



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
475 ALLENDALE ROAD, SUITE 102
KING OF PRUSSIA, PA 19406-1415

January 11, 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.
99902091/2022002

Dear Jerry Low:

On November 30, 2022, 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 inspections were conducted on October 26 – 27 and November 29 - 30, 2022. The inspection consisted of observations by the inspectors, interviews with site personnel, review of procedures and records, and ship walkdowns. The results of the inspection were discussed with Ray Duff, Assistant Program Manager, and other members of your staff on November 30, 2022, and are provided in the enclosed report.

Based on the results of this inspection, one Severity Level IV violation (NCV) (several occurrences) under the NRC enforcement program was identified. The issue would be treated as a non-cited violation (NCV), consistent with Section 2.3.2 of the NRC Enforcement Policy. A licensee under NRC jurisdiction would have the option of contesting the violation or the significance of the violation by providing a response within 30 days of the date of this letter, with the basis for the denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001.

In accordance with Title 10 of the *Code of Federal Regulations* (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 Katherine Warner, of my staff at (610) 337-5389 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. 2022002

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

SUBJECT: SURFACE SHIP SUPPORT BARGE – NRC INSPECTION REPORT NO. 99902091/2022002 DATED JANUARY 11, 2023

Distribution w/encl (via email)
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OFFICE	DRSS/RI	N	DRSS/RI				
NAME	KWarner/kw		ADimitriadis/ad				
DATE	12/16/2022		1/09/2023				

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Inspection Visit No. 2022002

Project No. Contract N00024-20-C-4139

Facility: Surface Ship Support Barge (SSSB)

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

Inspection Dates: October 26 – 27, 2022 and November 29 – 30, 2022

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

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

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

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. 99902091/2022002

An announced routine decommissioning inspection was completed on November 30, 2022, 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, a review of procedures and records, observations of prepared work areas and in-progress work activities, interviews of site personnel, and walkdowns of the facility. The SSSB falls 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).

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 to in the above-mentioned IA between the NRC and NNPP. IMC 2561, "Reactor Decommissioning Inspection Program" and its associated procedures are referenced and used, as appropriate.

The inspectors identified an issue that would be treated as one Severity Level IV non-cited violation (NCV), with three examples, based on the failure to follow the Decommissioning Work Plan (DWP). Specifically, the site did not properly implement sections 7.6 and 5.1.11, which requires radiological surveys prior to the use of destructive techniques for dismantlement and the dry pit to remain intact until its relocation into the containment structure (CS), respectively. Because these issues resulted in no or relatively inappreciable potential safety or security consequences, were site-identified, were not repetitive or willful, and were entered into the site's corrective action program known as "Radiation Safety Incident Notification and Improvement Reporting program" (2022-028, 2022-030, and 2022-033), the NRC would consider these issues to be one non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy.

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 activities 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 official NRC point of contact with inspection support from the NRC Region I Office. 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). As of December 2022, the SSSB was undergoing radiological decommissioning, including dismantlement and disposal activities.

2.0 Naval Vessel Decommissioning

a. Inspection Scope

The inspectors performed on-site topical inspections on October 26 – 27 and November 29 - 30, 2022, supplemented by in-office reviews and periodic phone calls. The inspection consisted of observations by the inspectors, interviews with site personnel, a review of procedures and records, and site walk-downs.

The inspectors evaluated the site's process for identifying and correcting issues by reviewing a representative selection of issues to determine if a sufficiently low threshold for problem identification existed and if appropriate prioritization and timely resolution of issues had been conducted commensurate with the significance of the issue.

The inspectors conducted document reviews and interviews with site personnel to determine if proposed changes to the decommissioning work plan (DWP) met any of the criteria described in Chapter 14 of the DWP and would require prior NRC approval.

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. In October 2022, the inspectors observed the movement of the remaining part of the SSSB into the Big Top containment structure (CS) to determine if the movement was performed safely and in accordance with site documentation. In November, the inspectors toured the interior of the CS, including the accessible areas of the SSSB to review radiological postings, general housekeeping, material conditions and observed pre-job briefings and ongoing demolition work to remove concrete from one end of the wet pit. The inspectors toured the site to review placement and material condition of the environmental monitoring stations and

radiation detectors, labeling of containers, and site access control. The inspectors reviewed program documentation including several waste shipment packages, work plans, radiation work permits, environmental monitoring data, and radiological surveys.

b. Observations and Findings

The inspectors noted that issues identified on the SSSB were categorized into one of three separate programs that can be generally stated as quality, safety, and radiological. Additionally, the site also bins issues through its audit process. The site implemented a tracking log to gather all issues under one document for review. The inspectors determined that issues under the three programs and the audits had been identified, entered into the appropriate programs, and evaluated commensurate with their safety significance, including low threshold issues under the Radiation Safety Incident Notification and Improvement Reporting procedure.

