



FEL TEST PLAN WORKSHEET

PROGRAM DEPUTY APPROVAL

FEL Exp Coordinator Signoff: _____ Date: _____
 PI Reviewer Signoff: _____ Date: _____
 Expiration Date (max. 90 days from approval): _____
 Presentation Required? yes no

COMPLETION INFORMATION

Completion Date: _____
 Crew Chief/PI Signoff: _____
 Comments (partial completion, etc.): _____

NOTE: Information addressing the appropriate content of each of the following sections can be found in Section 2.0 of the Test Plan Instructions.

Test Plan Title: 42 MeV Dump Setup

Author(s): R. Legg

Date Submitted: Oct. 28, 1997

Revision Number: Rev. 1, (Oct 29, 1997)

Brief Purpose of Test

Setup the steering and raster magnets into the 42 MeV, high power beam dump.

Anticipated Benefits

This will allow high power beam for first light and rastered low current beam for GEN experiment.

Beam Conditions Required

Complete all of the following tables, entering a value or an X in the appropriate spaces:

Beam Type/Current (enter value)

Beam Type	Beam Current
Beam Off	
Pulsed (std. current = 1 μ A) ^a	X
CW	

a. The standard current for pulsed beam operation is 1 μ A. If your test requires pulsed beam current >1 μ A, then specify the required current and provide a brief explanation next to the specified current.

Beam Energy (select one)

Beam Off	350 keV	9 MeV	38 MeV	Energy Recovery dump
			X	

Beam Termination Point (select one)

Inj Dump	ER Dump	Straight Ahead Dump	Other (specify)
		X	

Type of Test (select one)

Invasive (disrupts beam delivery)	Non-invasive (does not disrupt beam delivery)
X	

Time Required

4 hours

Preferred Time of Test

owls

Staff Required to Execute the Test (including contact info)

Control room staff should be able to perform this procedure without assistance. If help is required, call C.L. Bohn at 7690.

Controlled Access Requirements

None

Hardware and/or Software Changes Required

NOTE: If software changes are part of the test plan, include the name of the application, the old revision level, the new revision level, and if applicable, whether or not it is possible to roll back to the old revision level (are there hardware limitations, etc.).

Setup Procedure

1. Verify the quads, MQG2F09, MQG2F08, MQG2F07, prior to the first reverse bend dipole, MDX3F01, are set for straight-ahead mode.
2. Verify the dipole, MDX3F01, is set to 0 B-dl.
3. Record the B-dl settings of corrector pair MDH2G00H & V.

MDH2G00H, G-cm	MDH2G00V, G-cm

4. Record the intercepted current on the dump. _____ uA
5. Close the laser shutter and record the measured current on the dump. If the

ratio of the No-Beam current to the Beam-On current is greater than 10%, then increase the pulse width to achieve a 10:1 signal to noise ration, but do not exceed 2 microamps average beam current.

Dump leakage Current, uA	Beam-On Dump Current, uA

Test Procedure

- Adjust corrector MDH2G00H more positive in 50 G-cm (2mm) steps until the intercepted current drops to 20% of its maximum value. Record the B-dl of the corrector.
- Adjust corrector MDH2G00H in a negative direction in 50 G-cm (2mm) steps until the intercepted current drops to 20% of its maximum value. Record the B-dl of the corrector.
- Set corrector MDH2G00H to center the laser in the dump. The B-dl will be: [(positive B-dl) - (negative B dl)]/2 G-cm.

MDH2G00H, B-dl in positive direction	MDH2G00H, B-dl in negative direction	MDH2G00H, B-dl in center position

- Repeat Steps 6, 7 and 8 for corrector MDH2G00V.

MDH2G00V, B-dl in positive direction	MDH2G00V, B-dl in negative direction	MDH2G00V, B-dl in center position

- Insert OTR ITV2G00. Record where the spot is on the viewer and its size (sigma) retract viewer.

Beam centroid position in Y, mm	Beam Sigma Y, mm	Beam centroid position in X, mm	Beam Sigma Y, mm

- Energize corrector MAZ2G00H to 1 amp RMS at its nominal frequency (60 Hz).
- Insert the OTR ITV2G00. Verify the spot is a horizontal stripe. (If not, call AES?) Record the length of the stripe on the OTR. The width of the stripe on the dump face will be 2.75 times the size at the viewer. Adjust the RMS current

of the raster corrector until the length of the stripe on the OTR is 2.55 mm greater than the size of the spot recorded in step 10.

8. Repeat Steps 11 & 12 for corrector MAZ2G00V.
9. Insert Viewer ITV2G00 and verify that the square image of the beam is still centered at the same location recorded in Step 10, to er the beam in the dump according to Steps 6, 7, 8 and 9 using the corrector pair MDH2G00V & H.
10. Unmask the raster magnet FSD inputs. If the raster is being used for the first time, set the comparater trip levels on the fast raster power supplies.
11. Shut the raster off, and verify that the FSD trips and shuts off the beam.

Backout Procedure

- 1.

Test Results

Verify that the raster produces a rectangular spot on the viewer.

Verify that the raster power supplies pull the FSD line when deenergized.