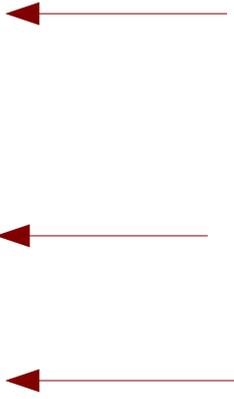


Pre-injector Upgrade Updates (18 Aug – 01 Sep 2010)

C.Y. Tan
01 Aug 2010

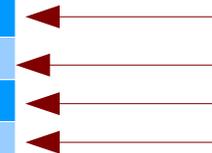
Solenoid Parameters

Parameter	Unit	Value
Solenoid peak field	T	0.45
Integral (Bz^2)dz	T ² -m	0.0154
Current	A	500
Number of turns		78
Ampere-turns	kA	39
Inductance	mH	3.7
Conductor	mm	10.4 x 10.4, dia. 5.82
Voltage	V	7.5
Power loss	kW	3.75
Water pressure drop	MPa	0.5
Number of water circuits		1
Water flow	l/min	2.5
Water temperature rise	°C	22

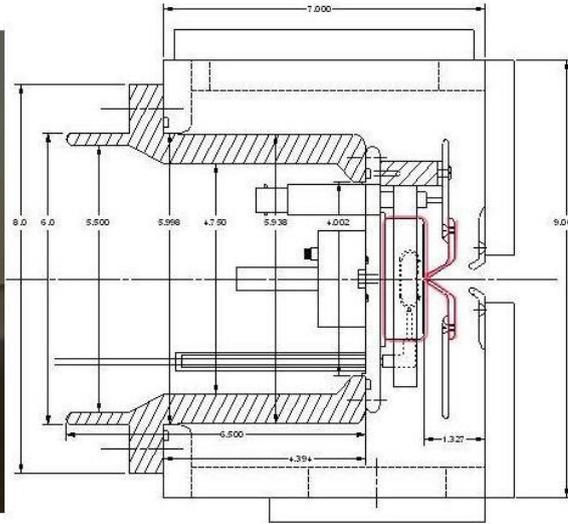
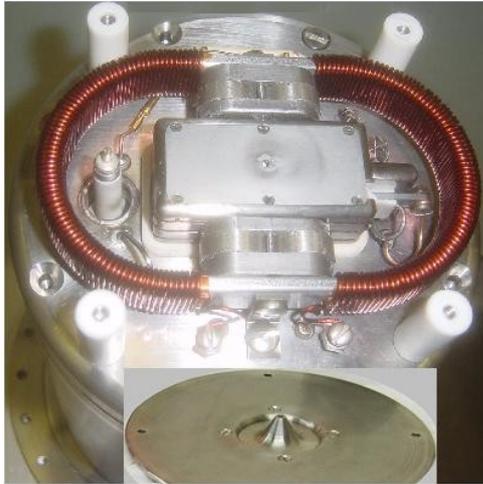


Quadrupole/Dipole Parameters

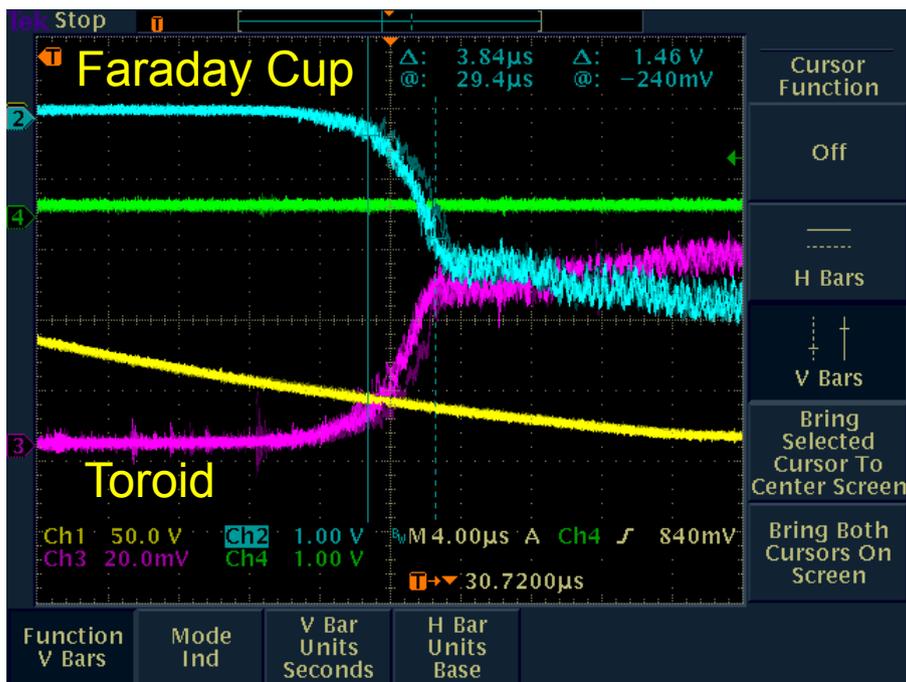
Parameter	Units	Value
Quadrupole gradient	T/m	39.25; 31.11;16.85
Pole tip radius	mm	20
Quadrupole effective length	mm	45
Quadrupole integrated gradient	T	1.77; 1.4; 0.76
Dipole corrector integrated field	T-m	0.006
Copper conductor dimensions	mm	5.0 x 5.0, ø3.0
Copper area	mm ²	17.64
Quadrupole number of coil turns		4
Dipole number of turns		2
Quadrupole peak current at 1.77 T int. gradient	A	650
Dipole peak current at 0.006 T-m int. field	A	650
Current pulse form		60 Hz half sine wave
Repetition rate	Hz	15
R.M.S. current factor		0.0884
Quadrupole and dipole r.m.s. current	A	57.5
Current density	A/mm ²	3.25
Quadrupole and Dipole inductances	μH	83; 2.3
Quadrupole and Dipole DC resistances	Ω	0.7; 0.13
Quadrupole and Dipole Inductive voltages	V	20.3; 0.6
Quadrupole and Dipole power losses	kW	2.5; 0.5
Number of water circuits		2
Water pressure drop	atm	5.0
Water flow	l/min	3.0
Water temperature rise	°C	14



