U.S. Department
of Transportation

**Maritime
Administration**

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

March 18, 2005

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

SUBJECT: **Reply to a Notice of Violation**
Docket No. 50-238
License No. NS-1 (N.S. SAVANNAH)
Report No. 50-238/2001-201

To whom it may concern:

In response to the Notice of Violation dated February 15, 2001 referenced above, the U.S. Maritime Administration (MARAD) provided a letter reply dated March 15, 2001. That response ultimately led to the closure of one of the two cited violations, namely Violation 50-238/2001-201-02 (adequate inspection of primary and secondary systems). Periodic updates regarding the outstanding violation, number 50-238/2001-201-01, have been provided in annual reports covering calendar years 2001 - 2004. This letter responds to the outstanding violation.

I. **Violation 50-238/2001-201-01** Failure to have a health physicist on call within two hours of the ship and the failure to have an Emergency Radiological Assistance Team available in case of radiological emergency as required by TS Section 3.1.

1) **The reason for the violation.** Please refer to MARAD's March 15, 2001 letter for a full description of the reason for the violation.

2) **The corrective steps that have been taken, and the results achieved.** The initial assumptions regarding proposed corrective steps are also outlined in MARAD's March 15, 2001 letter response, as well as subsequent annual reports. As described in those background documents, MARAD ultimately concluded an agreement with the United States Department of Energy (effective February 2005 through August 2006) to provide the required local on-call health physics capability under an agreement with the Thomas Jefferson National Accelerator Facility (Jeff Labs) in Newport News, Virginia. MARAD further contracted with the firm WPI, Inc., of Blacksburg, Virginia, to develop an emergency radiological response protocol, and training for MARAD employees of the James River Reserve Fleet. Those employees, supplemented

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Reply to a Notice of Violation
Docket No. 50-238
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Report No. 50-238/2001-201
Dated March 18, 2005

by the Jeff Labs health physicists, comprise the N.S. SAVANNAH Emergency Radiological Assistance Team (SERAT), in conformance with TS Section 3.1. Enclosure (1) to this letter describes in more detail the sequential corrective steps taken to provide the required emergency response capability, and the results thus achieved. Enclosures (2) and (3) are reports from the September 2004 and March 2005 training sessions and response drills respectively.

3) **The corrective steps that will be taken to avoid further violations.** MARAD will maintain the effectiveness of the SERAT in accordance with Technical Specification Section 3.1. As required, MARAD will continue to contract for qualified local health physics coverage in order to maintain the required 2-hour on-call response.

4) **The date when full compliance will be achieved.** Full compliance is now in effect, and was achieved effective with the training and shipboard orientation provided to the back-up members of the SERAT and Jeff Labs health physicists, March 8-9, 2005.

I hope that the foregoing response is complete, and adequately addresses the issues raised by the outstanding violation. MARAD remains committed to maintain and preserve the N.S. SAVANNAH, the world's first nuclear powered merchant ship, in full compliance with all applicable NRC regulations and requirements. If you have any questions regarding the foregoing, please contact me directly.

Sincerely,

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

Enclosures

Reply to a Notice of Violation
Docket No. 50-238
License No. NS-1 (N.S. SAVANNAH)
Report No. 50-238/2001-201
Dated March 18, 2005

E. Koehler/ek/03/18/05
0EK.610-01.030L

cc: MAR-100, 110, 220, 600, 610 (rf), 610.1, 610.3, 610.4,
611 (pg, jw), 612, 613
MRG-7100, 7600, 7700

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David S. Breeden, Jr.
U.S. Army Corps of Engineers

John B. Davis, CHP
General Health Physics, Inc.

Enclosure (1) to MARAD Violation Response
50-238/2001-201-01; dated March 18, 2005
Sequential Corrective Steps

MARAD has taken the following steps to eliminate the causes of the Notice of Violation (NOV).

1. MARAD has contracted with the Department of Energy, Thomas Jefferson National Accelerator Facility (Jeff Labs) in Newport News, Virginia (within approximately 9 miles of the James River Reserve Fleet - JRRF) to provide on-call qualified radiological protection assistance from Jefferson Laboratories in the event of an incident that prompts a SERAT response on the vessel. Examples of the initiating event that would trigger such a response would include fire, obvious intrusion, radiation area intrusion alarm(s), damage from ship ramming, sinking, etc.

