

Report on the investigation of  
an accident on board  
the commercial sailing vessel

***Albatros***

Thames Estuary

22 August 2004

resulting in one fatality

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**Extract from**  
**The Merchant Shipping**  
**(Accident Reporting and Investigation)**  
**Regulations 1999 – Regulation 4:**

*“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.

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**GLOSSARY OF ABBREVIATIONS, ACRONYMS AND TERMS**

BST	-	British Summer Time
COSWP	-	Code of Safe Working Practices for Merchant Seamen
EPIRB	-	Emergency Position Indicating Radio Beacon
GMDSS	-	Global Maritime Distress and Safety System
GPS	-	Global Positioning System
ISM	-	International Safety Management
LCYC	-	Large Commercial Yacht Code
MCA	-	Maritime and Coastguard Agency
RNLI	-	Royal National Lifeboat Institution
SOLAS	-	Safety of Life at Sea
STV	-	Sail Training Vessel
VHF	-	Very High Frequency
VTs	-	Vessel Traffic Services
Leeway		Angle between ship's projected course and her track through the water.
Markus Cradle		A self-contained net used for recovering a body from the water in a horizontal position.
Ratlines		Small ropes stretched horizontally between shrouds to form footholds when going aloft.
Serving		Small stranded rope tightly wound around a rope or wire to protect it.

## SYNOPSIS



On 22 August 2004, a passenger was fatally injured on board the commercial sailing vessel *Albatros* after climbing aloft and falling from the mainmast ratlines.

The passenger had repeatedly expressed a wish to climb the mast, both to the deckhand and then to the master. The master finally acceded to this wish, on the understanding that the passenger was to wear an approved safety harness and receive instructions from the deckhand.

The passenger climbed the mast's ratlines, wearing a restraint belt and lifeline – not the safety harness as instructed. About 8 metres aloft, the passenger appeared to freeze. He then fell backwards and plummeted to the port gunwale before falling overboard.

Two deckhands attempted to rescue the casualty by diving overboard, leaving the master as the only crew member on board the vessel. The casualty was eventually recovered, but was pronounced dead on arrival at the local hospital.

It is unclear why the passenger fell. It is possible that a defective ratline gave way, causing him to lose his balance. Contributory factors include:

- The lack of a safety management procedure on board.
- There was no effective maintenance procedure to ensure timely and effective repair to the ratline.
- The passenger received an inadequate briefing and supervision.
- He was wearing a restraint belt, and not an approved safety harness.

Additionally, the MAIB investigation identified that the crew responded inappropriately to the manoverboard emergency, resulting in the vessel being subjected to unnecessary risk.

Recommendations have been made to the owner of *Albatros* to ensure the vessel is always safely manned with a competent crew who would be able to respond appropriately to any future emergency on board.

The MCA is recommended to ensure that foreign registered, commercial vessels carrying passengers operating out of UK ports, are subjected to the same safety management performance standards as UK registered vessels of a similar type and class.

Figure 1



*Albatros alongside at Southend Pier Head*

## SECTION 1 - FACTUAL INFORMATION

### 1.1 PARTICULARS OF *ALBATROS* AND ACCIDENT (Figure 1)

#### Vessel details

Registered owner	:	Antonius J Brouwer
Manager(s)	:	Antonius J Brouwer
Port of registry	:	Amsterdam
Flag	:	Netherlands
Type	:	Commercial sailing vessel
Built	:	1899 – Netherlands
Classification society	:	Register Holland
Construction	:	Steel (welded below waterline & riveted above waterline)
Length overall	:	29.78m
Gross tonnage	:	119
Engine power and/or type	:	160hp Hundested
Service speed	:	6 knots
Other relevant info	:	Gaff ketch rig. Total sail area of 415m <sup>2</sup> consisting of: mainsail, mizzensail, jib, inner jib, outer jib, inner staysail, outer staysail and flying jib.

#### Accident details

Time and date	:	1445 on 22 August 2004
Location of incident	:	51° 30'.6N, 000° 55'.6E
Persons on board	:	33 (30 passengers and 3 crew)
Injuries/fatalities	:	1 fatality
Damage	:	N/A



## 1.2 BACKGROUND

*Albatros* was built in 1899 at Rotterdam. She has two masts and carries a gaff ketch cutter rig. Total sail area amounts to 415m<sup>2</sup>, comprising main and mizzen sails, main topsail and mizzen topsail, jib, inner and outer staysails and a flying jib. She is equipped with a suite of navigational aids including GPS, radar, echo sounder and both fixed and hand-held VHF radios. The vessel has a Hundested 160hp diesel engine providing an operating speed of 6 knots.

In her early life, *Albatros* was used for carrying cargoes of Scandinavian timber, building materials and cattle feed to and from various locations in the Baltic Sea. The present owner purchased the vessel in 1980 and then spent 4½ years in the Netherlands fitting her out to modern day standards under the scrutiny of Germanischer Lloyd classification society. During the refitting period, the cargo carrying capacity was reduced to 125 tonnes by increasing the size of the accommodation and by adding more permanent ballast. The refit was completed in 1987.

*Albatros* re-entered service carrying bulk cargoes of cattle feed, grain, fertiliser and timber between the continent and several ports in the United Kingdom, and Scandinavia. She was later contracted to run two cargoes of soya bean meal per month from Ghent and Rotterdam to Wells Next the Sea on the north Norfolk coast taking advantage of the prevailing winds en route between the east coast of England and the continent.

Following another refit in 1997, the vessel was contracted to work for Greenpeace. In 2000, the owner returned to Wells Next the Sea to use the port as a corporate base for business ventures. These included using *Albatros* as an entertainment venue, day chartering and for sail training.

Certified for carrying up to 11 trainees overnight, and 36 passengers on day trips, *Albatros* is able to carry a maximum of 45 people at any one time. The master pre-plans the season's sailings based on business received from day trips and longer voyages from various UK and continental ports. Occasional work is received from local councils wishing to provide a facility for disaffected youths. Other business is sometimes realised from attendance at various classic boat festivals.

