



UNITED STATES COAST GUARD

**REPORT OF INVESTIGATION INTO THE
CIRCUMSTANCES SURROUNDING THE
GROUNDING OF THE
M/V MONTROSE
ON FEBRUARY 28, 2007**



MISLE Activity Number: 2879209
Originating Unit: Sector Baltimore
MISLE Case Number: 339349

INCIDENT BRIEF

At 0600 Eastern Standard Time (EST) on February 28, 2007 the Liberian flagged bulk cargo vessel *M/V MONTROSE* (IMO #9231004) grounded bow first in the mud in the Chesapeake Bay at the mouth of the Choptank River in Maryland state waters. The vessel departed the Consol Energy Coal Pier in Baltimore, MD, at 0055 en route south bound out of the Chesapeake Bay with two Maryland State Pilots onboard to take shifts during the long (10 plus hour) transit out of the bay. The Maryland State Pilot on the first shift navigated the outbound Chesapeake Bay transit using buoy markers and radar as primary reference. The *MONTROSE* ran aground at the approximate location of 38° 37.45N latitude and 076° 24.23W longitude with 27 persons onboard. There was no damage to the vessel, no injuries to the crew and no resulting pollution. The vessel was outside of the navigable channel and did not pose a hazard to navigation. U. S. Coast Guard Sector Baltimore responded to the grounding.

A Response Team from Sector Baltimore consisting of a Marine Inspector and Marine Investigator conducted an initial damage survey, inspection and casualty investigation. The vessel ordered tugs to the scene for assistance and potential salvage if damage occurred. A subsequently issued Captain of the Port Order required the vessel to undergo a damage assessment once it was refloated prior to departing.



Figure 1: Coal Lightering Operations on the *Montrose*

Efforts to pull the *MONTROSE* off were unsuccessful at high tide on February 28, 2007. Likewise efforts to pull the vessel off on March 1, 2007 during the next high tide were unsuccessful. Later on March 1, 2007, inclement weather and sea state caused the vessel stern to swing resulting in the addition of the starboard side of the vessel grounding. No pollution was reported from the starboard side grounding.

A formalized vessel salvage plan was developed by the operating company's salvor which Sector Baltimore approved.

Approximately 7,000 metric tons of coal were lightered and replaced in ballast. The *MONTROSE* floated free on March 7, 2007. A completed dive survey showed no damage and the vessel was deemed fit for transit. The *MONTROSE* reloaded cargo and departed Sector Baltimore's Area of Responsibility on March 9, 2007, 10 days after the initial grounding.

A joint investigation was requested by the *M/V MONTROSE*'s flag state of Liberia. This report of investigation reflects the results of that joint investigation and the Coast Guard's concurrence as to the primary and secondary failures that led to the grounding.

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I. FINDINGS OF FACT

Undertaken pursuant to the Coast Guard's investigative authorities under Title 46, United States Code part 6301, this investigation documents the Coast Guard's findings about the grounding of the *M/V MONTROSE* on February 28, 2007.

1.1 M/V MONTROSE Vessel Details:

Vessel Name:	MONTROSE
Flag:	LIBERIA
Vessel Identification Number:	9231004
Call Sign:	ELZQ5
Status:	Undamaged
Role:	Involved in a Marine Casualty
Vessel Class, Type, Sub-Type:	Bulk Carrier, General, General
Gross Tonnage(GRT):	38731
Net Tonnage(NRT):	25019
Deadweight Tons:	72296
Length:	711.9
Keel Laid Date:	06/21/2001
Delivery Date:	01/16/2002
Place of Construction:	JAPAN
Classification Society:	American Bureau of Shipping
Owner:	Bentonwood B.V. 80 Broad St. Monrovia, LR
Operator:	Motia Compagnia Navigazione Spa

