

Information Submitted in Support of  
a License Amendment of License NS-1  
N.S. Savannah  
for Co-Licensure of the  
S.C. Patriots Point Development Authority  
and  
Maritime Administration  
U.S. Department of Commerce

Docket No. 50-238

June 1981.

8106180 394

## TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
I	----- Personnel Dosimetry-----	1
II	----- Radiological Surveillance, Equipment and Instruments-----	1
III	----- Environmental Surveillance Program-----	1
IV	----- Radiological Protection Equipment and Facilities-----	2
V	----- Additional Radiological Surveys-----	2
VI	----- Health Physics Support and Emergency Provisions-----	3
VII	----- Training and Instruction to Workers-----	4

## I. Personnel Dosimetry

Self reading pocket dosimeters (0-200mR/hr range) will be maintained on board the vessel for the Patriots Point Authority personnel which may be required to enter a restricted radiation control area. The pocket dosimeters will be zeroed (0-10mr) as they are issued and the reading and time recorded on a log. Once an individual has completed his entry into a radiation control area, the dosimeter will be read and time and reading recorded. Health Physics personnel performing surveys in radiation control areas will be provided Eberline TLD Badges and self reading pocket dosimeters. All records of personnel exposure will be maintained by the Patriots Point Development Authority. Integrated personnel whole body exposures will be reported to NRC annually.

## II. Radiological Surveillance Equipment and Instruments

A. Direct radiation levels of all areas of the vessel open for access by the general public and the employees and staff of Patriots Point Authority will be determined by an Eberline model PRM-7 micro- "R" meter with a sodium Iodide crystal. All radiation levels within a radiation control area will be determined by an Eberline E-520 GM survey instrument with an HP 260 probe and an Eberline RO-2 Ionization chamber.

B. Removable contamination will be determined by wiping surfaces with a 40mm Nu-Con linen smear. Smear samples will be counted for gross alpha-beta in a Tennelec Model LB5110LG gas proportional counter. This instrument is calibrated with NBS traceable standards. For those smear samples that indicate greater than background, a quantitative and qualitative isotopic analysis will be performed using a Nuclear Data 4420 Gamma Spectrometer with a GeLi crystal detector. This instrumentation is cross-checked with NBS traceable standards with the EPA cross-check calibration program.

All portable instruments will be calibrated either by the Eberline calibration facility located in Columbia, South Carolina, or by the South Carolina Department of Health and Environmental Control, Bureau of Radiological Health. All instruments are calibrated at six month intervals.

C. In addition to the semi-annual radiological survey, environmental TLD's will be placed at radiation monitoring stations throughout the vessel. These devices will be collected quarterly and analyzed using an Eberline TLR-5 TLD reader. Results of accumulated radiation exposure will be included in the semi-annual radiological survey report.

## III. Environmental Surveillance Program

A semi-annual environmental surveillance program will be established. Pre-operational background is now being obtained. This includes collection of water and sediment samples in the area where the vessel will be located. Environmental TLD's have been placed near the ship's eventual location to determine background direct radiation levels.

The environmental surveillance program will consist of the collection and analysis of water and sediment samples in the area of the vessel's location at the Patriots Point Development Authority facility.

Water samples will be analyzed for gross alpha-beta, tritium, and a isotopic analysis (quantative and qualitative) at the laboratory facility of the S.C. Department of Health and Environmental Control, Bureau of Radiological Health.

Sediment samples will be analyzed for isotopic content. In addition to the collection of the above samples, Environmental TLD's will be located in the area of the vessel. The TLD's will be collected quarterly and analyzed for direct radiation exposure.

During the course of the semi-annual radiation survey of the vessel, high volume air samplers will be operated aboard the ship in confined areas. These air samplers will be analyzed for gross alpha-beta and isotopic content.

