

**PREPRODUCTION INITIATIVE
MOBILE BILGE CLEANING SYSTEM
TEST PLAN**

SITE: NAB CORONADO

1.0 OBJECTIVE

This test plan describes the data collection procedure for evaluating the use of a mobile bilge cleaning system (MOBICS) in an operational environment. The data will be used to determine the system's efficiency, effectiveness, and overall success in completing bilge cleaning on small boat units. The environmental and cost benefits of using such a system versus the currently used method will be established.

2.0 DESCRIPTION

Currently, bilge cleaning on Special Operations 11-meter rigid hull inflatable boats (RHIBs) is accomplished by removing the boat from the water, transporting it to a wash station, steam cleaning it, and capturing the wash water for treatment. When the equipment necessary to take the boat out of the water (boat trailer, tow vehicle) is not available, bilge cleaning is accomplished by two sailors with degreaser, buckets, and rags.

The lighter amphibious resupply cargo (LARC-V) boat is an amphibious vehicle manufactured in the late 1960s. The diesel engine and hydraulic systems are old and prone to leakage. These fluids collect in the bilge and are pumped overboard by an automatic bilge pumping system. Since the vehicle is amphibious, this can occur when the vehicle is on land or in the water. The bilge cleaning process for the LARC-V involves cleaning the bilge with pressure washer and degreaser. The oil/water mixture is drained and captured, and the bilge is wiped down with rags. The captured oil/water mixture is cycled through an oil/water separator.

To simplify and improve bilge cleaning on these types of boats, a MOBICS will be evaluated. The MOBICS selected will be evaluated at NAB Coronado by Beach Master Unit 1 (BMU-1) and Special Boat Unit 12 (SBU-12). The MOBICS is self-powered by a generator and consists of a steam cleaner, a vacuum system, filters, a collection tank, and an oil-water separator. The length of the vacuum and steam cleaner hoses will allow the bilge to be cleaned while the boat is still in the water.

The selected MOBICS will clean the bilge area with high-pressure steam, vacuum the waste from the bilge area, and collect up to 110 gallons of waste in a collection tank. The MOBICS is mounted on a trailer, facilitating its evaluation by both Navy units.

3.0 TEST PLAN

This test plan will be used to evaluate the effectiveness of the MOBICS manufactured by American Marine Oil System (A.M.O.S.). Quantitative and qualitative data will be collected and used to evaluate the system's ability to provide safer and more efficient bilge cleaning while reducing oily water discharge to waterways and oily rag generation.

3.1 Approach

One MOBICS will be used during the implementation of this test plan. Quantitative and qualitative data will be collected by completion of the Operator's Log and the Maintenance and Repair Log. This system will be evaluated for approximately 12 months. A sharing arrangement has been coordinated between SBU-12 and BMU-1.

Bilge cleaning operations will occur in accordance with the current maintenance requirements. The effectiveness of the bilge cleaning will be measured by evaluating the system's efficiency, ability to interface with site operations, and reduction of hazardous waste generated during the bilge cleaning process.

3.2 Instructions for Completing the Operator's Log

The Operator's Log includes various information needed to complete the evaluation. This log should be completed each time the MOBICS is used. The Operator's Log should be completed as follows:

- **Date:** Record the date on which the bilge cleaning was performed.
- **Unit No.:** Check the box corresponding to your unit.
- **Operator(s):** Record the names of the personnel who performed the cleaning.
- **Boat Information:** Circle the type of boat and record the number of the boat that was cleaned.
- **Location:** Record the location where the bilge cleaning was performed.
- **Volume of Fluid Removed from Bilge:** Record the quantity of wastewater collected.
- **Volume of Degreaser Used:** Record the quantity of degreaser used during cleaning.
- **Man-hours to Clean Bilge:** Record the amount of time it took to clean each unit, including setup and tear-down (e.g., 2 people at 2 hours each equals 4 man-hours).
- **Number of Rags Used:** Record the total number of rags that were used.
- **Oil/Water Separator:** Check the box if the oil/water separator was used and, if so, record the amount of waste oil separated.
- **Daily Maintenance Checklist:** Place a check mark in the box when the task has been completed. Place a check mark in the "Corrective Action Taken" column if an action was required (e.g., if oil needed to be added or if a filter needed to be changed).
- **Comments:** Add any observations or suggestions pertaining to the performance of the MOBICS. Attach additional pages as necessary.

Note: One sheet should be completed for each boat that receives bilge cleaning.

3.3 Instructions for Completing the Maintenance and Repair Log

The Maintenance and Repair Log should be completed once per month during the evaluation period. If repairs are necessary, please contact Geneen McQuaid or Raymond Wendrzycki. Due to contract requirements, do not contact the vendor directly except in cases of emergency.

3.3.1 Maintenance

Enter the date and name of the individual completing the log.

On the Maintenance and Repair Log, please indicate whether periodic maintenance was performed during the month. Table 1 exhibits the recommended maintenance schedule provided by the manufacturer and is included here for your information.

3.3.2 Repairs

Record any repairs(s) completed during the month. Describe and record the required repair, cause, parts, cost, repair time, downtime, and recommended actions to prevent recurrence. *Note: All repairs must be reported to Geneen McQuaid or Raymond Wendrzycki unless there is an emergency.*

3.3.3 Qualitative Assessment

Any observations, comments, or suggestions pertaining to the overall performance of the units should be recorded.