1.2 The following individuals were subjects of this investigation:

Captain Michael Gerard Faby is a [REDACTED] year old male, licensed merchant mariner. Captain Faby was the pilot on the bridge of the vessel at the time of the grounding and has been with the Maryland Pilot's Association since December 21, 1976. Captain Faby's first Federal Master's license was issued on February 17, 1983 and his current license was issued on December 19, 2002. The text of his license states that Captain Faby is "Master of steam or motor vessel any gross tons upon inland waters; First Class Pilot of steam or motor vessel of any gross tons upon Chesapeake and Delaware Canal from Courthouse Point, MD to Chesapeake City, MD; Chesapeake bay and its tributaries from Courthouse Point, MD to Cape Henry." While Captain Faby had never piloted the *MONTROSE* before, he estimated that he has conducted over 2500 transits on similar vessels. The last time Captain Faby conducted a southbound transit of the bay was on February 20, 2007 on the *M/V SAUDI DURIA*, 8 days prior to the *MONTROSE* grounding.

[REDACTED] is a [REDACTED] year old male, native of India. Mr. [REDACTED] was Second Officer on the *MONTROSE* and was on the bridge watch as acting navigation officer at the time of the grounding. Mr. [REDACTED] has been sailing since 1974, received his Second Mate's License in 1982

and holds a Second Officer Certificate of Competency issued by India with an expiration date of October 12, 2010. He joined the *MONTROSE* crew on February 20, 2007 and had not done a southbound transit of the Chesapeake Bay previously.

██████████ is a █████ year old male, native of India. █████ was the Master on the *MONTROSE* and was in his cabin showering at the time of the grounding. Captain █████ has been sailing since 1994; however, he was sailing as Master for the first time.

1.3 Weather and Waterway Information

The weather for the outbound transit on February 28, 2007 was clear with good visibility. According to the National Oceanic and Atmospheric Administration (NOAA), winds were light and from the northeast. Sunrise was at 0639 and daylight was just beginning to show when the *MONTROSE* ran aground. The high temperature recorded was 46⁰ Fahrenheit, with the low being 29⁰. There was no precipitation. High tide occurred at 0102, with low tide at 0651.

The Chesapeake Bay nautical chart for the Choptank River and Herring Bay,¹ describes the area where the Choptank River feeds into the Chesapeake Bay from the east as extending from Black Walnut Point at the southern tip of Tilghman Island to the southern point of Trippe Bay at Mills Point. Water depth at the 'CR' Buoy in the Chesapeake Bay is at 95 feet, but rapidly shallows to 21 feet towards the east by the Sharps Island buoy at the mouth of the Choptank.

1.4 Incident Information

1.4.1 Sequence of Events: Pre-Grounding

Maryland pilot Captain Faby, operating under a one hour recall, received orders at 2300 local time on February 27, 2007 from the pilot dispatch to take the *M/V MONTROSE* outbound starting at 0055 February 28, 2007. Captain Faby boarded the *MONTROSE* at 0018 in conjunction with three docking pilots and a second bay pilot, Captain █████. The vessel sailed at 0055 and Captain Faby took the first shift for the estimated 10 hour total outbound transit. Both Captain Faby & Captain █████ informally decided that Captain █████ would relieve Captain Faby as the pilot on the bridge at 0700.

Upon boarding the *MONTROSE*, Captain Faby did not conduct or receive a navigation brief. The vessel Master and Captain Faby did discuss the handling characteristics of the vessel; however, when asked to sign the pilot exchange card by the Master, Captain Faby declined stating that he would sign it "later" and that he had over 30 years experience² as a Chesapeake Bay pilot. The *MONTROSE* got underway from Sparrow's Point Marine Terminal on the Patapsco River at 0055. The docking pilots departed the vessel at 0115.

According to the American Pilots Association, of which the Maryland Pilots under the Maryland Pilots Association are members, the role of the pilot is *to direct the navigation of the ship*,

¹ NOAA Chart #12266

² ECN 2879209 #009

*subject to the master's overall command of the ship and the ultimate responsibility for its safety. Navigation of a ship in United States pilotage waters is a shared responsibility between the pilot and the master/bridge crew*³. Once the docking pilots departed, Captain Faby took the responsibility of directing the navigation of the MONTROSE.