   Jefferson Laboratories maintains a 24/7 on-call laboratory Health Physics personnel response capability. The call out for the SAVANNAH will be on the same response notification system. The response is expected to always result in the on-call HP technician arriving within 2 hours of the notification of the need for his or her services.

2. MARAD has also taken the steps to stockpile dedicated equipment (radiological survey, electronic TLDs, sampling equipment (air and water), anti-C clothing, respirators, and support supplies) at the debarkation point and on the ship in non-radiological control areas. JRRF responders are typically already medically certified and mask trained in the normal course of their duties.

3. MARAD has prepared a comprehensive SERAT Operating Procedure which defines how the SERAT operates and what the SERAT responsibilities are (to act as initial responders and board the vessel if deemed safe by the On Scene Leader and Incident Commander to do so. Upon boarding, the SERAT is to assess damage and radiological conditions in and around the radiological spaces, and to obtain initial post-incident water, sediment and air samples from the space condition).

4. The SERAT, made up of immediately available call out JRRF personnel, and under the direction of the JRRF Fleet Program Manager (formerly Fleet Superintendent) as Incident Commander, conducted two series of table-top and deployment (to the ship) drills in the past 4 months. All SERAT members were escorted to the radiological areas of prime interest, including the stabilizer spaces, charge pump rooms, B deck upper secondary area and hold 5 hot chemistry lab. None of the radiological spaces were opened, but the equipment layout inside the compartments was described by a person (MARAD consultant) having first hand knowledge of the contents.

   The SERAT Operating Procedures also provide for an integrated agency response and for controlling the traffic around the NS SAVANNAH.

Enclosure (1) to MARAD Violation Response
50-238/2001-201-01; dated March 18, 2005
Sequential Corrective Steps

5. Jefferson Laboratories has taken control of several sediment and water samples that were retrieved from the river within 100' of the SAVANNAH starboard side, and within 200' of the ship on the port side (the Army Barge STURGIS lies on the port side of the SAVANNAH restricting direct access). These samples will be used as baseline samples to make a comparison between any future post-incident samples from these locations.

6. The drills were both designed and critiqued by qualified consultants, and the drill results demonstrated that the resources of the JRRF and Jefferson Laboratories can provide a useful first response and control activities on the river in the vicinity of the NS SAVANNAH.

7. The monitoring equipment is at this time out of service for calibration and is expected back following annual calibration by March 24, 2005.

#

Enclosure (2) to MARAD Violation Response
50-238/2001-201-01; dated March 18, 2005

N.S. SAVANNAH SERAT September 24, 2004 Drill Report
Dated January 26, 2005

Prepared by WPI for MARAD
11 pages plus cover letter

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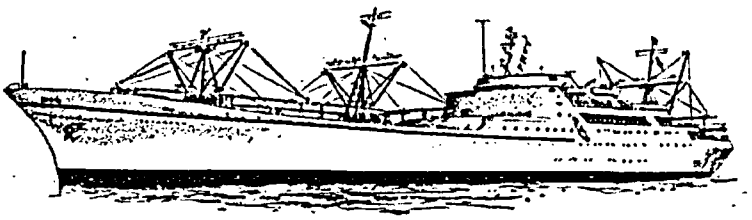

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File Index SAV.0014
Reference:WPI-SAV-05-033
January 26, 2005

Subject: **NS SAVANNAH SERAT Drill Report**
NS SAVANNAH SERAT Training and Implementation
MARAD Order No. DTMA2P04261

Dear Messrs. Fritz and Koehler:

This transmittal provides MARAD the final report for the SERAT drill performed on September 24, 2004 at the James River Reserve Fleet. The draft report was issued on October 11, 2004 for review and comment via WPI Letter # WPI-SAV-04-030. All comments that were received on the draft report have been incorporated.

1. SAVANNAH Emergency Radiological Assistance Team (SERAT) September 24, 2004 Drill Report, revision 0, dated January 26, 2005.

If you have any questions please do not hesitate to call me at (804) 938-1261.

