Naval Surface Warfare Center
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Survivability, Structures, and Materials Directorate

Technical Report

Identification of Weather Deck Runoff Discharge Constituents Onboard a U.S. Navy Mine Countermeasure (MCM-1) Class Ship

by

Mary L. Wenzel

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Section 325 of the 1996 National Defense Authorization Act, "Discharges from Vessels of the Armed Forces", requires the Navy to comply with Uniform National Discharge Standards (UNDS) to control the overboard discharge of incidental wastewaters from ships of the Armed Forces. During Phase I of the UNDS initiative, it was determined weather deck runoff requires a Marine Pollution Control Device (MPCD) to control the discharge.

At the request of Naval Sea Systems Command (NAVSEA 05L13), representatives from Carderock Division, Naval Surface Warfare Center, Puget Sound Naval Shipyard, and M. Rosenblatt & Son, Inc., conducted a shipboard assessment aboard a U.S. Navy MCM-1 class ship to identify constituents that have the potential to contribute to weather deck runoff. The data obtained during the assessment will be used to develop the MPCD for weather deck runoff. The shipboard assessment team conducted a one day at-sea and a one day in-port assessment aboard two different MCM-1 class ships to observe and document topside equipment and processes, general housekeeping practices and their associated materials. In addition, the team solicited crew feedback regarding methods to reduce or eliminate discharge constituents and identified potential MPCDs. As a result of the information obtained and the observations made during the assessment, the following constituents were identified as having the potential to contribute to weather deck runoff (in order of predominance): MIL-G-24139, approximately three pounds are used to lubricate the swivel fittings on the booms that raise and lower the mine neutralization system remotely operated vehicle and approximately one-half pound is used to lubricate the drive gear located on the acoustic cable reels; motor gasoline which may be spilled when refueling the RHIBs onboard ship; and Simple Green™ detergent used to clean the weather decks and topside equipment.

MPCDs currently in use aboard the ship include: (1) nylon rope used on the RHIB hoist and winches, and the forward and aft outrigger booms; (2) covers installed on the gun mounts when the ship is in port; (3) a containment device with pipe nipple and cap installed around the fueling station; and (4) a containment device with plug and lanyard installed around the 30-gallon drum of motor gasoline located on a jettison platform. The shipboard assessment team also identified potential MPCDs to reduce the potential of hazardous constituents entering surrounding waters; however, any modification to a warship must first address its impact on the operation of the ship in terms of its weight and space requirements, affect on other ship systems, life cycle cost, safety, and ship's mission.

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ADMINISTRATIVE INFORMATION

The resource sponsor for Uniform National Discharge Standards Development Program is Chief of Naval Operations, N452. The Research Development Test and Evaluation Program Manager is C. Adema, Naval Sea Systems Command, SEA 05R24. This project is described in the Carderock Division, Naval Surface Warfare Center (CDNSWC) Research and Technology Work Unit Summaries 6310-280 and 6310-281. This task was supported by M. Rosenblatt & Son, Inc., as delineated in Technical Instructions 2R2-733A and 2R2-670A of Contract N00024-96-C-409.

ACKNOWLEDGEMENTS

The conduct of shipboard assessments to identify constituents which have the potential to contribute to weather deck runoff is a teaming initiative. The team members are: John Baillargeon, Puget Sound Naval Shipyard; James Surgeon, M. Rosenblatt and Son, Inc.; and Mary Wenzel, Carderock Division, Naval Surface Warfare Center.

EXECUTIVE SUMMARY

Section 325 of the 1996 National Defense Authorization Act, "Discharges from Vessels of the Armed Forces", requires the Navy to comply with Uniform National Discharge Standards (UNDS) to control the overboard discharge of incidental wastewaters from ships of the Armed Forces. During Phase I of the UNDS initiative, it was determined weather deck runoff requires a Marine Pollution Control Device (MPCD) to control the discharge.

At the request of Naval Sea Systems Command (NAVSEA 05L13), representatives from Carderock Division, Naval Surface Warfare Center, Puget Sound Naval Shipyard, and M. Rosenblatt & Son, Inc., conducted a shipboard assessment aboard two U.S. Navy MCM-1 class ships to identify constituents that have the potential to contribute to weather deck runoff. The data obtained during the assessment will be used to develop the MPCD for weather deck runoff. Prior to conducting shipboard assessments, all ships applicable to UNDS were analyzed to determine similarities and grouped into one of nine categories: (1) air capable, carrier; (2) air capable, amphibious assault; (3) surface combatants; (4) auxiliary; (5) service craft; (6) towed support; (7) patrol/small craft; (8) submersible; and (9) research vessels. MCM-1 class ships are representative of ships in the service craft category.

The three-person shipboard assessment team conducted a one day at-sea and a one day pierside assessment aboard two different MCM-1 class ships to observe and document topside equipment and processes, general housekeeping practices and their associated materials. In addition, the team solicited crew feedback regarding methods to reduce or eliminate discharge constituents, identified MPCDs currently in use, and identified potential MPCDs. As a result of the information obtained and the observations made during the assessment, and as evidenced by the cleanliness of the weather deck, the team concluded that there are very few hazardous constituents which have the potential to contribute to weather deck runoff aboard a MCM-1 class ship. The following constituents were identified as having the potential to contribute to weather deck runoff (in order of predominance): MIL-G-24139, approximately three pounds are used to lubricate the booms that raise and lower the mine neutralization system remotely operated vehicle and approximately one-half pound is used to lubricate the drive gear located on the acoustic cable reel; motor gasoline which may be spilled when refueling the RHIBs onboard ship; and Simple Green™ detergent used to clean the weather decks and topside equipment.

Several MPCDs currently in use aboard both MCM-1 class ships include: (1) nylon rope used on the RHIB hoist and winches. Although intended to reduce the magnetic signature of these vessels, the use of nylon rope instead of steel or other metallic materials serves as an excellent MPCD for light duty cranes; (2) nylon rope installed on the forward and aft outrigger booms used to raise and lower the mine neutralization system remotely operated vehicle; (3) covers installed on the gun mounts when the ship is in port to protect the equipment from the weather and to prevent corrosion; (4) a containment device with pipe nipple and cap installed around the fueling station; this device allowed the crew to attach a hose to the nipple and drain the containment as required; and (5) a containment device with plug and lanyard installed around the 30-gallon drum of motor gasoline located on a jettison platform.

The shipboard assessment team identified two potential marine pollution devices to reduce the potential of hazardous constituents enter surrounding waters: (1) install containment devices around cranes and cable reels which have hydraulic systems, and (2) install chaffing jackets on hydraulic hoses to prevent wear, possible leakage, and hose rupture. However, any modification to a warship must first address its impact on the operation of the ship in terms of its weight and space requirements, affect on other ship systems, life cycle cost, safety, and ship's mission.

INTRODUCTION

Uniform National Discharge Standards. On 10 February 1996, President Clinton signed into law the Fiscal Year 1996 National Defense Authorization Act. Section 325 of the Authorization Act, "Discharges from Vessels of the Armed Forces", requires the Department of Defense and the Environmental Protection Agency (EPA) to jointly develop Uniform National Discharge Standards (UNDS) for wastewater discharges, other than sewage, incidental to the normal operation of a vessel of the Armed Forces. The Act applies to discharges for which it is reasonable and practicable to require the use of a Marine Pollution Control Device (MPCD) to mitigate adverse impacts on the marine environment. The intent of the Act is to establish a consistent set of vessel effluent standards that enhances environmental protection and provides the Armed Forces with mission-related operational flexibility.

Naval Sea Systems Command (NAVSEA 05L13) and EPA have conducted equipment expert meetings with cognizant life cycle managers and equipment experts to gain knowledge on equipment operation and to identify additional information required to evaluate each discharge. In addition, NAVSEA and EPA performed nature of discharge analyses and determined that weather deck runoff has the potential for causing an adverse environmental effect. Preliminary practicability analyses showed that at least one reasonable and practicable MPCD exists. As a result, NAVSEA and EPA determined that weather deck runoff will require an MPCD.

Weather deck runoff consists primarily of water from rainfall, deck washdowns, and ship operations in heavy seas that drains directly into surrounding waters. Sources of contaminants that may be present in deck runoff include materials commonly used on decks and in topside equipment when conducting routine deck operations, maintenance, and general housekeeping aboard all classes of vessels of the Armed Forces (e.g., paint, fuels, lubricants, cleaning compounds and solvents). Characterization of the discharge is being accomplished through shipboard assessments of topside processes, equipment and operations, and by interviewing the ship's crew while they are engaged in normal operations.

A three-person shipboard assessment team was established by NAVSEA (05L13) and is comprised of representatives from the following organizations: (1) Ships Environmental Support Office, Carderock Division, Naval Surface Warfare Center; (2) Puget Sound Naval Shipyard; and (3) M. Rosenblatt & Son, Inc.

Prior to performing the shipboard assessments, a comprehensive evaluation of all ship classes applicable to UNDS was conducted by representatives from the Ships Environmental Support Office and Puget Sound Naval Shipyard. All ships listed in the document *"Ships Applicable to UNDS - Vessel Class Listing with Number of Vessels per Class (Active Vessels Only)"* were analyzed to determine similarities. The analysis included ship mission, topside equipment, weather deck surface area, age of ships in class, and number of ships in class. As a result of the analyses, each class of ship was placed into one of nine platform categories: (1) air capable, carrier; (2) air capable, amphibious assault; (3) surface combatants; (4) auxiliary; (5) service craft; (6) towed support; (7) patrol/small craft; (8) submersible; and (9) research vessels. A listing of the platform categories is provided as Appendix A.

A list was developed to identify class-specific topside processes and equipment that have the potential to contribute to weather deck runoff. All data were reduced to identify specific classes of vessels to survey in order to ensure data is obtained on each topside process and equipment. After completing this process, it was determined that ships representative of the towed support, submersible, and research vessel classes would not be surveyed. The rationale for this decision is: (1) they do not have unique topside equipment; and (2) they do not perform unique maintenance processes topside. In summary, conducting shipboard assessments aboard ships in the towed support, submersible, or research vessel categories would not be cost effective since their study is not expected to provide data that is not already available from the study of the other six platform categories. A matrix showing the class-specific processes and ships to be surveyed is included as Appendix B. Shipboard assessments have previously been conducted on U.S. Coast Guard WLM and WPB class ships and on a U.S. Navy DDG-51 class ship.

MCM-1 class ships are 224-ft. in length and manned by a crew of 83 personnel. The ship locates, identifies and destroys mines that cannot be countered by conventional minesweeping techniques. MCM-1 class ships conduct sweeping operations to detect deeply moored mines as well as magnetic and acoustic mines. These vessels perform mine hunting and destruction operations in all areas of the ocean, including within 0-12 nautical miles (nm) of the coastline.

APPROACH

Surveys. Three surveys have been developed for use during the shipboard assessments: baseline, class-specific, and maintenance. The baseline survey was designed to obtain information common to all ships surveyed e.g., coaming height, scupper locations, and identification of MPCDs and best management practices currently in use. This survey will be used during every shipboard assessment and will serve as a baseline for comparison purposes when evaluating potential MPCDs. The class-specific survey was designed to obtain information related to processes that are specific to each class of ship. Copies of the baseline and class-specific surveys for the MCM class assessments are provided as Appendices C and D, respectively.

The MCM-1 shipboard assessments were the first assessments conducted using the maintenance survey, developed to eliminate the difficulty the team encountered when attempting to validate the computer-generated class-specific constituent profile aboard the DDG-51 class ship as discussed in the report entitled *"Identification of Weather Deck Runoff Discharge Constituents Onboard a U.S. Navy Arleigh Burke Class Guided Missile Destroyer"*, NSWCCD Report CR-TR-63-2000/01. The maintenance survey, designed to identify applicable Maintenance Index Pages and Maintenance Requirement Cards (MRCs) that pertain to each of the class-specific processes, was successfully piloted aboard the MCM-1 class shipboard assessments. The maintenance information, which includes hazardous materials that have the potential to contribute to weather deck runoff, will be used to develop the class-specific constituent profiles.

Quantitative and Qualitative Data. It is critical to the UNDS process to obtain quantitative as well as qualitative data to aid the identification of marine pollution control devices to control the discharge. To achieve this, each Sailor that performs maintenance on topside equipment is

queried regarding the amount of material used as well as the amount remaining that is exposed to the environment after the maintenance process is complete. The equipment is visually examined by a team member to verify the amount of material exposed to the environment and the quantity that has the potential to contribute to weather deck runoff is recorded. This process is performed only for equipment that has material exposed to the environment; if a material is contained within the equipment, it is not exposed to the environment and subject to deck runoff other than during maintenance or as a result of catastrophic equipment failure.

Shipboard Assessment Objectives. The objectives of the shipboard assessments were to observe and document topside equipment and processes performed by U. S. Navy personnel and to identify discharge constituents that have the potential to contribute to weather deck runoff. Class-specific process information was obtained on: deck/superstructure maintenance and preservation; deck washdown; electronic intelligence systems; search/navigational systems; firemain systems; fuel transfer systems; general housekeeping; mine handling systems; ships boats; ships boats launching systems; towing and mooring systems; and weapons systems. Although the data collected applies specifically to the ships surveyed, it is representative of other ships in the service craft platform category that have the same equipment and processes.

Shipboard assessments were conducted aboard two U. S. Navy MCM-1 class mine counter-measure ships on 11-12 August 1999. The first assessment was conducted aboard a ship that was pierside, the other aboard a ship performing routine engineering operations while underway in the coastal waters near the vessels homeport. The crew was observed performing various scheduled maintenance and preservation actions on topside equipment throughout the assessments. The ships' operational zones and percentage of time spent in each zone are as follows: (1) operations beyond 12 nm: 90%; (2) operations within 3-12 nm: 10%; (3) operations within 0-3 nm: limited to transit only. The percentage of operating time in a given area is dependent upon operational schedules and requirements.

RESULTS

Deck/Superstructure Maintenance & Preservation. MCM-1 class ships are constructed of glass reinforced plastic (GRP) sheathed wood (laminated oak framing, Douglas fir planking, and deck sheathing with reinforced fiberglass covering). Great care is taken to maintain and preserve the vessels' hull, decks, and superstructure. Surfaces are cleaned with fresh water and Simple Green™ detergent prior to painting, and, a majority of the time (80%), only sandpaper is used to prepare the surface for painting. Deck/superstructure paint is applied using brushes and rollers and removed using sandpaper, grinders, or vacuum-assist disc sanders; no chemical paint removers are used in the ships preservation process. Spray painting is not performed onboard ship and no solvents are thinners are used when painting. Waste materials are swept and containerized for shoreside disposal. Approximately 90-95% of the painting is performed while pierside, the remaining 5-10% is limited to touch-up work which is performed when underway. Brushes and rollers are solvent-cleaned in the paint locker which is not accessible from the weather deck.

