SDP In Dock Installation (IDI) Modules

- **CLIENT**
  Babcock Marine (Rosyth) Ltd
- **LOCATION**
  Rosyth, Fife

Introduction

This SDP In Dock Installation (IDI) Modules Project (IDI) forms part of the overall UK Submarine Dismantling Programme (SDP) where laid up submarines will be decommissioned and dismantled at Rosyth Dockyard. The agreed strategy for these submarines is for the decommissioning and dismantling to be split in two stages where Stage 1 comprises the docking and removal of Low Level Waste (LLW) primarily from the reactor compartment.

Stage 2 will involve removing the reactor pressure vessel and surrounding shield tank. These decommissioning and dismantling works are being carried out by Babcock Marine (Rosyth) Ltd (Babcock) on behalf of the UK MoD (The Authority).

This project forms an integral part of Stage 1 whereby the modules have now been mounted on the Support Platform (outside of the scope of this contract) adjacent to the submarine that is docked down in Dock No.2 and provides total containment and a transit route for removed LLW items through the modules before being transferred to a separate treatment/storage facility elsewhere on the Rosyth site.

Scope of Work

A concept design with relative order of magnitude costs was prepared in 2015 by Nuvia as part of a separate MOD contract and accepted by Babcock and the MoD as forming the basis for the design of this project.
The project scope included the detail design, procurement, fabrication, assembly, integrated testing, delivery of the modules to site, assembly and commissioning of the modules on the supporting structure. The full integrated testing was carried out off-site to minimize the amount of time required for commissioning at the dockside location.

The IDI comprises four separate modules joined together to form a weatherproof outer shell and 'clean' containment internally for handling of the removed LLW. Module 1 forms the interface and bridge with the submarine providing a route for man operator access and plant removal by use of an overhead lifting beam, the module has been mounted on the support structure adjacent to the position of a new aperture in the hull of the reactor compartment and provides the weatherproof and containment seal with the submarine's pressure hull.

Module 2A adjoins Module 1 and forms the main working area for the preliminary processing of LLW before packaging and transferring to a separate treatment/storage facility elsewhere on the Rosyth site. Module 2B comprises the personnel entry point and boot barrier and adjoins both Modules 2A & 3. Module 3 adjoins Module 2B and houses the HVAC and utility services for the overall IDI facility. All four modules are of similar construction and together form a weatherproof totally sealed and contained facility. In between LLW removal campaigns the modules will be separately removed from the in dock support structure and temporarily stored on a bespoke frame adjacent to the dock awaiting the next campaign.

Challenges

- The available timescale for the Project to align with the UK's Submarine Dismantling Programme was exceedingly tight, from contract award in Dec'15 with the start of scheme design, to handover of the operational facility in May'17 was indeed a challenge.
- The requirement to separate and lift the four modules out of the dock for each campaign change required a great deal of design effort to provide disconnection of

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all services at the module joints and the ability to crane out the individual modules to the dockside.

- Nuvia fulfilled the role of Principal Designer and also Principal Contractor for the Project.
- The concept of having a ModuCon inner containment within an outer structural shell with waterproof cladding is a first for Nuvia.
- Providing a totally sealed connection to the submarine by means of an outer weatherproof shroud and an inner containment seal was a challenge that proved successful.

Expectations

The Client's main driver was to have the Facility operational in time for the overall Submarine Dismantling Programme to proceed to programme, this was achieved.

Nuvia successfully fulfilled the roles of Principal Designer and Principal Contractor.

Conclusion

The Project was delivered to a particularly challenging timeline, the facility is now fully operational and good feed-back is being received from the Babcock Operator.

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