

The MONCHEGORSK

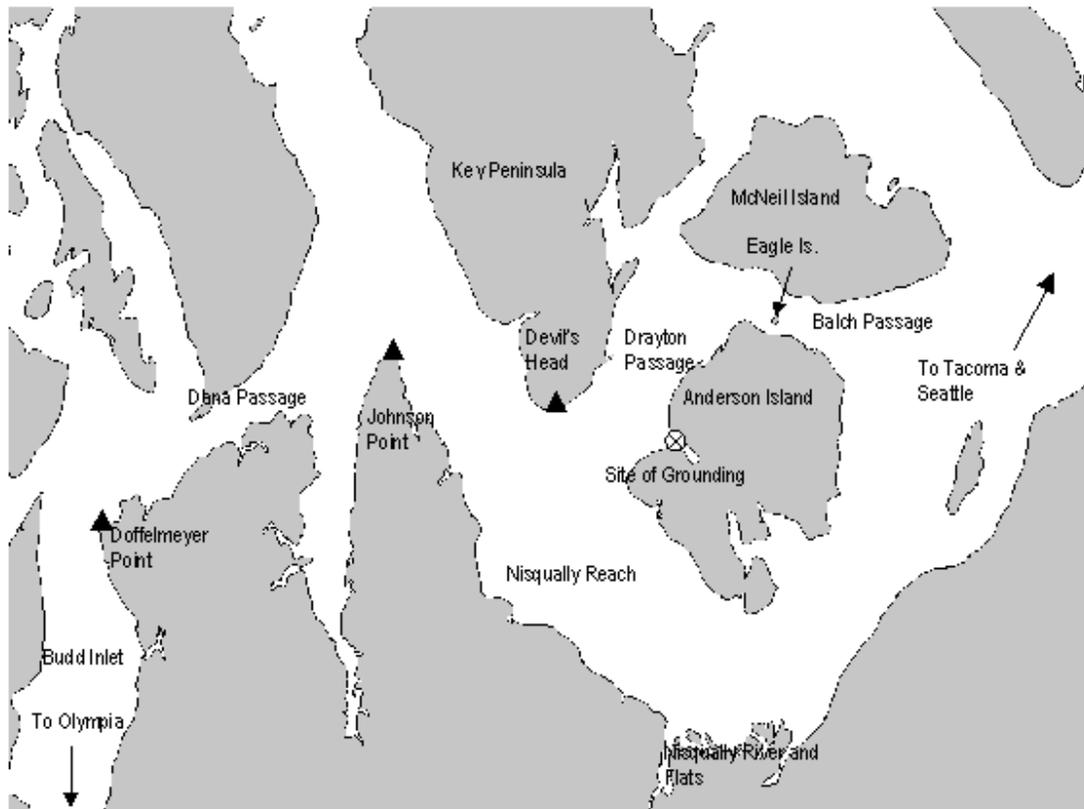
OVERVIEW

On September 5, 1998, at about 1830, the M/V MONCHEGORSK ran aground under power at the entrance to Amsterdam Bay, Anderson Island, Washington. The grounding occurred in daylight with clear weather, under the direction of a pilot who intended to take the ship north around Anderson Island via Drayton and Balch Passages on its outbound passage from Olympia, Washington. No oil spilled as the result of this grounding and the vessel was refloated with the assistance of tugs at about 0500 the next morning.

PROBABLE CAUSE

The probable cause of the grounding of the MONCHEGORSK was the improper positioning of the vessel in Drayton Passage by an unchecked turn to starboard. The turn to starboard was initiated by the Pilot who stated it was an attempt to gain a clear path past small vessel traffic in the vicinity that concerned him. Subsequent attempted maneuvers were ineffective in stopping the ship or turning it to port in time to avoid grounding. Factors contributing to the grounding were:

- a lack of communication between the Pilot, the Master and the Chief Mate regarding the intended route;
- the Master's absence from the bridge at a critical juncture of the transit;



Area transited by the MONCHEGORSK. (Not for navigational use.)

Prevention Bulletin

- the Chief Mate's failure to notify the Master of a departure from the intended route in spite of standing orders; and,
- a loss of situational awareness on the part of the bridge team.

SAFETY ISSUES

The safety issues discussed in this report are:

- the importance of developing and communicating a passage plan;
- the importance of using a passage plan that has been discussed with the pilot and adjusted based on the pilot's input;
- the importance of communication between members of the bridge team;
- the role of each bridge team member in maintaining and promoting situational awareness; and
- the importance of following standing orders.

VESSEL INFORMATION

MONCHEGORSK is a 18,627-gross ton general cargo ship built in 1983. It is 177 meters in length. The ship has two main engines geared to a single shaft driving a single controllable pitch propeller. Both engines were on line during the outbound transit of September 5th.

