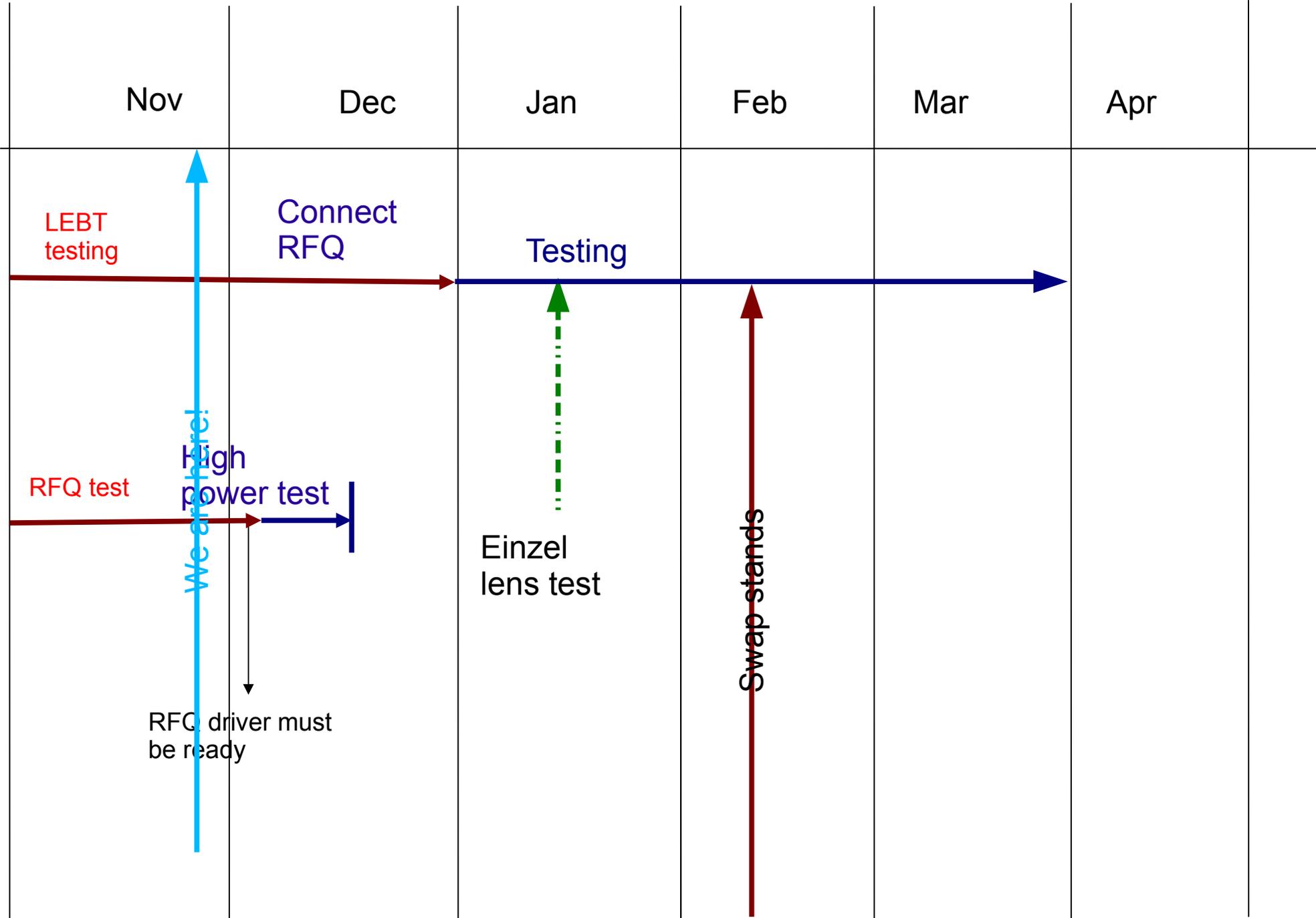


Pre-injector Upgrade Updates (09 Nov 2011 – 23 Nov 2011)

