

The Development of Method of Neutron Source Detection in Soil

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ABSTRACT

In the course of development of method of neutron source detection in soil, series of experiments were carried out on an experimental installation, presenting a mock-up of a borehole. A design of detecting device and neutrons registration system are described. Soil density and its chemical composition were measured. Neutron fluxes in a borehole were measured at various mock-up configurations using various types of neutron sources. Dependence of method sensitivities from water content in soil, source-detector distance and presence of heterogeneous bodies was examined. Data obtained was verified using the PRIZMA code (Developed in RFNC-ZVNIITF) and MCNP code (Developed in LANL). Possibility of direction to a neutron source from a borehole using a collimator is shown. Guidelines of further research are discussed.