The inspectors reviewed implementation of a previously reviewed change to the DWP involving resequencing a portion of the work activities using the CS instead of the SSSB containment documented in NRC Inspection Report 2022001. The inspectors noted that the evaluation stated that “should water collect inside the CS, it will be sampled, analyzed, and dispositioned based on analytical results.” This, ensures, in part, that the Chapter 14 criteria “result in the potential for significant environmental impacts that have not been previously reviewed” is not met. The inspectors noted that some water intrusion in the CS had occurred despite placement of the sandbag barrier during rain events. The inspectors reviewed the sample data available to date and determined that APTIM had appropriately dispositioned the results and rainwater intrusion incidents to date have not resulted in the spread of contamination. Furthermore, the inspectors noted that APTIM appropriately collected a sample inside the CS after a rainwater event the week of the November inspection.

The inspectors observed the movement of the remaining portion of the SSSB to an area under the containment structure on October 26, 2022. The inspectors noted appropriate procedural use and adherence by APTIM personnel.

The inspectors reviewed the available 2022 environmental monitoring samples and verified that effluent and environmental requirements were met. The inspectors noted a higher TLD reading for the second quarter of 2022 near the west radioactive material storage area of 78 mrem excluding background. The inspectors noted that the other first and third quarter readings were minimal. The project radiation safety officer estimated that the 100 mrem/year limit to the public would not be exceeded once the appropriate application of an occupancy factor was applied and the relocation of any higher-level waste containers a considerable distance away from the fence.

The inspectors verified that the HEPA-filtered ventilation to provide a negative-air enclosure in the CS during dismantlement, sizing, and loading operations had been tested prior to use. The inspectors verified that the required daily checks of the negative-air condition in the CS were being conducted by APTIM. The inspectors noted the addition of several temporary ventilation units, including one on the vessel pulling suction from the wet pit, to provide increased air control during demolition.

The inspectors reviewed the implementation of the radiation protection plan, including respiratory protection training and adherence to the radiation work permits. The inspectors

noted that the site-specific respiratory protection training provided to the inspectors on the use of powered air purifying respirators was generally acceptable in providing the individual with the necessary information to don, doff, and use the respirator. The inspectors identified that radiation protection technicians were performing hand and foot frisks of personnel leaving the CS during demolition activities rather than the whole-body frisk required by RWP 2022-015. The inspectors noted that APTIM took prompt corrective actions to address this issue, including coaching the radiation protection staff and entering the issue into the Radiation Safety Incident Notification and Improvement Reporting system as RIR-SSSB-36. The inspectors also discussed the use of dust suppression during demolition activities after observing a visible dust cloud during concrete demolition. During one of the walk-downs, the inspectors noted that one water misting machine was operational, but due to location and distance did not provide expected dust suppression. The inspectors noted that APTIM implemented changes to the configuration of water misting machines and added additional dust suppression capacity to ensure prior expectations.

The inspectors noted that the remaining work includes dismantlement and disposal of the remaining sections of the SSSB inside the CS, including the wet pit and pump room, continued waste shipment, site restoration, and final status surveys.

Violation

The inspectors identified an issue that would have been categorized (if the site was an NRC licensee) as one Severity Level IV violation, with three examples, based on the failure to follow the Decommissioning Work Plan (DWP). Specifically, DWP section 7.6 states in part: "When destructive techniques are required for dismantlement such as burning or cutting, the cut/burn line will be identified and surveyed and decontaminated as necessary prior to cutting or burning". Additionally, DWP section 5.1.11 discusses dry pit disposal and states, in part: "the dry pit... will remain intact until the final stage of decommissioning when the remainder of the SSSB will be relocated into the containment structure (CS). At that time, the dry pit will be sized and placed into intermodal containers for disposal as low-level rad waste." Contrary to the above, the inspectors noted several examples of a failure to obtain radiological surveys prior to cutting or burning and several examples of dry pit segmentation prior to relocation into the CS.

Procedure AMS-805-00-PR-00100, Revision 0, discusses the methods in which activity-level work planning and control documents (ALWCD) are to be developed. Section 4.0 states in part: "an ALWCD is the mechanism by which work is planned and executed. An ALWCD document can either be a Work Package or a Job Safety Analysis." Section 4.2 continues "The Work Package shall provide specific work activity instructions on the work to be performed." Among other requirements, a pre-job briefing with the complete work crew be conducted in a formal and detailed manner. Work package SSSB-2021-0030-RO implemented, in part, DWP section 7.6 described above, and work package SSSB-2021-0042-RO implemented, in part, DWP sections 7.6 and 5.1.11 described above.

Work package SSSB-2021-0030-RO was developed to establish cut lines and cut a portion of the AFT Partial Tank and transfer it to the Containment Structure. Hold points required that radiological surveys be performed inside the AFT Partial Tank #8 Item 13C before cuts were made. The areas were to be flagged and the cutting directed by supervision. This was to be verified by radiation protection supervision after the survey and prior to the cut.

