

modular hydrophone triplet options for sustainable IMS hydroacoustic stations

Each of the six IMS HA hydrophone stations consists of two triplets (one north and one south triplet), except for HA01 Cape Leeuwin (Australia) which has only one triplet. The hydrophone triplets are designed for a minimum 20 year-life, with no scheduled maintenance required. In the current robust design, triplet nodes and components are linearly interconnected in such a way that the repair of any failing component necessitates the replacement of the entire triplet. The complete lack of modularity does not allow component replacement. Wet-mate connectors (WMC's), which have found widespread use in Ocean Observatories and in the Oil-and-Gas sector over the past decade, can be a game-changer: placed at strategic locations in the triplet which are accessible to a Remotely Operated Vehicle (ROV) controlled from a surface ship, WMC's can enable the targeted repair of components. Triplet design options, with varying degrees of modularity and complexity, have been examined vis-à-vis reparability, operational risk and sustainability. This down-selection process has led to the identification of a hybrid modular triplet concept which strikes a balance by maintaining the reliable deployability of the present linear system whilst enabling the targeted replacement of failed components.

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