



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
475 ALLENDALE ROAD, SUITE 102
KING OF PRUSSIA, PA 19406-1415

September 1, 2023

Jerry Low, Contracting Officer
U.S. Department of the Navy
Naval Sea Systems Command
1333 Isaac Hull Avenue, SE
Washington Navy Yard 20376-0001

SUBJECT: SURFACE SHIP SUPPORT BARGE – NRC INSPECTION REPORT NO.
99902091/2023001

Dear Jerry Low:

On August 10, 2023, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection of the Surface Ship Support Barge (SSSB) in accordance with the interagency agreement (IA) between the U.S. Department of the Navy, Naval Sea Systems Command (NAVSEA) and the NRC. On-site inspection activities were conducted April 10 – 12 and May 15 – 18, 2023. The inspection consisted of observations by the inspectors, interviews with site personnel, review of procedures and records, and site walkdowns. The results of the inspection were discussed with Ray Duff, Assistant Program Manager, and other members of your staff on August 10, 2023, and are provided in the enclosed report.

Based on the results of this inspection, no violations of more than minor safety significance were identified.

In accordance with 10 CFR Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web Site at <https://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Radioactive Waste; Decommissioning of Nuclear Facilities**; then **Regulations, Guidance and Communications**. The current Enforcement Policy is included on the NRC's Website at www.nrc.gov; select **About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents**; then **Enforcement Policy** (Under 'Related Information'). You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

No reply to this letter is required. Please contact Andrew Taverna, of my staff at (610) 337-5119 if you have any questions regarding this matter.

Sincerely,

Anthony Dimitriadis, Chief
Decommissioning, ISFSI, and Reactor Health
Physics Branch
Division of Radiological Safety and Security

Enclosure:
Report No. 99902091/2023001

cc w/Encl:
H. Duff, PMS 312D
S. Picard, NAVSEA 08
J. Blackburn, NAVSEA 08

SUBJECT: SURFACE SHIP SUPPORT BARGE – NRC INSPECTION REPORT NO. 99902091/2023001 DATED SEPTEMBER 1, 2023

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SUNSI Review Complete: ATaverna **ADAMS ACCESSION NO. ML23230A248**

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DATE	08/18/2023		08/23/2023	08/31/2023		

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Inspection Visit No.: 2023001

Project No.: Contract N00024-20-C-4139

Facility: Surface Ship Support Barge (SSSB)

Location: Alabama Shipyard
660 Dunlap Dr.
Mobile, AL 36602

Inspection Dates: April 10 – 12 and May 15 – 18, 2023

Inspectors:

K. Warner, Senior Health Physicist
Decommissioning, ISFSI and Reactor Health Physics Branch
Division of Radiological Safety and Security

G. Chapman, Senior Health Physicist
Reactor Decommissioning Branch
NMSS Decommissioning, Uranium Recovery and Waste Program

O. Masnyk Bailey, Health Physicist
Decommissioning, ISFSI and Reactor Health Physics Branch
Division of Radiological Safety and Security

A. Taverna, Health Physicist
Decommissioning, ISFSI and Reactor Health Physics Branch
Division of Radiological Safety and Security

K. Barnes, Health Physicist (in training)
Decommissioning, ISFSI and Reactor Health Physics Branch
Division of Radiological Safety and Security

K. Robertson-DeMers, Health Physicist (accompaniment)
Reactor Decommissioning Branch
NMSS Decommissioning, Uranium Recovery and Waste Program

Approved By: Anthony Dimitriadis, Chief
Decommissioning, ISFSI and Reactor Health Physics Branch
Division of Radiological Safety and Security

Enclosure

EXECUTIVE SUMMARY

Surface Ship Support Barge (SSSB)
NRC Inspection Report No. 99902091/2023001

An announced routine decommissioning safety inspection was completed on August 10, 2023, by U.S. Nuclear Regulatory Commission (NRC) staff at the SSSB site in Mobile, Alabama. The inspection included a review of programs and activities associated with the SSSB decommissioning project, including interviews with APTIM staff and APTIM contractors; review of documents; walkdowns of the facility; observations of prepared work areas and in-progress work activities. The SSSB is under the jurisdiction of Naval Nuclear Propulsion Program (NNPP) and is not an NRC licensed facility. However, in September 2019, NNPP and NRC entered into an interagency agreement (IA) for NRC to provide technical support for oversight of decommissioning activities of the SSSB (Agencywide Documents and Access and Management System (ADAMS) Accession No ML20177A172). By contract, APTIM is required to perform dismantlement and disposal in compliance with all NRC licensee-applicable regulations. The Project Manager in NRC's Reactor Decommissioning Branch, Division of Decommissioning, Uranium Recovery, & Waste Programs (DUWP), Office of Nuclear Material Safety and Safeguards (NMSS) is designated as the NRC point of contact with inspection support from the NRC Region I Office.