## 1.3 NARRATIVE

### 1.3.1 Background to the voyage

The voyage had been arranged through a third party agency based in Chatham - *European Maritime Events*. Southend on Sea Borough Council agreed to advertise and sell tickets for the event locally. Information on ticket prices and



*Albatros's* planned schedule can be found at **Annex A**. *European Maritime Events* provided a general information sheet for prospective passengers that stated:

*“passengers are welcome to assist the crew in operating the vessel, or simply sit back and enjoy the sensation of sailing on a tall ship”.*

Three sailings from Southend Pierhead were planned for 20, 21 and 22 August 2004 respectively, but delays due to bad weather and the prevailing wind direction in the English Channel, made 21 and 22 August the only suitable days for undertaking the advertised programme (**Figure 1**).

All passengers were instructed to board *Albatros* at Southend Pierhead between 0915 and 0945 on 22 August 2004. On boarding, the names of the passengers were checked against a manifest which Southend on Sea Borough Council provided to the master of *Albatros*. A total of 32 people had bought tickets for the day sail. Two failed to turn up, leaving a total of 30 passengers, including 3 children, to embark for the event.

### 1.3.2 The voyage plan

The master had planned the voyage to take advantage of a low water at Southend on 22 August at 1100, with a height of 1.1 metres, and a high water at 1721 with a height of 5.4 metres, equating to 55 percent of the spring range.

His intention was to sail downstream for approximately 3 hours with the last of the morning's ebb tide. Then, after slack water and with the onset of the flood-tide, he planned to turn *Albatros* and sail back to Southend Pierhead to arrive at approximately 1800.

### 1.3.3 The passenger safety briefing

Before *Albatros* left Southend, all passengers and crew were mustered in the former cargo hold (now a mess deck) where the master provided a safety briefing and introduced the crew to the passengers (**Figures 2a and 2b**). This included an introduction covering the history of the vessel, and was followed by a briefing on the following six basic safety rules:

- To move around the vessel with care.
- The precautions against falling overboard, and the requirement to stay on board the vessel.
- That passengers should always follow the instructions of the crew.
- Passengers were not to run on the deck.
- A general description of the safety equipment carried on board and its method of operation. This specifically included the EPIRB and liferafts.
- A lifejacket demonstration was given, which included lifejacket stowage positions, how they were issued and where people were to muster in the event of an emergency.

Figure 2a



Mess deck - venue used for passenger safety briefing

Figure 2b



Safety notices posted on mess deck bulkhead

#### 1.3.4 The accident

On completion of the passenger safety brief, *Albatros* left Southend Pierhead as planned, at 1015, heading east with the ebb tide. Once the vessel was clear of the berth, passengers enjoyed the experience of watching and, in some cases, assisting the crew set the sails, and continued to relax on passage, making the best of the good weather conditions. Some passengers, under the instruction of the English deckhand, took the wheel and assisted in steering the vessel downstream.

The sail plan for departure, and for the remainder of the voyage, consisted of main and mizzen sails, staysail, and fore jib. The British deckhand acted as helmsman, and the Dutch deckhand mingled with the passengers on deck while keeping watch over the sails.

Catering for the passengers would normally have been undertaken by the third deckhand who had left the vessel on arrival at Southend. Consequently, the master felt obliged to perform this task on 22 August. Waiting until the vessel was in clear water and the sails were set, he went below to prepare lunch. Some passengers, realising his predicament, provided assistance.

After approximately 1½ hours underway, the Dutch deckhand was approached by a passenger, Mr Kneller, who requested permission to climb the rigging on the mainmast in order to take some photographs. The deckhand had faced similar requests by passengers on previous voyages, but had always refused permission because he thought it too dangerous. Following this refusal, Mr Kneller persisted with his request several times. Tired of repeatedly rejecting his request, the deckhand told the passenger to ask the master for permission to go aloft.

Mr Kneller then approached the master on a number of occasions. The master, at first, refused permission for him to go aloft. At that time, the vessel was sailing on a starboard tack and, due to the prevailing wind, the sails were being carried on the port side, effectively blanketing the ratlines. The master did not deem it suitable for a passenger to climb the rigging under such conditions. However, he advised Mr Kneller that, once the vessel had reversed course and the wind and sails were on the opposite side, the area around the ratlines would be clear and provide an opportunity for him to climb the rigging.

At approximately 1400, as passengers took their lunch, *Albatros* tacked to starboard and came around onto a reverse course with the wind on the port quarter. This manoeuvre was carried out with the assistance of some passengers who received instruction from the crew beforehand.

Once the course change had been made, the master then allowed Mr Kneller to go aloft on the condition that he wore a safety harness, and that he was briefed by a deckhand on how to use it. The deckhand and the master reported that

they thought the passenger to be a fairly fit looking 60 year old, physically capable of climbing the rigging. He was in fact 75 years old, and weighed 106kg.

Shortly after the sails had been trimmed, the master went below to eat lunch with the remaining passengers. Meanwhile, on deck, the Dutch deckhand briefed the passenger on how to wear a safety restraint belt; the master had in fact told the deckhand that the passenger was to wear a safety harness. The deckhand checked that the belt was fitted correctly and advised Mr Kneller how to climb aloft safely.

Under the watchful eye of the deckhand, who was at the foot of the mast, Mr Kneller started to climb up the ratlines on the port side of the mainmast, clipping and unclipping his restraint belt at each step. Approximately 2 metres from deck level, the lifeline from his restraint belt became fast around some running rigging. The deckhand explained that the line was fast and how best to free it. Mr Kneller carried out the actions explained to him, freed the lifeline and continued with his climb.

The deckhand recalled that, at about 1450, Mr Kneller had climbed approximately 8 metres above deck level. He recalled observing that as Mr Kneller was about to take a step upwards, he released the karibiner clip on his lifeline from the ratline, froze for some seconds, released his grip, and fell backwards. He landed on the ship's side railings above the gunwale next to the deckhand, before falling overboard into the sea.

Weather conditions were good: a south-south-east wind force 2 and negligible swell. The vessel's speed was approximately 2 knots through the water and 3½ knots over the ground.

The helmsman reported that he had been aware of a passenger climbing the rigging, which had surprised him because he had not seen this before. However, he carried on with his duties at the helm.

Some passengers had witnessed Mr Kneller climb sections of the rigging. However, other than the deckhand who had been supervising the climb, no-one saw him fall or observed what he did prior to the fall.

