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PAPER TITLE Comparative study of different LiF TLDs for neutron dosimetry

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ABSTRACT (See instructions overleaf)

Intensive investigations of new materials for thermoluminescent dosimetry (especially of $^6\text{LiF}/^7\text{LiF-Mg,Cu,P}$) are now performing. Therefore the comparison of dosimetric characteristics for different TLDs on the basis of LiF has a great interest. The comparison of russian TLDs: TLD-6011/7011 (Moscow State University-"Practica", Moscow), DTG-4-6/7 (Institute of Geochemistry, Irkutsk) with TLD-600/700 ("Harshaw") is presented. The comparison has been performed on the basis of neutron dose equivalent measurements of these TLDs in IHEP neutron reference fields. The absolute sensitivity and the ratio of neutron and gamma sensitivities were estimated from the experimental data. The neutron dose equivalent has obtained by a passive monitor which consist of the LiF pairs in 25,4 cm diameter spherical polyethylene moderator. The comparison shows that photon sensitivity of new TLD-6011 is higher than one of TLD-600 by factor 50. The neutron sensitivity of TLD-6011 is higher than one for TLD-600 in 9 times and than for DTG-4-6 by a factor of 4. The neutron-to-photon response ratio for the TLD-600 is about two times higher than that for TLD-6011 and DTG-4-6. The analysis of TLD perspective for area, environmental and individual monitoring given taking into account the new ICRP recommendation is presented.