**Purpose**

A sample Small Boat Operations Manual, intended to formally implement specific hazard controls for items identified in the previous hypothetical risk assessment, is given below. Program Managers or Vessel Operations Coordinators should use common sense in developing the majority of the information in this manual. Guidance and input from the NOAA Small Boat Program Coordinator may be provided to assist in developing specific risk abatement requirements or procedures.

This example is by no means comprehensive or inclusive of all particulars or aspects of specific NOAA owned small boats. Additional information and appendices can or may be included with vessel specific information regarding scheduling, approved repair facilities, operator training criteria and skills demonstration, research permits, maintenance logs, VHF radio station license, vessel documentation, copy of EPIRB registration, or other information deemed necessary by the Vessel Operations Coordinator or Program Manager.

**Small Boat Operations Manual for Research Vessel *Zenith Safety***

Operations Area

The vessel is to be operated in the protected bays, sounds, straits, and channels of Southeast Alaska. Operations in waters beyond this general area are not advised, however if operated in open waters beyond the protected areas, special attention shall be given to anticipated weather and distance to a safe harbor of refuge.

Weather

At a minimum weather forecasts shall be monitored by all available means as follows; at least every 8 hours, or in the case of impending foul weather as often as forecast updates are issued. In all cases involving underway mission decisions, the Operator-in-Charge of the R/V ZENITH SAFETY shall determine whether or not an operation will be delayed or cancelled due to weather events.

Material Condition

In order to maintain the material condition of the aluminum hull the operator of the R/V ZENITH SAFETY is urged to keep all bilges clean and dry at all times. Furthermore, special attention must be paid to the introduction of dissimilar metals aboard the vessel. For example, a penny or copper wire clippings dropped in the bilge can corrode a hole through the hull in a relatively short period of time. The fiberglass cockpit enclosure of the vessel requires periodic attention through wash down and occasional cleaning and polishing. The attachment of the fiberglass house to the hull should be periodically examined for signs of corrosion. All fishing apparatus and through hull fittings must be visually examined at least monthly for signs of wear, corrosion, strain, cracking, or potential failure. Use of plain steel bolts, nuts, pipe fittings, hose clamps, or other appurtenances are strongly discouraged. Instead, type 316 stainless steel should be used where possible. Any issue which may be beyond the scope of in house knowledge or experience shall be brought to the immediate attention of Robbie's Marine Service for correction as soon as practicable. Robbie can be reached at 609-555-4801.

Repair Standards

Due to the susceptible nature of aluminum hulled vessels to galvanic corrosion, special attention must be given to repair or modifications to the R/V ZENITH SAFETY. In particular the use of dissimilar metals on board the vessel must be minimized and, if used, kept electrically isolated from the hull of the vessel. Electrical modifications to the vessel must account for the special nature of wiring installations aboard aluminum hulled vessels. Any work to be performed on the vessel must be in accordance with American Boat and Yacht Council Standards and Recommended Practices for Small Craft. If in doubt as to the adequacy or compliance of a proposed repair or alteration, the Vessel Operations Coordinator is urged to contact either Robbie, of Robbie's Marine Service (609-555-4801) or the OMAO Small Boat Engineer.

Any modification to the vessel which requires additional lifting or hoisting capacity or involves the cumulative redistribution of greater than 2% of the vessel's displacement tonnage is required to be reviewed by the OMAO Small Boat Engineer. A weight record or log shall be maintained in order to ensure an accurate record of weight movements, additions, or deletions from the vessel. A running total (sum) of all weights shall be kept current. The 2% weight threshold shall be calculated from the boat's original displacement weight from the most current trim and stability data. The 2% threshold shall be conspicuously written on the top of each page of the weight record or log when a new page is started.

Stability

Operation of the vessel shall be within the guidelines set forth by the Trim and Stability Booklet for the R/V ZENITH SAFETY. Extreme caution must be exercised by the operator when icing conditions are possible.

Emergency Drills

Emergency drills shall be conducted at least quarterly and shall include responses to fire, flooding, abandon ship and man overboard emergencies. At least annually, all field party members shall be trained in cold water and wilderness survival techniques, and in the use of fire arms.

Safety Systems

Prior to departure on any project, all personnel shall be briefed by the vessel operator on the location and operation of all emergency equipment. At a minimum, all personnel shall know the location and operation of the vessels GPIRB (emergency position indicating radio beacon with GPS position included in distress message), SART (search and rescue transponder), life raft, survival radio, flares and other signaling devices, and immersion suits. Float plans shall be submitted in accordance with the Small Boat Standards and Procedures Manual. During multiple day projects when the vessel is away from the home port, daily position and operational update reports must be communicated to a contact on shore.

Operator Qualifications

The following personnel are qualified to operate the vessel on any project in accordance with this manual:

|  |  |  |
| --- | --- | --- |
| Susan Scientist | Frank Fish | Paul Porpoise |
| Tina Trout | Samantha Shrimp | Bob Buoy |
| Sal Salmon | Dave Daybeacon | Regina Radar |

Susan Scientist is designated as the Vessel Operations Coordinator for R/V ZENITH SAFETY in accordance with the Small Boat Standards and Procedures Manual. Certification of and qualification criteria for potential operators of the R/V ZENITH SAFETY is delegated to, and managed by, Susan Scientist. Certification involves successful completion of a web-based training course, proficiency in hands-on boat handling skills, and demonstration of basic engineering systems trouble shooting. Contact Susan Scientist for specific certification details.

