



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

June 11, 2019

Mr. Erhard W. Koehler
Senior Technical Advisor, N.S. *Savannah*
U.S. Department of Transportation
Maritime Administration (MAR-640.2)
1200 New Jersey Avenue, SE
W25-209/212
Washington, DC 20590-0001

**SUBJECT: NUCLEAR SHIP SAVANNAH - ISSUANCE OF AMENDMENT 17 TO REVISE
THE TECHNICAL SPECIFICATIONS TO REVISE THE RADIOACTIVE
EFFLUENT CONTROLS AND MAKE AN ADMINISTRATIVE CHANGE**

Dear Mr. Koehler:

By applications dated June 19, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18173A102), November 9, 2018 (ADAMS Accession No. ML18325A178), and February 13, 2019 (ADAMS Accession No. ML19081A111) the United States Maritime Administration (MARAD), requested U.S. Nuclear Regulatory Commission (NRC) approval of an Amendment revising the Nuclear Ship *SAVANNAH* (NSS) Technical Specifications.

The proposed amendment would revise the Technical Specifications to reflect the decommissioning status of the vessel. The changes will incorporate a Process Control Program, an Offsite Dose Calculation Manual, a Radioactive Effluent Controls Program and a Radiological Environmental Monitoring Program.

The NRC staff has completed its review of the proposed amendment to your license. The amendment approving the proposed changes is provided in Enclosure 1. Enclosure 2 contains the NRC staff's associated safety evaluation.

A notice of issuance of amendment has been forwarded to the Office of *Federal Register* for publication.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions, please contact me at 301-415-3017, or via e-mail at theodore.smith@nrc.gov.

Sincerely,

//RA//

Theodore B. Smith, Project Manager
Reactor Decommissioning Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket Nos. 50-238

Enclosures:

1. Amendment No. 17 to NS-1
2. Safety Evaluation

cc: w/enclosures: Distribution

E. Koehler

- 2 -

SUBJECT: NUCLEAR SHIP SAVANNAH - ISSUANCE OF AMENDMENT 17 TO REVISE
THE TECHNICAL SPECIFICATIONS TO REVISE THE RADIOACTIVE
EFFLUENT CONTROLS AND MAKE AN ADMINISTRATIVE CHANGE

DISTRIBUTION:

PUBLIC
RidsRgn1MailCenter Resource

RDB r/f
MRoberts, RI

RidsNMSS Resource
KWarner, RI

ADAMS Accession No.: ML19085A482

*via email

OFFICE	DUWP	DUWP	DUWP/BC	OGC	DUWP/BC	DUWP
NAME	TSmith	CHolston	JClements	JEzell*	BWatson	TSmith
DATE	3/27/2019	3/27/2019	3/27/2019	5/29/2019	6/10/2019	6/11/2019

OFFICIAL RECORD COPY

ENCLOSURE 1

AMENDMENT NO. 17 TO LICENSE NO. NS-1

UNITED STATES MARITIME ADMINISTRATION

NUCLEAR SHIP SAVANNAH

DOCKET NO. 50-238



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

UNITED STATES MARITIME ADMINISTRATION
DOCKET NO. 50-238
NUCLEAR SHIP SAVANNAH
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 17
License No. NS-1

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
 - A. The application for a license amendment filed by the United States Maritime Administration (MARAD, the licensee), dated June 19, 2018 and November 9, 2018, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and applicable portions of the Commission's regulations set forth in 10 CFR Chapter I, and all required notifications to other agencies or bodies have been duly made;
 - B. The facility will operate in conformity with the license, as amended, the provisions of the Act, and the applicable rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amended license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with applicable portions of the Commission's regulations set forth in 10 CFR Chapter I;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51, of the Commission's regulations and all applicable requirements have been satisfied.

Amendment 17
June 14, 2019

2. Accordingly, the license is hereby amended as indicated in the attachment to this license amendment, and Facility Operating License No. NS-1 is hereby amended as follows.

Paragraph 2.C.(3) of Facility Operating License No. NS-1 is hereby amended to read:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 17, are hereby incorporated in the license. The licensee shall maintain the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

//RA//

Bruce A. Watson, CHP, Chief
Reactor Decommissioning Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Attachment:
Change to Facility
Operating License No. NS-1

Date of Issuance: June 14, 2019

ATTACHMENT TO LICENSE AMENDMENT NO. 17

TO FACILITY OPERATING LICENSE NO. NS-1

DOCKET NO. 50-238

Replace the following page of the Technical Specifications with the attached revised page. Revised pages are identified by amendment number and contains marginal lines indicating the area of change.

