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Title: LIGHT YIELD MEASUREMENTS OF A NE213-DETECTOR FOR 2.8-14.8 MEV NEUTRONS

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Abstract: The light yield of a 125 mm diameter NE213 detector was measured over the neutron energy ranging from 2.8 to 14.5 MeV to resolve the discrepancy between the previously reported light yield of an identical NE213 detector using a Cf-252 source [K. Gul, A.A. Naqvi and H.A. Al Juwair, Nucl. Instr. and Meth. A278 (1989) 470] and 5.5-16.5 MeV monoenergetic neutrons from the D(d, n) reaction [A. Aksoy et al., to be published]. The new light yield measurements were carried out for 3.5-6.1 MeV neutrons using an Am-241-Be neutron source while the detector's light yield for 14.8, 9.7 and 2.8 MeV neutrons were measured using the T(d, n) and D(d, n) source neutrons. The light yield data measured in this experiment is consistently 2-19% lower than that of Gul et al. [Nucl. Instr. and Meth. A278 (1989) 470]. Within the experimental uncertainties, the present data agrees well with that of Aksoy et al. [to be published] and with that of Verbinski et al. [V.V. Verbinski, W.R. Burrus, TA Love, W. Zobel and N.W. Hill, Nucl. Instr. and Meth. 65 (1968) 8]. These measurements have shown that the light yield of the NE213 detectors is smaller than that reported by Gul et al. The reason for this discrepancy might be the uncertainty involved in the technique used by Gul et al. to determine the proton energy.