



Local network deployed around the Kozloduy NPP - a useful tool for seismological monitoring

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Radiation risks may transcend national borders, and international cooperation serves to promote and enhance safety globally by exchanging experience and by improving capabilities to control hazards, to prevent accidents, to respond to emergencies and to mitigate any harmful consequences. International safety standards provide support for states in meeting their obligations under general principles of international law, such as those relating to environmental protection. Seismic safety is a key element of NPP safe operation. Safety and security measures have in common the aim of protecting human life and health and the environment.

The Kozloduy NPP site is located in the stable part of the Moesian platform (area of about 50000 km²). From seismological point of view the Moesian platform is the most quite area on the territory of Bulgaria. There are neither historical nor instrumental earthquakes with $M > 4.5$ occurred within the platform. The near region (area with radial extent of 30 km) of the NPP site is characterized with very low seismic activity. The strongest recorded quake is the 1987 earthquake $S=3.6$, localized 22 km northwest of the Kozloduy NPP site on the territory of Romania. In line with international practice, the geological, geophysical and seismological characteristics of the region around the site have been investigated for the purpose of evaluating the seismic hazards at the NPP site.

A local network (LSN) of sensitive seismographs having a recording capability for micro-earthquakes have been installed around Kozloduy NPP and operated since 1997. The operation and data processing, data interpretation, and reporting of the local micro-earthquake network are linked to the national seismic network (NOTSSI). A real-time data transfer from stations to National Data Center (in Sofia) was implemented using the VPN and MAN networks of the Bulgarian Telecommunication. Real-time and interactive data processing are performed by the Seismic Network Data Processor (SNDP) software package. Strong motion accelerographs and GPS instrumentation are installed permanently within the near region. The equipment is periodically upgraded and calibrated to provide adequate information in line with updated international operational practice.

The results of the 17 years of operation of LSN "Kozloduy" are presented in the present study. The multiple studies carried out indicate that LSN jointly with NOTSSI provide reliable registration of weak seismicity in the near (30 km) region of NPP site. Earthquakes recorded within and near the network are carefully analyzed in connection with seismotectonic studies of the near region. The seismological database acquired is homogeneous for the entire region to the extent possible or, at a minimum, is sufficiently complete for characterizing, from a seismotectonic point of view, features relevant to the site.