#### IV. Radiological Protection Equipment and Facilities

The Patriots Point Authority will maintain portable GM radiation detection instruments aboard the ship. Coveralls, shoe covers, gloves, skull caps, and pocket dosimeters will be maintained for entry into radiation control areas. For emergency situations, additional portable survey instruments will be provided by a qualified health physicist on call within two hours. Instrumentation needed to perform the semi-annual radiation survey will be provided by the South Carolina Department of Health and Environmental Control. The health laboratory and operating room area aboard the ship will be provided for all health physics to be conducted on the ship. The stewards quarters adjacent to the reactor compartment entry will be maintained as a change room for entry into radiation control areas. These facilities will be secured and entry only authorized by the Executive Director or his designate.

#### V. Additional Radiological Surveys

Radiological surveys will be performed on the vessel as required to assure that all areas accessible to the general public and employees are within the limits specified in the Technical Specifications. Following sandblasting and painting of the vessel, the Department will perform an additional radiological survey. Prior to the use of the galley, dining room, officer and crew messes, passenger and crew accommodations, and any other area on the vessel to be used as restaurant facilities, lodging or concessions, additional radiological surveys will be made by the Department to assure that these areas meet the criteria for unrestricted use as outlined in the Technical Specifications. Reports of these surveys will be provided to the U.S. Nuclear Regulatory Commission by the Patriots Point Authority before these areas are opened to the public and employees for unrestricted use.

Any additional areas of the vessel to be used for access by the general public and employees due to expansion of the museum and displays of the vessel will be surveyed to assure that all radiological criteria for unrestricted use are met.

VI. Health Physics Support and Emergency Provisions

- A. Radiological - the Patriots Point Development Authority has acquired the services of the Radiation Safety Office at the Medical University of South Carolina, Charleston, South Carolina. This office is under the direction of Jimmy O. Fenn, Ph.D., a qualified health physicist. Dr. Fenn will provide radiological assistance to the Patriots Point Authority in the event of a radiological emergency or if entry into a radiation control area is required.

In the event of other radiological emergencies which requires additional personnel and equipment, an emergency radiological assistance team will be provided by the S.C. Department of Health and Environmental Control, Bureau of Radiological Health. The Department maintains a Mobile Radiological Laboratory and Mobile Decontamination facility. The ERAT team and Mobile Laboratory can respond to the Patriots Point Authority facility within four hours of notification.

Semi-annual radiological surveys and environmental surveillance, and any additional Health Physics support and surveys will be performed by the S.C. Department of Health and Environmental Control, Bureau of Radiological Health. Bureau personnel performing these support activities are qualified health physicist as prescribed in the Technical Specifications.

- B. Fire fighting support and provisions - a direct fire alarm is installed between the manned security guard station at the Patriots Point Authority facility and the Mt. Pleasant Fire Department dispatcher's Office. Firefighting will be the responsibility of that department. In the event that fires are within a radiation control area, pocket dosimeters will be provided and firemen instructed to use self contained breathing apparatus (Scott-Air Pax) and wear normal fireprotection clothing, boots, hats, gloves, overcoats. All firemen and fire fighting equipment will be decontaminated and surveyed prior to release from the area. Additional fire fighting plans provide for the activation of the vessel's installed fire and flushing piping systems, and the updating of all Co<sub>2</sub> and other portable extinguishers.
- C. Provisions for Flooding - The vessel will be "permanently moored" and utilize standard mooring lines and steel wire cables to breasting/mooring platforms and concrete pile dolphins on the bow and stern designed to withstand any anticipated hurricane force winds or tidal surges. Due to the relatively shallow depth, and the silting probability of her berth, sinking of the vessel is not likely. However, in the event of flooding, portable pumps are on hand. In the event of major flooding, equipment from the U.S. Coast Guard and U.S. Naval base facilities in Charleston is available.

In the event of either fire and flooding, or other occurrences requiring evacuation of visitors and employees, this will be handled by security and other staff personnel. Evacuation will be via one or more of the three gangways to the pier and onto the parking area as necessary and as dictated by the occurrence. The parking area is approximately 1600 ft.

from the vessel. All evacuations will be conducted in accordance with administrative procedures for abnormal occurrences developed by Patriots Point Authority.

