Shipboard System Modifications

Modifications, both permanent and temporary, of some shipboard systems are inevitable over the life of a ship. These modifications may be required due to a change in the vessel's trade, in technology, or in regulatory standards. Modifications may also be made on a temporary basis pending permanent repairs. Well considered and fully documented modifications tend to maintain safety and prevent pollution. Ill conceived and/or undocumented modifications endanger both the safety of the ship and the marine environment. The following cases emphasize the point:

- About 2,000 gallons of oil were spilled during a bunkering operation. Among the underlying problems were a number of seemingly minor fuel system modifications that made bunkering more difficult and increased the likelihood of a mistake. Original sounding tubes were unusable due to the location of bulkheads and machinery. Retro-fitted sounding tubes were not located near the ship's phone system making communication difficult.
- A ship grounded when it lost power and steering control. Ship's power was lost due to a blockage in the diesel oil supply system. The blockage resulted from sludge in a small in-line tank that was retrofitted by a prior owner. Neither the small tank nor its purpose was well documented.
- A diesel spill occurred when a service tank for a ship's auxiliary generator system overflowed. Part of the problem was attributed to a failure to properly align the valves in the fuel system. The crew did not have an up-to-date piping diagram that showed how the system was arranged. The system was a modification to the original ship configuration.
- A converted ballast tank was overfilled with diesel. The crew did not have information on either the tank's capacity or the maximum allowable filling rate. The tank did not

WHY IT MATTERS

This bulletin was prepared to share lessons learned with industry and the interested public. Prevention recommendations are also made to prevent similar occurrences. Sharing lessons learned is important if Washington State is to achieve its "zero spills" goal.

WEBSITE INFORMATION

http://www.ecy.wa.gov/programs/spills/spills.html

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Special accommodations:

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have a sounding tube installed to allow verification of the tank level.

The following are suggested to help ensure that system modifications do not undermine safety and pollution prevention efforts:

- Avoid multiple modifications to a system that reduce or bypass safety protections.
- Carefully plan temporary fixes to avoid hidden hazards.
- Implement appropriate lock-out, tag-out procedures to maintain safety while modifications are being made.
- Document system changes in logbooks, manuals, and system diagrams.
- Inform relieving personnel so that system changes are known and understood before getting underway.
- Review maintenance and operation procedures for a modified system to ensure the procedures reflect the change.
- Have the vessel's classification society or other appropriate authorities inspect and approve modifications to ensure compliance with the ship's flag state requirements.

Certification under the International Management Code for the Safe Operation of Ships and for Pollution Prevention (the ISM Code) requires that ships be maintained in accordance with relevant rules, regulations and company policy. It also requires a system for maintaining up-to-date documentation. Adherence to ISM requirements will help ensure that system safety and pollution prevention integrity is maintained despite modifications.

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