All Maryland State Pilots are provided a laptop with Differential GPS to use in pilotage. Captain Faby brought his laptop onboard, but piloted the vessel using the radar as his primary means of navigation, and local buoys as waypoints. There is no evidence explaining why Captain Faby did not use the equipment provided by the Maryland Pilots Association. Prior to receiving pilot orders, Captain Faby attended to personal matters during the day and only had three hours of sleep; however, Captain Faby stated he felt well rested to take the first leg of the transit. Captain Faby's 96 hour work/rest schedule is captured in Appendix 1 of this report. Captain [REDACTED] went below decks to rest.

Mr. [REDACTED] the Second Officer, reported to the bridge about 0150 once his other duties were complete. The vessel master had assigned Mr. [REDACTED] the 0000-0600 watch. The Master had the con prior to the arrival of Mr. [REDACTED] and remained on the bridge until about 0515 when he went below to shower prior to the next expected shift change. There is no evidence that a navigation brief or informal discussion was held regarding the transit between the pilot and the Master or the Second Mate. The only known conversation regarding vessel handing was the initial instructions Captain Faby gave to the MONTROSE bridge crew on watch to use "as little rudder as possible." There is no evidence a passage plan was established based on navigation information and knowledge of area, and there are no formal relief procedures between pilots upon assuming the pilot duties.

At about 0520 the south bound MONTROSE met the M/V SPOHIE traveling north. Captain Faby and pilot of the SPOHIE had a conversation and Captain Faby agreed not to change course until the SPOHIE made her course correction at Buoy 82. The vessels passed port-to-port and afterwards, once the MONTROSE was clear of the SPOHIE and abeam of Buoy 82, Captain Faby gave order to the helmsman to set course heading for 165 degrees true. Prior to this course change Captain Faby moved about the bridge frequently; however, once the MONTROSE established a heading of 165 degrees true, Captain Faby moved his chair forward to the window to sit and watch for the next anticipated turn that was to occur just prior to being abeam of the 'CR' Buoy.

1.4.2 Sequence of Events: Grounding

At roughly 0600, the MONTROSE ran aground at Latitude 38° 37.45 N, Longitude 076° 24.23 W. At the time of the grounding, Mr. [REDACTED] was plotting his fix and Captain Faby was sitting starboard of the radar near the window. The vessel heading was 165 degrees true which was the last course heading given by the pilot. The MONTROSE ran aground at an estimated speed of 11.6 knots in clear weather. According to witnesses, Captain Faby had been sitting very still in his chair prior to the grounding, and it is our conclusion that the initial vibrations were what roused Captain Faby from his sedentary state. Initially believing the vessel may have been

³ <http://www.americanpilots.org/>

experiencing bank suction, Captain Faby ordered Mr. [REDACTED] to reduce speed and ordered the rudder hard to starboard in an effort to pilot the *MONTROSE* back into deeper water.

The Master reported to the bridge upon feeling the vibrations caused as the vessel went aground. When efforts to free the vessel were unsuccessful, Captain Faby told the Master that they were aground. At 0645 Captain Faby contacted Captain [REDACTED] President of the Maryland Pilot's Association, to inform him that the *MONTROSE* was aground. Captain [REDACTED] notified Coast Guard Sector Baltimore at 0715 that the *MONTROSE* was aground but efforts were underway to free the vessel. At 0815 Captain [REDACTED] confirmed that the *MONTROSE* was aground and could not be freed.

1.4.3 Sequence of Events: Post-Grounding

At 1025 on February 28, 2007, a Response Team from Sector Baltimore consisting of a Marine Inspector and Marine Investigator went to the *MONTROSE* to conduct an initial damage survey, inspection and casualty investigation. The agent for the *MONTROSE* ordered tugs to the scene for assistance and potential salvage if damage occurred. Sector Baltimore issued a Captain of the Port Order requiring the *MONTROSE* to undergo a damage assessment once it was refloated and prior to departure of Baltimore's Area of Responsibility. The initial assessment indicated no damage had been sustained by the vessel, there were no injuries to the crew and no pollution or pollution hazard existed. The *MONTROSE* grounded outside of the navigable channel and did not pose a hazard to navigation.