VII. Training and Instructions to Workers

Instructions to individuals working in or frequenting any portion of a restricted area shall be carried out in accordance with the requirements of 10 CFR Part 19. All other requirements stipulated by this regulation shall apply. Patriots Point Development Authority will establish an orientational course for its employees, and conduct emergency training for security personnel and other staff as required.

BRH/DHEC  
5-25-81

RADIATION SAFETY  
(803) 792-4255, 4256



## Medical University of South Carolina

80 BARRE STREET / CHARLESTON, SOUTH CAROLINA 29401

June 11, 1981

Mr. J. E. Guerry  
Director  
Patriot's Point Development Authority  
Mt. Pleasant, South Carolina 29464

Re: Radiation Safety Back-up for SS Savannah

Dear Mr. Guerry:

In accordance with our discussion and those with Mr. Heyward Shealy, Director of the South Carolina Bureau of Radiological Health, I and other members of our staff will be able to provide emergency back-up for the South Carolina Bureau of Radiological Health for radiation safety needed in regard to the SS Savannah. We will be available for call if such needs should arise. Attached is a list of personnel available with their telephone numbers.

If we can be of any further help in this matter, please call. We are glad to provide whatever help we can to the South Carolina Patriot's Point Authority.

Sincerely,

A handwritten signature in cursive script, appearing to read "J. O. Fenn".

J. O. Fenn, Ph.D.  
Radiation Safety Officer

/sg

attachment

	<u>OFFICE</u>	<u>HOME</u>
JIMMY O. FENN, PH.D. Radiation Safety Officer Director, Division Basic Radiation Sciences	792-3271	884-3470
JAMES R. GOODGAME, M.S. Division of Radiation Therapy	792-3271	577-0423
HENRY HARGROVE Assistant Health Physicist Division of Radiation Safety	792-4255	886-6886
JOSEPH D. WISE, JR., M.S. Health Physicist Division of Radiation Safety	792-4255	795-2157
ALLEN J. WEICK Radiation Therapy Dosimetrist Division of Radiation Therapy	792-3271	873-3796





BOARD  
 William M. Wilson, Chairman  
 J. Linn Mason, Jr., M.D., Vice-Chairman  
 I. DeQuincy Newman, Secretary  
 Leonard W. Douglas, M.D.  
 George G. Graham, D.D.S.  
 Michael W. Mirns  
 Barbara P. Nussle

*7th  
 Pier*

**SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL**

Sims Avcock Building  
 2600 Bull Street, Columbia, SC 29201

**CONSTRUCTION PERMIT**

Permission is hereby granted to: Patriots Point Development Authority  
 Box 986  
 Mt. Pleasant, S.C. 29464

for the construction of a waste treatment and/or collection system in accordance with construction plans, specifications, engineering report and Construction Permit Application signed by Mel D. Bundy, Registered Professional Engineer, S.C. Registration No: 4557.

Project Description: Patriots Point: Approximately a 630 foot 4" force main extension to serve the NS Savannah and a destroyer and relocate the existing force main serving the Yorktown.

Effluent to be discharged to Mt. Pleasant W& SC/Patriots Point (NPDES#SC0027081) in the (Stream or Existing System)

N/A basin at a daily rate not to exceed 0 \* gallons per day.

County in which project is located: Charleston

Effluent concentrations of those constituents the system is designed to remove or reduce will be as follows: N/A

Coordinates of the discharge point: N/A  
 (to nearest 5 seconds)

**Special Conditions:**

- \* 1 - There is no flow allowed with this permit. The future projects which will utilize this system must make application with DHEC.
- 2 - Ductile iron force main must conform to ANSI A21.50, latest revision.

Permit No: 7215 Date of Issue: July 22, 1980

Expiration Date: Unless construction is initiated prior to July 22, 1981, it will be necessary to reapply since this permit will no longer be valid.