The program for conducting NRC inspection activities at the SSSB is described in Inspection Manual Chapter (IMC) 2565, "Regional Inspection Activities for Naval Reactors Naval Vessels Undergoing Decommissioning." IMC 2565 supports fulfillment of NRC's responsibility for providing oversight and inspection services of the SSSB as agreed in the above-mentioned IA between the NRC and NNPP. IMC 2561, "Reactor Decommissioning Inspection Program" and its associated procedures are used, as appropriate.

Based on the results of this inspection, no violations of more than minor safety significance were identified.

REPORT DETAILS

1.0 Background

The SSSB was a barge, (i.e., non-powered vessel) that was used to support refueling Navy nuclear-powered ships. The SSSB was originally the mid-section of the SS *Cantigny*, which was converted to a nuclear support facility and in 1964 was named the Prototype Waterborne Expended Fuel Container. Further repairs and alterations resulted in renaming the former mid-section to the SSSB. The SSSB was last used to support the final defueling of the Ex-Enterprise in approximately 2016. NNPP selected APTIM Federal Services, LLC (APTIM) to decommission the SSSB. By contract, APTIM is required to perform dismantlement and disposal in compliance with all NRC licensee-applicable regulations. Based on NRC review and recommendation for approval of the dismantlement work plan, NNPP authorized transfer of custody of the SSSB to APTIM on June 10, 2021, to support dismantlement consistent with NRC regulations (ML21166A149). Throughout the inspection period, the SSSB was undergoing radiological decommissioning that included site cleanup, dismantlement activities, and final status surveys (FSSs).

2.0 Naval Vessel Decommissioning

a. Inspection Scope

The inspectors performed on-site decommissioning inspection activities on April 10 – 12 and May 15 – 18, 2023, supplemented by in-office reviews and periodic phone calls. The inspection included a review of programs and activities associated with the SSSB decommissioning project, including interviews with APTIM staff and APTIM contractors; review of documents; walkdowns of the facility; observations of prepared work areas and in-progress work activities. Supplemental information on the details of the inspections may be found in the attachment to this report.

The inspectors evaluated the APTIM's process for identifying and correcting issues by reviewing a representative selection of corrective action documentation to determine if a timely resolution of issues had been conducted commensurate with the significance of the issue.

The inspectors observed activities and reviewed documentation associated with occupational exposure, environmental monitoring, and radioactive waste management to determine the effectiveness of site radiological programs. The inspectors performed walk downs to review the material condition of the site and determine current work status. The inspectors conducted work observations to determine if Radiation Protection (RP) controls and oversight were implemented in accordance with site procedures.

The NRC contracted Oak Ridge Associated Universities (ORAU) to perform confirmatory surveys of the areas being considered for site release. In April 2023, the inspectors observed confirmatory survey activities conducted by ORAU of the West End where the barge previously resided outside the Containment Structure (CS). In May, the inspectors observed confirmatory surveys conducted by ORAU within the footprint of the CS and of concrete adjacent to the CS. The inspectors observed side by side static beta measurements and the collection of split soil samples at various locations within the CS. The inspectors conducted interviews with cognizant site personnel to determine whether FSS activities were conducted in accordance with APTIM's Decommissioning Work Plan

(DWP), Final Status Survey Plan (FSSP), and other plans and procedures such as the “APTIM Sampling and Analysis Plan.”

b. Observations and Findings

The inspectors reviewed select corrective action documentation and determined that corrective actions had been adequately implemented.