Sincerely,

R. Jon Stouky
Sr. Vice-President

cc.:

F. Fitzgerald w/attachment
J. Bowen w/attachment
F. Hoffmann w/attachment
J. Wiegand w/attachment

WPI℠
Solutions for Government and Industry

U.S. Department of Transportation
Maritime Administration
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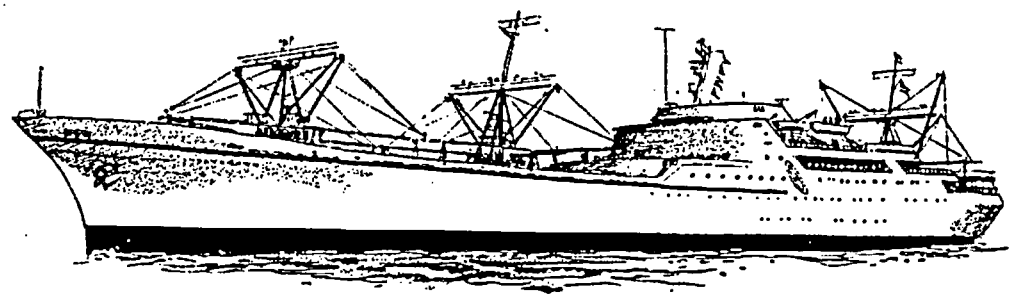

Nuclear Ship (NS) SAVANNAH

SAVANNAH Emergency Radiological Assistance Team (SERAT) September 24, 2004 Drill Report

Background

The US Nuclear Regulatory Commission (USNRC), in 2001, issued a Notice of Violation (NOV) against the *NS SAVANNAH* license (number 50-238) for not having a two-hour availability of a radiological safety person (commonly called a Health Physics professional) and for not providing an emergency response team in the event of a radiological emergency aboard the vessel.

The Maritime Administration (MARAD) is obligated by *NS SAVANNAH* Technical Specifications (section 3.1) to have a health physicist on duty or on call within two 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. This team is called the Savannah Emergency Radiological Assistance Team or SERAT. The mission of the SERAT is as follows:

1. Quickly assess vessel non-nuclear safety conditions;
2. Provide limited damage control;
3. Provide initial assurance that the vessel is not or will not discharge radioactive materials to the surrounding water or air;
4. Sample the ambient and inside air and water;
5. Brief regulatory and post-SERAT response teams on the vessel conditions; and
6. Determine the condition of the STURGIS and its affect on the NSS based on external observations

Current Status

To resolve and bring closure to the NOV, WPI was contracted by MARAD to perform the following:

1. Develop a SERAT Shipboard Emergency Response and Inspection Protocol;
2. Develop a Radiation Training Program for SERAT Members;
3. Identify and procure equipment for the SERAT;
4. Develop and provide training to the SERAT;
5. Develop a drill scenario for the SERAT;
6. Attend the SERAT drill and provide a report of the drill

The items identified above are addressed below in the same order.

1. The SERAT Shipboard Emergency Response and Inspection Protocol revision 3 was developed by WPI and accepted by MARAD on August 2, 2004.

2. The Radiation Training Program for SERAT Members revision 0 was developed by WPI and accepted by MARAD on July 30, 2004.

3. Equipment to support the SERAT team was identified, procured and co-located at the James River Reserve Fleet (JRRF) and on-board the *NS SAVANNAH.*

4. Training courses were developed by WPI based on the MARAD approved documents listed in 1 and 2 above. Jon Stouky and John Bowen performed on-site training at JRRF on September 16th and September 22nd for the SERAT members. The training courses developed to support the SERAT team were submitted to MARAD on September 27, 2004.

5. On September 24, 2004 a SERAT team drill was performed utilizing a drill scenario developed by WPI. Following completion of the drill, the drill scenario was transmitted to MARAD on September 27, 2004.

