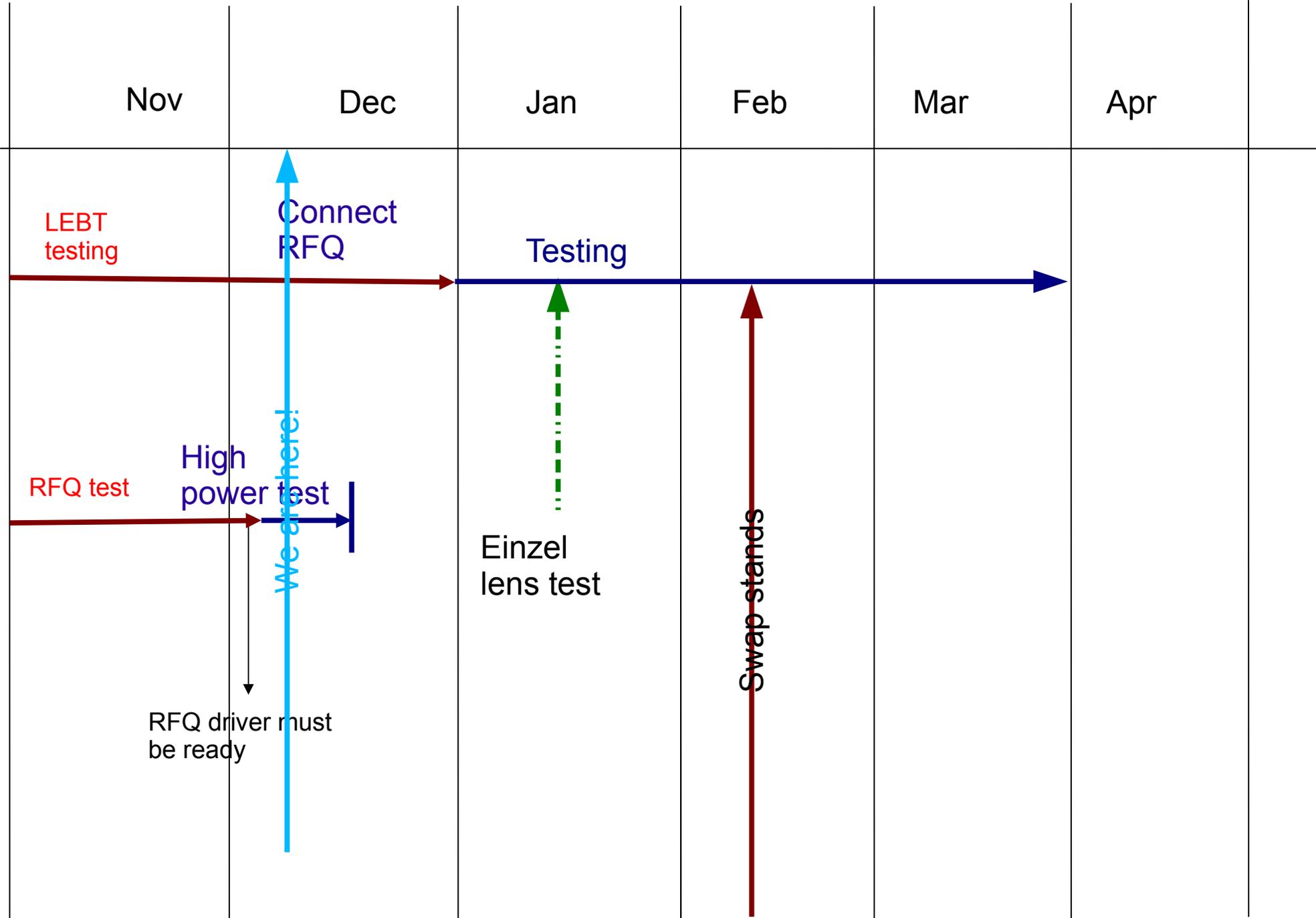


Pre-injector Upgrade Updates (23 Nov 2011 – 07 Dec 2011)

C.Y. Tan
07 Dec 2011



Nov

Dec

Jan

Feb

Mar

Apr

LEBT testing

Connect RFQ

Testing

RFQ test

High power test

We are here!

RFQ driver must be ready

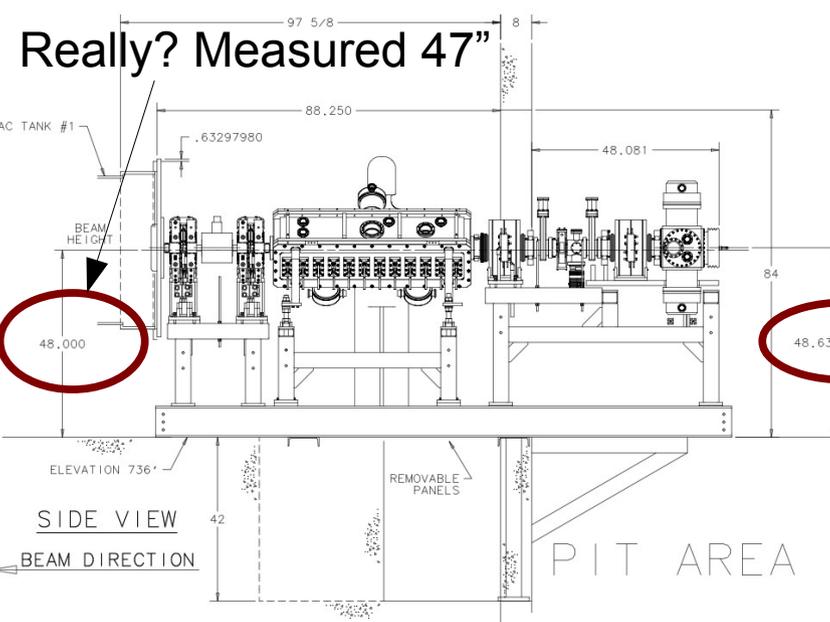
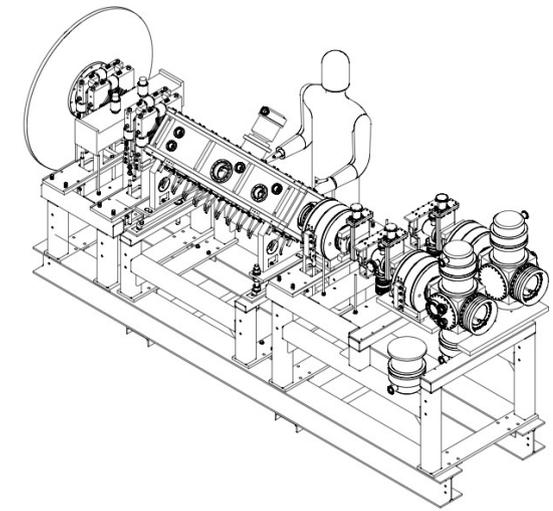
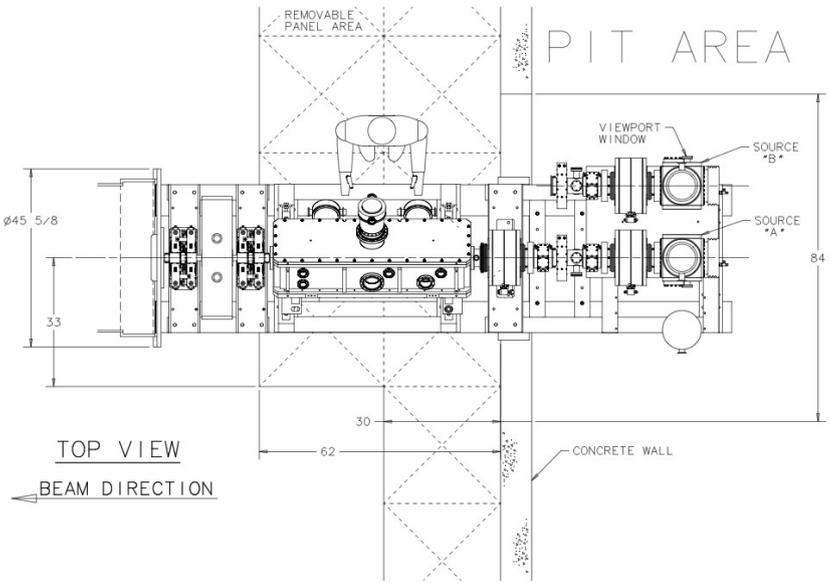
Einzel lens test