#### 1.3.5 The rescue operation

Immediately Mr Kneller fell, the Dutch deckhand shouted "manoverboard". On hearing this, the helmsman opened the wheelhouse door and saw Mr Kneller lying face-down, surrounded by blood on the sea surface. In an attempt to save him, the helmsman left the wheel in the hands of a passenger already on the wheel, before diving overboard to rescue Mr Kneller.

The Dutch deckhand threw a lifebuoy close to Mr Kneller in the water.

At the time of the accident, the master was down below lunching with passengers. On hearing what he later understood to be the thud of the passenger striking the ship's side rails, he made his way up onto the deck just as the Dutch deckhand was raising the alarm. Stepping on deck, the master saw the Dutch deckhand dive overboard to assist the helmsman in the attempt to rescue Mr Kneller.

Having witnessed Mr Kneller hitting the gunwale and then falling overboard, some passengers were in a state of shock; others assisted the master in the rescue operation. Some passengers maintained a visual fix on the men in the water, two others, under the guidance of the master, donned lifejackets and helped lower and then launch a steel tender. The two passengers rowed towards the casualty. Having to row into the wind in a dinghy which was particularly prone to the effects of leeway, meant that they could approach the casualty only very slowly.

The master told VTS of the situation on VHF channel 12. Once the dinghy was clear of the ship, the master went into the wheelhouse and called Thames Coastguard on VHF channel 16 to request immediate medical assistance. The coastguard responded at 1507 and informed the master that a lifeboat would be deployed. With the sails still set, the master started the main engine and engaged it. The passenger, who had originally taken over the duties of helmsman from the deck rating, was instructed by the master to put the helm 20° to port.

The master had no crew members on board, because both were still in the water assisting Mr Kneller. The master, therefore, needed passengers to assist in sheeting in as the vessel's head tacked through the wind to port. Once on course, and with the casualty observed ahead, full engine power was used to return to the scene. This took about 15 minutes from turning.

To give the master more control over the rescue, he reduced the sail area. He achieved this with passenger assistance, the master managing to lower the main sail and the fore jib and the passengers assisting in stowing the two sails. The two remaining sails had minimum effect in the light winds and, consequently, because of time and manpower constraints, were left rigged.

Under the instructions and guidance of the master, passengers rigged a boarding ladder and a Markus Cradle to help recover Mr Kneller back on board.

Meanwhile, the two deckhands struggled for 15 minutes to keep Mr Kneller afloat using the buoyancy provided by the lifebuoy as an aid.

*Albatros* returned to the scene, manoeuvring carefully alongside the casualty and the deckhands. With the exception of six passengers assigned to help bring the three men back on board, everyone vacated the embarkation ladder area.



Having heard the reports broadcast on VHF channel 16, a local fishing vessel, *Skeery Bell*, arrived on scene. She secured on *Albatros*'s port bow, but was able to provide little assistance. The six passengers, the master, and the two deckhands were unable to place the casualty into the Markus recovery net because of his weight and their inability to position the net low enough in the water.

The RNLI Atlantic 75 rescue craft based at Southend on Sea, arrived on scene at 1530. With its lower freeboard and buoyancy tubes, it was better able to lift Mr Kneller on board. The craft returned immediately to the slipway at Shoeburyness, where the casualty was tended by paramedics and transferred to hospital. He was confirmed dead on arrival.

The master and passengers helped retrieve the two deckhands and the dinghy back on board *Albatros*. *Albatros* then returned to Southend Pierhead, arriving at 1730.

## 1.4 METEOROLOGICAL CONDITIONS

Weather conditions throughout the period of the voyage were good. The sky was clear and sunny, and the wind no more than a force 3 from a south-south-east direction. Sea conditions commensurate with the wind speed were no more than sea state 2, and there was negligible swell. The sea temperature in the Thames Estuary at that time of the year could be expected to be about 15°C, giving people not wearing a buoyancy device a 50% likelihood of surviving 12 hours<sup>1</sup>.

## 1.5 PARTICULARS OF MASTER AND CREW

### 1.5.1 The master

The master and owner of *Albatros*, Antonius J Brouwer, is a Dutch national. Gaining a mate's foreign going certificate of competency at the age of 29, Mr Brouwer was later able to convert to a master's sailing certificate of competency, based on the experience he gained as holder of a mate's certificate and from his previous sailing experience. He obtained, without further examination, a certificate of competency to sail as master on seagoing sailing ships with a gross tonnage of less than 300, trading within the following area:

*"The Baltic Sea; North Sea up to 63°30'N 9 not more than 25 nautical miles out of the Norwegian coast. 61°N 1°W, the line connecting Strathie Head and Barony Point, Mull. East coast of Colonsay, Islay (Ardmore Point) Inishowen Head (North Ireland) and from Old Head of Kinsale (South Ireland) to 48°N 30'W 2° 35'W (about 25 miles west from Point du Raz) to South Bank of Girond (45° 30'N 2° 35'W) and the Mediterranean Sea."*

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<sup>1</sup> United Kingdom report presented by the IMO sub committee on search and rescue.

The certificate was issued in Rotterdam by the Netherlands Shipping Inspectorate, under the provisions of the International Convention on Standards of Training Certification and Watchkeeping for Seafarers 1978.

The certificate is valid provided the holder is in possession of a valid medical certificate. Mr Brouwer also holds a valid GMDSS certificate of competency.

#### 1.5.2 Crew

The crew complement at the time of the accident comprised two deck ratings, one Dutch and one British. A third rating, normally employed on catering duties, left *Albatros* on arrival at Southend Pierhead due to personal reasons. The deckhands were employed on a seasonal work basis.

The Dutch deckhand had been following a basic safety training course, which included, as part of the syllabus, a first-aid and basic sea safety certificate.

An entry in his seaman's book, issued by the Netherlands Inspectorate, described him as a trainee who was undertaking basic safety training. This is the minimum level of training through which he could be issued with a deck rating certificate after completion of 6 months' on board training.

Employed on *Albatros* for 2½ months in 2003 for seasonal work, 2004 was his second period on board. At the time of the accident, he had been employed for 3½ months. He was due to leave *Albatros* the following day, 23 August 2004, to celebrate his 17th birthday. His total sea time on board *Albatros* at the time of his departure was just over 6 months.

The British deckhand held the following Royal Yachting Association certificates:

- Dinghy Senior Instructor, Keelboat Instructor,
- First Aid, Powerboat Instructor,
- Safety boat certificate, and
- Day skipper shorebased theory.