Source Status



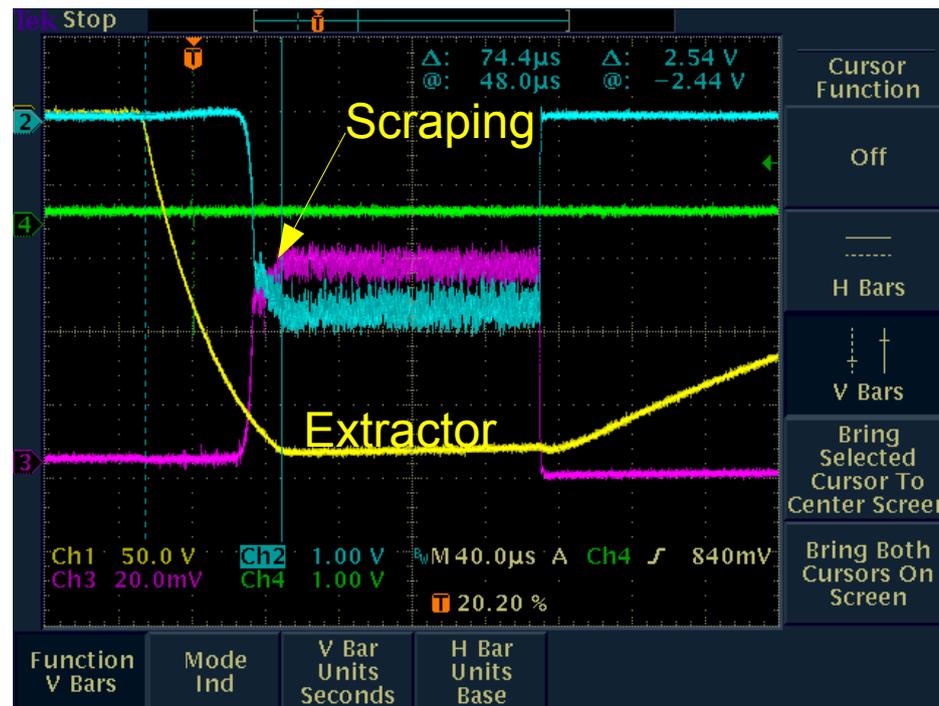
Device	Status	Comments
Source	Extracting beam.	Conditioning, presently at ~30kV, short pulse.
Pulser	35kV pulsed.	As of 10 Aug 2010. Safety OK



