

October 19, 2006

U. S. Maritime Administration
ATTN: Erhard W. Koehler, Senior Technical Advisor
N. S. Savannah
Office of Ship Operations
U. S. Department of Transportation
MAR-610.1
Washington, D.C. 20590

SUBJECT: NRC INSPECTION REPORT NO. 50-238/2006-201

Dear Mr. Koehler:

On October 10-11, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Colonna Shipyard on board the Nuclear Ship Savannah. The enclosed report documents the inspection results, which were discussed on October 11, 2006, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspector reviewed selected procedures and records, observed activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Craig Bassett at 404-358-6515.

Sincerely,

/RA/

Johnny H. Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-238/2006-201
cc w/encl.: Please see next page

N. S. Savannah

Docket No. 50-238

cc:

Mr. David S. Breeden, Jr.
Chief, Safety Office
Humphreys Engineer Center
Support Activity
Casey Building, Room 112
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Alexandria, VA 22315-6034

Test, Research, and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

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

Docket No. 50-238

License No. NS-1

Report No. 50-238/2006-201

Licensee: U. S. Maritime Administration
Washington, D. C. 20509

Facility: Nuclear Ship Savannah

Location: Colonna Shipyard
Norfolk, VA

Dates: October 10 and 11, 2006

Inspector: Craig Bassett

Approved by: Johnny H. Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

This routine, announced inspection included on board and on site review of various aspects of the licensee's programs concerning organization and staffing, maintenance, emergency preparedness, physical security, radiation protection, surveillance, and transportation activities as they relate to the licensee's Class III Research Reactor. The licensee's programs were directed toward the protection of public health and safety and were in compliance with NRC requirements.

Organization and Staffing

- Organization, staffing, and record keeping met Technical Specifications Sections 3.1, 3.2, and 3.4 requirements.

Review, Audit, and Design Change Functions

- The Review and Audit Committee performed their review and oversight functions as required by Technical Specifications Sections 3.5 and 3.6.
- One 10 CFR 50.59 facility design change had been reviewed since the last inspection.
- One Technical Specification change had been submitted to the NRC for review and approval.

Procedures

- The Senior Technical Advisor and the Review and Audit Committee were reviewing and approving new procedures as required by TS Sections 3.5.

Maintenance and Surveillance Activities

- The maintenance activities were consistent with the Technical Specifications and licensee procedures.
- The program for completing surveillances and confirmations was being implemented in accordance with Technical Specifications Sections 3.4 and 3.7.1 and licensee procedures.

Emergency Preparedness

- U. S. Maritime Administration has the support and equipment in place to meet emergency preparedness requirements specified in the Technical Specifications.

Radiation Protection Program

- The radiation protection program being implemented by the licensee satisfied regulatory requirements.

Effluents and Environmental Monitoring

- No liquid or gaseous effluent had been released from the vessel. Doses to the public were well below 10 CFR 20.1301 (a) limits. The environmental requirements specified in the Technical Specifications were met.

Transportation Activities

- No radioactive material was transferred to or from the N.S. Savannah.

Physical Security

- The physical protection features of the security system, including equipment, procedures, and access control, met the Technical Specifications Section 3.3 requirements and satisfied shipyard procedures.

REPORT DETAILS

Background and Summary of Plant Status

The Nuclear Ship (N. S.) Savannah, which is owned by the U. S. Maritime Administration (MARAD), was the first nuclear powered merchant ship. As part of the "Atoms for Peace" program, the N. S. Savannah was designed, constructed, and operated as a joint research and development project of MARAD and the Atomic Energy Commission (AEC). The ship's reactor was first brought to power in 1961 and seagoing trials followed in 1962. The AEC ended its participation in the project in 1965, transferring liability and title of the reactor to MARAD. The N. S. Savannah was operated in experimental and commercial demonstration service throughout the 1960's. Having completed its research and development objectives, the ship was removed from service in 1970. In 1971, when alternative uses for the ship failed to materialize, its nuclear power plant was defueled, partially dismantled, and prepared for long-term lay-up. By April 1976, additional pre-decommissioning activities such as removing the three primary purification system ion exchangers, their resins, and dewatering the primary, auxiliary, and secondary systems had been performed. A "Possession Only" license was issued as Amendment No. 8, dated May 19, 1976.