He had joined *Albatros* at the port of Ramsgate on 9 August, having previously spent 2 weeks on her earlier in the year.

Although the deck ratings participated at the passenger safety briefing, neither had received any formal written instructions, guidance, or safety training commensurate with their levels of responsibility when they joined the vessel.



## 1.6 STATUTORY CERTIFICATION, SURVEYS AND INSPECTIONS

### 1.6.1 Seaworthiness certificate

Valid until 1 April 2008, the Netherlands Shipping Inspectorate issued a certificate of seaworthiness on 1 April 2003. This allowed *Albatros* to operate with no more than 45 people on board, within the trading limits of:

*Coastal waters, 30 miles out of the European coasts of the following areas: North Sea; Northerly limited by parallel 53 N and Southerly limited from the line of Dover to Calais. The Baltic Sea. The North Sea up to 63 30 N (not more than 25 sea miles out of the Norwegian coast) – 61 N, 1 W – the line which connects Strathie Head with Barony point – Mull – East coast of Colonsay – Islay (Ardmore Point) – Inishoven Head (North Ireland) and from Old Head of Kinsale (South Ireland) to 48 N, 6 W (about 25 sea miles west from Pt du Raz) to South Bank of Gironde (45 30 N, 2 03 W) and the Mediterranean Sea.*

For Netherlands regulatory purposes, this trading area is known as Area 17 (III limited).

### 1.6.2 Safe manning certificate

To trade within the above area, *Albatros* must also comply with the minimum safe manning document, issued by the Netherlands Shipping Inspectorate in Rotterdam on 10 May 2004.

The document states that the minimum manning for *Albatros* is one master and three deck ratings, one of whom must be in possession of an endorsement rating, confirming that the seaman has completed his 6 month basic training period at sea.

The document specifies the following conditions:

- a. *One of the officers forming part of a navigational watch shall be in possession of a Restricted Radio Operator Certificate.*
- b. *The number of ratings may be reduced from three to one, when the passengers fulfil the duties of those ratings.*
- c. *Only for day journeys, else one of the ratings shall be in possession of the certificate 'S7' or 'Coastal Navigation Theory'.*

Contained within the same document, is a note explaining that navigation officers and masters shall be in possession of an endorsement for sailing vessels, and that the certificate does not exempt the master from his obligation to request additional crew when working circumstances demand.

The Netherlands Shipping Inspectorate requires deck ratings to have an endorsement as deck rating, qualifying for the endorsement when they have 6 months' training on board seagoing vessels, whether it be cargo, passenger or sailing vessel.

Passengers are not allowed to undertake independent rating jobs, but may assist crew under the supervision of the master and ratings. There are no prescribed standards for the experience, training and health requirements of passengers assisting in the operation of the vessel.

#### 1.6.3 Certificate of class

*Albatros* operates under Register Holland class rules (the white and blue rules). She is classed as a commercial sailing ship. She underwent a 5-yearly special survey in March 2004. The certificate of class is valid for a period of 1 year until 1 April 2005.

Provided that a valid class certificate, issued by an accepted classification society, is on board, the vessel receives several exemptions under the authority of article 5.2 of the Dutch Shipping Act (exemption sailing passenger ships), (**Annex B**). With a tonnage of less than 500gt, under SOLAS regulations *Albatros* is exempt from compliance with the International Safety Management Code.

#### 1.6.4 Safety management certificate

Exemptions issued by the Netherlands Shipping Inspectorate for sailing passenger ships include exemptions from:

- Passenger ship safety certificate for ships with more than 12 passengers.
- ISM certificate for ships with more than 12 passengers.

These exemptions are conditional, based on the vessel being issued with a valid certificate of class by Register Holland, or another accepted classification society. Further exemptions for sailing passenger ships are shown in **Annex B**.

### 1.7 SAFETY EQUIPMENT ON BOARD

The following safety equipment was carried on board *Albatros*, and was recorded on the certificate of class:

- 4 x 25 person RFD liferafts
- 4 lifebuoys
- 84 lifejackets
- Three engine-driven bilge pumps - with a total capacity of 110m<sup>3</sup> per hour
- Fire extinguishers:
  - a. 5 x 6kg dry powder
  - b. 1 x 9kg foam

Additionally, *Albatros* carried the following safety equipment:

- A steel tender used as a rescue boat, secured to lifting davits at the vessel's stern. The tender was propelled by oars.
- A Markus Cradle. This is a net, which is attached to the vessel and is used to recover personnel from the sea.

#### 1.7.1 Safety harnesses

Two restraint belts and two safety harnesses were carried on board *Albatros* (**Figures 3 and 4**).

The restraint belts were manufactured by Kong - Bonaiti in Italy and designed for a maximum load of 1500kg. Mr Kneller was wearing one of these belts when he fell from the rigging.

It comprised an 85mm wide webbing belt, secured using a two-buckle friction grip arrangement by inserting the webbing under the two buckles, then back over one and under the second. The attached lifeline comprised a 1.3m x 15mm diameter polypropylene rope, with a karibiner clip attached.

The safety harnesses on board fitted around the user's waist and chest, but did not incorporate leg and crotch support. They were fitted with an elasticised lifeline, complete with karibiner clip attachment. The lifeline was attached to the harness by another karibiner clip, passing through two stainless steel D rings fitted into the harness webbing.

### 1.8 ON BOARD PROCEDURES AND INSTRUCTIONS

Procedures and instructions on board *Albatros* were displayed on the forward bulkhead of the mess deck area (**Figure 2b**). These comprised:

- A hand-written emergency instruction, advising the assembly station in the event of an emergency.
- Instructions on how to don and adjust a lifejacket.
- Printed instructions, advising emergency procedures in the event of a man-overboard, a fire alarm, and an abandon ship.

A ship safety plan was displayed on the starboard side of the mess deck, showing the location of all safety equipment and escape routes.

