

The Rise of Underwater Sustainment in the Nuclear Submarine Enterprise

Secure dry-docking facilities for nuclear-powered submarines are limited and costly, with design and construction timelines of 10–15 years. Submarine Rotational Force – West (SRF-West) is set to host up to 5 nuclear-powered submarines from 2027, yet planning for Henderson Defence Precinct won't conclude until 2028. This underscores the urgency of advancing underwater sustainment capabilities.

Underwater sustainment including all aspects of cleaning, inspection, preservation, maintenance, and repair is emerging as a critical alternative to dry-docking. By integrating commercial diving, underwater engineering, remotely operated vehicles (ROVs), and biofouling-capture technologies, essential maintenance can be performed in-water without compromising nuclear safety.

Operational Advantages:

- **Structural Integrity:** Underwater engineering expertise provides critical mechanical, electronic, hydraulic and pneumatic system support relative to the external hull, ballast tanks and sub-systems.
- **Fleet Readiness:** Frequent in-water servicing supports the integrity and seaworthiness of the platform, inspection and cleaning mitigates threats like Microbially Influenced Corrosion (MIC), which stems from biofilms on metal surfaces.
- **Environmental Compliance:** All Defence platforms must comply with Australian biosecurity legislation. Regular cleaning with capture meets this while supporting platform hydrodynamics and acoustic performance.

Deployed within secure naval bases, these technologies uphold sovereignty, safety, and operational agility and enhance fleet readiness and sustainability.

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