A formalized vessel salvage plan was approved and approximately 7,000 metric tons of coal had to be lightered and replaced in ballast in order for the vessel to free itself with the assistance of tugs. The *MONTROSE* floated free on March 7, 2007. A completed dive survey showed no damage and the vessel was deemed fit for transit. The *MONTROSE* reloaded cargo and departed Sector Baltimore's Area of Responsibility on March 9, 2007, 10 days after the initial grounding.

1.5 Drug and Alcohol Testing

Pursuant to 46 CFR Part 4.06, mandatory post casualty drug and alcohol testing was conducted on the pilot, Captain Michael Faby. Following the casualty, Captain Faby submitted to an alcohol breath test taken at approximately 1300 on February 28, 2007. Using DOT protocols, the test was administered by Coast Guard Station Oxford boarding officer. The results were [REDACTED]

Captain Faby submitted to chemical testing at the Concentral Medical Center at approximately 0822 hours on March 1, 2007. Testing analysis was conducted by Medical Review Services in Nashville, TN, and the test was confirmed negative by the Medical Review Officer, Dr. [REDACTED] of Choice Point Medical Review Services.

Following the casualty, Mr. [REDACTED] submitted to an alcohol breath test taken at approximately 1300 on February 28, 2007. Using DOT protocols, the test was administered by Coast Guard Station Oxford boarding officer. The results were [REDACTED] There were no post casualty drug or alcohol tests conducted on the Master of the *MONTROSE* or on the other pilot, Captain [REDACTED]

1.6 Voyage Data Recorder (VDR)

The *MONTROSE* is equipped with a Furuno brand Voyage Data Recorded (VDR). The VDR was taken by Coast Guard personnel as evidence in the investigation. Data entered from the VDR runs from 0515 through 0721, after the grounding. The quality of the audio recording is very poor, and both Coast Guard investigators and Liberian investigators reviewed the recording. The Coast Guard concurs with and uses the Liberian interpretation of the recordings made.

At 0555 incoming VHF radio traffic is heard followed by a vibration at 0600. Immediately after the initial vibration Captain Faby is heard giving the order “starboard twenty.” The order is followed by the sound of a loud vibration and alarms. The *MONTROSE*’s rudder is put hard to starboard. It is at this time, 0602, that the vessel Captain calls up and the bridge phone rings. At 0615 the words “aground” and “stern floating” are heard. There were no verbal exchanges recorded between the pilot and second officer up until the grounding.

II. ANALYSIS

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 from occurring in the future.

2.1 Pilot Fatigue

When the *MONTROSE* grounded at the mouth of the Choptank River, the pilot, Captain Faby, was either asleep or had, as written in his statement to investigators, “lost attention,” and did not see the expected waypoint of the ‘CR’ Buoy pass down the starboard side of the vessel. There are several factors that may have caused the pilot to be fatigued for the transit, thus missing his turn.

Captain Faby awoke at 0600 the day before the incident and expended considerable energy in taking care of personal and family affairs. He did not go to sleep until 2000 on February 27th and was awoken at 2300 to report for the *MONTROSE* transit. Captain Faby’s typical rest period is 6 plus hours of sleep; however, he had only had 3 hours of sleep prior to commencing transit.

Maryland Pilots are considered independent contractors. While Captain Faby had been given adequate time off by the Maryland Pilot Association between vessel piloting jobs, he failed to exercise good judgment in adhering to a work/rest schedule that would leave him well rested for his duties. There is no secondary check on the part of the Maryland Pilots Association to ensure the pilots, as independent contractors, take the adequate rest afforded to them in their duty schedule. By his own admission, Captain Faby states that he should have been sleeping as opposed to staying awake with his girlfriend’s children.⁴ This inadequate amount of rest contributed to the attention failures on the part of the pilot. We conclude that this lack of attentiveness caused Captain Faby to miss the prescribed turn.

