U.S. Department
of Transportation

**Maritime
Administration**

SAVANNAH Technical Staff
Office of Ship Operations

400 Seventh Street, S.W.
Washington, D.C. 20590

Ref: 10 CFR 50.90

August 7, 2006

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

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

License Amendment Request No. 2006-01

Technical Specifications Changes to Support Pre-Decommissioning Activities

Reference: **(a)** Letter from Mr. Alexander Adams, Jr., (NRC) to Dr. Zelvin Levine (MARAD) and Mr. James H. Flatley (PPDA), dated June 29, 1994, Issuance of Amendment 12 to Amend License No. NS-1 - N.S. SAVANNAH (TAC No. M89505)

Pursuant to 10 CFR 50.90, the United States Maritime Administration (MARAD) hereby requests approval to amend the Nuclear Ship SAVANNAH (NSS) Facility Operating License, NS-1, by incorporating the enclosed proposed changes into the NSS Technical Specifications (TS).

The proposed license amendment will modify TS requirements with five proposed changes in order to prepare for decommissioning the NSS. Three of the proposed changes are related to allowing the NSS to be berthed at locations other than the James River Reserve Fleet (JRRF), Newport News, Virginia. The fourth proposed change will eliminate the need to utilize administrative controls to remove the Containment Vessel (CV) Entry Shield Plugs to perform activities such as surveys, system walkdowns and inspections required for developing a detailed decommissioning plan, schedule and cost estimate. The fifth proposed change will clarify the TS and eliminate redundancies, subtle differences and inefficiencies in the current TS regarding preventing unauthorized access into the Reactor Compartment and Radiation Control Areas. In addition to the proposed changes, we are also enhancing the numbering of the Technical Specifications to remove ambiguities that exist in the current numbering (e.g., a cursory review could identify Technical Specification 2.2 on both page 3 and 11 of the current Technical Specifications).

The License Amendment Request is provided in three (3) enclosures to this letter. Enclosure 1 is an evaluation of the request, with two (2) supporting attachments. Attachment A to Enclosure 1 provides a summary of the security considerations supporting three of the five proposed TS changes. *Please note that MARAD has determined it may be appropriate to withhold the consolidated security discussion contained in Attachment A from public disclosure as confidential material.* Attachment A

A020

is considered commercial or financial information as discussed in 10 CFR 2.390(d)(1). Attachment B of Enclosure 1 is the affidavit required by 10 CFR 2.390 requesting that Attachment A (of Enclosure 1) be withheld from public disclosure. Enclosure 2 provides the existing TS marked up to show the proposed changes. Once the TS language is finalized, MARAD will provide retyped TS in electronic and hardcopy format. This is because no clean electronic version of the current TS exists. The electronic version currently in use by MARAD is an Optical Character Recognition version that was derived from Reference (a). Enclosure 3 lists two new Regulatory Commitments supporting the proposed changes.

MARAD has reviewed the proposed changes to the current license basis in accordance with 10 CFR 50.92 and concludes that they do not involve a significant hazards consideration.

MARAD requests approval of the proposed License Amendment by December 31, 2006 for implementation within 30 days from the date of approval. Approval by this date is necessary to preclude having to return to the JRRF, following routine maintenance and drydocking.

Regarding Enclosure 1, Attachment A, MARAD respectfully requests that the subject information which contains confidential information to MARAD be withheld from public disclosure in accordance with 10 CFR Section 2.390 of the Commission's regulations (Application for Withholding).

If there are any questions or concerns with respect to this Application for Withholding, the accompanying affidavit or any issue discussed in this request, please contact me at (202) 366-2631, and/or e-mail me at erhard.koehler@dot.gov.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 7, 2006

Respectfully,

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

Enclosures (3)

Docket 50-238; License NS-1; N.S. SAVANNAH
License Amendment Request No. 2006-01
August 7, 2006

Enclosures:

1. Evaluation of License Amendment Request with Attachments

   A. Security Considerations Supporting Proposed Changes 1, 4 and 5
   (Confidential Information submitted under 10 CFR 2.390)

   B. Affidavit for Withholding Attachment A

2. Proposed Technical Specification Changes (mark-up)

3. List of Regulatory Commitments

Docket 50-238; License NS-1; N.S. SAVANNAH
License Amendment Request No. 2006-01
August 7, 2006

cc:

Electronic copy w/o Attachment A
NSS ESC
NSS RAC
MRG-7600, 7700

Hardcopy, cover letter only
MAR-600, 610, 610.1, 610.3, 610.5, 611, 612 (em, ship file), 613, 614

Hardcopy w/ all enclosures and attachments
MAR-100, 610.4 (rf)
USNRC (Alexander Adams, Jr.; Craig Bassett)

EK/jmo

U.S. Department
of Transportation

**Maritime
Administration**

SAVANNAH Technical Staff
Office of Ship Operations

400 Seventh Street, S.W.
Washington, D.C. 20590

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

Enclosure 1 to License Amendment Request No. 2006-01

EVALUATION OF LICENSE AMENDMENT REQUEST

Subject: Technical Specifications Changes to Support Pre-Decommissioning Activities

1.	**DESCRIPTION**	**1**
2.	**PROPOSED CHANGES**	**2**
3.	**BACKGROUND**	**4**
4.	**TECHNICAL ANALYSIS**	**5**
5.	**REGULATORY SAFETY ANALYSIS**	**15**
a.	Proposed Determination of No Significant Hazards Consideration	15
b.	Applicable Regulatory Requirements/Criteria	16
6.	**ENVIRONMENTAL CONSIDERATION**	**16**
7.	**PRECEDENT**	**16**
8.	**REFERENCES**	**17**

1. DESCRIPTION

This document and its two attachments describe a request to amend Operating License NS-1 for the Nuclear Ship SAVANNAH (NSS). Attachment A lists security considerations supporting three of five proposed changes to the NS-1 Technical Specifications, and is considered Confidential Information under 10 CFR 2.390. Attachment B is the Affidavit supporting the licensee's request to withhold Attachment A from public disclosure.

