U.S. Department of Transportation

Maritime Administration

SAVANNAH Technical Staff
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 28, 2014

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 CY2013, 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 CY2013 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 Commitment.

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 me at erhard.koehler@dot.gov.

Respectfully,

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

Enclosure

U.S. Department of Transportation

Maritime Administration

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Office of Ship Disposal

Enclosure

Enclosure:
1. Annual Report for CY2013, Revision 0

cc:

Electronic copy
NSS ESC
NSS SRC

MAR 610, 612, 615

Hardcopy, cover letter only
MAR-600, 640, 640.2

Hardcopy w/ all enclosures
MAR-100, 640.2 (rf)
USNRC (Theodore Smith, Mark C. Roberts)
USNRC Regional Administrator - NRC Region I
MD Department of the Environment (Roland G. Fletcher; George S. Aburn, Jr.)
NC Department of Environment & Natural Resources (Beverly O. Hall)
SC Department of Health & Environmental Control (Susan E. Jenkins; Aaron Gantt)
VA Department of Emergency Management (Michael M. Cline)
VA Department of Health (Leslie P. Foldesi)

EWK/jmo

U.S. Department of Transportation

Maritime Administration

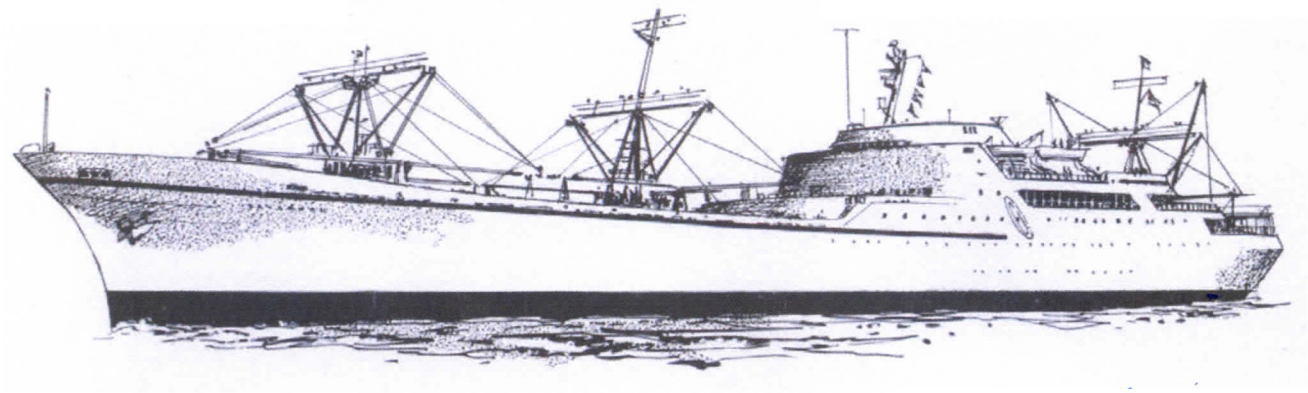
SAVANNAH Technical Staff
Office of Ship Disposal

1200 New Jersey Ave., SE
Washington, DC 20590

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

Enclosure 1 to Submittal of Annual Report for CY2013, Revision 0

U.S. Department of Transportation
Maritime Administration
Office of Ship Disposal



