



Operation of International Monitoring System Network

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The IMS is a globally distributed network of monitoring facilities using sensors from four technologies: seismic, hydroacoustic, infrasound and radionuclide. It is designed to detect the seismic and acoustic waves produced by nuclear test explosions and the subsequently released radioactive isotopes. Monitoring stations transmit their data to the IDC in Vienna, Austria, over a global private network known as the GCI. Since 2013, the data availability (DA) requirements for IMS stations account for quality of the data, meaning that in calculation of data availability data should be exclude if:

- there is no input from sensor (SHI technology);
- the signal consists of constant values (SHI technology);

Even more strict are requirements for the DA of the radionuclide (particulate and noble gas) stations – received data have to be analyzed, reviewed and categorized by IDC analysts.

In order to satisfy the strict data and network availability requirements of the IMS Network, the operation of the facilities and the GCI are managed by IDC Operations. Operations has following main functions:

- to ensure proper operation and functioning of the stations;
- to ensure proper operation and functioning of the GCI;
- to ensure efficient management of the stations in IDC;
- to provide network oversight and incident management.

At the core of the IMS Network operations are a series of tools for: monitoring the stations' state of health and data quality, troubleshooting incidents, communicating with internal and external stakeholders, and reporting.

The new requirements for data availability increased the importance of the raw data quality monitoring. This task is addressed by development of additional tools for easy and fast identifying problems in data acquisition, regular activities to check compliance of the station parameters with acquired data by scheduled calibration of the seismic network, review of the samples by certified radionuclide laboratories.

The DA for the networks of different technologies in 2014 is: Primary seismic (PS) network – 95.70%, Infrasound network (IS) – 97.68%, Hydroacoustic network (HA) – 88.78%, Auxiliary Seismic – 86.07%; Radionuclide Particulate – 83.01% and Radionuclide Noble Gas -75.06%.

IDC's strategy for further improving operations and management of the stations and meeting DA requirements is:

- further development of tools and procedures to effectively identify and support troubleshooting of problems by the Station Operators;
- effective support to the station operators to develop tailored Operation and Maintenance plans for their stations;
- focus on early identification of the raw data quality problems at the station in order to support timely resolution;
- extensive training programme for station operators (joined effort of IDC and IMS).