Technical Specifications

Remove

All (1-10)

Insert

1-10

N.S. *SAVANNAH*

Technical Specifications
Docket No. 50-238

Appendix A to
Facility License No. NS-1

U.S. Department of Transportation
Maritime Administration

Table of Contents

1.0	GENERAL	2
2.0	RADIOACTIVE RELEASES	2
2.1	Process Control Program (PCP)	2
2.2	Offsite Dose Calculation Manual (ODCM)	2
2.3	Radioactive Effluent Controls Program	3
2.4	Radiological Environmental Monitoring Program	3
2.5	Reporting Requirements	4
3.0	ADMINISTRATIVE CONTROLS	5
3.1	Administrative Responsibility	5
3.2	Records	5
3.3	Radiological Criteria, Access Control and Security	6
3.4	Reports and Notice of Ship Movement	6
3.5	Procedures and Operating Instructions	7
3.6	Safety Review Committee	8
3.7	Ship Access Control and Surveillance	9

1.0 GENERAL

The nuclear ship N.S. *SAVANNAH* has been in a state of active decommissioning since Amendment 15 was issued.

2.0 RADIOACTIVE RELEASES

2.1 Process Control Program (PCP)

The PCP shall describe the administrative and technical controls for liquid and solid radioactive waste systems management. Changes to the PCP will be outlined in the Annual Radioactive Effluent Release Report per Section 2.5.2. This submittal shall contain:

- 2.1.1. Information to support the rationale for the change and the changed pages of the PCP or a statement there were no changes;
- 2.1.2 A determination that the change did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes;
- 2.1.3 Documentation that the change has been reviewed and found acceptable by the Safety Review Committee and approved by the Senior Technical Advisor, U.S. Maritime Administration; and,
- 2.1.4 Each change shall be identified by markings in the margin of the affected pages; clearly indicating the area of the page that was changed; and, shall indicate the date (i.e., month and year) the change was implemented.

2.2 Offsite Dose Calculation Manual (ODCM)

The ODCM shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents; in the calculation of gaseous and liquid effluent monitoring alarm and trip setpoints; and in the conduct of the radiological environmental monitoring program. Changes to the ODCM will be outlined in the Annual Radioactive Effluent Release Report per Section 2.5.2. This submittal shall contain:

- 2.2.1 A complete copy of the ODCM with an accompanying criteria and justification for the changes or a statement there were no changes;
- 2.2.2 A determination that the change(s) maintain the levels of radioactive effluent control required and by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations;

2.2.3 Documentation that the change has been reviewed and found acceptable by the Safety Review Committee and approved by the Senior Technical Advisor, U.S. Maritime Administration; and,

2.2.4 Each change shall be identified by markings in the margin of the affected pages; clearly indicating the area of the page that was changed; and, shall indicate the date (i.e., month and year) the change was implemented.

2.3 Radioactive Effluent Controls Program

A program shall be provided conforming to 10 CFR 50.36a for control of radioactive effluents and for maintaining the doses to members of the public from radioactive effluents as low as reasonably achievable. The program (1) shall be contained in the ODCM, (2) shall be implemented by operating procedures, and (3) shall include remedial actions to be taken whenever the program limits are exceeded. The program shall include the following elements:

2.3.1 Limitations on the operability of radioactive gaseous monitoring instrumentation, including surveillance tests and setpoint determination in accordance with the methodology in the ODCM;

2.3.2 Limitations on the concentrations of radioactive material released in liquid effluents to unrestricted areas conforming to 10 CFR 20, Appendix B, Table 2, Column 2;

2.3.3 Monitoring, sampling and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters described in the ODCM;

2.3.4 Limitations on the annual doses or dose commitment to a member of the public from radioactive materials in liquid effluents released to unrestricted areas conforming to 10 CFR Part 50, Appendix I;

2.3.5 Determination of cumulative and projected dose contributions from radioactive effluents for the current calendar year in accordance with the methodology and parameters in the ODCM at least every year;

2.3.6 Limitations on the annual doses to a member of the public from all radionuclides in particulate form in gaseous effluents released to unrestricted areas conforming to 10 CFR Part 50, Appendix I; and,

2.3.7 Limitations on the annual dose or dose commitment to any member of the public due to release of radioactivity and to radiation from uranium fuel cycle sources conforming to 40 CFR Part 190.

2.4 Radiological Environmental Monitoring Program

A program shall be provided to verify the adequacy of the programs and procedures in-place for limiting and controlling radioactive effluents and doses in unrestricted areas.

The program shall include the sampling and analysis of environmental media and pathways of exposure that are considered important, considering the scope of activities being performed. The program shall (1) be contained in the ODCM; (2) conform to the guidance of 10 CFR 50, Appendix I; and (3) include the following:

- 2.4.1 Monitoring, sampling, analysis, and reporting of radiation and radionuclides in the environment in accordance with the methodology and parameters described in the ODCM.
- 2.4.2 Participation in an Interlaboratory Comparison Program to ensure that independent checks on the precision and accuracy of the measurements of radioactive material in the environmental sample matrices are performed as part of the Decommissioning Quality Assurance Plan for environmental monitoring.