Swap stands

Latest

- Source @ 35 keV (01 Dec 2011)
 - 80 mA @ upstream solenoid
 - 60 mA @ downstream solenoid
- RFQ conditioning with high power started (02 Dec 2011)
 - 1 Hz Conditioning complete on 05 Dec
- LEPT correctors powered (06 Dec)
- Vacuum
 - LEPT vacuum is what is expected $> 1e-6$, $< 1e-5$.
BNL did NOT use Xe prior to cryo pumping.

REV	DESCRIPTION	DRAWN	DATE
		APPROVED	DATE



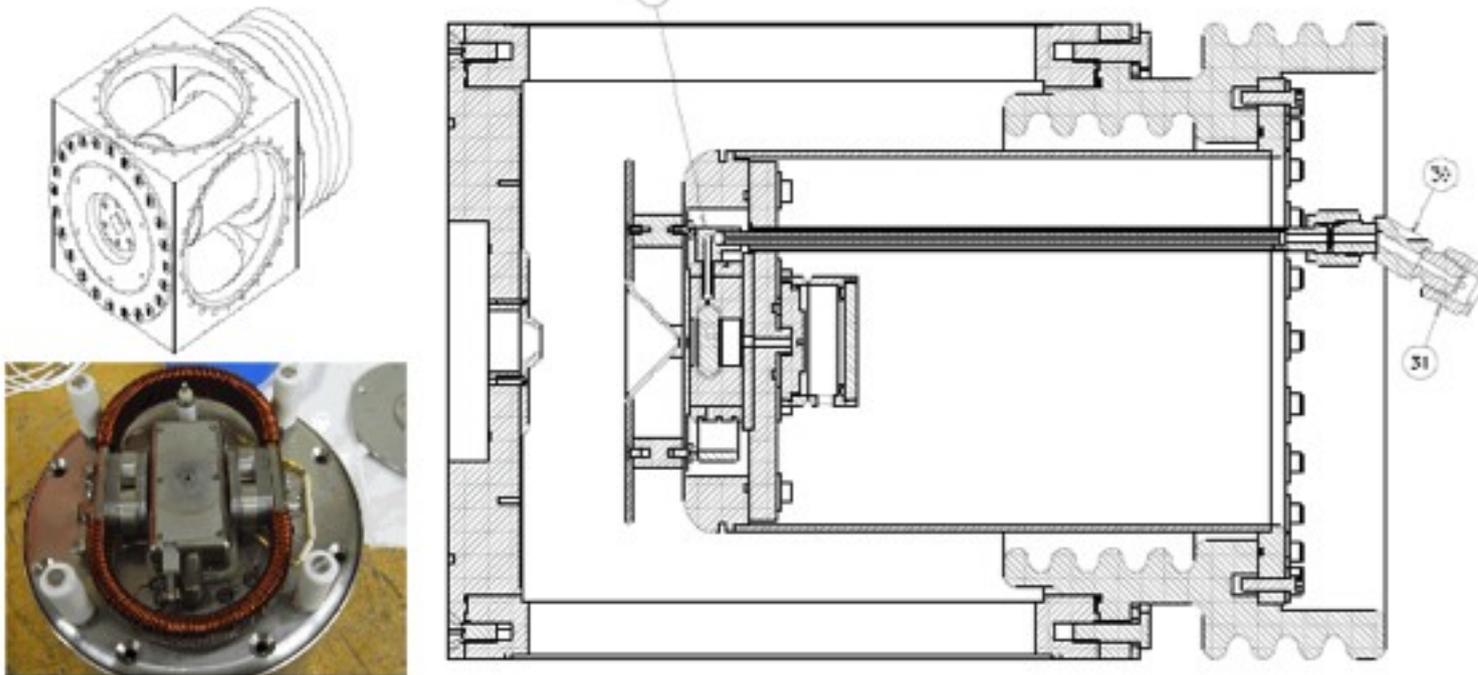
Really? Measured 47"

If we use 8" I beam, we will be ≥ 47.5 " high

PREACCELERATOR
PRELIMINARY
LAYOUT
APRIL 27, 2011

UNLESS OTHERWISE SPECIFIED			ORIGINATOR
+	+	+	DRAWN
			CHECKED
			APPROVED
1. BREAK ALL SHARP EDGES MAX.			USED ON
2. DO NOT SCALE DRAWING.			
3. DIMENSIONS BASED UPON ASME Y14.5M-1994			
4. MKV, ALL MKV SURFACES			MATERIAL
5. DRAWING UNITS: U.S. INCH			
FERMI NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY			
SCALE	DRAWING NUMBER	SHEET	REV
		1 OF 1	
CREATED WITH :	GROUP :		

Source Status



Device	Status	Comments
Added turbo to roughing pump		Did not improve vacuum
Source	35 kV extraction	80mA at upstream toroid. 60 mA at downstream toroid

