



U.S. Department
of Transportation
**Maritime
Administration**

Office of Ship Disposal

1200 New Jersey Ave., SE
Washington, DC 20590

Ref: 10 CFR 50.36(c)(5), 50.54(w), 50.59(d)(2)

February 23, 2018

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Docket No. 50-238; License No. NS-1; N.S. SAVANNAH
Annual Report for CY2017, Revision 0

Pursuant to Technical Specification 3.4.2, the Maritime Administration (MARAD) is required to submit an annual written report. MARAD hereby submits Revision 0 to the Annual Report for CY2017 as Enclosure (1).

The annual report is also intended to meet the routine reporting requirements for:

- 10 CFR 50.59(d)(2) requires a summary of safety evaluations for activities implemented under 10 CFR 50.59; and,
- 10 CFR 50.54(w) Insurance Annual Report.

This submittal contains no new Regulatory Commitments, but does revise one Voluntary Commitment as described in Section 3.3.3 of the Enclosure.

If there are any questions or concerns with any issue discussed in this report, please contact me at (202) 366-2631, and/or e-mail erhard.koehler@dot.gov.

Respectfully,

Erhard W. Koehler
Senior Technical Advisor, N.S. SAVANNAH
Office of Ship Disposal

Enclosure

A020
NRR

Docket No. 50-238; License NS-1; N.S. SAVANNAH
Submittal of Annual Report for CY2017, Revision 0
February 23, 2018

Enclosure:

1. STS-202, Annual Report for CY2017, Revision 0

**Docket No. 50-238; License NS-1; N.S. SAVANNAH
Submittal of Annual Report for CY2017, Revision 0
February 23, 2018**

cc:

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MAR 610, 612, 615

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MAR-600, 640, 640.2

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MAR-100, 640.2 (rf)

USNRC (Ted Smith, Mark C. Roberts)

USNRC Regional Administrator - NRC Region I

MD Department of the Environment (Eva Nair)

EWK/jmo



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Office of Ship Disposal

1200 New Jersey Ave., SE
Washington, DC 20590

**Maritime
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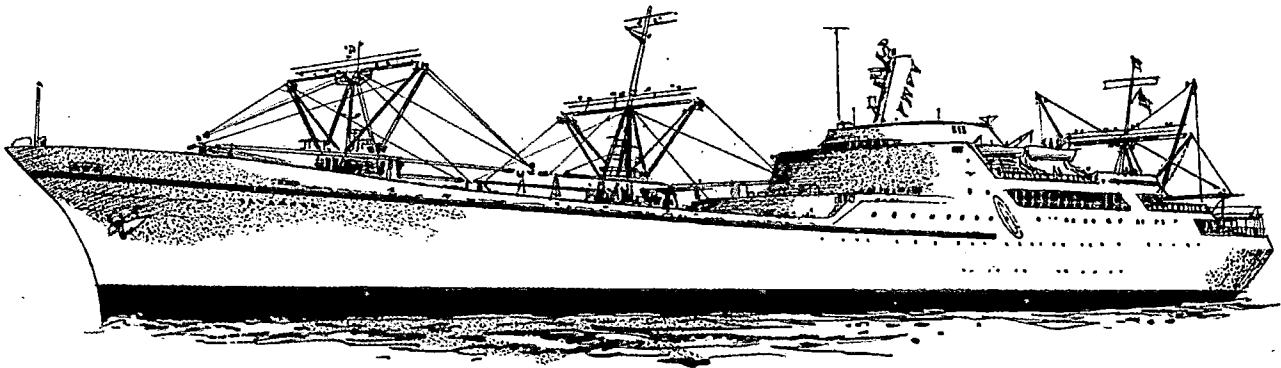
Docket No. 50-238; License No. NS-1; N.S. *SAVANNAH*

Enclosure 1 to Submittal of Annual Report for CY2017, Revision 0

STS - 202, ANNUAL REPORT FOR CY2017



**U.S. Department of Transportation
Maritime Administration**



N.S. SAVANNAH

**ANNUAL REPORT
FOR CY2017**

STS - 202
Revision 0

Approved:

Date: February 23, 2018

Manager, N.S. *SAVANNAH* Programs

Prepared by:
TOTE Services, Inc.

RECORD OF REVISIONS

| Revision | Summary of Revisions |
|----------|---|
| 0 | The original version of the 2017 Annual Report License NS-1 |
| | |

LIST OF EFFECTIVE PAGES

| Page No. | Rev. No. | Page No. | Rev. No. | Page No. | Rev. No. |
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1.0 INTRODUCTION

This Annual Report is submitted by the Maritime Administration (MARAD) as licensee for the Nuclear Ship *SAVANNAH* (NSS) and covers the Calendar Year (CY) 2017 reporting period. This report is arranged into three sections following the introduction. Section 2.0 provides the discussion of the various reporting items required by the Technical Specifications (TSs). Section 3.0 includes other periodic reports required by the NRC, and issues of regulatory significance. Section 4.0 includes facility issues that MARAD believes may be of interest to the NRC.