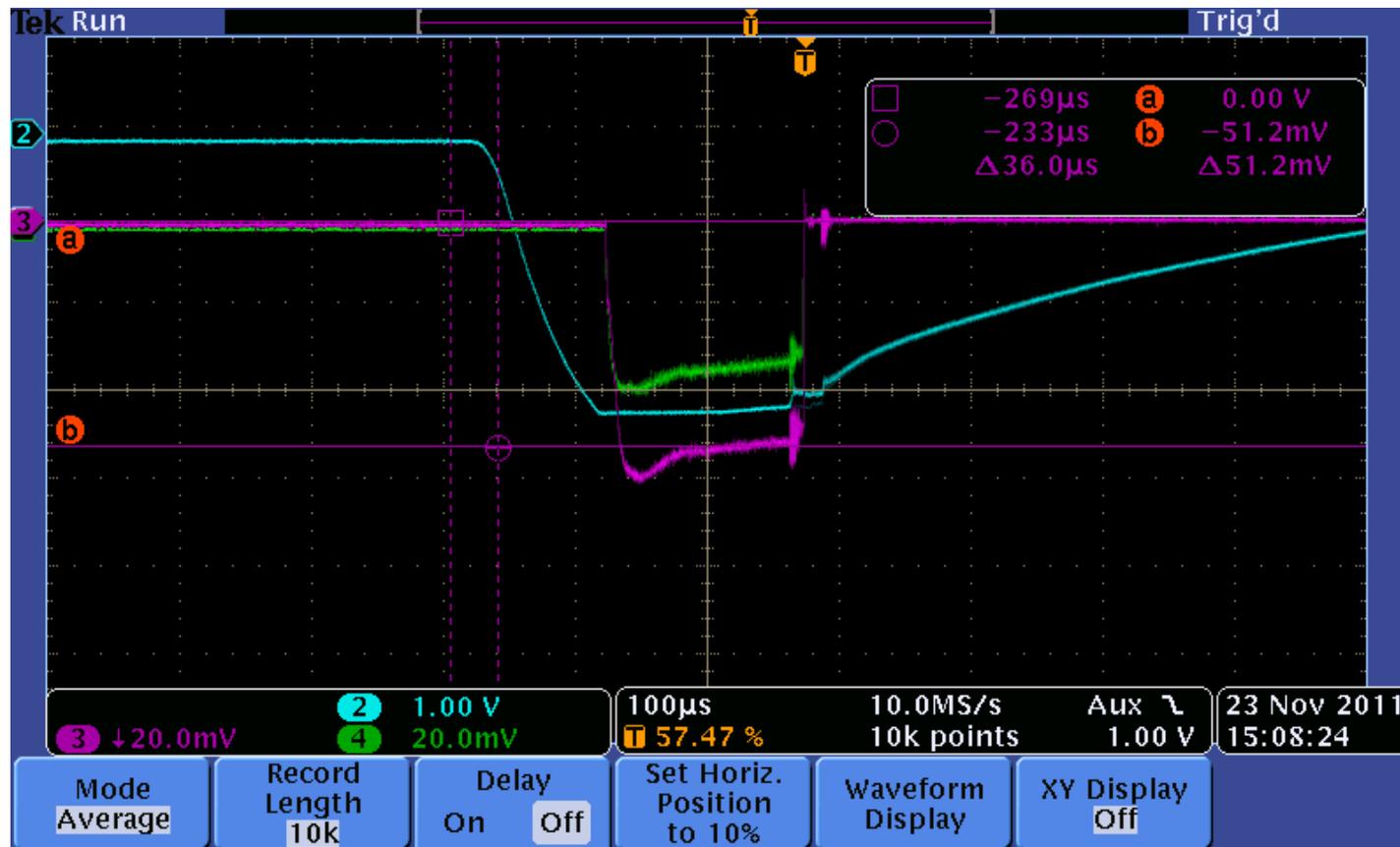
C.Y. Tan
23 Nov 2011



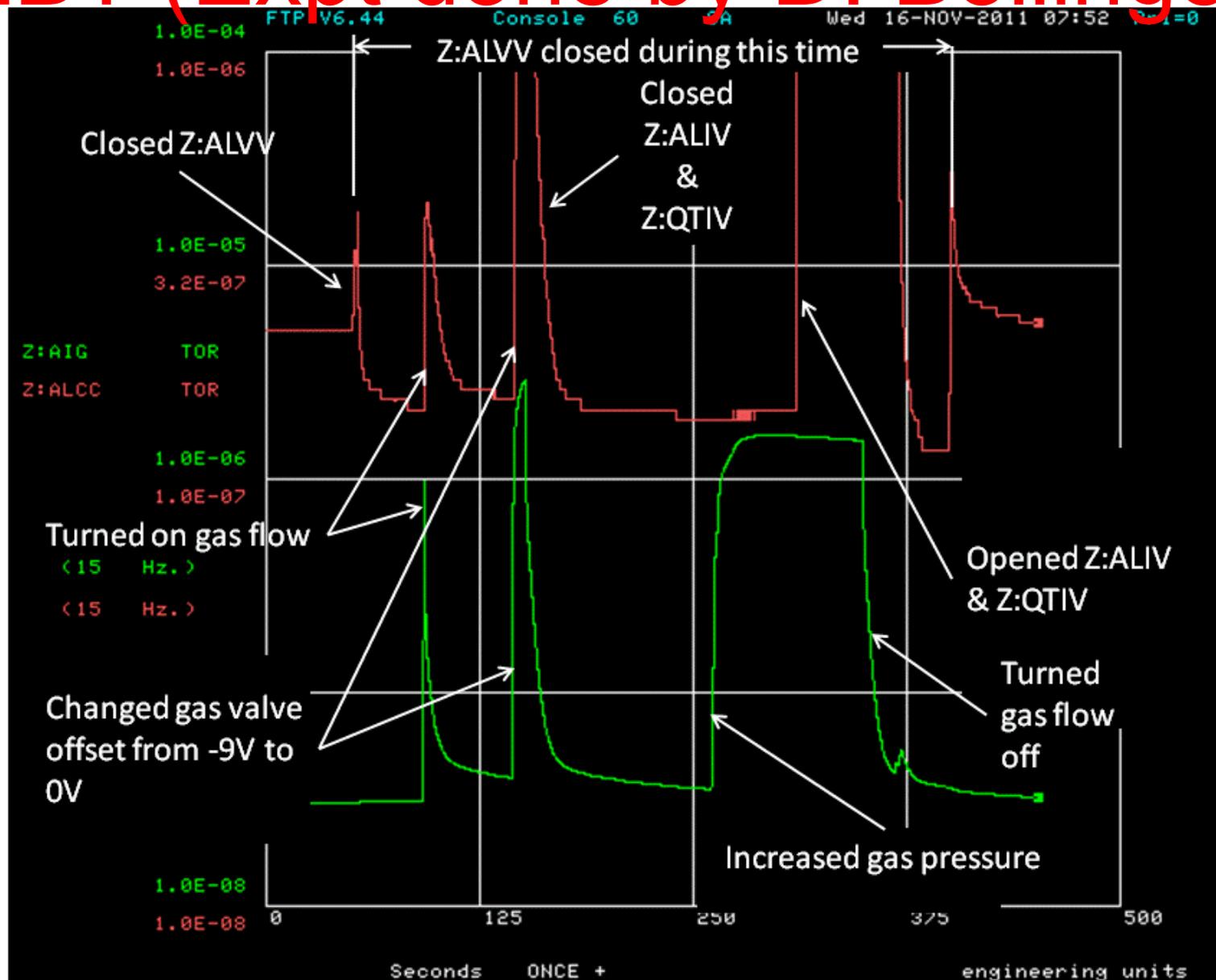
Latest

- RFQ tuned to 201.25 MHz.
 - Low power (60W) conditioning complete.
- LEBT pump down to $\sim 2e-7$ torr after fixing bellows.
 - However, with hydrogen in source, LEBT vacuum $> 1e-4$ torr!
 - Problem traced to sharing of roughing pump, hydrogen back flowing into LEBT from source!
 - Vacuum in LEBT still poor with hydrogen ($1e-5$ torr).
 - Replaced present turbo with 350 L/s turbo (18 Nov)
 - There is a virtual leak in neutralization line does not show up until $< 1e-6$ torr.
 - **50mA @ 30 kV extraction at downstream toroid!!!!**

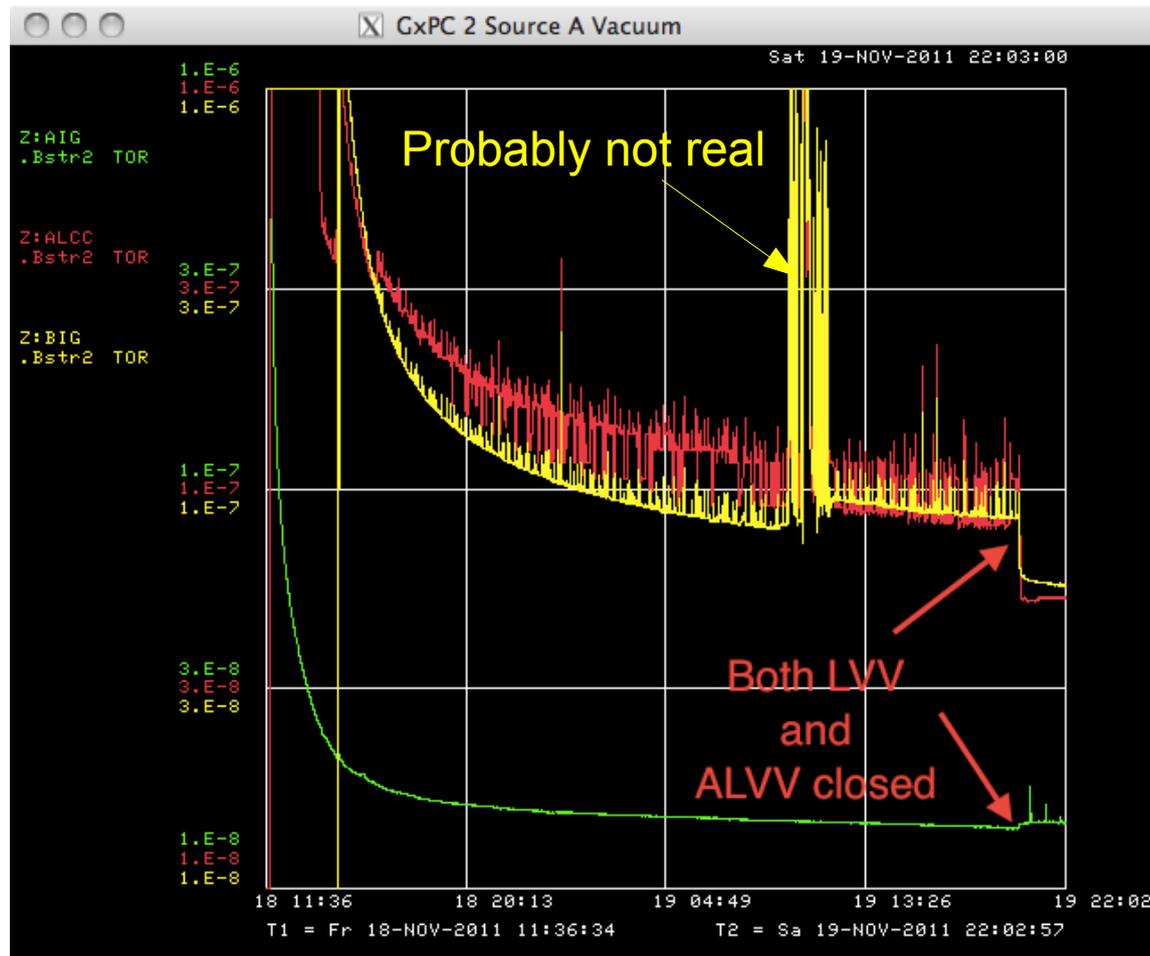
50mA H- Beam at downstream toroid @30kV extraction



