

Low Intensity ($\sim 10^7$ ppp) in $^-$ -beam. Calibrate vc Counter

J. Balsamo

May 1976

Collider Accelerator Department
Brookhaven National Laboratory

U.S. Department of Energy
USDOE Office of Science (SC)

Notice: This technical note has been authored by employees of Brookhaven Science Associates, LLC under Contract No.E(30-1)-16 with the U.S. Department of Energy. The publisher by accepting the technical note for publication acknowledges that the United States Government retains a non-exclusive, paid-up, irrevocable, world-wide license to publish or reproduce the published form of this technical note, or allow others to do so, for United States Government purposes.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

NO. 74

AGS Studies Note

May 6, 1976

- 1) Participants. Balsamo, Blumberg, Gill, Glenn, Lee, Soukas, Witkover
- 2) Purpose. Obtain calibration at $\sim 5 \times 10^{11}$ ppp for lexan Cerenkov counters $\frac{1}{4}$ " thick located in air space adjacent to .004" Al window downstream of U165 box vs U165 current transformer. Then obtain a spill of $\sim 10^7$ protons/100 μ s in U-channel for Baltay-Kalbfleisch studies of narrow band neutrino horn using integrated Cerenkov counter signal.
- 3) Scheduled time. 1000-1330. Actual time. 1130-1600 (with HEP on).
- 4) Results. (A) First, orbits were taken for the E10 and H10 backleg bumps at 560 ms, just before flat top. At 1/2 of normal FEB excitation, they gave deflection of 2.5 and 2.0 cm respectively--quite reasonable results. Also orbit of L5 RBD taken at $t = 522$ ms, giving +.5 cm deflection at E10 for 1 kV on RBD supply--also quite reasonable.

(B) H10 magnet moved into operating position ≈ 2.5 in. from H10 E. Late CBM decreased from $\sim 1 \times 10^{13}$ ppp to $\sim 6 \times 10^{12}$ ppp. Then E10 moved into operating position ≈ 2 in. from E10 E. CBM decreased to $\sim 5 \times 10^{12}$ ppp. Attempt to put an injection orbit bump around E10 and H10 increased CBM to $\sim 7 \times 10^{12}$ ppp.

(C) FEB power supply trigger changed from after invert to $t = 1265$ ms, about 100 ms before end of the 700 ms SEB spill and end of flat top. No signal was observed on U15 current transformer. Faint beam spot $\sim \frac{1}{4}$ " H \times $\frac{1}{2}$ " V observed on U165 radelin flag. Cerenkov counters saturated on most sensitive scale and 1100 V on 6199 PM's. Signal ok on less sensitive scale, 700 V on photo tubes. No signal seen on U167 current transformer (U165 CT inoperative). Signal seen on U165 scintillation counter loss monitor but could not be observed when counter signal patched up to Main Control Room. Internal AGS beam current transformer showed $\sim 2\%$ loss of internal beam at FEB ejection time.

(D) From theoretical estimate of Cerenkov photons/proton, light collection efficiency, and photo cathode efficiency and photo tube gain, we extracted $\sim 10^9$ protons in $\sim 100 \mu$ s. Since there was no external beam signal in Main Control, it was not possible to optimize extraction. Flipping G10 target or pulsing L5 RBD gave no indication of increased external beam. Next time C15 beam kicker should be used.

cc: Studies Group
G. Kalbfleisch