Deck Washdowns. The weather decks of both MCMs were remarkably clean. As a result of all the mine sweeping and handling equipment located topside, the surface area that is washed is significantly smaller than other warships in the same platform category. The frequency of deck washdowns is dependent upon the amount of saltwater accumulation. Washdowns are normally conducted once every three weeks. Sixty percent of washdowns are conducted pierside, 20% within the 0-3 nm range and 20% within the 3-12 nm range. Two types of washdown evolutions were described by the crew, i.e., "saltwater rinses" and full washdowns. Despite the name, in both cases only fresh water is used; saltwater is never used to wash MCM-1 class ships. Eighty percent of the washdowns conducted are rinses; no detergents are used. Full washdowns are conducted using approximately two gallons of Simple Green™ detergent. The crew prefers to conduct full washdowns while the vessel is in port and receiving pierside services. The full washdown evolution takes approximately 2-1/2 hours using a ½" garden hose with a water pressure of 35-60 psi, the nozzle is normally left open so the water runs continuously. If a full washdown is conducted when underway, the water pressure is 55-65 psi and an on/off nozzle is used so the water does run continuously in an effort to conserve the ship's fresh water supply. The crew scrubs the deck with corn brooms, scrub brushes and detergent during a full washdown evolution.

Electronic Intelligence & Search/Navigational Systems. MCM-1 class ships are equipped with the following systems: AN/SSN-2 Precise Integrated Navigation System (PINS); AN/SQQ-32 Sonar; AN/SPS-55 Radar; and AN/WSN-2 Gyrocompass. The surface search and navigation radar rotating assemblies are cleaned using fresh water and Simple Green™ detergent. Since all surface search and navigation systems used onboard ship are self-contained, there are no constituents (other than a very small amount of Simple Green™ detergent) which have the potential to contribute to weather deck runoff.

Firemain Systems. The firemain system is designed to operate at 125 psi using the standard combination nozzle and hose stations. The system uses salt water from the ships environment and applies it in a fog spray or solid stream to combat fires. A total of 13 stations are located throughout the ship on the weather decks. The sprinkler system for weather deck countermeasure washdown is tested every 60 months in accordance with the planned maintenance program; however, the system is activated approximately once every six months for crew training. Since the firemain system uses salt water obtained from surrounding waters, it does not have the potential to contribute constituents to weather deck runoff other than the constituents that become entrained in the salt water as it traverses the weather deck. However, these constituents are identified and reported in their respective class-specific process report sections. The firemain system is being addressed as a separate UNDS discharge; as a result, the shipboard assessment team was requested to determine how the firemain system contributes to weather deck runoff only.

Fuel Transfer Systems. The MCM-1 class ship normally receives fuel from a shoreside refueling truck when the ship is pierside. The ship has a fuel capacity of 19,674 gallons of #2 Diesel Fuel Marine (DFM) received at 50 psi pressure. All fuel transfer pumping gear is located below decks and is common to both refueling stations; above-deck valves and piping are enclosed within a containment device, Appendix E. The crew takes the following precautions to

prevent fuel from entering surrounding waters: (1) as shown in Appendix F, threaded plugs are installed in the containment device to allow the controlled drainage of collected rainfall or fuel in the event of a leak; (2) an oil boom is placed around the ship; (3) all deck drains are plugged during refueling operations; and (4) a spill kit is maintained onboard. Since the ship does not carry or maintain fueling hoses onboard, the shoreside fuel depot provides equipment (fuel hoses equipped with cam-lock quick disconnect fittings) required for refueling operations. As a result, there is minimal potential for the fuel transfer system to contribute to weather deck runoff. A potential for spillage exists only when connecting or disconnecting the transfer hoses or in the event of a fuel hose rupture; however these would be attributed to catastrophic equipment failure and are not incidental to normal operation of a vessel.

General Housekeeping. The assessment team observed the crew sweeping and swabbing the decks and cleaning bulkheads and overheads throughout the day. All dirt and debris was swept and containerized for shoreside disposal. The decks were swabbed using a small amount (3-4 ounces) of Simple Green™ mixed with fresh water in a 5-gallon bucket; none of the water/Simple Green™ mixture was discarded overboard. As a result of the crew's attention to cleanliness, there is minimal debris topside which has the potential to enter surrounding waters.

Mine Handling Systems. Topside equipment includes: four cable reel assemblies; five winch assemblies; three winch control stations; three outrigger booms; two cranes; three mine tensioner payout systems; and a mine neutralization system (MNS) remotely operated vehicle. Pictures which show the mine handling systems and the MNS are provided as Appendices (G) and (H), respectively. Also shown in Appendix (G) is a 55-gallon drum of MIL-L-2105, *"Lubricating Oil, Gear, Multi-Purpose"*, which was carried onboard the ship when underway to replenish the acoustic and magnetic cable reels and the stern crane in the event of a leak The bases of each of the three outrigger booms, Appendix (I), contained approximately one pound of MIL-G-24139 *"Grease, Water Resistant, General Purpose"*, which has the potential to contribute to weather deck runoff under certain conditions, such as extreme temperature or rainfall. In addition, the drive gear located on the acoustic cable reel was thinly coated with MIL-G-24139. Placards, which specify material and frequency of lubrication, were posted on the cable reels and cranes. The placards, shown in Appendices (J), (K) and (L), identify a total holding capacity of 45.1 gallons of MIL-L-2105 for all three pieces of equipment. The equipment is cleaned using fresh water and small amounts of Simple Green™. Since the equipment is continuously exposed to salt water, it requires periodic paint touch-up. Paint is removed using mechanical paint removal methods only (e.g., needle guns, sanders and hand sanding) and applied with brushes and rollers; paint debris is swept and containerized for disposal ashore. The areas surrounding the base of hydraulically operated cranes and cable reels did not have containment devices to contain fluid; therefore, a potential does exist for constituents to enter surrounding waters in the event of a spill resulting from a ruptured line or hose. During Phase I of the UNDS initiative, it was determined that mine countermeasure equipment lubrication does not require control by a marine pollution control device. As a result, the assessment team did not gather data related to waterborne equipment lubrication.

Ships Boats. Each MCM maintains two 17 ft. 10 in. rigid-hulled inflatable boats (RHIBs) for use by the mine-disposal divers. The MCM assessed pierside carried one RHIB with a 90 hp

Johnson outboard engine and one with a 60 hp Johnson outboard engine. The MCM assessed underway had two RHIBS, each with a 90 hp Evinrude outboard engine. The RHIBs are refueled using 6-gallon gas cans filled from the 30-gallon motor gasoline tank located on a jettison platform and surrounded by a containment device with plug and lanyard which allows the crew to drain the containment device as required, Appendix M. The outboard engines are operated daily for 2-3 minutes or as long as 15 minutes depending on the ship's crew. The external surfaces and the bilge of the RHIBs are washed down with fresh water and Simple Green™ following every use and during major ship cleanings. The primary constituents that have the potential to contribute to weather deck runoff are: (1) gasoline spilled when refueling the RHIB onboard ship; and (2) contaminants resulting from the onboard operation of the outboard engines on a daily basis. (Small boat engine wet exhaust will be addressed by a separate UNDS Discharge Assessment Team.)

Ships Boats Launching Systems. One anti-magnetic electric hoist winch type BE-09 with 1" nylon rope with lifting capacity of 2,000 pounds is used to launch and recover the RHIBs. The nylon rope is static tested at twice the lifting capacity and operational testing is performed during the actual hoisting of the RHIBs. All load testing is performed by an outside activity when in port. The nylon rope is cleaned using fresh water; the hoist assembly is cleaned with fresh water and Simple Green™.

Towing and Mooring Systems. All towing and mooring is performed using multi-strand nylon line. No preservation measures are taken other than to inspect and replace the nylon line when required; cleaning is limited to fresh water rinses when required. The anchor chain capstan is equipped with a gypsy that can be de-clutched to allow independent operation and is used to assist in mooring. The towing and mooring system does not contribute any constituents to weather deck runoff.

Weapon Systems. Systems employed aboard MCM-1 class ships are two .50 caliber machine guns and two M60 machine guns mounted port and starboard. All gun mounts are cleaned using fresh water and Simple Green™. MIL-L-63460 "Cleaner Lubricant and Preservative (CLP), is applied to the gun mounts. Covers are installed on the gun mounts when the ship is in port to protect the equipment from the weather and to prevent corrosion.

Deck Coaming and Drains. The main deck and 01 level have 2" coaming around the entire deck area. All levels above the 01 level have a 1" coaming and drain directly to the deck below and then overboard via the main deck scuppers.

Topside Equipment/Systems (by Deck Level)

- Main Deck/Forecastle:
  - Non-magnetic anchor windlass and capstan assembly Model X-1852; dynamic load test 11,993 pounds, static load test 11,694 pounds, working load 4,648 ponds.
  - Two 8" fixed fairlead rollers.
  - One SQQ32 sonar winch assembly.

- One SQQ30 sonar winch control panel.
- Two portable water hose stowage chests.
- One P250 pump (enclosed).
- Two hawse reels port and starboard.
- Two seawater fire stations.

- Main Deck/Fantail:
  - One magnetic cable reel model 2D5-03347. Manufactured by Lake Shore, Inc.
  - One mine sweeping winch model 2D5-00348.
  - One acoustic cable reel model 2D5-00346.
  - One acoustic cable reel model 2D5-00347.
  - Two stern cranes port and starboard; dynamic load test 91,000 pounds, static load test 12,000 pounds, working load 6,000 pounds.
  - Three mine tensioner/payout systems.

- 01 Level (Port):
  - One BSP winch model CTD-110-365. Manufactured by Sound Ocean Systems.
  - One 30-gallon motor gasoline stowage tank with containment.
  - Two Avon Rigid Hulled Inflatable Boats, 17'10" 8 person capacity (the RHIBs on the ship assess pierside had one 90 and one 60 hp Johnson outboard motors; both RHIBs on the ship assessed underway had two 90 hp Evinrude outboard motors).
  - One antimagnetic electric hoist winch type BE-09 with 1" nylon rope; dynamic load test 3,000 pounds, static load test 4,000 pounds, working load 2,000 pounds.
  - One hazardous material spill kit.
  - One oil spill kit.
  - One electrically operated winch control station.

  01 Level (Starboard):
  - One magnetic and acoustic cable reel control panel.
  - One aft outrigger boom 4,100 pounds with 1" nylon rope.
  - One forward outrigger boom with 1-1/2" 1" nylon rope and 5/8" steel cable.
  - One padeye for booms.
  - One P250 pump (enclosed).
  - One mine neutralization system (MNS) remote operated vehicle (ROV).

- 02 Level:
  - Two 12" search and rescue lights port and starboard.
  - One microwave antenna.
  - MNS center boom, dynamic load test 4,500 pounds, static load test 6,000 pounds, working load 3,000 pounds.
  - MNS center winch-electrically operated.

  03 Level:
  - Two 50 caliber machine gun mounts.

- Six ammunition lockers.
- Three pyrotechnics lockers.
- Two MK3 MOD4 binoculars port and starboard.
- Two search and rescue lights port and starboard.
- One AS-3018A/WSC-IV antenna manufactured by Datron Systems.
- Two M60 machine gun mounts.
- Various stowage lockers.

A line drawing depicting the Mine Counter Measure Class Ship is provided as Appendix (N). Material safety data sheets for materials that have the potential to contribute to weather deck runoff are provided as Appendix (O). The CD-ROM entitled *"MCM-1 Class Shipboard Weather Deck Information Management System"*, Appendix P contains two files: (1) a database containing all maintenance processes and associated materials used topside, and (2) a database containing all maintenance processes and associated materials performed onboard the entire ship.

All hazardous materials used onboard the MCM-1 class ship are obtained from the hazardous material minimization center located at the ship's homeport. No excessive amounts of any product were stored onboard; the ship only carried what was anticipated to be used during one operating period.

MARINE POLLUTION CONTROL DEVICES IN USE

- Nylon rope used on the RHIB hoist and winches. Although intended to reduce the magnetic signature of these vessels, the use of nylon rope instead of steel or other metallic materials serves as an excellent MPCD for light duty cranes.
- Nylon rope installed on the forward and aft outrigger booms used to raise and lower the mine neutralization system remotely operated vehicle.
- Covers installed on the gun mounts when the ship is in port to protect the equipment from the weather and to prevent corrosion.
- A containment device with pipe nipple and cap installed around the fueling station. This device allows the crew to attach a hose to the nipple and drain the containment as required.
- A containment device with plug and lanyard installed around the 30-gallon drum of motor gasoline located on a jettison platform.

POTENTIAL MARINE POLLUTION CONTROL DEVICES

As a result of the information obtained during the ship assessment, the team identified two **potential** marine pollution control devices. However, before any new system is used aboard a warship, the Navy must first address its impact on the operation of that ship in terms of its weight, power and space requirements; affect on other ship systems, life cycle cost, and safety; and the mission of the ship.

- Install containment device around cranes and cable reels which have hydraulic systems.

- Install chaffing jackets on hydraulic hoses to prevent wear, possible leakage, and hose rupture.

CONCLUSIONS

MCMs are relatively small ships with a significant amount of topside equipment that uses a wide variety of greases, hydraulic fluids and lubricants. Nonetheless, the weather decks of both ships were extremely clean and it was obvious the crew takes precautions to ensure hazardous constituents do not enter surrounding waters. As a result, the team concluded that there are very few hazardous constituents used topside that have the potential to contribute to weather deck runoff.

Although it is not exposed to the environment, MIL-L-2105, which is used in the acoustic and magnetic cable reels and the stern crane has the potential to contribute to weather deck runoff in the event of a catastrophic equipment failure. Also, contaminants resulting from the onboard operation of the outboard engines on a daily basis also have the potential to contribute to weather deck runoff; however, this discharge is being addressed by the Small Boat Engine Wet Exhaust Discharge Assessment Team,

The following constituents are exposed to the environment and have the potential to contribute to weather deck runoff (in order of predominance): MIL-G-24139, approximately three pounds are used to lubricate the swivel fittings on the base of the booms that raise and lower the mine neutralization system remotely operated vehicle and approximately one-half pound is used to lubricate the drive gear located on the acoustic cable reels; motor gasoline which may be spilled when refueling the RHIBs onboard ship; and Simple Green™ detergent used to clean the weather decks and topside equipment.

