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The National Data Centres Preparedness Exercises (NPE) – Independent performance assessment by simulated CTBT violation scenarios

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The Comprehensive Nuclear Test Ban Treaty (CTBT) was opened for signature on 24 September 1996. The technical preparations for monitoring CTBT compliance are moving ahead rapidly and many efforts have been made since then to establish the verification system. In that regard the two underground nuclear explosions conducted by the Democratic Peoples Republic of Korea 2006 and 2009 were the first real performance tests of the system.

In the light of these events NDCs realized the need in getting more familiar with the verification regime details. The idea of an independent annual exercise to evaluate the processing and analysis procedures applied at the National Data Centres (NDC) of the CTBT was born at the NDC Evaluation Workshop in Kiev, Ukraine, 2006. The exercises should simulate a fictitious violation of the CTBT and all NDCs are invited to clarify the nature of the selected event. This exercise should help to evaluate the effectiveness of procedures applied at NDCs, as well as the quality, completeness, and usefulness of IDC products. Moreover, the National Data Preparedness Exercise (NPE) is a measure for the readiness of the NDCs to fulfill their duties in regard of the CTBT verification, the treaty compliance based judgments about the nature of events as natural or artificial and chemical or nuclear, respectively. NPEs proved to be an efficient indicative tool for testing the performance of the verification system and its elements.

The NPEs were organized and coordinated at the German NDC on behalf of the remaining NDCs and with support from the Austrian NDC and the CTBTO. At the twenty-eighth session of Working Group B in 2007, details of these annual exercises were described by eight countries in a working paper.

In 2007 and 2008 the exercise were focused on seismic waveform data analysis. Since 2009 the analysis of infrasound data was included and additional attention was attached to the radionuclide component. In 2010 a realistic noble gas release scenario was selected as the trigger event which could be expected after an underground nuclear test. The epicenter location of an event from the Reviewed Event Bulletin (REB), unknown for participants of the exercise, was selected as the source of the noble gas release.

The idea of the NPE, results and conclusions of the exercises with details of the various scenarios will be presented.