6. WPI attended/participated in the SERAT drill on September 24, 2004. This document is the report of the SERAT drill.

SERAT Drill Objectives

The objectives of the SERAT drill were to ensure that the SERAT team is:

1. Properly trained and the level of the procedures were appropriate;
2. Knowledgeable of the *NS SAVANNAH;*
3. Able to implement the proper awareness to the situation; and
4. Processes adequate communication systems (command and control)

SERAT Drill Participants

1.	Fred Hoffmann	Incident Commander (IC)
2.	Vicki Kinkade	Alternate Incident Commander
3.	George Patterson	SERAT Team Leader (Base Team)
4.	Randall Goodman	Environmental & Safety Specialist – Team 1
5.	George Diggs	Boat Crew (2) – Machinery – Cochran
6.	Robert Hambley	Electrician – Team 1
7.	Marlowe Tabaniag	Mechanical – Team 2
8.	Kevin Bates	Rigger (Base Team)
9.	Health Physicist	Jefferson Labs (Jon Stouky acting) – Team 2

SERAT Drill Observers

1. Erhard Koehler, Senior Technical Advisor, N/S SAVANNAH (remained at JRRF headquarters observing IC and command/control functions)
2. Jeff McMahon, Ship Operations and Maintenance Officer, SAR (remained at JRRF headquarters observing IC and command/control functions)
3. John Wiegand, Staff Marine Engineer, MARAD (observed SERAT team boarding personnel)
4. John Bowen, Chief Engineer, WPI (observed SERAT team boarding personnel)

SERAT Drill Description

The following is a synopsis of the drill. For a detailed description of the drill, refer to the drill scenario that was transmitted to MARAD on September 27, 2004 via WPI Letter number WPI-SAV-04-029, NS SAVANNAH SERAT Drill Script.

The initiating events for the SERAT drill were:

1. "A" Deck Entry Alarm; and
2. Sump Level Alarms
   a. Engine Room
   b. Reactor Space

With the receipt of the above alarms, the IC initiated the SERAT team to respond to a potential radiological event on the *NS SAVANNAH*. While the SERAT team was

mustering and staging equipment at the pier, the IC dispatched a boat to circle the *NS SAVANNAH* to obtain the following information needed to brief the SERAT team:

1. Observe ballast marks
2. Observe for listing
3. Observe for oil slicks
4. Observe for smoke or fire aboard
5. Observe for unauthorized boarding
6. Measure gross radiation field

With the SERAT mustered and SERAT equipment staged at the pier, the IC briefed the SERAT as to the status of the *NS SAVANNAH*. Once the team was briefed, they departed the pier to board the *NS SAVANNAH*. When the team arrived at the *NS SAVANNAH*, the health physicist and the SERAT Team Leader boarded first with respirators donned. This was performed to verify the status of the *NS SAVANNAH* and establish clean areas aboard the vessel for embarking and disembarking. When the remaining SERAT members received notification from the SERAT Team Leader, they boarded the *NS SAVANNAH* and mustered in the established clean area.

The vessel hatches and structure were first inspected for any signs of unauthorized personnel intrusion. No unauthorized intrusion was observed by the SERAT.

For cross-training purposes, the interior inspection of the vessel was performed as one group instead of the two teams identified in the drill scenario. A thorough inspection of the vessel was performed; however the SERAT team did not enter any radiologically controlled areas. When a radiological controlled area was encountered, the health physicist reviewed what would be observed in the applicable area if entry was performed. For this drill, entries into radiologically controlled areas were simulated.

The SERAT was composed of three groups. The groups consisted of a Base Team, Team 1 and Team 2. Teams 1 and 2 performed the inspections on the vessel while the Base Team stayed topside for communications with the IC. The SERAT Team Leader communicated all pertinent information observed by Teams 1 and 2.

The SERAT observed (simulated) water in both the engine room and reactor space. The team determined the rate of inflow and estimated the time before the specific areas were flooded. This included estimating the time until electrical power would be lost.

The team did remove the HVAC exhaust filters for the reactor space. The activity was measured on the exhaust filters. The measured contamination on the exhaust filters was less than 100 counts per minute above background. This information would have been needed for the personnel entering the reactor space if the reactor space was opened.

Once the initial assessment was complete, the SERAT mustered at the area initially setup by the SERAT Team Leader and the health physicist (just outside of the established clean area). The SERAT removed their personnel anti-contamination clothing while stepping into the clean area at the appropriate time. Once in the clean area, the health physicist, monitoring for contamination, frisked the SERAT. For simulation purposes, one member of the team was found to be contaminated (a hand, a foot and an area on his face). The appropriate decontamination method was described to the team (containment – putting a glove on the hand and a disposable booty on the foot) and then the team returned to the pier.

