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## Salvage Annex

The Salvage Annex discusses the procedures and potential issues to be considered during a salvage operation in the Puerto Rico and U.S. Virgin Islands Area Committee Area of Responsibility.

Note: The Coast Guard Captain of the Port has jurisdiction over vessel salvage situations occurring within his/her zone; this does not preclude any other agencies' interests with respect to spill response.

### Initial Response Phase

A vessel casualty and oil spill or potential oil spill, may require the following responses:

- (1) Search and rescue
- (2) Oil spill containment/clean-up
- (3) Fire fighting
- (4) Vessel salvage
- (5) Endangered Species Act Section 7 Emergency Consultation

The first priority in a vessel casualty is the safety of the crew and any other personnel in the area. Secondary concerns are for environmental protection and vessel salvage. A casualty-scene information that will become essential to the early efforts at salvage should be completed by the responders aboard the vessel.

### 1. Search and Rescue Operations.

The SAR (Search and Rescue) Mission Coordinator (SARMC) will respond by deploying Coast Guard resources. This individual will be the local Coast Guard Group Commander or District Commander whose zone includes the vessel casualty. Upon notification, the Coast Guard will designate the SARMC and respond, as necessary, with on-scene resources.

### 2. Pollution Response Operations.

The Federal On-Scene Coordinator will ensure pollution response efforts are conducted in accordance with this plan. However, pollution response operations will be accomplished on a not-to-interfere basis with search and rescue operations. While pollution response clearly takes priority over salvage efforts, the two responses may necessarily be conducted concurrently. Salvage operations could be critical to preventing any further discharge of oil. The FOSC will prioritize actions to avoid interference between salvage and pollution response efforts.

### **3. Fire Fighting.**

Refer to section 8000 of this plan in which the Puerto Rico and the U.S. Virgin Islands Marine Firefighting Contingency Plans are attached for marine fire fighting activities.

The salvage issues regarding firefighting should be considered while fire fighting activities are being completed. The de-watering, ballasting, and counter-flooding aspects of fire fighting will be coordinated by the FOSC. Follow on issues of hull integrity due to weakening from heat fatigue must be considered in the salvage effort.

### **4. Salvage Operations.**

Salvage is a term used to describe all services rendered to save property from marine peril. This broad definition encompasses not only actions undertaken to save a vessel or cargo, but also includes wreck removal, harbor clearance, and deep water search and recovery.

Salvage includes:

- Providing firefighting assistance.
- Refloating a vessel from a stranding.
- Offloading cargo or water to prevent foundering, or removing sound cargo from impending peril.
- Shoring, patching and making temporary repairs to correct structural, stability, or mechanical problems.
- Rescue towing of an incapacitated vessel to a safe haven.
- Preventing pollution.

### **5. Endangered Species Act Section 7 Emergency Consultation.**

The National Oceanic and Atmospheric Administration and Department of the Interior should be contacted prior to any salvage operations to ensure that endangered species, such as coral, manatees, and sea turtles, have not and/or will not be impacted by the incident or salvage. The NOAA representative to contact would be Dr. Lisa Carrubba (787) 851-3700 and [lisamarie.carrubba@noaa.gov](mailto:lisamarie.carrubba@noaa.gov) and the DOI representative, Greg Hogue (see [Section 9000](#) for contact information).

After consultation with these natural resource trustee representatives and confirmation that endangered species has or may be taken, an e-mail requesting an emergency consultation along with the [Emergency Consultation Request Worksheet](#) must go to the National Marine Fisheries Service at [nmfs.ser.emergency.consult@noaa.gov](mailto:nmfs.ser.emergency.consult@noaa.gov) to allow for the trustees to conduct surveys of the area and provide a recommendation on the salvage practices and specific areas to be avoided in order to minimize the takes to any endangered species.

## **Definitions and Roles**

### **Salvage Tug**

A Salvage tug is a tugboat equipped to attend to vessels in distress in coastal or ocean conditions, and to render assistance either by towing, provision of pumping equipment, or similar aid. Such tugs historically have been large, powerful, and stationed at high risk locations for ship traffic.

### **Rescue Tug**

A rescue tug is generally a “tug boat of opportunity”, having adequate horsepower or bollard pull strength to assist in controlling a distressed vessel until salvage resources arrive. A rescue tug would generally be capable of providing emergency towing, and quite possibly render a degree of firefighting assistance, since many of the newer tugs are equipped with firefighting water monitors. Rescue towing involves taking an incapacitated vessel under tow at sea and towing it out of harm’s way, generally to a safe haven or port, but sometimes for beaching.

### **Salvage Masters**

In order to conduct a proper salvage you must have someone in charge who has the knowledge of how to respond to the specific situation. The person in charge of a salvage operation is known as the salvage master.