The ship was maintained for a period as a museum in Charleston, SC, and was subsequently placed in the James River Reserve Fleet (JRRF) and moored along the port side of the MH-1A Floating Nuclear Power Plant STURGIS in the middle of the James River in Virginia. On August 15, 2006, the ship was towed to the Colonna Shipyard in Norfolk, VA, where it has been undergoing routine hull maintenance, topside repairs, modifications, and preservation. Access to the vessel and to the restricted areas of the vessel is being provided by a contract guard force, as well as by MARAD and shipyard personnel. MARAD continues to be the current licensee and is maintaining the facility as required by the Technical Specifications (TS).

1. Organization, Staffing, and Reporting

a. Inspection Scope (Inspection Procedure [IP] 69002)

The inspector interviewed licensee staff and reviewed the following to ensure staffing, reporting, and record keeping requirements specified in TS Sections 3.1, 3.2, and 3.4 were being met, the inspector reviewed:

- organization and staffing for the N. S. Savannah
- administrative controls and management responsibilities
- N. S. Savannah 2004 Annual Report, dated March 4, 2005
- N. S. Savannah 2005 Annual Report, dated February 28, 2006
- TS for the N. S. Savannah, Amendment No. 12, dated May 29, 1994
- Port Operating Plan (POP), Hampton Roads and Norfolk, Virginia, STS-004-A3, Revision (Rev.) 3, dated May 2, 2006
- Quarterly Structural Survey forms, JRRF No. 23B, form revision dated April 1995, for the last 18 months

b. Observations and Findings

The inspector noted that, since the last inspection, MARAD completed an internal reorganization in May 2005 which resulted in the reestablishment of the Savannah Technical Staff (STS). The STS is now the organizational unit within MARAD that is responsible for all N. S. Savannah program activities. The organizational structure of the STS currently consists of the Senior Technical Advisor (STA) also referred to as the Manager, N. S. Savannah Program. He will be assisted by a Decommissioning Program Manager, a Documentation Manager, a Facility Site Manager, and a Quality Assurance Manager. Other consultants include a person in charge of Risk and Scheduling, a person over Licensing and Compliance, and others involved with Environmental and Maritime issues. Health physics (HP) and Emergency Response support continues to be provided by contractor and JRRF personnel. The inspector verified that these positions were filled, reviewed personnel qualifications, and determined that the various individuals were knowledgeable of their duties and responsibilities. MARAD, JRRF, Colonna Shipyard, and contractor guard staff provided day-to-day support for the N. S. Savannah. The inspector determined that the changes made should provide adequate support for the preparations for decommissioning.

A review of the quarterly structural surveys showed that they were being completed as required by TS Section 3.2 and problems, if any, were being documented and acceptably addressed. The quarterly structural surveys also documented many other of the required surveillances. Review of associated ship and MARAD records verified that management responsibilities were administered and records maintained as required by TS Sections 3.1 and 3.2.

Through a review of the 2004 and 2005 annual reports, the inspector determined that the reports generally summarized the required information and were issued at the frequency specified in TS Section 3.4.1. No special reports were submitted pursuant to TS Section 3.4.2. It was noted that some of the information required to be submitted in the annual reports was not specifically documented in those reports. The licensee was informed that the results of quarterly intrusion alarm system checks were not in the annual reports nor were the results of occupational exposure indicated by personal dosimetry. It was also noted during the review of the annual reports that the radiation readings taken at various locations on board the ship reported in the two reports were identical. Apparently the data in the 2005 annual report had not been updated by the contractor. The licensee was informed that the issue of including all the required information in the annual reports and the issue of revising and correcting the 2005 annual report would be followed by the NRC as an Inspector Follow-up Item (IFI) and would be reviewed during a future inspection (IFI 50-238/2006-201-01).

c. Conclusions

Organization, staffing, and record keeping met TS Sections 3.1, 3.2, and 3.4 requirements.