Treatment Plant Classification: N/A

In accepting this permit, the owner agrees to the admission of properly authorized persons at all reasonable hours for the purposes of sampling and inspection.

THIS IS A PERMIT FOR CONSTRUCTION ONLY AND DOES NOT CONSTITUTE STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL APPROVAL, TEMPORARY OR OTHERWISE, TO PLACE THIS SYSTEM IN SERVICE.

CMG/um *MB*  
 cc: Mel D. Bundy, P.E.  
 Charleston, Berkeley-Dorchester  
 Regional Planning Council

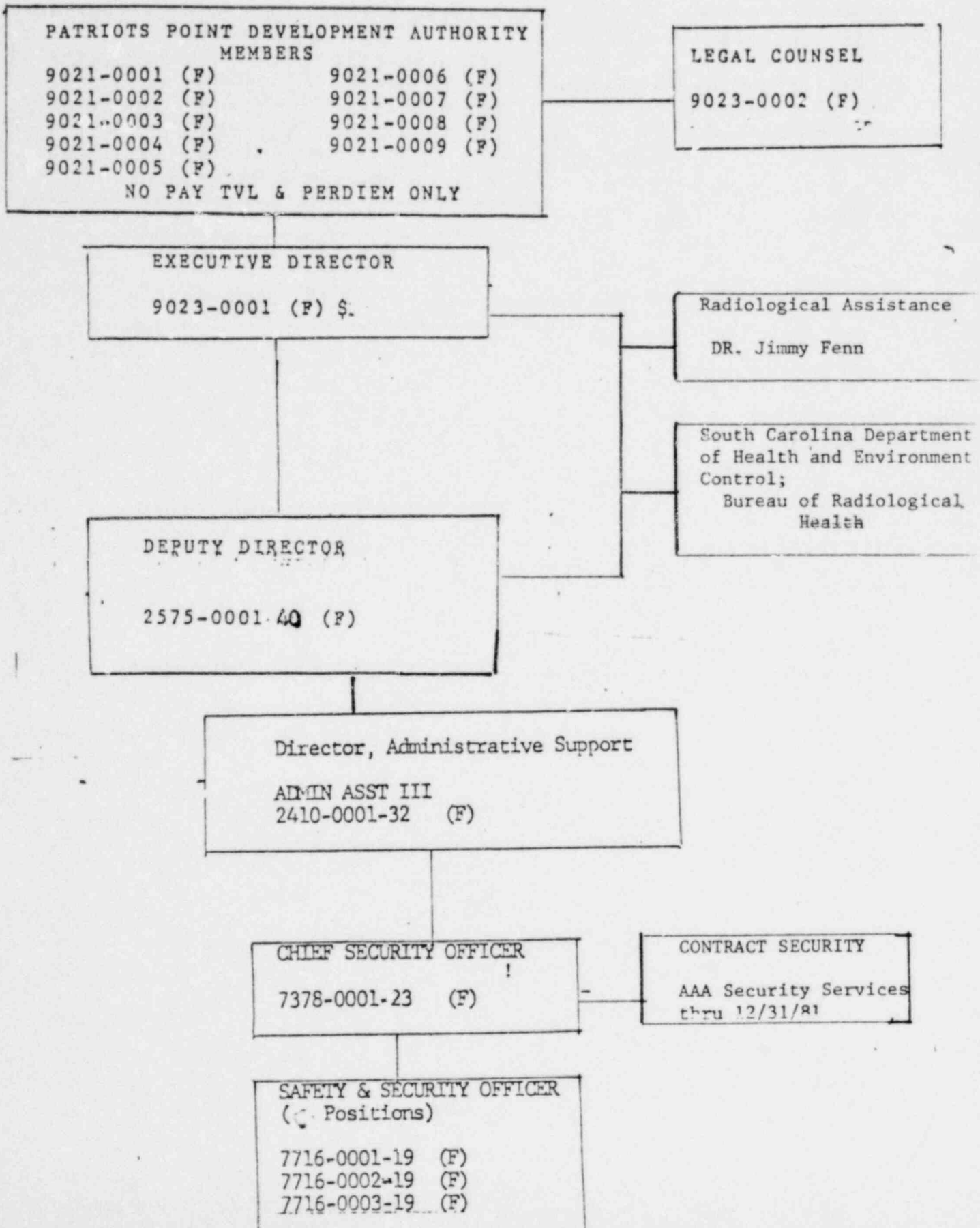
*Robert E. Davis P.E.*  
 Bureau of Wastewater and Stream  
 Quality Control