Captain Faby and Captain [REDACTED] did not work out a watch relief schedule prior to their arrival onboard the *MONTROSE*. The Maryland Pilots do not have defined work watch schedules for relief while in transit, and Captains Faby and Krebs made an informal decision that Captain Faby would take the first watch and would awaken Captain [REDACTED] at 0700. With no written watch policy for transits that can last as long as 16 hours in the Chesapeake Bay, fatigued pilots may try to stretch out their portion of the watch in an attempt to provide some addition relief to the resting pilot if their anticipated shift is more strenuous due to weather, time or other environmental factors.

There is no evidence to suggest any of the bridge crew were also fatigued. We conclude that the Second Officer’s lack of awareness about the location of the *MONTROSE* within an accurate fix is a result of complacency brought about by the belief that the pilot “had the conn,” exacerbated by the strong personality of Captain Faby.

⁴ Investigating Officer Interview with Captain Faby. ECN 2879209 #004

2.2 Bridge Resource Management

According to the American Pilot's Association, of which the Maryland Pilots Association is a member, while a pilot is not a member of the bridge "team" ... a pilot is expected to develop and maintain a cooperative, mutually supportive working relationship with the master and the bridge crew in recognition of the respective responsibility of each for safe navigation. The Master of the *MONTROSE* requested Captain Faby sign the Pilot Exchange Card when the pilots first boarded the vessel at the pier. The Docking Pilots signed the card; however, Captain Faby did not, stating he had "over 30 years" as a pilot. This first interaction did not create or foster a relationship or dialogue between the bridge crew and the pilot. The Master was sailing as a vessel master for the first time, and may have been intimidated by the declaration of experience and the force of Captain Faby's personality.

While Captain Faby and Captain [REDACTED] had an initial conversation about the transit, at no time did Captain Faby ever communicate with Second Officer [REDACTED] or any other member of the bridge crew. All witness accounts state that the only bridge team communications prior to the grounding was when Captain Faby called out course changes and, when the vessel was transiting the Fort McHenry Channel, Captain Faby gave the standing order of "as little rudder as possible."

The Standing Orders of Captain [REDACTED] to his bridge crew when a pilot was on board are as follows:

Night Order Book Item 32. While Pilot on board, officer on watch must co-operate with Pilot and maintain an accurate check on ship's position and movement. If in doubt as to the Pilot's action, shall seek clarification from Pilot, if doubt still exists, inform the Master and take whatever action is necessary before he arrives.

By his own admittance in a statement to the Liberian investigating officer, Mr. [REDACTED] suspected that the pilot was not changing course yet Mr. [REDACTED] failed to communicate with Captain Faby or attempt to seek clarification regarding the transit or upcoming turn at the CR Buoy.

The pilot's demeanor and mannerism were such as to command authority and Second Officer [REDACTED] failed to assert himself. Mr. [REDACTED] became complacent in allowing Captain Faby to take full responsibility and control of the vessel. Captain Faby, though his actions of asserting his time on the water in a forceful interaction with the vessel Master, encouraged that complacency by failing to discuss what was expected between the pilot and the vessel crew. This created a breakdown in bridge communications.

III. CONCLUSIONS

1. Failure on the part of the pilot, Captain Faby, to order the turn. The grounding of the *MONTROSE* occurred because Captain Faby failed to order-execute the appropriate turn from heading 165 degrees true at the “CR” buoy. This failure was based on several underlying factors, including:

- a. Inattention by Captain Faby causing him to miss seeing the ‘CR’ buoy where he would make his turn;
- b. Cultural mismatches between Captain Faby and the bridge crew;
- c. Lack of good Bridge Resource Management and use of countermeasures to overcome communications breakdown; and
- d. Second Officer [REDACTED] abdication of navigational “conning” responsibility resulting from complacency with regard to vessel conning.

