

Concepts for the Next generation IMS Hydroacoustic stations

A study was conducted to review advances in undersea technology with an emphasis on the applicability of a modularized approach to the next generation IMS Hydroacoustic Stations. The primary objective of the study was improving station maintainability. In the past 10 to 20 years, significant technological developments in undersea connectivity have been made driven by the emergence of ocean observatories and Oil & Gas applications. These developments were considered for their suitability to the hydroacoustic component of the IMS network. The study presents different design concepts and highlights their advantages and disadvantages. The study concluded that different modular design options based on a Hub and Spoke configuration provided greater deployment flexibility, easier maintainability and a marked advantage for fault tolerance in the hydrophone triplet. Analysis of aggression scenarios identified that the overall system reliability is dominated by trunk cable aggression which could, in some instances, be improved by a configuration that implemented a cross connection between the North and South triplets of IMS's hydrophone hydroacoustic stations. Regarding underwater equipment improvements, the study noted that adoption of integrated digital hydrophones versus the current analog system would improve the signal path data quality.

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