A Salvage Master should have direct experience in ship salvage, demonstrating experience in the use of salvage ships and craft, ground tackle, heavy lift craft, cranes and booms, oil pollution containment equipment, and all ancillary types of salvage equipment (e.g. pumps, compressors, welding equipment, etc.). The salvage master acts under the direction of the FOSC, he generally assumes complete control of salvage, harbor clearance, and related engineering operations.

### **Potential threats**

The threat is greatest from cargo vessels that carry hazardous materials in large quantities, such as break bulk; containerized cargoes; dangerous liquids; and pressurized or liquified gases. Vessels that are regulated, such as oil tank ships and barges, pose a substantial threat to the marine environment, they have been the main target of federal and state oil spill prevention regulations. Yet, in some cases it is the unregulated cargo vessel that may pose a bigger potential pollution hazard. There are far more cargo vessels than tank vessels, cargo vessels may carry more bunker fuel than the cargo capacity of some oil barges, additionally, cargo or freight vessels may be carrying products far more hazardous in nature than oil.

## Salvage Response Considerations

This section describes salvage situations and the general guidelines to follow in responding to a salvage situation. In addition, this section also describes actions to be taken in response to vessel strandings, the relationship between the on-scene coordinator, the responsible party, the vessel's master, and the salvor. Information pertaining to salvage procedures was adapted from Chapter 8 of Volume I of the U.S. Navy Salvage Manual. All parties involved in a salvage response should refer to the manual for specific information relating to salvage techniques.

Salvage efforts may be divided into three phases: stabilization, refloating, and post-refloating. During the stabilization phase, salvors take steps to limit further damage to the vessel, and to keep the ship from being driven harder aground or broaching. Response leaders gather information and formulate a salvage plan; that plan specifies actions to be taken during the refloating and post-refloating phases of the salvage. The refloating phase commences when the salvage plan is executed and ends when the ship begins to move from her strand. During post-refloating, the vessel is secured and delivered to the designated port facility. Parties involved in salvage response should refer to Chapter 8, Volume I of the U.S. Navy Salvage Manual for specific information relating to salvage techniques.

### Stabilization Phase:

This phase of operations must take into account the potential discharge of oil and hazardous substances into the environment. Upon stranding the Vessel's master SHOULD take the following steps:

1. Have ships personnel report to their emergency stations.
2. Take action to determine the vessel's condition and stabilize the vessel.
3. Secure watertight closures.
4. Notify Coast Guard and vessel's Operations center.
5. Request salvage assistance.
6. Note course and speed at time of stranding.
7. Obtain and provide if necessary, an accurate cargo stowage plan.
8. Evaluate the following:
  - Safety of personnel
  - Weather and sea conditions
  - Forecast for change in weather and sea conditions
  - Nature of the sea floor and shoreline.
  - Depth of water around ship
  - Ground reaction
  - Damage to hull
  - Damage to shafting, screws, and rudder
  - Risk of further damage

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- Prospect of maintaining communications
  - Ground reaction
  - Likely draft and trim after refloating
  - Potential for discharge of pollutants
  - Position of vital and cargo systems' valves
  - The liquid level of all tankage (e.g. fuel, ballast, cargo, etc.)

The Vessel's Master should not:

1. Jettison weight to lighten the vessel in an attempt to back the vessel off.
2. Attempt to back the vessel off when the bottom is torn open.
3. Fail to take action to stabilize the vessel and to determine its condition.

The Vessel's Master should request salvage assistance immediately, and not delay pending the results of an early attempt to refloat the vessel. If the damage assessment indicates the vessel is not in danger of broaching, sinking or capsizing, the master may attempt to back the vessel clear using full engine power on the next high tide.

The Responsible Party should take the following steps:

1. Contact the Coast Guard. Provide a current status of the situation.
2. Implement a Unified Command System response organization.
3. Identify salvage resources available and determine time required for those resources to arrive on scene:
  - Salvage Master
  - Salvage Vessel's
  - Tug Boats
  - Beach Gear
  - Barges with Ground Tackle
  - Lightering Resources
  - Lifting Vessels
  - Appropriate portable cargo transfer pumps and hoses Hull patching equipment
4. Initiate salvage response. Over-estimate the quantity of resources needed.
5. Keep the vessel's master informed of all actions taken.
6. Obtain the services of a Naval Architect.
7. Conduct damage stability and longitudinal strength calculations.