2. Inattention and fatigue on the part of the pilot, Captain Faby. Fatigue played a primary precondition role as a cause of this casualty. Captain Faby’s inattention caused him to lose situational awareness of the *MONTROSE*’s location in the bay and order the required course change necessary to prevent the grounding. Captain Faby’s fatigue resulted from:

- a. Poor decision making on the part of Captain Faby by failing to follow an adequate work/rest schedule while on call by only getting 3 hours of sleep prior to reporting to the *MONTROSE* for duty;
- b. Deciding on taking the first piloting shift and stretching it for 7 hours despite lack of proper rest; and
- c. Captain Faby went from actively walking around on the bridge to sitting in his chair and looking out the starboard window; and

In an interview with Coast Guard investigators, Captain Faby admitted it was not outside the realm of possibility that he fell asleep.

3. Failure to follow good Bridge Resource Management. Poor Bridge Resource Management played a primary preconditioned role as a cause of this casualty. The bridge crew and the pilot did not work as a ‘team’ and discouraged the bridge crew from maintaining an awareness of pilot actions and questioning the vessel’s course. The Bridge Resource Management failure occurred because:

- a. Captain Faby did not conduct a navigation brief with the bridge crew or conduct an informal discussion regarding the transit with Master or Second Officer;
- b. Captain Faby refused to sign the pilot exchange card when requested to do so by the Master of the *MONTROSE*, thereby establishing a position of authority and disregard for the vessel’s navigational crew;
- c. Neither Captain Faby, nor the bridge crew of the *MONTROSE* communicated during the transit;
- d. Mr. [REDACTED] and Captain Faby did not cooperate with each other by maintaining and communicating ship’s position and movement; and
- e. A passage plan was not established based on navigation information and knowledge of area.

4. Cultural and personality mismatches between the pilot and the bridge crew. Captain Faby's authoritative presence on the bridge created an atmosphere wherein the Second Officer did not feel he could "speak up" or "challenge" the decision on the pilot. Specifically:

- a. Captain Faby quickly asserted his authority on the bridge by refusing to honor the vessel Master's request to sign the pilot exchange card.
- b. Captain [REDACTED] was sailing for the first time as a vessel master and may have been reluctant to force Captain Faby to participate in a navigation brief or sign the pilot exchange card; and
- c. Mr. [REDACTED] did not closely monitor the vessel's position and became complacent in the belief that the pilot was in charge of the vessel, due to Captain Faby's command presence, disinterest in the bridge crew's role, and assertion of professional experience/competence.

5. Failure of the Second Officer to follow standing orders. The Master of the *MONTROSE* had standing orders for the watch standing officers regarding their responsibilities while a pilot was on board. These orders were violated:

- a. Second Officer [REDACTED] failed to follow the Master's standing orders to "seek clarification from the Pilot, if doubt still exists, inform the Master" regarding the course and position of the vessel;
- b. The Second Officer in his statement expressed that he had doubts about the course and position and was rechecking the vessel position when the grounding occurred, but took no action; and
- c. Mr. [REDACTED] did not attempt to "seek clarification from the pilot" nor did he attempt to contact the Master when he began to have doubts.

6. There is no evidence that drugs or alcohol played a role in this casualty.

7. Evidence of Potential Violation of Federal Law or Regulation. There is evidence to suggest that the following laws or regulations may have been violated:

- a. **Piloting the *MONTROSE* in a negligent manner.** There is evidence to suggest that, while piloting the *MONTROSE*, Captain Faby failed to provide necessary navigational information to ensure the safe transit of the vessel. Several mitigating factors also exist, including Captain Faby's fatigued status, his loss of situational awareness, and his overconfidence in his experience. This matter has been referred for appropriate remedial enforcement action.
- b. **Conning the *MONTROSE* in a negligent manner.** There is evidence to suggest that, while conning the *MONTROSE*, Second Officer [REDACTED] abdicated his navigational duties and failed to follow standing orders. Refer to Liberia for review and action as appropriate per recommendation 4.1.

