U.S. Department of Homeland Security

United States Coast Guard

SERT

Salvage Engineering Response Team

Brief Sheet
Coastal and Offshore Salvage Plans

Background

Inland or harbor salvage refers to salvage or wreck removal of vessels stranded, capsized or sunken in sheltered waters. Coastal or offshore salvage, by contrast, is much more susceptible to the dynamics of ocean waves, and therefore casualties tend to deteriorate more rapidly. Salvage planning in each environment requires a different approach.

Basic Content of a Coastal/Offshore Salvage Plan

A salvage plan for coastal or offshore environments should address a number of important issues, including:

- Vessel and cargo details, including relevant technical specifications;
- Current vessel condition, including flooding, structural damage, and cargo/fuel loss;
- Environment, including bottom type, water depth and topography, tides, and currents;
- Projected sea conditions, including wind and waves, operation limitations, and methods to track and forecast;
- A description of the salvage techniques, including a summary of rationale for selection;
- A description of the salvage procedure, including vessel arrangement and mooring, rigging (lifting or pulling) system configurations and attachments, and cargo/oil removal operations;
- Supporting sketches/drawings for configurations while aground, afloat, and at critical phases of the operation;
- An engineering assessment, including supporting calculations (see below);
- A listing of specific required equipment and resources, including relevant technical specifications;
- A listing of key personnel, including affiliation, responsibilities, and communication methods;
- An overall schedule, including resource utilization;
- Pollution and hazardous substance identification, prevention and control measures;
- A description of the plan for transport and disposition of the salvaged vessel;
- A description of important operational risks, mitigation measures, and contingency plans;
- A site safety plan, including results of a site safety survey, identification of specific personnel hazards, precautions and safety measures, briefings, and required certifications and/or training (addendum); and
- A diving safety plan, if it is anticipated that diving operations may be required (addendum).

Engineering Assessment

The engineering assessment is a key component of the salvage plan and supports the rationale for selection of techniques and salvage procedure, including identification and mitigation of operational risks. Although requirements may vary depending on the type of casualty and operational risks, the engineering assessment should include:

- Calculation of vessel ground reaction, lifting or pulling forces, transverse stability, longitudinal bending and localized stresses while aground, afloat, and during critical phases;
- Specification of rigging (lifting and pulling) system components, including rated capacities, specification/size and safe working load or breaking strength;
- Calculation of forces in rigging (lifting or pulling) systems, including identification of critical system components and attachment points (including welded padeyes) and calculation of maximum stresses and/or minimum factors of safety; and
- Calculations supporting pumping, compressed air dewatering, and cargo/oil removal operations.

Suggested References

- U.S. Navy Salvage Manual (Volume 1: Strandings and Harbor Clearance) and U.S. Navy Salvor's Handbook
- Marine Casualty Response: Salvage Engineering (JMS) or U.S. Navy Salvage Engineer's Handbook
- Modern Marine Salvage (Milwee)