

PREPRODUCTION INITIATIVE-NELP VACUUM-ASSISTED SOLVENT CLEANER TEST PLAN

SITE: NAWC LAKEHURST

1.0 OBJECTIVE

The Navy performs many cleaning functions in support of routine procedures and maintenance operations. At the NAWC Lakehurst Catapult Site, cleaning of machinery and support equipment involves the use of detergent to remove greases, oils, dirt and grime that result from regular usage. Due to the frequency of cleaning and the shape and orientation of the objects requiring cleaning, there is substantial waste of cleaning agent and worker exposure to hazardous chemicals. The purpose of the vacuum-assisted solvent cleaner technology demonstration is to eliminate worker exposure to harsh chemicals and to eliminate direct discharge of cleaning agents to the environment. The semi-closed loop process will reduce the amount of uncontained waste and the generation of hazardous rag waste.

This test plan describes the data collection procedures for the vacuum-assisted solvent cleaner. The data will be used to determine the unit's efficiency, effectiveness, and overall success in cleaning the catapult site. The unit is expected to:

- reduce hazardous waste
- simplify the cleaning process
- provide a healthier work environment
- reduce the amount of cleaning materials requiring purchase

2.0 EQUIPMENT DESCRIPTION

NAWC Lakehurst currently uses Simple Green and PEG-2 to clean the catapult site equipment. By continuing use of these detergents, the new equipment can be tested not for the effectiveness of the detergent, but effectiveness of the technology versus hand cleaning.

The vacuum-assisted solvent cleaner consists of a supply tank which contains the cleaning agent in its diluted form for typical cleaning applications; a spray pump and hose; a recovery vacuum tank; and recovery vacuum attachments. These attachments can be specifically chosen according to the substrate being cleaned. Once the technology is proven effective for this particular cleaning application, it can be applied to many other types of cleaning applications, as well.

3.0 TEST PLAN

This test plan will evaluate the vacuum-assisted solvent cleaner's effectiveness in reducing cost, time, and uncontained waste volume associated with cleaning operations.

Overall waste volume may be reduced, as well. Worker safety is improved by reducing exposure to frequently used cleaning agents.

3.1 Approach

Quantitative and qualitative data will be acquired by completion of the following tables.

3.1.1 Instructions for Completing the Tables

- **Operational Data—Table 1**
 - **Date:** Indicate the date the solvent cleaner was used.
 - **Substrate:** Indicate what is being cleaned (e.g. support equipment, floors, walls, or specific catapult machinery, etc.).
 - **Area Covered:** Indicate the square footage of the equipment surface or building space being cleaned.
 - **Time/Task:** Record the number of man-hours spent cleaning the substrate.
- **Waste Disposal Data—Table 1**
 - **Waste Disposal Date:** Indicate the date that waste was disposed of.
 - **Waste Volume:** Indicate the volume of waste disposed of. (Only provide this information when waste is actually disposed of; cleaning activities may or may not have occurred on the same date.)
- **Consumables—Table 2**
 - **Date:** Indicate the date consumables were ordered.
 - **Item:** Record the specific consumables being replaced (e.g., detergent, filters, etc.). If available, provide the part number and description.
 - **Quantity:** Record the amount of each consumable being replaced.
 - **Cost:** Record the cost of each consumable being replaced.
- **Downtime—Table 2**
 - **Time Period:** Record any periods greater than one week when the unit was not used.
 - **Reason:** Explain whether the downtime was due to repairs, maintenance, workload, or other factors.

- **Repairs—Table 2**
 - **Time:** Indicate the time required to repair the solvent cleaner.
 - **Parts:** List the parts required for repair.
 - **Cost:** Indicate the cost of the parts required for repair.
- **Qualitative Assessment:** Provide a narrative evaluation of the vacuum-assisted solvent cleaner’s capabilities. Briefly discuss:
 - any damage to the substrate that resulted from use of the solvent cleaner (and whether it was related to the equipment or detergent)
 - the efficiency of the unit
 - ease-of-use and the unit’s ability to successfully interface with site operations.

4.0 REPORTING

The data entry forms are a concise method of data collection. Forms should be completed on a daily basis; data will be collected for 1 year. During this time, periodic status reports on the testing should be submitted via fax to Stephanie Williams at 609-667-7586. Any questions should be directed to Ms. Williams’s attention at 609-667-6770. The final report will include detailed results and observations, assess the efficiency and cost-effectiveness of the unit, and evaluate its ability to interface with site operations.

Table 2

2a. Consumables

Date	Item		Quantity	Cost
	Number	Description		

2b. Downtime

Time Period	Reason

2c. Repairs

Time	Parts	Cost

Qualitative Assessment*:

Please comment on the effectiveness and efficiency of the unit.

* Attach additional sheet if needed.