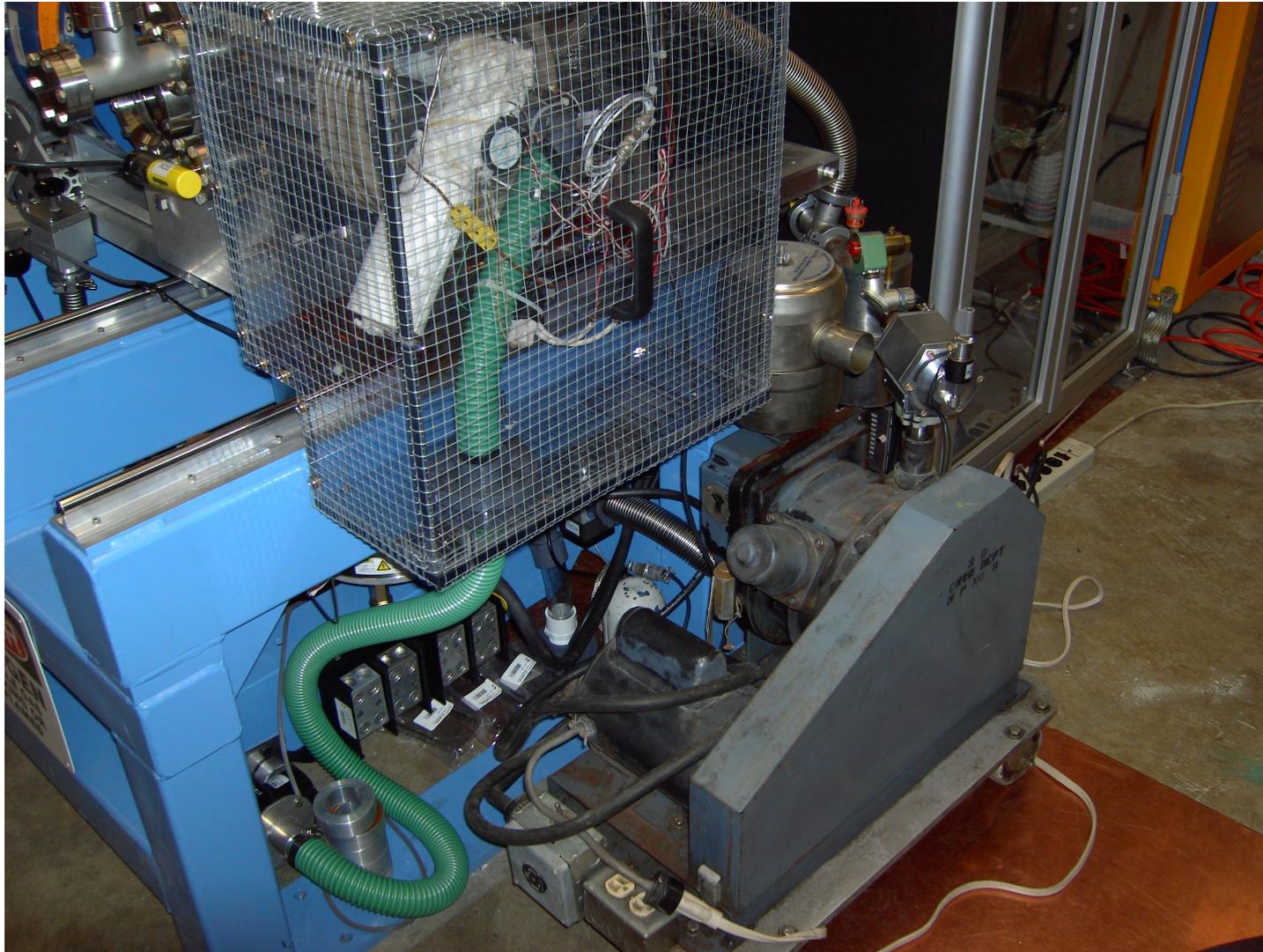
35 keV extraction!



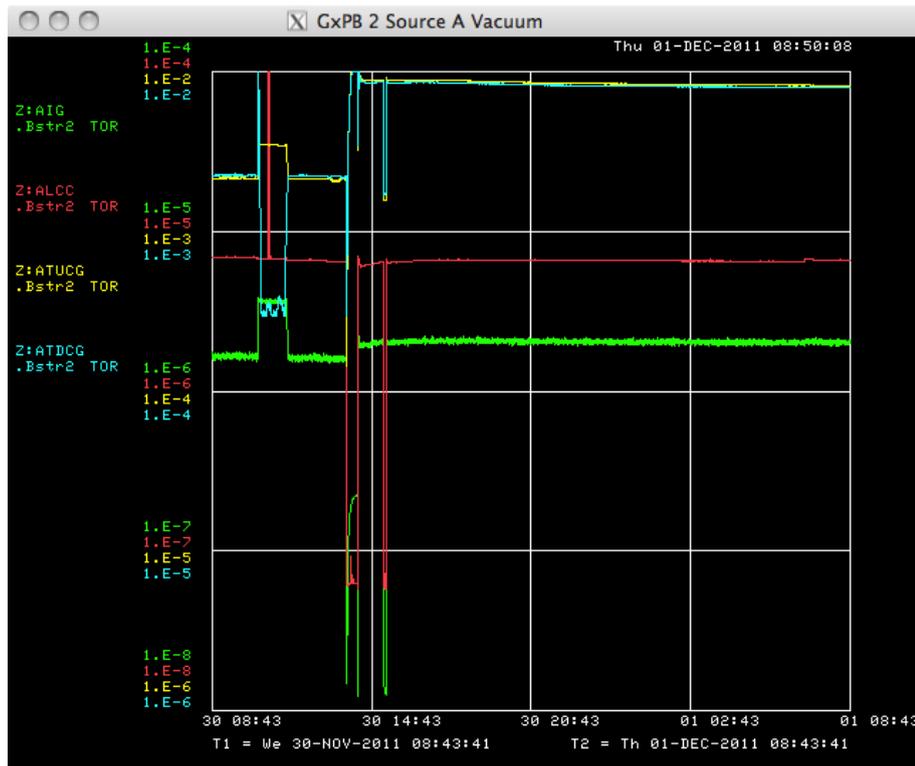
Green upstream toroid (3x39.2 mA) = 80 mA.

Magenta is downstream solenoid 60mA.

