

FACILITIES AND PROCEDURES FOR CALIBRATING
A SELF-FABRICATED BORON-LOADED PERSONNEL NEUTRON DOSIMETER

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ABSTRACT

The inaccuracy of general personnel neutron dosimeters and more concern about the neutron damage to humans have brought about an intensive effort in designing a new type of personnel neutron dosimeter. Facilities and procedures for calibrating a self-fabricated boron-loaded neutron dosimeter are described here. An aluminum building designed and constructed by the Institute of Nuclear Energy Research was used as a neutron calibrating room.

Cf-252 was used as a primary neutron standard source. A variety of moderators were used to change the irradiated neutron spectra for testing the energy dependence of this new dosimeter. Dose equivalent rates of various spectra were evaluated by Bonner Multisphere spectrometer. Ratios of 9" to 3" sphere from BF₃ detector were determined as the energy correction indices.

This paper also discussed the unfold spectra as the number of energy group in Bon computer code was changed. Results of field measurements in LWR by this boron-loaded dosimeter were compared to those from multisphere spectrometer.