The forward draft was 6.5 meters and the after draft 7.95 meters at the time of the grounding. The MONCHEGORSK was partially loaded on this voyage.

The U.S. Coast Guard (USCG) found no evidence that mechanical failure aboard the MONCHEGORSK contributed to the grounding.

PERSONNEL

The Master held a Master's license issued by Russia. He had been aboard MONCHEGORSK since May 1998. He had previously worked aboard MONCHEGORSK as Master. During an interview the Master was able to answer questions posed to him in English.

The Chief Mate held a Master's license issued by Russia. He had been aboard MONCHEGORSK since July 1998. He had previously worked aboard MONCHEGORSK as Chief Mate. During an interview the Chief Mate was able to answer questions posed to him in English.

The Helmsman served in the deck department as an able bodied seaman (AB) and welder. He had previously worked aboard the MONCHEGORSK as an AB. During an interview the Helmsman was unable to answer questions posed to him in English, and the Master interpreted.

The Pilot held a Washington State Pilots License and a U.S. Merchant Marine Officer's license as Master of ocean steam or motor vessels of not more than 1,600 gross tons, Second Mate of ocean steam or motor vessels of any gross tons, and First Class Pilot any gross tons on Puget Sound and all connecting waters.

The MONCHEGORSK

According to the Helmsman, the Pilot gave him helm orders which he then repeated in English and Russian.

ENVIRONMENT

Locale

Anderson Island is situated at the southern end of Puget Sound, Washington. Drayton Passage, to the west of Anderson Island, trends southwest-northeast. It narrows to about 0.5 n.m. (between 10 fathom depth contours). Charted depths range from about 11 to 33 fathoms.

Amsterdam Bay is located on the west side of Anderson Island. This small bay has charted depths between 0.25 and 1 fathom. The entrance to Amsterdam Bay is about 0.3 n.m. wide. The 10 fathom curve lies about 0.15 n.m. west of the entrance to the bay.

Weather and Tides

Wind at about the time of the grounding was reported to be westerly at 5 to 10 knots. Visibility was unlimited with clear skies.

A high tide of 14.4 feet above datum was predicted for Devil's Head, Drayton Passage at 1812. Currents at Drayton Passage were predicted at 0.2 to 0.3 knots between 1800 and 1900, ebbing in a direction of 030 degrees. Balch Passage currents were predicted to be 0.9 knots, ebbing towards 107 degrees at 1830. The current strength was forecast to increase at 1900 to 1.5 knots on the ebb.

Sunset occurred at about 1943, with civil twilight ending at 2015.

CHRONOLOGY

The MONCHEGORSK got underway from Olympia, Washington, just after 1700. (Note: Times are approximate.) The Chief Mate had the watch, the Master, Helmsman and Pilot were also on the ship's bridge. The Pilot intended to transit outbound via Balch Passage, but the Master and Pilot did not discuss the passage plan. The Pilot contacted Puget Sound Vessel Traffic Service (PSVTS) to notify them of getting underway and PSVTS requested that he check in when abeam of Eagle Island in Balch Passage.

There were numerous small vessels in Olympia harbor due to the holiday weekend and the Pilot sounded the ship's whistle to warn of the ship's approach. The assist tug SEA CLOUD was released at 1725. The MONCHEGORSK headed north out of Budd Inlet.

The ship entered Dana Passage at 1800. The ship's speed was about 12 knots. Accounts vary as to exactly when, but at some point the Master informed the Pilot that he would be going below.

The ship's log book and chart indicated the ship rounded Johnson Point at 1813. Its speed increased to about 18 knots. At some point, after the Master had gone below, the Pilot conferred with the Chief Mate at the chart table, informing him that he would be taking the ship through Drayton and Balch Passage—north around Anderson Island rather than south via Nisqually Reach as had been plotted on the chart by the Third Mate and approved by

Prevention Bulletin

the Master. The Chief Mate agreed to the Pilot's plan without notifying the Master, despite his understanding that the ship's standing orders required he do so.

The MONCHEGORSK began to turn to port into Drayton Passage at 1817. The Pilot ordered the ship to slow to avoid wake damage to the shore in Drayton Passage, and the engines began to slow at 1821. The ship steadied-up on a course of about 082 degrees at 1822. At 1825 the ship began a turn to starboard after the Pilot ordered 5 degrees, then 10 degrees, starboard rudder. The Pilot indicated he began the starboard turn because he was concerned with the movements of two small vessels ahead.

The Chief Mate indicated he attempted to contact the Master due to his concern with the starboard turn, but was interrupted.

At 1826 the engines were backed for about one minute then put ahead for about a minute at 1827. The engines were backed again at 1828 and continued to back until after the ship had grounded.

The Master returned to the bridge from his cabin at some point after feeling the engines go astern—arriving there not long before the ship grounded.