In accordance with the requirements of TS 3.4.2.1, the written annual report shall be submitted prior to March 1 of the following calendar year, and shall specifically include the nine (9) reporting items listed in that specification. These items are addressed in Sections 2.1 through 2.9 inclusive. In addition, TS 3.6.3 requires the Safety Review Committee (SRC) to review ten (10) items, one of which is this annual report. Section 2.1.3 includes the status of these ten (10) SRC review items.

2.0 ITEMS REQUIRED BY TECHNICAL SPECIFICATIONS

The nine (9) TS 3.4.2.1 items specifically required to be included in the written annual report are as follows:

- a. The status of the facility (see 2.1).
- b. The results of the radiation surveys and monitoring station dosimeter readings (see 2.2).
- c. The results of environmental sample analysis surveys (see 2.3).
- d. The results of quarterly intrusion alarm system checks (see 2.4).
- e. The amount of radioactive materials removed from the N.S. *SAVANNAH* (NSS) by releases, discharges, and shipments of radioactive waste material (see 2.5).
- f. A description of the principal maintenance performed on the vessel (see 2.6).
- g. Any unauthorized entry into radiation control areas by visitors or employees and corrective action taken to improve access control (see 2.7).
- h. Any degradation of one of the several boundaries which contain the radioactive materials aboard the NSS (see 2.8).
- i. Results of occupational exposure indicated by personal dosimetry (see 2.9).

The status of these subject items were reviewed by the Safety Review Committee at its annual meeting on December 14, 2017 and by the Executive Steering Committee members during its concurrence routing prior to submission of this annual report to the NRC.

2.1 TS 3.4.2.1.A. STATUS OF THE FACILITY

During CY2017, the ship was berthed at Pier 13, Canton Marine Terminal, 4601 Newgate Avenue, Baltimore, MD, and remained "Mothballed" per the requirements of Regulatory Guide (RG) 1.86, "Termination of Operating Licenses for Nuclear Reactors," Reference (a). This 1974 RG describes the now outmoded Mothballing option of protective storage. This state of protective storage was approved in 1976 by Amendment 8 (Possession-Only) to License NS-1, Reference (b). MARAD understands RG 1.86 was withdrawn as noticed in the Federal Register (81 FR 53507) on August 12, 2016 and that its withdrawal does not impact the NSS licensing basis.

As described in MARAD's Post Shutdown Decommissioning Activities Report (PSDAR), Rev. 1, Reference (c), in 2008 MARAD committed to a project to bring the NSS into conformance with the contemporary NRC SAFSTOR protective storage criteria. Appropriated funding has not been provided

for that project. In the interim, MARAD has maintained its active retention program of surveillance, monitoring and maintenance of the nuclear facilities housed onboard the ship, and custody, maintenance and repair of the ship as the primary physical boundary and protective barrier of the licensed site.

In-lieu-of the SAFSTOR project, funds were appropriated in FY2017 to begin decommissioning and license termination activities in accordance with the PSDAR. Reference (d) provided notice to the NRC of the availability of decommissioning funds. Decommissioning activities conducted during the reporting period are described in Sections 2.1.1 and 2.1.4 below.

2.1.1 LICENSE ACTIVITIES

MARAD submitted License Amendment Request (LAR) 2017-001 to revise the license by deleting the condition that does not allow dismantlement and disposal of the facility. The request is based on conflict between the language of the license condition and the language of 10CFR50.82 and 50.59 rule changes in the late 1990's.

2.1.2 ORGANIZATION

In 2017, MARAD made no substantial changes to its licensee organization. The organization continues to be made up of MARAD direct employees, contractors, and consultants. Following the receipt of substantial additional funding as described in 2.1.4, additional contractors were hired to support SAFSTOR activities.

2.1.3 REVIEW OF OTHER TECHNICAL SPECIFICATION REQUIREMENTS

In accordance with the TS 3.6.3, the Safety Review Committee (SRC) is specifically required to review the following items with or without a formal meeting:

a. *Proposed changes to Technical Specifications*

While a change was proposed to the NS-1 License as described in Section 2.1.1, no changes were proposed to the Technical Specifications in CY2017.

b. *Evaluations required by 10 CFR 50.59*

Safety Evaluation Screenings were performed as required and forwarded for committee review for information. No screening determined that a 10 CFR 50.59 Evaluation was required; consequently, none were performed. Additional information regarding 10 CFR 50.59 Evaluations is found in Section 3.1 of this report.

