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LAWRENCE LIVERMORE LABORATORY

University of California/Livermore, California

DT FUSION NEUTRON IRRADIATION OF SLL
SYNTHETIC-FUSED QUARTZ

Unclassified

Susan C. MacLean

October 18, 1974

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DT Fusion Neutron Irradiation of SLL
Synthetic-Fused Quartz*

by

Susan C. MacLean

October 21, 1974

Dr. Manfred Kaminsky of Argonne National Laboratory (ANL) scheduled a particle release experiment at the LLL Rotating Target Neutron Source (RTNS) in October, 1974. He agreed to have Dr. Peter Mattern of Sandia Livermore Laboratory (SLL) include synthetic-fused quartz (SiO_2) samples during the irradiation. The SiO_2 samples and four niobium dosimetry foils were arranged around the front flange of Dr. Kaminsky's apparatus.

The irradiation was performed by the LLL E Division Accelerator Staff during the period October 2 to 4, 1974. The neutron production was monitored continuously with a proton recoil counter and recorded each hour. The dose record is attached. Total beam-on time was 40.0 hours.

The niobium dosimetry foils were stored for a few days before they were delivered to the LLL Radiochemistry Division where Ruth Anderson carried out the gamma ray counting. The average fluence on each dosimetry foil was computed using the method described in UCRL-51393, Rev. 1. The results were as follows:

<u>Dosimetry Foil Number</u>	<u>Average Fluence (n/cm^2)</u>
Nb-PLM1	5.84×10^{14}
Nb-PLM2	4.36×10^{14}
Nb-PLM3	3.04×10^{14}
Nb-PLM4	5.95×10^{14}

The estimated overall uncertainty of the results is $\pm 7.5\%$. The relative uncertainty between any two values is about $\pm 2\%$. The values given here represent average fluences over the volume of each dosimetry foil.

* Work performed under the auspices of the U.S. AEC.

KAMINSKY & MATTERN IRRADIATION OF 10/2/74-10/4/74

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