The anchors were made ready since the MONCHEGORSK was quickly approaching the entrance to Amsterdam Bay and the heading was about 137 degrees. Accounts vary as to who gave the order, but the port anchor was dropped, followed by the starboard anchor. The ship's course recorder indicated a swing to port at 1829, followed by a lesser swing to starboard.

The ship grounded at 1830 on a heading of 119 degrees off a sandy spit near the entrance to Amsterdam Bay. Average ship speed between 1825 and the grounding was about 10 knots. Efforts to free the ship by the SEA CLOUD, which had been about 2 miles behind the MONCHEGORSK, were unsuccessful that evening. The ship was subsequently refloated the next morning on the high tide with the assistance of two tugs. The ship sustained little damage.

ANALYSIS

Drugs/Alcohol

The Pilot, Master, Chief Mate and Helmsman submitted to a drug test and the results were negative. The USCG investigating officer did not note any indications of alcohol use when he boarded the ship.

Alertness/Fatigue

On September 6th the Chief Mate asked a USCG Officer if having little or no sleep over the previous 2 days "would have caused him to react slower than he normally would have, when he saw what was going to happen to the ship." When questioned on October 25th the Chief Mate stated that he had 5 to 6 hours of sleep on the night of September 4th – 5th, and about 3 hours additional sleep on the afternoon of the September 5th, prior to the Pilot's arrival. He stated that he was not tired while navigating the ship.

The MONCHEGORSK

No information was gathered regarding the sleep patterns of the Pilot, Master or Helmsman.

The grounding occurred at a time of day (1830) that is not noted for low alertness levels in people. However, the Chief Mate's question to the USCG raises the possibility that he was fatigued during the transit, which may have negatively affected his performance.

Grounding Scenarios

Information gathered from this grounding suggests two possible scenarios for the events that followed the initial turn to starboard in Drayton Passage.

One scenario is that the Pilot gave a series of orders that were ineffective in arresting the ship's swing to starboard. The second scenario is that the Chief Mate interfered with the Pilot's intent following the initiation of the starboard turn by backing the engines at 1826 without the Pilot's knowledge.

Both of these scenarios indicate a communication problem between the Chief Mate and Pilot. The Chief Mate was unaware the Pilot's intentions and concerns in initiating a starboard turn at 1825. The Chief Mate did not communicate to the Pilot his concern or uncertainty with the starboard turn. Assuming the second scenario, the Chief Mate never communicated to the Pilot the astern bell he initiated, as a result of his uncertainty.

Passage Planning

Passage planning is required under the Seafarer's Training, Certification, and Watchkeeping Code (STCW). Planning a ship's route or passage is required to be "laid down" and "checked before the voyage commences." The STCW requires, "When the route planning is verified taking into consideration all pertinent information, the planned route shall be clearly displayed on appropriate charts and shall be continuously available to the officer in charge of the watch, who shall verify each course to be followed prior to using it during the voyage" and "If a decision is made, during a voyage, to change the next port of call of the planned route, or if it is necessary for the ship to deviate substantially from the planned route for other reasons, then an amended route shall be planned prior to deviating substantially from the route originally planned."

In this case, the MONCHEGORSK's Third Mate laid down, and the Master approved, a trackline showing an intended route through Nisqually Reach. The track was not updated based on the Pilot's intent to use Drayton and Balch Passages. The trackline was not updated prior to undocking because it was not discussed with the Pilot. Only after the ship was underway did the Pilot notify the Chief Mate that he wished the ship to transit Drayton and Balch Passages. The Chief Mate agreed to the deviation without consulting the Master.

A substantial deviation from the intended route occurred without the planning called for under STCW. The unplanned deviation from the intended route resulted in the Master leaving the bridge under a false impression that the ship would transit Nisqually Reach. The Master incorrectly assumed the Pilot's intent to follow the passage plan as drawn on the ship's chart. He then went below, likely anticipating a period of minimal maneuvering as the ship rounded Johnson Point for Nisqually Reach. In doing so, he was absent from the bridge during a critical period of time when his experience was needed to assist the Pilot

Prevention Bulletin

and to help avoid this grounding.

Improved communication regarding the ship's intended route between the Master, Chief Mate, and Pilot prior to undocking, could have provided the margin necessary to avoid this grounding. The International Chamber of Shipping's *Bridge Procedures Guide* (1998 edition) emphasizes the importance of communication regarding the passage plan. It says, "While responsibility for the plan in pilotage waters rests with the ship, the pilot on boarding, or before if practicable, should advise the master of any local circumstances so that the plan can be updated." It states further, "The pilotage passage plan will need to be discussed with the pilot as soon as he comes on board. Any amendments to the plan should be agreed, and any consequent changes in individual bridge team responsibilities made, before pilotage commences."

