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sustainment of the IMS Hydrophone Hydroacoustic Network of the CTBT

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Hydroacoustics is the only verification technology of the International Monitoring System (IMS) of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) to be fully certified. Five T-phase stations and six hydrophone-based hydroacoustic stations monitor the world oceans 24/7 for signs of nuclear explosions. Hydrophone stations comprise triplets of underwater microphones, called hydrophones, suspended hundreds of meters below the sea surface and cabled to shore with electro-optical cables, providing near real-time hydroacoustic data to the International Data Centre in Vienna, Austria. Installing the six hydrophone-based hydroacoustic stations in some of the most remote places on the planet constituted a major engineering accomplishment – sustaining or repairing them turns out to be equally, if not more, challenging.

Failure causes include natural phenomena, such as underwater landslides which damage underwater segments of cables, degradation of cable protective material in the near-shore areas, and obsolescence or malfunctioning of shore equipment. This poster summarizes the on-going sustainment projects of the IMS hydrophone hydroacoustic network through re-establishment solutions of damaged sections, risk mitigation studies and external aggression protective measures, innovative modular solutions for easy of repair of underwater components and enhanced resilience together with protective measures for onshore electronics.

Promotional text

The certification of all the IMS hydroacoustic stations constitutes a major engineering accomplishment. The sustainment of this network turns out to be equally, if not more, challenging. This poster summarizes all the on-going projects to achieve resilience in hydroacoustics.

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