



### *Marine Fouling Challenges in Australian Waters: An Operator Perspective*

*Harvey Smith - Woodside (for Subsea Equipment Australia Reliability - SEAR - Joint Industry Project)*

High levels of marine growth in warm Australian waters presents a significant challenge to Oil & Gas operators. Interventions need to be well planned due to the high cost of offshore time and unknown functional condition of the equipment. Over the years, specialized cleaning and removal methodologies have been implemented, including ROV tooling and chemical treatment processes, to address the fouling issues unique to the region.

This presentation aims to share operational experience with the marine growth challenges in the region, existing strategies for removal, lessons learnt and future areas for improvement.

### *Marine Growth Prevention, Remediation Techniques & Developments*

*Brett Phillips - Oceaneering & Mark De Castro - TMT*

Biofouling on subsea assets presents several challenges to marine and subsea Oil & Gas operators worldwide. In Australia the effects of biofouling and calcareous deposition are regionally unique and can significantly influence the continued operation of subsea production systems, especially during intervention campaigns. Traditionally marine growth mitigation and remediation techniques have focused on marine growth covers for prevention, cleaning methods for intervention and override techniques as a final effort.

This presentation will cover some of the unique challenges faced by Australian operators, traditional prevention & remediation strategies, as well as some locally developed innovative new equipment, tooling and bespoke engineered solutions that have enabled operators to overcome marine growth & biofouling challenges in the region.

### *In-water hull cleaning with complete capture, containment and filtration*

*Peter Maidment - CleanSubsea Australia*

The build up of biofouling on ship's hulls increases drag and correspondingly increases fuel consumption and GHG emissions. Traditionally vessel hulls have been cleaned in dry dock or by divers in-water with little regard for environmental contamination, but Australian legislation does not permit this in Australia (soon to be mirrored worldwide by pending international legislation).

CleanSubSea's Envirocart system is a remotely-operated hull cleaning robot that completely captures and contains all removed marine growth without damaging the hull coating, linked to a filtration system that filters the effluent to allow clean water to be returned to the sea. In addition to addressing the marine growth removal, this process ensures the protection of marine biodiversity through removal of invasive marine species.

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|---|-----------------------------|--------------------------|--------|
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| wwNon-Members                           | \$55                        | \$65                     | \$70   |
| 5 Ticket Member Pass                    | \$130                       | \$205                    | \$230  |
| 5 Ticket Non-Member Pass                | \$230                       | \$305                    | \$330  |