N.S. SAVANNAH

ANNUAL REPORT
2013

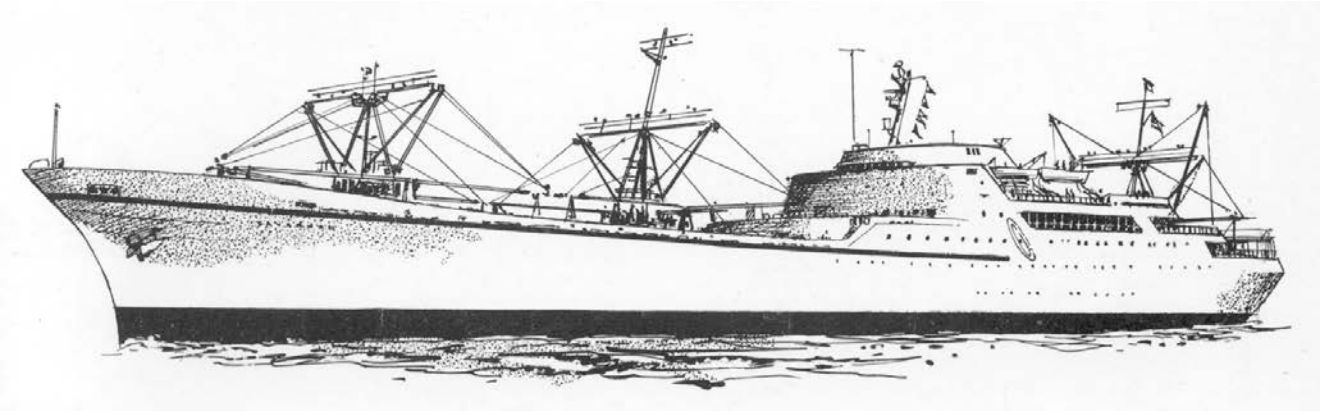
STS - 183
Revision 0

Approved: 02/28/2014

Manager, N.S. *SAVANNAH* Programs Date

Prepared by:
TOTE Services, Inc.

U.S. Department of Transportation
Maritime Administration
Office of Ship Disposal



N.S. SAVANNAH

ANNUAL REPORT
2013

STS - 183
Revision 0

Approved: _____

Manager, N.S. *SAVANNAH* Programs Date

Prepared by:
TOTE Services, Inc.

RECORD OF REVISIONS

Revision	Summary of Revisions
0	The original version of the 2013 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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16	0	17	0		

Table of Contents

1.0 INTRODUCTION

This Annual Report is submitted by the Maritime Administration (MARAD) as licensee for the Nuclear Ship *SAVANNAH* (NSS) and covers the CY 2013 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. 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 Technical Specification 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, Technical Specification 3.6.3 requires the Safety Review Committee to review ten (10) items, one of which is this annual report. Section 2.1.3 includes the status of these ten 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.

b. The results of the radiation surveys and monitoring station dosimeter readings.

c. The results of environmental sample analysis surveys.

d. The results of quarterly intrusion alarm system checks.

e. The amount of radioactive materials removed from the N.S. *SAVANNAH* (NSS) by releases, discharges, and shipments of radioactive waste material.

f. A description of the principal maintenance performed on the vessel.

g. Any unauthorized entry into radiation control areas by visitors or employees and corrective action taken to improve access control.

h. Any degradation of one of the several boundaries which contain the radioactive materials aboard the NSS.

i. Results of occupational exposure indicated by personal dosimetry.

The status of these subject items were reviewed by the Safety Review Committee at its annual meeting on December 11, 2013 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 Calendar Year (CY) 2013, the ship was berthed at Pier 13, Canton Marine Terminal, 4601 Newgate Ave., 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).

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 yet 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.

The implementation of sequestration in the latter half of FY 2013 reduced the resources available for NSS activities. MARAD was forced to defer some maintenance activities, and to make other adjustments to its annual workplan; however, core compliance activities were maintained without interruption. Similarly, the continuity of MARAD licensed activities was maintained during the federal government shutdown in October due to the availability of carryover funds to support licensee staffing.

2.1.1 License Activities

MARAD completed no significant licensing action in 2013.

The USNRC conducted no facility inspection in 2013.

2.1.2 Organization

In 2013, MARAD made changes to its licensee organization. The organization is made up of MARAD direct employees, contractors, and consultants. The changes deal exclusively with contract service providers, as described below.