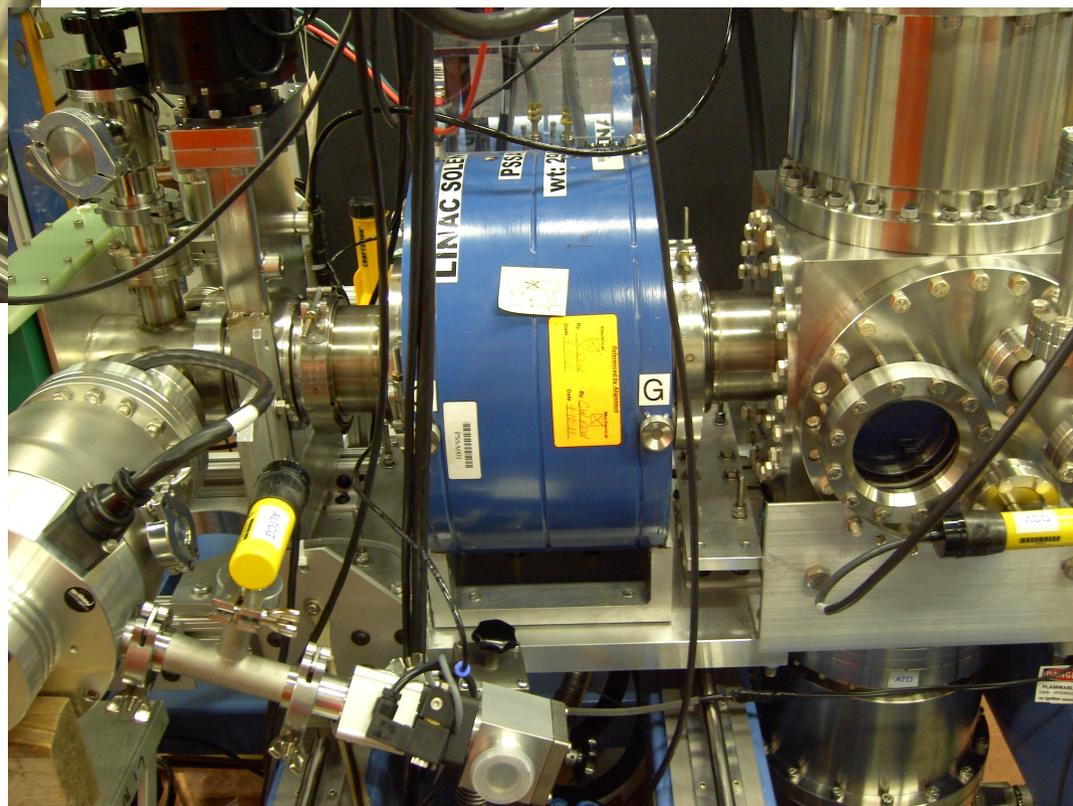
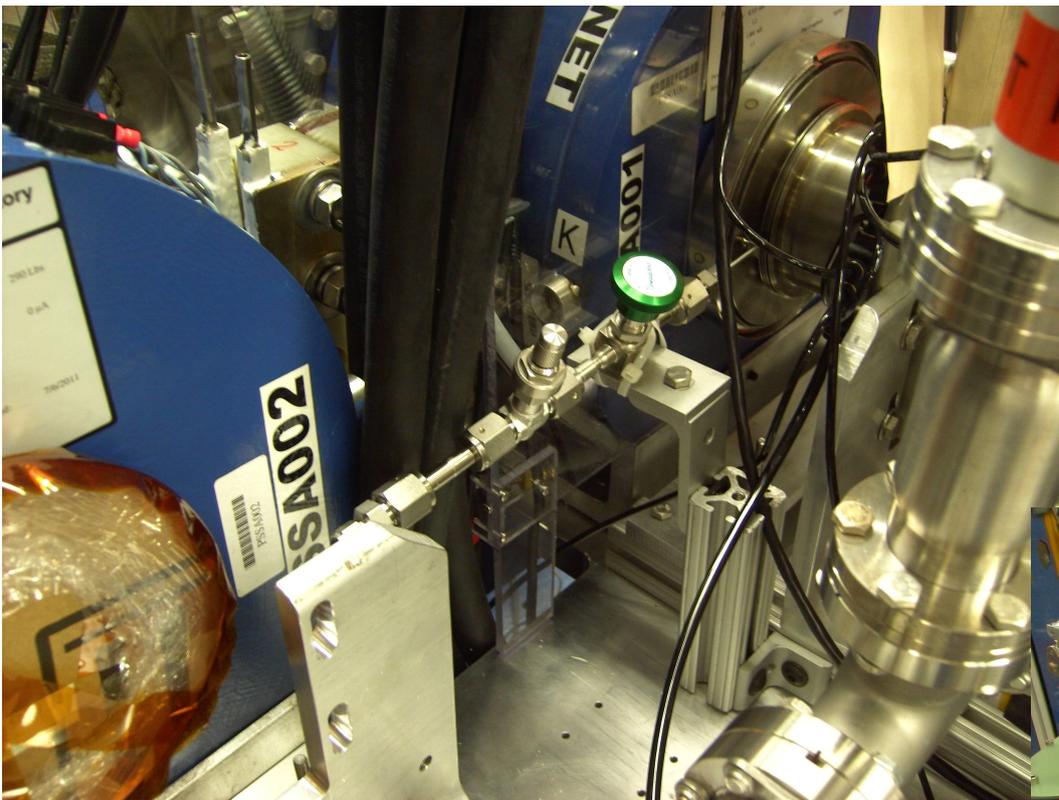
Proof that H2 is back flowing into LEBT (Expt done by D. Bollinger)



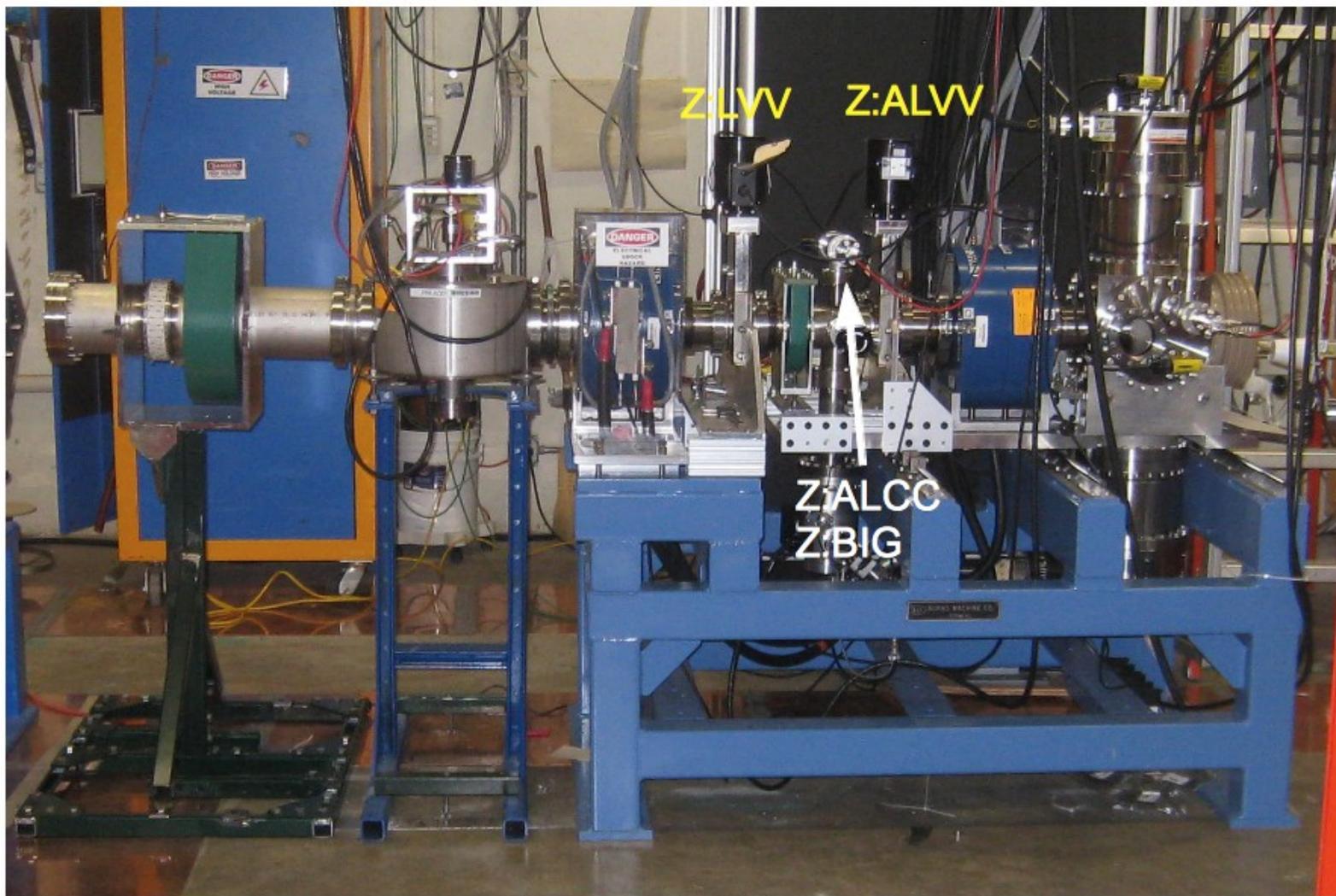
Proof that there is a leak between ALVV and cube