Rotary Vane Pump

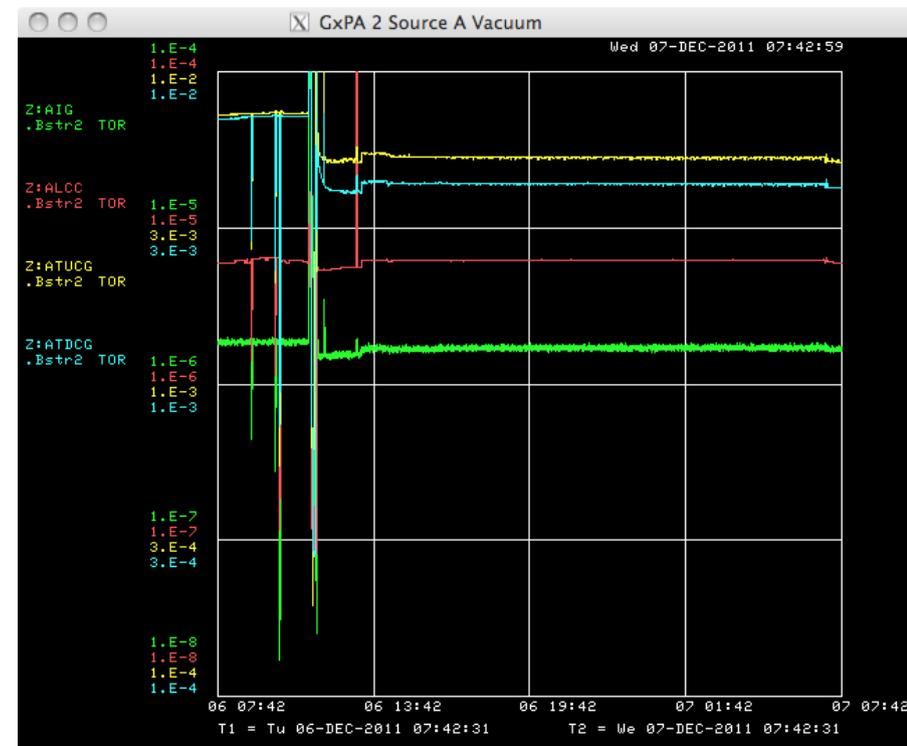


Swapped scroll pumps for rotary vane in source. No change in LEBT vacuum

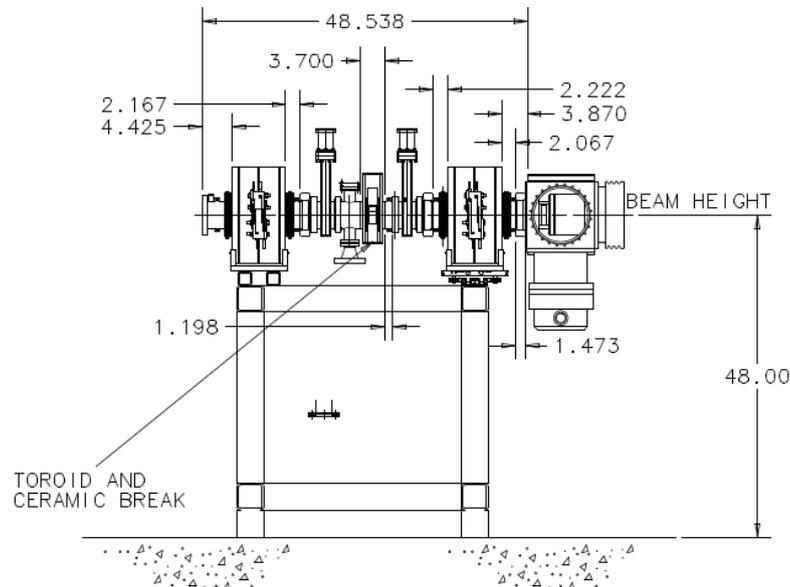


1 rotary vane is insufficient. The fore pressures got worse after the change out.

All scroll pumps replaced with rotary vane. Fore pressures are better, but looks like the same as scroll. Vacuum looks the same.