SHIP CLASS	NUMBER OF SHIPS	SHIP TYPE NUMBER	SHIP FUNCTION	LENGTH	PLATFORM CATEGORY
NAVY					
CV 59	1	CV 62	Forrestal class aircraft carrier	1052'	1
CV 63	3	CV 64	Kitty Hawk class aircraft carrier	1052'	1
CVN 65	1	CVN 65	Enterprise class aircraft carrier(nuc)	1101'	1
CVN 68	7	CVN 72	Nimitz class aircraft carrier (nuclear)	1092'	1
LHA 1	5	LHA 3	Amphibious assault ship (gen.purps)	833'	2
LHD 1	4	LHD 4	Amphibious assault ship (multi-purps)	844'	2
LPH 2	2	LPH 9	Amphibious assault ship (helo carr)	602'	2
AGF 11	1	AGF 11	Flagship, 6th Fleet. conv. LPD	568'	2
AGF 3	1	AGF 3	Flagship, 3rd Fleet. conv. LPD	521'	2
LCC 19	2	LCC 19	Amphibious command ship	636'	2
LPD 14	2	LPD 15	Amphibious transport docks	568'	2
LPD 4	3	LPD 4	Amphibious transport docks	568'	2
LPD 7	3	LPD 8	Amphibious transport docks	568'	2
LSD 36	5	LSD 36	Anchorage class dock landing ship	553'	2
LSD 41	8	LSD 48	Whidbey Island class dock landing	609'	2
LSD 49	3	LSD 50	Harpers Ferry class dock landing	609'	2
LST 1179	3	LST 1179	Newport class tank landing ship	522'	2
CG 47	27	CG 54	Ticonderoga class Cruiser	567'	3
CGN 36	2	CGN 36	California class Cruiser (nuclear)	596'	3
CGN 38	1	CGN 41	Virginia class Cruiser (nuclear)	585'	3
DD 963	31	DD 968	Spruance class Destroyer	563'	3
DDG 51	18	DDG 51	Arleigh Burke class Destroyer	504'	3
DDG 993	4	DDG 994	Kidd Class Destroyer	563'	3
FFG 7	43	FFG 34	Oliver Hazard Perry class Frigate	445'	3
AO 177	5	AO 177	Fleet oiler	708'	4
AOE 1	4	AOE 2	Fast combat support-Sacramento cls	795'	4
AOE 6	3	AOE 8	Fast combat support-Supply class	755'	4
AFDB 4	1	AFDB 7	Large aux. floating drydock	413'	5
AFDB 8	1	AFDB 8	Large aux. floating drydock	825'	5
AFDL 1	2	AFDL 23	Small aux. floating drydock	288'	5
AFDM 14	1	AFDM 14	Medium aux. floating drydock	598'	5
AFDM 3	4	AFDM 6	Medium aux. floating drydock	622'	5
ARD 2	1	ARD 5	Aux. repair drydock	486'	5
ARDM	3	ARDM 5	Medium aux. repair drydock	492'	5
ARS 50	4	ARS 53	salvage vessel	255'	5
AS 33	1	AS 33	submarine tender	644'	5
AS 39	3	AS 39	submarine tender	646'	5
EX YFU	1	IX 514	Basic Flgt. Training--Helo	125'	5
BH	8	BH 1	Boom Handling	24'	5
DB	4	DB 1	Distribution box	64'	5
DT	1	DT 1	Diving tender	74'	5
DW	7	DW 1	Dive workboat	50'	5
HH	7	HH 1	Hawser handling	30'	5
HL	3	HL 1	Hydrographic survey launch	var.	5
IX 308	2	IX 310	IX-308-torp trial,IX-310-barges	176'(308)	5
LH	3	LH 1	Line handling	var.	5
SLWT	24	SLWT 4013	Side loadable warping tug	84'	5
TD	2	TD 1	Target drone	56'	5
TR	24	TR 4	Torpedo retriever	var.	5
WT	1	WT 1	Warping tug	85'	5
YD	63	YD 113	Floating crane		5
YFB	2	YFB 83	Ferry boat or launch	180'	5
YFU 83	1	YFU 83	Harbor utility craft	135'	5
YFU 91	1	YFU 91	Harbor utility craft	115'	5
YM	2	YM 17	Dredge		5
YO 65	3	YO 220	Fuel oil barge	174'	5
YOG 5	3	YOG 78	Gasoline barge	174'	5
YSD 11	1	YSD 74	Seaplane wrecking derrick	104'	5

YTB 752	1	YTB 752	Edenshaw class large harbor tug	101'	5
YTB 756	3	YTB 759	Pontiac class large harbor tug	109'	5
YTB 760	68	YTB 826	Natick & Tuscumbia class lrg. har. tug	109'	5
YTL 422	1	YTL 602	small harbor tug	66'	5
YTM	11	YTM 1	medium harbor tug		5
YTT 9	3	YTT 10	torpedo trials craft	186'	5
YLC	1	YLC 1	Salvage lift craft, light		5
YMN	1	YMN 1	dredge		5
YPD	4	YPD 37	Floating pile driver		5
ASDV	2	ASDV 2	Auxiliary swimmer delivery vehicle	134'	5
CT	14	CT 1	craft of opportunity COOP trainer	80'	5
MC	2	MC 1	Mine countermeasure support	27'	5
MCM 1	14	MCM 12	Avenger class mine warfare	224'	5
MHC 51	4	MHC 52	Osprey class mine warfare	188'	5
APL	16	APL 15	Barracks craft		6
BT	4	BT 1	Bomb target	18'	6
IX 35	2	IX 502	Barracks ship	328'	6
IX 501	1	IX 501	Barracks ship	230'	6
WH	12	WH 1	Wherry	var.	6
YC	254	YC 1027	Open lighter		6
YCF	1	YCF 16	Car float		6
YCV	9	YCV 10	Aircraft transportation lighter		6
YDT	3	YDT 16	Diving tender		6
YFN	157	YFN 1102	covered lighter		6
YFNB	11	YFNB 30	Large covered lighter		6
YFND	2	YFND 29	Dry dock companion craft		6
YFNX	8	YFNX 15	Special purpose lighter	110'	6
YFP	2	YFP 11	Floating power barge		6
YFRN	3	YFRN 1	Refrigerated covered lighter		6
YFRT	2	YFRT 287	Range tender	133'	6
YGN 80	3	YGN 80	Garbage lighter		6
YNG	2	YNG 11	Gate craft		6
YOGN	12	YOGN 10	gasoline barge		6
YON	48	YON 100	fuel oil barge		6
YOS	14	YOS 10	oil storage barge		6
YR	25	YR 26	Floating workshop		6
YRB	4	YRB 1	Repair and berthing barge		6
YRBM	39	YRBM 1	Repair, berthing and messing barge		6
YRDH	1	YRDH 6	floating drydock workshop 'hull'		6
YRR	9	YRR 1	radiological repair barge		6
YRST	3	YRST 1	salvage craft tender		6
YSR	14	YSR 11	sludge removal barge		6
YWN	6	YWN 147	water barge		6
AC	2	AC 2	Area command cutter	50'	7
HS	70	HS 1	Harbor security (Boston Whaler)	24'	7
LCAC 1	91	LCAC 1	Landing craft (air cushion)	88'	7
PB	31	PB 25	Patrol boat (w/e PBR)	var.	7
PBR	25	31RP664	Riverene Patrol craft	32'	7
PC 1	13	PC 9	Coastal defense ship	170'	7
PF	3	PF 1	Patrol craft, fast	51'	7
PK	1	PK1	Picket boat	45'	7
YP 654	1	YP 667	Patrol craft, training	80'	7
YP 676	27	YP 676	Patrol craft, training	108'	7
AP	6	AP 1	Area point system search craft	27'	7
AR	6	AR 1	Aircraft rescue		7
AT	21	AT 1	Armored troop carrier	36'	7
ATC	20	36AT721	Armoured troop carrier	36'	7
BW	4	BW 1	Boston Whaler	var	7
CA	1	CA 1	catamaran	26'	7
CC	4	CC 1	cabin cruiser (commercial)	var.	7
CM	151	CM 1	Landing craft, mechanized	var.	7

CU	40	CU 4	Landing craft, utility	135'	7
LA	1	LA 1	Landing craft, assault	96'	7
LCM(3)	2	LCM(3) 1	Mechanized landing craft		7
LCM(6)	60	LCM(6) 1	Mechanized landing craft	56'	7
LCM(8)	100	LCM(8) 1	Mechanized landing craft	74'	7
LCPL	130	LCPL 1	Landing craft personnel light	36'	7
LCU 1610	40	LCU 1614	Landing craft, utility	134'	7
LCVP	10	LCVP 1	Landing craft vehicle and personnel	36'	7
ML	3	ML 1	Motor launch	var.	7
MM	5	MM 1	Marine mammal support craft	25'	7
MW	121	MW 25	Motor Whaleboat	26'	7
NM	1	NM 1	Noise measuring	73'	7
NS	120	NS 1	Non-standard (commercial)	var.	7
PE	211	PE 16	personnel craft	var.	7
PL	147	PL 1	Landing craft, personnel light	var.	7
PR	8	PR 1	Plane personnel and rescue	var.	7
PT	266	PT 6	Punt	var.	7
RB	270	RB 1	Rigid Inflatable boat	var.	7
RX	15	RX 1	Rigid inflatable (non-standard)	var.	7
SC	6	SC 1	Support craft	var.	7
SS	12	SS 1	swimmer support	var.	7
TC	19	TC 1	Training craft	var.	7
UB	793	UB 7	small utility boat	var.	7
VP	12	VP 1	Landing craft, vehicle personnel	36'	7
WB	338	WB 1	Work boat	var.	7
AGSS 555	1	AGSS 555	Dolphin deep research sub	165'	8
DSRV-1	2	DSRV 2	Deep submergence rescue vessel	50'	8
DSV 1	3	DSV 2	Deep submergence vehicle	22'	8
SSBN 726	17	SSBN 731	Trident class Strategic missle sub	560'	8
SSN 637	13	SSN 678	Sturgeon class Attack sub	292'	8
SSN 640	2	SSN 645	Franklin class Strategic missle sub	425'	8
SSN 671	1	SSN 671	Narwhal class Attack sub	314'	8
SSN 688	56	SSN 753	Los Angeles class Attack sub	360'	8
SES 200	1	IX 515	Operational Demo. air supported hull	160'	9
AGER 2	1	AGER 2	Enviromental research ship		9
AGOR 21	1	AGOR 22	Oceanographic research	204'	9
AGOR 23	2	AGOR 24	Oceanographic research	274'	9
SB	1	SB 1	Sound/sail	41'	not applicable
ST	34	ST 1	Sail training craft	44'	not applicable
YL	7	YL 1	Yawl	30'	not applicable
MSC					
AH 19	2	TAH 20	Hospital Ship	894'	2
AE 26	8	TAE 27	Ammunition ship	564'	4
AFS 1	8	TAFS 5	Combat Store Ships	581'	4
AKR 287	8	TAKR 287	Sealift ship	946'	4
AO 187	12	TAO 198	Oiler	677'	4
ARC 7	1	TARC 7	Cable repair ship	502'	5
ATF 166	7	TATF 172	Oceangoing Tug	240'	5
AG 194	2	TAG 195	Misc. Auxiliary	246'	9
AGM 22	2	TAGM 23	Missle Rng. Instrumentation Ship	563'	9
AGOS 1	5	TAGOS 12	Ocean Surveillance Ships	224'	9
AGOS 19	4	TAGOS 20	Ocean Surveillance Ships	234'	9
AGS 26	2	TAGS 27	Survey Ships	285'	9
AGS 45	1	TAGS 45	Survey Ships	442'	9
AGS 51	2	TAGS 52	Survey Ships	208'	9
AGS 60	4	TAGS 62	Survey Ships	328'	9
AKR 295	3	TAKR 296	?	?	?
USCG					
WHEC	12	WHEC 715	High Endurance Cutter	378'	3

WMEC	13	WMEC 901	Medium Endurance Cutter "Bear"	270'	3
WMEC	16	WMEC 615	Medium Endurance Cutter "Reliance"	210'	3
WMEC	1	WMEC 38	Medium Endurance Cutter "Storis"	230'	3
WMEC	2	WMEC 167	Medium Endurance Cutter "Acushnet"	213'	3
WAGB	2	WAGB 10	Ice Breaker "Polar"	399'	5
WAGB	1	WAGB 83	Ice Breaker "Mackinaw"	310'	5
WLB	2	WLB 201	Seagoing Buoy Tender "Juniper"	225'	5
WLB	10	WLB 277	Seagoing Buoy Tender "Balsam" [Ser. A]	180'	5
WLB	2	WLB 297	Seagoing Buoy Tender "Balsam" [Ser. B]	180'	5
WLB	15	WLB 388	Seagoing Buoy Tender "Balsam" [Ser.C]	180'	5
WLM	6	WLM 551	Coastal Buoy Tender "Ida Lewis"	175'	5
WLM	5	WLM 685	Coastal Buoy Tender "Red"	157'	5
WLM	6	WLM 540	Coastal Buoy Tender "White"	133'	5
WLIC	4	WLIC 800	Inland Construction Tender "Pamlico"	160'	5
WLIC	3	WLIC 298	Inland Construction Tender "Cosmos"	100'	5
WLIC	2	WLIC 75301	Inland Construction Tender "Anvil" [A]	75'	5
WLIC	3	WLIC 75303	Inland Construction Tender "Anvil" [B]	75'	5
WLIC	4	WLIC 75306	Inland Construction Tender "Anvil" [C]	75'	5
WLI	1	WLI 313	Inland Buoy Tender "Cosmos"	100'	5
WLI	1	WLI 642	Inland Buoy Tender "Buckthorn"	100'	5
WLI	2	WLI 65400	Inland Buoy Tender "Improved Berry"	65'	5
WLI	2	WLI 65303	Inland Buoy Tender "Berry"	65'	5
WLR	1	WLR 311	River Buoy Tender "Sumac"	115'	5
WLR	5	WLR 75500	River Buoy Tender "Kankakee"	75'	5
WLR	9	WLR 75401	River Buoy Tender "Gasconade"	75'	5
WLR	6	WLR 65501	River Buoy Tender "Ouachita"	65'	5
WTGB	9	WTGB 101	Icebreaking Tug "Bay"	140'	5
WYTL	14	WYTL 65601	Small Harbor Tug	65'	5
ANB	20		Aids to Navigation boat	58'	5
ANB	25		Aids to Navigation boat	55'	5
ANB	32		Aids to Navigation boat	45'	5
ANB	58		Aids to Navigation boat	21'	5
?	17		Buoy servicing boat	49'	5
?	9		Buoy servicing boat	46'	5
WPB	16	WPB 1301	Patrol Boat "Island" [series A]	110'	7
WPB	21	WPB 1317	Patrol Boat "Island" [series B]	110'	7
WPB	12	WPB 1338	Patrol Boat "Island" [series C]	110'	7
WPB	1	WPB 82312	Patrol Boat "Point" [series A]	82'	7
WPB	31	WPB 82333	Patrol Boat "Point" [series C]	82'	7
WPB	7	WPB 82371	Patrol Boat "Point" [series D]	82'	7
WFCI	5	WFCI 43501	Fast Coastal Interceptor	44'	7
PC	24		Raider type patrol craft	22'	7
MLB	4	MLB 52312	Motor lifeboat	52'	7
MLB		MLB 47200	Motor lifeboat	47'	7
MLB	105		Motor lifeboat	44'	7
?	1	SAR	Search and rescue	50'	7
?	14	SAR	Search and rescue	21'	7
?	207		Utility boat	41'	7
?	2		Utility boat	38'	7
?	28		Port Security Boat	31'	7
?	19		Surf rescue boat	30'	7
?	2	Hammerhead	Hammerhead Patrol craft	24'	7
USAF					
MR	5	MR-120-8801	Missile retriever boat	120'	5
MR	1	MR-85-1603	Missile retriever boat	85'	5
TG	1	TG-45-1919	Small Harbor Tug	45'	5
MLC	4	C-74-2205	LCM(8) type mech. Lndg. Crft.	74'	7
US ARMY					
C1MT123	1	C1-MT-123A type	Heavy Lift ship, James McHenry	279'	4