Problem is not the neutralization line

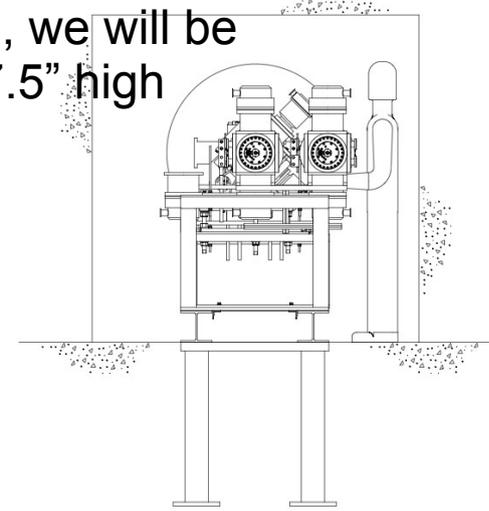
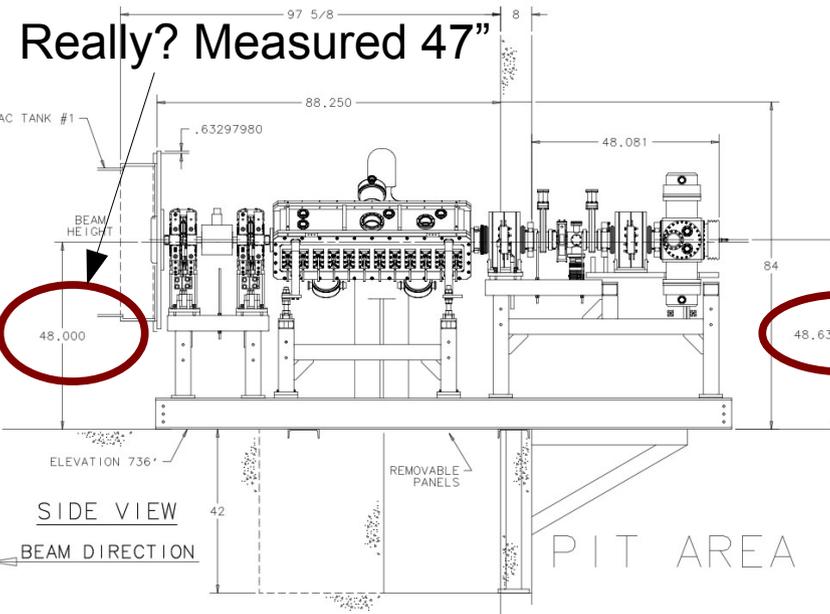
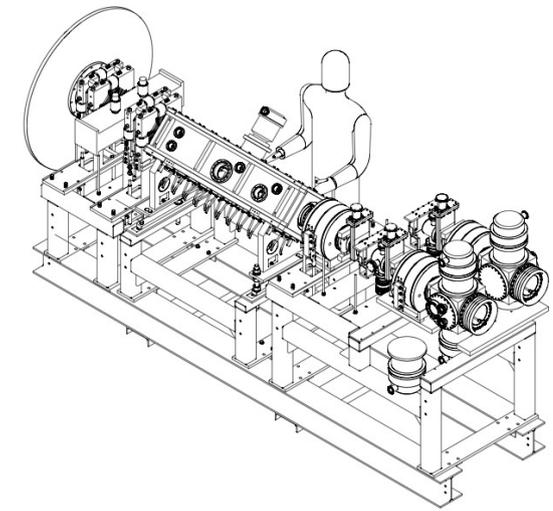
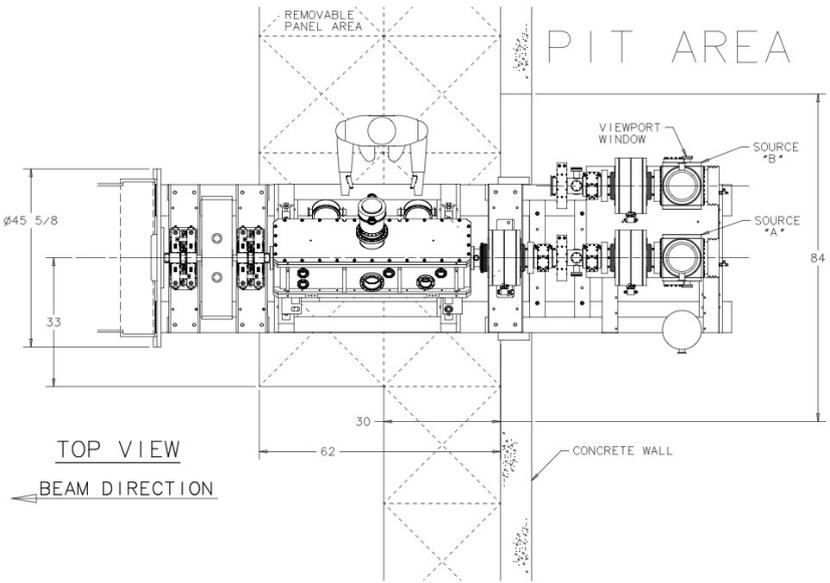


Suspects are bellows and gate valve.



Z:LWV	Z:ALVV	Z:ALCC	Z:BIG	Comments
O	O	1e-6	Not connected	After 2 hours
C	O	1.2e-7	8e-8	After 20 hours. VERY NOISY!
C	C	5e-8	5e-8	Possible problem with ALCC. After 12 hours. Note: noise is now in Z:AIG!
O	C	7.6e-8	8.2e-8	After 12 hours

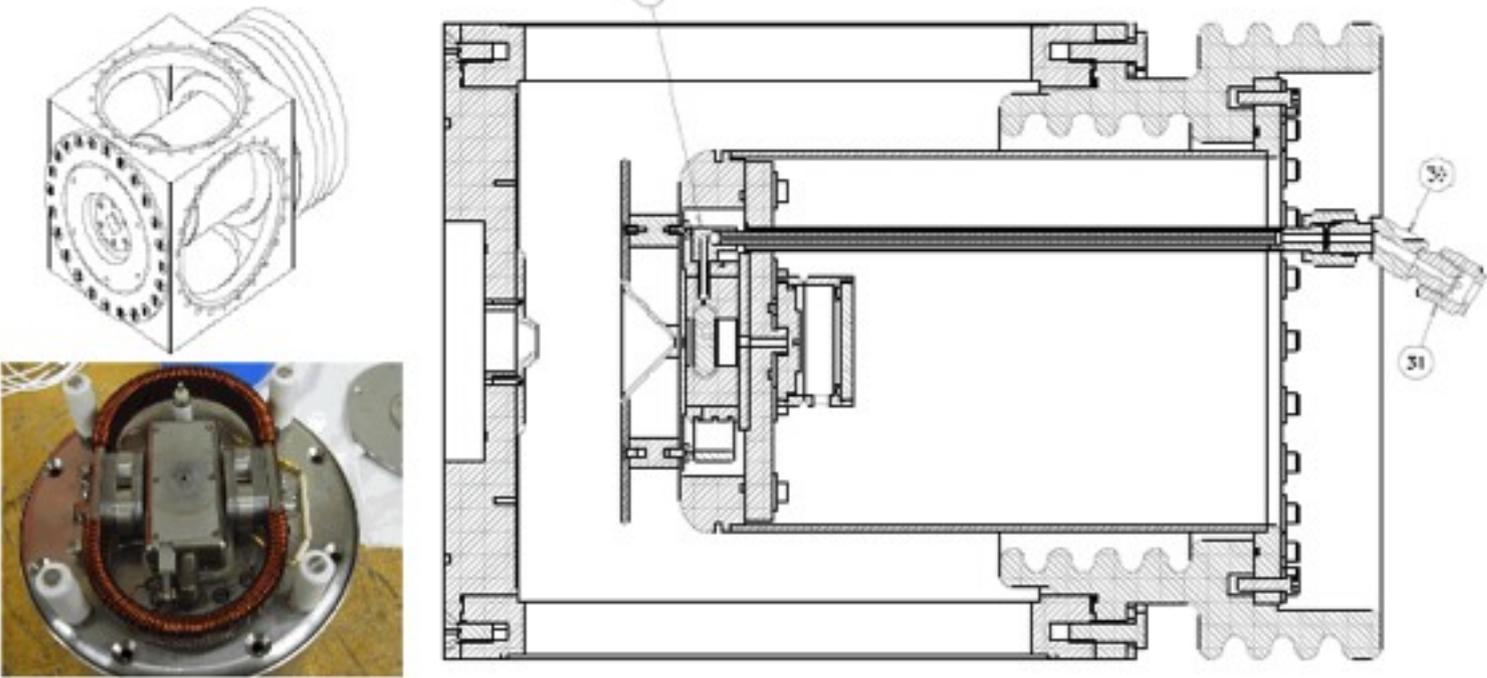
REV	DESCRIPTION	DRAWN	DATE
		APPROVED	DATE



PREACCELERATOR
PRELIMINARY
LAYOUT
APRIL 27, 2011

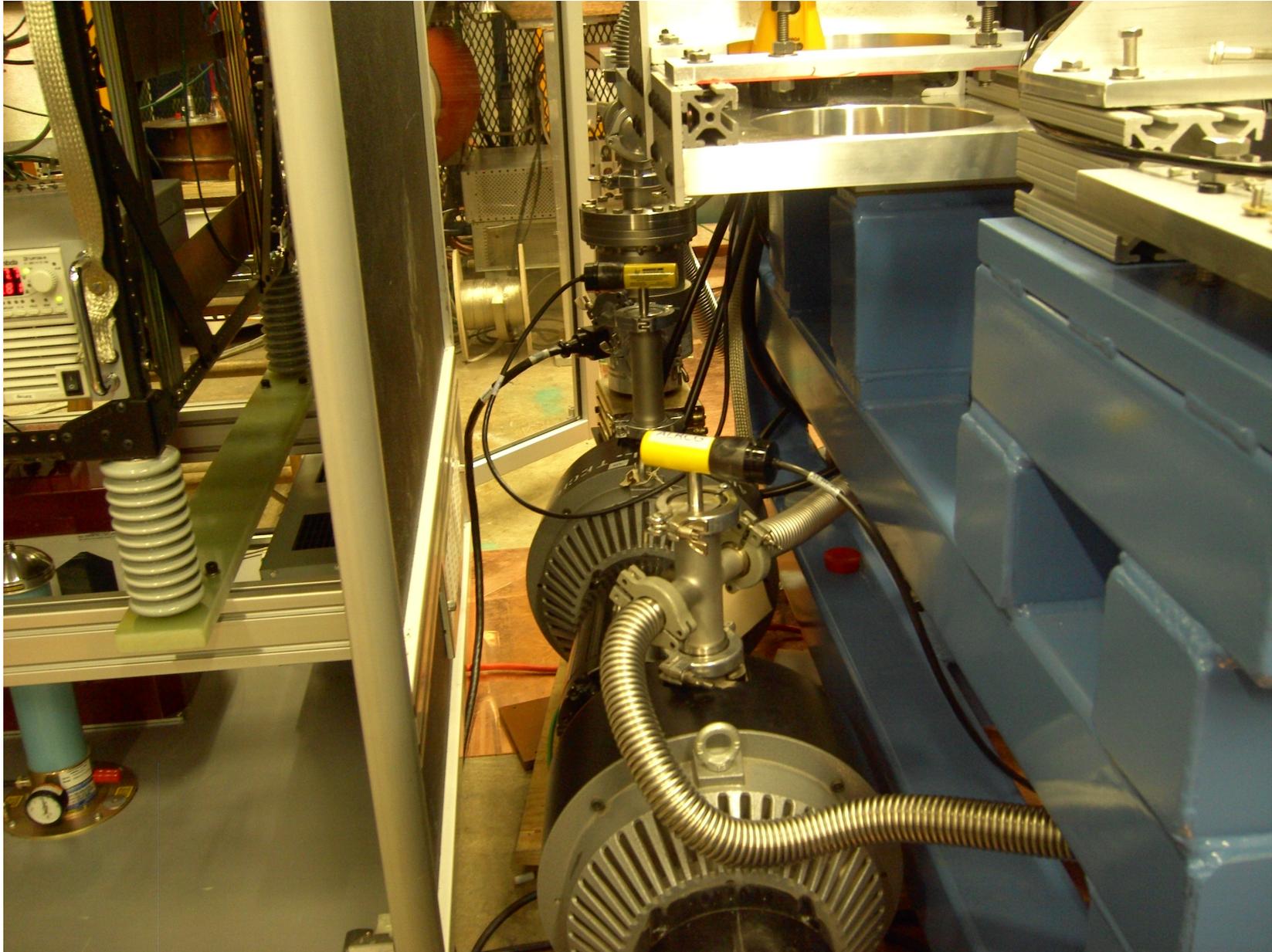
UNLESS OTHERWISE SPECIFIED			ORIGINATOR	
+	+	+	DRAWN	
			CHECKED	
			APPROVED	
1. BREAK ALL SHARP EDGES			USED ON	
2. DO NOT SCALE DRAWING			MATERIAL	
3. DIMENSIONS BASED UPON				
4. MKV, ALL MKV SURFACES				
5. DRAWING UNITS: U.S. INCH				
FERMI NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT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