The proposed changes would revise the Operating License to allow the Maritime Administration (MARAD) to prepare for decommissioning the NSS. The current license states that "the licensee shall not dismantle or dispose of the facility without prior approval of the Commission." 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. See Enclosure 3, List of Regulatory Commitments.

In order to complete these activities in a safe and efficient manner, MARAD proposes five changes to the Technical Specifications that will effectively reinstitute portions of the December 20, 1971 Technical Specifications that were in effect following defueling.

In general, these changes include the following:

- Following 30 day notification to the NRC, the ship can be located at any appropriate U.S. domestic location to allow more efficient performance of pre-decommissioning activities;
- Revising the membership of the Review and Audit Committee to be more consistent with activities associated with preparing for decommissioning;
- Allowing the performance of radiological surveys and environmental surveillances by any appropriately qualified individual;
- Revising the Access Control requirements into the Containment Vessel such that the 42 inch entrances are manned or secured; and,
- Revising the Access Control requirements into the Reactor Compartment and Radiation Control Areas such that each door is manned or secured.

MARAD requests approval of the proposed License Amendment by December 31, 2006 for implementation within 30 days from the date of approval. Approval by this date is necessary to preclude having to return the NSS to the James River Reserve Fleet, following routine maintenance and drydocking.

2. PROPOSED CHANGES

Proposed Change 1

Technical Specifications 3.1 and 3.3.2 - the cumulative impact of these Technical Specifications is the ship shall be in layup at the James River Reserve Fleet, Fort Eustis, VA (JRRF) except when it is "off-site for infrequent required ship maintenance ..." After completing routine maintenance and drydocking that is currently scheduled to begin in August 2006, MARAD is proposing that the ship will no longer be limited to layup at JRRF. Specifically, MARAD is proposing following 30 day notice to NRC, the ship can be towed, berthed, moored or drydocked in any U.S. domestic location having a MARAD approved Port Operating Plan. This language is generally consistent with Technical Specification Amendments approved December 20, 1971 following defueling, Reference (a).

Proposed Change 2

Technical Specification 3.6.1 - the current membership of the Review and Audit Committee consists of two members associated with the JRRF and one who is associated

with the U.S. Army, Center for Public Works, Humphries Engineering Center (HEC). MARAD is proposing new membership requirements for the Review and Audit Committee since the ship will no longer be required to be in layup at JRRF and "alongside or in close proximity to the decommissioned U.S. Army MH-1A Floating Nuclear Power Plant STURGIS (i.e., Proposed Change 1). Consistent with Saxton Nuclear Experimental Corporation Technical Specifications, Reference (b), MARAD is proposing the following:

> The Review and Audit Committee shall report to the Senior Technical Advisor. The Committee will consist of at least four members. Membership shall be approved by the Senior Technical Advisor. In aggregate, the membership experience shall include an appropriate balance of both maritime expertise and commercial nuclear (operating and/or decommissioning) expertise. Four 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 N18.8-1971, paragraphs 4.3.2.

Proposed Change 3

Technical Specification 3.1 and 3.7.2.2 - the cumulative impact of these Technical Specifications is the annual radiation surveys and semi-annual environmental surveillances are required to be performed by "the designated representatives of HEC." Specifically, MARAD is proposing that these surveys and surveillances will be performed by an individual who meets or exceeds the qualifications of ANSI N18.8-1971, paragraphs 4.3.2 or 4.5.2.

Proposed Change 4

Technical Specification 3.7.1.1 - This Technical Specification is in place to prevent unauthorized entry into the Containment Vessel (CV). It requires the CV Entry Shield Plugs to be in place, sealed and the lifting equipment partially disassembled. Even though Technical Specification 3.7.1.7 allows MARAD to use appropriate administrative controls to deviate from 3.7.1.1, MARAD is proposing to revise the 3.7.1.1 requirement to be more consistent with the corresponding Ship Surveillance requirements that were put into place December 20, 1971 following defueling (Reference a). In 1971, the Technical Specifications required "All Radiation Control Areas were required to be posted and manned or locked." Specifically, MARAD is proposing the 42 inch CV entrances shall be manned or secured.

Proposed Change 5

Technical Specifications 3.3, 3.7.1.2, 3.7.1.3, 3.7.1.5 and 3.7.2.1 - These Technical Specifications prevent unauthorized entry into the Reactor Compartment and Radiation Control Areas. Even though Technical Specification 3.7.1.7 allows MARAD to use appropriate administrative controls to deviate from the any of the 3.7 Technical Specifications, MARAD is proposing to revise all five of these requirements to clarify the Technical Specifications and eliminate redundancies, subtle differences and inefficiencies

in the current Technical Specifications. The proposed changes will be more consistent with the corresponding Ship Surveillance requirements that were put into place December 20, 1971 following defueling (Reference a).

In summary, MARAD is proposing the above five changes to the Technical Specifications in order to prepare for decommissioning the NSS. Three of the proposed changes are related to allowing the NSS to be berthed at locations other than the JRRF. The fourth proposed change will eliminate the need to utilize administrative controls to remove the CV Entry Shield Plugs to perform activities such as surveys, system walkdowns and inspections required for developing a detailed decommissioning plan, schedule and cost estimate. Similar to the fourth proposed change, the fifth proposed change will also eliminate the need to utilize administrative controls to routinely open each Reactor Compartment and/or Radiation Control Area entrance.

