DATABASES, ARCHIVES AND INFORMATION STORAGE SYSTEMS CREATED IN CENTER FOR ACQUISITION AND PROCESSING OF THE SPECIAL SEISMIC INFORMATION IGR NNC RK

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The main tasks of Kazakhstan National Data Center of IGR NNC RK are: acquisition, processing and storage of data of NNC RK seismic network, data exchange with other International and National Data Centers, joint scientific-research works with other Organizations. Data represents both uninterpreted seismic records arriving to the Center in real time via satellite channels and processing results. Part of seismic information arrives to the Center with delay on different carriers: CD, magnetic tapes, via Internet channels and e-mail. The following archives and databases are created in the Center:

▪ *Database of origin data*: SEED-archives on CD. In the Center SEED-archives are generated by three data groups: permanent NNC RK network (only three-component stations), SEED-archives on Kurchatov "Cross" array and large aperture seismic "Necklace" array. SEED-archives are regularly sent to IRIS/DMC where they are used by scientists of different countries in their scientific works.

▪ *Database of nuclear explosions records*. Several types of records on nuclear explosions are stored:

1. Digital records of permanent NNC RK stations. As NNC RK stations started operation only in 1994, the amount of recorded nuclear tests is not large. These are five explosions at LopNor Test Site in China, the last one was conducted in July, 1996; six explosions at Myuryuroa Test Site conducted by France, and explosions in May 1998 in India and Pakistan.

2. Digitized analog seismic records from various archives: stations assigned to NNC RK by the Special Control Service of the former USSR, located at the territory of Kazakhstan; Complex Seismological Expedition IPE AS USSR; Institute of Seismology and the Test-Methodical Expedition MES RK.

▪ *Database of calibration explosions records* at former Semipalatinsk Test Site. Database is stored in CSS-3.0 format.

▪*Database of ground-truth events*. This database is created within works on calibration of seismic stations included into IMS system. It contains earthquakes with hypocenters identified with high accuracy on local network, and explosions with known coordinates and time. All information is stored in CSS 3.0 format.

▪ *"Seismo" database*. This database was created for the purpose of integration of separate databases on different processing types in CSS3.0 format into single database.
«Seismo» is the database that stores processing results of seismic data and where they are rebooted systematically. Results of seismic data processing are divided depending on operative levels. National Data Center has several main types of seismic data processing:

1. Automatic seismological bulletin: is created using data of IGR NNC RK stations network only from 2001. Bulletin is created in real time with delay about 15 minutes. More than 100 events could be included every day.

2. Interactive seismological bulletin is also created on the basis of IGR NNC RK stations network beginning from the second half of 2002. About 20-50 events are processed every day.

3. Joint operative bulletin is created using data of two seismic networks: SEME MES and IGR NNC RK. It is created in Data Center of IGR NNC RK with two days delay. This bulletin contains more accurate location of events near Almaty.

In addition, any data in CSS 3.0 format could be included in database. For example, database of ground-truth events or world catalogues of events. "Seismo" database is a relational database operating on the server of Interbase of Borland Company. Access to data is implemented by client software which functions are replenished permanently. Advantages of such data organization are the following:

- automatic operative filling of data base with new data;
- storage of large amount of information and quick search of data;
- easy management of backup copies;
- Concurrent use of database by several users

At the present time "Seismo" database contains information of more than 7000 events and is replenished permanently.

▪ Database of geological and tectonic information: is created according to the region of each seismic array or station installation, contains information on geology and tectonics of area under construction, geological sections for each borehole where seismic instruments are installed.

In addition, to control data arrival "OControl" database was created. It contains detailed information about quality and amount of information arriving to Data Center via satellite channels. The results of various process stages systematically replenish the Data Center website www.kndc.kz. Website is open for all interested users from different countries. Thus, owing to created archiving system, Kazakhstan data of NNC RK stations are used worldwide and in Kazakhstan to solve different tasks.