### 1.9 RATLINES

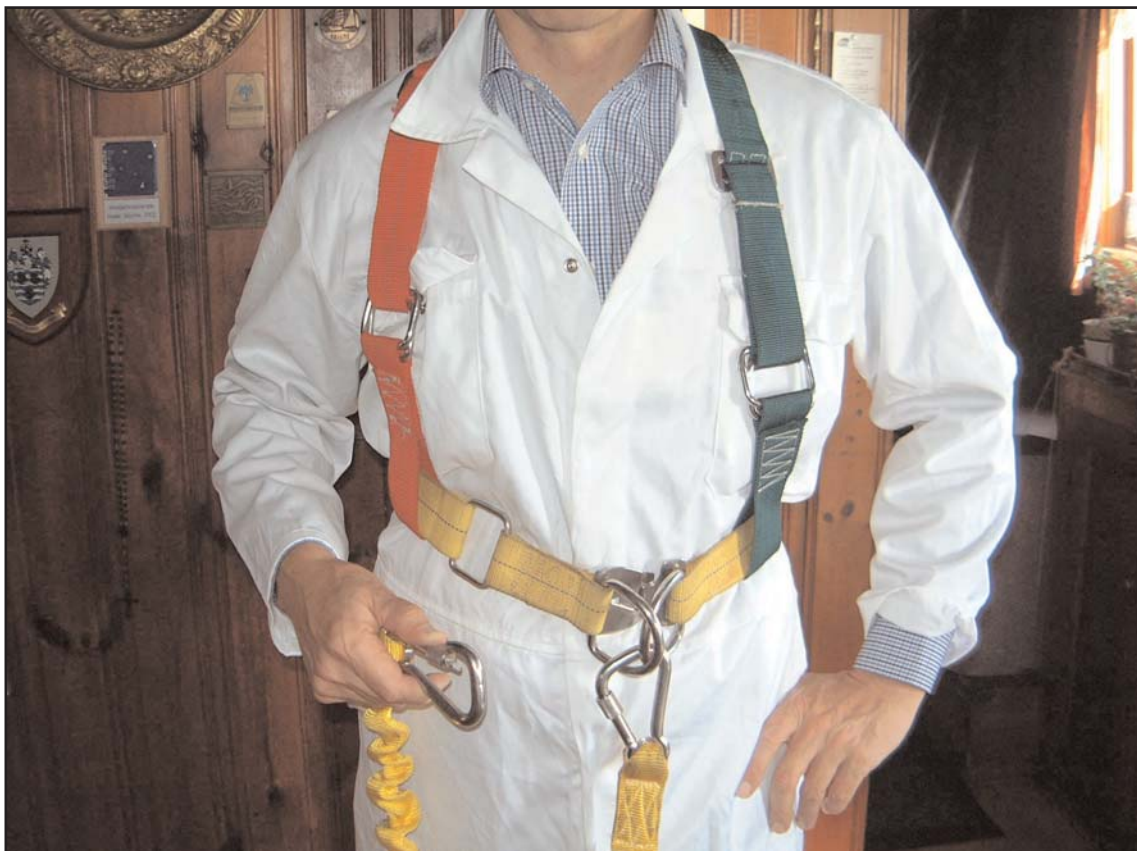
The only rigging available for climbing was situated on the port side of the mainmast and was known as ratlines (**Figure 5**). Lengths of man-made polypropylene fibre rope were secured to the forward, middle and after shrouds to effectively form a rope ladder, the steps of which gradually decreased in size as they approached the upper mast band (**Figure 6**). The technique used

Figure 3



Restraint belt - type fitted to Mr Kneller

Figure 4



The type of safety harness carried on board *Albatros*



Figure 5



Lower ratlines

Figure 6



Upper ratlines

Figure 7



Method of securing the ratlines to shrouds on board *Albatros*

on board *Albatros* to secure the ratline to the shrouds, consisted of a rolling hitch on the forward and after shrouds and a clove hitch on the middle shroud. Each end of the line was tucked back under a strand of the standing part, and the end melted to prevent fraying (**Figure 7**).

Both the master and the deckhands reported that they were aware of a loose ratline some 8 to 9 metres from the deck. This had been identified some 2 to 3 days before the accident. It is thought to have become loose when *Albatros* encountered high wind and sea conditions in the English channel, en route to Southend. All of the crew described the ratline as hanging loose and adrift from the after shroud (**Figure 8**).

The rigging was not used during normal shipboard operations, but when *Albatros* was used as a sail training vessel, trainees might be required to ascend the rigging to instil confidence in climbing aloft.

When the crew were required to go up the mast for maintenance purposes, they ascended the mast using a bosun's chair attached to a top halyard.

Figure 8



The parted ratline viewed on arrival at the scene

## **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 THE ACCIDENT**

Mr Kneller died when he fell down from the rigging after going aloft to find a strategic position from which to take photographs. At the time of the accident, *Albatros* was operating in a passenger ship role, as opposed to a sail training ship role. In this respect, when trading as a passenger ship, her passengers were not normally allowed to go aloft. The master and deckhand had already refused Mr Kneller's request to go aloft, but the master finally acceded to the repeated requests and allowed him to make the climb.

Mr Kneller looked fit and there were no indications of any physical disability or illness that might have prevented him from climbing the mast safely. It is probable that Mr Kneller was physically capable of climbing the mast, but the exact circumstances of how he fell are uncertain.

The only witness at the time Mr Kneller fell was the deckhand, who saw him unclip his lifeline, momentarily freeze and then fall backwards. The deckhand reported that Mr Kneller had not reached the level of the broken ratline before he fell. However, photographic evidence clearly shows that his chest was level with the height of the damaged ratline when the accident occurred. Furthermore, contrary to crew reports that the ratline was detached from the aft shroud, photographic evidence clearly shows that the rolling hitch securing the ratline was attached to the shroud. Inspection of the photograph shows that the ratline was secured by little more than a half hitch. The knot was not substantial enough to take the weight of Mr Kneller. After the accident, the end of the ratline was found to have parted from the after shroud. It is possible that while unclipping his lifeline, at the same time gripping the damaged ratline, his weight was sufficient to cause the ratline to give way, causing him to fall.

### **2.3 INSTRUCTIONS FOR PROCEEDING ALOFT**

The instruction given by the deckhand to Mr Kneller was brief, incomplete and inadequate for someone of Mr Kneller's limited experience. Although instruction on how to fit and wear a restraint belt was given, there is no evidence to suggest that he was shown the correct method of ascent.