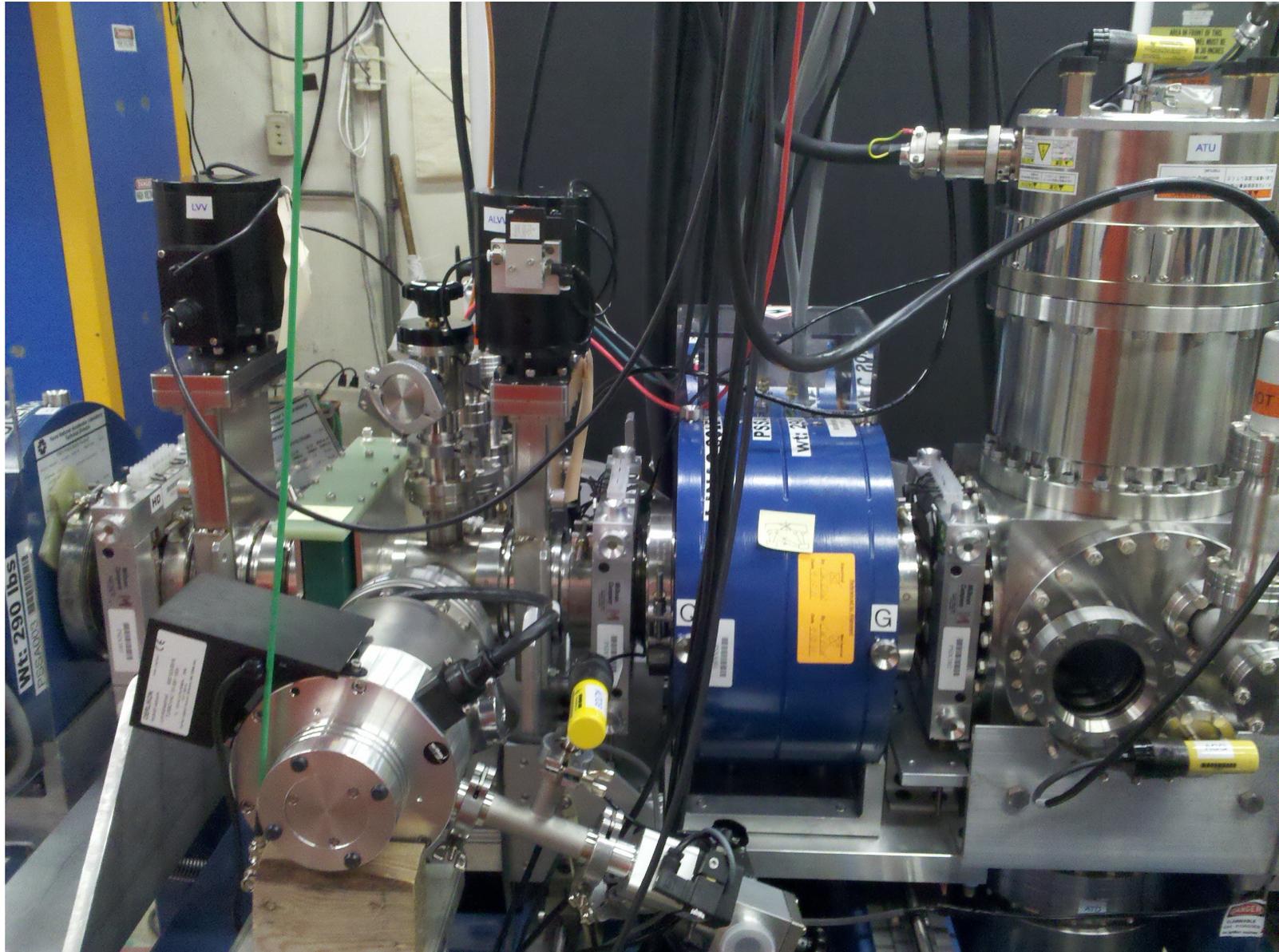


LEBT Status

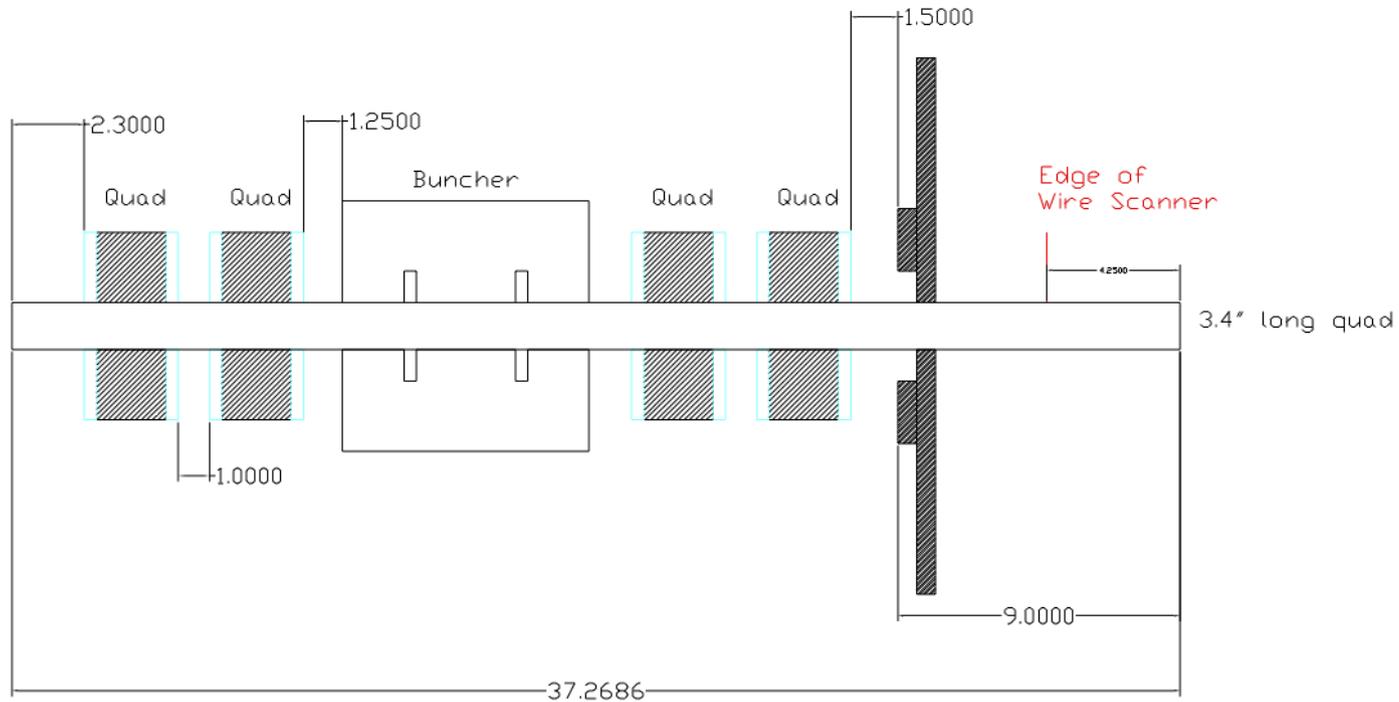


Device	Status	Comments
New slide	being designed	Expect to have by end of Feb 2012
Arc Modulator cabling	Replaced with twisted pair	Reduces noise problem (28 Nov)
Correctors	Collected from TD (29 Nov)	All measured. Installed in LEPT line (29 Nov). Powered 06 Dec
HRM reset	Added reset (30 Nov)	Kludge to overcome hangs when there are sparks.
Rotary Vane	Replaced scroll pump	12/06/11
Chopper box	Waiting for final approval	
Solid state switches	Delayed	Shipping this week (06 Dec, see it to believe it)