c. *Proposed changes or modifications to a Radiologically Controlled Area entry alarm system or reactor containment vessel system*

The Safety Review Committee reviewed all changes to alarm systems and reactor containment vessel system prior to their implementation. These are summarized in 2.6.

d. *Evaluations of substantive changes to the results of radiological surveys*

At the October 26, 2017 meeting, the Safety Review Committee reviewed the final survey of the cleaned Stateroom B-1 and the initial survey of the Nuclear Electronics Workshop (D deck). Stateroom B-1 had been the storage location for low level radioactive waste (LLRW). The October 2017 Fire Hazards Analysis report identified ventilation duct and other issues in Stateroom B-1, and after evaluation, MARAD decided to relocate the LLRW to another location. All LLRW in Stateroom B-1 was moved to the Nuclear Electronics Workshop which was modified to address the issues noted in the Fire Hazards Analysis. The Stateroom B-1 was cleaned prior to the final survey which found no contamination and background radiation levels.

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e. *Procedures and revisions per TS 3.5*

Procedures and their revisions were reviewed prior to approval.

f. *Evaluations of reported violations of Technical Specifications*

There were no reported violations to Technical Specifications in 2017.

g. *Evaluations of reportable events per TS 3.4.3.1*

There were no reportable events in 2017.

h. *Evaluations of deviations allowed by TS 3.7.1.7*

No new Technical Specification Deviations were approved. Both existing deviations were revised in 2017.

STS-004 Deviation - Loss of Alarm Coverage of B Deck RC Door Rev. 3 was reviewed and approved at the December 14, 2017 Safety Review Committee meeting. The significant change is the deviation was revised to replace the Motorola System with the Honeywell Vista 128 system.

STS-004 Deviation - Severe Weather prevents daily security patrols Rev. 2 was reviewed and approved at the December 14, 2017 Safety Review Committee meeting. The revision notes that the NRC equates patrol and video surveillance in 10 CFR 73.55(i)(5) Surveillance, observation, and monitoring (ii).

i. *Audits and self-assessments to verify the effectiveness of the Decommissioning Quality Assurance Plan*

Assessments were performed in the following functional areas in the reporting period:

- QSA-2016-001 2016 Annual Radiation Protection Program Assessment
- QSA-2017-002 Technical Specification 3.7.1.7 Deviations Review 2017
- QSA-2017-003 Procedure Annual Review 2017
- QSA-2017-004 Commitment Periodic Review 2017

j. *Annual reports to the NRC*

During the reporting period, the CY2016 Annual Report (STS-199) and the CY2016 Decommissioning Funds Status Report (STS-200) were reviewed prior to their submission to the NRC.

2.1.4 DECOMMISSIONING PLANNING ACTIVITIES

MARAD decommissioning planning during protective storage is generally associated with the development of budget estimates and requests, as described in Reference (e) and similar prior-year reports. MARAD also monitors developments in the decommissioning environment for applicability to future NSS activities.

As described in Reference (d), MARAD received an appropriation of \$24M in FY2017 to commence decommissioning. In general terms, the appropriations provide a two-year tranche of funds to carry out Phase I of the DECON project as described in the PSDAR, Reference (c). MARAD held a technical discussion with the NRC on July 12, 2017 to review its initial plans to outfit the vessel to support DECON activities. The nominal Phase I start date was established by MARAD as October 1, 2017.

Because nearly ten years has elapsed since the PSDAR and the preceding MARAD Decommissioning Environmental Assessment (EA), Reference (f), were docketed, MARAD determined that an updated EA is required. This effort is expected to carry forward through

much of CY2018. The updated EA will help define the specific methods by which MARAD will perform Phase I, with performance adjustments taking place in the second year of Phase I.

2.1.5 SAVANNAH EMERGENCY RADIOLOGICAL ASSISTANCE TEAM (SERAT)

All SERAT members are located within a 2-hour response radius of the ship's current location. Training is scheduled on January 30, 2018.

2.2 TS 3.4.2.1.B. RADIATION SURVEYS AND MONITORING STATION DOSIMETER READINGS

A routine radiological survey program continued to be followed in 2017. Radiological survey measurements were taken in various Radiologically Controlled Areas (RCAs) and non-RCAs. Evaluations of all surveys over the course of the year found no significant changes in 2017. All readings in non-RCAs were insignificant as compared to background radiation levels. The results of the 2017 Radiation Survey Results in RCAs are listed in Appendix A.

2.2.1 MONITORING STATION DOSIMETER RESULTS

Forty-six (46) permanently placed thermo luminescent dosimeter (TLD) monitoring stations are dispersed throughout the non-RCAs of the NSS and in those areas of the NSS that are routinely occupied. Fixed point radiation surveys are performed during TLD change outs. Results from the TLDs from all monitoring stations indicated that readings were insignificant as compared to the background radiation levels. No fixed point radiation dose rate exceeded 5 mR/hr (milli-R/hr).