2. Review, Audit, and Design Change Functions

a. Inspection Scope (IP 69002)

The inspector reviewed the following to ensure that the licensee had established and conducted reviews and audits as required in TS Sections 3.5 and 3.6 and to decide whether modifications to the facility, if any, were consistent with 10 CFR 50.59:

- TS and 10 CFR 50.59 changes
- N. S. Savannah 2004 Annual Report, dated March 4, 2005
- N. S. Savannah 2005 Annual Report, dated February 28, 2006
- Review and Audit Committee (RAC) Annual meeting minutes from 2004 to present

b. Observations and Findings

Review of the RAC membership and meeting schedule confirmed that they met TS Sections 3.6.1 and 3.6.4 requirements. The inspector reviewed the minutes of last two RAC meetings and confirmed that the topics considered were as stipulated in TS Section 3.6.3. The inspector determined that the RAC provided guidance, direction, and oversight as required by TS Sections 3.5 and 3.6

As required by TS Section 3.6.3, the RAC is also responsible for reviewing facility 10 CFR 50.59, TS, and license change requests. One 10 CFR 50.59 facility design change had been proposed since the last inspection involving the Reactor Vessel Characterization Core Boring. This change had been reviewed by one of the licensee's contractor personnel and no safety issues were identified. However, the boring had not been reviewed by the RAC. This issue was noted by the licensee and a newly developed program was implemented. The licensee issued a corrective action report (CAR) to follow-up on this issue and ensure that the RAC reviews this change and all future 50.59-type changes. It was also noted that one TS change had been submitted to the NRC for review and approval on August 7, 2006. That review by the NRC was pending.

The RAC conducted reviews of the facility as required by TS Section 3.6.2 and licensee procedures. The inspector found the content of the reviews to be consistent with the TS. The inspector noted that no recent audits had been conducted by the licensee. This had also been noted by the licensee and a separate CAR had been established to ensure that the RAC completed an audit by the end of the year.

c. Conclusions

The RAC performed their review and oversight functions as required by TS Sections 3.5 and 3.6. One 10 CFR 50.59 facility design change had been reviewed since the last inspection. Also, one TS change had been submitted to the NRC for review and approval.

3. Procedures

a. Inspection Scope (IP 69002)

The inspector reviewed the following to ensure that the licensee was developing procedures for the required topics and that the procedures were being reviewed by the RAC as required in TS Sections 3.5:

- RAC Annual meeting minutes from February 2004 to present
- N. S. Savannah Technical Staff Procedure, STS-002-001 "Training Requirements for NSS Workers," Rev. 0, dated September 11, 2006
- N. S. Savannah Technical Staff Procedure, STS-002-002, "NRC Posting Requirements," Rev. 0, dated September 11, 2006
- N. S. Savannah Technical Staff Procedure, STS-002-004, "Site Access Control," Rev. 0, dated September 11, 2006

b. Observations and Findings

The STA and the RAC were required by TS Section 3.5 to review and approve new procedures and radiological safety significant revisions to existing ones. In the past this had not been an issue because the ship had been in the JRRF and there had been very little activity conducted except for routine surveillance and maintenance work. With the current preparations for decommissioning, the licensee has initiated an effort to develop various types of procedures dealing with administrative matters, emergency conditions, radiation control, and access control. The inspector also noted that one of the procedures that was under development was a Corrective Action Program. The inspector reviewed the new procedures and verified that they had been reviewed and approved by the STA, as well as by the RAC through electronic mail (E-mail).

c. Conclusions

The STA and the RAC were reviewing and approving new procedures as required by TS Sections 3.5.

