such vessels.

The management company responsible for *Coastal Bay* is recommended to:

3. Consider either the employment of a third deck officer, or re-negotiation of the charter party to allow the rest requirements for watchkeepers laid down in STCW 95 to be met.

4. Provide comprehensive written instructions to the vessel regarding watchkeeping arrangements, rest periods, the use of an additional lookout at night, and the use and testing of the bridge watch alarm.

5. Implement a system to effectively monitor crew working hours.

6. Consider reducing the length of employment contracts of watchkeeping personnel to allow more frequent leave periods.

7. Subscribe to Merchant Shipping Notices (MSN, MGN, and MIN) from the MCA and to visit the MCA and Antigua and Barbuda Registry internet sites on a regular basis.

Antigua and Barbuda Department of Marine Services and Merchant Shipping is recommended to:

8. Ensure that its circular issued in December 1998 and entitled *'Look-Out During Periods of Darkness'* is received by all vessels operating under its flag.

Marine Accident Investigation Branch
March 2001