3. BACKGROUND

MARAD is owner and licensee of NSS, the world's first nuclear powered merchant ship. Conceived in the 1950's as part of President Eisenhower's "Atoms for Peace" program, the NSS was designed, constructed and operated as a joint research and development project of the MARAD and the Atomic Energy Commission (AEC). MARAD's contribution was the ship while the AEC's was the reactor and related nuclear systems. The reactor was first brought to power in 1961. Seagoing trials followed in 1962. The AEC ended its participation in the project in about 1965, transferring liability and title of the reactor to MARAD. NSS was operated in experimental and commercial demonstration service throughout the 1960's. Having completed its research and development objectives, the ship was removed from service in 1970. In 1971, when alternative uses for the ship failed to materialize, its nuclear power plant was defueled, partially decommissioned and prepared for long-term lay-up under contemporary best practices. By April 1976, additional decommissioning activities such as removing the three primary purification system ion-exchangers, their resins and dewatering the primary, auxiliary and secondary systems had been performed. The NSS possession-only license was issued on May 19, 1976. The NSS is a registered National Historic Landmark.

In the past twenty four months, MARAD has taken significant action to set the stage for actively decommissioning the NSS. These activities have included completing a radiological and environmental characterization scoping survey of the ship, completing a rough order of magnitude decommissioning cost estimate, self-assessment of regulated activities and establishing an experienced, full-time, licensing support staff.

Unlike most licensed facilities, the NSS is mobile and can be decommissioned in many locations. The specific location for decommissioning the NSS has not been chosen. Regardless, while awaiting the determination of the decommissioning location, routine maintenance to most positively enhance the ship's appearance and routine drydocking to preserve the hull can be performed. Routine non-nuclear maintenance outside of radiological controlled areas and generally on A deck and above is currently scheduled to start in August 2006. A second and subsequent contract for drydocking, which includes cleaning, repairing (as needed) and painting the hull, is scheduled to be awarded later in 2006.

The current Technical Specifications require the ship to return to the JRRF following "infrequent required ship maintenance." However, after the drydocking MARAD expects to be routinely

performing many decommissioning planning activities that will require frequent entries into the CV and other Radiation Controlled Areas. MARAD has determined it may be most cost effective to layberth the ship while conducting these activities, rather than returning it to the JRRF. A layberth is a berth used by a vessel for an extended period of time. MARAD has also determined that the administrative burden associated with deviating from 3.7.1 Access Control requirements as allowed by 3.7.1.7 is no longer appropriate.

4. TECHNICAL ANALYSIS

Proposed Change 1: Ship's Location

a. Detailed Explanation of the Proposed Amendment

In order to most efficiently prepare for decommissioning, a number of preparatory activities must be completed. These activities will be limited to surveys, system walkdowns and inspections required for developing a detailed decommissioning plan, schedule and cost estimate. When the ship is located at the JRRF, access to the ship is extremely limited and not conducive to efficiently performing these pre-decommissioning activities. For example, any inspection of the ship would require riding one of the JRRF crew barges on the James River and boarding the ship mid-river. The number of barges and their departure/return times are limited since the JRRF services a large number of ships.

The actual process of embarking and disembarking the ship can be challenging especially when each individual has more than a single large item (computer, notebooks, lunch, etc.) to carry on board. Depending on weather conditions, embarking and disembarking can be an even greater challenge. When significant equipment is required, these challenges are multiplied.

When boarding the ship is infrequent, these challenges and their embedded inefficiencies are reasonable. However, as the access to the ship for pre-decommissioning activities escalates and numerous individuals need to access the ship on a daily basis, the inherent inefficiencies and challenges become unreasonable and inefficient. For example, hand carrying any number of bulky items (i.e., computers, notebooks, etc.) associated with pre-decommission activities will be significantly easier regardless of weather conditions when the ship is tied up alongside a pier.

Given this underlying basis for the proposed change, the specific reason for the proposed change is the language in Technical Specifications 3.1 and 3.3.2. While assigning the responsibility of the NSS to the Senior Technical Advisor (STA), MARAD, paragraph 2 of Technical Specification 3.1 limits the ship's location to the JRRF or at an off-site ship repair facility. While discussing Access Control and Security, paragraph 2 of Technical Specification 3.3.2, limits the ship to either being in layup at JRRF alongside or in close proximity to the decommissioned U.S. Army MH-1A Floating Nuclear Power Plant STURGIS except when it is off-site for infrequent required ship maintenance.

After completing routine maintenance and drydocking that is currently scheduled to be completed by late 2006, MARAD is proposing that the ship will no longer be limited to layup at JRRF. Specifically, MARAD is proposing following 30 day notice to NRC, the ship can be towed, berthed, moored or drydocked in any U.S. domestic location having a MARAD approved Port Operating Plan.

Approval of this proposed change will allow MARAD the option of keeping the ship berthed in the vicinity of the drydocking until the decommissioning location is selected. While the ship is berthed, access for individuals preparing for decommissioning is more efficient and less challenging than if the ship returned to its moored location at JRRF.

b. Technical Details in Support of Safety Arguments

During the ship's operating period, the acceptability of a location was dependent on establishing the low-population zone such that following the Maximum Credible Accident, the dose to members of the public would not exceed established limits. Prior to permanent defueling in 1971, the Maximum Credible Accident was a loss of coolant accident assuming continuous operation at 100% for two years. Following defueling in 1971, there has been no possibility of any reactor/criticality accident. Following the 1976 decommission activities to remove the three primary purification system ion-exchangers, their resins and dewatering the primary, auxiliary and secondary systems, no decommissioning activities have been allowed.