4. Maintenance and Surveillance Activities

a. Inspection Scope (IP 69002)

The inspector interviewed licensee staff and reviewed the following to ensure that maintenance activities, surveillances, and verifications were being completed as required by TS Section 3.4 and 3.7.1 and licensee procedures:

- maintenance logs and records
- 2004 Annual HP Survey, report dated March 4, 2005
- N. S. Savannah STS Activities Log for 2005 and 2006
- 2005 Annual HP Survey, report dated February 16, 2006
- N. S. Savannah 2004 Annual Report, dated March 4, 2005

- N. S. Savannah 2005 Annual Report, dated February 28, 2006
- Monthly Dehumidifier (DH) readings from January 2004 to present
- TS for the N. S. Savannah, Amendment No. 12, dated May 29, 1994
- Monthly Cathodic Protection (CP) readings from January 2004 to present
- Diving Inspection, Paint, CP and Marine Growth reports for the past two years
- POP, Hampton Roads and Norfolk, Virginia, STS-004-A3, Rev. 3, dated May 2, 2006
- Quarterly Structural Survey forms, JRRF No. 23B, form revision dated April 1995, for the last 18 months
- Colonna Shipyard Inc. Subcontractor Safety/Security/Environmental Guidelines, guidelines not dated

b. Observations and Findings

Under the current license no reactor operations are authorized. During the past six weeks, Colonna Shipyard personnel have been completing various routine repair and maintenance activities. Through interviews, observations, and record reviews the inspector noted that all required maintenance activities were being accomplished as required. Information on the operational status of the facility was documented as required by TS Section 3.2 and licensee procedures. Use of maintenance and repair records satisfied procedural requirements.

Surveillances for the N. S. Savannah were completed to maintain the vessel in an acceptable condition, to ensure containment of the residual radioactive material, and to protect the safety of the MARAD, JRRF, Colonna Shipyard staff, as well as that of the public. The inspector reviewed, monthly, quarterly, semiannual, annual and other periodic checks and verifications for all TS-required surveillances. The surveillances were being completed and documented as required by TS Sections 3.4 and 3.7.2 and licensee procedures.

c. Conclusions

The maintenance activities were consistent with the TS and licensee procedures. The program for completing surveillances and confirmations was being implemented in accordance with TS Sections 3.4 and 3.7.1 and licensee procedures.

5. **Emergency Preparedness**

a. Inspection Scope (IP 69002)

The inspector interviewed licensee staff and reviewed selected aspects of the following to ensure the N. S. Savannah emergency response capability satisfied TS Section 3.1 requirements:

- N. S. Savannah 2004 Annual Report, dated March 4, 2005
- N. S. Savannah 2005 Annual Report, dated February 28, 2006
- TS for the N. S. Savannah, Amendment No. 12, dated May 29, 1994
- emergency response facilities, supplies, equipment, and instrumentation

- Quarterly Structural Survey forms, JRRF No. 23B, form revision dated April 1995, for the last 18 months
- POP, Hampton Roads and Norfolk, Virginia, STS-004-A3, Rev. 3, dated May 2, 2006
- Colonna Shipyard Inc. Fire Protection Plan with Attachments, plan note
- Nuclear Ship (NS) Savannah Emergency Radiological Assistance Team (SERAT), Shipboard Emergency Response and Inspection Protocol for Conditions at Colonna Shipyard, Norfolk, VA, Rev. 6, dated September 2006
- Nuclear Ship Savannah Radiological Training Program for SERAT Members, Rev. 0, dated July 29, 2004
- Nuclear Ship (NS) Savannah Emergency Radiological Assistance Team (SERAT), Shipboard Emergency Response and Inspection Protocol for Conditions at James River Reserve Fleet, Rev. 3, dated July 2004

b. Observations and Findings

Although an NRC-approved emergency plan is not required for the N. S. Savannah, TS Section 3.1 requires MARAD to have a health physicist on duty or on call within two hours and to provide an emergency radiological assistance team (ERAT) in the event of radiological emergencies. During an NRC inspection in 2001, it was noted that this type of support was not in place and a violation was issued. During an NRC inspection in 2003, it was noted that MARAD was taking action to provide this required support but the actions were not finalized. During this inspection, the inspector confirmed that an N. S. Savannah Emergency Radiological Assistance Team (SERAT) had been established and verified that training for team members had been conducted. The SERAT Team had conducted a drill in September 2004 in which the Team deployed to the ship. A full drill was to be conducted in March 2005 but had to be scaled back to a Table-Top Exercise due to inclement weather. The inspector noted that another drill was scheduled to be conducted during the week of October 16, 2006.

