May 10, 2000

U. S. Maritime Administration
ATTN: Joseph Seelinger, Deputy Director
Office of Ship Operations
Department of Transportation
MAR-610.1
Washington, D.C. 20590

Dear Mr. Seelinger:

SUBJECT: NRC INSPECTION REPORT NO. 50-238/00-201

This letter refers to the inspection conducted on April 11-13, 2000 at the N. S. Savannah. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Should you have any questions concerning this inspection, please contact Craig Bassett at 404-562-4712.

Sincerely,

/RA/

Ledyard B. Marsh, Chief
Events Assessment, Generic Communications
and Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No.: 50-238
License No.: NS-1

Enclosure: NRC Inspection Report 50-238/00-201

cc w/encl: Please see next page

cc w/encl:

Erhard Koehler, Marine Surveyor
Division of Ship Maintenance
and Repair
Maritime Administration
Department of Transportation
MAR-611
Washington, D.C. 20590

Michael Bagley
Fleet Superintendent
James River Reserve Fleet
Drawer C
Fort Eustis, VA 23505

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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

Docket No.:	50-238
License No.:	NS-1
Report No.:	50-238/00-201
Licensee:	U. S. Maritime Administration Washington, D. C. 20509
Facility Name:	N. S. Savannah
Location:	James River Reserve Fleet Ft. Eustis, VA
Inspection Conducted:	April 11-13, 2000
Inspector:	C. H. Bassett
Approved by:	Ledyard B. Marsh, Chief Events Assessment, Generic Communications and Non-Power Reactors Branch Division of Regulatory Improvement Programs Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

N. S. Savannah
NRC Inspection Report No. 50-238/00-201

In accordance with the applicable NRC inspection procedure, this routine, announced inspection included onsite review of selected aspects of the licensee's reactor safety program since the last NRC inspection of this facility. The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements.

Staffing and Audits

- The licensee's staffing and auditing of activities remain in compliance with the requirements specified in the Technical Specifications (TSs).

Radiological Surveys

- Surveys were being completed as required.
- No doses had been reported for James River Reserve Fleet personnel.
- Thermoluminescent dosimeters were noted to be in place as required by the TSs.
- Radiation levels in areas routinely entered by James River Reserve Fleet personnel were within those allowed by the TSs.
- One Unresolved Item was identified concerning the availability of a health physicist on call within two hours of the ship and the availability of an Emergency Radiological Assistance Team in case of a radiological emergency.

Access Control and Security

- Access control and security was acceptable and being maintained as stipulated in the TSs.

Surveillances

- In general, surveillances were being completed acceptably and within the time frame requirements of the TSs.
- Water and sediment samples had been taken and analyzed as required.
- One Unresolved Item was identified concerning the adequacy of the annual inspection of the primary and secondary systems being performed by the health physicist.

REPORT DETAILS

Summary of Plant Status

The N. S. Savannah was removed from service and mothballed in 1970. There is no reactor

fuel on board and all primary and secondary systems have been drained of fluids. All radioactive resins were also removed from the ship and any remaining radioactive material is contained within the reactor vessel and its internal components. The ship is currently moored port side to the MH-1A Floating Nuclear Power Plant STURGIS in the James River, Virginia. It is secured in place by nine anchors and ten mooring wire ropes. Access to the vessel and to the restricted areas of the vessel is being provided by James River Reserve Fleet (JRRF) personnel. Annual radiation surveys of vessel are being completed by a contractor working for the U. S. Maritime Administration (MARAD).

1. Staffing and Audits (40755)

a. Inspection Scope

The inspector reviewed the following regarding the licensee's staffing and audits to ensure that the requirements of TS Section 3.6 were met:

- staffing requirements for maintenance of the vessel,
- the composition of the Review and Audit Committee (RAC),
- RAC responsibilities and meeting minutes, and
- audits performed during 1998 & 1999.

b. Observations and Findings

Through observation of operations and discussions with licensee personnel, the inspector determined that the staffing was adequate to support the maintenance of the N. S. Savannah.

Through discussions with licensee representatives and record reviews, the inspector determined that the RAC was composed of those individuals stipulated in the TSs. The RAC met once a year to review and discuss the status of the ship and the other issues outlined in the TSs. Audits were conducted as required and findings resolved.

A review of the TSs indicated that they were in need of some revisions. This issue was discussed with personnel at JRRF and it was concluded that MARAD personnel would be the ones responsible for such actions. The licensee was informed that the issue of revising and updating the TSs for the N. S. Savannah would be noted by the NRC as an Inspector Follow-up Item (IFI) and would be reviewed during a subsequent inspection (IFI 50-238/00-201-01).

c. Conclusions

The licensee's staffing and auditing of activities remain in compliance with the requirements specified in the TSs.

2. Radiological Surveys (40755)

a. Inspection Scope

The inspector reviewed the following to verify compliance with 10 CFR Part 20 and the applicable licensee TS requirements:

- health physics survey and dosimetry records,
- radiological signs and posting,
- documentation of inspections of the ship, and
- annual reports.

b. Observations and Findings

Surveys were being completed and documented acceptably to permit evaluation of the radiation hazards that might exist. Postings met regulatory requirements. Personnel dosimetry, supplied by the Radiation Safety Officer (RSO) for Ft. Eustis, was being worn by maintenance personnel. No personnel exposure had been recorded by the dosimetry. Thermoluminescent dosimeters (TLDs) were noted to be in place at various locations on the ship as required by TSs. TLD doses were within regulatory limits and consistent with previous readings. The inspector conducted a survey of selected areas of the ship and determined that the radiation levels routinely entered by JRRF personnel were within those allowed by the TSs and well within the limits of the regulations.