Following the final shutdown on November 8, 1970 and the subsequent defueling, the remaining radioactive material is primarily the activated pressure vessel and other primary system components. The activation estimates have dropped dramatically in the subsequent years: 108,496 Ci (1976), 13,000 Ci (1994) and 452 Ci (2005). Note that the 2005 estimate used actual power history.

General area dose rates measured during the 2005 radiological and environmental characterization scoping survey are as follows:

- In non-radiological areas, general area dose rates were at or below background, with one exception in Cargo Hold 4, where "shine" from the Cold Water Chemistry Lab, upper level [originally the Radiation Monitoring Room (C-deck level, forward of the reactor compartment Frames 99 - 102), later this room became known as Forward Control] produces approximately 0.250 mR/hr at the Cargo Hold 4 aft bulkhead. Shine is radiation emanating from another location on the ship but being measured remotely.
- For radiological areas outside of containment and the reactor compartment, general area dose rates ranged from background to 0.050 mR/hr. Contact readings on some pipes reached 2mR/hr.
- Inside the reactor compartment, dose rates in the upper levels were essentially background. In the lower reactor compartment levels, general area dose rates varied 0.3–1.6 mR/hr, with contact readings of up to 221 mR/hr.
- Inside containment, general area dose rates varied 0.1–10 mR/hr, with the highest contact reading around the "U" tube end of the steam generators of 35 mR/hr.

Since issuance of the possession only license on May 19, 1976, Reference (c), the allowance of no decommissioning activity, low activation estimates and general area dose rates, there has been little or no possibility of any event that could cause the dose to the public to approach any established limit. As a result, the acceptability of the ship's location has been dependent on MARAD analysis and prior approval of and/or notification to the NRC. Because MARAD has initiated and directed the towing of hundreds of vessels to layberths, repair yards and the reserve fleets, towing operations incident to relocating the NSS are straightforward and essentially routine.

Currently, as long as appropriate security measures are in place, the ship is allowed to be moved to any off-site ship repair facility repair for infrequent ship maintenance. Any difference between the ship being at JRRF, an off-site ship repair facility or any domestic location is negligible. Security Considerations Supporting Proposed Change 1 are discussed in Attachment A.

c. Summary of Technical Analysis

Berthing the ship alongside a pier or drydocked in any domestic location allows access for individuals preparing for decommissioning to be more efficient and less challenging than if the ship returned to its moored location at JRRF. The proposed change is supported by the following:

1) No decommissioning activity is allowed;

2) With low activation estimates of irradiated components and low general area dose rates, there is little or no possibility of any event that could cause the dose to members of the public to approach any established limit; and,

3) Security changes are negligible.

Proposed Change 1, Ship's Location, is an administrative change.

Proposed Change 2: Review and Audit Committee Membership

a. Detailed Explanation of the Proposed Amendment

Assuming approval of Proposed Change 1, (i.e., following 30 day notice to NRC, the ship can be towed, berthed, moored or drydocked in any U.S. domestic location having a MARAD approved Port Operating Plan), it is no longer appropriate that the makeup of the Review and Audit Committee is comprised of individuals specifically associated with the ship being located at JRRF in the vicinity of the U.S. Army MH-1A Floating Nuclear Power Plant STURGIS. In preparation for decommissioning, MARAD has determined a more appropriate makeup of the Review and Audit Committee would include individuals whose aggregate experience included extensive maritime experience as well as extensive commercial nuclear decommissioning and/or operating experience. To ensure that issues involving health physics continue to be appropriately considered by the committee, the quorum requirements include an individual that meets or exceeds the qualifications of ANSI N18.8-1971, paragraph 4.3.2.

b. Summary of Technical Analysis

By having individuals on the committee that have a combined extensive experience in maritime safety and nuclear safety, MARAD is confident that issues brought to the committee will be properly scrutinized regarding nuclear and maritime safety issues no matter where the ship is located. Proposed Change 2, Review and Audit Committee Membership, is an administrative change.

Proposed Change 3: Qualification to perform Surveys and Surveillances

a. Detailed Explanation of the Proposed Amendment

MARAD has determined that it is no longer appropriate that the Technical Specifications should limit performance of annual radiation surveys and semi-annual environmental surveillances to a designated representatives of the U.S. Army, Center for Public Works, Humphries Engineering Center (HEC).

The underlying basis for limiting the performance of these surveys and surveillances to HEC was based on utilizing an existing contract with that HEC had already established. The Federal Acquisition Regulations and the Economy Act (31 U.S.C. 1535), References (d) and (e), allow for using an interagency acquisition when the acquisition is in the best interest of the Government and more economical. Until now, it has been more economical to use the existing contract than it would have been to solicit a new contract with either the same or another entity. However, in preparation for decommissioning, MARAD needs the flexibility to procure survey and surveillance services from any appropriate qualified source. MARAD has concluded that any individual who meets or exceeds the qualifications of ANSI N18.8-1971, paragraphs 4.3.2 or 4.5.2 will adequately perform the annual radiation surveys and semi-annual environmental surveillances.

b. Summary of Technical Analysis

Annual radiation surveys and semi-annual environmental surveillances can be adequately performed by any individual who meets or exceeds the qualifications of ANSI N18.8-1971, paragraphs 4.3.2 or 4.5.2. Proposed Change 3, Qualification to perform Surveys and Surveillances, is an administrative change.

Proposed Change 4: Containment Vessel (CV) Entry Shield Plugs

a. Detailed Explanation of the Proposed Amendment

In order to most efficiently prepare for decommissioning, MARAD has determined it is no longer appropriate or efficient to utilize administrative controls to remove the CV Entry Shield Plugs to perform activities such as surveys, system walkdowns and inspections required for developing a detailed decommissioning plan, schedule and cost estimate.