It was noted that two emergency kits had been purchased, one for use and storage onboard the N. S. Savannah and the other for storage in the JRRF Office (to be used by the SERAT Team as they responded to an emergency on the ship). The inspector confirmed that the two emergency kits were still available for use, although they had been somewhat depleted during the last drill. This item had been noted by the licensee and a Corrective Action Record had been established to track the remediation of this problem.

The inspector also noted that the licensee had established a Memorandum of Agreement with the Department of Energy (DOE) to provide for radiological analytical services to evaluate conditions on the N. S. Savannah. This was to be provided through Jefferson Science Associates, a DOE contractor. This contract was also established so that radiological support would be available within two hours. In addition, an agreement had been established with a contract Health Physicist to conduct surveys and complete the environmental surveillances required by the TS. This person was also on call and would provide radiological support as needed and functioned as the Radiation Safety Officer (RSO) in support of MARAD licensed activities.

It was also noted that local fire fighting personnel, from the Norfolk Fire Department, had received a briefing concerning the N. S. Savannah and had toured the ship. They confirmed that they would be available to respond to a fire emergency as needed.

c. Conclusions

MARAD has the support and equipment in place to meet the emergency preparedness requirements specified in the TS.

6. Radiation Protection Program

a. Inspection Scope (IP 69002)

The inspector interviewed licensee staff and reviewed the following to ensure that the requirements of 10 CFR Part 20, TS, and the licensee's Radiation Protection Program were being met:

- General Employee Training Notebook and records
- 2004 Annual HP Survey, report dated March 4, 2005
- N. S. Savannah STS Activities Log for 2005 and 2006
- Personnel dosimetry records from 2004 to the present
- 2005 Annual HP Survey, report dated February 16, 2006
- N. S. Savannah 2004 Annual Report, dated March 4, 2005
- N. S. Savannah 2005 Annual Report, dated February 28, 2006
- TS for the N. S. Savannah, Amendment No. 12, dated May 29, 1994
- N. S. Savannah Technical Staff Procedure Health Physics Manual, Rev. 0, dated March 21, 1981 (pending revision)
- POP, Hampton Roads and Norfolk, Virginia, STS-004-A3, Rev. 3, dated May 2, 2006
- Quarterly Structural Survey forms, JRRF No. 23B, form revision dated April 1995, for the last 18 months
- Colonna Shipyard Inc. Subcontractor Safety/Security/Environmental Guidelines, guidelines not dated
- N. S. Savannah Technical Staff Procedure, STS-002-001 "Training Requirements for NSS Workers," Rev. 0, dated September 11, 2006
- N. S. Savannah Technical Staff Procedure, STS-002-002, "NRC Posting Requirements," Rev. 0, dated September 11, 2006
- WPI Nuclear Ship Savannah Radiation Training Program for the Characterization Effort, Rev. 0, dated March 20, 2005
- WPI Operating Procedure, "N. S. Savannah Special Initial Containment Entry Procedure for Use of the James River Reserve Fleet," dated April 2005
- WPI Operating Procedure, NSS-100, "Radiation Worker Training," Rev. 0, dated March 18, 2005
- WPI Operating Procedure, NSS-110, "Dosimetry Issue," Rev. 0, dated March 22, 2005
- WPI Operating Procedure, NSS-140, "Radiological Surveys and Sampling," Rev. 0, dated March 18, 2005

b. Observations and Findings

(1) Radiation Protection Program

In the past, MARAD had established contracts for much of its health physics survey and surveillance work. The result was that the MARAD Radiation Protection Program (RPP) with respect to the N. S. Savannah was a compilation of portions of various other RPPs. These consist of the JRRF occupational dosimetry program, their contract HP's survey and instrument calibration program, their own scope of work requirements, and their own internal plans and procedures.