LSV	6	LSV 01	Vehicle Landing Ship "Besson Class"	273'	4
LT	8	LT 130	Large Harbor Tug	128'	5
LT	18	LT 1937	Large Harbor Tug	107'	5
ST	11	ST 1988	Small Harbor Tug	70'	5
LCU	35	LCU 2001	Landing craft "LCU 2000 class"	174'	7
LCU	13	LCU 1667	Utility Landing Craft "LCU 1610 Class"	135'	7
LCM	126	LCM(8)	Mechanized Landing Craft "LCM(8)"	74'	7
LARC	30	LARC XV	Amphibious Vehicle	45'	7
LARC	19	LARC LX	Amphibious Vehicle	63'	7
LARC	3	LARC V	Amphibious Vehicle	35'	7
			Category legend:		
			# 1-aircraft platform(carrier type)		
			# 2-aircraft platform(amphib type)		
			#3-surface combatant platform		
			#4-auxiliary platform		
			#5-service craft platform		
			#6-towed support platf.		
			#7-patrol/small craft platform		
			#8-submersible platform		
			#9-research platform		

Weather Deck Runoff Class Specific Processes/Equipment Matrix

Class Specific Process	AOE-6	CV/CVN	DDG-51	LCAC-1	LHD-1	MCM-1	WLB (USCG)	WPB (USCG)
Air Operations								
Fixed Wing		X						
Rotary Wing	X	X	X		X			
Aircraft Elevators		X			X			
Flight Deck Safety Nets	X	X	X		X			
Fire Assist Vehicles		X			X			
Ground Support Equipment	X	X			X			
ALRE		X						
RAST *								
Aircraft Washdown	X	X	X		X			
Aircraft Fueling	X	X	X		X			
Buoy Handling Systems							X	
Deck/Superstructure Maintenance & Preservation	X	X	X	X	X	X	X	X
Deck Washdown	X	X	X	X	X	X	X	X
Electronic Intelligence Systems	X	X	X		X	X		X
Search/Navigational Systems	X	X	X	X	X	X	X	X
Firemain Systems	X	X	X		X	X	X	X
Fuel Transfer Systems	X	X	X	X	X	X	X	X
General Housekeeping	X	X	X	X	X	X	X	X
Mine Handling Systems						X		
Ships Boats/Launching Systems								
Ships Boats	X	X	X		X	X	X	X
Ships Boats Launching System	X	X	X		X	X	X	X
Stores Handling Systems	X	X	X		X			
Towing & Mooring Systems	X	X	X		X	X	X	X
Weapon Systems	X	X	X		X	X	**	X

ALRE: Aircraft Launch and Recovery Equipment

RAST: Recovery, Assist, Securing and Traversing (system)

* RAST installed on CG 49-73; FFG-8, 28, 29, 32, 33, 36-43, 45-61; DD 963-973, 975, 977, 978, 980-982, 985, 987-989, 991, 992, 997

** Weapon capability not normally employed

UNDS Weather Deck Runoff Survey

Ship: U S Navy MCM Class Vessel	Date Commissioned: N/A	Platform Category: Service Craft	IN PORT [X] UNDERWAY [x]
Assessment Date: 10-11 August 1999	Ship POC:		

1 Does the ship conform to expected platform category? Yes

Comments:

2 During the previous 0-12 and 12-24 months what percentage of time was spent:

Location	Previous 12 Months	Previous 12-24 Months
Pierside	75%	%
At-Sea	25%	%
	TOTAL 100%	**TOTAL 100%**
How much of the above **at-sea** time was spent operating within:		
0-3 nm	Transit %	%
3-12 nm	10%	%
>12 nm	90%	%
	TOTAL 100%	**TOTAL 100%**

3 Describe shipboard operations when operating within:

0-3 nm Transiting

3-12 nm Training / Mine Hunting

> 12 nm Training / Mine Hunting

UNDS Weather Deck Runoff Survey

4	List major weather deck equipment which has the potential to contribute to deck runoff:
	Forecastle:
	- Non-Magnetic Anchor Windlass and Capstan assembly Model X-1852; Dynamic Load Test 11,993 lbs., Static Load Test 11,694 lbs., Working Load 4,648 lbs.
	- Two 8" fixed fairlead rollers
	- One SQQ32 sonar winch assembly
	- One SQQ30 sonar winch control panel
	- Two Portable water hose stowage chests
	- One P250 pump (enclosed)
	- Two Hause Reels P&S
	- Two Seawater fire stations
	Fantail
	- One Magnetic Cable Reel Model 2D5-03347 manufactured by Lake Shore Inc.
	- One Mine Sweeping Winch Model 2D5-00348
	- One Acoustic Cable Reel Model 2D5-00346
	- One Acoustic Cable Reel Model 2D5-00347
	- Two Stern Cranes P&S; Dynamic Load Test 91,000 lbs., Static Load Test 12,000 lbs., Working Load 6,000 lbs.
	- Three Mine Tensioner/Payout systems
	01 Level (Port)
	- One BSP Winch Model CTD-110-365, Manufactured by Sound Ocean Systems
	- One 30 gallon MOGAS stowage tank with containment
	- Two Avon Rigid Hulled Inflatable Boat's, 17' 10" 8 person capacity (one 90 and one 60 HP Johnson outboard motors onboard MCM surveyed) and (two 90 HP Evinrude outboard motors onboard the other MCM surveyed)
	- One Antimagnetic Electric Hoist Winch Type BE-09 with 1" nylon rope; Dynamic Load Test 3,000lbs., Static Load Test 4,000lbs., Working Load 2,000lbs.
	- One Hazardous Materials Spill Kit
	- One Oil Spill Kit
	- One Electrically Operated Winch Control Station
	01 Level (Starboard)
	- One Magnetic & Acoustic Cable Reel Control Panel
	- One Aft Outrigger Boom 4,100 lbs with 1" Nylon Rope
	- One Fwd Outrigger Boom with 1-1/2" Nylon Rope and 5/8" Steel Cable
	- One Padeye for Booms
	- One P250 pump (enclosed)
	- One MNS ROV
	02 Level
	- Two 12" Search Lights P&S
	- One Microwave Antenna

UNDS Weather Deck Runoff Survey

Weather deck equipment (continued)

- MNS Center Boom Dynamic Load Test 4,500 lbs., Static Load Test 6,000 lbs., Working Load 3,000 lbs.
- MNS Center Winch-Electrically operated

03 Level

- Two .50 caliber Machine Gun Mounts
- Six Ammo Lockers
- Three Pyrotechnics Lockers
- Two MK3 MOD4 Binoculars P&S
- Two 12" Search Lights P&S
- One AS-3018A/WSC-IV Antenna Manufactured by Datron Systems
- Two M60 Machine Gun Mounts
- Various Stowage Lockers

UNDS Weather Deck Runoff Survey

5		Evaluation of runoff potential from the weather deck:
	a	Note location and height of coaming The main deck/01 level has 2" coaming around the entire deck area. All levels above the the main deck have a 1" coaming.
	b	Note location and route of scuppers: Scupper drains for the 02/03 levels drain to the deck below and drain overboard on the main deck/01 level.
	c	Note drainage routes from above deck levels: See above

UNDS Weather Deck Runoff Survey

d Identify all containment devices in use and corresponding equipment: The fueling stations containment enclosures are equipped with pipe caps attached by lanyards.

Containment enclosure around MOGAS container has open overboard discharge drains in containment walls.

e Identify containment or design issues/problems: Holes in containment walls of the MOGAS station.

UNDS Weather Deck Runoff Survey

6		What preventive measures if any does ship employ to mitigate runoff? During refueling evolutions an oil boom is placed around the ship.
7		Identify potential design/equipment changes to mitigate runoff from: None noted
	a	Deck coamings and scupper drains
	b	Elevated deck drain routing: None

UNDS Weather Deck Runoff Survey

c Equipment: Installation of containments around cranes and other hydraulically operated equipment to assist in the prevention of potential spill areas.

d Fuel transfer station: None noted

e Exposed cable reels and wire rope containment: Not applicable

f Grease fittings and exposed bearing surfaces: N/A

g Exposed hydraulic hoses and manifolds: Installation of chaffing jackets on hydraulic hoses for cranes to prevent wear of hoses and possible leakage due to damaged hoses.

UNDS Weather Deck Runoff Survey

8		Marine Pollution Control Devices (MPCD)
	a	Identify equipment in place to serve as a potential MPCD: - Nylon rope on cranes
	b	Discuss potential MPCD effectiveness: Although nylon rope is used in order to reduce magnetic conduct aboard these vessels, it seconds as a great pollutant reduction in the way of eliminating the need for grease on the crane wires.

UNDS Weather Deck Runoff Survey

c Discuss shipboard impact of potential MPCD: No negative impact to the ships performance.

d Solicit suggestions for other potential MPCDs: None noted

UNDS Weather Deck Runoff Survey

9		Best Management Practices (BMP)
	a	Identify BMPs currently in use:
		- Placards located at the oily waste stations: The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters and contiguous zone of the United States. If such discharges cause film or sheen upon, or beneath the surface of the water, violators are subject to penalty of $5,000.00.
		- Lanyards on the pipe caps of the containmnet enclosures of the fueling stations prevent accidental lose and reduce the potential of the drain pipe being open.
		- Covers on the .50 caliber machine gun mounts, provide protection from the eliminates of weather and prevent constituents applied during maintenance and preservation actions being washed off during rainfall.
	b	Discuss efficiency of BMP in use: All provide effective means in the prevention of deck runoff.

UNDS Weather Deck Runoff Survey

c Discuss shipboard impact of BMP in use: No negative impact.

d Solicit suggestions for potential BMPs: None

U. S. Navy MCM-Class Specific Process Appendix

Deck/Superstructure Maintenance & Preservation

a. What percentage of time is painting performed:
   Inport: 90-95 percent
   Underway: 5-10 percent
b. Are chemical paint removers used: No
   Identify chemicals paint removers: N/A
c. Is a solvent or thinner used when painting: No
   Identify solvent or thinner: Note, solvents are used in the paint locker for brush cleaning only. Paint locker does not open onto the weather deck.
d. Are surfaces cleaned prior to painting: Yes
   If yes, what cleaner is used: Simple Green
e. Identify depainting methodology used:
   Needle Guns: No — Vacuum Equipped: N/A
   Disc Sanders: Yes — Vacuum Equipped: Yes
   Grinders: Yes — Vacuum Equipped: No
   Wire Brushes: No
   Other: Sandpaper for roughing the surface. 80% of the preparation is completed using this method.
f. Identify measures taken preventing paint from entering the water: None
g. Identify measures taken to prevent debris from entering the water during depainting: Sweeping and disposing in trash.
h. How are paint debris picked up: Sweeping

Electronic Intelligence & Search/Navigational Systems

a. Identify types of electronic intelligence and search/navigational systems employed:
AN/SSN-2 Precise Integrated Navigation System (PINS)
AN/SQQ-32 Sonar
AN/SPS-55 Radar
AN/WSN-2 Gyrocompass
b. What processes are used for cleaning and lubrication of above listed assemblies: Fresh water washdowns, occasionally using Simple Green detergent. Units are self-contained.
c. Identify maintenance/repair of drive assemblies: None
d. Identify preservation processes for exterior structure and materials used: None

Firemain Systems

a. How is the sprinkler system maintained and tested: System is tested every 60 months IAW Planned Maintenance Program however, the counter measure washdown is activated every 6 months for training purposes. The piping for the system has 30 drain valves.
b. How is the fire main supply system maintained and tested: All maintenance and testing of the system is performed IAW applicable Maintenance Requirement Cards (MRCs). System flushed on a quarterly basis. System is comprised of 3 fire pumps at a pressure of 125psi. 13 fire stations are located throughout the ship.
c. Identify CO2 bottle bank preservation and maintenance processes: Not applicable.
d. Identify fire station preservation and maintenance processes: All fire stations and applicable hardware are maintained IAW Maintenance Requirement Cards (MRCs).

Fuel Transfer System

a. How are fuel transfer piping system and valves maintained: All maintenance is performed IAW applicable Maintenance Requirement Cards (MRCs).
b. Identify fuel transfer pump and control system maintenance: Not applicable, all equipment is located below decks. Fuel on-load pressure of 50psi, stowage system capacity of 19,674 gallons.
c. Are fuel transfer station cofferdams installed and are drain plugs used: Yes, fuel stations have cofferdams and stainless steel pipe caps with lanyards. Fuel containment boom placed around ship during refueling evolutions.
d. What does the ship do for fuel spill prevention and what is the location of spill recovery gear: Spill kit is located, 01 level port side aft. This is a standard spill kit crew reported no problems with replenishment materials.
e. How are fuel hoses and couplings maintained: Hose couplings are of a cam-lock quick disconnect type and are the responsibility of the fuel depot. Ship does not carry hoses onboard, refueling is performed pier side supplied by a fuel truck.