2.5 Reporting Requirements

In addition to applicable reporting requirements of Title 10, *Code of Federal Regulations*, the following reports shall be submitted prior to April 1 of each year in accordance with 10 CFR 50.4.

2.5.1 Annual Radiological Environmental Monitoring Report

The Annual Radiological Environmental Monitoring Report shall include summaries, interpretations, and analyses of trends of the results of the radiological environmental monitoring program for the previous calendar year. The material provided shall be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM), and in 10 CFR 50, Appendix I, Section IV.B.2.

The Annual Radiological Environmental Monitoring Report shall include the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the previous calendar year pursuant to the ODCM.

In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted in a supplementary report as soon as possible.

2.5.2 Annual Radioactive Effluent Release Report

The Annual Radioactive Effluent Release Report shall include a summary of the quantities of 1) radioactive liquid and gaseous effluents and 2) solid waste released from the NSS. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR 50, Appendix I, Section IV.B.1.

3.0 ADMINISTRATIVE CONTROLS

3.1 Administrative Responsibility

- 3.1.1 The N.S. SAVANNAH NS-1 License is held by the Senior Technical Advisor, as the responsible official for the U.S. Maritime Administration, Washington, D.C.
- 3.1.2 At all times, the custody and responsibility for access control, security, environmental surveillance, radiological monitoring, reporting to the U.S. Nuclear Regulatory Commission and maintenance will be with the Senior Technical Advisor, U.S. Maritime Administration (MARAD), Washington, D.C.
- 3.1.3 Radiological surveys and environmental sampling will be the responsibility of MARAD and performed by an individual who meets or exceeds the qualifications of ANSI N18.1-1971, paragraphs 4.3.2 or 4.5.2. Laboratory analyses of environmental samples will be the responsibility of MARAD and reviewed in accordance with the Decommissioning Quality Assurance Plan.
- 3.1.4 MARAD shall have a health physicist on duty or on call to provide health physics support and direction for all entries into Radiological Controlled Areas.
- 3.1.5 MARAD shall have a health physicist on duty or on call within two hours to provide health physics support and direction for radiological emergencies. MARAD shall provide an Emergency Radiological Assistance Team which will provide health physics direction and support in the event of an on-board emergency such as fire, flooding or intrusion. In the event of fire, entry may be made into the effected Radiological Controlled Areas except the reactor containment vessel, without the support and direction of a health physicist.

3.2 Records

- 3.2.1 In addition to the records and documents required by applicable regulations, the Senior Technical Advisor, U.S. Maritime Administration, Washington, D.C., and other assigned personnel shall maintain the following records and documents in accordance with the Decommissioning Quality Assurance Plan:

- a Health Physics Records:
 - (i) Personnel Exposure;
 - (ii) Ship's Radiological Surveys; and
 - (iii) Environmental Surveillance and Laboratory Analyses;
- b. DELETED;
- c. DELETED;

- d. Quarterly Inspections of Physical Barriers and Intrusion Alarms;
- e. Licensee Event Reports (LER);
- f. Records of Safety Review-Committee Meetings;
- g. File of Annual Reports to the NRC; and
- h. Drawings, prints, layouts and specifications for the ship.

3.3 Radiological Criteria, Access Control and Security

3.3.1 Radiological Controlled Areas

3.3.1.1 Radiological Controlled Areas are "Restricted areas" as defined in 10 CFR 20 and in the radiation protection program developed in accordance with 10 CFR 20.

3.3.1.2 All entries into Radiological Controlled Areas shall be in accordance with the licensee's radiation protection program.

3.3.2 Access Control and Security

3.3.2.1 The license holder shall control all access to the vessel through assignment of designated personnel with appropriate administrative procedures and physical security provisions.

3.3.2.2 Visitors shall be escorted by MARAD's designated personnel.

3.3.2.3 Security for the vessel shall be provided by the license holder at all times.

3.4 Reports and Notice of Ship Movement

3.4.1 The Senior Technical Advisor, U.S. Maritime Administration, Washington, D.C. shall make the following reports:

3.4.2 Annual Report

3.4.2.1 Prior to March 1 of each year, a written annual report shall be submitted to the NRC in accordance with 10 CFR 50.4. The report shall include the following:

- a. The status of the facility;
- b. The summary of results of the radiological surveys and monitoring station dosimeter readings;
- c. The summary of results of environmental sample analysis surveys;

- d. The results of quarterly intrusion alarm system checks;
- e. DELETED;
- f. A description of the principal maintenance performed on the vessel;
- g. Any unauthorized entry into Radiological Controlled Areas and corrective action taken to improve access control;
- h. Any degradation of one of the several boundaries which contain the radioactive materials aboard the N.S. *Savannah*; and
- i. Results of occupational exposure indicated by personal dosimetry.

3.4.3 Reportable Events

3.4.3.1 In addition to those events that are reportable in accordance with the regulations of the NRC, the following additional events are reportable:

- a. Any major damage to the vessel due to severe weather conditions or other causes; and
- b. Major flooding or sinking of the vessel.