On March 15, 2013, MARAD awarded a contract to TOTE Services, Inc. (TOTE), of Moorestown, New Jersey. This contract combines and integrates three previously separate contracted services that together provide for radiological protection and radiological emergency response; ship husbandry and custodial care; and core nuclear competencies and proficiencies. TOTE is the lead partner of a three-company team. It is responsible for the Facility Management (vessel custody and husbandry) services previously provided by Keystone Shipping Company under general agency assignment. It will also act as the integrator of all contract services, and will provide Federal Acquisition Regulation (FAR) procurement authority under its MARAD-approved commercial procurement procedures. Mega-Tech, LLC assumes the License Technical Support (LTS) task from Sayres & Associates, Corp. The LTS task provides a cadre of nuclear professionals who collectively possess experience and expertise in core nuclear disciplines and knowledge areas. Radiological Protection and radiological emergency response has been assumed by Radiation Services Organization (RSO), Inc., of Laurel, MD from Radiation Safety and Control Services (RSCS), Inc.

All key personnel under the contract tasks are required to meet qualifications (by title) under ANSI N18.1-1971 and ANSI/ANS-3.1-1999. Of note is that three (3) of the Mega-Tech LTS nuclear professionals are incumbents from the previous Sayres contract, thus providing a significant measure of continuity into the new licensee organization.

Appropriate turnover surveys and inspections were completed for all contract services, including close-out radiological and environmental surveys by RSCS, and baseline surveys by RSO.

2.1.3 Review of Other Technical Specifications Requirements

In accordance with the NSS Technical Specification 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.*

   No changes were proposed to the Technical Specifications in CY 2013.

b. *Evaluations required by 10 CFR 50.59.*

Safety Evaluation Screenings were performed as required. 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 SRC reviewed all changes to alarm systems prior to installation.

There were no changes to the reactor containment vessel system.

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

There were no substantive changes to the results of radiation surveys.

e. *Procedures and revisions per Technical Specification 3.5.*

Per Technical Specification 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 2013.

g. *Evaluations of reportable events per Technical Specification 3.4.3.1.*

There were no reportable events in 2013.

h. *Evaluations of deviations allowed by Technical Specification 3.7.1.7.*

One Technical Specification Deviation was approved in 2013. It was a revision to STS-004 Deviation - Loss of Alarm Coverage of B Deck RC Door.

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:

- STS-179, Review of Regulatory Commitments July 2013
- STS-181, Technical Specification 3.7.1.7 Deviations Review 2013
- STS-182, Annual Procedure Review 2013
- Assessment 2013-001, New Contract Transition Review
- Assessment 2013-002, Evaluate Key Near Term Activities -NSS Decommissioning Tasks Related to Budget Request and Site Selection
- STS-186, Annual Structures, Systems and Components Degradation Inspection Radiological Areas (T.S. 3.7.3.4) 2013
- Assessment 2013-003, Procedures assessment.

j. *Annual reports to the NRC.*

During the reporting period, the CY 2012 Annual Report (STS-172) and the CY 2012 Decommissioning Funds Status Report (STS-173) were reviewed prior to their submittal to the NRC.

2.1.4 Decommissioning Planning Activities

During 2013, planning was begun for three activities:

- Environmental remediation of the Cold Chemistry Laboratory (an RCA) in 2014. The work contemplated does not involve decommissioning activities, but requires similar work control practices. All work falls within the scope of the SAFSTOR Preparations described in Reference (c).
- Updating the characterization plan. MARAD intends to conduct a more detailed and comprehensive characterization survey with pre-requisite activities beginning in 2014 if resources become available. As above, the work falls within the scope of Reference (c).
- As one aspect of updating its decommissioning plans, MARAD organized a meeting (that took place on 07/09/2013) among the NRC and the Advisory Council on Historic Preservation (ACHP) to discuss implementation of the Section 106 consultation process required under the National Historic Preservation Act of 1966, as amended (NHPA). The National Park Service (Region I, Philadelphia) was also invited, but was unable to attend the meeting due to travel restrictions that were in place at the time. The meeting took place at the ACHP offices in Washington, DC. Future meetings were anticipated but did not take place in 2013 due to the prolonged effects of sequestration and the government shutdown in October.