Ships Boats

a. List small boat exterior hull maintenance and preservation processes: No hull repair or preservation work noted to have been done onboard the ship.
b. Identify power plant and drive system maintenance: Daily engine flushes are performed using fresh water. Duration of run time varied from 2-3 minutes up to 15 minutes dependent upon the crew of the different MCM Class Vessels surveyed.
c. How are craft bildges cleaned and what is done with the drainage: Flushed with freshwater IAW applicable Maintenance Requirement Card (MRC).
d. Observe small boat fueling and venting process: Not applicable during assessment.
e. How are the ships boats cleaned and what materials are used: The boat is cleaned using fresh water and small amounts of Simple Green detergent.

Ships Boats Launching System

a. Identify processes for inspection and maintenance of davit/hoist assemblies: Visual inspections are performed prior to each operational use.
b. What maintenance and testing of hoist control system is done: Operational testing when using the hoist for lowering and raising the ships boat. All weight testing of the hoist is performed by outside activity.
c. Identify wire rope maintenance and lubrication processes: N/A hoist use nylon rope in the place of wire rope.
d. Identify the process for cleaning and preservation of handling gear: Freshwater washdowns with small amounts of simple green detergent for cleaning of the boat launching gear. Painting for preservation is accomplished using mechanical methods using needle guns, disc sanders, grinders and hand sanders.

Towing and Mooring Systems

a. How is wire rope maintained and preserved: Not applicable, Nylon Line is used.
b. Identify any towing support hardware maintenance: Not applicable
c. How are the mooring lines stowed, inspected and maintained: Lines are stowed in the line locker or flaked on deck. Visually inspected after each use and replaced as required.
d. Is any maintenance performed on the mooring capstan assembly: All maintenance is performed IAW applicable maintenance requirement cards. The anchor chain capstan is equipped with a Gypsy which can be de-clutched to allow for independent operations and used to assist in mooring.
e. What type of capstan control system is used: Electrical

Weapon Systems

a. Identify all weapon systems on weather deck: 2- 50 caliber Machine Gun mounts, and 2- M60 Machine Gun mounts.
b. What maintenance is done on identified systems: Maintenance on the weapon systems is IAW Maintenance Requirement Cards (MRCs).
c. What type of cleaning and what materials are used: Guns are wiped down with fresh water and Simple Green. A light coating of CLP NSN 9750-01-053-6688 is applied for preservation.
d. Identify any recurring problems leading to weather deck pollution potential: None

Deck Washdown

a. Where are the washdowns conducted; E.g., 0-3, 3-12, >12 nm: Pierside 60%, 0-3 20%, 3-12 20%
b. How often are washdowns conducted: Dependent on the amount of saltwater accumulation, normally averaging every 3 weeks.
c. Is fresh or saltwater used for washdown: Freshwater only
d. Identify cleaning agents used to conduct washdown: When performing saltwater rinse of vessel, no cleaners are used, this makes up 80% of the washdowns. When conducting a full washdown approximately 2 gallons of simple green detergent is used.
e. Describe washdown process: Starting on the 03 level using two fresh water hoses, buckets, brooms. Dipping broom in bucket with cleaner and scrub deck, rinse with fresh water.
f. Size of hose used for washdown: ½" garden hose
g. Water pressure: At-sea the pressure is 55-65 psi, and while pierside the pressure is 35-60 psi.
h. Is on/off nozzle used during washdown: Yes, unless pierside, then water is allowed to run continuous.
i. Time required to conduct washdown: 2-1/2 hrs total with water running approximately 50% of the time.
j. Has a sheen ever been note as a result of the washdown: No

General Housekeeping

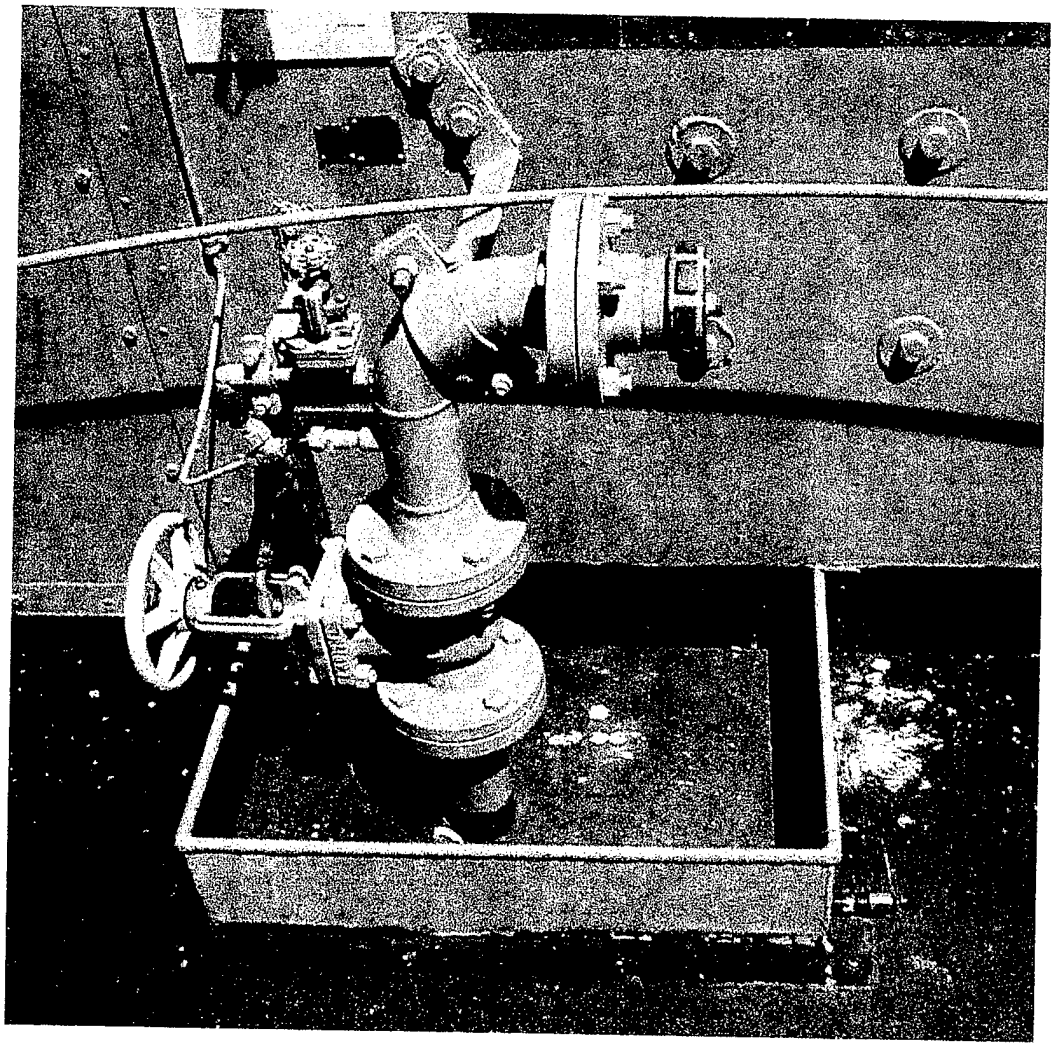
a. Identify materials used when performing general housekeeping: Normally consists of sweeping and swabbing of decks, with spot cleaning of bulkheads and overheads. Use of simple green detergent for all general housekeeping.
b. Discuss cleaning material efficiency: Good
c. Did you use PPE when using above listed materials: No
d. Identify other (substitute) materials used: None
e. Discuss cleaning efficiency of substitute materials: N/A

Mine Handling Systems

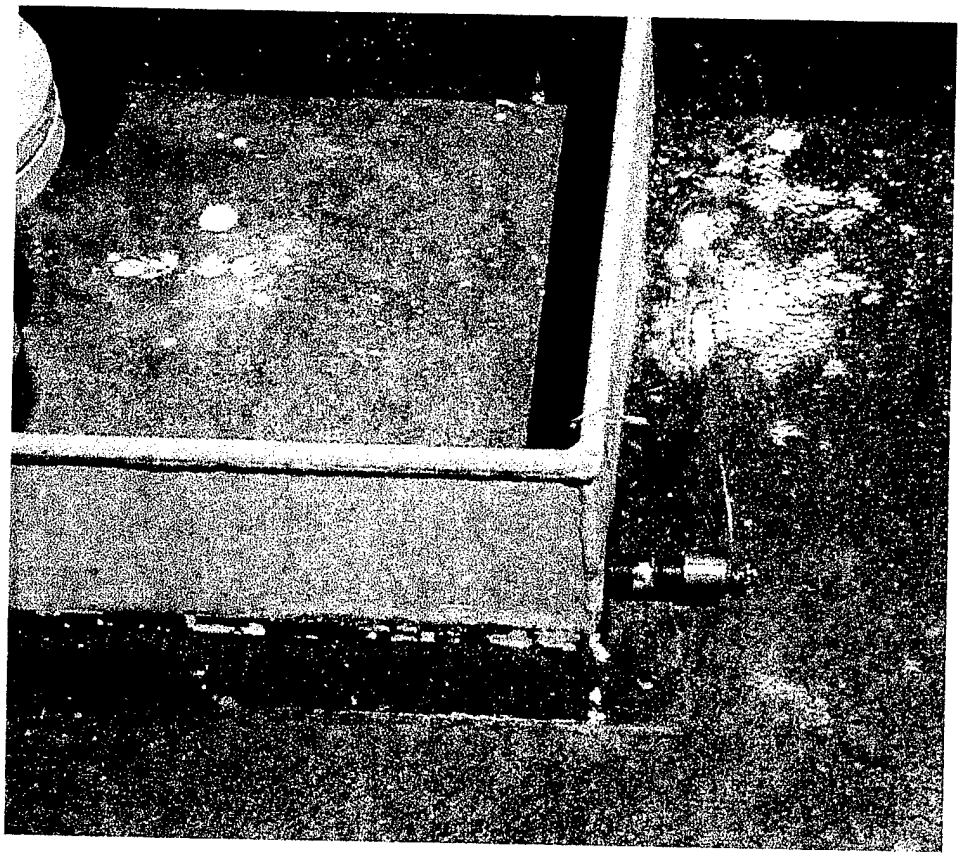
a. Identify weather deck mounted mine handling equipment:
SQQ32 Sonar Winch
Magnetic Cable Reel Model 2D5 –03347 manufactured by Lake Shore Inc.
Mine Sweeping Winch 2D5-00348
Acoustic Cable Reel Model 2D5-00346
Acoustic Cable Reel Model 2D5-00347
Stern Cranes
Mine Tensioner/Payout System
BSP Winch Model CTD-110-365 manufacture by Sound Ocean Systems
Magnetic & Acoustic Cable Reel Control Panel
Aft Outrigger Boom
Fwd Outrigger Boom
Mine Neutralization System Remote Operated Vehicle(MNS)
MNS Center Boom
MNS Center Winch

b. Identify maintenance performed on all exposed equipment, list materials used: All equipment and components are inspected and maintained IAW applicable maintenance requirement cards. Materials used are listed in the maintenance appendix of this report.

c. Identify cleaning agents used on mine handling equipment: All equipment and components are cleaned using fresh water and simple green. Painting and preservation of this equipment is performed using mechanical methods, no chemicals are used.