At the pier, a final personnel frisk on each individual was performed by the health physicist. This frisk included the personnel who boarded the NS *SAVANNAH* as well as the personnel in the boat taking air, water and sediment samples around the *NS SAVANNAH*. Air, water and sediment samples were obtained by the boat circling the *NS SAVANNAH* at a distance of approximately 50 yards. These samples were cataloged with respect to where they were obtained. The samples were then turned over to the health physicist at the pier.

Personnel thermoluminescent dosimeters (TLDs) were issued to the SERAT team prior to boarding the vessel and were returned at the completion of the drill. SERAT personnel observed the reading of the TLD. No dose was received during the drill as measured by the TLDs. All TLDs read 0 µSievert (µSv) at both the beginning and end of the drill. The SERAT equipment includes a RADOS DBR-1 TLD Reader and ten DIS-1 TLDs, which allows the TLDs to be zeroed prior to departing the pier and then read once the SERAT returns to the pier after the inspection of the *NS SAVANNAH*.

After all personnel returned to the pier, a debriefing was conducted by the IC. During the debriefing, an assessment was provided as to the status and situation onboard the *NS SAVANNAH*. Also during the debriefing, the IC asked each SERAT member and observer for any comments and/or lessons learned resulting from the drill. These

comments and/or lessons learned are described in "Comments and/or Lessons Learned" section below. After the debriefing, the drill was secured.

During the drill, the IC enlisted the services of several JRRF support boats as can be seen in the following:

1. The *Cochran* (patrol launch) was utilized to perform the initial inspection of the NS SAVANNAH and provided feedback to the SERAT.

2. The *Craney Island* (patrol launch) was utilized to transport the SERAT to and from the NS SAVANNAH.

3. The *Cochran* was utilized to perform air, water and sediment sampling while the SERAT was performing their onboard inspections.

4. After the SERAT boarded the *NS SAVANNAH*, the *Craney Island* backed off and patrolled river traffic.

5. TD-21 (tugboat) was ordered to JR-1 (crane barge) and stood by to provide assistance to the *NS SAVANNAH*, if required.

6. A 1000 foot perimeter was established around the *NS SAVANNAH* during the drill. River traffic entering this perimeter was escorted through the area.

Comments and/or Lessons Learned

The following are the comments and/or lessons learned that were provided during the debrief session.

1. The SERAT needs an additional 1 or 2 people; 1 person would help the health physicist and another person would be a communications runner. The extra person helping the health physicist would also support personnel donning anti-contamination clothing.

2. There should be bottled water aboard the vessel. On hot days with personnel dressed out in anti-contamination clothing, heat stress is a concern. To mitigate this concern, water needs to be available to the SERAT. The health physicist

would need to establish controls on how the water would be accessible to personnel to minimize internal contamination concerns.

3. When the SERAT boarded the vessel, they did not have the key to the aft entrance on the "B" deck. The SERAT, per procedure, did have bolt cutters such that this would not have been an issue. The SERAT entered the interior of the vessel utilizing another entrance.

4. When utilizing the sediment sampler, use a ½ inch line. When smaller lines were tried, the sediment sampler would close prematurely.

5. During foul or inclement weather, the initial setup (establishment of clean areas) on the *NS SAVANNAH* should include a tent or the initial team (health physicist and SERAT Team Leader) needs to establish clear a path to the Ball Room and also establish a clean area in the Ball Room.

6. During a real radiological event onboard the *NS SAVANNAH*, it would take a lot more time for the health physicist and SERAT Team Leader to lay out a clean area and define a "step off" pad.

7. Communications

    a. A radio check was not performed prior to the drill to ensure that all planned communication methods would work.
    b. It was hard to communicate onboard the *NS SAVANNAH*. The walkie-talkies were intended for external communications (e.g.: between the SERAT Team Leader and the IC), and proved incapable of performing satisfactorily inside the vessel.
    c. Another communication channel must be provided and it would be advisable to have 3 or more channels available. In a real radiological event, only one radio channel would be available for communications. Currently, there are two radio frequencies/channels utilized at the JRRF. If an onboard alarm is activated, it uses one of the available channels to transmit the signal, which leaves only one for verbal communication. The initial plan for the drill called for one channel to be used by the IC and SERAT Team Leader and another channel would be used by the SERAT Teal Leader to communicate with the onboard SERAT members.

d. Ship to shore communications was good and the reports were understood.
e. The other boats (*Cochran* and *Craney Island*) involved in the drill provided good communications with the IC.