LEBT with trims installed

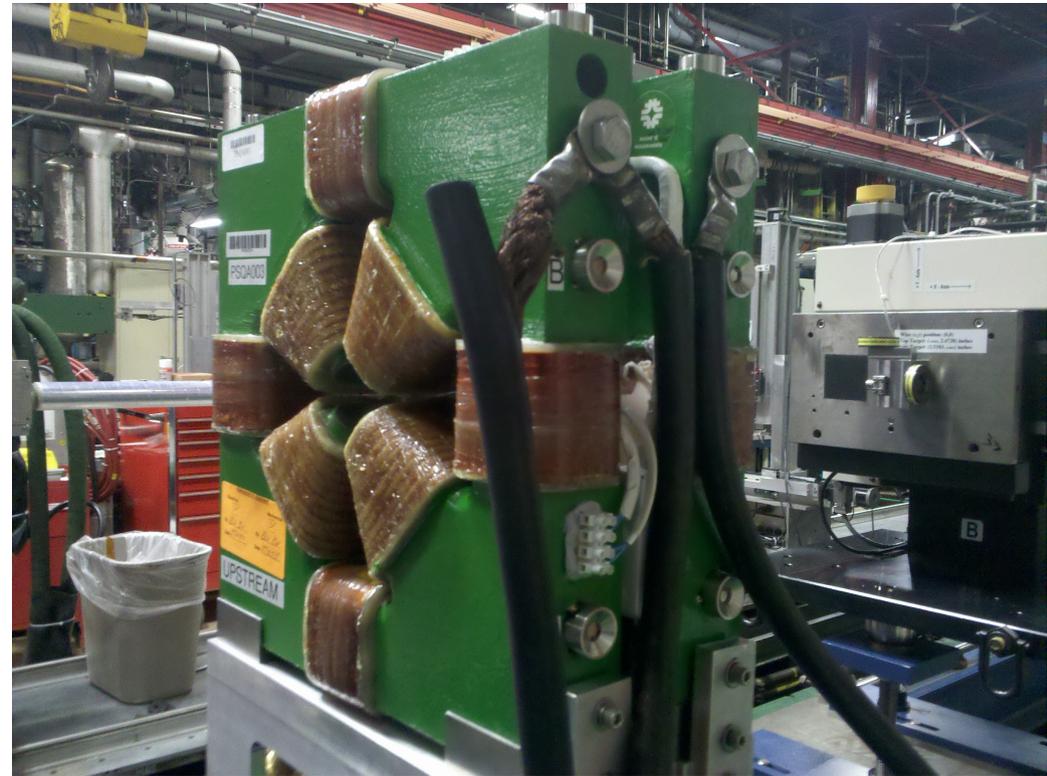


MEBT Status

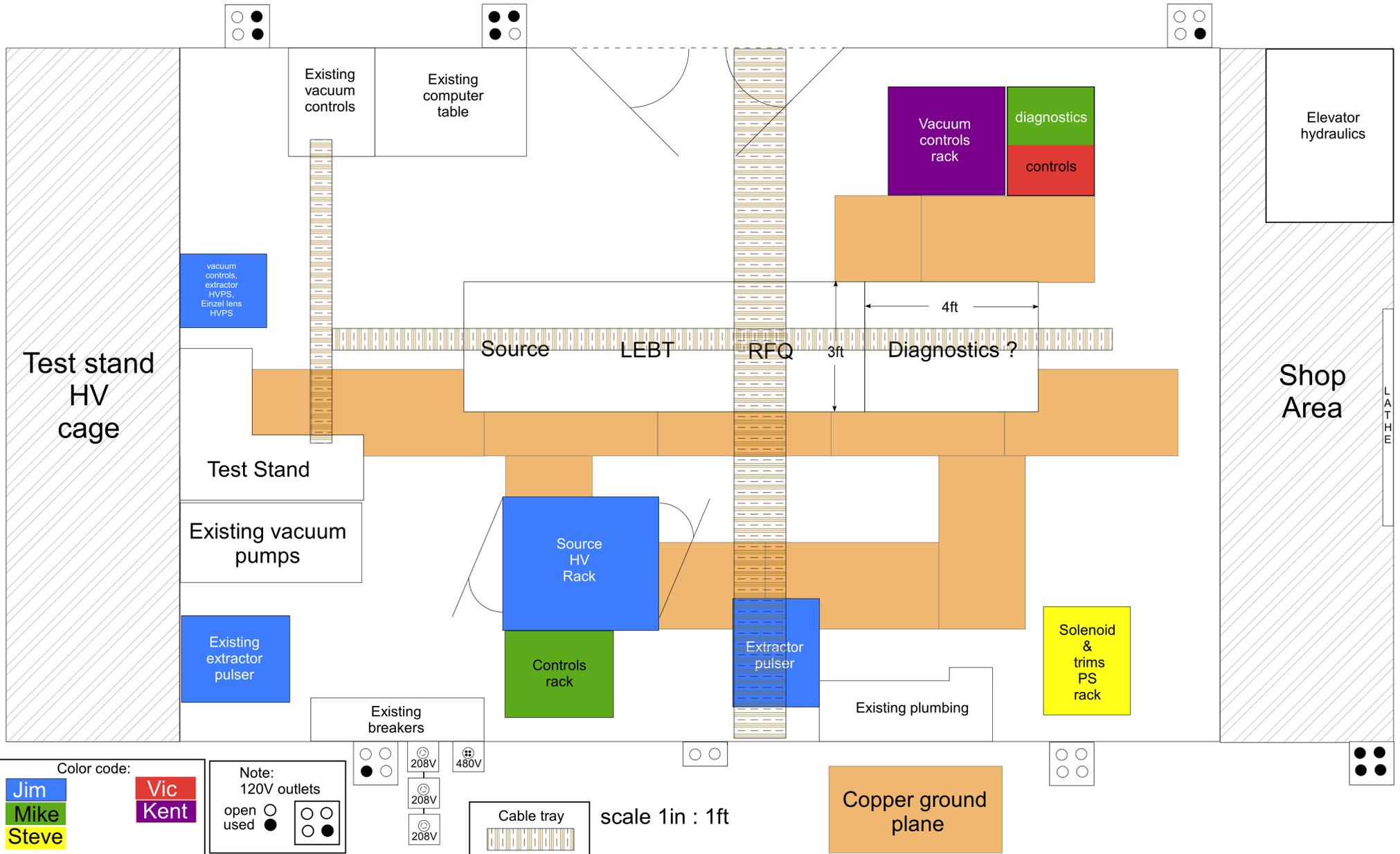


Device	Status	Comments
MEBT Stand	Being designed	
Quad doublets	Being paired and tested	1-2, 3-4, 5-6, are paired

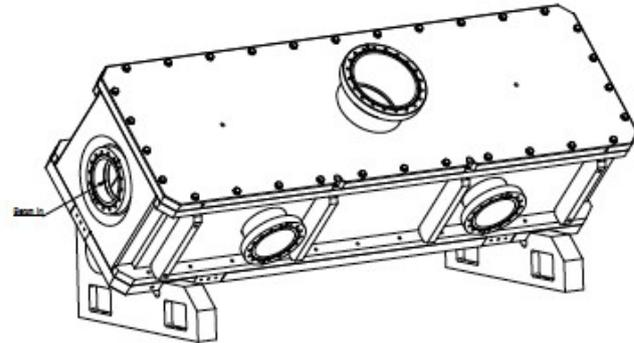
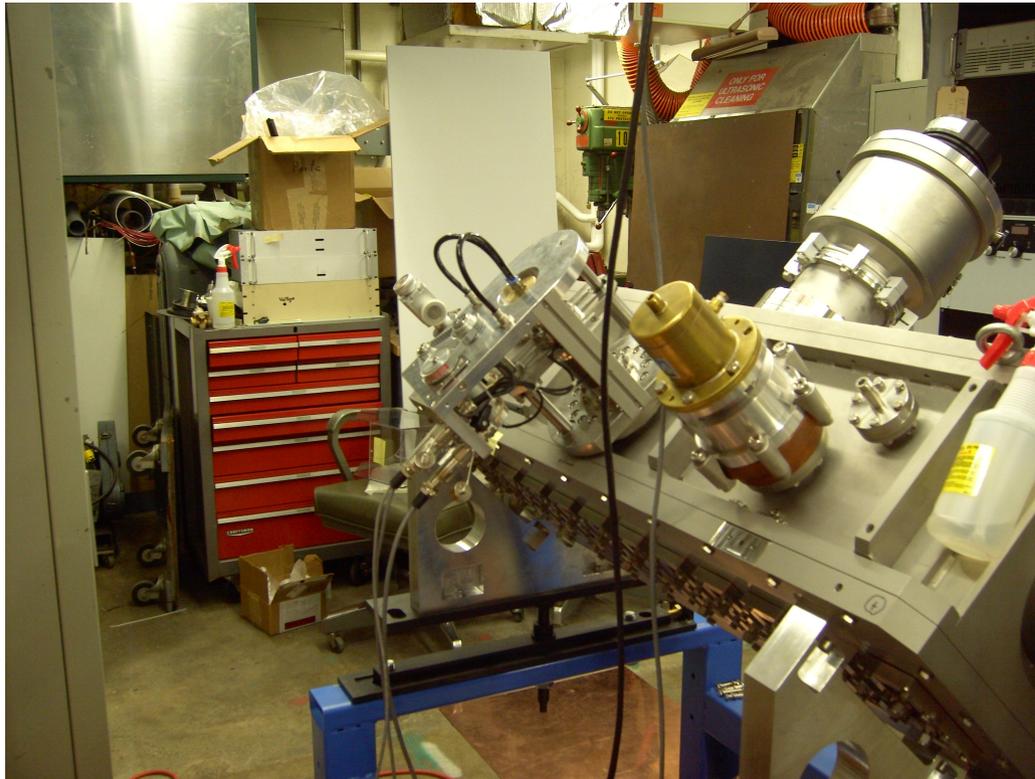
Quad doublets being tested



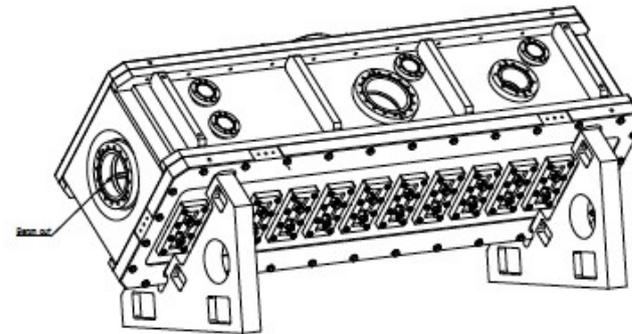
Proposed test area layout



RFQ Status

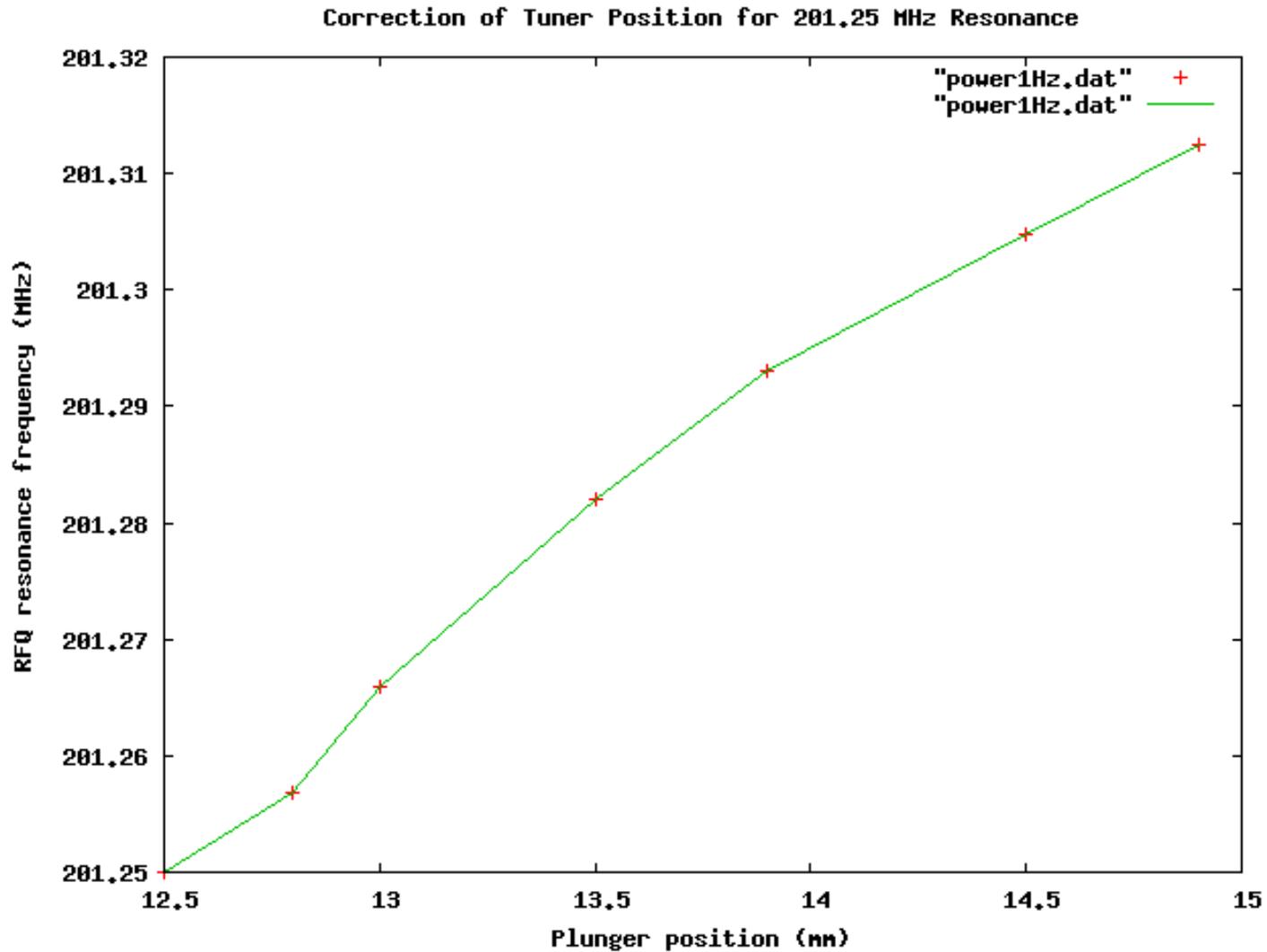


15

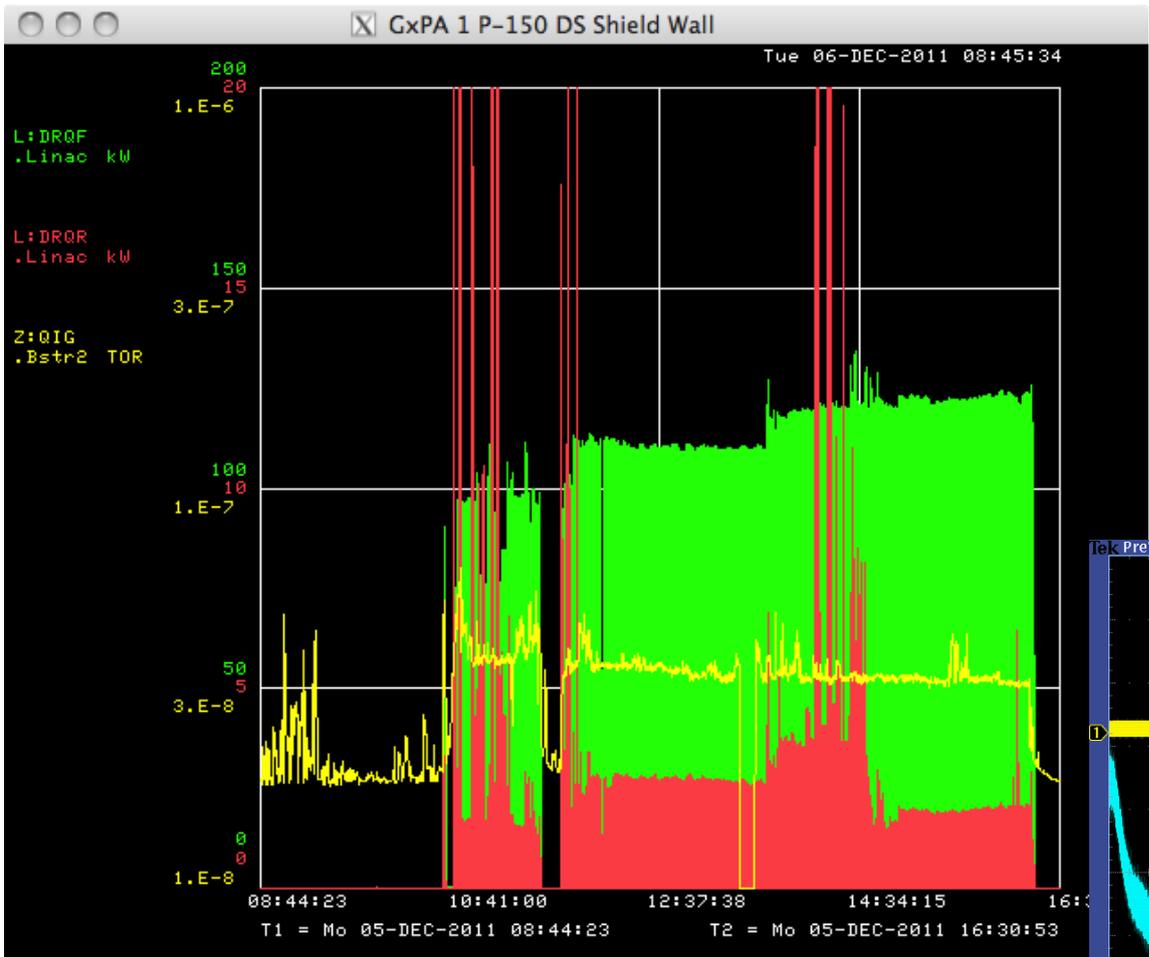


Device	Status	Comments
High power conditioning started	Completed for 1 Hz operation on 05 Dec	Forward power 110 kW, reflected 3 kW. Will do 15 Hz next