**POOR ORIGINAL**

PATRIOTS POINT DEVELOPMENT AUTHORITY

NAVAL AND MARITIME MUSEUM

ADMINISTRATION A-1





THE NAVAL AND MARITIME MUSEUM

State of South Carolina  
Patriots Point Development Authority  
Post Office Box 986  
Mt. Pleasant, South Carolina 29464  
803-884-2727

12 JUN 1981

Dr. Zel Levine  
Director  
Maritime Administration  
Department of Commerce  
Washington, D. C. 20230

Dear Dr. Levine:

It was nice talking to you today and as per our conversation I am enclosing the following information:

- a. Original and two (2) copies of a letter of agreement between S. C. DHEC and Patriots Point Development Authority.
- b. Original and two (2) copies of N.S. SAVANNAH technical specifications Docket No. 50-238, June 1981.
- c. Original and two (2) copies of information submitted in support of a License Amendment of license NS-1 N.S. SAVANNAH for Co-Licensure of the Patriots Point Development Authority and Maritime Administration Docket No. 50-238, June 1981.
- d. Safety Analysis report N. S. SAVANNAH, U.S. NRC License No. NS-1 Docket No. 50-238 of June 1981.
- e. Letter from Dr. Jimmy Fenn agreeing to provide radiological assistance within two hours in the event of an incident or if need arises to enter radiation control areas.
- f. Three (3) copies of S. C. DHEC construction permit for water and sewage to the N.S. SAVANNAH.  
In this regard any other permits required or needed in connection with sewage effluent, such permits will be obtained from the State Health Department and the Mt. Pleasant Water and Sewage Commission.

Charles F. Hyatt, Chairman, Representing the Governor  
Horace L. Tilghman, Jr., Chairman, Representing Cong. John W. Jenrette  
A. Crawford Clarkson, Jr., Representing Cong. Floyd D. Spence  
John R. Floyd, Representing Cong. Carroll A. Campbell, Jr.  
Joseph R. Griffin, Representing Sen. Ernest F. Hollings  
J. Mat Hiers, Representing Cong. Kenneth L. Holland

Leroy H. Keyserling, Representing Cong. Mendel J. Davis  
James T. Lazar, Representing Cong. Butler O. Derrick, Jr.  
Charles T. Mauro, Representing Sen. Strom Thurmond  
J.E. Guerry, Jr., Executive Director  
C.G. Waldrop, Deputy Director  
William L. Proulx, Esq., Legal Counsel

POOR ORIGINAL

Dr. Zel Levine - Page 2

I further certify that we will comply with the Health Physics procedures manual which copies are on board N.S. SAVANNAH. Fire and flooding and an evacuation plan will be developed and be on board prior to opening; and an access and security control log will be continued in the N.S. SAVANNAH.

In addition I am enclosing an original and two (2) copies of an organizational chart of our current organization with Dr. Fenn and DHEC reporting directly to the Executive Director, Patriots Point Development Authority.

We hope that this information will be sufficient for you to proceed at your end, but if you need further information please give me a call.

Best personal regards, I remain

Sincerely,

A handwritten signature in dark ink, appearing to read "J. E. Guerry, Jr.", with a large, stylized flourish at the end.

J. E. Guerry, Jr.  
Executive Director

JEGjr:db  
Enclosures