TS Section 3.1, Administrative Responsibility, requires that MARAD shall have a health physicist on duty or on call within two (2) hours to provide health physics support for radiological emergencies or entry into radiation control areas. In addition to the services of a health physicist, MARAD shall provide an Emergency Radiological Assistance Team in the event of radiological emergencies. When the issues of a health physicist on call within two hours and the services of an Emergency Radiological Assistance Team were discussed with site personnel, it was not readily apparent that such provisions were actually in place. The licensee was informed that these issues would be considered an Unresolved Item (URI) by the NRC (URI 50-238/00-201-02).

c. Conclusions

Surveys were being completed as required. No doses to JRRF personnel were recorded. Thermoluminescent dosimeters were noted to be in place as required by TSs. Radiation levels in areas routinely entered by JRRF personnel were within those allowed by the TSs. One Unresolved Item was identified concerning the availability of a health physicist on call within two hours of the ship and the

availability of an Emergency Radiological Assistance Team in case of a radiological emergency.

3. Access Control and Security (40755)

a. Inspection Scope

The inspector reviewed the following to verify that the licensee was providing adequate access control and security in compliance with TS 3.7.1 requirements:

- security logs,
- maintenance records,
- documentation of seal inspections, and
- inspection reports.

b. Observations and Findings

The inspector noted that all entrances to the ship were secured when not in use. The entrances to the reactor compartment were secured as required. Radiation control areas were posted, locked, and sealed. The entrance to the reactor compartment on B Deck was chained, posted, sealed, and double locked. The intrusion alarms were functioning properly and security personnel completed a patrol of the vessel at least once during every twenty-four hour period. JRRF personnel inspected the ship daily during the work week.

c. Conclusions

Access control and security were acceptable and being maintained as stipulated in the TSs.

4. Surveillances (40755)

a. Inspection Scope

The inspector reviewed the following to verify that the licensee was providing adequate surveillances in compliance with TS 3.7.2 requirements:

- contractor reports,
- maintenance records,
- documentation of inspections of the ship, and
- annual reports.

b. Observations and Findings

(1) General Surveillance Items

The inspector determined that JRRF personnel were checking the seals on the controlled area doors and testing the intrusion alarm once a

quarter. Two draft level stripes were painted fore and aft as required, one just above the water level and the upper stripe one foot above the lower. The cathodic protection system, shared between the N. S. Savannah and the MH-1A Floating Nuclear Power Plant STURGIS, was being maintained to protect the underwater areas of the ship's hull. Underwater inspections of the hull were being conducted annually. Water samples and bottom sediment samples were being taken semi-annually adjacent to the ship and analyzed by a qualified laboratory for radioactivity.

(2) Annual Inspection of the Primary and Secondary Systems

TS Section 3.7.6 requires that an inspection will be conducted at least annually by MARAD's designated personnel to determine any degradation of the primary and secondary systems.

When site personnel were asked whether MARAD designated personnel were completing an annual inspection of the primary and secondary systems to check for any degradation that might have occurred, it was noted that the health physicist performs the inspection when he is conducting the annual radiation survey. It was not clear during the inspection whether this person was qualified to accurately assess the status of the primary and secondary systems and thus satisfy the requirements of the TS and also not clear if records of the inspection were maintained. The licensee was informed that this issue also would be considered an Unresolved Item by the NRC (URI 50-238/00-201-03).

c. Conclusions

In general, surveillances were being completed acceptably and within the time frame requirements of the TSs. Water and sediment samples had been taken and analyzed as required. One Unresolved Item was identified concerning the adequacy of the annual inspection of the primary and secondary systems being performed by the health physicist.

5. **Exit Interview**

The inspection scope and results were summarized on April 13, 2000, with licensee personnel. The inspector described the areas inspected and discussed in detail the inspection findings.

No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspector.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Employees
M. Bagley, Fleet Superintendent, JRRF, MARAD, Department of Transportation (DOT)

Other Personnel
K. Winget II, Radiation Safety Officer, Transportation Branch, Ft. Eustis

Accompanying NRC Personnel
A. Adams, Senior Project Manager, NRR
T. Ikeda, Foreign Assignee, NRR

INSPECTION PROCEDURE USED

IP 40755 Class III Non-Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-238/00-201-01	IFI	Follow-up on the revision and updating of the TSs for the N. S. Savannah.
50-238/00-201-02	URI	Follow-up on the availability of a health physicist to be on call within two hours of the ship and the ability of MARAD to deploy an Emergency Radiological Assistance Team in case of a radiological emergency.
50-238/00-201-03	URI	Follow-up on whether the health physicist is qualified to accurately assess the status of the primary and secondary systems as required by the TSs.

Closed

None

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
DOT	Department of Transportation
IFI	Inspector Follow-up Items
IP	Inspection Procedure
JRRF	James River Reserve Fleet
MARAD	Maritime Administration
NPR	Non-Power Reactor
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
PDR	Public Document Room
RAC	Review and Audit Committee
RSO	Radiation Safety Officer
TLD	Thermoluminescent dosimeter
TS	Technical Specification
URI	Unresolved Item