2.3 TS 3.4.2.1.C. ENVIRONMENTAL SAMPLE ANALYSIS SURVEYS

Environmental water and sediment samples were taken adjacent to the ship at various times during the calendar year as required by TS and potential ship's movement to new piers. The environmental sample results indicate that any changes in the radiological conditions in the environment surrounding NSS are insignificant as compared to the samples taken shortly before the NSS arrived at Pier 13. Therefore, based on the results of the radiological environmental monitoring program, NSS operations did not have any adverse effects on the health and safety of the public or on the environment in 2017.

The results of the 2016 Radiological Environmental Sampling Results are listed in Appendix B.

2.4 TS 3.4.2.1.D QUARTERLY INTRUSION ALARM SYSTEM CHECKS

Routine security surveillances were conducted as required by TS 3.7.2.1 and the Key and Seal log was reviewed on a quarterly basis. Other monitored doors were tested.

2.5 TS 3.4.2.1.E. RADIOACTIVE MATERIALS REMOVED BY RELEASES, DISCHARGES AND WASTE SHIPMENTS

No radioactive materials were removed from the ship by any of the methods described below:

2.5.1 RELEASES

There were no releases.

2.5.2 DISCHARGES

There were no discharges.

2.5.3 SHIPMENTS

There were no shipments.

2.6 TS 3.4.2.1.F. PRINCIPAL SAFSTOR AND MAINTENANCE ACTIVITIES

Annually, MARAD's major maintenance activities focus on occupational and visitor safety, TS-required equipment, routine preventative maintenance, repairs and upgrades, preservation of the ship's structural integrity, and restoration of ship systems and equipment necessary for husbanding the ship and for its long-term retention and/or decommissioning. The following significant discrete activities were performed in 2017:

- Performed underwater inspection of the hull on October 27, 2017. The inspection findings were consistent with previous inspections; the hull is coated with a thin, easily removable layer of marine growth, and the underlying paint coatings are in an acceptable condition. The visual and ultrasonic survey of the hull structure, including the condition of hull pitting and welds, is satisfactory.
- Upgraded the previous Honeywell alarm system with a Honeywell Vista 128 alarm system to monitor the intrusion and flood devices.
- All non-fire sensors (intrusion and flooding devices) on the Siemens were moved to the Honeywell Vista 128 alarm system. This pending activity was described in the STS-199, Annual Report 2016 in 2.6.2. Alarm System Repairs.
- Replaced 18 lighting transformers (six banks of three transformers per bank) due to age; inefficiency (oversized for current and projected loads); and inability to handle modern electronic waveforms.
- Remediated numerous Asbestos Containing Material (ACM) areas including areas in the containment vessel.
- Remediated exfoliating lead-based paint in the Cold Chemistry Laboratory.
- Replaced the Shore Power Viking Plug
- Performed a Fire Hazards Analysis (FHA)
- Completed work that resulted in down-posting two RCAs (Hot Chem Lab and Health Physics Lab).
- Performed a power survey of the ship's electrical distribution network.
- Completed access improvements to the Containment Vessel (CV) and Lower Level Reactor Compartment. The modification removed the large and small Auxiliary Reactor Access Trunk Plugs in the D deck (D Deck Plugs), and installed the original access ladder from the CCL D Deck opening to the tank top of the RC Lower Level. To improve CV ventilation, the two 42 in. entrances have been opened and are secured with either a locked or bolted grate. In addition, the forward 18 in. by 24 in. manway/flood port has been opened to improve ventilation. It is secured by a twelve (12) in. diameter ventilation duct cover.

2.7 TS 3.4.2.1.G. UNAUTHORIZED ENTRY INTO RADIOLOGICALLY CONTROLLED AREAS (RCAS)

No unauthorized entries were made into any RCAs in 2017.

2.7.1 EVENT DISCUSSION

None

2.7.2 IMPROVEMENTS TO ACCESS CONTROL

None

2.8 TS 3.4.2.1.H. INSPECTION OF PRIMARY, SECONDARY AND AUXILIARY SYSTEMS DEGRADATION

The annual inspection required by TS 3.7.3.4 was conducted from September 19 through 20, 2016. It is documented in SIC-TS-A-2 R0 Structures, Systems and Components Annual Inspection 2017. There was no notable change in the condition of the primary, secondary and auxiliary systems since the last inspection in 2016. The water levels in the Forward and Aft Reactor Compartment Lower Level sumps continue to be monitored.

