



**REPORT ON THE USE OF THE NUCLEAR SHIP  
SAVANNAH  
TO SUPPORT THE RADIOLOGICAL CHARACTERIZATION  
PROGRAM**

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**Prepared for**

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## **BACKGROUND**

The licensed site of the NS SAVANNAH is the entire ship. Performing the radiological characterization of the NS SAVANNAH included both the nuclear spaces and the non-radiological areas required the use of many. This effort included changes in equipment needs and space usage aboard the vessel. This report documents the use of these spaces and the current condition of the ship after the completion of the program.

## **MAJOR POINTS**

There are several major points that can be made concerning the use of the ship spaces and facilities to support the characterization program from March 20, 2005 through September 19, 2005. These are;

1. No radioactive material was removed or moved except for contaminated materials that were removed/generated in the process of sampling and are now stored in the radioactive waste storage room, the containment vessel or have been shipped to laboratories for analysis. Some radiological areas were predictably found to have been reduced in contamination when compared to earlier surveys.
2. No ships' electrical or fluid systems were modified, although some ships electrical systems were used as temporary power sources. All electrical systems operations were conducted by James River Reserve Fleet (JRRF) personnel.
3. Spaces temporarily changed to accommodate their use for the tasks at hand have typically been left in the modified status. An example of this is the hospital on A deck portside. The bed frames in one of the wards have been removed to make administrative space.
4. Two staterooms on A deck portside have been cleaned up. They can serve as a storage and staging area for future work.
5. Two A deck staterooms on the starboard side were partially cleaned and serve as the anti-C clothing center and the MARAD project office.
6. In recognition of the necessity of continued access to the ship and to the containment vessel (CV), the ventilation system was modified as discussed below.



7. The hospital on the portside A deck has been used extensively for HP lab operations. This area was cleaned and surveyed. It is recommended that if another campaign aboard is conducted for any length of time, the operating table be temporarily removed from the medical facility to enhance the facility's usability.
8. A limited quantity of potentially radioactive waste from operations was generated. This was all surveyed when packaged and then again when transferred to the JRRF crane barge and to the extent allowed, free released with the non-contaminated trash. Remaining contaminated materials were labeled and stored in the waste storage cabins on B deck starboard side.
9. Ventilation air handling fans were used with limited success in the public areas. It is recommended for future campaigns, that the A deck dogged hatch forward and aft on the port side and starboard side be opened and ventilation air be pushed/pulled through the ship on A deck

## CV VENTILATION

The CV was closed and not entered for several (approximately 30) years. A basic change was made in the overall ventilation system to accommodate the anticipated need for frequent CV entries to support the decommissioning planning work. The change was to route a ventilation system such that the dehumidification (DH) system discharges DH output air through a 3" valve (inerting system) in the cupola to the lower reaches of the CV. A second inerting system cupola valve line (which was cut inside at the cupola) is attached to the inlet of the HEPA filter and then to the in-line air handler that discharges to the B deck starboard passageway.

The effects of this change, when the personnel hatch is closed, are to continuously ventilate the CV when the DH system is running. This may eliminate the need for a marine chemist when entering the CV and extensive radiation surveys. **However, no calculations of the efficiency of this system line up exist, so persons entering the CV are cautioned to take necessary radiological precautions and to use an O-2 monitor when making any initial entries after periods of CV closure. Also, persons entering the CV in the future are cautioned that, in the initial entry for the campaign described**



**herein, the O-2 levels were initially observed to be lower in the lower parts of the CV.**

## **SECURITY AND FIRE PROTECTION**

The security process and the DH system were altered during the CV and other shipboard work phases. With the exception of the CV ventilation system change noted above, they have been returned to the as-found condition. The security locks on the radiation areas have all been changed to a keyed alike master padlock system. All keys are in the hands of MARAD personnel.

A small quantity of wood used in the shipboard activities was left aboard for future MARAD use. No wood (or other flammable materials) taken in by WPI was left in the CV.

No gas or flammable fluids were used in the work performed by WPI, and none was left aboard the vessel.