The deckhand instructed Mr Kneller to clip on at each ratline. The generally accepted method of climbing rigging is to clip on only when stationary or about to begin work, using three points of contact at all times, and keeping the lifeline



tucked away to prevent it becoming snagged on an obstruction. If Mr Kneller had used this method to climb the rigging, it is unlikely that he would have snagged his lifeline during the early stages of his climb and would have significantly reduced the risk of losing his balance while clipping on to the ratlines.

### 2.3.1 Safety harnesses and restraint belts

The vessel carried two safety harnesses. The master ordered the deckhand to provide and fit Mr Kneller with a safety harness. Instead, the deckhand fitted one of two restraint belts. Not designed for fall arrest, but for restraining the user in a position where there is no direct risk of falling, a restraint belt is unsuitable for use as a safety device for climbing rigging. The long lifeline and large karibiner clip made it a cumbersome piece of equipment, quite capable of becoming snagged while climbing.

As a guide, the length of a lifeline attached to a harness should be approximately the same as an arm's length. When not in use, it is usually taken across both shoulders, ensuring it is kept clear of any obstructions. It is possible that the deckhand did not appreciate that the restraint belt and safety harness served different purposes. Given the deckhand's relative inexperience, the master needed to check that the correct equipment was being used.

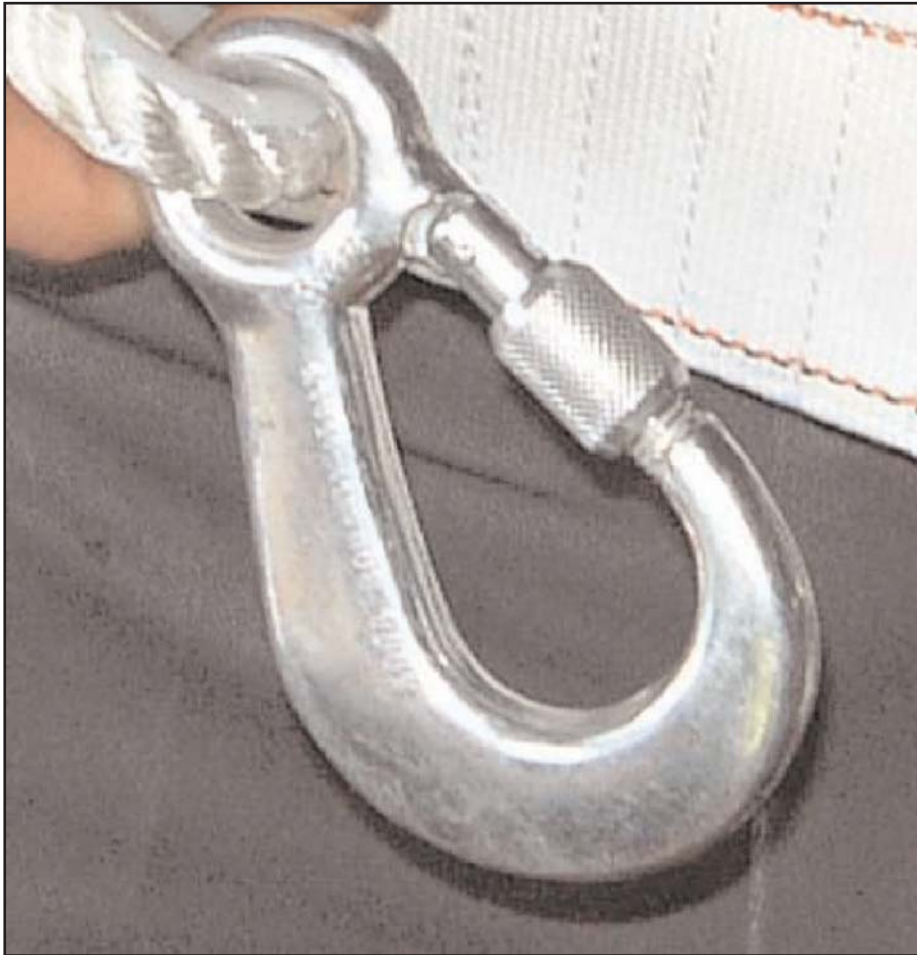
### 2.3.2 Lifeline securing arrangement

All the lifelines attached to the harnesses and belts on board *Albatros* were fitted with karibiner clips (**Figure 9**). Designed for clipping on and then screwing up to a safety line for a period of time, the screw arrangement on a karibiner, when used constantly, can become partially closed, allowing it to be clipped on, but not returning to the fully closed position once clipped on (**Figure 10**). A safer arrangement would have been to have a double action spring-loaded clip fitted to the lifeline (**Figures 11 and 12**).

### 2.3.3 Standard operating procedure

There was no evidence of a standard operating procedure for a 'person proceeding aloft'. Such a procedure could have provided the deckhand with a ready reference safety check-off list, and given him confidence that all safety issues had been addressed. It might also have prompted him to consider the possibility of further safety precautions that were necessary. In this particular case, the rigging of a secondary lifeline from a halyard block might have reduced the risk of falling, given Mr Kneller's lack of experience climbing the rigging.

Figure 9



Karibiner clip - fitted to the restraint belt used by Mr Kneller

Figure 10



Karibiner clip with screw arrangement partially closed

Figure 11



Alternative arrangement of a double action spring loaded clip

Figure 12



Lifeline with karibiner clip used for securing the lifeline to the safety harness, complete with two double action clips for different working conditions



#### 2.3.4 Responsibility of the master

The master was the most qualified person on board *Albatros*, and the best person available to ensure that Mr Kneller was correctly briefed and that he was wearing the correct safety harness for going aloft. However, he was not available to provide the brief. It is probable that the master was distracted from performing this function because of his perceived social responsibilities to the passengers during lunch. This consequently diverted him from properly examining and then assessing the safety implications of allowing a passenger to climb aloft.

### 2.4 THE DEFECTIVE RATLINE

#### 2.4.1 Maintenance

The crew reported that they were aware that the ratline was defective. Despite this knowledge, there was no attempt or plan made to repair it.

All the ratlines were inspected during the vessel's special survey in March 2004 undertaken by Register Holland. At that time, the ratlines were not found to be defective. Since the survey, an ad-hoc visual inspection regime for checking the ratlines was followed. There was no formal planned maintenance regime to ensure timely and conscientious efforts to correct or avoid any defects of a safety critical nature.