3.4.3.2 Within four (4) hours of discovery, the U.S. Nuclear Regulatory Commission will be notified of any reportable event, listed above, in accordance with 10 CFR 50.72.

3.4.3.3 Within 60 days of discovery, any reportable event, listed above, will be reported to the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 50.73(d).

3.4.4 Notice of Ship Movement

3.4.4.1 Following 30 days written notice to the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 50.4, the vessel can be towed, berthed, moored or dry-docked in any U.S. domestic location having a U.S. Maritime Administration approved Port Operating Plan.

3.5 Procedures and Operating Instructions

3.5.1 Activities which are designated as within the scope of the Decommissioning Quality Assurance Plan shall be prescribed by written, reviewed and approved procedures of a type appropriate to the circumstances.

3.5.2 Procedures and any subsequent revisions shall be reviewed and approved as required by the Decommissioning Quality Assurance Plan.

3.6 Safety Review Committee

- 3.6.1 The Safety Review Committee shall report to the Senior Technical Advisor. The Committee will consist of at least four members. Membership shall be approved of by the Senior Technical Advisor. In aggregate, the membership experience shall include an appropriate balance of both maritime and commercial nuclear (operating and/or decommissioning) expertise. The permanent members include the following:
- a. Senior Technical Advisor;
 - b. Decommissioning Program Manager;
 - c. Facility Site Manager;
 - d. Quality Assurance Manager; and,
 - e. An individual who meets or exceeds the qualifications of ANSI N18.1-1971 paragraphs 4.3.2.
- 3.6.2 A minimum of three members shall constitute a quorum of which one shall be the Senior Technical Advisor or their designated representative and one shall be an individual that meets or exceeds the qualifications of ANSI N18.1-1971, paragraphs 4.3.2.
- 3.6.3 Members of the Committee shall review all of the following items:
- a. Proposed changes to Technical Specifications;
 - b. Evaluations required by 10 CFR 50.59;
 - c. Proposed changes or modifications to a Radiological Controlled Area entry alarm system or reactor containment vessel system;
 - d. Evaluations of substantive changes to the results of radiological surveys;
 - e. Procedures and revisions per Technical Specification 3.5;
 - f. Evaluations of reported violations of Technical Specifications;
 - g. Evaluations of reportable events per Technical Specification 3.4.3.1;
 - h. Evaluations of deviations allowed by Technical Specification 3.7.1.7;
 - i. Audits and self-assessments to verify the effectiveness of the Decommissioning Quality Assurance Plan; and,
 - j. Annual reports to the NRC.

- 3.6.4 These reviews may be accomplished and concurred with by members of the Committee without a formal meeting.
- 3.6.5 The Committee shall be convened by the Chairman and shall meet annually to review and discuss events of the preceding period. The Committee will meet when necessary to review evaluations of Reportable Events per Technical Specification 3.4.3.1.
- 3.6.6 Written minutes of all meetings shall be prepared and distributed to all Committee members.

3.7 Ship Access Control and Surveillance

Applicability Applies to routine access control and surveillance of the ship.

Objective To prevent unauthorized entry into Radiological Controlled Areas by manning or securing their entrances and to determine change in radiation levels or integrity of the ship. An entrance is secured by bolting, welding, locking via a chain and/or hasp, or preventing access via an equivalent method.

3.7.1 Access Control

- 3.7.1.1 The 42 inch containment vessel entrances shall be manned or secured.
- 3.7.1.2 All Radiological Controlled Areas entrances will be manned or secured.
- 3.7.1.3 All Radiological Controlled Area entrances will be posted with appropriate caution and warning signs.
- 3.7.1.4 All entrances to the ship not in use will be secured at all times.
- 3.7.1.5 The B Deck Reactor Compartment entrance at Frame 122 will be fitted with an intrusion alarm with audible and visual signals that will alert a manned security guard post.
- 3.7.1.6 MARAD trained personnel will patrol the vessel at least once during a twenty-four (24) hour period.
- 3.7.1.7 Deviations from the above access control conditions will be in accordance with appropriate parts of Section 3 of these Technical Specifications, Administrative Controls.

3.7.2 Surveillance

- 3.7.2.1 Periodically and at least once a quarter, MARAD's designated personnel will inspect the Radiological Controlled Area entrances to verify they are properly secured and test the intrusion alarm in Technical Specification 3.7.1.5.

3.7.2.2 Radiological surveys of the ship will be performed at least annually and as necessary to support ship activities in accordance with 10 CFR 20.

3.7.2.3 DELETED.

3.7.2.4 DELETED.

3.7.3 Vessel and System Maintenance

3.7.3.1 Two draft level stripes will be painted fore and aft (at the draft marks), one will be just above the water level and the upper stripe will be one foot above the lower. These will be observed daily to check if the draft has increased. Both stripes must always be visible. If the lower stripe is not visible, the ship shall be surveyed and the water leakage located. The source of leakage will be determined, the ship pumped out, and repairs made as may be required, including dry-docking if determined necessary, in order to assure that the integrity of the hull is maintained.

