FEB COMMISSIONING STUDIES

SCHEDULED: 0001-0800  ACTUAL: 0200-0800

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Objectives:
1. Test U16 insulated plate as external beam monitor.
2. Optimize H10 magnet position using U16 plate.
3. Test horizontal and vertical profile arrays.
4. Attempt total beam extraction by increasing capacitance (and thus duration of current pulse) in C15 kicker power supply.

Results:

The most significant result of this study is that we set up the same conditions as May 8 run and the extraction was identical. The method appears to be reproducible, stable, and simple, as advertised.

1. The U16 plate (1010" sq 45° to beam) gives 3.5 volt integrated signal on C = 0.0033 μF capacitor for ~10^{-12} ppp.

2. We moved H10 magnet radially to maximize ratio U16/C34 and find clearance of ~0.2", which implies separation between circulating and extracted beam of ~0.3" at H10. This for E10 septum at maximum kick, ~1.4 mrad. Above measurement agrees with the ~5/16" separation seen on H10 floy. It still seems premature to say that H10 septum could be made thinner — separation will be smaller with larger circulating beam intensity than the 1.5 x 10^{-12} ppp we used here.

3. Both profile arrays work fine. Spot size seemed quite reproducible on pulse-to-pulse basis.

4. Added 1 μF to the 0.2 μF of C15 capacitor bank. At 20 kV on bank, the peak current went from previous 5000 A to 8000 A and pulse duration from 2.4 μsec to ~6 μsec.

With only C15 on, essentially all circulating beam removed from ring. Extremely we see 15 bunches — mostly partially sheared. A guess would be that we extracted about 80% of A & S via 3 μsec using only one kicker.