8. Clearer definition is needed in the SERAT Shipboard Emergency Response and Inspection Protocol regarding the roles of the health physicist and the safety officer. In the SERAT capacity, the health physicist and safety officer are to provide advice to the SERAT Team Leader and/or Incident Commander. In the SERAT capacity, the health physicist and safety officer do not have the authority to stop the job.

9. The cargo doors on the *NS SAVANNAH* were found to be unlocked due to other maintenance activities.

10. To more accurately define location onboard the NS SAVANNAH, the compartment frames should be labeled and "EXIT" signs should be put in place.

11. To limit the potential spread of contamination, additional personnel (line handlers) are needed at the pier to tie-off the boats upon their return. Personnel onboard the boats are assumed to be contaminated until they are frisked at the pier.

12. An additional hand held frisker should be procured to expedite the frisking process.

13. The applicable SERAT equipment needs to be identified on a maintenance schedule. This schedule once created needs to be supplied to the JRRF in WORD format for incorporation into their overall maintenance schedule.

14. The SERAT Shipboard Emergency Response and Inspection Protocol needs to address the use of life jackets and handling of the life jackets onboard the vessel.

15. There should be large step-by-step checklist for donning and doffing anti-contamination clothing. A checklist currently exists in the protocol, however a large laminated checklist should be available where the personnel donning and doffing the clothing. The health physicist and an additional person should help with taping.

16. There should be a checklist of team members departing the pier, boarding the *NS SAVANNAH* and returning to the pier.

17. An equipment checklist should be established to identify what equipment is needed when boarding the *NS SAVANNAH.*

18. Larger anti-contamination suits are needed. Currently, the SERAT equipment includes anti-contamination suits up to 3X. 5X and 6x suits need to be ordered.

19. The protocol needs to better define the measurements for wind and water speed such that non-mariners will understand the measurements and/or units.

20. The Boarding & Inspection Logic Diagram in the Protocol needs to be revised to reflect the sequence of changing the exhaust filters for the reactor space. This activity needs to be performed early in the inspection so that feedback can be provided to the reactor space inspection team.

21. The Protocol needs to be revised to provide a distance away from the vessel to obtain air, sediment and water samples. For the drill, a distance of approximately 50 yards was used.

22. The River Water Logic Sampling Plan needs to be revisited to validate the sampling depth for water.

Conclusion

The drill went extremely well. JRRF management approached the drill very seriously and identified contingencies as needed. During preparation for the drill, JRRF management discussed the need to call the Chief of the Port, Coast Guard and Ft. Eustis personnel at the initiation of the SERAT in the event of an incident involving the *NS SAVANNAH.* This drill could have resembled a "table top" exercise. However, as can be seen with the involvement of the various personnel and resources available to MARAD, this drill was definitely not taken lightly.

At the conclusion of the drill and as identified earlier in this report, there were many comments and/or lessons learned. None of these would have posed a problem but they

provide opportunities to refine the process. With MARAD and JRRF management understanding the need for the SERAT, the comments and/or lessons learned will be incorporated.

All of the drill objectives were satisfied as delineated below:

1. The procedures and training were appropriate to ensure that personnel involved with the SERAT understood their SERAT duties. This awareness extended to the potential radiological concerns regarding the *NS SAVANNAH.*

2. The SERAT personnel chosen by JRRF were familiar with the *NS SAVANNAH* lay-out. This proved extremely useful when determining the location of the sounding pipes for the tanks under the reactor space. This knowledge of the ship enabled the SERAT to expeditiously assess the vessel.

3. Because of the training the SERAT received and their familiarity with the vessel, they implemented the appropriate awareness required for the successful implementation drill. If there were areas of uncertainty, particularly surrounding the radiological aspects, the SERAT member would stop and get advice from the health physicist.

4. The communications between the onboard SERAT member and the SERAT Team Leader was probably the weakest link identified during the drill. The information the SERAT member transmitted to the SERAT Team Leader who then subsequently transmitted it to the IC was appropriate. However, the individual SERAT member and the SERAT Team Leader communications were very repetitive. The available communications methods and channels were made to work but it was not the ideal scenario. The command and control aspect of the communications from the IC worked well for communications between the supporting personnel and the SERAT Team Leader.