3.7.3.2 A cathodic protection system will be provided and properly maintained to protect the underwater areas of the vessel's hull to minimize corrosion damage to the hull.

3.7.3.3 An underwater inspection of the hull will be conducted at least every four (4) years. The vessel will be dry-docked if the inspection determines that such action is necessary due to localized severe pitting, underwater plate thinning in excess of 40 percent, or other damage that would require corrective action and/or removal of the vessel to an off-site ship repair facility.

3.7.3.4 An inspection will be conducted at least annually by MARAD's designated personnel to determine any degradation of the primary, auxiliary and secondary systems.

ENCLOSURE 2

SAFETY EVALUATION
UNITED STATES MARITIME ADMINISTRATION
NUCLEAR SHIP SAVANNAH
DOCKET NO. 50-238



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY
THE OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
RELATED TO THE N.S. SAVANNAH
AMENDMENT NO. 17 TO FACILITY LICENSE NO. NS-1
DOCKET NO. 50-238

1.0 INTRODUCTION

By application dated June 19, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML1817A128), the United States Maritime Administration (MARAD), requested approval of a proposed license amendment revising the Nuclear Ship SAVANNAH (NSS) Facility Operating License NS-1 Technical Specifications (TS). MARAD is requesting a revision to the TS regarding radioactive effluent controls, and to make an administrative correction consistent with prior changes made in Amendment No.15.

2.0 BACKGROUND

The NSS has been shut down since 1970 and was defueled in 1971. In 1976, the license was changed to a possession-only license (41 FR 21706), and on April 23, 2018, Amendment Number 15 was issued to allow dismantlement and disposal (i.e., active decommissioning) (ADAMS Accession No. ML18081A134). Presently, the ship is scheduled to remain at the Canton Marine Terminals in Baltimore under a long-term lay berth contract.

3.0 REGULATORY EVALUATION

NRC regulations related to radioactive effluent controls are established in 10 CFR 50.36a, "Technical Specifications on Effluents from Nuclear Power Reactors." This regulation requires each licensee to establish TS to keep the average annual releases of radioactive materials in effluents and their resultant committed effective dose equivalent at small percentages of the public dose limits in 10 CFR 20.1301, and to exert best efforts to keep radioactive effluents released to the unrestricted area 'as low as is reasonably achievable' (ALARA). In addition, section 50.36a requires the licensee to develop and follow operating procedures for the control of effluents, and that the radioactive waste system designed pursuant to § 50.34a be used and maintained.

In 1987, the Nuclear Regulatory Commission (NRC) issued an Interim Policy Statement on "Technical Specification Improvements for Nuclear Power Reactors" that became effective upon issuance of the Interim Policy Statement (*Federal Register*, Volume 52, No. 25, February 6, 1987, pages 3788-3793). Subsequently, in 1995, the NRC issued a "Final Rule on Technical Specifications" in the *Federal Register*, Volume 60, No. 138, July 19, 1995, pages 36953 –

36959. The Policy Statements established a specific set of objective criteria for determining which regulatory requirements and operating restrictions should be included in Technical Specifications, and encouraged licensees to implement a voluntary program to update their TS to be consistent with revised vendor-specific Standard Technical Specifications in NUREGs 1430 - 1434.

In Generic Letter 89-01 (January 31, 1989), the NRC staff published the results of its examination of the contents of the Radiological Effluent Technical Specifications (RETS) in relation to the NRC's Interim Policy Statement on Technical Specifications. The staff determined that "programmatic controls" can be implemented in the Administrative Controls section of the TS to satisfy existing regulatory requirements for radiological effluent technical specifications (RETS). The staff also determined that the "procedural details" of the current TS on radioactive effluents and radiological environmental monitoring can be relocated to a licensee-controlled document such as the Offsite Dose Calculation Manual (ODCM). Likewise, the procedural details of the current TS on solid radioactive wastes can be relocated to the licensee-controlled Process Control Program (PCP).

Licensees were encouraged in Generic Letter 89-01 to propose changes to TS that are consistent with the guidance provided in the Generic Letter 89-01. Licensees were informed that they can make future changes to these licensee-controlled documents (ODCM or PCP) in accordance with the administrative controls section as specified in the TS. These TS improvement actions were determined to simplify the RETS, to meet the regulatory requirements for radioactive effluents and radiological environmental monitoring, consistent with the goals of the Interim Policy Statement.

Therefore, "programmatic controls" for radioactive effluents and radiological environmental monitoring are required in the TS such as to conform to the regulatory requirements of 10 CFR Part 20, 40 CFR Part 190, 10 CFR 50.36a, and Appendix I to 10 CFR Part 50. Similarly, programmatic requirements for the PCP are also retained in the TS. However, "procedural details" for radioactive effluents, solid radioactive wastes, environmental monitoring, and associated reporting requirements can be voluntarily relocated to the ODCM or PCP as appropriate.