Inspectors observed radiological surveys of steel plates from within the CS and determined that RP controls observed for the steel plates were found to be adequate. The inspectors determined that sampled instruments were source checked in accordance with licensee procedures, and calibrations had been up-to-date. The inspectors reviewed the available 2022 and 2023 environmental monitoring samples and verified that effluent and environmental requirements were met. This review included a review of the direct shine exposure pathway results and specific review of the higher thermoluminescent dosimeter (TLD) readings described in NRC inspection report 2022002 (ML22350A693). The inspectors reviewed APTIM occupational dosimetry records for 2022 and select 2023 data and determined that the results were below NRC’s regulatory limits and were consistent with site activities conducted in the period sampled.

The inspectors observed ORAU perform surveys, including walk-over gamma and beta scans in accordance with the survey plan. During the April on-site visit, the inspectors conducted direct observations of ORAU performing surveys of the west end of the site where the barge was located and much of it dismantled prior to its relocation under the CS. The inspectors noted that the CS was not ready for ORAU to perform confirmatory surveys during the April inspection as planned. Specifically, decontamination and demolition work were still being conducted in the CS at the time of the on-site visit making the area not conducive for confirmatory survey and sampling activities. The inspectors and NRC management reinforced confirmatory survey readiness expectations and scheduled an additional visit. The NRC and ORAU returned in May to conduct confirmatory surveys of the CS. The inspectors noted that ORAU identified 17 elevated discrete areas of soil inside the CS. ORAU obtained 3 samples of soil from these locations and additional surveys and samples were taken for further analysis at the direction of the inspectors.

The inspectors noted that several NRC confirmatory sample results had elevated Co-60 concentrations above the Derived Concentration Guideline Levels. The inspectors noted that APTIM was given the opportunity to reduce the level of residual radioactivity before confirmatory surveys were conducted, but APTIM chose to concentrate on a small portion of the area in question. APTIM conducted remediation, resurveyed, and reperformed it’s FSS sampling in the affected survey units. The NRC staff’s final recommendation to the Navy regarding unrestricted site release would be based on NRC license termination criteria of 10 CFR 20, Subpart E, Section 1402. Specifically, the decision would be provided to the Navy by NRC staff in the Office of Nuclear Material Safety and Safeguards (NMSS) after the issuance of the final confirmatory survey data and analysis and review of the FSS results by NMSS staff. The NRC’s technical evaluation will be documented and communicated under separate correspondence.

During the May site visit, the inspectors observed several FSS activities conducted by APTIM RP technicians, including marking measurement locations, taking static measurements, and performing walk-over gamma surveys. The inspectors observed

instances where the APTIM RP technicians were not actively listening to the count rate during scanning to identify/mark elevations through indications of increased count rate. The NRC staff noted that listening to the count rate is a practice consistent with that outlined in NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)" and is included in the basis for the scan minimum detectable concentration equations in MARSSIM. APTIM committed to using MARSSIM in its FSS Plan and therefore such practices should be conducted. APTIM's DWP Rev. 2, Section 11.5.1 (ML22151A118), states that the FSS approach and methods will be documented in a written FSS Plan designed in accordance with MARSSIM guidance. The inspectors also noted that the observed instances where APTIM staff's scanning speed was significantly quicker paced could have resulted in missing small, discrete, elevated areas. It was noted that APTIM's FSSP method for identifying elevated areas was primarily through post processing of collected data vice listening for elevations in instrument count rates. The inspectors discussed these concerns with on-site personnel and were told that elevated readings were likely due to non-SSSB materials based on previous sampling results which include, specifically, Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) (Black Beauty blasting grit) which is present throughout the shipyard. The inspectors considered this an example of non-conservative decision-making as demonstrated by the identification of Co-60 in soil samples within the CS.

Further, the inspectors noted that while corrective actions were taken because of the NRC confirmatory results, APTIM had not initiated any corrective action documentation. The inspectors noted that Section 6.11 of procedure AMS-710-07-WI-04014, "Radiation Safety Incident Notification and Improvement Reporting" describes events requiring radiological improvement reports. One of the items for which a Radiological Improvement Report (RIR) should be initiated is for "unexpected/uncontrolled contamination or radiation levels." Procedure AMS-710-07-WI-04014 also describes the necessity of initiating RIRs at a relatively low threshold so that minor deficiencies can be corrected before becoming serious problems. Additionally, the APTIM Sampling and Analysis Plan, Section 8.1 describes when to initiate a corrective action request including "re-sampling/survey, if needed to fill any identified data gaps from the issue." The elevated NRC confirmatory soil samples in the CS caused the inspectors to consider those affected survey units as not meeting the release criteria without corrective actions, such as remediation, and the reperformance of FSS and evaluation for acceptability with the release criteria.