2.9 TS 3.4.2.1.I. SUMMARY OF 2017 OCCUPATIONAL EXPOSURE

As a result of the NSS being in the Mothballed state of protective storage, no individual is expected to receive in one year from sources external to the body, a dose in excess of 10 percent of the limits specified in 10 CFR 20.1201. Sixty eight (68) individuals were monitored with TLD and self-reading dosimetry during their entries into RCAs. All personnel received less than 10 mRem from occupational sources during the monitoring period. Therefore, MARAD has no requirement under 10 CFR 20.1502, "Conditions requiring individual monitoring of external and internal occupational dose," to reasonably anticipate that there is a need to "monitor exposure to radiation and radioactive materials at levels sufficient to demonstrate compliance with the occupational of dose limits." Likewise, MARAD has no requirement under 10 CFR 20.2106, "Records of individual monitoring results," to maintain records of doses when an individual is not required to be monitored.

3.0 OTHER NRC REPORTS

3.1 10 CFR 50.59(D)(2) REPORT OF CHANGES, TESTS OR EXPERIMENTS

The regulations require each power reactor licensee to submit, at intervals not to exceed 24 months, a report containing a brief description of any changes, tests, and experiments, including a summary of the evaluation of each.

No Changes, Tests or Experiments were proposed in 2017 that would require a 10 CFR 50.59 evaluation, and, consequently, no evaluations were completed.

Screenings are forwarded to Safety Review Committee members for information.

3.2 10 CFR 50.54(W)(3) INSURANCE ANNUAL REPORT

The regulations require each power reactor licensee to obtain insurance available at reasonable costs and on reasonable terms from private sources or to demonstrate to the satisfaction of the NRC that it possesses an equivalent amount of protection covering the licensee's obligation. MARAD adheres to the Federal rules of self-insurance as a matter of established policy.

3.3 COMMITMENT MANAGEMENT

3.3.1 DELETED REGULATORY COMMITMENT

One Regulatory Commitments was deleted using the process required by STS-004-011, Commitment Management which is based on NEI 99-04, Revision 0, "Guidelines for Managing NRC Commitment Changes."

The following commitment was deleted:

NRC COMMITMENT LAR 2006 #1 -- In order to prepare for decommissioning, a number of preparatory activities must be completed. These activities include surveys, system walkdowns, inspections, etc. required for developing a detailed decommissioning plan, schedule and cost estimate. The activities will be administratively limited to allowing no opening of reactor or auxiliary systems or other activities that could reasonably be expected to generate airborne contamination. [Continuing action]

Source: Letter from Mr. Erhard W. Koehler (MARAD) to Document Control Desk (NRC), dated August 7, 2006, License Amendment Request No. 2006-01, Technical Specifications Changes to Support Pre-Decommissioning Activities.

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The commitment was originally developed as a defense in depth regulatory commitment to help ensure that License Condition 2.C.(2) [The licensee shall not dismantle or dispose of the facility without prior approval of the Commission.] was met.

During development of the License Amendment Request (LAR) 2017-001 to request NRC approval to dismantle and dispose of the NSS contaminated systems outside of the Reactor Compartment and Cold Chemistry Laboratory using 10 CFR 50.59, the staff recognized that with a request to delete 2.C.(2), the underlying purpose for the commitment no longer exists. The basis for and approval of the change are documented in STS-004-011, Commitment Evaluation Form, "CATS Issue Number 809." The process concluded no NRC notification was required; however, MARAD concluded it was appropriate to note the deletion in this Annual Report.

3.3.2 MARAD INVESTIGATION - VOLUNTARY COMMITMENT STATUS

As a result of an Independent MARAD Investigation performed on the NSS staff in October 2016, five voluntary commitments have been made. Each commitment is based on one of the five recommendations made in the team's report. Each is being tracked in the Corrective Action System by a Corrective Action Report (CAR) and will be subject to future NRC inspection. These are not Regulatory Commitments.

STS-004-011, Commitment Management defines a Voluntary Commitment as follows:

Any voluntary enhancement or factual statement that describes routine corrective actions taken in accordance with Quality Assurance Programs or other similar descriptive information that is neither intended to constitute nor explicitly identified as a Regulatory Commitment

| Title | CAR # | Comments/Status |
|--|--------------|--|
| NRC Commitment - Internal Investigation RI-2016-A-0054 Rec 1. See comments - Definition of "Patrol" | CAR 2016-039 | Develop or update the Technical Specifications, Section 3.7.1.6 and/or STS 004-004 revision 13 Surveillance Inspection and Calibration Procedure, Attachment 13 (Ref #9) Site Inspection Checklist (Weekends and Holidays) to ensure that these two documents verbiage is in agreement. STATUS: Closed based on a review of the NSS licensing basis, NRC regulation and NRC guidance. See 3.3.3 Revised Voluntary Commitment. |