The current Technical Specification 3.7.1.1 requires the CV Entry Shield Plugs to be in place, sealed and their lifting equipment partially disassembled. The history of this requirement is unclear.

After completing routine maintenance and drydocking that is currently scheduled to be completed by late 2006, MARAD expects to be routinely performing many decommissioning planning activities that will require frequent entries into the CV. Examples of the activities are surveys, system walkdowns and inspections required for developing a detailed decommissioning plan, schedule and cost estimate. MARAD has determined the administrative burden associated with deviating from Technical Specification 3.7.1.1 as allowed by 3.7.1.7 is no longer appropriate when numerous CV entries are anticipated. The resource burden of enabling, then disabling the chain hoist and removing, then replacing the shield plugs on a frequent basis for numerous routine CV entries is inefficient and a poor use of MARAD resources.

In place of using the shield plugs to prevent unauthorized access to the CV, MARAD proposes the 42 inch entrances shall be manned or secured. MARAD proposes "secured" includes allowing entrances to be bolted, welded, locked via a chain and/or hasp, or another equivalent means to prevent access. As an alternate to securing entrances, MARAD proposes manning entrances to prevent unauthorized access.

If approved, the chain hoists would be enabled and the shield plugs would be replaced as determined by MARAD when necessary for ship safety. For example, MARAD may choose to reinstall the shield plugs prior to a planned ship movement.

Approval of this proposed change will remove the administrative burden and inefficiencies that arise from the current Technical Specification.

b. Technical Details in Support of Safety Arguments

Thirty years ago, when the Reference (c) instituted Technical Specification requirements for the CV Entry Shield Plugs, the CV general area dose rates were significantly higher than those of today. In Reference (c), the SER notes the following:

> A maximum of 900 mR/hr was detected inside the containment vessel near the starboard steam generator with average exposure inside the containment vessel at less than 100 mR/hr.

Per the 2005 radiological and environmental characterization scoping survey, general area dose rates inside the CV, varied from 0.1–10 mR/hr, with the highest contact reading around the "U" tube end of the steam generators (35 mR/hr).

In 1976, requiring the shield plugs to be in place was an appropriate defense in depth mechanism to prevent unauthorized entry into the CV when it had significantly higher dose rates.

Per Reference (c), in 1976 a single posted, locked and sealed door was determined to be an adequate barrier to prevent unauthorized entry for rooms that had "direct radiation" as high as 45 mR/hr in the lower reactor compartment. At approximately 10 mR/hr, the highest current general area dose rate in the CV is about one fourth of that level.

Using this same dose rate criteria, Proposed Change 5 (see below) to Technical Specification 3.7.1.2 will by itself continue to provide an adequate mechanism to prevent unauthorized entry into the CV as well as the Reactor Compartment. Currently,

Technical Specification 3.7.1.2 requires all entrances into the Reactor Compartment to be secured.

In order to continue an appropriate defense in depth mechanism to prevent unauthorized personnel from entering the CV, MARAD proposes the 42 inch entrances shall be manned or secured. Since the requirements for the 42 inch manways provide a deterrent to unauthorized access similar to those provided by the CV Entry Shield Plugs, Proposed Change 4 is an administrative change.

Security Considerations Supporting Proposed Change 4 are discussed in Attachment A.

c. Summary of Technical Analysis

By requiring the 42 inch manways to be manned or secured, MARAD is proposing a deterrent to unauthorized access similar to that provided by the CV Entry Shield Plugs. The significantly lower dose rates in the CV and negligible change in security support the proposed change. Proposed Change 4, CV Entry Shield Plugs, is an administrative change.

Proposed Change 5: Reactor Compartment and Radiation Control Area Entrances

a. Detailed Explanation of the Proposed Amendment

In order to most efficiently prepare for decommissioning, MARAD has determined it is no longer appropriate or efficient to utilize administrative controls to allow opening of Reactor Compartment (RC) and Radiation Control Area (RCA) entrances to perform activities such as surveys, system walkdowns and inspections required for developing a detailed decommissioning plan, schedule and cost estimate. In addition, there are five Technical Specifications that address these entrances. In addition to generally being redundant, they have subtle differences that MARAD has concluded should be eliminated.

The following five Technical Specifications address RC and RCA entrances:

1. The current Technical Specification 3.3, Paragraph 1, requires that any authorized visitor aboard the ship will be accompanied by representatives of the license holder until all radiation control area are locked and sealed.
2. The current Technical Specification 3.3, Paragraph 3, requires that all RCA entrances will be posted with appropriate caution and warning signs, locked and secured with chains, and sealed with numbered seals. It continues by requiring that keys and seals will be maintained by a designated representative of the license holder, and a log maintained.
3. The current Technical Specification 3.7.1.2 requires that all RC entrances will be secured from the outside except the B Deck entry at Frame 122, which will be chained, posted and double-locked.

4. The current Technical Specification 3.7.1.3 requires that all RCAs will be posted, locked and sealed.

5. The current Technical Specification 3.7.2.1 requires that periodically and at least once a quarter, MARAD's designated personnel will inspect the seals on the control area doors and test the intrusion alarm in Item 3.7.1.5.

The following two Technical Specifications also address the intrusion alarm associated with the B deck, Frame 122, RC entrance:

1. The current Technical Specification 3.3, Paragraph 4, requires that an intrusion alarm with an interlock will be maintained on the B Deck entry door into the reactor compartment with audible and visual signals located at a manned security guard post. These signals shall be both seen and heard by the security guard on duty.

2. The current Technical Specification 3.7.1.5 requires that the B-deck RC entrance will be fitted with an intrusion alarm with audible and visual signals located at a location that is manned by a guard or security officer.

