Decommissioning work on historic nuclear support facility, SSSB, draws to a close

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WASHINGTON. – Along the waterfront in the Alabama Shipyard, LLC, near Mobile, Ala., decommissioning work has drawn to a close on a remarkable hull, which quietly and safely served the nuclear-powered aircraft carriers and cruisers of the U.S. Navy for more than 50 years.

The Navy's Surface Ship Support Barge (SSSB) served as the primary platform supporting the complex refueling, defueling, and associated maintenance operations for reactor components from U.S. Navy nuclear-powered surface ships at Newport News Shipbuilding, from 1964 to 2016. Dismantlement and disposal of SSSB began in 2020 and concluded this summer. On September 30th, the dismantlement site was turned back over to Alabama Shipyard, marking final completion of the project.

"This historic platform was an integral part of the Navy's nuclear-powered ship maintenance efforts for decades," notes RDML Casey Moton, Program Executive Officer for Aircraft Carriers. "The Navy-industry team leading the dismantlement has honored that legacy, displaying the same innovative spirit that has been driving the safe modernization and revolutionary construction of the nation's aircraft carriers over the last

60 years.”

Dismantlement and Disposal

In June 2020, NAVSEA awarded a three-year, $129 million contract for SSSB’s dismantlement and disposal to APTIM Federal Services, LLC, with work to be accomplished at Alabama Shipyard, LLC. APTIM completed the process of demolishing the final components of the platform to include the former spent fuel water pool – a 32-foot-deep compartment on the barge that comprised 2,500 tons of steel-reinforced, high-density concrete.

Ray Duff, assistant program manager for CVN Inactivation/Disposal, who leads the Government’s team on this project within NAVSEA, highlighted the major accomplishments of the project, which completed site work in June 2023, and received approval to turn over the SSSB dismantlement area back to the host shipyard on 30 September 2023. No spent fuel has been present on SSSB since its decommissioning in 2016, but the remaining 1% of the platform’s low residual radioactivity contained in the spent water pool and associated system components required careful remediation.

“Our focus throughout the project was to remove and secure the hazardous material while keeping every worker safe and protecting the public and the environment,” explained Duff, “and we succeeded.”

APTIM’s team of hazardous remediation experts logged 237,389 hours to complete the dismantlement and dispoal, working within a specially fabricated structure under strict environmental monitoring, with zero OSHA lost time or recordable incidents. The team methodically surveyed, identified, and separated components, and then packaged and transported hazardous waste for disposal at Waste Control Specialists, LLC, a regulated facility in Andrews, Texas, capable of handling such materials. Approximately 8,080 tons

of waste material were safely packaged and shipped to Waste Control Specialists, and 426 tons of ferrous and non-ferrous metals were recycled.

From World War II tanker to nuclear-age platform

SSSB began its service at sea, as the mid-section of the tanker ship SS Cantigny, built in 1945 by the Sun Shipbuilding Company, in Chester, Pennsylvania. The T2-SE-A1-type tanker was named after the 1918 Battle of Cantigny, the first major American offensive of World War I, fought near the village of Cantigny, on the Somme River in France.

In 1964, Newport News Shipbuilding and Drydock Company converted Cantigny's mid-body section to a nuclear support facility, initially called the Prototype Waterborne Expended Fuel Container (PWEFC). PWEFC provided an operational capability similar to the spent fuel pool in a commercial nuclear power reactor, and during the course of its long life supported refueling operations for many nuclear-powered cruisers and aircraft carriers—including early refuelings of ex-Enterprise (CVN 65).

In the late 1980s, Newport News Shipbuilding refurbished PWEFC with significant upgrades, replacing the original hull and tank structure and installing new longitudinal bulkheads. Then a decade later, the Navy completed additional repairs and upgrades, extending the platform's service life by 50 years, and renamed her the Surface Ship Support Barge—otherwise known as the "Triple S-B."

A Legacy of Safety and Service

In cooperation with NAVSEA, using an interagency agreement, the U. S. Nuclear Regulatory Commission (NRC) provided NAVSEA with technical expertise during planning, execution, and termination of the project, evaluating APTIM's work plan to ensure workplace safety and to mitigate any possible impacts to the environment or to the public.

Based on NRC review and recommendation for approval of the dismantlement work plan, Naval Reactors, also referred to as the Naval Nuclear Propulsion Program, transferred custody of SSSB to APTIM for dismantlement on June 10, 2021. SSSB left Hampton Roads on May 19, 2021, and arrived at the Port of Mobile on June 1, 2021, where self-propelled modular transporters moved the 268-foot barge to a land-based facility in the Alabama Shipyard—its final port of call.

SSSB's legacy of safety and service spans 52 years in Newport News Shipbuilding, supporting defueling operations for the Navy's nuclear-powered cruisers and aircraft carriers. In addition to ex-Enterprise, SSSB was instrumental in extending the service lives of the USS Nimitz (CVN 68), USS Dwight D. Eisenhower (CVN 69), USS Carl Vinson (CVN 70), USS Theodore Roosevelt (CVN 71), and USS Abraham Lincoln (CVN 72) as part of those ships' mid-life refueling and complex overhauls (RCOH).

Capt. Mark Johnson, manager of the PEO CVN In-Service Aircraft Carrier Program Office, notes that while SSSB's decommissioning signals the end of an era, it also marks the Navy's infusion of technological advancements in executing RCOHs.

"The Navy now has the capacity to manage and package spent fuel modules into robust shipping containers as required in real time, without the need to first house the materials in an intermediate facility, such as the SSSB spent fuel water pool," said Johnson. "It's an advancement that safely streamlines refueling activities, consistent with expediting readiness across the maintenance enterprise, with the goal of delivering warships back to operators in the fleet."