2.1.5 *SAVANNAH* Emergency Radiological Assistance Team (SERAT)

As described in 2.1.2., there were significant changes to the contract staff in 2013. In order to ensure a seamless transition for the SERAT, the existing on-call health physics contractors were retained for one month past the effective NTP date of the new contract service providers. Site-specific training was conducted for the new on-call health physicists during that turnover period. The balance of SERAT members-of-record are incumbents located within the 2-hour response radius of the ship's current location. There was no change to the ship location.

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 2013. Radiological survey measurements were taken in various non-Radiological Controlled Areas and Radiological Controlled Areas. As described in 2.1.2, a close-out radiological survey was performed at the termination of the RSCS contract. Similarly, a baseline radiological survey was performed by RSO at the start of the TOTE contract. Evaluations of all surveys over the course of the year found no significant changes in 2013. All readings in non-Radiological Controlled Areas were insignificant as compared to background radiation levels.

The results of the 2013 Radiation Survey Results in Radiologically Controlled Areas are listed in Appendix A.

2.2.1 Monitoring Station Dosimeter Results

Forty-six (46) permanently placed thermoluminescent dosimeter (TLD) monitoring stations are dispersed throughout the non-radiologically controlled areas 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 μR/hr (micro-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. As described in 2.1.2, a close-out environmental survey was performed at the termination of the RSCS contract. Similarly, a baseline environmental survey was performed by RSO at the start of the TOTE contract.

The environmental sample results indicate that 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 2013.

The results of the 2013 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 Technical Specification 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 Maintenance and Related Activities

The major maintenance activities of CY 2013 continued to focus on routine preventative maintenance, 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. In addition, the following significant discrete activities were performed:

2.6.1 Underwater Hull Inspection 2013

TS 3.7.3.3 requires that an underwater inspection of the hull be conducted at least every four years. MARAD performs this inspection annually as part of its hull classification program. The 2013 inspection was conducted roughly five (5) years after the last out-of-water drydocking availability, and at the approximate mid-point of the notional ten (10) year special survey and drydocking cycle. The inspection was intended to credit the intermediate hull classification survey, which includes requirements for ultrasonic measurement of hull plating thickness. To meet these objectives, the 2013 inspection scope was increased from the normal diver-based visual examination of the underwater hull surface.

The underwater hull inspection was conducted by Seaward Marine Services, Inc. (Norfolk, VA) during the period from 03/21/2013 to 03/26/2013. The survey was performed from pier-side at the Canton Marine Terminal - Pier 13, Baltimore, MD. Seaward employed its Lamp Ray® remotely-operated vehicle (ROV) to perform the inspection. The Lamp Ray® ROV is a hull-crawling inspection vehicle integrated with a precise hull tracking capability and data management system to produce quantifiable data on hull plate thickness, coating condition, galvanic potential field and hull form.

The inspection scope included:

- Hull shell plate material thickness gauging
- Hull coating thickness measurement

- Hull potential measurement
- Hull visual/video inspection.

The results of the inspection were satisfactory and within expectations, and resulted in crediting of the intermediate hull classification survey by the American Bureau of Shipping.

2.6.2 Cathodic Protection System

As required by TS 3.7.3.2, the impressed-current cathodic protection system was maintained and tested periodically during CY 2013. The anodes and reference cells were cleaned by divers as part of the Lamp Ray® inspection.

2.6.3 Fire door hold back restoration

The magnetic holdback feature for fire doors was restored. This feature is manually activated from the Ship's Security Office (A-18) in the event of a fire condition.