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| Title | CAR # | Comments/Status |
|--|---------------------|--|
| <p>NRC Commitment - Internal Investigation RI-2016-A-0054 Rec 2. See comments - Improve Procedure Training.</p> | <p>CAR 2016-037</p> | <p>Revise or update the training procedure to address the following: a. Create a more structured process for the training on new or revised procedures to ensure clarity and standardization for training the crew. b. Identify a written process for determining what crew members require the new or revised procedure training. c. Create a check and balance system between the trainer and the document control manager to ensure the records of the training, crew determinations, and lesson plans are recorded and retained. STATUS: Closed. CAR Resolution approved March 2, 2017 STS-PI-00, Process Instruction for Preparing Procedures revised to require lesson plans to be sent Safety Review Committee with new and revised procedures and complete training within 30 days of approval.</p> |
| <p>NRC Commitment - Internal Investigation RI-2016-A-0054 Rec 3. See comments - Implement ABS's Nautical System Enterprise</p> | <p>CAR 2016-043</p> | <p>Add the NSS to ABS's Nautical System Enterprise so MARAD Headquarters among others can provide oversight to the work being conducted. STATUS: Pending MARAD Action. CAR Resolution approved November 16, 2016. If MARAD determines cost is too high, then NSS will inform MARAD that the existing work orders effectively document maintenance and are available for their review.</p> |
| <p>NRC Commitment - Internal Investigation RI-2016-A-0054 Rec 4. See comments - Implement RRF Safety Program.</p> | <p>CAR 2016-044</p> | <p>Add the NSS to MARAD's RRF Safety Program, to provide additional oversight and compliance aboard the vessel. STATUS: Closed. CAR Resolution approved March 2, 2017. MARAD Safety Inspection was conducted October 18-19, 2017. STS-008-001 Safety, Health and Environmental Management Plan has been drafted and is pending MARAD review.</p> |
| <p>NRC Commitment - Internal Investigation RI-2016-A-0054 Rec 5. See comments - Improve New crew member training to include NSS Chain of Command and crew responsibilities.</p> | <p>CAR 2016-041</p> | <p>Add a roles and responsibilities training to new crewmember training to ensure that all new crewmembers are aware of the chain of command as well as responsibilities of each crewmember. STATUS: Closed. CAR Resolution approved November 16, 2016</p> |

3.3.3 REVISED VOLUNTARY COMMITMENT

One Voluntary Commitments was revised. The original commitment stated:

NRC Commitment - Internal Investigation RI-2016-A-0054 Rec. 1. See comments - Definition of "Patrol" - Develop or update the Technical Specifications, Section 3.7.1.6 and/or STS 004-004 revision 13 Surveillance Inspection and Calibration Procedure, Attachment 13 (Ref #9) Site Inspection Checklist (Weekends and Holidays) to ensure that these two documents verbiage is in agreement.

Source: Letter from Mr. Shawn R. Ireland (MARAD) to Ms. Nicole S. Warnek (NRC), dated October 28, 2016, Internal Investigation RI-2016-A0054.

During the development of the response to address the recommendation, the NSS staff reviewed the licensing history and basis of the word "patrol" in the Technical Specifications. The original use of the "patrol" in 1976 required MARAD security patrols to check only the main entrance daily to assure that the vessel has not been entered. When the normal fleet personnel were off-site, security personnel will patrol the Reserve Fleet in a small boat at least once every 24 hours. Physically boarding and inspecting inside the ship was not required.

In 10CFR73.55, NRC approves use of video cameras as an equally effective method to perform a security patrol. The issue was discussed during the December 2017 NRC inspection. The inspection report documents no observation, inspector follow item or notice of violation regarding the issue. Therefore, the commitment is revised as follows:

NRC Commitment - Internal Investigation RI-2016-A-0054 Rec. 1. See comments - Definition of "Patrol" - Review the licensing history and basis of the word "patrol" in Technical Specification 3.7.1.6. Review current NRC regulation and regulatory guidance on the use of video surveillance as a form of patrol. If needed, revise the Technical Specification 3.7.1.6 and/or STS 004-004 revision 13 Surveillance Inspection and Calibration Procedure, Attachment 13 (Ref #9) Site Inspection Checklist (Weekends and Holidays).

As described in 3.3.2, the voluntary commitment is closed based on a review of the NSS licensing basis, NRC regulation and NRC guidance.

4.0 SIGNIFICANT MARAD ISSUES

4.1 REMAINING PROTECTIVE STORAGE TIMELINE

As described in Reference (c), and elsewhere, the license termination deadline for the NSS is December 3, 2031,¹ based on the Permanent Cessation of Operations milestone date of December 3, 1971. As of December 3, 2017, 46 years of protective storage had elapsed; over 75 percent of the allowed 60-year protective storage – DECON - license termination period.