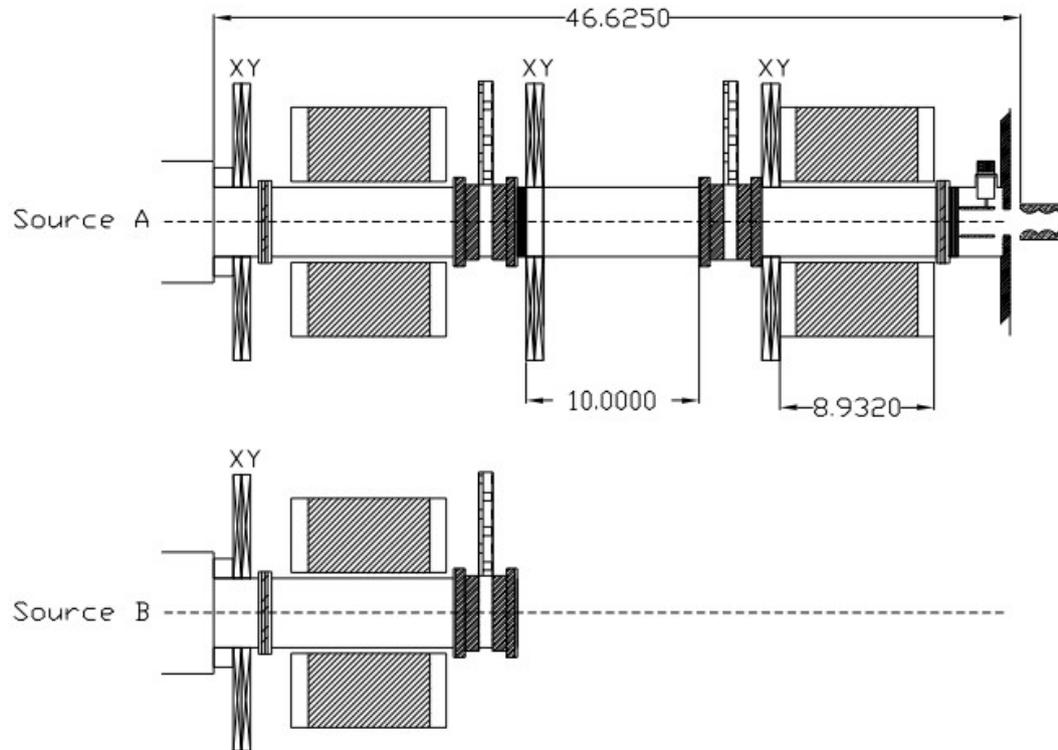
Rising edge ~4 to 5 us.

Falling edge ~0.5 us

26kV extraction.
 ~60mA beam

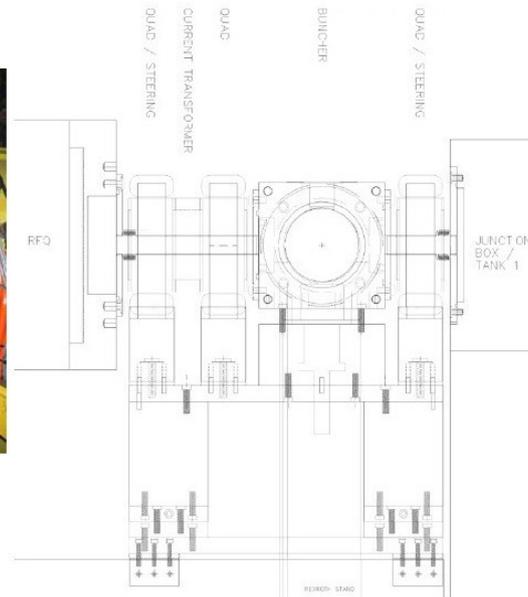
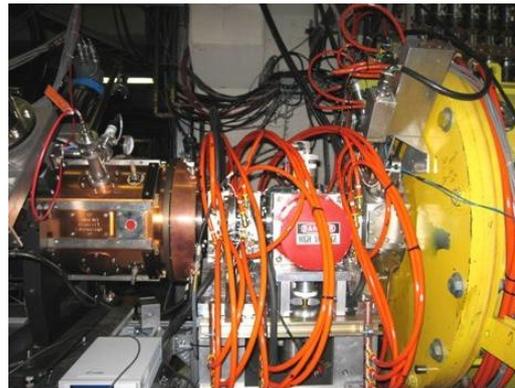


LEBT Status



Device	Status	Comments
Power for solenoids		Off the shelf supplies (500A)
Correctors	Bdl=186.5 gauss inches	Vendor sought
Einzel Lens		Beam shot at it at >35kV. No sparking
Pulser for Einzel	To be designed	Build with thyratrons for test.
Solenoids		PO done. Expect 1 st solenoid end of year.
Toroid	before sol 2	Cannot be inside tank

MEBT Status



Device	Status	Comments
Quads	Design in progress. Includes dipole corrector in quad.	Question as to whether sextupole component will be a problem.
Buncher	Tests complete	\$23k
Power for quads	Must have specs ok from (TD)	Use linac quad supplies?
Power for buncher		Use present buncher supply in the line.
Connection to Tank	Remove large flange of Tank1	

RFQ Status

- Coax cables need to be ordered for PA to RFQ.
- PA being assembled.
- Schempp (25 Aug 2010)
 - Parts are being procured.
 - Rectangular box rather than round tube because it's a better design.

Test Stand

- Room has been cleaned up.
 - After beam line layout (progress?)
 - Water – Bob Slazak
 - Electrical – Jim Ranson
- Need to test LEBT before RFQ connection
 - Wires, toroids at the end of the LEBT, same position as the RFQ.

Safety

- When can the beam line layout in test area be done?

Controls

- Mike Kucera will need to be involved.

RFQ reminders

- Schempp is vendor
 - Make sure that the vanes are cleaned! See ISIS email.
 - Some cleaning details supplied by ISIS.
 - Review and verify on site mechanical design and construction (already in contract).