2.6.4 Contract turnover surveys

When the NSS was redelivered to MARAD custody in 1994 (from the Patriots Point Development Authority of South Carolina), most surveys and inspections were waived by the Maritime Administrator, and the vessel was accepted in as-is condition. Consequently, the material configuration of much of the vessel was unknown, and inventories were incomplete, missing and invalid. The TSIM contract award with its accompanying redelivery of the vessel from Keystone to MARAD and immediate delivery to TOTE afforded an opportunity to conduct a complete and thorough material condition survey and inventory. Beginning in August 2012, MARAD directed Keystone to take and record inventories; identify and record operational and in-service equipment, machinery and systems; and perform operational testing and demonstrations of the operating equipment, machinery and systems. These activities were substantially completed by the end of 2012.

The NSS has few pieces of operational machinery and equipment; generally limited to mooring and stores handling. Those pieces of operational equipment were demonstrated as follows:

- Port Anchor Windlass – demonstrated by KSC to MARAD in 2012; Tote accepted report.
- Stbd Anchor Windlass – demonstrated by KSC to MARAD and Tote on 03/28/2013.
- Electric Mooring Capstans (2) – demonstrated by KSC to MARAD and Tote on 03/28/2013.
- Aft Stbd Mooring Capstan - demonstrated by KSC to MARAD in 2012; Tote accepted report.
- Electric Air Compressor - demonstrated by KSC to MARAD and Tote on 03/28/2013.
- Stores Davit – pull tested to 10,000 lbs and witnessed by Keystone, MARAD and ABS. Retested using water weights to full rating during the week of April 1, 2013.
- Shore-mounted electric Fire Pump – demonstrated by KSC to MARAD and Tote on 03/28/2013.

Turnover surveys were conducted during the two week period beginning March 18, 2013. A formal walkover of the vessel was jointly conducted by representatives of Keystone, MARAD and TOTE. The walkover sighted all compartments of the ship, except for the following:

- Cargo Hold 1;
- Cargo Holds 2-4 below B Deck;
- Cargo Hold 5 below the 16'-6" flat;

- Cargo Holds 6 and 7 below C Deck;
- Innerbottom tanks, voids and peak tanks.

Radiologically Controlled Areas were surveyed and sighted on March 26-27 as part of the Radiological Protection task turnover. Representatives from Keystone, MARAD and Tote witnessed all spaces for turnover, in addition to the outgoing and incoming radiological protection contractors.

The turnover surveys were recorded on MARAD Forms MA-58 (Material Condition Survey) and MA-279 (Walkover Survey Report) with attached notes, inventories and test reports prior to the contract turnover on March 29.

2.6.5 Hiller Alarm System Modification

The modification of the Hiller Alarm system removed the monitoring of various alarm loops from the mother board to a new loop driver card. The modification enhances system reliability and protects the motherboard from damage caused by a loop circuit malfunction.

2.7 TS 3.4.2.1.g. Unauthorized Entry Into Radiation Control Areas

No unauthorized entries were made into any Radiologically Controlled Area in 2013.

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 Technical Specification 3.7.3.4 was conducted September 24-26, 2013. It is documented in STS-186, NSS Annual Structures, Systems and Components Degradation Inspection 2013. There was no notable change in the condition of the primary, secondary and auxiliary systems since the last inspection in 2012. Forward and Aft RCLL Sump levels continue to be monitored.

2.9 TS 3.4.2.1.i. Summary of 2013 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% of the limits specified in 10 CFR 20.1201. One hundred and five (105) individuals were monitored with TLD and self-reading dosimetry during their entries into radiological controlled area. All personnel received zero dose 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 2013 that would require a 10 CFR 50.59 evaluation, and, consequently, no evaluations were completed.

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.

4.0 SIGNIFICANT MARAD ISSUES

4.1 Atoms for Peace

December 8, 2013 marked the sixtieth anniversary of President Eisenhower's *Atoms for Peace* speech. The NSS is considered to be the most significant physical remnant of the Atoms for Peace program, and consequently MARAD organized an observance of the anniversary.

4.2 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, 2013, 42 years of protective storage had elapsed; more than two-thirds (⅔) of the allowed 60-year protective storage period.

