

The main categories for engine room flooding can be categorized within the following groups;

- ✔ Grounding, collision, failure of internal systems breaching hull integrity
- ✔ Seawater systems
- ✔ Oily water separator
- ✔ Sewage system overboard
- ✔ Boiler water blown down
- ✔ Exhaust gas cleaning systems
- ✔ Fire pump / emergency systems
- ✔ Stern tube seal integrity failure
- ✔ Ballast water systems
- ✔ ODME
- ✔ Seawater tank

Together in Safety Golden Safety Rules:

Apply Together in Safety [Golden Safety Rules](#)



Additional Guidelines and Best Practices:

Conduct daily, weekly, monthly, annual, and 5-year maintenance and inspection routines in accordance with manufacturer’s instructions and company Planned Maintenance cycles, paying particular attention to the integrity of the material condition of piping systems, structure and shipside connections.

Test bilge alarms, emergency pumps and associated piping / valves (especially emergency bilge suction valve) in line with the onboard Planned Maintenance schedules.

Inspect all hull penetrations, shipside valves, Stub pieces, Sea chest and gratings, and complete overhaul and thickness measurement during maintenance, drydock and special survey renewals. Shipside valves are to be renewed only by Class certified valves.

Ensure that any work being completed by contractors to external hull fittings / hull structures / underwater diving operations is compliant with regulatory requirements and supervised by a Company Superintendent or Senior Officer. Communications must be always maintained between contractors and appointed responsible person onboard.

Complete a risk assessment is completed before commencement of any work and implement robust isolation control. Permits to work for Pipelines, and underwater operations to be used.

Flooding risk to machinery spaces of floating offshore installations:

[Guidelines on inspection of ship side valves; flood detection and control; inspection and training](#)



Training:

Run flooding / damage control drills onboard. Train crew in Engine room flooding and damage control responsibilities. (The time limits set out in SOLAS for ship abandonment should be considered as a secondary objective when conducting flooding drills and must be considered as part of a flooding scenario.) Drills must be conducted safely and regularly.

Rotate crew to different tasks during drill exercises. All crew must be able to demonstrate the location of isolating devices and the operation of pumping arrangements in the event of an emergency.

Hold a debrief after each drill and reflect on what went well, and what needs improvement.

Learn from industry case studies:

See [Safety4Sea: flooding](#)

[UK P&I Club Risk Focus: Catastrophic Machinery Failure](#)

Verification:

Conduct Sailing Engineering audits to inspect and verify hull integrity / penetrations whilst vessel is within its normal operational environment.

Hold an engine room flooding drill and verify crew competence during one of the annual inspections onboard by the Technical Superintendent. Verify crew readiness, familiarity of emergency systems and safe working practices.

Interview crew on their understanding of emergency systems / piping and contingency measures.

Track and trend system and hull connection condition.