Following defueling in late 1971, Technical Specification Change 12, Reference (a) required in 7.10.B.3 that "All Radiation Control Areas will be posted and manned or locked." The Safety Evaluation Report (SER) accompanying this change provided no explicit basis for the change. Entrances to the RC had no explicit requirements.

Technical Specification Amendment 8 (1976), the Possession-only License, Reference (c) added the requirement for RC entrances. It required "All entrances into the Reactor Compartment will be secured from the inside except the B Deck entry at Frame 122, which will be chained, posted and double locked."

The NRC Safety Evaluation Report (SER) for Amendment 8 states,

> Access to controlled areas outside the containment vessel is controlled by use of locked doors and posting of radiation signs.
>
> Access to the ship is controlled by sealing all entrances from the inside except one door for security and maintenance checks ...

It appears the underlying basis for the wording of the Amendment 8 Technical Specification derives from preventing unauthorized entry given that in 1976, MARAD anticipated no decommissioning activity in the foreseeable future. Amendment 8 clearly anticipates the ship going into layup at JRRF as shown in the 1976 version of Technical Specification 3.1. The practical basis for locking most entrances from the inside appears to be the number of entrances requiring intrusion alarms is minimized. Note that Amendment 8 allowed opening RC entrances for any reason as long as administrative controls were in place.

The phrase "will be secured from the inside" appears to have been inadvertently changed in Amendment 9, Reference (g), when the phrase became "will be secured from the outside." Since the SER for Amendment 9 does not discuss the change, the source of the

change appears to have been an administrative error that has continued into the current Technical Specifications.

Note that some of the Technical Specifications have required entrances to be "secured" since 1976 without an explicit definition of "secured." MARAD has determined any means to guard an area from unauthorized access, danger or risk of loss forms the underlying basis for the word "secured." MARAD proposes allowing entrances to be bolted, welded, locked via a chain and/or hasp, or another equivalent means to prevent access. As an alternate to securing entrances, MARAD proposes manning entrances to prevent unauthorized access.

After completing routine maintenance and drydocking that is currently scheduled to be completed in late 2006, MARAD expects to be routinely performing many decommissioning planning activities that will require frequent entries into the RC and other RCAs. Examples of the activities are surveys, system walkdowns and inspections required for developing a detailed decommissioning plan, schedule and cost estimate. MARAD has determined the administrative burden and inefficiencies associated with deviating from Technical Specifications 3.3, 3.7.1.2, 3.7.1.3 and 3.7.1.5 as allowed by 3.7.1.7 is no longer appropriate when numerous RCA entries are anticipated. MARAD has also determined that the surveillance requirement of 3.7.2.1 to "inspect the seals on RCA doors" should be broadened to include inspection to ensure any means of securing an entrance is adequate (i.e., bolted, welded, chained and/or hasped or other equivalent means).

In addition, when many entries into RCAs are anticipated, it is no longer appropriate to have separate and duplicative Technical Specifications for the RC when the RC is an RCA.

By revising these Technical Specifications to define "secured," remove subtle differences and eliminate redundancies as well as the need to utilize the provisions of Technical Specification 3.7.1.7, MARAD has determined that controlling RC and RCA entrances will be improved.

MARAD is proposing the following:

1. Revise Technical Specification 3.3, Paragraph 1 to require "Any authorized visitor aboard the ship will be accompanied by representatives of the license holder until all radiation control area entrances are manned or secured as required by 3.7.1.2."

2. Delete Technical Specification 3.3, Paragraph 3. The requirements for keys, seals, and maintaining a log of the seals will be relocated to an administrative procedure. See Enclosure 3, List of Regulatory Commitments.

3. Delete Technical Specification 3.3, Paragraph 4 and include its requirements in proposed Technical Specification 3.7.1.5.

4. Revise the Objective of Technical Specification 3.7 to state "To prevent unauthorized entry into radiation control areas by manning or securing their entrances, and to determine

security support the proposed change. Proposed Change 5, RC and RCA entrances, is an administrative change.

5. REGULATORY SAFETY ANALYSIS

a. Proposed Determination of No Significant Hazards Consideration

MARAD has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

Proposed changes 1) Ship's Location, 2) Review and Audit Committee Membership, 3) Qualification to perform Surveys and Surveillances, 4) CV Entry Shield Plugs and 5) RC and RCA Entrances are administrative in nature and do not involve the modification of any plant equipment or affect basic plant operation.

The NSS's reactor is not operational and the level of radioactivity in the NSS has significantly decreased from the levels that existed when the 1976 Possession-only License was issued. No aspect of any of proposed changes is an initiator of any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2) Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

Proposed changes 1) Ship's Location, 2) Review and Audit Committee Membership, 3) Qualification to perform Surveys and Surveillances, 4) CV Entry Shield Plugs and 5) RC and RCA Entrances are administrative and do not involve any physical alteration of plant equipment that was not previously allowed by Technical Specifications. These proposed changes do not change the method by which any safety-related system performs its function. As such, no new or different types of equipment will be installed, and the basic operation of installed equipment is unchanged. The methods governing plant operation and testing remain consistent with current safety analysis assumptions.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

3) Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

Proposed changes 1) Ship's Location, 2) Review and Audit Committee Membership, 3) Qualification to perform Surveys and Surveillances, 4) CV Entry Shield Plugs and 5) RC and RCA Entrances are administrative in nature. No margins of safety exist that are relevant to the ship's defueled and partially dismantled reactor. As such, there are no changes being made to safety analysis assumptions, safety limits or safety system settings that would adversely affect plant safety as a result of the proposed changes. The proposed changes involve movement of the ship, changes in the performance of responsibilities and significantly improved radiological conditions since 1976.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, MARAD concludes that the proposed amendment(s) present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

b. Applicable Regulatory Requirements/Criteria

These proposed changes do not alter compliance with any applicable regulatory requirements or criteria. Proposed Changes 1, 4 and 5 continue to ensure no member of the public will receive dose that approaches any established limit. Proposed Change 2 continues to ensure NSS safety issues are properly reviewed for their impact to maritime and nuclear safety. Proposed Change 3 continues to ensure individuals performing surveys and surveillances are appropriately qualified. These changes do not alter the design or licensing basis of any system.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6. ENVIRONMENTAL CONSIDERATION

The proposed amendment is confined to (i) changes to surety, insurance, and/or indemnity requirements, or (ii) changes to recordkeeping, reporting, or administrative procedures or requirements. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(10). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7. PRECEDENT

Proposed change 3: Review and Audit Committee Membership, is generally consistent with membership requirements approved for Saxton Nuclear Experimental Corporation Facility in Reference (b).

