

Methods and Techniques of Exploration of Sites in Nuclear Power Plants (After the Example of Armenian NPP)

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Engineering and geological research of building sites for NPP conducts with following purposes:

- to determines physical and mechanical properties of rocks, forming a section under the building site;
- to receives required parameters for calculating the spectrum of site's soils;
- to determines dynamic characteristics and – through them – ground categories by seismic properties for subsequent applications during NPP site seismic microzoning.

These sorts of work conduct in Armenian Institute "Atomenergoseismicprojects CSC" in complex of geological, geophysical and seismological investigations for estimation of seismically danger at the regions and sites of Armenian NPP.

Physical and mechanical properties of rocks, forming a section under the building site of Armenian NPP, are determined on the phases of cores, extracted from boreholes of 50 m depth, drilled around the main corps of NPP. Gamma-ray and microseismic loggings are also performed in the boreholes.

Armenian NPP site seismic microzoning performs using three different methods depending on ground conditions

- seismic rigidities method - by intensity growing determination depending on grounds elastic properties (seismic waves passage speed and density) and level of subsoil waters;
- microseisms registration method;
- explosions registration method;

The standard ground categorization according to seismic properties is also established by grounds dynamic characteristics (prevalent periods). Microvibrations multiple registration methodology has been used for transference and speeds on the drilled boreholes mouths. Following results of research as a standard is selected the soil of 1-st category (basalt), which is widespread on the sites of Armenian NP