4.2 PUBLIC EVENTS, VISITATION AND TRAINING

Similar to past years, MARAD continued its program of public access and training support during 2017. Major activities included the annual commemoration of National Maritime Day (observed on May 21) and open houses and educational tours in support of Baltimore Port Fest (October). A variety of training and meeting events were conducted throughout the year. Public access was curtailed, but not eliminated, between January and April while major renovations to the ships public spaces were in progress. That

¹ December 3, 1971 is the de facto date of permanent cessation of operations date based on completing the reactor defueling that date by tensioning the reactor vessel head with six studs.

work was conducted using MARAD heritage funding sources. Refer to Section 4.3 for more information about the heritage funding activities.

4.3 HISTORIC STEWARDSHIP

The NSS was designated as a National Historic Landmark (NHL) in 1991, and is the only directly-owned, managed and maintained NHL property in the Department of Transportation inventory.² Under the provisions of the National Historic Preservation Act (NHPA) of 1966, as amended, the highest standard of care for historic objects falls upon federal owners of NHLs. MARAD maintains a continuous focus on its historic stewardship responsibilities when conducting activities on the NSS site. All work on the ship, whether radiological or not, is sensitive to maintaining the historic fabric and appearance of the ship. MARAD's Federal Preservation Officer (FPO) provides expert advice and guidance to licensee staff in these matters, particularly with respect to the implementation of the Secretary of the Interior's Standards for the Treatment of Historic Properties and Historic Vessel Preservation Projects.

In FY2016 MARAD, for the first time, applied funds from its Vessel Operations Revolving Fund heritage account to perform preservation work on the NSS. The circumstances that made such funding available in FY2016 were unique, and are not expected to be repeated. The NHPA defines preservation broadly to include activities such as "management, maintenance, rehabilitation, stabilization, recordation, evaluation, research and documentation." The funded preservation work cut across this broad spectrum of activities, and included work items that support both the heritage and licensed activities aspects of NSS management. This condition is roughly (and appropriately) opposite to the typical funding profile wherein heritage and stewardship activities are conducted within the context of licensed activities from funds supplied for that purpose. Each of the heritage projects, however, has a close and strong nexus to NHPA Section 110 and Section 106 compliance. Examples of heritage work that supports both stewardship and licensed activities (particularly with respect to decommissioning) include development of the characterization plan, electrical power survey, and fire hazards analysis. Of these, the characterization plan was completed during CY2016. Work on the electrical power survey and fire hazards analysis was completed in CY2017.

The FY2016 heritage funding also supported renovations and limited restoration activities in the ship's public spaces. Two of the spaces, the Eisenhower Room (formerly the Main Lounge) and Veranda, are designated spaces that support public involvement in licensing and National Environmental Policy Act (NEPA) activities. These spaces were renovated and retrofitted with modern lighting and heating, ventilation and air conditioning (HVAC) systems to support public access activities. The balance of the public space work was associated with MARAD's stewardship obligations, and not subject to this report.

² The NHL Washington (DC) Union Station is owned by the DOT, acting through the Federal Railroad Administration. The station complex, including air rights above the tracks, is managed and maintained by the independent Union Station Redevelopment Corporation, a public-private quasi-governmental entity established in 1983.

5.0 REFERENCES

- a. Regulatory Guide 1.86, *Termination of Operating Licenses for Nuclear Reactors*, June 1974
- b. Letter from Mr. Robert W. Reid (NRC) to U.S. Department of Commerce, Maritime Administration, dated May 19, 1976, *No Title [Issuance of Amendment 8, Possession-only License]*
- c. Letter from Mr. Erhard W. Koehler (MARAD) to U.S. Nuclear Regulatory Commission (NRC), dated December 11, 2008, *Submittal of Post Shutdown Decommissioning Activities Report, Revision 1*
- d. Letter from Mr. Erhard W. Koehler (MARAD) to U.S. Nuclear Regulatory Commission (NRC), dated May 30, 2017, *Availability of Funds for Decommissioning*
- e. Letter from Mr. Erhard W. Koehler (MARAD) to U.S. Nuclear Regulatory Commission (NRC) dated March 31, 2017, *Submittal of Decommissioning Funds Status Report for Calendar Year (CY) 2016, Rev. 0*
- f. Letter from Mr. Erhard W. Koehler, (MARAD) to U.S. Nuclear Regulatory Commission dated October 3, 2008, *Submittal of Finding of No Significant Impact and Environmental Assessment*