Upon being assigned responsibility for the salvage action, the salvor should:

- Advise the vessel that he (his organization, vessel, etc.) is enroute to assist, and provide ETA (estimated time of arrival) on-scene.
- Ensure that the master is aware of the information covered in the preceding paragraphs that relates to early attempts to refloat the vessel.
- Obtain all information available regarding the vessel's particulars and details of the stranding. This should include:
  - An accurate position of the stranding (latitude/longitude)

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- Means used to fix position
  - Drafts at time of sailing
  - Estimated drafts at time of stranding
  - Applicable chart numbers
  - Drafts after stranding, with state of time and tide
  - Soundings along side from forward to aft, corrected to datum of the chart of the area
  - Soundings of all tanks and voids, noting changes in contents
  - Ships course and speed at time of stranding
  - Ships heading after stranding and details of changes
  - Liveliness of the vessel in response to swells and surf
  - Weather conditions
  - Sea and current conditions
  - Extent of vessel damage
  - Location of grounding points and estimated ground reaction
  - Seafloor type
  - Status of vessel's machinery and piping systems
  - Vessels loading plan or cargo manifest
  - Amount and location of hazardous substances
  - Locally available resources (tugs, cranes, bulldozers)

Upon arrival, the salvage ship or vessels, and personnel, should conduct damage control and position stabilization. Damage control actions may range from augmenting the ship's crew, to conducting firefighting and flooding control. Position stabilization consists of securing the ship at the first opportunity to prevent it from broaching or being driven further ashore.

Prior to developing a salvage plan, the salvor must conduct a thorough salvage survey of the vessel and its immediate surroundings. The survey is defined in the Navy Salvage Manual as being comprised of: the preliminary survey; the detailed hull survey; the topside survey; the interior survey; the diving survey; the hydrographic survey; and the safety survey. The salvor should refer to Section 8-2.6 of Volume I of the Navy Salvage Manual for details. The information should be recorded on the salvage survey form included in Appendix I, Chapter 8, Volume I of the Navy Salvage Manual, or an equivalent.

Based on information received from the vessel, the salvor should evaluate the following:

1. Vessel's original estimates of ground reaction and freeing force.
2. Stability afloat and residual strength.
3. Ship's machinery condition and retraction power available locally.
4. Ship's ability to proceed to a safe haven after refloating.

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The salvor should then advise the master based on these evaluations, and take the following steps to mobilize the salvage force:

1. Determine personnel and material required
2. Collect information about the stranded ship. Sources include:
  - Owner
  - Vessel's classification society
  - Coast Guard
3. Ensure needed navigation material is on board.
4. Begin recording written record of information and actions taken.
5. Ensure that salvage vessels enroute will be prepared to respond upon arrival to the stranding site.

Upon arrival (in coordination with the response organization/OSC where applicable), the salvage master should conduct damage control and stabilization. Damage control actions may range from augmenting the vessel's crew for firefighting and flooding control. Position stabilization consists of securing the vessel to prevent broaching or being driven further ashore. The salvor must then, in preparation for the development of the salvage plan, conduct a thorough salvage survey. This survey is defined and described in the Navy Salvage Manual, Volume 1 Section 8-2.6, as being comprised of the preliminary survey, a detailed hull survey, a topside survey, an interior survey, a diving survey, a hydrographic survey and a safety survey. The information gathered during the surveys should be recorded on a survey form as found in Appendix of the aforementioned manual.

1. Basic information identifying the ship's characteristics and the condition of the stranding.
2. An analysis prepared by the salvor and naval architect, which provides estimates of:
  - The ground reaction
  - The freeing force
  - Location of the neutral loading point (point at which weight can be added w/out change in ground reaction)
  - Stability - grounded and afloat
  - Strength of hull girder, damaged areas, attachment points, and rigging
  - A summary of the engineering rationale employed for selection of retraction and refloating techniques
  - Hydrographic information
  - Potential pollution risks
3. List of specific safety hazards involved
4. Potential pollution risks
  - Lightering Considerations
  - Booming Considerations
  - Standby Equipment
5. Means for controlling interference between pollution response efforts and salvage efforts

6. Appendices which provide detailed information regarding techniques to be employed.
7. Location to which the vessel will proceed following refloating.
8. Means for controlling the vessel as it is freed.
9. Vessel escort, if any, to be employed.
10. Means for delivering vessel to destination (tow, own power).
11. Any preparation of vessel necessary to gain permission for entry into port of destination.
12. Means of disposal, if other than above.

### **Refloating Phase:**

The salvage plan is implemented during this phase. The plan should be considered a flexible working plan with appropriate changes made in response to changing conditions. During this phase, all parties must be in close communication, and the process should be brought to a halt if significant safety problems develop. The salvor, responsible party, and the Captain of the Port have the authority to stop salvage operations in this case.