IV. RECOMMENDATIONS

4.1 To the Commandant of the Coast Guard

1. The Commandant of the Coast Guard should provide a copy of this report to the Flag State of Liberia with recommendation for remedial action against the license of the *M/V MONTROSE* Second Officer, Mr. [REDACTED]

4.2 To the Commander, U. S. Coast Guard Sector Baltimore

1. The Commander, U. S. Coast Guard Sector Baltimore should provide a copy of this report to the Maryland Pilot Board with recommendation for remedial action against the license of the attending pilot, Captain Michael Faby.

2. To address the unsafe condition wherein pilots are fatigued, The Officer in Charge of Marine Inspection (OCMI) should request the Maryland Pilots Association examine the feasibility in adopting written 96-hour work/rest requirements and “time on bridge” watch standards to ensure pilots are not fatigued during their transit.

3. To address the unsafe condition wherein foreign crews are abdicating watch standing, vessel navigation and awareness, the OCMI should request the Maryland Pilots Association: 1) review and revise their Bridge Resource Management training program to ensure pilots can create a “team” atmosphere on the bridge; 2) require a formalized navigation brief for every watch change to prevent miscommunication on the bridge; and 3) develop formalized procedures for pilots to halt transit of a vessel if the pilot suspects the Master or Officers in charge are abdicating complete navigational control to the pilot and not maintaining adequate awareness of vessel position. This procedure would fall under notifying the Coast Guard of a hazardous condition. Hazardous conditions must be reported to the Coast Guard immediately under Title 33 Code of Federal Regulations part 160.215.

APPENDIX 1

Captain Michael Faby's 96 Hour Work/Rest Schedule

Action	Start Date/Time	End Date/Time	Days	Hours
Watch	02/25/2007 00:00	02/25/2007 03:00	0	3
Sleep	02/25/2007 04:00	02/25/2007 10:00	0	6
Recreation Including Time Ashore	02/25/2007 10:00	02/25/2007 11:00	0	1
Meal	02/25/2007 11:00	02/25/2007 13:00	0	2
Recreation Including Time Ashore	02/25/2007 13:00	02/25/2007 19:00	0	6
Meal	02/25/2007 19:00	02/25/2007 20:00	0	1
Recreation Including Time Ashore	02/25/2007 20:00	02/25/2007 21:00	0	1
Sleep	02/25/2007 21:00	02/26/2007 07:00	0	10
Meal	02/26/2007 07:00	02/26/2007 08:00	0	1
Recreation Including Time Ashore	02/26/2007 08:00	02/26/2007 12:00	0	4
Meal	02/26/2007 12:00	02/26/2007 13:00	0	1
Recreation Including Time Ashore	02/26/2007 13:00	02/26/2007 16:00	0	3
Sleep	02/26/2007 16:00	02/26/2007 19:00	0	3
Meal	02/26/2007 19:00	02/26/2007 20:00	0	1
Recreation Including Time Ashore	02/26/2007 20:00	02/26/2007 23:00	0	3
Sleep	02/26/2007 23:00	02/27/2007 06:00	0	7
Meal	02/27/2007 06:00	02/27/2007 07:00	0	1
Recreation Including Time Ashore	02/27/2007 07:00	02/27/2007 12:00	0	5
Meal	02/27/2007 12:00	02/27/2007 13:00	0	1
Recreation Including Time Ashore	02/27/2007 13:00	02/27/2007 19:00	0	6
Meal	02/27/2007 19:00	02/27/2007 20:00	0	1
Sleep	02/27/2007 20:00	02/27/2007 23:00	0	3
Recreation Including Time Ashore	02/27/2007 23:00	02/28/2007 00:01	0	1.02
Watch	02/28/2007 00:01	02/28/2007 06:00	0	5.98
Time Of Accident	02/28/2007 06:00	02/28/2007 06:01	0	0.02

Figure 1: Second Officer Chart