APPENDIX A. 2017 RADIATION SURVEY RESULTS IN RADIOLOGICALLY CONTROLLED AREAS

| Area | General Area Radiation levels mR/hr (milli-R/hr) | Highest Radiation Level mR/hr (milli-R/hr) | General Area Contamination Level (DPM/100cm ²) | Highest Contamination Level (DPM/100cm ²) |
|--|--|--|--|--|
| Reactor Compartment Cupola Level | <1.0 | <1.0 | <1000 | <1000 |
| Reactor Compartment Upper Level | <1.0 | <1.0 | <1000 | <1000 |
| Reactor Compartment Forward Middle Level | <1.0 | <1.0 | <1000 | <1000 |
| Reactor Compartment Aft Middle Level | <1.0 | <1.0 | <1000 | <1000 |
| Reactor Compartment Lower Level | <1.0 | 36 on contact with pipe 8 ft in overhead; 4 @ 30 cm. (A) (B) | <1000 | 4041 inside drum (A) Drum not opened in 2017. Outside drum surface <1000 (B) |
| Containment Vessel 1st Level | <1.0 | <1.0 | <1000 | <1000 |
| Containment Vessel 2nd Level | <1.0 | 2.0 near Steam Drum starboard | <1000 | <1000 |
| Containment Vessel 3rd Level | <1.0 | 2.0 Steam Generator | <1000 | <1000 |
| Containment Vessel 4th Level | <1.0 | 1.5 between Steam Generator and Ht. Exch. | <1000 | <1000 |
| Port Charge Pump Room | <1.0 | <1.0 | <1000 | <1000 |
| Starboard Charge Pump Room | <1.0 | <1.0 | <1000 | <1000 |
| Hot Chemistry Lab | <1.0 | <1.0 | <1000 | <1000 |
| Health Physics Lab | <1.0 | <1.0 | <1000 | <1000 |
| Port Stabilizer Room | <1.0 | <1.0 | <1000 | <1000 |
| Port Booster Pump Area | <1.0 | <1.0 | <1000 | <1000 |

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Appendix A 2017 Radiation Survey Results in Radiologically Controlled Areas

| Area | General Area Radiation levels mR/hr (milli-R/hr) | Highest Radiation Level mR/hr (milli-R/hr) | General Area Contamination Level (DPM/100cm ²) | Highest Contamination Level (DPM/100cm ²) |
|--|--|--|--|---|
| Starboard Stabilizer Room | <1.0 | <1.0 | <1000 | <1000 |
| Stateroom B-1 Rad Waste Storage Area (C) | <1.0 | <1.0 | <1000 | <1000 |
| Fan Room B-Deck | <1.0 | <1.0 | <1000 | <1000 |
| Cold Chemistry Lab Area C-Deck | <1.0 | <1.0 | <1000 | <1000 |
| Sample Room D-Deck | <1.0 | 3.0 on contact with overhead line (A) (B) | <1000 | 700 inside sample sink |
| Gas Absorber Room D-Deck | <1.0 | <1.0 | <1000 | <1000 |
| Cargo Hold D-Deck | <1.0 | <1.0 | <1000 | <1000 |
| Hold Deck Aft of Reactor space port side | <1.0 | <1.0 | N/A | N/A |
| NEWS D Deck Rad Storage (C) | <1.0 | <1.0 | <1000 | <1000 |

Table Data Notes

(A) Historical High value since 2013

(B) 2017 value

(C) Radioactive waste moved to Nuclear Electronics Workshop (NEWS) in 2017.

APPENDIX B. 2017 RADIOLOGICAL ENVIRONMENTAL SAMPLING RESULTS

| Sample Location | Sample Date | Type of sample | Co-60 (B) | Cs-137 (B) |
|---|-------------|----------------|---|----------------------------------|
| Pier #13 Canton Marine Terminal, Baltimore, MD NSS Stbd Side (AFT) | 04/04/2017 | Sediment (A) | <MDC (minimum detectable concentration) | <MDC |
| Pier #13 Canton Marine Terminal, Baltimore, MD NSS Stbd Side (FWD) | 10/12/2017 | Sediment (A) | <MDC | 2.65E-02 pCi/g MDC = 2.16E-02 |
| Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (FWD) | 4/04/2017 | Sediment (A) | <MDC | 1.84E-02 pCi/g MDC = 1.08E-02 |
| Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (AFT) | 10/12/2017 | Sediment (A) | <MDC | <MDC |
| Pier #13 Canton Marine Terminal, Baltimore, MD NSS Stbd Side (AFT) | 4/04/2017 | Water | <MDC | <MDC |
| Pier #13 Canton Marine Terminal, Baltimore, MD NSS Stbd Side (FWD) | 10/12/2017 | Water | <MDC | <MDC |
| Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (FWD) | 4/04/2017 | Water | <MDC | <MDC |
| Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (AFT) | 10/12/2017 | Water | <MDC | <MDC |

Table Data Notes

- (A) Sediment samples are reported on a dry weight basis and are decay corrected to the Sample Collect date
- (B) Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma)