

Radiation

Safety

Committee

BROOKHAVEN NATIONAL LABORATORY

AGS DEPARTMENT

Meeting Notice

TO: L. Ahrens, P. Cirnigliaro, A. Etkin, W. Glenn, M. Harrison, J. Hastings,
E. Lessard, W MacKay, S. Musolino, A. Pendzick, K. Reece, J. Sandberg,
A. Stevens, R. Thern, M. Zarcone

FROM: D. Beavis

DATE: Monday, November 2, 1998 TIME: 4:00 P.M.

PLACE: Bldg. 911B, Large Conference Room

SUBJECT: U-Line Operation



GENERAL DISCUSSION:

There are two cases of Radiation Safety that we have to deal with in the U-line due to small amount (10 feet) of shielding over a long portion of the berm.** With a properly tuned beam, and controlled number of spills, there is no problem since the losses all occur inside the block house.

However, there are faults which can exceed specified limits. At high energy, eg 24 GeV, and high intensity, eg 60TP, it is necessary to have sufficient shielding to limit the radiation dose outside a controlled area for a single pulse and then insure that the beam is not turned on. } ←

With the present shielding using the Moyer Model for an 11 foot person (a correction for sky shine), the level at 24 GeV for a solid fault with 60 TP is 6 mRem (see Fig 1 and 2) at the edge of the berm. If we move the boundary back 50 feet from the berm, the level would be 1 mRem. The 3 Chipmunks along the berm (midway between the top and edge) would have received a dose of up to 50 mRem, and tripped at a setting of 2.5 mRem. We would integrate the outputs of the Chipmunks in the MCR, and then administratively keep the beam within compliance. I will try to do these calculations more accurately using a sky-shine model. *check*

For the low energy (1.6 GeV) end of the experiments, the shielding us a 50 foot boundary back from the berm should allow for continuous running at energies of 1.6 GeV and below (See Fig 1). The Chipmunks will be active and we will integrate the dose in the MCR.] -

The actual dose should be much much less than these maximum fault limits. All tuning will be done with a single bunch extraction. Normal U-line transport allows all beam which passes through the extraction septum to go cleanly through the U-line beam magnets.

After the beam is properly tuned and focussed, with the mercury target out of the beam, there may be single spill intensities of up to 10 TP for studies of mercury target heating and pressure.

** RADIATION SAFETY COMMITTEE should consider the benefits of increasing berm thickness from 10 feet to 20 feet in the thin region. Estimated cost is <\$100K. Would it simplify RHIC as well as these AGS operations? *check*

SET UP

1. H10 Extraction and UD1-UD2 LOTO
2. PASS System Operational for U and V lines
3. Check off satisfied for V Primary Line
4. WD1-WD8 (20 Deg) LOTO
5. W, X & Y Lines secured with padlocks.

