



## **NUCLEAR EXPLOSIONS CONDUCTED AT ASIAN TEST SITES BY DATA OF KAZAKHSTAN MONITORING NETWORK**

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Since 1994 the IGR RK monitoring network consisted of 4 small aperture, one medium and one large aperture seismic arrays, 7 three-component stations and 2 infrasound arrays has been operating successfully on the territory of Kazakhstan. Owing to good stations location from geological view and characteristics of seismic noise, well considered arrays configuration, most stations positioning in boreholes, integration of broadband and short-period instruments all system stations are high-sensitive to regional and teleseismic events.

The Asian Test Sites (Lop Nor, Chagay and Pokharan) are located at regional distances from the stations of Kazakhstan monitoring network. The comparative analysis of the wave pattern of underground nuclear explosions conducted at Lop Nor Test Site in 1994 – 1996, and at Pokharan and Chagay Test Sites in 1998 was conducted. The wave pattern of nuclear explosions records was compared with seismograms of tectonic earthquakes from the Test Sites regions and adjacent territories. Spectral relations of main regional phases of UNE and earthquakes for the IGR network stations were investigated.

Despite the fact that all IGR RK stations were located at teleseismic distances from North Korean Test Site Punggyeri (distance range is 3725-5350 km) all 3 North-Korean nuclear tests (10.6.2006, 05.25.2009, 02.12.2013) were recorded by the stations. The stations data were used by different seismological agencies to determine the explosions parameters. Despite large epicentral distances and stations location within narrow azimuth to source range, the Kazakhstan Data Center managed to determine quite accurately the explosions parameters in operative mode. Comparative analysis of waveforms from 3 North Korean tests was conducted by data of Kazakhstan seismic stations.