4.0 REPORTING

Senior Chief Duris (BMU-1) and Lt. Kaylor (SBU-12) have approved the use of these data collection sheets for this project. As previously described, the Operator's Log will be completed each time the system is used, and the Maintenance and Repair Log will be completed once per month. Data will be collected for 1 year. During the evaluation period, the data sheets will be faxed or electronically transmitted Geneen McQuaid/Raymond Wendrzycki (see Section 4.1, Point of Contact, for the fax numbers) monthly, at a minimum. The final report will include information on the system's safety, overall performance, cost-effectiveness, and ability to interface with site operations.

4.1 Points of Contact

If any questions arise or repairs are necessary during the evaluation period, please contact either of the following individuals immediately:

| POC | Affiliation | Phone Number | Fax Number |
|-------------------|-----------------------|---------------------------------|---------------------------------|
| Geneen McQuaid | UTRS, Cherry Hill, NJ | (856) 667-6770 | (856) 667-7586 |
| Ray Wendrzycki | NAVAIR, Lakehurst, NJ | (732) 323-1666 DSN: 624-1666 | (732) 323-4917 DSN: 624-4917 |

Please note that due to contract requirements, NAB Coronado should **not** directly contact the MOBICS vendor unless there is an emergency. All communication with the vendor should be directed through UTRS or NAVAIR.

Bilge Cleaning Operator's Log Sheet

Date _____

Unit No. SBU-12 BMU-1

Operator(s): _____

Boat (circle one): LARC RHIB Mark V Boat No. _____

Location (circle one): In Shop At Dock At Beach Other _____

Volume of fluid removed from bilge: _____

Volume of degreaser used: _____

Man-hours to clean bilge: _____

Number of rags used: _____

Was the oil/water separator used? Yes No

If yes, volume of waste oil separated: _____

Daily Maintenance Checklist

| Maintenance Operation | Complete | Corrective Action |
|--|----------|-------------------|
| Check engine oil | | |
| Check blower oil level | | |
| Check pump oil level | | |
| Check stainless steel filter | | |
| Check ball float cages | | |
| Check blower filter | | |
| Check PSI safety valve | | |
| Check temperature control solenoid valve | | |

The above maintenance information supplements the manufacturer's manual.

Operator comments or suggestions: _____

Fax to: Raymond Wendrzycki at (732) 323-4917 (DSN 624-1666) and Geneen McQuaid at (856) 667-7586.

MAINTENANCE AND REPAIR LOG

Date: _____

Name: _____

PERIODIC MAINTENANCE

Was periodic maintenance performed: Yes No

What type of periodic maintenance was performed? 25-hour 50-hour 100-hour

Record the amount of time necessary to perform maintenance: _____

REPAIR (Advise Geneen McQuaid or Raymond Wendrzycki of any repairs.)

List any repair(s) required:

Describe the cause of the required repair(s):

List repair parts, cost (if known), and time required to complete the repair:

List the amount of downtime due to repair: _____

Detail corrections/suggestions made to prevent future occurrences:

QUALITATIVE ASSESMENT

Please comment on the overall performance of the unit:

Please comment on any problems encountered:

Please suggest any possible improvements:

Additional comments/observations:

ATTENTION: Fax each completed log sheet to Geneen McQuaid at 856-667-7586 and Raymond Wendrzycki at 732-323-1666 (DSN 624-1666).

**Table 1
Maintenance Schedule**

| Maintenance Operation | Initial Maintenance | | Daily | Periodic Maintenance | | |
|--|----------------------------------|--|--------------------------------------|----------------------|----------------|-----------------|
| | After first 8 hours of operation | | After each time the unit is operated | Every 25 Hours | Every 50 Hours | Every 100 Hours |
| Engine | | | | | | |
| Check Engine Oil Level | X | | X | | | |
| Change Oil | X | | | | X | |
| Change Oil Filter | X | | | | | X |
| Service Air Cleaner | | | | X | | |
| Service Air Cleaner Cartridge | | | | | | X |
| Inspect Spark Plugs | X | | | | X | |
| Clean Cooling System | | | | | | X |
| Replace In-Line Fuel Filter | X | | | | | X |
| Replace Spark Plugs | | | | | | X |
| Check Valve Clearance | | | | | | X |
| Blower/Vacuum | | | | | | |
| Check Blower Oil Level | X | | X | | | |
| Change Blower Oil | X | | | | | X |
| Pump | | | | | | |
| Check Pump Oil Level | X | | X | | | |
| Change Pump Oil | X | | | | | X |
| Filters and Valve | | | | | | |
| Check Stainless Steel Filter | X | | X | | | |
| Check Ball Float Cages | X | | X | | | |
| Check Blower Filter | X | | X | | | |
| Check PSI Safety Valve | X | | X | | | |
| Check Temperature Control Solenoid Valve | X | | X | | | |
| Pulley and Belt | | | | | | |
| Check Pulley | X | | | | X | |
| Check for Belt Tension | X | | X | | | |

The above maintenance information supplements the manufacturer's manual.