

LINAC COMMISSIONING FORM

21-sep-2001

Major Category: DTL Tank1 + D-plate

Sub-Category: Beam Sub-category

Sub-System (e.g. beam emittance, or BPM etc.): Aperture scan/Steering

Objective: Determine the aperture of DTL Tank 1, to verify with beam that no drift tubes are misaligned etc. Also, steer the beam through the tank 1 in the center of the aperture.

Requested by: J.Galambos

Date Proposed:

Estimated Time to Complete: 6 shifts

Estimated Manpower to Complete: 12 man-shifts

Priority/Order: high/2

Basic Equipment Needs (e.g. which diagnostics): Need diagnostic plate current monitor, and DTL BPMs.

Special Equipment Needs: Pencil beam slit at the end of the MEBT, that is used in the acceptance measurement. Also additional dipole corrector windings (use quad windings ?) to provide enough bending.

Software/Application needs: Aperture scanning program that varies two correctors searching for the phase space that is transmitted. This done for horizontal and vertical directions.

Input Beam Requirements: Short pulse, so that the pencil beam aperture limit can survive, but long enough so that the RF has settled (100 μ sec)

Other prerequisites:

Correlations Sought:

Procedure: Insert a pencil beam aperture limitation in the MEBT (passes 10% of nominal beam), upstream of 2 dipole correctors. Then rework the quads associated with the dipole correctors to provide adequate bending to perform the full aperture scan. Systematically scan the two kicks to map out the region of space that is transmitted through the DTL tank (using the DTL plate CM as a diagnostic for beam transmission). Then translate the corrector strength values for transmission into a transmission phase space to verify that it is similar to the expected acceptance.

Supporting Computations: Need to convert the dipole corrector strengths that are scanned into beam phase space parameters.

Problems Expected:

Comments:

Date Completed LANL:

Date Completed ORNL:

Results:

Problems Encountered: