A History of Verification – The International Monitoring System

As an essential part of the CTBT’s unique verification regime, the International Monitoring System (IMS) currently consists of well over 300 facilities located in diverse environments around the globe. The IMS utilizes the most modern technology available to apply four complementary verification methods: seismic, hydroacoustic, and infrasound stations monitor the earth, oceans, and the atmosphere, while radionuclide stations detect releases of radioactive particles and noble gases into the environment. The data that the monitoring systems collect are then transmitted to the International Data Centre (IDC) in Vienna where they are processed to produce products that are shared, along with the raw data, with CTBTO Member States.

In August 1997, the first IMS team met to size up the pioneering task of constructing the IMS, and assess the associated challenges. The IMS had to be built and become fully operational within a brief timeframe to ensure that the Treaty could be enforced. This tight schedule meant that many innovations were developed and incorporated into commercially available equipment, all while adhering to the CTBT’s stringent specifications. Today, the IMS is nearing completion with around 90% of its facilities established.

Time and time again, the IMS has proved its worth. The IMS detected all four announced nuclear tests of the Democratic People’s Republic of Korea (DPRK), and accurately located them at the DPRK test site. Thanks to the IDC’s automatic data analysis, Member States rapidly receive preliminary information on suspicious events. “The system as it is today has shown its effectiveness. Today (January 2016) we had the DPRK test where the seismic component of IMS lit up like a Christmas tree”, remarked David Jepsen, Coordinator of the IMS Division at the CTBTO.

Station operators across the globe are responsible for the day-to-day operation and maintenance of monitoring stations all over the planet. Through continuous human capacity building and training of operators, the IMS has been able to adhere to specifications while providing high levels of data availability. Several thousand experts from most of the organization’s 183 Member States regularly work together to maintain and improve the capabilities of the IMS, and ensure that the CTBT has a robust verification regime upon entering into force. “I want the IMS to continue benefiting from cutting edge scientific developments in all CTBT verification technologies; in this regard, I will engage vigorously with my team and with the scientific community”, said Nurcan Meral Özel, Director of the IMS Division, CTBTO.
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»The CTBT verification regime is one of the great accomplishments of the modern world. The international monitoring system is nearly complete; it is robust, it is effective, and it has contributed critical scientific data on everything from tsunami warnings to tracking radioactivity and nuclear reactor accidents.«

JOHN KERRY
68th United States Secretary of State (2014)