4.3 Public Events, Visitation and Training

MARAD continued its program of public access during 2013, with substantial similarity to previous years. In addition to several group tours, there were two public open houses scheduled. The first was on Saturday, May 18 as part of the Port of Baltimore observance of National Maritime Day with a concurrent Port Exposition on Pier 13. The event had an estimated attendance of 1,200 persons. A second open house took place on Saturday, October 19 in conjunction with a week-long Port Fest organized by the Baltimore National Heritage Area of the National Park Service.

The NSS was again employed as a training site for various U.S. government agencies and organizational elements during CY 2013. A major exercise was organized by the United States Army Operational Test Command for the operational and acceptance testing of the Navy's Dismounted Reconnaissance, Sets Kits and Outfits (DR SKO) system. DR SKO equipment is portable instrumentation that can detect nuclear, biological and chemical hazards, and is designed for joint service use by the Navy and Army. The joint Army-Navy test group chose the NSS as a support platform for this exercise because its arrangement as a passenger-cargo ship provided a wide variety of shipboard environments in a single platform at a substantially lower-cost than operational naval vessels. Shipboard test activities began on October 28th and continued for two weeks. Other organizations employing the NSS in 2013 included the Weapons Intelligence Non Proliferation and Arms Control Center (WINPAC) and the U.S. Army Nuclear Disablement Team from the Aberdeen Proving Ground. Technical training was provided to the Maine Maritime Academy in July.

4.4 Historic Stewardship

MARAD continued to maintain a robust historic stewardship program in 2013. 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 National Historic Landmarks (NHL). The NSS was designated as a NHL in 1991, and is the only NHL property in the Department of Transportation

[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.

inventory. 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.

Decommissioning activities are subject to the provisions of the NHPA, and MARAD includes such planning and consultation as is necessary to ensure that decommissioning activities are in compliance with all applicable historic preservation statutory and regulatory requirements, as well as the relevant executive orders. Please also see 2.1.4.

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

Appendix A 2013 Radiation Survey Results in Radiologically Controlled Areas

Area	General Area Radiation levels µR/hr (micro-R/hr)	Highest Radiation Level µR/hr (micro-R/hr)	General Area Contamination Level (DPM/100cm^2)	Highest Contamination Level (DPM/100cm^2)
Reactor Compartment Cupola Level	1.0 – 4.0	10	<1000	<1000
Reactor Compartment Upper Level	1.0 – 2.0	15 at open hatch to Reactor vessel	<1000	<1000
Reactor Compartment Forward Middle Level	1.0 – 1.5	1.5	<1000	<1000
Reactor Compartment Aft Middle Level	1.0 – 2.5	7 on hose	<1000	<1000
Reactor Compartment Lower Level	30 – 2 000	40,000 on contact with pipe 8 ft in overhead; 10,000 @ 30 cm.	<1000	4041 inside drum
Containment Vessel 1st Level	150 - 450	2500 along Steam Drum	<1000	<1000
Containment Vessel 2nd Level	150 - 2400	3500 along Steam Drum	<1000	<1000
Containment Vessel 3rd Level	200 - 4000	10000 on contact with Steam Generator; 6000 @30cm	<1000	<1000
Containment Vessel 4th Level	400-3500	50,000 on contact with pipe; 4,500 @30cm	<1000	4092 STBD side off Deck
Port Charge Pump Room	1.5 - 30	100 to 120 on contact with pump suction line	<1000	<1000