4.0 TECHNICAL EVALUATION

In this license amendment request, MARAD requested revision of the N.S. SAVANNAH TS. The proposed license amendment would revise and consolidate the existing custom-formatted TS into a format consistent with the vendor-specific Standard TS for nuclear power plants, as provided in the NUREG series 1430 – 1434, "Standard Technical Specifications." The proposed TS changes are consistent with Generic Letter 89-01, in that programmatic controls for radioactive effluents and radiological environmental monitoring would be retained in TS, and would move procedural details from the TS and place them into the ODCM or the PCP.

MARAD has proposed for deletion the following TS, and has proposed revised TS as follows:

Proposed for revision

TS 1.0, "General"

This proposed revision would make an administrative correction on TS 1.0 consistent with the prior License Amendment No.15 to state that the N.S. *SAVANNAH* has been in a state of active decommissioning since Amendment 15 was issued. This proposed change is acceptable because it makes an administrative correction to be consistent with a previously issued license amendment.

TS Proposed for Deletion

TS 2.1, "Radioactive Liquid Waste Release,"
TS 2.2, "Radioactive Airborne Particulate Releases,"
TS 2.3, "Radioactive Liquid Waste Release Surveillance,"
TS 2.4, "Solid Radioactive Waste Release,"
TS 3.4.2 "Annual Report," paragraph 3.4.2.1.e (reporting of the radioactive materials released and shipments of radioactive waste material), and
TS 3.7.2, "Surveillance," paragraphs 3.7.2.3 (radiation monitoring devices) and paragraph 3.7.2.4 (environmental sampling and analysis).

TS Proposed as Replacement TS

TS 2.1, "Process Control Program (PCP),"
TS 2.2, "Offsite Dose Calculation Manual (ODCM),"
TS 2.3, "Radioactive Effluent Controls Program,"
TS 2.4, "Radiological Environmental Monitoring Program," and
TS 2.5, "Reporting Requirements."

Proposed deletion of current TS 2.1, "Radioactive Liquid Waste Release;" and replacement with the proposed TS 2.3, "Radioactive Effluent Control Program" and the proposed TS 2.1, "Process Control Program"

The current TS 2.1 establishes requirements applicable to radioactive liquid waste disposal. The TS requires that liquid waste releases be "as low as is reasonably achievable" (ALARA) and do not exceed 10% of the 10 CFR Part 20 effluent control limits or other applicable Federal regulations (i.e., Environmental Protection Agency's (EPA) 40 CFR Part 190, "Environmental Radiation Protection Standards For Nuclear Power Operations"). This specification would be replaced by proposed TS 2.3, "Radioactive Effluent Controls Program" (RECP). The RECP would establish effluent controls and limitations in a manner sufficient to meet the 10 CFR 50.36a effluent control requirements, the public dose limits of 10 CFR 20.1301, the effluent concentration limits of 10 CFR Part 20, Appendix B, Table 2, Column 2, and annual doses to members of the public conforming to 10 CFR Part 50, Appendix I.

The current TS 2.1 also establishes a requirement that radioactive liquid waste be solidified in approved media and transferred to a licensed burial facility in accordance U.S. Department of Transportation regulations, and in accordance with the burial facility's license and waste

acceptance criteria. This specification would be deleted and replaced with proposed TS 2.1, "Process Control Program (PCP)." The PCP would describe the administrative and technical controls for liquid and solid radioactive waste systems management. The PCP controls are established to ensure compliance with the regulatory requirements of § 50.36a, 10 CFR 20, 10 CFR 61, 49 CFR 172 – 177 Department of Transportation, applicable state regulations, and disposal site criteria.

The proposed deletion of the current TS 2.1 and replacement with the proposed TS 2.1 and the proposed TS 2.3 is acceptable because the proposed changes are consistent with the NRC's Interim Policy Statement on Technical Specification Improvements and Generic Letter 89-01, which allows programmatic controls for radioactive effluents and radiological environmental monitoring to be included in TS and encourages licensees to move procedural details which are not required to be included in the TS by 10 CFR 50.36a to the ODCM and the PCP. The proposed TS changes are consistent with the model technical specification revisions provided as enclosure 3 to Generic Letter 89-01.

Deletion of current TS 2.2, "Radioactive Airborne Particulate Releases" and replacement with the proposed TS 2.3, "Radioactive Effluent Controls Program"

The current TS 2.2 requires that no activities be conducted that would result in a release of radioactive airborne particulates in excess of 10% of the 10 CFR Part 20, Appendix B effluent concentrations or other applicable Federal Regulations (i.e., EPA 40 CFR Part 190). This specification would be deleted and replaced by the proposed TS 2.3, "Radioactive Effluent Controls Program." The proposed TS 2.3 would establish limitations on annual doses to members of the public from radioactive material released in particulate form in gaseous effluents to unrestricted areas conforming to 10 CFR Part 50, Appendix I and conforming to the dose limits in the EPA 40 CFR Part 190, "Environmental Radiation Protection Standards For Nuclear Power Operations."