Source Status

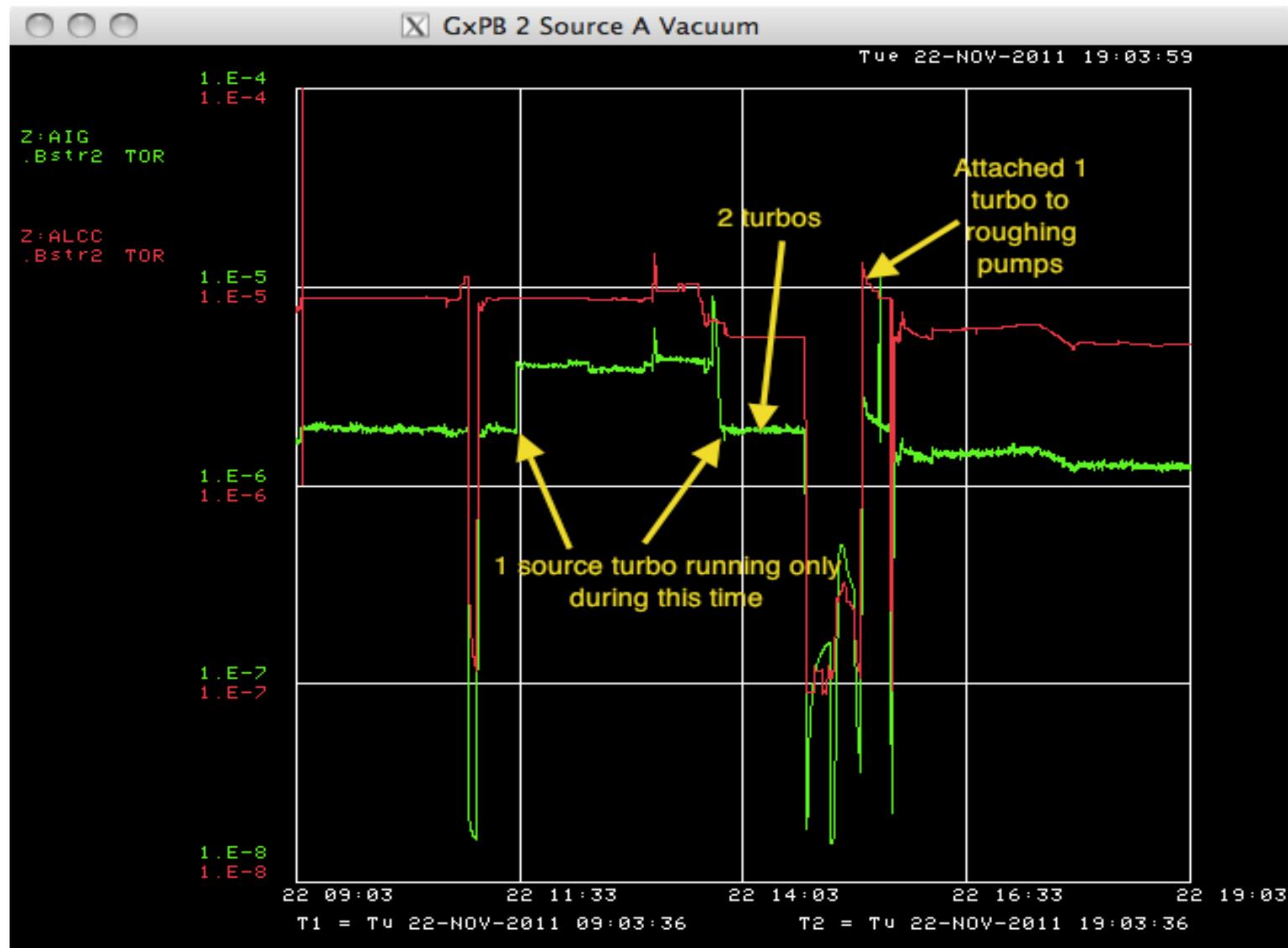


Device	Status	Comments
Added turbo to roughing pump		Did not improve vacuum

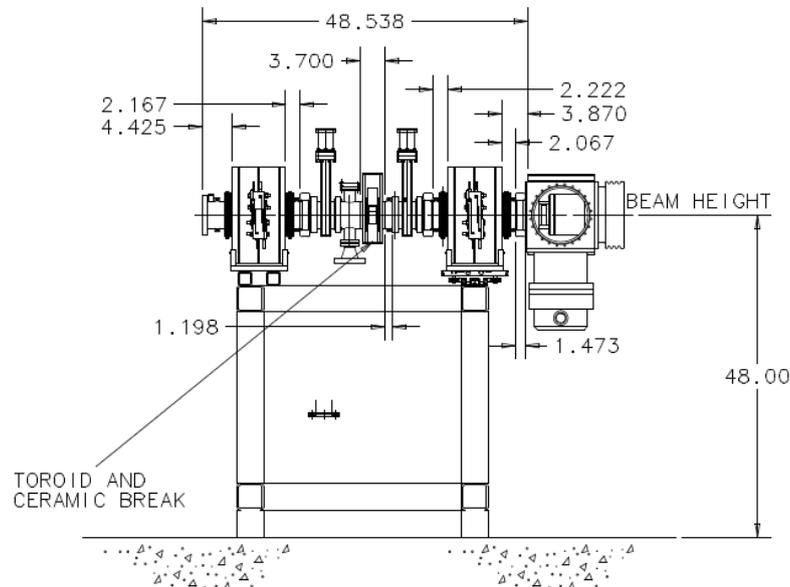
Added turbo to rougher for cube



Ugghhh vacuum ... still poor in the LEBT

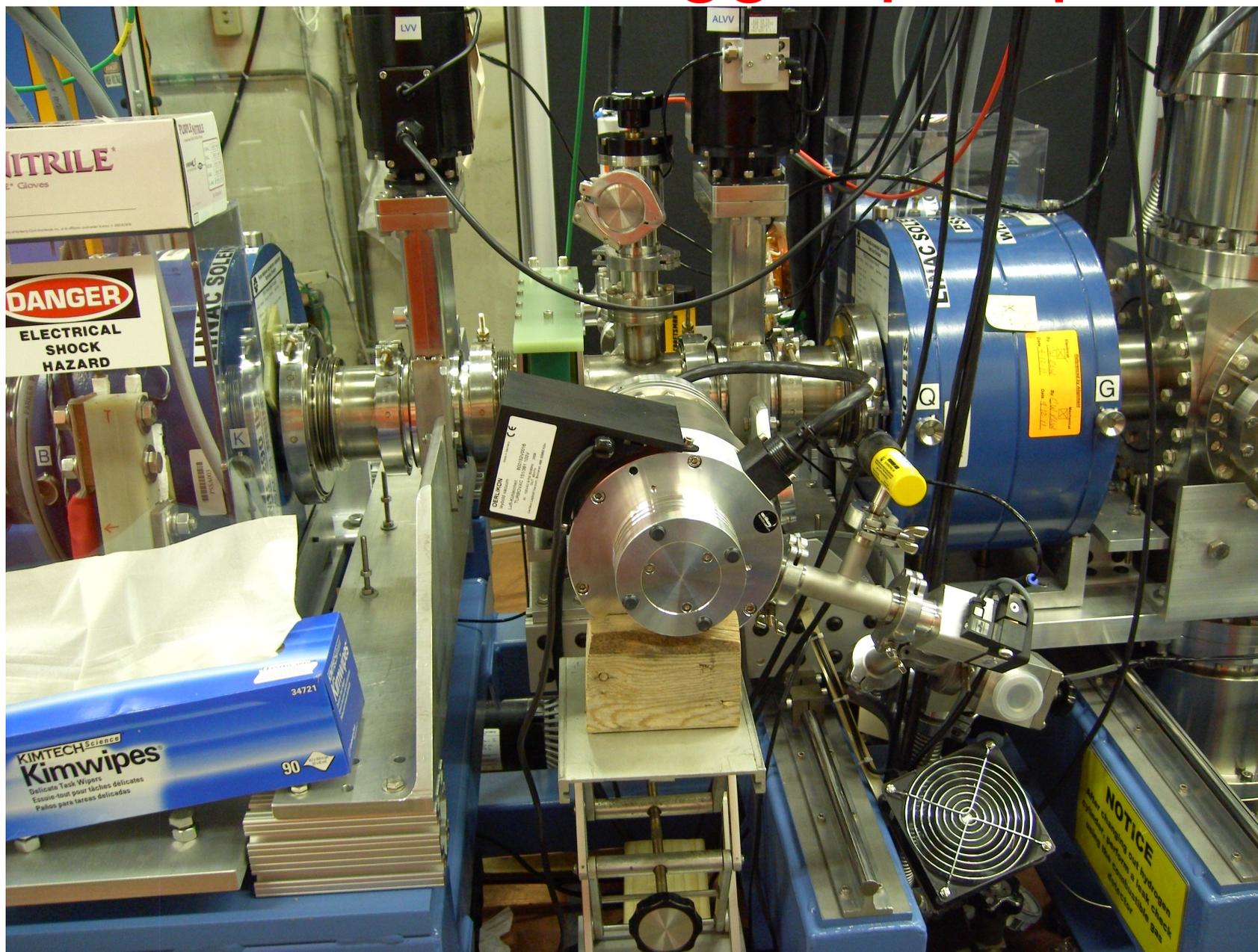


LEBT Status

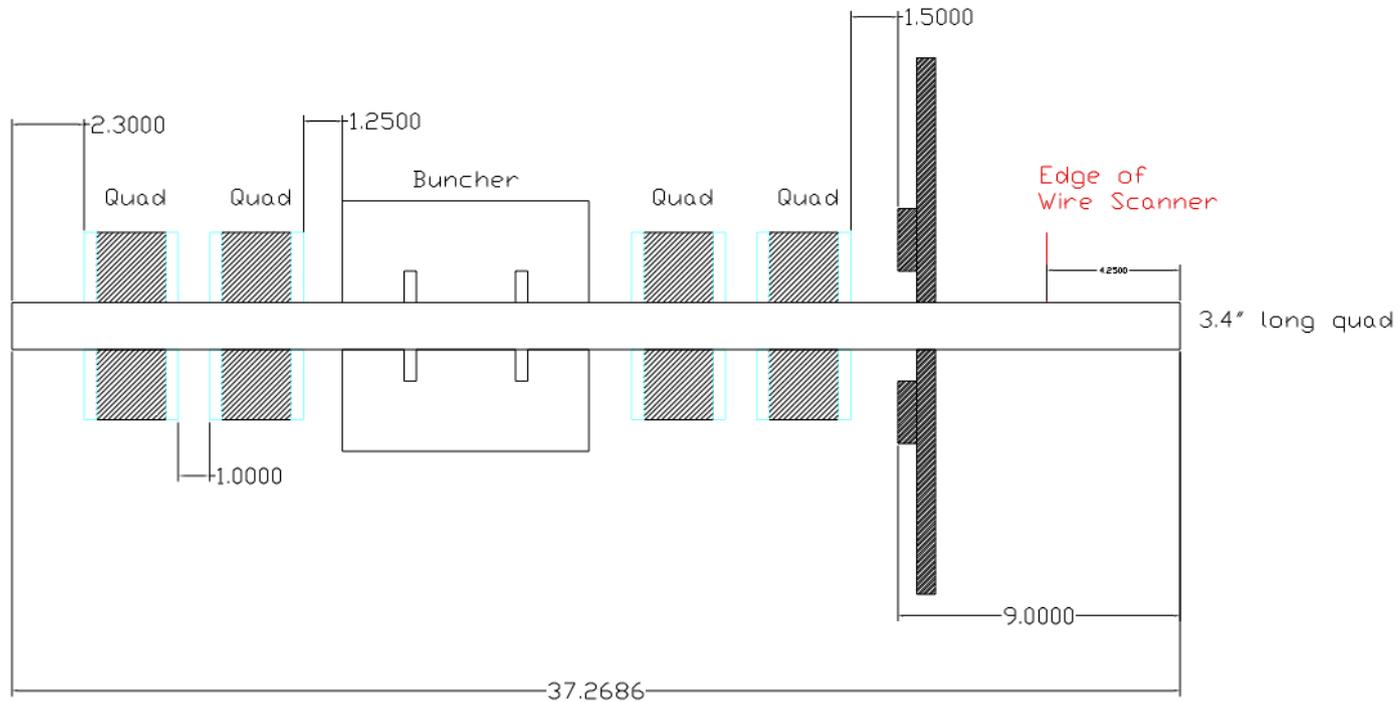


Device	Status	Comments
New slide	being designed	Expect to have by end of Feb 2012
Chopper box	with drafter	
Correctors		1 st corrector at TD (15 Nov)
Solid state switches	Delayed	Expect delivery 1 st week of Dec.
Replaced LEPT pump with larger pump	Works better 180 L/s to 350 L/s	Vacuum better from 2e-7 to 8e-8 in LEPT