With the pending full decommissioning work ahead for the N. S. Savannah, the licensee had initiated a project to develop a new RPP with implementing procedures specifically for the ship and the decommissioning work. These actions will enhance the safety program for the N. S. Savannah.

(2) Postings and Notices

During a tour of the ship, the inspector observed that caution signs, postings, and controls on the N. S. Savannah were acceptable for the hazards involving radiation and contaminated areas and were implemented as required by 10 CFR 20, Subpart J. Through observations of and interviews with licensee and contractor staff the inspector confirmed that personnel complied with the signs, postings, and controls. No unmarked radioactive material was detected in the facility. The inspector confirmed that a current copy of NRC Form-3 and various notices to workers were posted at the main entrance to the ship's spaces as required by 10 CFR Part 19.

(3) Surveys

The inspector audited annual contamination and radiation surveys done since January 2004. They were performed and documented as required by the TS Section 3.2.1. The inspector's review of the survey records confirmed that there was no detectable loose surface contamination in the accessible portions of the ship. Most readings were less than the minimum detectable activity of 6.5 disintegrations per minute per one hundred square centimeters (dpm /100cm²) for alpha and 35 dpm /100cm² for beta. None were greater than 100 dpm /100cm². General area radiation levels were typically in the range of a few microrem per hour. The inspector determined that the survey program satisfied 10 CFR 20.1501(a) and TS Section 3.7.2 requirements.

(4) Dosimetry

The dosimetry program requirements and procedures had not changed since the last inspection. Prior to the move from the JRRF to the Colonna Shipyard, MARAD used dosimetry supplied and serviced on base by the Ft. Eustis radiological safety office. The base vendor was National Voluntary Laboratory

Accreditation Program-accredited. The inspector confirmed that dosimetry was being issued to staff and visitors as required by 10 CFR 20.1502. All results showed no exposures above background and thus met 10 CFR 20.1201 limits. In the new location, the licensee is currently using their own dosimeters.

(5) Training

The inspector reviewed the radiation protection and General Employee training given to MARAD staff members, to shipyard workers, and to visitors. The training satisfied the requirements of 10 CFR Part 19 and the training program was acceptable.

c. Conclusions

The inspector determined that the RPP being implemented by the licensee satisfied regulatory requirements because: 1) surveys were being completed and documented as required by 10 CFR Part 20.1501(a), TS, and licensee procedures; 2) postings met regulatory requirements; 3) the personnel dosimetry program was acceptably implemented and doses were in conformance with 10 CFR Part 20 limits; and, 4) training was being conducted for MARAD and shipyard personnel as required.

7. Effluents and Environmental Monitoring

a. Inspection Scope (IP 69002)

The inspector reviewed selected aspects of the following to ensure compliance with 10 CFR Part 20 and TS Sections 2.1-2.4, 3.7.2.4 and 3.7.2.5 requirements:

- 2004 Annual HP Survey, report dated March 4, 2005
- N. S. Savannah STS Activities Log for 2005 and 2006
- Environmental dosimetry records from 2004 to present
- 2005 Annual HP Survey, report dated February 16, 2006
- N. S. Savannah 2004 Annual Report, dated March 4, 2005
- N. S. Savannah 2005 Annual Report, dated February 28, 2006
- TS for the N. S. Savannah, Amendment No. 12, dated May 29, 1994
- N. S. Savannah Technical Staff Procedure Health Physics Manual, Rev. 0, dated March 21, 1981 (pending revision)
- Quarterly Structural Survey forms, JRRF No. 23B, form revision dated April 1995, for the last 18 months
- Colonna Shipyard Inc. Subcontractor Safety/Security/Environmental Guidelines, guidelines not dated

b. Observation and Findings

Since there were no ongoing reactor operations, the only gaseous effluents would be those produced during dismantlement and other decommission operations. No dismantlement or decommissioning operations have been performed and no gaseous or liquid effluent had been release since the last inspection.