#### 2.4.2 Construction

Throughout the sail training environment, ratlines are an accepted tool used for climbing. However, they have been known to come adrift through age, wear and tear, and weather conditions. On many vessels, the risk associated with ratlines has been overcome by removing the rope, and replacing it with hardwood battens, supported by an aluminium angle bar which is secured to the shrouds using U bolts (**Figure 13**). This method is a stronger and safer option, and should be considered for future use on board *Albatros*.

When the use of battens is inappropriate, the ratlines are often secured by splicing an eye at each end of the rope and whipping the eye to the shroud using smaller thread.

In the case of *Albatros*, the ratlines' reliability would have been improved had their loose ends been whipped around the standing part, after being tucked through a strand. This could have prevented the end of the line from becoming loose and reducing the effectiveness of the rolling hitch. Ultimate failure might then have been avoided.



An alternative solid ratline

## 2.5 THE RESCUE

The post-mortem on Mr Kneller indicated that there was no water in the lungs and that death was caused by blunt injuries to the chest and abdomen. Therefore Mr Kneller was likely to have died when he hit the deck before he fell into the sea. However, the MAIB considered it necessary to examine the subsequent rescue operation, during which the vessel's safety, together with her crew and passengers, had been compromised. The examination highlighted the following:

### 2.5.1 Training

Of prime importance in any successful manoverboard rescue is the actions and responses taken by the crew. It is imperative that all crew members are aware of their individual responsibilities; this can only be achieved by regular training. Although the master had practised manoverboard exercises, albeit infrequently and without lowering the rescue boat, it was patently obvious from the actions taken by the crew that they did not understand their individual and collective responsibilities in such a situation.

### 2.5.2 Actions and responses

The verbal alarm alerted the master to the emergency. However, he had no crew on board to sail the vessel and take emergency action. He was therefore left with no other option than to undertake the rescue operation alone, dependent on significant passenger assistance. A standard operating procedure (**Annex C**) designed to make this evolution safe and effective was ignored.

While there was no formal policy for the use of passengers in an emergency, the master was obliged, given the circumstances, to use them to assist in the rescue operation. Passengers were clearly unfamiliar with operating the helm, launching dinghies, keeping lookout and assisting with sails. Despite this inexperience, their assistance was effective in helping the master to prepare the vessel to alter course and return to the casualty and crew.

Had the crew members remained on board, a far quicker, safer and more effective rescue could have been achieved with less reliance placed on passenger assistance. The lack of available trained manpower resulted in the master becoming involved in directing and assisting passengers, losing sight of his most important priority: to turn *Albatros* to return and recover the casualty. The use of the engine at an early stage would have greatly benefited this operation, but noticeably, this measure was omitted from the standard operating procedure.

### 2.5.3 General alarm

A general alarm was fitted on board *Albatros*, but was not used. Furthermore, the master's pre-sailing brief did not inform passengers of the alarm or its significance, believing that for day trips it was unnecessary to brief passengers about it. He felt that because of the vessel's size and the small number of passengers and crew, a shout from a crew member would be sufficient to raise the alarm. However, he considered he might use the alarm during hours of darkness.

The use of the general alarm not only alerts passengers and crew of an emergency situation, but also saves vital seconds when conducting musters; allows more preparation and reaction time; and provides an audible stimulant for people in an emergency situation. It is essential that, whatever the size of vessel, however many people are embarked, or whatever their experience, the master ensures that the characteristics of the general alarm and the actions to be taken are fully understood by everyone on board and complied with in the event of an emergency.

## 2.6 CERTIFICATION AND DOCUMENTATION

### 2.6.1 Legislation and ISM procedures

Dutch registered, and operating under Dutch legislation, *Albatros* trades predominantly as either a sail training vessel or a passenger carrying vessel within United Kingdom territorial waters. Being less than 500 gross tons, *Albatros* was exempt from compliance with the ISM Code. Legislation for UK-registered sailing vessels of an equivalent size to *Albatros* is contained within the Large Commercial Yacht Code (LCYC), but this does not apply to vessels which carry more than 12 passengers. Equivalency, with respect to the domestic carriage of passengers, is contained within the regulations applicable to vessels of class VI, which legislates for the carriage of up to 250 passengers. Inspection of the LCYC and class VI regulations shows that *Albatros* was operating broadly in line with United Kingdom requirements. However, the LCYC requires vessels to comply with a safety management system for vessels under 500gt. The class VI regulations require vessels to comply with the Safety Management Code for Domestic Passenger Ships.

Therefore, contrary to the requirements, if it had been a UK registered vessel, the Dutch regulations did not require any form of safety management system in place on board *Albatros*. This has meant that the operation of the vessel and the duties of her crew have not been governed by adherence to specific, written procedures designed to ensure that best practice and the safety of personnel are paramount.

The development and adoption of a formal safety management system, which incorporates risk assessment methodologies, is a prerequisite to ensuring that critical safety issues such as manning levels, emergency response, maintenance, training and the supervision or briefing of trainees and passengers are fully evaluated and controlled.

### 2.6.2 Passenger protection

When a foreign flag vessel is operating predominantly in United Kingdom waters, with passengers or trainees on board, passengers or trainees have a right to expect that a vessel's operating standards match those on board an equivalent United Kingdom registered vessel. The standard of safety management on a vessel type such as *Albatros* should be the same as its United Kingdom registered counterpart.



## SECTION 3 - CONCLUSIONS

### 3.1 SAFETY ISSUES

3.1.1 The following safety issues have been identified by the investigation:

The passenger fell down the mast when he was at chest level with the damaged ratline. How he fell down is uncertain. It is possible that while unclipping his lifeline, at the same time gripping the damaged ratline, his weight was sufficient to cause the ratline to give way, causing him to fall. [2.2]

3.1.2 The contributing factors that led to his fall were:

1. There was no effective maintenance procedure in place to ensure timely and effective repair to the ratline. [2.4]
2. Mr Kneller's safety was compromised by inadequate briefing and supervision, and the inappropriate use of a restraint belt. [2.3]
3. The safety of *Albatros* and her crew was jeopardised by the lack of a safety management system on board. This meant that the following were not in place:
  - A risk assessment of foreseeable ship operations and emergency situations
  - A training regime
  - Planned maintenance procedures
  - Supervision and effective briefings for the passengers. [2.6]

3.1.3 Additionally, other safety issues were identified by the MAIB investigation:

- The inappropriate action of the crew in response to the manoverboard emergency.
- There was no formal policy or guidelines on the use of passengers in the event of an emergency. [2.5]

Both subjected the vessel to unnecessary risk.

