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PAPER TITLE A New method for monitoring of mixed radiation in natural
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AUTHOR(S) NAME(S) Pszona S.

SUBMITTING AUTHOR

LAST NAME PSZONA

FIRST NAME STANISLAW

TITLE Dr

AFFILIATION Soltan Institute for Nuclear Studies

STREET Swierk

FAX 48, 2, 7793481

CODE 05-400 CITY OTWOCK/Swierk

COUNTRY Poland

PRESENTING AUTHOR (IF DIFFERENT)

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ABSTRACT (See instructions overleaf)

Natural radiation environment is characterised by existence of terrestrial gamma component and cosmic mixed radiation component. The cosmic component is in fact the mixture of different types of particles whose contribution to the total absorbed dose depend on the latitude and altitude. At the sea level and at the altitudes of the passenger aircrafts, fotons, muons and neutrons have to be considered.

A new method for determination of ambient dose equivalent in natral radiation environment with the sensitivity down to single nSv is based on the use of high pressure ^3He proportional counter in a polythene moderator. The very high sensitivity, especially for monitoring of neutron component, is achieved by applying of an active spectrometry system which register the pulse height apectra from 40 mm diameter spherical ^3He proportional counter. The inherent background of this counter was determined in Low Level Laboratory at Asse salt mine. It is shown that spectral analysis of the signals from ^3He detector give not only high sensitivity with regard to ambient dose equivalent but also improves the quality of the measurements. A special instrumentation for low-level neutron monitoring is described in which a quality control method has been implemented.