TS Sections 3.7.2.4 and 3.7.2.5 require semiannual thermoluminescent dosimeter or equivalent monitoring at strategic locations throughout the vessel and semiannual water and bottom sediment sampling. The environmental monitoring program being implemented by the licensee's contractor was acceptable to satisfy TS Sections 3.7.2.4 and 3.7.2.5 requirements.

The TLD measurements resulted in readings that were statistically indistinguishable from background. Results of sediment and water sample analyses also showed no statistical difference from background.

c. Conclusion

No liquid or gaseous effluents had been released to the environment. Doses to the public were well below 10 CFR 20.1301(a) limits. TS requirements were met.

8. Inspection of Transportation Activities

a. Inspection Scope (IP 86740)

The inspector interviewed licensee staff and reviewed selected aspects of the following to ensure that transportation requirements of 10 CFR, 49 CFR, and licensee procedures were being met:

- N. S. Savannah 2004 Annual Report, dated March 4, 2005
- N. S. Savannah 2005 Annual Report, dated February 28, 2006
- TS for the N. S. Savannah, Amendment No. 12, dated May 29, 1994
- POP, Hampton Roads and Norfolk, Virginia, STS-004-A3, Rev. 3, dated May 2, 2006

b. Observations and Findings

The inspector confirmed that no radioactive material had been received or shipped by the licensee since the last inspection.

c. Conclusions

No radioactive material was transferred to or from the N. S. Savannah.

9. Physical Security

a. Inspection Scope (IP 69002)

The inspector reviewed selected aspects of the following to ensure access control to the N. S. Savannah and its interior spaces satisfied TS Section 3.3 requirements:

- security systems, equipment, and instrumentation
- N. S. Savannah Security Detex Rounds Notebook
- N. S. Savannah Visitor Log Sign In/Sign Out Logbook
- TS for the N. S. Savannah, Amendment No. 12, dated May 29, 1994

- N. S. Savannah Security Logbook containing Log Sheets completed by contract Security Personnel
- N. S. Savannah Technical Staff Procedure, STS-002-004, "Site Access Control," Rev. 0, dated September 11, 2006
- POP, Hampton Roads and Norfolk, Virginia, STS-004-A3, Rev. 3, dated May 2, 2006
- Quarterly Structural Survey forms, JRRF No. 23B, form revision dated April 1995, for the last 18 months
- Colonna Shipyard Inc. Subcontractor Safety/Security/Environmental Guidelines, guidelines not dated
- Colonna Shipyard Inc. Procedure for Physical Security of Ships, Craft, and Barges at Private Contractors Facility, PCP-66, Rev. 5, not dated

b. Observations and Findings

Although an NRC-approved security plan was not required for the N. S. Savannah, access to the ship was controlled by means of barriers, gates, secured access points, and periodic patrols. The inspector toured the N. S. Savannah and confirmed that the physical protection systems (barriers and alarms), equipment, and instrumentation were as required by the POP and TS Section 3.3 requirements. The inspector also confirmed that the Colonna Shipyard crews and security patrols provided surveillance of the vessel as required by the POP.

Access to the vessel is only allowed with permission of the STA or his designee. During a tour of the ship the inspector noted that radiation control areas, as defined in TS Section 3.3, were secured, posted, and sealed as required. Keys and seals were maintained by the licensee or a designated representative as required.

The inspector also noted that local law enforcement agency personnel, from the Norfolk Police Department, had received a briefing concerning the N. S. Savannah and confirmed that they would be available to respond to any emergency.

c. Conclusions

The physical protection features of the security system, including equipment, procedures, and access control, met the POP and TS Section 3.3 requirements, and satisfied shipyard procedures.

10. Follow-up on Previously Identified Issues

a. Inspection Scope (IP 92701)

The inspector followed up on one violation (VIO) and one inspector follow-up item (IFI) which were identified and documented in Inspection Report Nos. 50-238/2000-201 and 50-238/2001-201 respectively. The inspector reviewed these issues with the licensee to decide what actions had been taken.

b. Observation and Findings

- (1) IFI-50-238/2000-201-01 - Follow-up on the revision and updating of the TS for the N. S. Savannah.

