

## Sustainment challenges and next generation opportunities for the IMS hydroacoustic network

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### 1. Comprehensive Nuclear-Test-Ban Treaty Organization

The certification of HA04, Crozet Islands, France, in 2017 marked the completion of the hydroacoustic component of the International Monitoring System (IMS) at CTBTO. All six hydrophone stations and all five T-phase stations in the IMS are now certified and operational; HA08 at Diego Garcia is the only exception as the north triplet is non-functional due to cable damage since 2014. In parallel to the IMS efforts to restore H08N, the main challenge is the sustainability of this network. The hydrophone stations are manufactured with at least a 20-year design life. As several of these stations are approaching this limit, the engineering and development efforts in IMS are focusing on the next generation cabled hydroacoustic stations that could facilitate reparability in a timely and cost effective manner. In this context, the multi-year effort on the next generation of modular design cabled hydrophone stations is on-going with the medium term goal to arrive at a modular design hydrophone mooring prototype that improves HA station sustainability, facilitates reparability through modular designs which employ wet-mateable connectors replaceable by Remotely Operated Vehicles, and makes it possible to interface with non-interfering instrumentation capable of adding to the scientific value of IMS hydroacoustic data. Recent results of these studies aiming at viable modular architectures that fulfil the technical specifications of the CTBT operational manual and satisfy the minimum 20-year system design life criteria are presented here.