The SSSB FSS Plan Summary, (Attachment 7 of DWP, Rev. 2 (ML22151A118)) and SSSB FSSP, Revision dated January 23, 2023 (ML23037A809), as supplemented on February 9, 2023 (ML23193A521) and March 18, 2023 (ML23193A441) were reviewed by the inspectors and NMSS staff and determined to be adequate. The inspectors reviewed FSS procedures for sample collection and radiological surveys and determined that the site adequately implemented FSSP, except for the scanning technique per Attachment 7 of DWP, Rev. 2, Section 2.4.2, page 12.

c. Conclusions

No violations of more than minor safety significance were identified.

3.0 Exit Meeting Summary

On August 10, 2023, the inspectors presented the inspection results to Ray Duff, Assistant Program Manager for CVN (Cruiser, Aviation Nuclear) Inactivation/Disposal within the Program Executive Office for Aircraft Carriers and the Contracting Officer's Representative (COR) for the SSSB (PMS 312D) and members of NNPP (NNPD) staff as well as APTIM representatives. No proprietary information was retained by the inspectors or documented in this report.

SUPPLEMENTARY INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

R. Duff, Assistant Program Manager, COR
B. Fox, Program Manager, APTIM
M. Carr, CHP, Project Radiation Safety Officer, APTIM
B. Rodgers, Radiological Controls Supervisor, APTIM
Lieutenant Gilbert, Government On-Site Representative NAVSEA

ITEMS OPEN, CLOSED, AND DISCUSSED

None

PARTIAL LIST OF DOCUMENTS REVIEWED

Radiological Improvement Records

2022-SSSB-36
2023-SSSB-01
2023-SSSB-02

Miscellaneous

2022 and 2023 EMP Reporting
Initial Inspection Worksheet Project No. 501513
Decommissioning Work Plan, Revision 2
Final Status Survey Plan, Revision 3
Dosimetry report
AMS-710-07-WI-04014, Radiation Safety Incident Notification and Improvement Reporting, Revision 0
APTIM-SSSB-009, Performance of Radiological Surveys, Revision 0
APTIM-SSSB-011, Sample Collection, Revision 0
APTIM-SSSB-012, Instrument Calibration and Maintenance, Revision 0
APTIM-SSSB-013, General Operation of Portable Rad Survey Instruments, Revision 0
APTIM-SSSB-014, QA-QC of Rad Survey Instruments, Revision 0
Sampling and Analysis Plan, Revision 0
ASY-20230406
ASY-20230407
ASY-20230408
ASY-20230409
Email from Bruce Fox to Katherine Warner, June 22, 2023

Sample of Air Samples

ASY-AS-BZ-1267, ASY-AS-BZ-1285, ASY-AS-BZ-1324, ASY-AS-BZ-1448, ASY-AS-BZ-1500,
ASY-AS-BZ-1517, ASY-AS-BZ-1537, ASY-AS-BZ-1561, ASY-AS-BZ-1585, ASY-AS-GA-1258,
ASY-AS-GA-1284, ASY-AS-GA-1396, ASY-AS-GA-1407, ASY-AS-GA-1492

Shipping Packages

3SB-23-0016, 3SB-23-0017, 3SB-22-0089, 3SB-22-0090, 3SB-22-0092

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
ALWCD	Activity-Level Work Planning and Control Documents
APTIM	APTIM Federal Services, LLC
CFR	<i>Code of Federal Regulations</i>
COR	Contracting Officer's Representative
CS	Containment Structure
DUWP	Decommissioning, Uranium Recovery, & Waste Programs
DWP	Decommissioning Work Plan
FSS	Final Status Survey
FSSP	Final Status Survey Plan
GPO	Government Printing Office
IA	Interagency Agreement
IMC	Inspection Manual Chapter
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
NAVSEA	U.S. Department of the Navy, Naval Sea Systems Command
NCV	Non-Cited Violation
NMSS	Office of Nuclear Material Safety and Safeguards
NNPP	Naval Nuclear Propulsion Program
NRC	Nuclear Regulatory Commission
ORAU	Oak Ridge Associated Universities
RIR	Radiological Improvement Report
RWP	Radiation Work Permit
SSSB	Surface Ship Support Barge
TLD	Thermoluminescent Dosimeter