The issue of revising and updating the TS for the N. S. Savannah was identified by an NRC Inspector as an IFI during a previous inspection in April 2000. During the January 2001 RAC meeting, the status of the TS was reviewed. It was agreed that they are still in need of revision. It was concluded that MARAD personnel would be the ones responsible for this action.

During this inspection it was noted that a revision to the TS had been completed and had been submitted to the NRC on August 7, 2006. The NRC review of the TS revision was pending. This item is considered closed.

- (2) VIO-50-238/2001-201-01 - Failure to have a health physicist on call within two hours of the ship and the failure to have an ERAT available in case of a radiological emergency as required by TS.

TS Section 3.1, Administrative Responsibility, requires MARAD to 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, MARAD will provide an ERAT in the event of radiological emergencies.

During an inspection in April 2000, the issues of having a HP on call within two hours and establishing the services of an ERAT were discussed with site personnel. It was not apparent then whether or not such arrangements had actually been made. The issue was left as an unresolved item. When JRRF and MARAD personnel acknowledged, during the January 2001 inspection, that no such provisions had yet been made to meet the requirements of the TS, it was cited as a Level IV Violation.

During this inspection, as noted in Paragraph 5 above, MARAD had been successful in establishing an ERAT for the N. S. Savannah and established a Memorandum of Agreement with the DOE to provide for radiological analytical services through a contractor. This also provided health physics support that would be available with two hours as required. In addition, MARAD had established an agreement with a contract Health Physicist to conduct surveys and complete the environmental surveillances required by the TS. This person was also on call and would be available to provide radiological support as needed and functioned as the RSO in support of MARAD licensed activities. This item is considered closed.

c. Conclusion

Corrective actions had been taken by the licensee and previously identified issues involving one IFI and one violation were closed as a result of this inspection.

11. Exit Interview

The inspection scope and results were summarized on October 11, 2006, with the Senior Technical Advisor. The inspector discussed the findings for each area reviewed. The licensee acknowledged the findings.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

D. Harris High Voltage Electrician, JRRF
E. Koehler Senior Technical Advisor, Office of Ship Operations, MARAD, DOT

Other Personnel

J. Conde Chief Radiological Safety Officer, Ft. Eustis Environmental Health and Safety
J. Osborne Assisting MARAD under contract with Sayres and Associates as the
Licensing and Compliance Officer, STS
A. Paynter Assisting MARAD under contract with Sayres and Associates as the Quality
Assurance Manager, STS

INSPECTION PROCEDURES USED

IP 69002 Class III Research and Test Reactors
IP 86740 Inspection of Transportation Activities
IP 92701 Follow-up on Previously Identified Items

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

IFI-50-238/2006-201-01 Follow-up on the licensee's failure to include in the annual reports to the NRC some of the information that was required to be submitted by the TS and follow-up on the revision of the 2005 Annual Report to ensure that the correct radiation readings are reported.

Closed

IFI-50-238/2000-201-01 Follow-up on the revision and updating of the TSs for the N.S. Savannah.
VIO-50-238/2001-201-01 Failure to have a health physicist on call within two hours of the ship and the failure to have an Emergency Radiological Assistance Team available in case of a radiological emergency as required by TS.

LIST OF ACRONYMS USED

CAR Corrective Action Report
CFR Code of Federal Regulations
CP Cathodic Protection
DH Dehumidifier
DOE Department of Energy
DOT Department of Transportation
ERAT Emergency Radiological Assistance Team
HP Health Physics
IFI Inspector Follow-up Item
JRRF James River Reserve Fleet
MARAD U. S. Maritime Administration
NRC Nuclear Regulatory Commission
POP Port Operating Plan
RAC Review and Audit Committee
Rev. Revision

RPP	Radiation Protection Program
RSO	Radiation Safety Officer
SERAT	Savannah Emergency Radiological Assistance Team
STA	Senior Technical Advisor
STS	Savannah Technical Staff
TS	Technical Specifications
VIO	Violation