Contrary to the above, on August 30, 2022, open air stitch cutting was performed on the port exterior wall of #8 Port Wing Tank prior to the completion of radiological surveys. The crew had been given permission to cut the “floor” of the tank which had been previously surveyed. However, the tank was cut from the floor to the top of the port wall before it could be surveyed. APTIM wrote Radiological Improvement Report (RIR) 2022-028 to document this issue.

Work package SSSB-2021-0042-RO was developed to prepare Tank # 8 centerline forward lead wall for removal. This work involved developing cut lines and stitch cutting the structure according to the approved lines. Procedural hold points required the superintendent to verify that radiation protection supervision reviewed radiological surveys and documented acceptance prior to any cuts being made. The procedure states in bold “Note: Do not cut this section, until remaining SSSB is inside containment structure.” On September 26, 2022, approval was granted for cutting the door access to the Port side of the Dry Pit Void, but authorization was not provided for any other locations to be cut. Contrary to the above, access was cut to the 7P Wet Pit Void without internal surveys being complete and a small window was cut at the Dry Pit Void Starboard access without the proper internal surveys being complete. APTIM wrote RIR 2022-030 to document this issue.

The same work package SSSB-2021-0042-RO, with additional guidance provided in bold letters as follows: “Excluded stitch cut area are Weather Deck, Horizontal cut in frame 53 along the Dry Pit, the vertical cuts in each of the Wet Pit Void Tanks, vertical cuts along the Wet Pit Void /Dry Pit Internal walls, cuts AFT of frame 53, and cuts in the Dry Pit void.” Contrary to the above, on October 12, 2022, internal baffle cuts were made from the Port and Starboard Wet Pit Void tanks to the Dry Pit without the proper radiation protection management approval and documentation and before the SSSB was moved into the containment structure. APTIM wrote RIR 2022-033 to document this issue.

The inspectors noted that surveys conducted after the incidents described above did not identify removable contamination. Therefore, no release of radioactive material is expected to have occurred. These issues are considered to be more than minor because they involved failures to implement procedures as described in example 6.3.d.3 in the NRC Enforcement Policy, dated January 14, 2022.

Because these issues resulted in no or relatively inappreciable potential safety or security consequences, were site-identified, were not repetitive or willful, and were entered into the site’s corrective action program known as “Radiation Safety Incident Notification and Improvement Reporting program” (2022-028, 2022-030, and 2022-033), the NRC would consider these issues to be one non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy (**NCV 99902091/2022002, Failures to Follow Decommissioning Work Plan**).

c. Conclusions

The NRC documented an issue that would be treated as one Severity Level IV non-cited violation (NCV) (several occurrences) under the NRC enforcement program for failures to implement the decommissioning work plan.

3.0 Exit Meeting Summary

On November 30, 2022, the inspectors presented the inspection results to Ray Duff, Assistant Program Manager for CVN 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 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
J. Brooks, Waste Coordinator, Re-Nuke
M. Carr, Project Radiation Safety Officer, APTIM
B. Rodgers, Radiation Protection Supervisor, APTIM
Lieutenant Stevens, Government On-Site Representative NAVSEA

ITEMS OPEN, CLOSED, AND DISCUSSED

None

PARTIAL LIST OF DOCUMENTS REVIEWED

Radiological Improvement Records

2022-SSSB-15
2022-SSSB-18
2022-SSSB-19
2022-SSSB-20
2022-SSSB-21
2022-SSSB-23
2022-SSSB-24
2022-SSSB-28
2022-SSSB-30
2022-SSSB-32
2022-SSSB-33

Miscellaneous

501513-CAR-003, Investigation and Root Cause Analysis, October 12 – 17, 2022
AMS-805-00-PR-00100, Activity-Level Work Planning and Control, Revision 0
Decommissioning Work Plan, Surface Ship Support Barge Dismantlement and Disposal,
Revision 1
Decommissioning Work Plan, Surface Ship Support Barge Dismantlement and Disposal,
Revision 2
Environmental Monitoring Results, various
Final Status Survey Plan Surface Ship Support Barge Dismantlement and Disposal, Revision 0
RWP SSSB-2022-007, Containment Structure D&D Operations **Excluding** Wet Pit or the Concrete
and Wet Pit Liner, Revision 2
RWP SSSB-2022-014, Wet Pit Entry to remove Equipment and Materials, Revision 0

RWP SSSB-2022-015, Concrete and Liner Demo, Revision 0
SSSB-2021-0030, Forward Partial Tanks #8 (13C), Revision 0
SSSB-2021-0042, Stitch Cut Tank 8 Forward Centerline Lead Wall, Revision 0
Technical Approach – Frame 53 Lead Wall Removal, October 3, 2022

Shipping Packages

3SB-22-0010
3SB-22-0011
3SB-22-0012

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
GPO	Government Printing Office
IA	Interagency Agreement
IMC	Inspection Manual Chapter
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
RIR	Radiological Improvement Report
RWP	Radiation Work Permit
SSSB	Surface Ship Support Barge