Enclosure (3) to MARAD Violation Response
50-238/2001-201-01; dated March 18, 2005

N.S. SAVANNAH SERAT March,8-9 2005 Training and Drill Report
Dated March 11, 2005

Prepared by WPI for MARAD
5 pages plus cover letter

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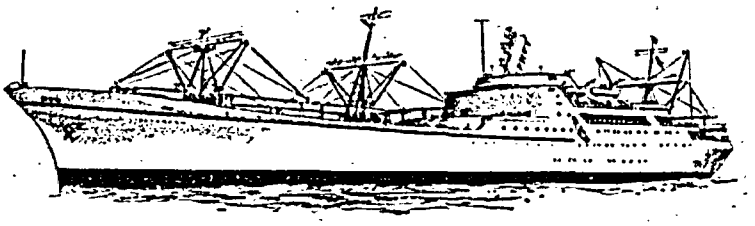

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File Index SAV.0014
Reference:WPI-SAV-05-034
March 11, 2005

Subject: **NS SAVANNAH SERAT Drill Report**
NS SAVANNAH SERAT Training and Implementation
MARAD Order No. DTMA2P04261

Dear Messrs. Fritz and Koehler:

This transmittal provides MARAD the final report for the SERAT training and drill performed on March 8 and 9, 2005 at the James River Reserve Fleet.

1. SAVANNAH Emergency Radiological Assistance Team (SERAT) March 8, 2005 Training and March 9, 2005 Drill Report, revision 0, dated March 11, 2005.

If you have any questions please do not hesitate to call me at (804) 938-1261.

Sincerely,

R. Jon Stouky
Sr. Vice-President

cc.:

F. Fitzgerald w/attachment
J. Bowen w/attachment
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J. Wiegand w/attachment

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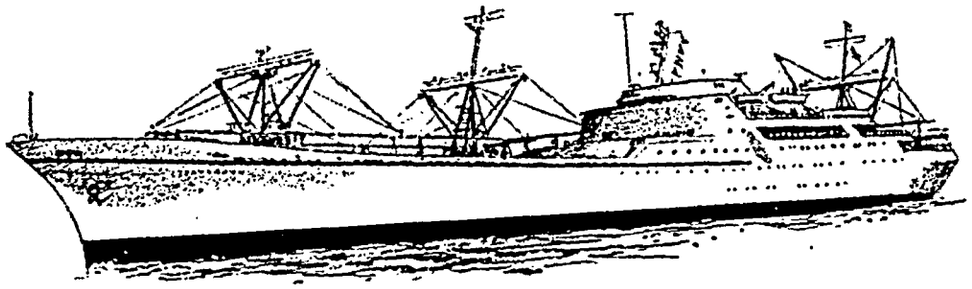
U.S. Department of Transportation
Maritime Administration
Office of Ship Operations



Nuclear Ship (NS) SAVANNAH

SAVANNAH Emergency Radiological Assistance Team (SERAT) March 8, 2005 Training and March 9, 2005 Drill Report

Background

In 2001, MARAD was cited for a violation of its Technical Specification requirement to have available or on-call a health physicist to respond to emergencies on the *NS SAVANNAH.* MARAD contracted with WPI to develop a protocol for emergency response and radiological assessment of incidents occurring on the vessel, to provide radiological training to employees of the James River Reserve Fleet; and to prepare incident drill scripts to establish the SAVANNAH Emergency Radiological Assistance Team (SERAT). WPI also assisted MARAD by coordinating with the Department of Energy, Thomas Jefferson National Accelerator Facility to provide the required 2-hour on-call health physics support to the SERAT. Although the Jefferson Laboratory agreement was not yet finalized an initial training session and incident drill was conducted in September 2004, which is described in a final drill report dated January 26, 2005.

Summary

On March 8, 2005, the Radiation Training Program for SERAT Members and the SERAT Procedure Training Program was provided to a second team of SERAT members. This second team of members included health physics personnel from the Thomas Jefferson National Accelerator Facility. The training session was followed by a table-top exercise/drill and shipboard orientation on March 9.

