

AUTHORIZED REFERENCE: Calculator, Physics Reference Card
Wt. No.

- 20 1. A sample of ^{90}Sr undergoes beta decay emitting radiation with energy 0.200 MeV. The activity of the sample is 272 Bq and the RBE is 0.920.
- a) Calculate the energy emitted in 1.00 minutes.

Energy emitted = 3260 MeV ans

- b) Using 3540 MeV for the total energy emitted in 1.00 minutes, calculate the dose equivalent for a 65.0 kg soldier who is exposed for 60.0 seconds and absorbs 50.0% of the emitted radiation.

$H = 4.01 \times 10^{-12} \text{ Sv}$ ans

- 10 2. Sketch and briefly describe one of the two types of fission bomb assemblies.

Gun-type assembly: two subcritical masses are quickly brought together to form one supercritical mass

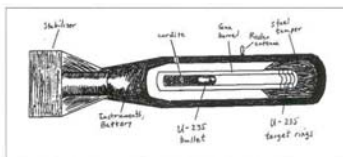


Fig. 1 Schematic of Little Boy (Adapted from Rhodes).

Implosion-type assembly: a subcritical mass is compressed quickly into a supercritical mass.

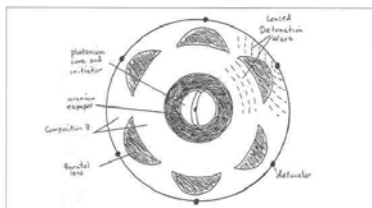


Fig. 2 Schematic of Fat Man (Adapted from Rhodes).