The proposed deletion of the current TS 2.2 and replacement with the proposed TS 2.3 is acceptable because the proposed changes are consistent with the NRC's Interim Policy Statement on Technical Specification Improvements and Generic Letter 89-01, which allows programmatic controls for radioactive effluents and radiological environmental monitoring be included in TS and encourages licensees to move procedural details which are not required to be included in the TS by 10 CFR 50.36a to the ODCM and the PCP. The proposed TS change is consistent with the model technical specification revisions provided as enclosure 3 to Generic Letter 89-01.

Deletion of current TS 2.3, "Radioactive Liquid Waste Release Surveillance" and replacement with the proposed TS 2.3, "Radioactive Effluent Controls Program"

The current TS 2.3 requires that liquid wastes be analyzed prior to discharge, and concentrations of radioactive waste not exceed 10% of the 10 CFR Part 20 limits or other applicable Federal regulations (EPA 40 CFR Part 190). This specification would be deleted and replaced by the proposed TS 2.3, "Radioactive Effluent Controls Program." This revised specification would establish requirements on the monitoring, sampling and analysis of radioactive liquid effluents using the methodology and parameters described in the Offsite Dose

Calculation Manual (ODCM). The proposed TS 2.3 would also establish limitations on concentrations of radioactive material released in liquid effluents to unrestricted areas conforming to 10 CFR Part 20, Appendix B, Table 2, Column 2, limitations on annual doses to members of the public conforming to 10 CFR 50, Appendix I (ALARA values), and limitations conforming to the dose limits in EPA 40 CFR Part 190.

The proposed deletion of the current TS 2.3 and replacement with the proposed TS 2.3 is acceptable because the proposed changes are consistent with the NRC's Interim Policy Statement on Technical Specification Improvements and Generic Letter 89-01, which allows programmatic controls for radioactive effluents and radiological environmental monitoring be included in TS and encourages licensees to move procedural details which are not required to be included in the TS by 10 CFR 50.36a to the ODCM and the PCP. The proposed TS change is consistent with the model technical specification revisions provided as enclosure 3 to Generic Letter 89-01.

Deletion of TS 2.4, "Solid Radioactive Waste Release" and replacement with the proposed TS 2.1, "Process Control Program"

The current TS 2.4 specification requires that solid radioactive waste be maintained in appropriate containers in accordance with 10 CFR Part 20 and secured in locked storage areas. The current TS 2.4 also requires that the transfer of solid radioactive waste be made to a licensed burial facility in accordance with 10 CFR Part 71, "Packaging and Transportation of Radioactive Materials," in accordance with the U.S. Department of Transportation regulations, and in accordance with the burial facility's license and acceptance criteria.

This specification would be deleted and replaced by the proposed TS 2.1, "Process Control Program." The proposed TS 2.1 would establish a requirement for a PCP that describes the administrative and technical controls for managing the solid radioactive waste systems in such a manner as to comply with the regulatory requirements of 10 CFR Part 20, Subpart K and 10 CFR Part 71. Furthermore, the regulations in 10 CFR Part 20, Subpart K – Waste Disposal and in 10 CFR Part 71 establish the regulatory requirements that the licensee must meet with respect to waste disposal and transportation of radioactive material irrespective of additional TS.

The proposed amendment to delete the current TS 2.4 and replace with the proposed TS 2.1 is acceptable because the proposed changes are consistent with the NRC's Interim Policy Statement on Technical Specification Improvements and Generic Letter 89-01, which allows programmatic controls for radioactive effluents and radiological environmental monitoring be included in TS and encourages licensees to move procedural details which are not required to be included in the TS by 10 CFR 50.36a to the ODCM and the PCP. The proposed TS change is consistent with the model technical specification revisions provided as enclosure 3 to Generic Letter 89-01.

Deletion of TS 3.2.1 b "Radioactive Liquid Waste Disposal Log" and 3.2.1 c, "Solid Radioactive Waste Disposal Log"

In an email dated February 13, 2019 (ADAMS Accession No. ML19081A111), the licensee identified two reporting requirements for liquid and solid radioactive waste disposal logs that are superseded by reporting requirements contained in proposed TS 2.5.1 and 2.5.2. The proposed amendment was revised to delete items 3.2.1 b and 3.2.1 c. from the list of required records. Since these logs will be replaced by implementation of the ODCM and PCP, they will no longer be maintained.

The proposed amendment to delete the current TS 3.2.1 b and 3.2.1 c is acceptable because the information on effluent releases will be reported on an annual basis, consistent with the ODCM and PCP, as described in proposed TS 2.5.2, in conformance with 10 CFR 50.36a and 10 CFR 50 Appendix I, Section IV.B.1.

