

NEUTRON SHIELDING FOR THE HIGH ENERGY EXPERIMENTAL FACILITY
OF A 500 MEV ETL ELECTRON LINAC

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The building in which a 500 MeV ETL electron linac and various experimental equipments are installed is going to be built early in 1980. The neutron dose calculation described here has been done for the shielding design of the high energy experimental facility in which about 400 MeV and 250 μ A beam is planned to be used. The two experimental rooms in the high energy experimental facility are going to be surrounded by thick concrete walls and earth. The only probable way for neutrons to emerge is the roof of 1.7 m and an auxiliary concrete block 2 m thick installed just above the target.

Fig.1 shows the calculated dose equivalent on the roof and near the facility. The calculation was done according to the Oak Ridge data for 400 MeV electrons given by Alsmiller and Barish¹⁾ and the formula for neutron sky-shine given by Rindi and Thomas²⁾. The calculated value according to PEP215 is also shown for comparison.

Fig.1 is shown in the next page. $\dot{D}(r)$ denotes the dose equivalent rate on the roof and $\dot{D}_s(r)$ the dose equivalent rate near the facility by neutron sky-shine. The dose equivalent rate calculated from the Oak Ridge data is multiplied by a factor of 1/2 to fit the experimental data of MIT.

- 1) R. G. Alsmiller, JR. and J. Barish: Particle Accelerators 5, 155 (1973)
- 2) A. Rindi and R. H. Thomas: LBL-3322 (1975)

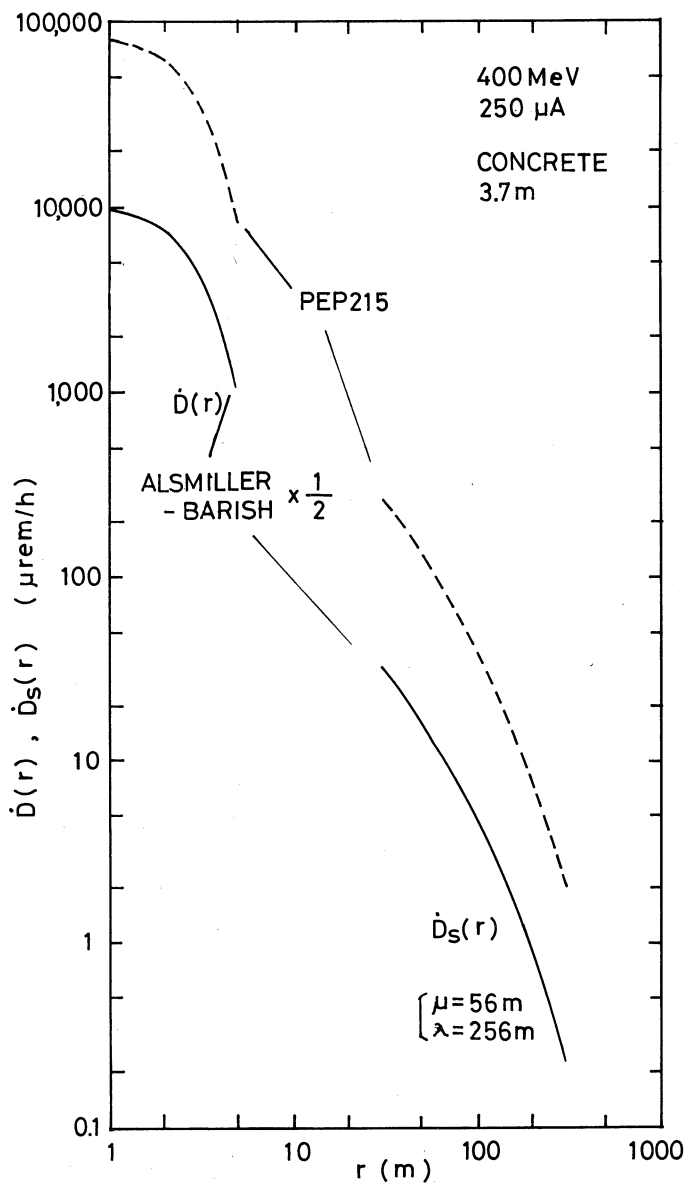


Fig.1 The calculated dose equivalent rate on the roof and near the facility.