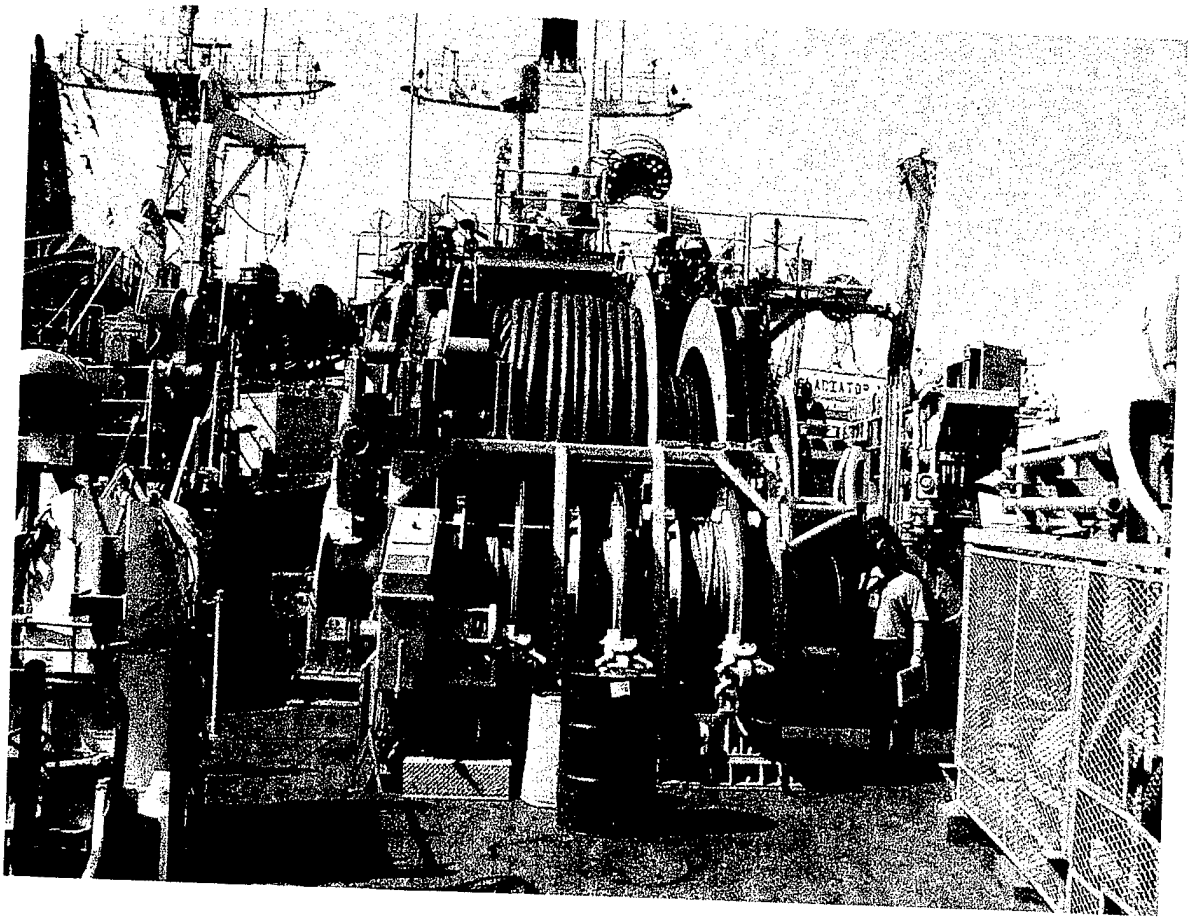


Refueling Station

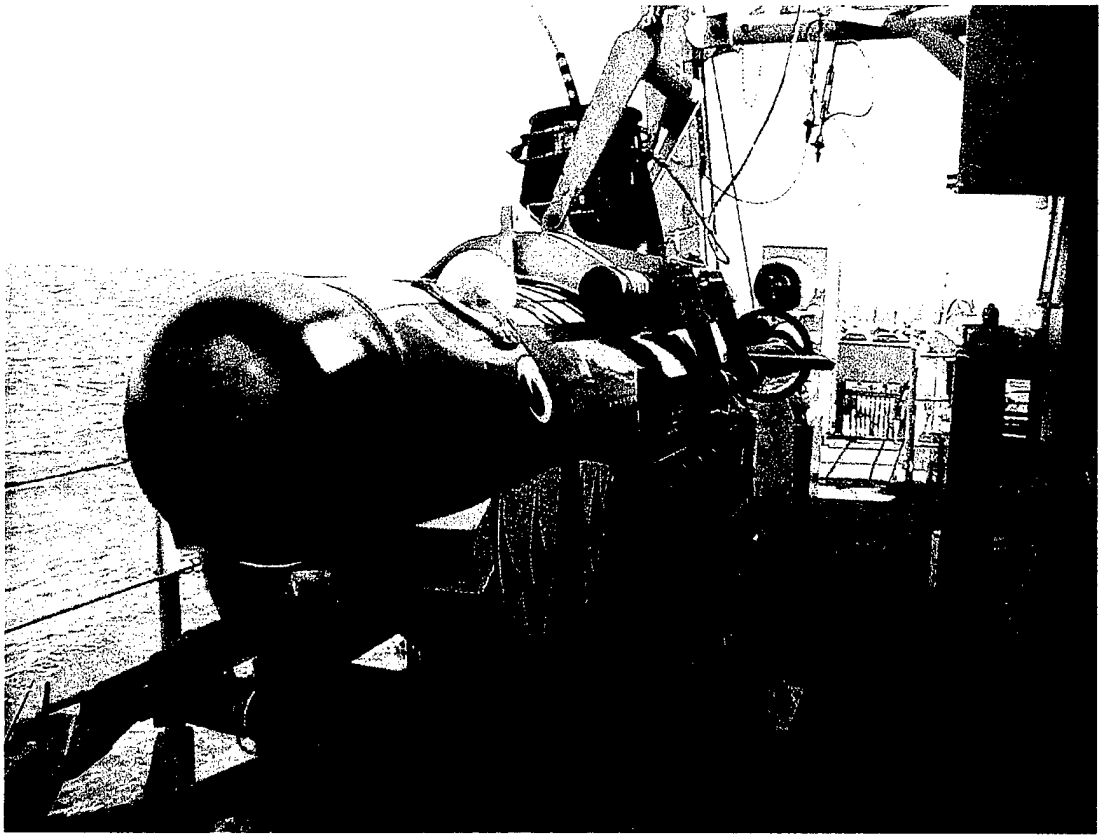


Fueling Station Containment Device

with Drain Plug

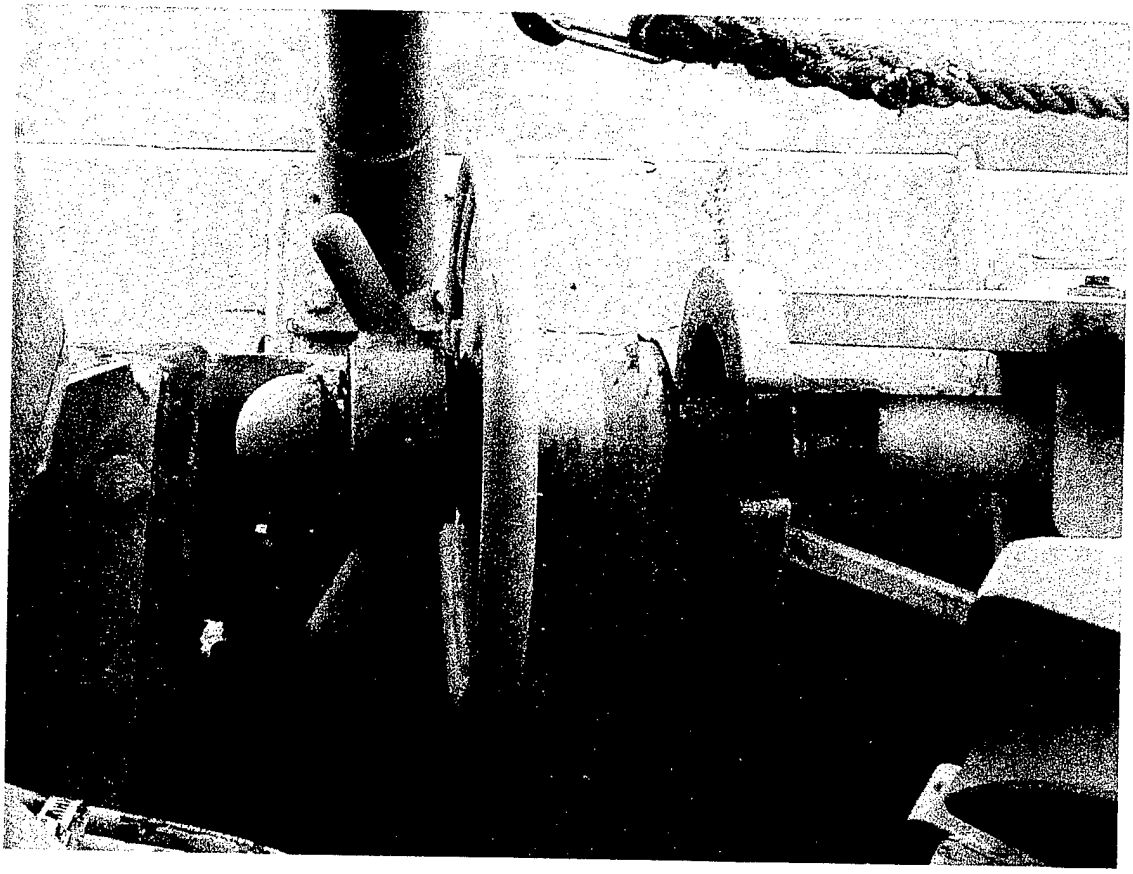


Mine Sweeping Winch Assemblies (foreground)
and Acoustic Cable Reels (background)



Mine Neutralization System (MNS)

Remotely Operated Vehicle (ROV)



MIL-G-24139 Grease on Outrigger Boom Swivel Fitting

Magnetic Cable Reel Lubrication Chart
Model 2D5-03347
Lake Shore, Inc.
Iron Mountain, MI

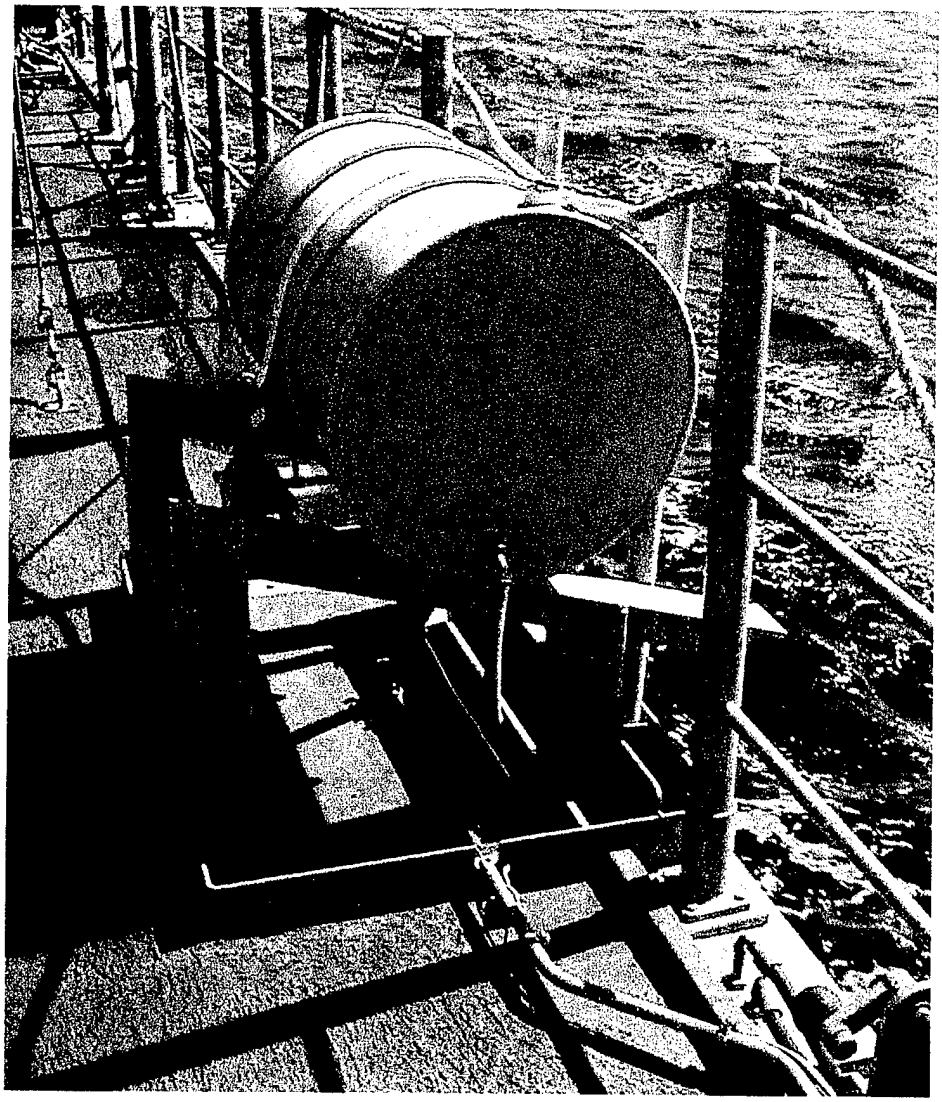
Item No.	1	2	3	4	5	6
Location	Gear Case	Drum Shaft Bearings	Gear Case Bearings	Select Lever	Brake Caliper Pivot Pins	Actuator Pins
Places	One (1)	Three (3)	Four (4)	One (1)	Sixteen (16)	Sixteen (16)
Type	Drain & Fill	Pressure	Pressure	Pressure	Pressure	Oil Can
Frequency	SemiAnnual	Quarterly	Quarterly	Quarterly	Quarterly	After each operation and as required
Lubricant	MIL-L-2105 GR 80, W-90	MIL-G-24139	MIL-G-24139	MIL-G-24139	MIL-G-24139	MIL-L-2104 GR 10
Remarks	Capacity 33 gal					

Acoustic Cable Reel Lubrication Chart
Model 2D5-03346
Lake Shore, Inc.
Iron Mountain, MI

Item No.	1	2	3	4	5
Location	Gear Case	Bearings	Actuator Pivot Pins	Brake Caliper Pivot Pins	Select Lever
Places	One (1)	Four (4)	Sixteen (16)	Sixteen (16)	One (1)
Type	Drain & Fill	Pressure	Oil Can	Pressure	Pressure
Frequency	SemiAnnual	Every 8 hrs of op or weekly	After each operation an as required	Quarterly	Every 8 hrs of op or weekly
Lubricant	MIL-L-2105 GR 80, W-90	MIL-G-24139	MIL-L-2104 GR 10	MIL-G-24139	MIL-G-24139
Remarks	Capacity 9 gal				

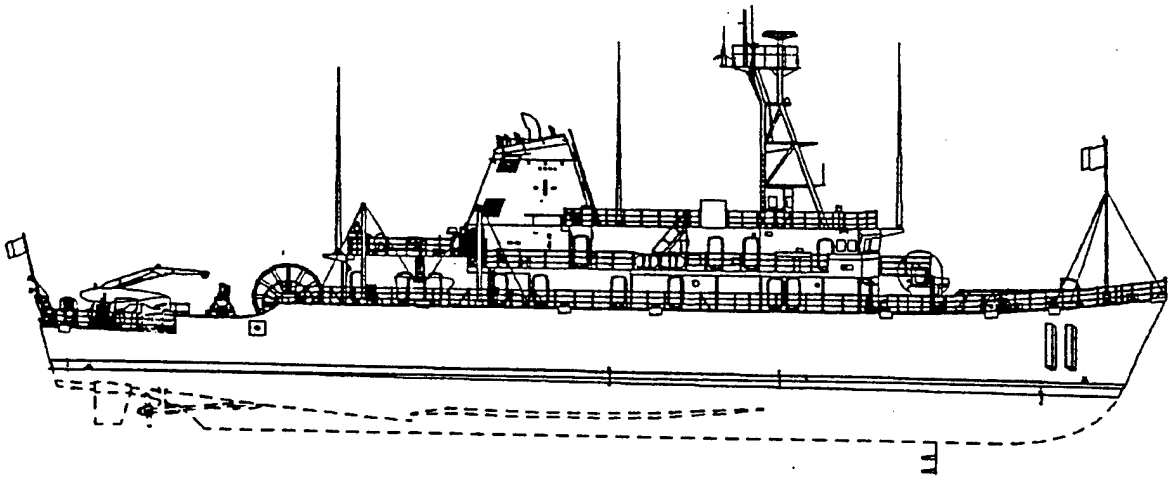
Lubrication Chart
Stern Crane Model 2D5-03447
Lake Shore, Inc
Iron Mountain, MI

Item No.	1	2	3	4	5	6	7	8	9
Location	Slew Bearing	Ring Gear	Hoist Winch	Slew Drive	Swivel Fairlead Bearing	Swivel Fairlead Sheave Pin	Main & Jib Boom Pivot Pin	Luff & Jib Cylinder Bearings	Wire Rope
Places	Four (4)	Total Surface of Gear Teeth	One (1)	One (1)	One (1)	One (1)	Two (2)	Four (4)	One (1)
Type	Pressure	Swab by Hand	Drain & Fill	Drain & Fill to Oil Level Plug	Pressure	Pressure	Pressure	Pressure	Swab by Hand
Frequency	Every 50 hrs of op.	Every 8 hrs of op or weekly	Every 6 months	Every 6 months	Every 8 hrs of op or weekly	Every 8 hrs of op or weekly	Every 8 hrs of op or weekly	Every 8 hrs of op or weekly	Every 100 hrs of op or qrtly
Lubricant	MIL-G-24139	MIL-G-18458	MIL-L-2105C	MIL-L-2105C	MIL-G-24139	MIL-G-24139	MIL-G-24139	MIL-G-24139	MIL-G-18458
Remarks		Access underside of deck	Capacity approx. .5 gal	Capacity approx. 2.6 gal					



30-Gallon Motor Gasoline Storage Tank

located on Jettison Platform



SHIP CHARACTERISTICS

Hull Framing

Traverse frames - laminated white oak
longitudinal girders - laminated Douglas fir
Single piece keel - laminated Douglas fir

Hull Planking

Inner lay diagonal planking - Alaskan cedar

Longitudinal planking - Douglas fir

Decks & Platforms

Main Deck and Ol level planking - tongue and groove laminated Douglas fir
Main Deck and 01 level sheathing - Douglas fir plywood.