This training and drill report is a result of the training and table-top exercise/drill performed for the second SERAT team. As a result of this effort, the Maritime Administration's James River Reserve Fleet has two trained SERAT teams with both teams experiencing a drill related to the training. This report augments the drill report dated January 26, 2005, which described the initial training and drill performed in September 2004. The January 26th drill report described the background, current status, drill objectives, drill performance, results along with a listing of lessons learned from the initial training and drill.

Training

The following JRRF personnel received the Radiation Training Program for SERAT Members and the SERAT Procedure Training Program on March 8, 2005

Calvin Ferguson	James Gallagher	Thomas Owens	George Diggs
William Thompson	David Howe	Stephen Wynne	

In addition to the JRRF personnel receiving the SERAT radiation training, health physicists from Jefferson Labs participated in the training session for familiarization purposes. These personnel included:

Erik Abkemeier and Keith Welsh[1]

SERAT Drill Objectives

The objectives of the SERAT drill were to ensure that the SERAT team is:

1. Cognizant of the roles and responsibilities of the SERAT;
2. Properly trained and the level of the procedures were appropriate;
3. Knowledgeable of the *NS SAVANNAH* structures and systems;
4. Able to implement the proper awareness of the shipboard situation; and
5. Assure adequate communication systems (command and control)

SERAT Drill Participants

1.	Fred Hoffmann	Incident Commander (IC)
2.	Calvin Ferguson	On-Scene Leader (Base Team)
3.	James Gallagher	On-Scene Leader Assistant (Base Team) - Rigger
4.	George Diggs	Electrician – Team 1
5.	Stephen Wynne	Electrician – Team 1
6.	David Howe	Mechanical – Team 2
7.	Erik Abkemeier	Health Physicist – Team 2
8.	Keith Welsh	Health Physicist – Team 2
9.	Thomas Owens	Small Craft Operator – Cochran
10.	William Thompson	Rigger (Cochran) – Air and Water Sampler

[1] Erik Abkemeier, Keith Welsh or other qualified representatives from Thomas Jefferson National Accelerator Facility will provide the required 2-hour on-call health physics support for the SERAT effort. The Radiation Training Program for SERAT Members is not required for these individuals since they are Health Physicists at the Thomas Jefferson National Accelerator Facility.

SERAT Drill Observers

1. Erhard W. Koehler, Senior Technical Advisor, *N/S SAVANNAH*, MARAD
2. John Wiegand, Staff Marine Engineer, MARAD
3. Jon Stouky, Sr. Vice President, WPI
4. John Bowen, Chief Engineer, WPI

SERAT Drill Description

The table-top exercise commenced at 0845 on March 9, 2005. The drill scenario was similar to the drill performed in September 2004. This drill scenario is documented in WPI Letter # WPI-SAV-04-029, *NS SAVANNAH* SERAT Drill Script, dated September 27, 2004. The complete drill scenario and resultant actions were reviewed and described in detail with the SERAT.

Conclusion

The drill/table-top exercise went extremely well. JRRF management approached the drill very seriously and identified contingencies as needed. During preparation for the drill, JRRF management discussed the need to call the Chief of the Port, Coast Guard and Ft. Eustis personnel at the initiation of the SERAT in the event of an incident involving the *NS SAVANNAH*.

All of the drill objectives were satisfied as delineated below:

1. The roles and responsibilities of the SERAT were clearly delineated.
2. The procedures and training were appropriate to ensure that personnel involved with the SERAT understood their SERAT duties. This awareness extended to the potential radiological concerns regarding the *NS SAVANNAH*.
3. The SERAT personnel chosen by JRRF were familiar with the *NS SAVANNAH* lay-out. This knowledge of the ship would enable the SERAT to expeditiously assess the vessel condition.
4. Because of the training the SERAT received and their familiarity with the vessel, they implemented the appropriate awareness required for the successful implementation drill. If there were areas of uncertainty, particularly surrounding the radiological aspects, the SERAT member/On-Scene Leader would stop and get advice from the health physicist.

5. The communications between the individual SERAT members, the On-Scene leader and the Incident Commander were reviewed in detail. This will ensure that all parties are familiar with the process and understand the limitations with the current system.

With the required 2-hour response for health physics support under contract with the Thomas Jefferson National Accelerator Facility, and the completion of the training/drill for the second SERAT, all actions required to close the open Notice of Violation from the Nuclear Regulatory Commission have been performed.