

Upgrade of the infrasound test site at the Conrad Observatory

The infrasound test facility at the Conrad Observatory has been upgraded to meet the rising demands of the infrasound equipment testing (sensors, digitizers and noise reducing systems). The facility upgrade was completed in the fall of 2011 and is ready for the 2012 program of work.

The infrasound and seismic test site at the Conrad Observatory in Trafelberg, Lower Austria, was established by the International Monitoring System (IMS) of the Preparatory Commission of the Comprehensive Nuclear Test-Ban Treaty Organization (CTBTO) in co-operation with Central Institute for Meteorology and Geodynamics (ZAMG) in 2008-2010 and officially opened in June 2010.

The site consists of four individual array elements, different in the design and size, 18- and 36-m diameter. The electronic equipment is placed in two surface equipment vaults, situated near the centers of the pipe arrays. The test site gives a unique opportunity for simultaneous evaluation of different types of the wind-noise-reducing systems.

The Infrasound Test Facility is operational since 2010. During the first year of operations a number of important tests have been performed at the facility, including:

- Comparison of performance of close-pack and standard pipe arrays;
- Field test of the PTS portable array;
- Joint experiment for system response study with Penn State University, USA.

However, the increasing demand for such tests at the Infrasound Facility resulted in infrastructure improvement. To comply with increased requirements, an upgrade of the facility was implemented in 2011.

The upgrade included repair and enhancement of the equipment vaults and enhancement of the installed pipe arrays. The polycarbonate lids were replaced by new aluminium lids, as shown in the Figure 1.

The enhancement of the site tests ability inside the equipment vaults included manufacturing and installation of two interconnection signal and power switchboards per vault, equipment shelves and additional GPS cables entrances, as well as, installation of three additional acoustic inputs in each vault. The new set-up



Figure 1: Enhancement of the equipment vaults:
A: Signal & power switch boards; B: Equipment shelf; C: Acoustic inputs; D: GPS cables entrance.

of the equipment vaults significantly improved the testing ability of the site, and allows simultaneous field testing in each vault of multiple digitizers and infrasound sensors, connected to five wind noise reducing systems (two permanent and three temporary).

The implemented improvement of the four existing pipe arrays included removal of gravel from inlet ports, installation of full-bore valves at each inlet port of the pipe arrays, as well as at each outgoing pipe at the summing manifolds and installation of acoustic outputs at each summing manifold

The introduced changes at the pipe arrays allows disconnection of any part of the pipe array, from a single inlet port to complete array, and possibility to test performance of each part of the pipe arrays separately.

The implemented changes significantly improve the ability of the Conrad Infrasound Test Facility and offer a unique possibility of the in-situ testing of wide range of infrasound equipment and systems in the vicinity of the CTBTO headquarters.

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