Superstructure Deck House construction

laminated and solid wood, plywood sheathing with GRP covering.

Dimensions

Length	224 ft.
Beam	39 ft.
Draft	12 ft.
Displacement	1350 tons

Machinery Characteristics

Twin main propulsion shafts driving five bladed controllable pitch propellers.

Electrical Plant

Three Isotta Fraschini ship service
diesel generators rated at 375 KW each

Combat Systems and Electronics

AN/SLQ-48 Mine Neutralization System (MNS)
AN/SSN-2 Precise Integrated Navigation System (PINS)
AN/SQQ-32 Sonar
AN/SPS-55 Radar
AN/WSN-2 Gyrocompass
Two M2HB 50 Caliber Machine guns.

Crew

Officers	9
Chief Petty Officers	5
Enlisted	69

Material Safety Data Sheets

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MSDS Safety Information

FSC: 7930 **NIIN:** 01-342-4145 **MSDS Num:** BLMXQ

Product ID: SIMPLE GREEN

Responsible Party **Cage:** IO907

Proprietary Ind:
Published:

Review Ind:
Special Project CD:

Item Description Information

Item Manager: GSA
Item Name: CLEANING COMPOUND,SOLVENT-DETERGENT
Specification Number: N/K **Type/Grade/Class:** N/K
Unit of Issue: DR **Quantitative Expression:** 00000000055GL
UI Container Qty: 55 GL DR **Type of Container:** METAL

Ingredients

Cas: 7732-18-5 **Code:** M **RTECS #:** ZC0110000 **Code:** M
Name: WATER
% Text: N/K **Environmental Wt:**
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **Code:** M **OSHA STEL:** **Code:**
ACGIH TLV: NOT APPLICABLE **Code:** M **ACGIH STEL:** N/P **Code:**
EPA Rpt Qty: **DOT Rpt Qty:**
Ozone Depleting Chemical: N

Cas: **Code:** X **RTECS #:** 1001310SA **Code:** M
Name: SURFACTANTS
% Text: N/K **Environmental Wt:**
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **Code:** M **OSHA STEL:** **Code:**
ACGIH TLV: NOT APPLICABLE **Code:** M **ACGIH STEL:** N/P **Code:**
EPA Rpt Qty: **DOT Rpt Qty:**
Ozone Depleting Chemical:

Cas: **Code:** X **RTECS #:** 1000366WA **Code:** M

Name: WETTING AGENTS

% Text: N/K **Environmental Wt:**

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE **Code:** M **OSHA STEL:** **Code:**

ACGIH TLV: NOT APPLICABLE **Code:** M **ACGIH STEL:** N/P **Code:**

EPA Rpt Qty: **DOT Rpt Qty:**

Ozone Depleting Chemical:

Cas: **Code:** X **RTECS #:** 1000586CA **Code:** M

Name: CHELATING AGENT

% Text: N/K **Environmental Wt:**

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE **Code:** M **OSHA STEL:** **Code:**

ACGIH TLV: NOT APPLICABLE **Code:** M **ACGIH STEL:** N/P **Code:**

EPA Rpt Qty: **DOT Rpt Qty:**

Ozone Depleting Chemical:

Cas: **Code:** X **RTECS #:** 1002064FR **Code:** M

Name: FRAGRANCE

% Text: N/K **Environmental Wt:**

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE **Code:** M **OSHA STEL:** **Code:**

ACGIH TLV: NOT APPLICABLE **Code:** M **ACGIH STEL:** N/P **Code:**

EPA Rpt Qty: **DOT Rpt Qty:**

Ozone Depleting Chemical:

Cas: **Code:** X **RTECS #:** 1001827CO **Code:** M

Name: COLORANT

% Text: N/K **Environmental Wt:**

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE **Code:** M **OSHA STEL:** **Code:**

ACGIH TLV: NOT APPLICABLE **Code:** M **ACGIH STEL:** N/P **Code:**

EPA Rpt Qty: **DOT Rpt Qty:**

Ozone Depleting Chemical:

Cas: 111-76-2 **Code:** M **RTECS #:** KJ8575000 **Code:** M

Name: 2-BUTOXYETHANOL

% Text: <2.0 **Environmental Wt:**

Other REC Limits: N/K

OSHA PEL: S, 50 PPM **Code:** M **OSHA STEL:** **Code:**

ACGIH TLV: S, 25 PPM; 9293 **Code:** M **ACGIH N/P STEL:** **Code:**

EPA Rpt Qty: **DOT Rpt Qty:**

Ozone Depleting Chemical: N

Cas: **Code:** X **RTECS #:** 9999999ZZ **Code:** M

Name: SUP DAT:ADVERSE EFFECTS ON THE CNS,BLOOD-FORMING TISSUE,BLOOD, KIDNEYS & LIVER, ASSOCIATED W/THE ADMINISTRATION (ING 9)

% Text: N/A **Environmental Wt:**

Other REC Limits: NOT APPLICABLE

OSHA PEL: NOT APPLICABLE **Code:** M **OSHA STEL:** **Code:**

ACGIH TLV: NOT APPLICABLE **Code:** M **ACGIH N/P STEL:** **Code:**

EPA Rpt Qty: **DOT Rpt Qty:**

Ozone Depleting Chemical:

Cas: **Code:** X **RTECS #:** 9999999ZZ **Code:** M

Name: ING 8:OF ETHYLENE GLYCOL MONOBUTYL ETHER (EGBE) & ETHYLENE GLYCOL MONOBUTYL ETHER ACETATE (EGBEA). (EXTRACTED (ING 10)

% Text: N/A **Environmental Wt:**

Other REC Limits: NOT APPLICABLE

OSHA PEL: NOT APPLICABLE **Code:** M **OSHA STEL:** **Code:**

ACGIH TLV: NOT APPLICABLE **Code:** M **ACGIH N/P STEL:** **Code:**

EPA Rpt Qty: **DOT Rpt Qty:**

Ozone Depleting Chemical:

Cas: **Code:** X **RTECS #:** 9999999ZZ **Code:** M

Name: ING 9: FROM DHHS (NIOSH) PUBLICATION NO. (90-118). (FP N)

% Text: N/A **Environmental Wt:**

Other REC Limits: NOT APPLICABLE

OSHA PEL: NOT APPLICABLE **Code:** M **OSHA STEL:** **Code:**

ACGIH TLV: NOT APPLICABLE **Code:** M **ACGIH N/P STEL:** **Code:**

EPA Rpt Qty: **DOT Rpt Qty:**

Ozone Depleting Chemical:

Health Hazards Data

LD50 LC50 Mixture LD50: (ORAL,RAT) >5.0 G/KG.

Route Of Entry Inds - Inhalation: YES **Skin:** YES **Ingestion:** YES

Carcinogenicity Inds - NTP: NO **IARC:** NO **OSHA:** NO

Health Hazards Acute And Chronic

ADVERSE EFFECTS ON HUMAN HEALTH ARE NOT EXPECTED FROM SIMPLE GREEN, BASED UPON SEVENTEEN YEARS OF USE WITHOUT REPORTED ADVERSE HEALTH INCIDENCE IN DIVERSE POPULATION GROUPS, INCLUDING EXTENSIVE USE BY INMATES OF U.S. FEDERAL PRISONS IN CLEA NUP OPERATIONS SIMPLE GREEN IS MILD EYE IRRITANT; MUCOUS (SEE EFTS OF OVEREXP)

Explanation Of Carcinogenicity

NOT RELEVANT.

Signs And Symptions Of Overexposure

HLTH HAZ: MEMBRANES MAY BECOME IRRITATED BY CONCENTRATE-MIST. SIMPLE GREEN IS NOT LIKELY TO IRRITATE SKIN IN MAJORITY OF USERS. REPEATED DAILY APPLICATION TO SKIN WITHOUT RINSING, OR CONTINUOUS CONTACT OF SIMPLE GREEN ON SKIN MAY LEAD TO TE MPORARY, BUT RVERSIBLE, IRRITATION.

Medical Cond Aggravated By Exposure

NONE SPECIFIED BY MANUFACTURER.

First Aid

EYE: IMMED RINSE EYE W/LRG QTYS OF COOL H*2O; CONT 15 MIN/UNTIL MATL HAS BEEN REMOVED; BE SURE TO LIFT UPPER & LOWER LIDS DURING RINSING. GET MED ATTN, IF IRRIT PERSISTS. SKIN: MIN EFTS, IF ANY; RINSE SKIN W/H*2O, RINSE SHOES & LAUNDER CLTH G BEFORE REUS. REVERSIBLE REDDENING MAY OCCUR IN SOME DERMAL-SENSITIVE USERS; THORO RINSE AREA & GET MED ATTN IF RXN PERSISTS. INGEST: ESSENTIALLY (SUPP DATA)

Spill Release Procedures

VACUUM, SWEEP, SCOOP, OR MOP UP SPILLED MATERIAL; WET CLEAN-UP METHODS ARE SUITABLE.

Neutralizing Agent

NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Methods

SIMPLE GREEN IS FULLY WATER SOLUBLE AND BIODEGRADABLE & WILL NOT HARM SEWAGE-TREATMENT MICROORGANISMS IF DISPOSED BY SEWER OR DRAIN. DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL LAWS.

Handling And Storage Precautions

NO SPECIAL PRECAUTIONS REQUIRED. THIS PRODUCT IS NON-HAZARDOUS.

Other Precautions

NONE SPECIFIED BY MANUFACTURER.

Fire and Explosion Hazard Information

Flash Point Method: N/P

Flash Point: **Flash Point Text:** N/K

Autoignition Temp: **Autoignition Temp Text:** N/A

Lower Limits: N/K **Upper Limits:** N/K

Extinguishing Media

NONFLAMMABLE/NONEXPLOSIVE. NO SPECIAL PROCEDURES REQUIRED.

Fire Fighting Procedures

NONE REQUIRED.

Unusual Fire/Explosion Hazard

NONE REQUIRED.

Control Measures

Respiratory Protection

NO SPECIAL PRECAUTIONS REQUIRED.

Ventilation

NONE SPECIFIED BY MANUFACTURER.

Protective Gloves

NONE SPECIFIED BY MANUFACTURER.

Eye Protection

CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment

NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices

RINSE COMPLETELY FROM SKIN AFTER CONTACT.

Supplemental Safety and Health

FIRST AID: NON-TOXIC.GIVE SEVERAL GLASSES OF H*2O TO DILUTE;DO NOT INDUCE VOMIT.IF STOMACH UPSET OCCURS, CONSULT MD.
INHAL:NON=TOXIC.EXPOS TO CONCENTRATE-MIST MAY CAUSE MILD IRRIT OF NASAL PASSAGES/THROAT;REMOVE TO FRESH AIR. GET MED ATTN IF IRRIT PERSISS. ANIMAL STUDIES HAVE CLEARLY DEMONSTRATED DOSE-RELATED (ING 8)

Physical/Chemical Properties

HCC: N1 **NRC/State LIC No:**

Net Prop WT For Ammo:

Boiling Point: **B.P. Text:** 230F,110C

Melt/Freeze Pt: **M.P/F.P Text:** N/K

Decomp Temp: **Decomp Text:** N/K

Vapor Pres: 30 **Vapor Density:** 1.3

Volatile Org Content %: **Spec Gravity:** 1.0257

VOC Pounds/Gallon: **PH:** 9.5

VOC Grams/Liter: **Viscosity:** N/P

Evaporation Rate & Reference: N/K

Solubility in Water: COMPLETE

Appearance and Odor: TRANSPARENT GREEN LIQUID WITH CHARACTERISTIC SASSAFRAS ODOR.

Percent Volatiles by Volume: N/K **Corrosion Rate:** N/K

Reactivity Data

Stability Indicator: YES NONE SPECIFIED BY MANUFACTURER.

Stability Condition To Avoid: NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid:

Hazardous Decomposition Products: NONE SPECIFIED BY MANUFACTURER.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: NOT RELEVANT.