8. REFERENCES

a. Letter from Mr. D. J. Skovholt (AEC) to Mr. D. L. Crook (MARAD), dated December 20, 1971, Change No.12, License No. NS-1, as amended

b. Letter from Mr. Alexander Adams, Jr., (NRC) to Mr. G. A. Kuehn, Jr. (SNEC), dated August 10, 2000, Saxton Nuclear Experimental Corporation Facility - Amendment License, Re: Organizational Structure (TAC No. MA8664)

c. Letter from Mr. Robert W. Reid (NRC) to Dr. Zelvin Levine (MARAD), dated May 19, 1976, Amendment 8

d. Federal Acquisition Regulations, Subchapter C - Contracting Methods And Contract Types Part 17 - Special Contracting Methods Subpart 17.5 -Interagency Acquisitions Under the Economy Act (31 U.S.C. 1535), March 2005 (originally effective March 1, 1984), http://www.acquisition.gov/far/reissue/FARvol1ForPaperOnly.pdf

e. Federal Acquisition Regulations System 48 CFR Chapter 1, Part 17, Subpart 17.503

f. Letter from Mr. Alexander Adams, Jr., (NRC) to Dr. Zelvin Levine (MARAD) and Mr. James H. Flatley (PPDA), dated June 29, 1994, Issuance of Amendment 12 to Amend License No. NS-1 - N.S. SAVANNAH (TAC No. M89505)

g. Letter from Mr. John F. Stolz, (NRC) to Dr. Zelvin Levine (MARAD) and Mr. J. E. Guerry (PPDA), dated August 14, 1981

U.S. Department
of Transportation

**Maritime
Administration**

SAVANNAH Technical Staff
Office of Ship Operations

400 Seventh Street, S.W.
Washington, D.C. 20590

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

Enclosure 2 to License Amendment Request No. 2006-01

PROPOSED TECHNICAL SPECIFICATION CHANGES (MARKED-UP)

Strikethrough indicates deletions. Underlining indicates additions.

3.0 Administrative Controls

3.1 Administrative Responsibility

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.

At all times, ~~including the duration of layup at the Maritime Administration's James River Reserve Fleet (JRRF) and any periods when the vessel may be relocated to an off-site ship repair facility,~~ 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.

The annual radiation surveys, semi-annual environmental sampling and surveillance, and laboratory analyses will be the responsibility of MARAD and performed ~~for MARAD by the U.S. Army Center for Public Works, Humphries Engineering Center (formerly the U.S. Army Engineering and Housing Support Center, Safety and Occupational Health Office). Staff members or contractor personnel performing these functions for MARAD will be health physicists with at least two years specialized training in health physics or equivalent and three years of work experience related to radiological health and safety.~~ by an individual who meets or exceeds the qualifications of ANSI N18.8-1971, paragraphs 4.3.2 or 4.5.2.

MARAD shall have a health physicist on duty or on call within two (2) hours to provide health physics support for radiological emergencies or entry into radiation control areas. In addition to the services of a health physicist, MARAD shall provide an Emergency Radiological Assistance Team in the event of radiological emergencies.

3.3 Radiological Criteria for Radiation Control Areas

Any authorized visitor aboard the ship will be accompanied by representatives of the license holder until all radiation control area are manned or secured as required by 3.7.1.2~~locked and sealed~~. All entries into radiation control areas by visitors or employees shall be under the direction of a health physicist in accordance with the licensee's health physics procedures manual. However, in the event of fire, entry may be made into all radiation control areas except the reactor containment vessel, without the direction of a health physicist.

A radiation control area is defined as an area of the ship with radiation levels from reactor generated radioactive materials in excess of 0.25mR/hr above natural background as measured at one meter from any surface, and/or surface contamination in excess of those limits prescribed in Table I of NRC Reg. Guide 1.86.

~~For radiological protection of visitors and employees, all radiation control area entrances will be posted with appropriate caution and warning signs, locked and secured with chains, and sealed with numbered seals. Keys and seals will be maintained by a designated representative of the license holder, and a log maintained.~~

~~An intrusion alarm with an interlock will be maintained on the B Deck entry door into the reactor compartment with audible and visual signals located at a manned security guard post. These signals shall be both seen and heard by the security guard on duty.~~

3.3.2 Access Control and Security

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

~~When in layup~~ Following 30-days notice to NRC, the vessel can be towed, berthed, moored or drydocked in any U.S. domestic location having a U.S. Maritime Administration approved Port Operating Plan. ~~shall be positioned in a secure position in the James River Reserve Fleet, Fort Eustis, Virginia, alongside or in close proximity to the decommissioned U.S. Army MH-1A Floating Nuclear Power Plant STURGIS.~~ Security for the vessel shall be provided by the license holder at all times~~, whether in layup in the JRRF or off-site for infrequent required ship maintenance, in which case 30-days prior notice in writing shall be given to NRC Region II~~.