Added bigger pump



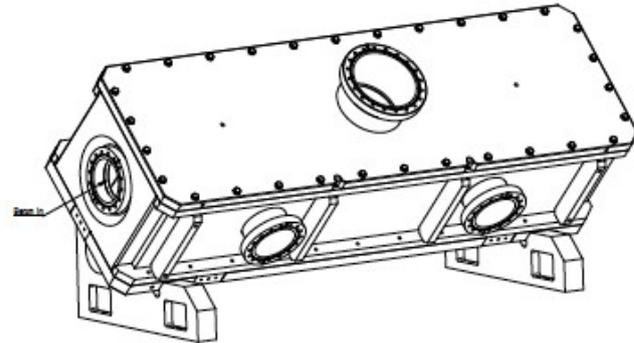
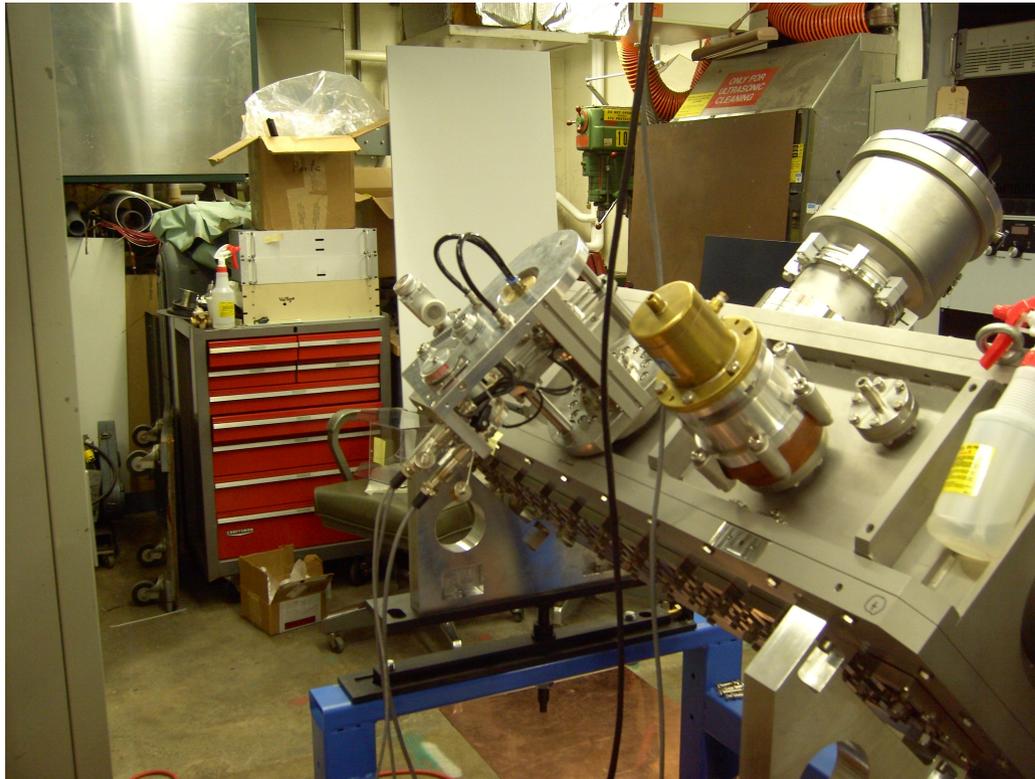
MEBT Status



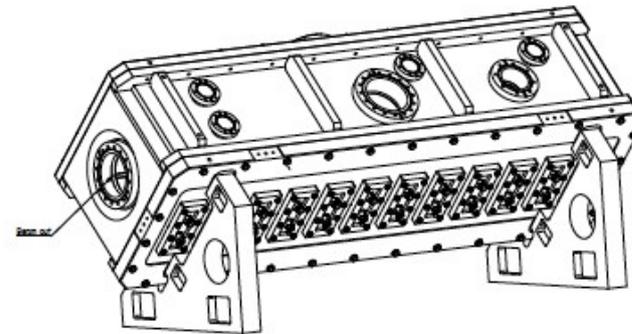
Device	Status	Comments
Quads	All quads measured (except 1) (8 Nov)	Same 12 th pole error as "bad" quadrupole.
MEBT Stand	Being designed	

RFQ Status

- RFQ is under vacuum (11 Nov 2011)

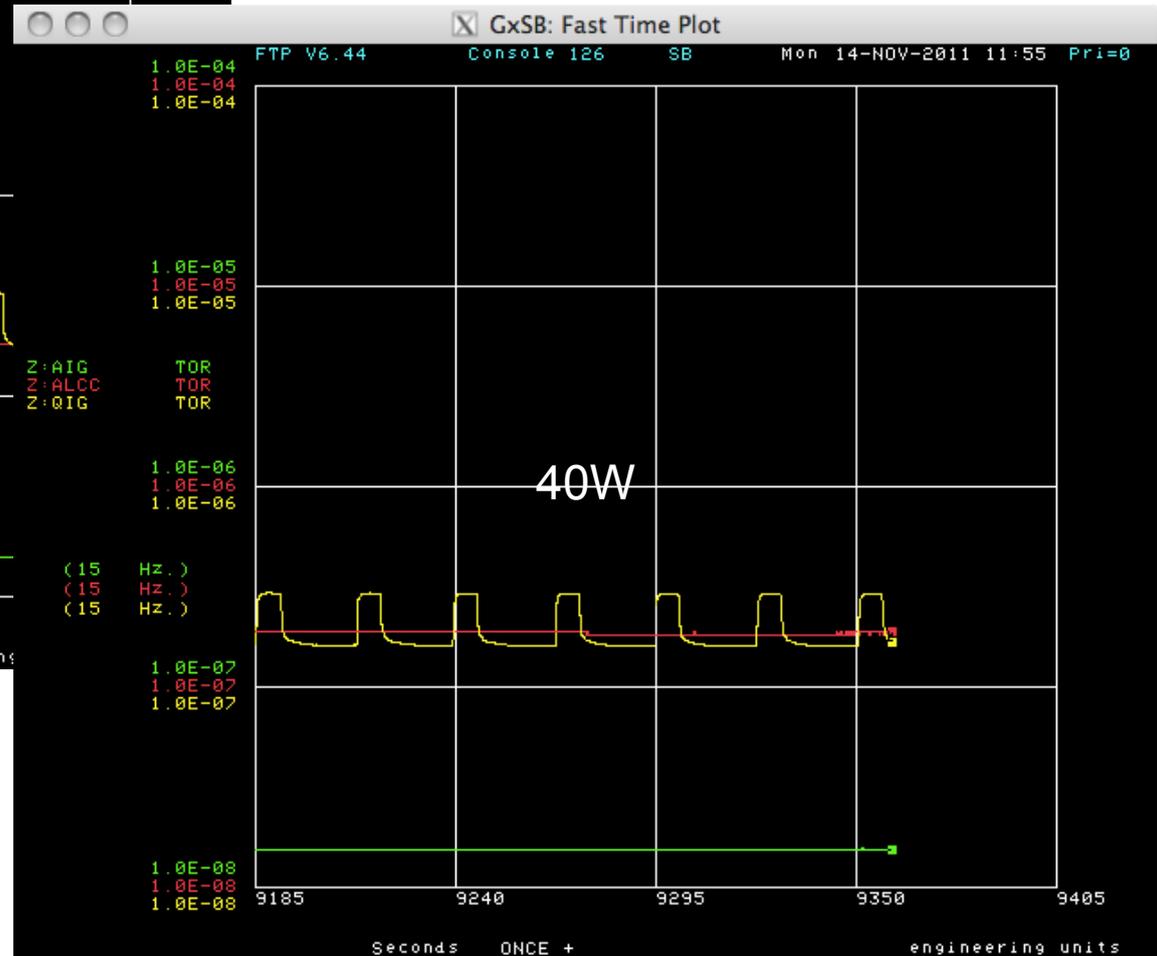
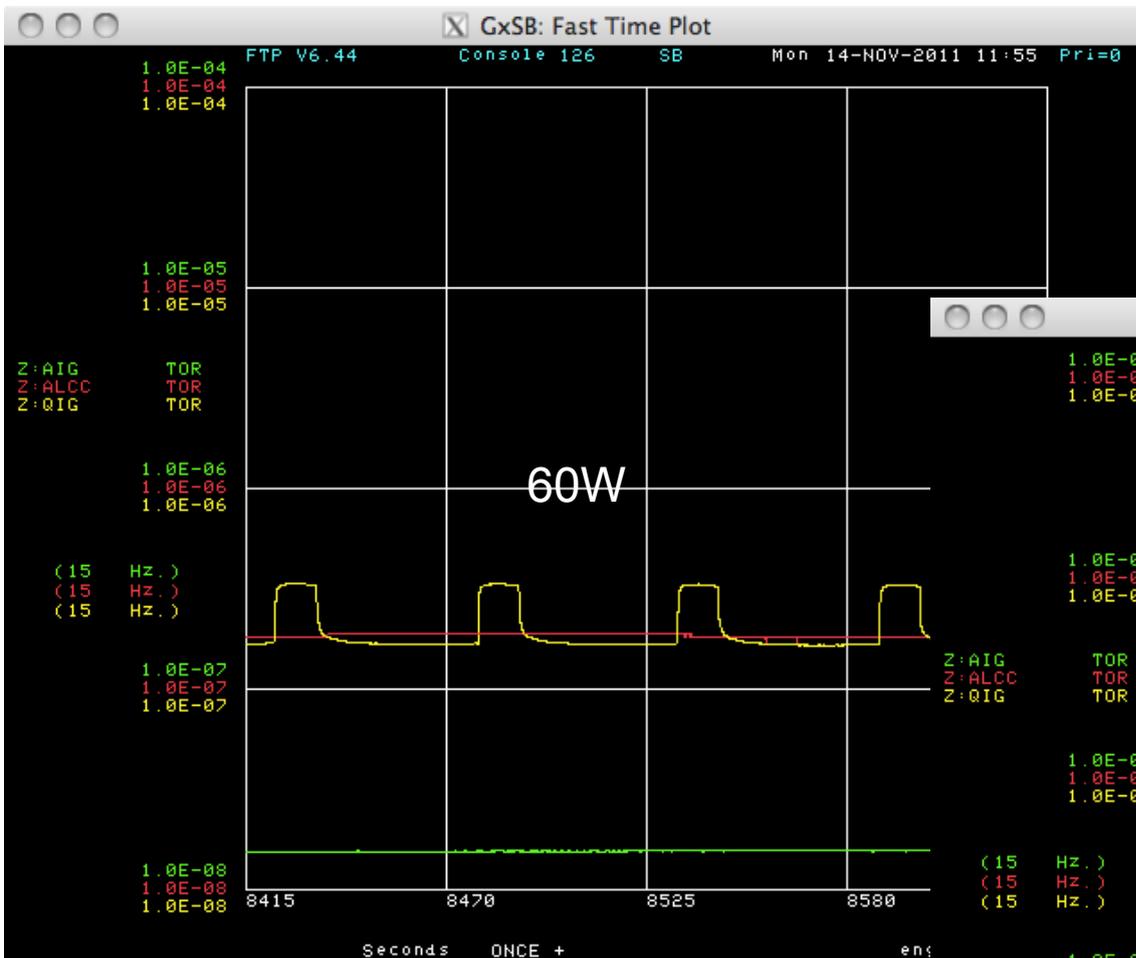