Tuner had to be moved by about 2.4mm for 201.25 MHz resonance

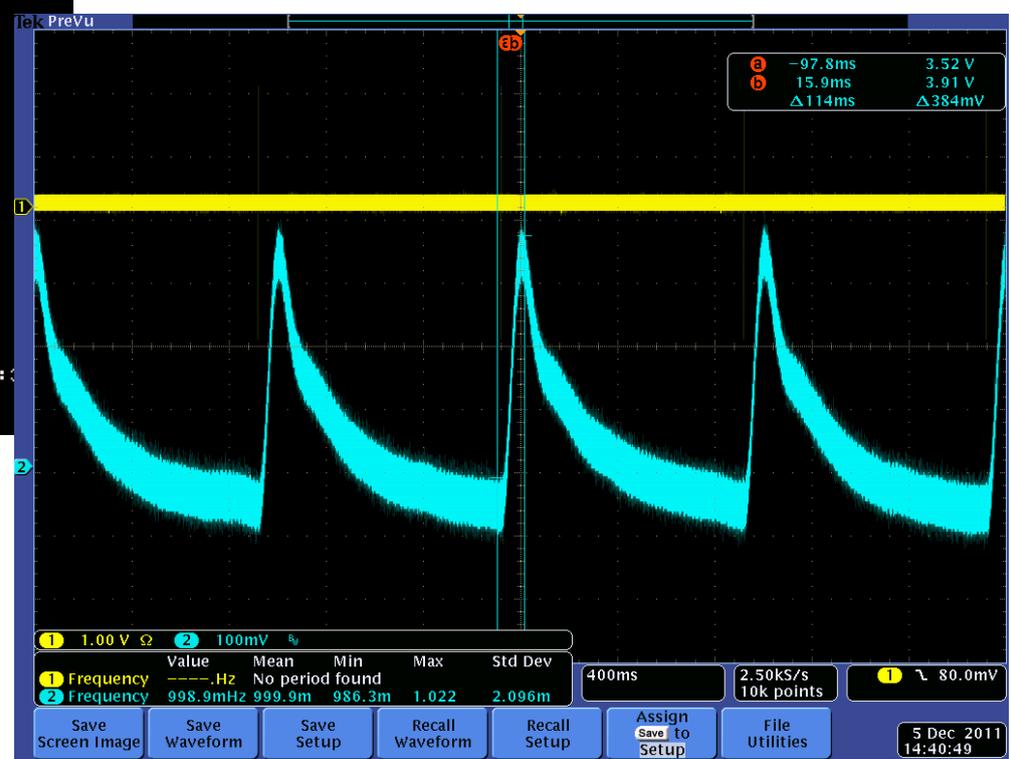


Conditioning as function of time



110 kW forward power,
3 kW reflected. Vacuum
looks good 3-5e-8 torr

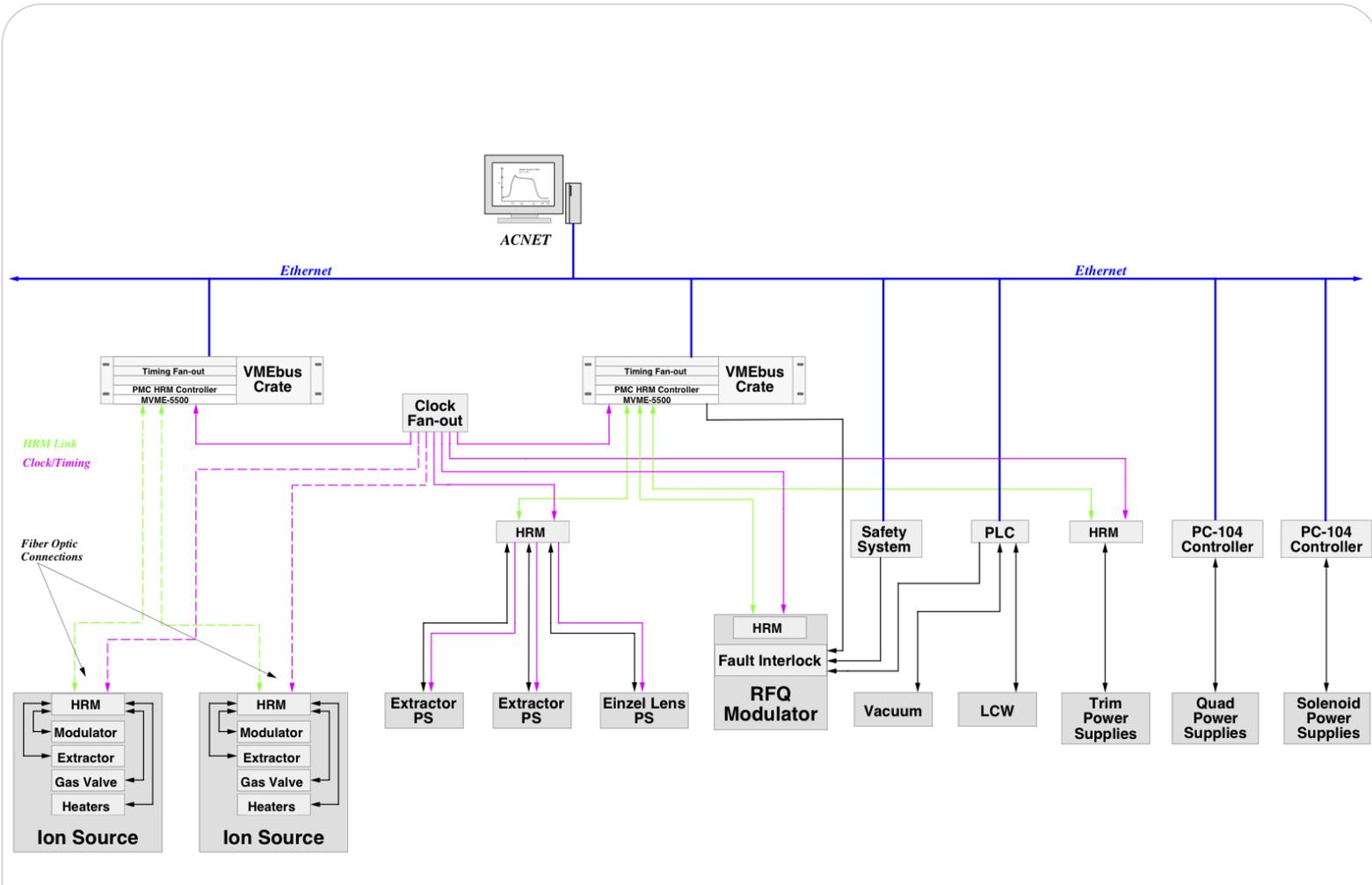
Vacuum pulses 114
ms later from the
RF pulse



Test area, test stand and instrumentation

Device	Status	Comments
emittance probes can	Can in village shop.	Projected to be completed in Jan 2012!
TOF	3 BPM shells	Have vacuum tube. Buttons in Nov from A0
Faraday Cup	Needs zero length adapter	Have copper seals and zero length adapter ordered
Toroids	Calibrated (28 Oct)	LEBT toroid is 0.5V/A.

Controls



Linac RFQ Upgrade Controls Block Diagram

Controls

- Problem with HRM tripping off when source sparks. Still Investigating.
 - Added remote reset capability (29 Nov)

Safety

- Hydrogen safety committee inspected and passed hydrogen bottle installation. (15 Nov)