Deletion of TS 3.4.2, "Annual Report" replace with the proposed TS 2.5.2

The current TS 3.4.2 requires reporting of the amount of radioactive materials removed from the N.S. SAVANNAH. This specification would be deleted and replaced by the proposed TS 2.5.2, "Annual Radioactive Effluent Release Report" which requires an Annual Radiological Environmental Monitoring Report and an Annual Radioactive Effluent Release Report.

The proposed amendment to delete the current TS 3.4.2 and replace with the proposed TS 2.5.2 is acceptable because the proposed changes require the licensee to submit a report to the NRC that includes a summary of the radioactive liquid and gaseous effluents and solid waste released from the N.S. SAVANNAH consistent with the ODCM, PCP, and in compliance with 10 CFR 50.36a, and 10 CFR 50, Appendix I, section IV.B.A. This change is also consistent with the NRC's Interim Policy Statement on Technical Specification Improvements and Generic Letter 89-01, which allows programmatic controls for radioactive effluents and radiological environmental monitoring be included in TS and encourages licensees to move procedural details which are not required to be included in the TS by 10 CFR 50.36a to the ODCM and the PCP. The proposed TS change is consistent with the model technical specification revisions provided as enclosure 3 to Generic Letter 89-01.

Deletion of TS 3.7.2, "Surveillance" and replacement with proposed TS 2.2, "Offsite Dose Calculation Manual

The current TS 3.7.2.3 specification requires that monitoring devices be placed at strategic locations throughout the vessel and requires the licensee to obtain dosimeter readings on a semi-annual basis to monitor the radiation from reactor generated materials. The current TS 3.7.2.3 would be deleted and replaced by the proposed TS 2.2, "Offsite Dose Calculation Manual (ODCM)." The ODCM would contain the radiological environmental monitoring program. Proposed TS 2.2 requires the ODCM to contain the methodology and parameters used in the calculation of the offsite doses for certain effluents and certain setpoints. Proposed TS 2.2 also controls how changes are made to the ODCM.

The current TS 3.7.2.4 requires semi-annual sampling and analysis of water and bottom sediment water adjacent to the ship. This specification would be revised and incorporated into

TS 2.4, "Radiological Environmental Monitoring Program" used to verify the adequacy of the programs and procedures for limiting and controlling radioactive effluents and doses in unrestricted areas.

The proposed amendment to delete the current TS 3.7.2.3 and TS 3.7.2.4 replace with the proposed TS 2.2 and TS 2.4 is acceptable because the proposed changes are consistent with the NRC's Interim Policy Statement on Technical Specification Improvements and Generic Letter 89-01, which allows programmatic controls for radioactive effluents and radiological environmental monitoring be included in TS and encourages licensees to move procedural details to the ODCM and the PCP.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment includes changes to the license with respect to conducting a radioactive effluent release and monitoring program, and is therefore administrative. NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration (83 FR 157; August 14, 2018), and there has been no public comment on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusions set forth in 10 CFR 51.22(c)(9) and 10 CFR 51.22(c)(10)(ii). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

6.0 STATE CONSULTATION

On November 1, 2018, the State of Maryland was notified of the proposed changes to the N.S. SAVANNAH license to revise the Technical Specifications associated with effluent and environmental monitoring and reporting requirements. Eva S. Nair, Program Manager, Radiological Health Program, Maryland Department of the Environment, responded on November 2, 2018, with no comments or questions.

7.0 CONCLUSION

The changes proposed by this license amendment would revise Technical Specifications associated with effluent monitoring and environmental monitoring and reporting consistent with the requirements in 10 CFR 50.36a, "Technical Specifications on Effluents from Nuclear Power Reactors." The proposed license amendment would also to make an administrative correction consistent with the intent of prior changes made in Amendment No.15 to state that the N.S. SAVANNAH has been in a state of active decommissioning since Amendment 15 was issued.

The revision would revise and retain the "programmatic controls" associated with the radiological effluent and environmental monitoring and move the "procedural details" to the ODCM and the PCP, consistent with the NRC's Policy Statements on Technical Specifications and consistent with Generic Letter 89-01. The proposed changes do not modify the amounts or the types of any radioactive effluents that may be released to unrestricted areas. The proposed

changes would not increase the individual or cumulative occupational radiation exposure or the analytical methods used in demonstrating compliance with the public dose limits of 10 CFR 20.1301. The proposed changes would not impact the licensee's ability to keep releases of radioactive materials to unrestricted areas at small percentages of the public dose limits, or to keep releases of radioactive effluents and radiation doses to members of the public ALARA. The TS amendment would be consistent with NRC guidance for Standard Technical Specifications as described in NUREG-1430.

Therefore, the staff concludes, based on the considerations discussed above, that: 1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and 2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributors: Steven M. Garry, CHP
 Theodore B. Smith

Date: May 29, 2019

