



## SAFETY MANAGEMENT MANUAL

### 7.8.7 Heavy Weather & Ship Routing

Originator:	Approved By:
Derek Bergeron	Timothy Twomey

#### 1. Purpose

The purpose of this procedure is to set forth Heavy Weather Operations for WHOI vessels.

#### 2. Responsibility

It is the responsibility of the Master to ensure the ship and personnel are safe and to take appropriate action to avoid and prepare for heavy weather conditions while at sea or in port.

#### 3. General

Encountering extreme weather conditions at sea is a common phenomenon. Every situation is unique and will draw upon the experience and knowledge of the Master and crew to safely guide the vessel through heavy weather. Depending upon geographical location and seasonality of revolving tropical storms, a ship, therefore, needs to prepare well to survive in harsh conditions. Both heavy weather and tropical storms demand the crew's preparation and immediate response.

The Master's action:

If possible, the Master shall select a reasonable route that allows the vessel to avoid navigation in heavy weather or keep a safe distance from the storm center. The Master must regulate speed and alter course in heavy weather, as required by good seamanship, to avoid the possibility of damage to ship and scientific equipment and to avoid injury to personnel. If practical and possible the Master may choose to seek shelter off a lee shore. When he/she judges that the vessel will be in heavy weather, the Master shall take necessary countermeasures as per above mentioned "Navigation in Heavy Weather Checklist."

Judgment of navigation in heavy weather: Navigation in heavy weather is defined as conditions with winds of Beaufort Scale 7 or more and a Significant Wave Height of 4 meters or more. The Master should obtain a forecast for the area of expected heavy weather. Passage plan should be checked for an estimated time of passing such an area. If not on weather routing advice already, in case of a severe storm, he may ask for such services through various weather routing services.

Weather Resources at Master's disposal as appropriate:

- Weather routing software aboard vessel: i.e., C-MAP IMS (Integrated Maritime Suite)
- Internet Sources: National Weather Service, Windy, Canadian Marine Weather Service



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- Sat-C
- NAVTEX
- VHF Reports
- Commander's Weather Service
- US Navy Routing Service
- Port Office assistance if Master is unable to collect adequate forecast information.

**OOW Report to The Master:** *The Officer of the Watch (OOW) should collect necessary weather information and navigational warnings and report it to the Master. During navigation in heavy weather, if there are any sudden changes in climatic conditions, the OOW **should immediately report to the Master.***

#### Heavy Weather Checklist

Ships navigation in heavy weather is as follows but not limited to:

- ☐ Have you informed departments heads, crew, and science party?
- ☐ Have you confirmed openings such as W/T doors / hatches / vents/ ports/ porthole deadlights / sounding pipes etc. are all closed securely as appropriate?
- ☐ Have all cargo lashings been checked and tightened?
- ☐ Have you secured cranes and davits?
- ☐ Meeting rough seas?
- ☐ Have all movable objects everywhere onboard (on deck, in the engine room, storerooms, cabin & accommodation, science laboratory spaces, galley, etc.) been adequately secured?
- ☐ Has ballast been adjusted to reduce the free surface effect and are draft, trim, and stability conditions adequate?
- ☐ Are fuel day tanks full and drained of any water?
- ☐ Have the main engine lube oil levels been verified to be 'topped' off?
- ☐ Have life rafts, rescue boat and work boats been inspected and properly secured?



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- ☐ Have you inspected anchor stowage, lashing, and stoppers of anchors and chain?
  - ☐ Steering gear and propulsion backups checked?
  - ☐ Has the vessel's course and speed been adjusted as necessary (on master's orders), to minimize adverse effects of heavy weather?
  - ☐ Have personnel been warned to not go out on weather decks without permission? Moreover, is permission granted only after appraising the situation, adjusting course (on master's orders) if required?
  - ☐ Have safety ropes and hand ropes been arranged where necessary (if required)?
  - ☐ If crew required to go out on deck, have they been instructed to wear PFD's and to use safety ropes?
  - ☐ Have instructions been given on: Monitoring weather reports (monitoring) and transmitting weather reports, or danger message (in case of tropical storm) as per SOLAS V/2a?
  - ☐ Met with Chief Scientist and discuss limitations on continuing science operations?
  - ☐ Have you identified possible ports of refuge or lee shores if a storm cannot otherwise be avoided?
  - ☐ Any other preparations the Master or crew feel is necessary given the situation?