Consideration to assuring that the problem will not be made worse must be addressed thoroughly. In the case of a heavily damaged vessel, the risk to the port and the environment may not warrant allowing the vessel to be brought into the harbor. In some cases, it may be desirable to allow the vessel to sink in deep water to mitigate environmental damage, or minimize risk to life. Obviously, these are decisions that will have all parties in the salvage effort fully involved, and the FOSC must take the lead to assure that the best management of the incident/threat is achieved.

Working with the Responsible Party and the naval architect, the salvor must develop a salvage plan. The plan must detail actions to be taken and resources to be used, and it must set organizational responsibilities and the anticipated schedule. **After the plan is prepared and prior to initiating salvage operations, the Responsible Party must submit the plan to the Federal On Scene Coordinator or his designated representative, for review.** The Federal On Scene Coordinator will review the plan, and approve or disapprove it based upon real or potential risks to port safety and the environment. Any plans for the intentional jettisoning of cargo will be reviewed as part of the salvage plan.

### **Post Refloating Phase:**

(1) This phase commences when the ship begins to move off the strand, and is completed when the ship has been delivered to a safe haven or repair facility. In addition, salvage resources and equipment should be removed from the salvage site. The options for disposal of the vessel include:

- Steaming into port, or to another location within the port
- Towing to safe haven

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- Anchoring in preparation for tow or temporary repairs
  - Beaching if the ship is in danger of sinking
  - Scuttling or sinking
- (2) The following salvage plan items are to be updated, as necessary, following refloating:
- Overall seaworthiness
  - Vessel's bottom, for damage hidden by the strand
  - Condition of piping systems and machinery
  - Condition of all ship's systems necessary for the transit
  - Ship's stability, list, and trim (may necessitate loading or shifting of weights)
  - Patching and pumping arrangements for compartments in way of damage
  - Towing bridle, day marks, and navigation lights (an insurance line should be rigged even when the ship proceeds under its own power)
- (3) Following this phase, the Responsible Party shall submit a completed form CG2692 to the Officer in Charge of Marine Inspection and submit all requested information to the Senior Investigating Officer of the Sector SJ Prevention Command.

### **Salvage Response for Other than Strandings**

Salvage assistance may also be required for vessel sinking and rescues (towing). In these cases, the relationships between the various parties remain the same as for strandings. For sinking, the salvor must focus on methods for refloating the vessel, and vessel stability as it is refloated. For rescue situations, development of a comprehensive salvage plan may not be necessary. Use of good marine practice in establishing and maintaining the tow, and coordination with the vessel's master, tow vessel, Coast Guard SARMC, the Captain of the Port, and the vessel's owner/operator may suffice. In either of these cases, the user of this plan should follow the guidelines presented, adapting them to the specific salvage requirements at hand.

### **Federal Salvage Resources**

#### **Navy Supervisor of Salvage Assistance (SUPSALVAGE)**

In the event that the Responsible Party does not respond to the casualty, the federal government may respond to the salvage requirement, utilizing the services of Navy Supervisor of Salvage. However, financial responsibility remains with the responsible party.

Navy Supervisor of Salvage services may be obtained by:

- a. Telephoning Supervisor of Salvage Operations **(703) 607-2758**  
After hours and weekends (NAVSEA Duty Officer) **(703) 602-7527**
- b. Initiating a message to: CNO WASHINGTON DC//N312/N866//  
Add the following if applicable:

//N45// for oil pollution  
//N873// for diving support  
Info copy to: COMNAVSEASYS COM WASHINGTON DC//OOC//

The message text should include: a brief description of services required; location; urgency; point of contact; and telephone number. If the task is urgent and requires immediate mobilization, the message should amplify this and include a statement that funding will be provided by separate correspondence. SUPSALVAGE can provide the services of naval architects, may provide the services of naval salvage vessels, and has access to contracts which will provide the services of commercial salvors and equipment. SUPSALVAGE developed and has available software for rapid analysis of longitudinal strength and intact/damaged stability. The software is known as Program of Ship Salvage Engineering (POSSE).

### **US Coast Guard Marine Safety Center Support**

Technical support is also available from the Marine Safety Center (MSC) Salvage Engineering Response Team (SERT). This group can evaluate vessel stability, hull strength and salvage plans, and may also be available for on-scene assistance. The MSC may be able to provide vessel plans if the ship is U.S. flag. The Federal On-Scene Coordinator may obtain services of MSC by calling (202) 327-3985 or e-mailing [SERT.Duty@uscg.mil](mailto:SERT.Duty@uscg.mil).

### **U.S. Coast Guard Atlantic Strike Team**

The Atlantic Strike Team can be on scene quickly to provide initial response assistance with pumps, personnel, pollution control equipment, and miscellaneous salvage hardware. The Strike Team can be contacted 24 hrs a day at:

Front Desk: (609) 724-0008  
OOD's Cell Phone: (850) 301-5200