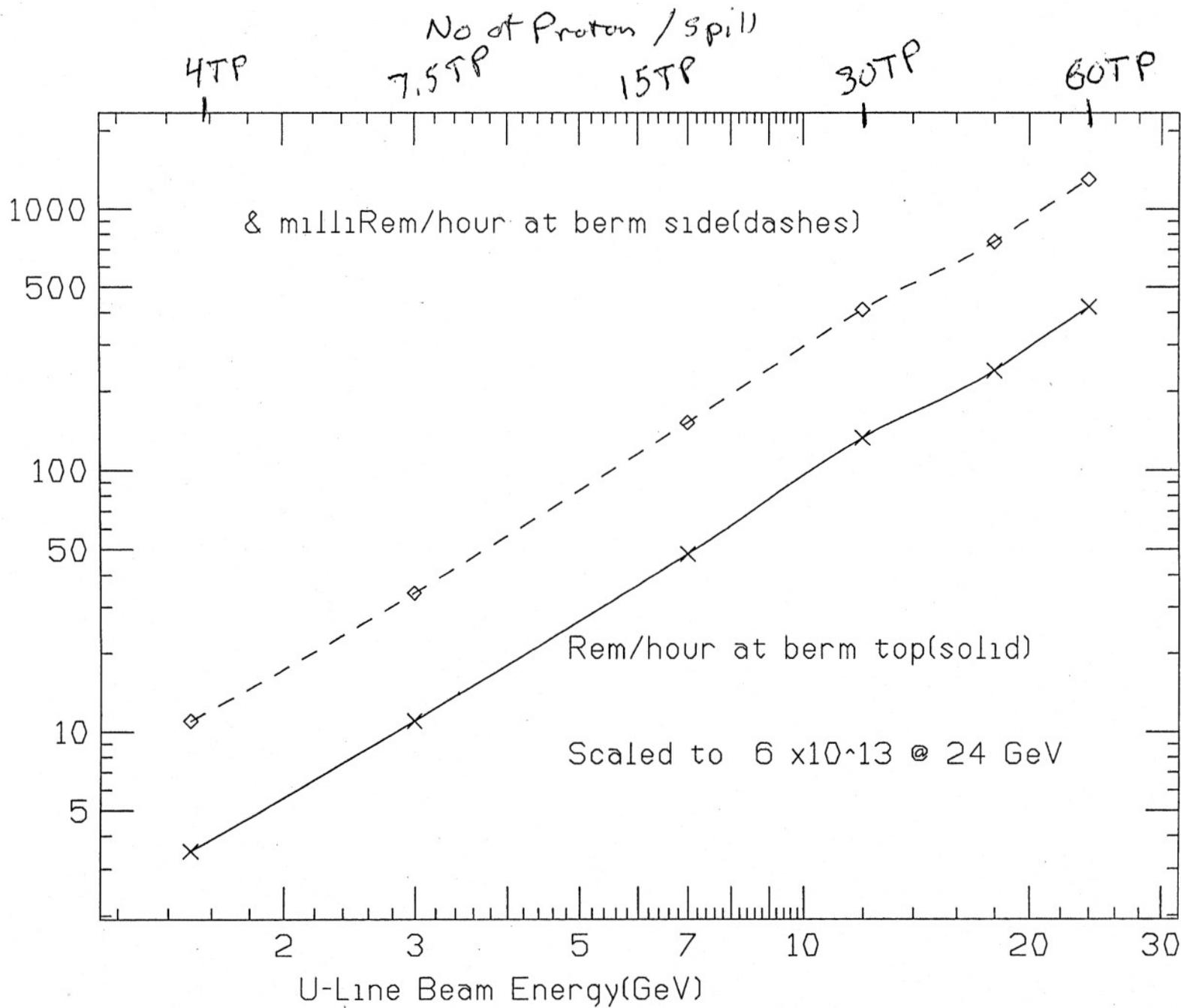
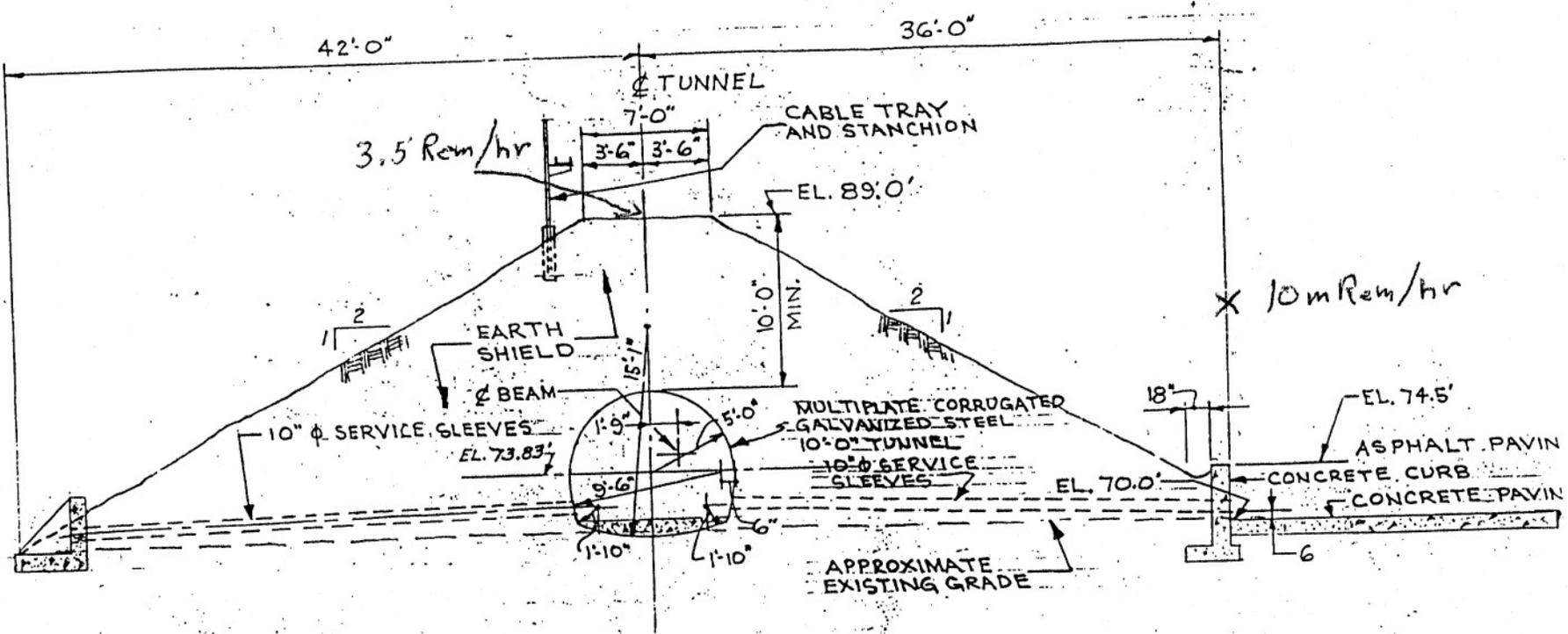


Fig 1 : Radiation Levels on Berm

design Dose out Top.
 - 1) peak.
 - 2) mrem - m²
 Sky shine



SECTION "2-2"
 SCALE 1/8" = 1'-0"

Fig 2. Berm Cross Section with 1.6 GeV Radiation Levels