Area	General Area Radiation levels µR/hr (micro-R/hr)	Highest Radiation Level µR/hr (micro-R/hr)	General Area Contamination Level (DPM/100cm^2)	Highest Contamination Level (DPM/100cm^2)
Starboard Charge Pump Room	1.0 - 18	60 on contact with pump suction line	<1000	<1000
Hot Chemistry Lab	0.5 – 1.0	4.0 on contact with sink drain trap shielding. 25 on contact with trap.	<1000	<1000
Health Physics Lab	1.5 – 3.0	17 on contact with Steam Generator Primary Side Samples	<1000	<1000
Port Stabilizer Room	1.0 – 4.0	4.5 grate level	<1000	<1000
Port Booster Pump Area	3.0 - 28	800 on contact with piping with 30cm readings up to 120.	<1000	<1000
Starboard Stabilizer Room	1.0 - 1.5	1.5 lower level off walkway	<1000	<1000
Stateroom B-1 Rad Waste Storage Area	2.0 - 4.0	80 on contact with waste container, 16 @ 30cm.	<1000	<1000
Fan Room B Deck	0.5 – 1.5	1.5	<1000	<1000
Cold Chemistry Lab Area C Deck	1.0 - 6.0	18 on contact with the floor	<1000	<1000
Sample Room D-Deck	10.0 – 600	3000 on contact with overhead line	<1000	1168 inside sample sink
Gas Absorber Room D-Deck	5.0 – 26	160 on Suction Strainer	<1000	<1000

Area	General Area Radiation levels µR/hr (micro-R/hr)	Highest Radiation Level µR/hr (micro-R/hr)	General Area Contamination Level (DPM/100cm^2)	Highest Contamination Level (DPM/100cm^2)
Cargo Hold D Deck	0.5 – 40	60 on contact behind aft deck plates along Port side	<1000	<1000
Hold Deck Aft of Reactor space port side	5.0 - 7.0	50 on contact with piping under the deck plate	N/A	N/A

Appendix B 2013 Radiological Environmental Sampling Results

Sample Location	Sample Date	Type of sample	Co-60	Cs-137
Pier #13 Canton Marine Terminal, Baltimore, MD NSS STBD Side (AFT)	03/28/2013	Sediment (A)	1.60E-02 pCi/g (B)	9.16E-02 pCi/g (C)
Pier #13 Canton Marine Terminal, Baltimore, MD NSS STBD Side (FWD)	03/28/2013	Sediment (A)	-2.66E-02 pCi/g (B)	8.46E-02 pCi/g (C)
Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (FWD)	03/28/2013	Sediment (A)	-3.87E-04 pCi/g (B)	9.89E-02 pCi/g (B)
Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (AFT)	03/28/2013	Sediment (A)	-7.03E-02 pCi/g (B)	7.24E-02 pCi/g (B)
Pier #13 Canton Marine Terminal, Baltimore, MD NSS STBD Side (AFT)	03/28/2013	Water	1.86E+00 pCi/L (B)	-1.49E-01 pCi/L (B)
Pier #13 Canton Marine Terminal, Baltimore, MD NSS STBD Side (FWD)	03/28/2013	Water	-9.94E-01 pCi/L (B)	8.37E-01 pCi/L (B)
Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (FWD)	03/28/2013	Water	2.69E+00 pCi/L (B)	-7.03E+01 pCi/L (B)
Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (AFT)	03/28/2013	Water	1.084E+00 pCi/L (B)	-7.44E-01 pCi/L (B)
Pier #13 Canton Marine Terminal, Baltimore, MD NSS STBD Side (FWD)	09/30/2013	Sediment (A)	1.52E-02 pCi/g (B)	1.57E-02 pCi/g (C)
Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (AFT)	09/30/2013	Sediment (A)	1.11E-02 pCi/g (B)	2.59E-02 pCi/g (B)
Pier #13 Canton Marine Terminal, Baltimore, MD NSS STBD Side (FWD)	09/30/2013	Water	-1.50E+00 pCi/L (B)	2.5E+00 pCi/L (B)
Pier #13, Canton Marine Terminal, Baltimore, MD NSS Port Side (AFT)	09/30/2013	Water	-2.53E+00 pCi/L (B)	1.01E+00 pCi/L (B)

Table Data Notes

(A) Sediment samples are reported on a dry weight basis and are decay corrected to the Sample Collect date

(B) Calculated MDA as a-posteriori values at the 95% confidence level

(C) Results are statistically positive at the 95% Confidence level (Activity is greater than or equal to the two sigma uncertainty)