Night Operations

Night operations, although not practiced, are authorized. The boat operator is specifically cautioned to the special hazards of operating the vessel at night. Specifically, the hazard of collision with floating debris such as logs or icebergs requires special consideration. A dedicated lookout is strongly recommended during night operations and is required during transits when the vessel is operating above 5 knots. The vessel searchlight must be in working order to conduct night operations.

Proximity or Probability of Emergency Assistance

Although Southeast Alaska is remote and hazardous, all operations conducted by the R/V ZENITH SAFETY will be within reasonable range of USCG emergency assistance. The vessel should not be operated beyond range of USCG air rescue without prior planning.

Embarked Personnel

At no time shall the vessel carry more than a total of six persons on any scientific operational mission. At no time may the vessel carry more then 8 persons on board. Personnel embarked aboard the vessel not in the direct employment of NOAA are required to sign a waiver for the release of liability. NOAA Administrative Order 217-106 contains policy regarding transportation of non-NOAA personnel aboard government vessels. Although the intent of the Order addresses personnel aboard NOAA ships, aircraft, and/or motor vehicles, the policy is applicable to small boats and the intent of the Order shall be followed. The Small Boat Standards and Procedures Manual, Section 3 states policy on transportation of passengers and shall be adhered to.

Staffing Levels

When operating the vessel for 12 hours or less, one certified operator is required. For projects requiring multiple and concurrent operational days, two certified operators are required. When VIPs or other observing personnel are embarked aboard, an additional operator is required beyond that stated above.

Nature of Operations

The R/V ZENITH SAFETY is currently configured for near coastal, less than 20 miles from shore, fisheries research. Any significant change in the proposed nature of operations for this vessel, such as diving, will require additional planning and special considerations.

Operating Environment

The R/V ZENITH SAFETY operates in Southeast Alaska. Hazards unique to this environment include bears, extremely cold water, rapidly and frequently changing weather conditions, poor radio and cellular phone communications due to mountainous terrain, and swift tidal currents sometimes in excess of 8 knots.

Required Safety Equipment

1 Category I 406 MHz EPIRB with integral GPS receiver
1 Search and Rescue Transponder (SART)
1 10-person capacity SOLAS approved, A Service, life raft
3 SOLAS approved orange smoke distress signals
3 SOLAS approved red rocket parachute flares
1 First Aid kit
1 Wilderness survival kit including matches, fire starting paste, and
bear deterrent.
1 GMDSS approved handheld VHF survival radio
2 24" life rings
1 Rescue heaving line
1 Anchor and 250' anchor line with at least 20' of 3/8" chain and
swivel between anchor and line.
2 Baseball bats (seasonal requirement, ice removal)

Required Navigation Equipment

Magnetic Compass with current deviation card
GPS interfaced with Electronic Charting
RADAR, 12 mile or greater
Search light
Nautical charts maintained to current Notice to Mariners
Binoculars

Required Communications Equipment

2 VHF radios
1 HF radio
1 Cell phone
1 Satellite phone

R/V ZENITH SAFETY Underway Check-off List

PRIOR TO DEPARTURE

\_\_\_\_\_ Float plan given to shore side contact.

\_\_\_\_\_ Top off potable water tank

\_\_\_\_\_ Empty marine toilet holding tank

\_\_\_\_\_ Adequate number of PFDs, Mustang suits, or float coats aboard.

\_\_\_\_\_ Inspect/test EPIRB for proper operation

\_\_\_\_\_ Inspect/test SART for proper operation

\_\_\_\_\_ Check fuel levels, record amount in log.

\_\_\_\_\_ Open all sea chests sea cocks and necessary sea valves

\_\_\_\_\_ Check oil, coolant, belts, and hoses for:

\_\_\_\_\_ Port main engine

\_\_\_\_\_ Starboard main engine

\_\_\_\_\_ Generator

\_\_\_\_\_ Marine gear(s)/transmission(s)

\_\_\_\_\_ Start main engines and generator

\_\_\_\_\_ Check for cooling water discharge

\_\_\_\_\_ Check oil pressures

\_\_\_\_\_ Check generator is warmed, shift to generator power

\_\_\_\_\_ Take in or unplug land line and shore tie

\_\_\_\_\_ Turn on and check all wheelhouse electronics for proper operation

\_\_\_\_\_ Check main engines are warmed, test ahead and astern propulsion

\_\_\_\_\_ Test steering

\_\_\_\_\_ Cast off lines

AFTER ARRIVAL

\_\_\_\_\_ Make mooring lines fast

\_\_\_\_\_ Secure main engines

\_\_\_\_\_ Secure all electronics and electrical loads

\_\_\_\_\_ Hook up shore tie and land line

\_\_\_\_\_ Shift to shore power

\_\_\_\_\_ Secure generator

\_\_\_\_\_ Notify personnel listed on float plan of arrival

\_\_\_\_\_ Disembark and go home