Toxicological Information

Toxicological Information: N/P

Ecological Information

Ecological: N/P

MSDS Transport Information

Transport Information: N/P

Regulatory Information

Sara Title III Information: N/P
Federal Regulatory Information: N/P
State Regulatory Information: N/P

Other Information

Other Information: N/P

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MSDS Safety Information

FSC: 9150 **NIIN:** 00-180-6381 **MSDS Num:** BRGHF

Product ID: AEROSHELL GREASE 6

Responsible Party **Cage:** 54527

Proprietary Ind:
Published:
Review Ind:
Special Project CD:

Item Description Information

Item Manager: S9G
Item Name: GREASE,GENERAL PURPOSE
Specification Number: MIL-G-24139 **Type/Grade/Class:** NONE
Unit of Issue: CN **Quantitative Expression:** 20000000175LB
UI Container Qty: 1.750 LBS **Type of Container:** CAN

Ingredients

Cas: 64742-54-7 **Code:** M **RTECS #:** PY8035500 **Code:** M
Name: SOLVENT REFINED: HYDROTREATED HEAVY PARAFFINIC DISTILLATES
% Text: 86.0 **Environmental Wt:**
Other REC Limits: NONE SPECIFIED
OSHA PEL: 5 MG/M3 OIL MIST **Code:** M **OSHA STEL:** **Code:**
ACGIH TLV: 5 MG/M3 OIL MIST9293 **Code:** M **ACGIH STEL:** N/P **Code:**
EPA Rpt Qty: **DOT Rpt Qty:**
Ozone Depleting Chemical: N

Cas: 1302-78-0 **Code:** M **RTECS #:** 1000995CT **Code:** M
Name: INORGANIC CLAY
% Text: 6.0 **Environmental Wt:**
Other REC Limits: NONE SPECIFIED
OSHA PEL: NOT ESTABLISHED **Code:** M **OSHA STEL:** **Code:**
ACGIH TLV: NOT ESTABLISHED **Code:** M **ACGIH STEL:** N/P **Code:**
EPA Rpt Qty: **DOT Rpt Qty:**
Ozone Depleting Chemical:

Cas: 68910-93-0 **Code:** M **RTECS #:** 1002868FA **Code:** M
Name: FATTY ACID AMIDES
% Text: 4.0 **Environmental Wt:**
Other REC Limits: NONE SPECIFIED
OSHA PEL: NOT ESTABLISHED **Code:** M **OSHA STEL:** **Code:**
ACGIH TLV: NOT ESTABLISHED **Code:** M **ACGIH STEL:** N/P **Code:**
EPA Rpt Qty: **DOT Rpt Qty:**
Ozone Depleting Chemical: N

Cas: **Code:** X **RTECS #:** 1003214OC **Code:** M
Name: OTHER COMPONENTS
% Text: 4.0 **Environmental Wt:**
Other REC Limits: NONE SPECIFIED
OSHA PEL: NOT ESTABLISHED **Code:** M **OSHA STEL:** **Code:**
ACGIH TLV: NOT ESTABLISHED **Code:** M **ACGIH STEL:** N/P **Code:**
EPA Rpt Qty: **DOT Rpt Qty:**
Ozone Depleting Chemical:

Health Hazards Data

LD50 LC50 Mixture LD50 ORAL RAT>15GM/KG FOR 64742-54-7
Route Of Entry Inds - Inhalation: NO **Skin:** YES **Ingestion:** NO
Carcinogenicity Inds - NTP: NO **IARC:** NO **OSHA:** NO

Health Hazards Acute And Chronic

EYES: MILDLY IRRITATING. SKIN: PROLONGED CONTACT MAY CAUSE VARIOUS SKIN DISORDERS SUCH AS DERMATITIS, FOLLICULITIS OR OIL ACNE. HIGH PRESSURE RELEASE MAY RESULT IN INJECTION OF GREASE INTO SKIN CAUSING LOCAL NECROSIS. INHALATION: NOT A ROUT E OF EXPOSURE.INGESTION: NOT A ROUTE OF EXPOSURE.

Explanation Of Carcinogenicity

THERE ARE NO INGREDIENTS ABOVE 0.1% WHICH ARE IDENTIFIED AS CARCINOGENS BY NTP,IARC OR OSHA.

Signs And Symptions Of Overexposure

EYES: MILD IRRITATION. SKIN: DERMATITIS, FOLLICULITIS, OIL ACNE, LOCAL NECROSIS. INHALATION: NO SPECIFIC INFORMATION IDENTIFIED. INGESTION: NO SPECIFIC INFORMATION IDENTIFIED.

Medical Cond Aggravated By Exposure

PRE-EXISTING SKIN DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT.

First Aid

EYES: FLUSH WITH LARGE AMOUNTS OF WATER. IF IRRITATION PERSISTS,GET MEDICAL ATTENTION. SKIN: REMOVE CONTAMINATED CLOTHING. WASH AREA WITH SOAP AND WATER. IF IRRITATION PERSISTS GET MEDICAL ATTENTION. IF INJECTED UNDER SKIN GET PROMPT MEDICA L ATTENTION. NHALATION: MOVE TO FRESH AIR. GIVE OXYGEN IF BREATHING DIFFICULT. GET MEDICAL ATTENTION. INGESTION: DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION.

Spill Release Procedures

SCOOP UP EXCESS GREASE. PLACE IN AN APPROPRIATE CONTAINER FOR DISPOSAL.CLEAN AREA WITH APPROPRIATE CLEANER.

Neutralizing Agent

NONE

Waste Disposal Methods

DISPOSE OF WASTE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

Handling And Storage Precautions

STORE IN COOL, DRY, PLACE WITH ADEQUATE VENTILATION, AWAY FROM OPEN FLAMES AND HIGH TEMPERATURES. PROTECT FROM PHYSICAL DAMAGE.

Other Precautions

MINIMIZE SKIN CONTACT. PROPERLY DISPOSE OF CONTAMINATEDLEATHER ARTICLES(EG.SHOES)THAT CANNOT BE DECONTAMINATED.

Fire and Explosion Hazard Information

Flash Point Method: PMCC

Flash Point: **Flash Point Text:** 390F,199C

Autoignition Temp: **Autoignition Temp Text:** N/A

Lower Limits: UNKNOWN **Upper Limits:** UNKNOWN

Extinguishing Media

WATER FOG, DRY CHEM, CARBON DIOXIDE.

Fire Fighting Procedures

USE A SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE EQUIPMENT.COOL FIRE EXPOSED CONTAINERS WITH WATER SPRAY.

Unusual Fire/Explosion Hazard

DO NOT USE A DIRECT STREAM OF WATER ON BURNING PRODUCT;IT CAN FLOAT AND REIGNITE.

Control Measures

Respiratory Protection

NONE NORMALLY REQUIRED.

Ventilation

USE DILUTION VENTILATION.

Protective Gloves

OIL RESISTANT GLOVES.

Eye Protection

SAFETY GLASSES.

Other Protective Equipment

NORMAL WORK CLOTHING AS NEEDED TO MINIMIZE SKIN CONTACT.

Work Hygienic Practices

WASH AFTER HANDLING AND BEFORE EATING, DRINKING, OR SMOKING. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

Supplemental Safety and Health

NONE

Physical/Chemical Properties

HCC: V6 **NRC/State LIC No:** N/R

Net Prop WT For Ammo: N/R

Boiling Point: **B.P. Text:** UNKNOWN

Melt/Freeze Pt: **M.P/F.P Text:** 300F,149C

Decomp Temp: **Decomp Text:** UNKNOWN

Vapor Pres: UNKNOWN **Vapor Density:** UNKNOWN

Volatile Org Content %: **Spec Gravity:** UNKNOWN

VOC Pounds/Gallon: **PH:** N/K

VOC Grams/Liter: **Viscosity:** N/P

Evaporation Rate & Reference: UNKNOWN

Solubility in Water: INSOLUBLE

Appearance and Odor: DARK AMBER, SMOOTH GREASE. SLIGHT ODOR.

Percent Volatiles by Volume: N/K **Corrosion Rate:** UNKNOWN

Reactivity Data

Stability Indicator: YES STRONG OXIDIZING AGENTS.

Stability Condition To Avoid: HEAT, OPEN FLAME AND OTHER IGNITION SOURCES.

Materials To Avoid:

Hazardous Decomposition Products: CARBON MONOXIDE, UNIDENTIFIED ORGANIC COMPOUNDS, MIXTURE OF AIRBORNE SOLID, LIQUID, GASES MAY BE FORMED UPON COMBUSTION.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: NONE

Toxicological Information

Toxicological Information: N/P

Ecological Information

Ecological: N/P

MSDS Transport Information

Transport Information: N/P

Regulatory Information

Sara Title III Information: N/P

Federal Regulatory Information: N/P

State Regulatory Information: N/P

Other Information

Other Information: N/P

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!! Datasheet is not complete, some fields are not displayed !!

MSDS Safety Information

FSC: 9150 **NIIN:** 00-905-9100 **MSDS Num:** BFVYL

Product ID: UNIVERSAL GEAR LUBRICANT SAE 80W-90

Responsible Party **Cage:** 96004

Proprietary Ind:
Published:
Review Ind:
Special Project CD:

Item Description Information

Item Manager: S9G
Item Name: LUBRICATING OIL, GEAR
Specification Number: MIL-L-2105 **Type/Grade/Class:** NK
Unit of Issue: GL **Quantitative Expression:** NK
UI Container Qty: 1 GL **Type of Container:** N/K

Ingredients

Cas: **Code:** X **RTECS #:** 1002720PL **Code:** M
Name: HIGHLY REFINED BASE OILS, CAS# 64742-57-0,64742-01-4,64742-54-7,64742-62-7.SUPP DATA
% Text: >90 **Environmental Wt:**
Other REC Limits: N/P
OSHA PEL: N/P **Code:** **OSHA STEL:** **Code:**
ACGIH TLV: N/K **Code:** M **ACGIH STEL:** N/P **Code:**
EPA Rpt Qty: **DOT Rpt Qty:**
Ozone Depleting Chemical:

Cas: **Code:** X **RTECS #:** 1003390AI **Code:** M
Name: ADDITIVES INCLUDING INHIBITORS AND EXTREME PRESSURE AGENT
% Text: <10 **Environmental Wt:**
Other REC Limits: N/P
OSHA PEL: N/P **Code:** **OSHA STEL:** **Code:**
ACGIH TLV: N/K **Code:** M **ACGIH STEL:** N/P **Code:**
EPA Rpt Qty: **DOT Rpt Qty:**
Ozone Depleting Chemical:

Health Hazards Data

LD50 LC50 Mixture NOT SPECIFIED BY MANUFACTURER.

Route Of Entry Inds - Inhalation: NO **Skin:** YES **Ingestion:** NO

Carcinogenicity Inds - NTP: NO **IARC:** NO **OSHA:** NO

Health Hazards Acute And Chronic

NONE EXPECTED.

Explanation Of Carcinogenicity

THIS PRODUCT IS NOT LISTED BY IARC, NTP OR OSHA AS A CARCINOGEN, MUTAGEN, TERATOGEN OR NEUROTOXIN.

Signs And Symptions Of Overexposure

NONE EXPECTED.

Medical Cond Aggravated By Exposure

NONE SPECIFIED BY MANUFACTURER.

First Aid

EYES: AS A PRECAUTION, FLUSH EYES WITH WATER FOR 15 MINUTES. REMOVE CONTACT LENSES IF WORN. SKIN: AS A PRECAUTION, WASH SKIN WITH SOAP AND WATER. REMOVE AND WASH CONTAMINATED CLOTHING. INHALATION: NONE REQUIRED. INGESTION: GIVE WATER OR MIL K TO DRINK AN CONTACT PHYSICIAN. DO NOT INDUCE VOMITING.

Spill Release Procedures

STOP SOURCE OF LEAK OR SPILL IF POSSIBLE. CLEAN UP RELEASES AS SOON AS POSSIBLE. CONTAIN LIQUID TO PREVENT FURTHER CONTAMINATION FO SOIL, SURFACE WATER OR GROUNDWATER. USE SORBENT MATERIALS. WHERE FEASIBLE REMOVE CONTAMINATED SOIL.

Neutralizing Agent

NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Methods

PREVENT WASTE FROM CONTAMINATING SURROUNDING ENVIRONMENT. DISCARD ANY PRODUCT, RESIDUE, DISPOSAL CONTAINER OR LINER IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS.

Handling And Storage Precautions

AVOID PROLONGED OR REPEATED SKIN CONTACT. STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

Other Precautions

DO NOT WELD, HEAAAAT OR DRILL CONTAINER. RESIDUE MAYIGNITE WITH EXPLOSIVE VIOLENCE IF HEATED SUFFICIENTLY. CAUTION! DO NOT USEPRESSURE TO EMPTY DRUM OR EXPLOSION MAY RESULT.

Fire and Explosion Hazard Information

Flash Point Method: COC

Flash Point: **Flash Point Text:** 392F,200C

Autoignition Temp: **Autoignition Temp Text:** N/K

Lower Limits: NOT GIVEN **Upper Limits:** NOT GIVEN

Extinguishing Media

CARBON DIOXIDE, DRY CHEMICAL, FOAM, WATER FOG

Fire Fighting Procedures

FIRE FIGHTERS SHOULD USE NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT WHEN FIGHTING CHEMICAL FIRE. USE WATER SPRAY TO COOL NEARBY CONTAINERS EXPOSED TO FIRE.

Unusual Fire/Explosion Hazard

FIRE OR EXCESSIVE HEAT MAY CAUSE PRODUCTION OF HAZARDOUS DECOMPOSITION PRODUCTS.

Control Measures

Respiratory Protection

NO SPECIAL RESPIRATORY PROTECTION IS NORMALLY REQUIRED. IF OPERATING CONDITIONS CREATEE HIGH AIRBORNE CONCENTRATIONS, USE A NIOSH APPROVED RESPIRATOR.

Ventilation

USE ADEQUATE VENTILATION TO KEEP AIRBORNE CONCENTRATIONS BELOW RECOMMENDED EXPOSURE STANDARD.

Protective Gloves

NOT NORMALLY REQUIRED

Eye Protection

NOT NORMALLY REQUIRED

Other Protective Equipment

AVOID PROLONGED OR REPEATED SKIN CONTACT.

Work Hygienic Practices

WASH WITH SOAP AND WATER AFTER HANDLING PRODUCT AND BEFORE EATING DRINKING OR SMOKING.

Supplemental Safety and Health

THIS PRODUCT CONTAINS PETROLEUM BASE OILS WHICH MAY BE REFINED BY VARIOUS PROCESSES INCLUDING SEVERE SOLVENT EXTRACTION, SEVERE HYDROCRACKING OR SEVERE HYDROTREATING. NONE OF THE OILS REQUIRE A CANCER WARNING UNDER THE OSHA HAZARD COMMUNICA TION STANDARD.

Physical/Chemical Properties

HCC: V6 **NRC/State LIC No:** N/R

Net Prop WT For Ammo: N/R

Boiling Point: **B.P. Text:** NOT GIVEN

Melt/Freeze Pt: **M.P/F.P Text:** NOT GIVEN

Decomp Temp: **Decomp Text:** UNKNOWN

Vapor Pres: NOT GIVEN **Vapor Density:** NOT GIVEN

Volatile Org Content %: **Spec Gravity:** 0.90

VOC Pounds/Gallon: **PH:** N/K

VOC Grams/Liter: **Viscosity:** SEE ADD DATA

Evaporation Rate & Reference: NOT GIVEN

Solubility in Water: INSOLUBLE

Appearance and Odor: DARK GREEN LIQUID, HYDROCARBON ODOR

Percent Volatiles by Volume: N/K **Corrosion Rate:** UNKNOWN

Reactivity Data

Stability Indicator: YES STRONG OXIDIZING AGENTS SUCH AS CHLORATES, NITRATE, PEROXIDES, ETC.

Stability Condition To Avoid: EXTREME TEMPERATURES.

Materials To Avoid:

Hazardous Decomposition Products: NOT GIVEN

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: NONE. WILL NOT OCCUR.

Toxicological Information

Toxicological Information: N/P

Ecological Information

Ecological: N/P

MSDS Transport Information

Transport Information: N/P

Regulatory Information

Sara Title III Information: N/P

Federal Regulatory Information: N/P

State Regulatory Information: N/P

Other Information

Other Information: N/P

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