3.6 Review and Audit Committee

3.6.1 The Review and Audit Committee shall report to the Senior Technical Advisor. The Committee will consist of at least four members. Membership shall be approved 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. Four 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 N18.8-1971, paragraphs 4.3.2.

~~1. There shall be a Review and Audit Committee (Committee) consisting as a minimum of the following personnel:~~

~~a. Committee Chairman: Senior Technical Advisor, U.S. Maritime Administration, Washington, D.C.~~

~~b. Alternate Chairman: Chief, Division of Ship Maintenance and Repair, U.S. Maritime Administration, Washington, D.C. 20590.~~

~~c. Member: Fleet Superintendent, James River Reserve Fleet.~~

~~d. Member: Fleet Captain or Fleet Engineer, James River Reserve Fleet.~~

~~e. Designated representative of U.S. Army Center for Public Works, Humphries Engineering Center (formerly the U.S. Army Engineering and Housing Support Center, Safety and Occupational Health Office)~~

~~f. Four members shall constitute a quorum provided that at least:~~

~~I. One member of such quorum shall be either the Senior Technical Advisor, U.S. Maritime Administration, Washington, D.C. or the Chief, Division of Ship Maintenance and Repair, U.S. Maritime Administration, Washington, D.C. 20590.~~

~~II. One member of such quorum shall be either the Chief, Division of Ship Maintenance and Repair,~~

~~U.S. Maritime Administration, Washington, D.C. 20590, or the Superintendent, JRRF, or the Fleet Engineer, JRRF, or his designated alternate.~~

~~III. One member of such quorum shall be either the designated representative of U.S. Army Center for Public Works, Humphries Engineering Center (formerly the U.S. Army Engineering and Housing Support Center, Safety and Occupational Health Office), or his designated alternate.~~

3.6.2 Members of the Committee shall conduct audits, on-the-spot checks, and evaluations to assure that all work is being done safely and in accordance with established procedures. If a deficiency is discovered,

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 ~~seals on the control area doors~~ Radiation Control Area entrances to verify they are appropriately secured and test the intrusion alarm in Item 3.7.1.5.

3.7.2.2 Radiation surveys of the ship shall be made annually, and environmental surveillance shall be made semi-annually by ~~the designated representative of U.S. Army Center for Public Works, Humphries Engineering Center (formerly the U.S. Army Engineering and Housing Support Center, Safety and Occupational Health Office) or alternative contractor personnel designated by the license holder.~~an individual who meets or exceeds the qualifications of ANSI N18.8-1971, paragraphs 4.3.2 or 4.5.2.

U.S. Department
of Transportation

**Maritime
Administration**

SAVANNAH Technical Staff
Office of Ship Operations

400 Seventh Street, S.W.
Washington, D.C. 20590

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

Enclosure 3 to License Amendment Request No. 2006-01

LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by MARAD in this consolidated License Amendment Request. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Erhard W. Koehler, Senior Technical Advisor, N.S SAVANNAH at (202) 366-2631, and/or erhard.koehler@dot.gov.

REGULATORY COMMITMENT	TYPE (Check One)		DUE DATE
	One Time Action	Continuing Action	
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.	☐	☒	December 15, 2006 or before the NSS completes the 2006 drydocking (which ever occurs first).
When RCA entrances are secured by locks, keys and seals will be maintained by MARAD or their designee. A log of the seals will be maintained designated representative	☐	☒	December 15, 2006 or before the NSS completes the 2006 drydocking (which ever occurs first).

EK/jmo

U.S. Department
of Transportation

**Maritime
Administration**

SAVANNAH Technical Staff
Office of Ship Operations

400 Seventh Street, S.W.
Washington, D.C. 20590

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

Attachment B to Enclosure 1 to License Amendment Request No. 2006-01

AFFIDAVIT

I, Erhard W. Koehler, state as follows:

1. I am Senior Technical Advisor and Manager, N.S. SAVANNAH Programs and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing, and am authorized to apply for its withholding on behalf of MARAD.

2. I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Application for Withholding requested in the cover letter.

3. The information sought to be withheld is contained in "Security Considerations Supporting Proposed Changes 1, 4 and 5," (Enclosure 1, Attachment A) and includes the entire contents of Attachment A.

4. The basis for proposing that Attachment A be withheld is it contains a discussion of various security issues consolidated into a single document. In addition, it contains somewhat more security detail than is found in the current Technical Specifications.

5. Public Disclosure of the information sought to be withheld is likely to cause substantial harm to N.S. SAVANNAH only in the sense that numerous security details that help to form the technical basis to support the license amendment request have been consolidated into a single document. To the best of my knowledge, in the past, these details were scattered among various documents such as requests for proposals for ship maintenance and berthing; letters requesting or approving licensing actions, etc.

6. Pursuant to the provisions of paragraph 10 CFR 2.390(b)(4), the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

   (i) While individual details regarding security have not been held in confidence by MARAD, the consolidated discussion of security issues contained in Attachment A has been held in confidence.
   (ii) To the best of my knowledge, the consolidated nature of information contained in Attachment A is of a type customarily held in confidence by MARAD. The basis for requesting withholding of Attachment A follows:

- Even this low-level of detail of security information for the N.S. SAVANNAH (NSS) has not been consolidated into a single document since 1976.

(iii) MARAD will transmit Attachment A in confidence and expects the Commission to receive it in confidence.

(iv) As stated above, while individual NSS security details may be available in public sources, there is no single document that consolidates even this low level of security details that is publicly available.

(v) Since MARAD is a Federal Agency, public disclosure of the information sought to be withheld will not cause substantial harm to the competitive position of MARAD.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 7th day of August, 2006.

Respectfully,

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

EK/jmo