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Radiation Monitor Requirements for the CEBAF Experimental Areas

G. Stapleton

1. Area Monitors

The monitors required are intended for areas occupied by personnel and should operate in the dose range 0.1–1000 mrem/h. They must be able to provide dose equivalence for photon and neutron fields with adequate compensation and scaling for spectrum sources. The monitors are required to have local alarms and readout with moveable detectors that can be relocated to distances up to 100 ft from the alarm/display unit. Each monitor should be computer addressable so that all data is readily available at the MCC, both for control and record purposes.

The area monitor system currently being supplied to CEBAF provides this capability.

Price of these units are as follows:

Microprocessor, alarm, readout unit (dual channel) including photon detector
$\sim$ \$2800

NRD moderated BF_3 detector, high voltage supply and discriminator
$\sim$ \$1200

This comes to \$4000 which represents only a working figure. For this estimate we should scope a number some 10% higher $\simeq$ \$4400 per item.

The location of these instruments should be as follows:

Counting House	2
Bottom of CH stairs at each E/S labyrinth	3
Outside entrance to each truck access tunnel	3
Roof (outside) each E/S	3
Each beam dump cooling water house (photon channel) at each beam dump (neutron channel)	3
Switchyard entrance way	1
Inside each E/S (for use only when E/S occupied)	6
Total	21
Spares	2
23 at \$4400 =	\$ 100,000

2. Beam Shut-Off Monitors

The area monitors are intended only for occupied areas and radiation levels appropriate to occupied areas.

Additional beam shut-off monitors are required to terminate the electron beam if it incorrectly steered or it impinges on material other than the experiment target. These monitors are essentially rugged and rather insensitive but can reliably terminate the beam at given preset loss levels. These devices are necessary because the end station shielding is only scoped for a relatively small beam loss ($\sim$ 40 W).

3–4 monitors for each E/S
$\sim$ 12 items
$\sim$ \$36,000

3. Hand-Held Radiation Monitors

These monitors are required for area surveys in and around the end-stations. They will be kept in the counting house or in the entrance gallery underneath.

Bicron microrem	3	3600
471RF Victorem	3	6000
		9600
Grand total for monitors		\$146,000

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