Bridge Resource Management

Communication between a ship's bridge watchstanders and a pilot regarding the passage plan is a significant element of bridge resource management (BRM). According to the National Transportation Safety Board:

One of the principles of BRM requires that everyone on the bridge be familiar with the passage plan, know his or her responsibilities in connection with the passage, and be able to communicate observations on the progress of the passage plan to other members of the bridge watch freely and professionally. Sound BRM requires that when a pilot boards a vessel, the pilot's knowledge and expertise concerning local waters be communicated and integrated into the watchstanders' information flow.

Bridge resource management also helps to ensure that the situational awareness of the bridge team (including a pilot) is maintained. The American Pilots' Association states, "...a compulsory pilot is not a member of the bridge 'team.' Nevertheless, a pilot is expected to develop and maintain a cooperative, mutually-supportive working relationship with the master and bridge crew..." The ICS Bridge Procedures Guide says, "When the pilot is on board a ship, he will temporarily join the bridge team and should be supported accordingly." In addition, "A bridge team which has a plan that is understood and is well briefed, with all members supporting each other, will have good situational awareness. Its members will then be able to anticipate dangerous situations arising and recognize the development of a chain of errors, thus enabling them to break the sequence."

The concept of error chains and the signs of their development are discussed in Captain A.J. Swift's *Bridge Team Management: A practical guide*. Many of these indicators were present on board the MONCHEGORSK on September 5, 1998:

- **Ambiguity.** The track to be followed by the MONCHEGORSK was not clear to all members of the bridge team prior to undocking.
- **Distraction.** The Pilot stated that he was concerned with small vessel traffic.
- **Inadequacy and Confusion [loss of control].** The Pilot said he knew the heading had gotten too far over and realized he needed to come hard to port or stop the

The MONCHEGORSK

vessel. The Helmsman stated he knew the ship had to proceed more to port, but he received starboard helm orders. The Chief Mate said he wondered about the Pilot's starboard turn order, and attempted to contact the Master regarding the order.

- **Communication Breakdown.** The Chief Mate did not call the Master upon learning of the Pilot's intent to deviate from the intended route. The Chief Mate was apparently unaware of the Pilot's concern for small vessel traffic in Drayton Passage.

- **Non-Compliance with Plan.** The planned route was not followed.

- **Procedural Violation.** The Chief Mate did not call the Master about the deviation from the intended route despite a standing order to the contrary.

The Master and Pilot failed to support the bridge team by not discussing the passage prior to undocking. The Chief Mate failed to support the bridge team by not notifying the Master immediately of the departure from the intended route, despite a standing order to the contrary. These failures, along with the lack of effective communication between the Chief Mate and Pilot once the ship entered Drayton Passage, compromised the situational awareness of the bridge team, and thus enabled the error chain to continue unbroken.

LESSONS LEARNED

- Passage plans should be reviewed and discussed by the bridge team (including the pilot) when the pilot boards the ship. Any changes foreseen at that time should be evaluated, plotted on the chart, and made known to all bridge team members.
- Changes to passage plans should be evaluated to determine their impact on the composition and duties of the bridge team.
- Communication is critical to the bridge team. It maintains the situational awareness of bridge team members and ensures that developing error chains are interrupted.
- Standing orders should be consistently followed.

PREVENTION RECOMMENDATIONS

To Ship Owners and Operators:

- Implement policies and procedures that ensure the ship's navigation watch discusses the passage plan with the pilot as soon as possible after the pilot embarks.
- Conduct bridge resource management training for all bridge watchstanders, and ensure that such training emphasizes the importance of communication in maintaining situational awareness.
- Communicate lessons-learned from this grounding throughout the company's fleet.

To Pilot's Associations:

- Ensure the importance of the master-pilot information exchange, including the discussion of the passage plan, is emphasized in bridge resource management training provided to member pilots.
- Communicate lessons-learned from this grounding with member pilots.

More Prevention Bulletins

- PB 99-01: The ANADYR [WDOE# 99-250]
- PB 98-01: The ARCADIA [WDOE# 98-253]
- PB 96-02: BARGE 101
- PB 96-01: The KEYSTONE CANYON
- PB 95-02: The VERBIER
- PB 95-01: The DONA V

For copies of additional Prevention Bulletins, please mail, fax, or telephone your request to our Olympia office (see page 1). Please be sure to clearly show your address and phone number on your request.

- Check here to automatically receive copies of future Prevention Bulletins.

Ecology is an equal opportunity agency. If you have special accomodation needs, contact Mariann Cook Andrews at (360) 407-7211 (voice) or (360) 407-6006 (TDD).

 *Printed on Recycled Paper*

WASHINGTON STATE
Department of Ecology
P. O. Box 47600, Olympia, WA 98504-7600
Address Service Requested