## SECTION 4 - RECOMMENDATIONS

**The Maritime and Coastguard Agency** is recommended to:

2005/141      Ensure that all foreign registered, commercial vessels carrying passengers operating out of United Kingdom ports, are subjected to the same safety management performance standards as UK registered vessels of a similar type and class.

**The owner and operator of *Albatros*** is recommended to:

2005/142      Develop a safety management regime to assess effectively the safety of foreseeable ship operations and provide procedures to:

- Ensure that the vessel is, at all times, safely manned with a competent crew to enable an effective response in an emergency.
- Introduce a maintenance regime to ensure timely and effective repairs of safety critical equipment.
- Develop an unambiguous policy and guidelines on the use of passengers to assist crew.

**Marine Accident Investigation Branch**  
**April 2005**

Safety recommendations shall in no case create a presumption of blame or liability

*Albatros* - General Information

# **SV ALBATROS**

## **DAY SAILING TRIPS FROM SOUTHEND 2004**

### **PRICES AND GENERAL INFORMATION**

<b>Adult</b>	<b>£58.00</b>
<b>Child (Up to 15 years)</b>	<b>£29.00</b>
<b>Family (2 adults plus 2 children)</b>	<b>£150.00</b>

*A group of 8 or more persons (including children and family groups will receive a discount of 5%*

Please note that experience has shown us that these trips are unlikely to be suitable for children under 12 years of age

In the event of cancellation of the trip by the ship, it's master or agent for reasons other than weather; each passenger will be offered a full refund of monies paid. In the event of cancellation because of adverse weather, passengers will be offered a choice of either an alternative trip on a different date or a full refund of monies paid. We regret that a refund is not possible should the passenger cancel at any time after purchasing a ticket, but tickets may be transferred providing the changed passenger details (as per the application form) are provided.

Refreshments will be provided at arrival and during the trip, and a light lunch is served on board.

Boarding is from 9.15 am at Southend Pierhead, with departure at about 9.45 am. The ship will return to the pier at around 6 pm.

Passengers are welcome to assist the crew in operating the vessel, or simply sit back and enjoy the sensation of sailing on a tallship. The ship has a covered area in the event of inclement weather, and there are comfortable seated areas below decks. However, passengers are recommended to bring warm clothing and a waterproof coat, as it's cooler at sea than on land.

The vessel aims to be under sail for the maximum time but this, and the course followed are at the Master's discretion and is subject to weather conditions. The ship complies with the regulations of the UK MCA (Marine and Coastguard Agency) and satisfies all national and local maritime requirements, plus appropriate European safety directives. It is equipped with the latest navigational and safety equipment. There will be a safety briefing for all passengers immediately prior to departure

## Exemption Certificate

**EXEMPTION CERTIFICATE****THE NETHERLANDS**

Issued under the provisions of the Dutch Shipping Act and Shipping Order 1965

Name of ship <b>ALBATROS</b>		Port of registry <b>AMSTERDAM</b>
Distinctive number or letters <b>PFAB</b>	IMO number <b>5008356</b>	Gross tonnage <b>119</b>

**THIS IS TO CERTIFY:**

That the ship is, under the authority conferred by article 5.2 of the Dutch Shipping Act and management rule, "Exemption sailing Passenger ships DGG-J-98011076", exempted from

**Article No.:**

- ISPS Code (\* Regulation XI-2/1 of SOLAS '74 as amended)
- 3 1 ISM Certificate for ships with more than 12 passengers
  - 4 Passenger Ship Safety Certificate for ships with more than 12 passengers
  - 35 Watertight subdivision, Damage stability, Side Scuttles, Filling- and Airpipes, Sounding
  - through arrangements, Admittance and Way-out, Protection of the crew, freeing ports, Enclosure
  - 48 devices for discharges
  - 50 Steering gear, Anchor and Mooring gear, Fire protection, Arrangements for fuel oil, Bilge
  - through pump arrangements, Electrical arrangements, Noise protection, Crew accommodation,
  - 64a Storage of food and potable water
  - 67 b Life saving appliances
  - 88 through Fire detection and firefighting equipment, Safety lamp, Protective equipment
  - 89a
  - 93a Bridge watch alarm installation
  - 95a Radar installation
  - 101 Radio Installation

**UNDER THE CONDITION THAT:**

A valid class certificate is on board issued by Register Holland or an accepted Classification society.

This exemption is an Annex to the certificate of Seaworthiness number 6610/2004 and will remain valid until 01-04-2008

Issued at Rotterdam, the 01-04-2003, under number: 6614/2004

The Head of the Shipping Inspectorate,  
on his behalf,

Teamleider

Model VROZEIL 15-04-04 ea/kh/gt  
Sectie: KV



Emergency procedure for manoverboard



# **ALBATROS EMERGENCY PROCEDURES**

## **MAN OVERBOARD**

- On discovering man overboard throw a lifebelt as close as possible to the man overboard, give alarm by all means possible and keep watch on the man in the water from the best position - foredeck, afterdeck, top of bridge.
- Ship and sails to be prepared for manoeuvring to man overboard at captain's orders.
- Mate/bosun supply lookout with portable VHF. Make ready to receive casualty - dry clothes, towels, MARKUS lifenet, blankets etc.

## **FIRE ALARM**

Signal: continuous ringing of alarm bells.

- Person discovering the fire: if save then get help to attempt to extinguish the fire, and also to notify the bridge and give fire alarm.
- Captain: gives the fire alarm.
- Mate: fire team leader.
- Bosun: member of the fire team.
- Shut doors, portholes, ventilation shafts.
- Run out and prepare fire hose(s)

## **ABANDON SHIP**

Signal: interrupted ringing of alarm bells.

- All crew and passengers to assemble on maindeck midships with lifejackets.
- Captain: transmitting Distress message and contacting other vessels.
- Mate: collect VHF's on bridge and after orders from captain prepare crew to launch liferafts.
- All personnel: after orders from captain prepare to launch the liferafts, release Epirb, collect portable VHF's and SART from bridge.