15

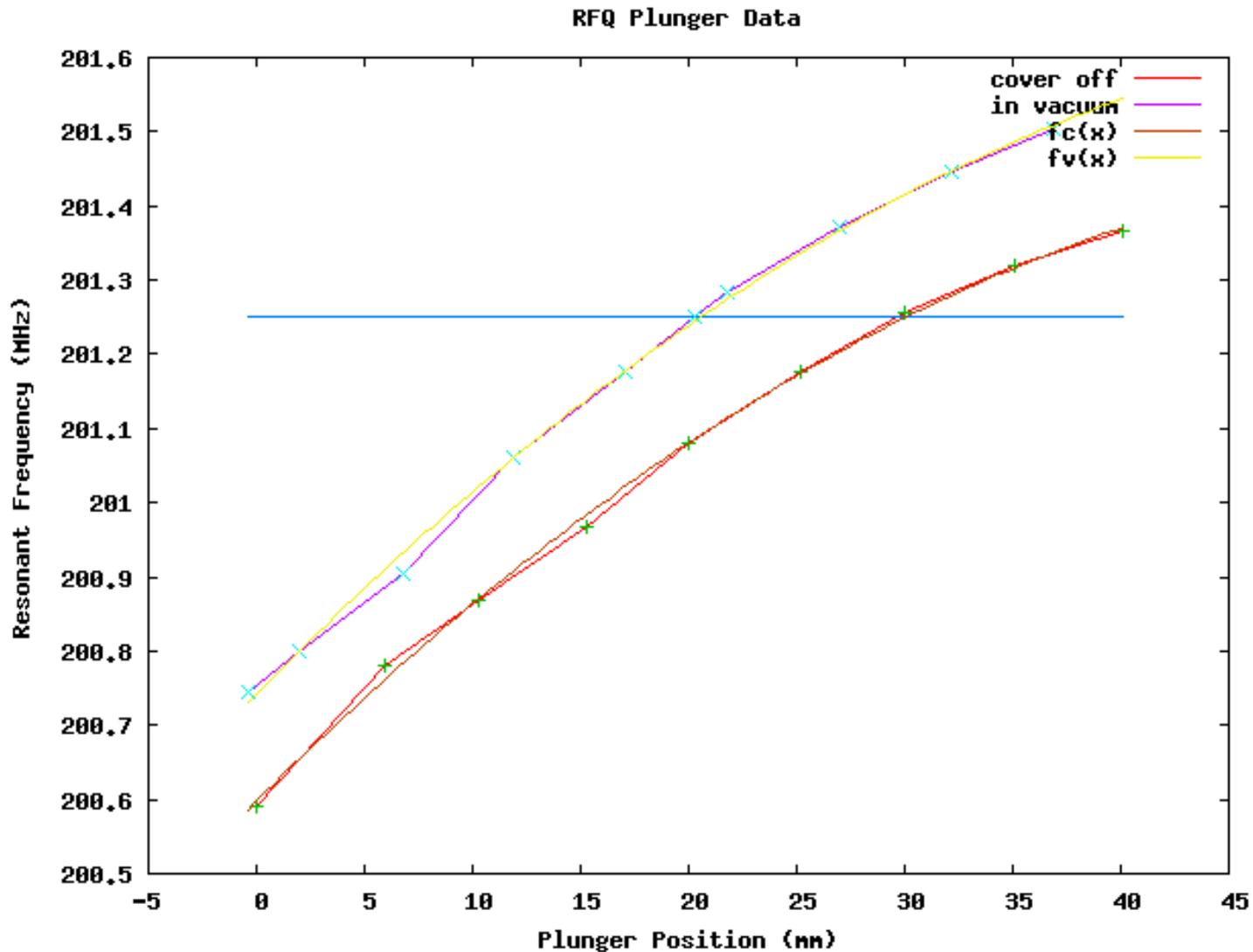


Device	Status	Comments
High power cable	Connected (21 Oct 2011)	High power conditioning to start after Thanksgiving.

Multipacting or something else?



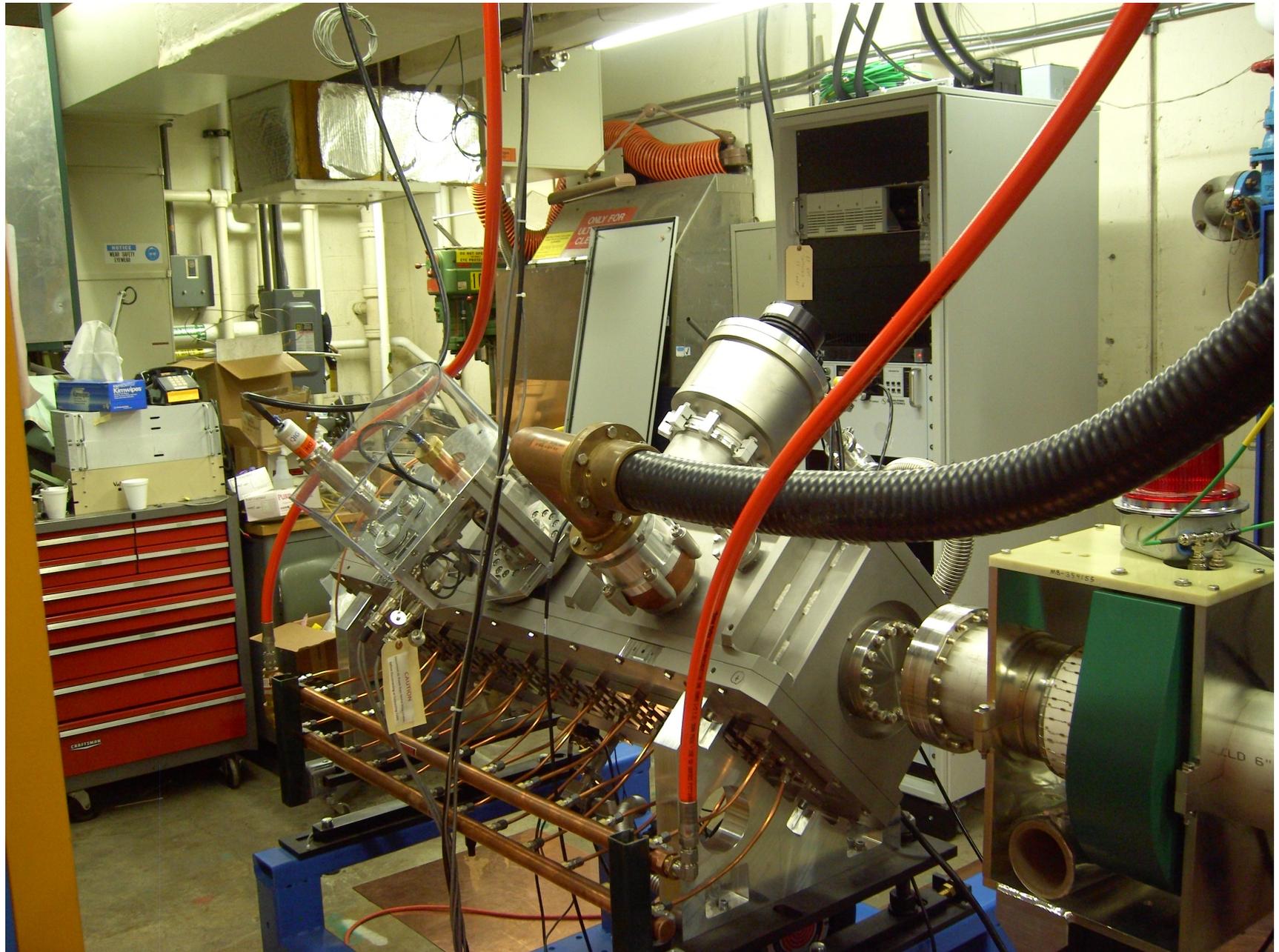
Tuner Range



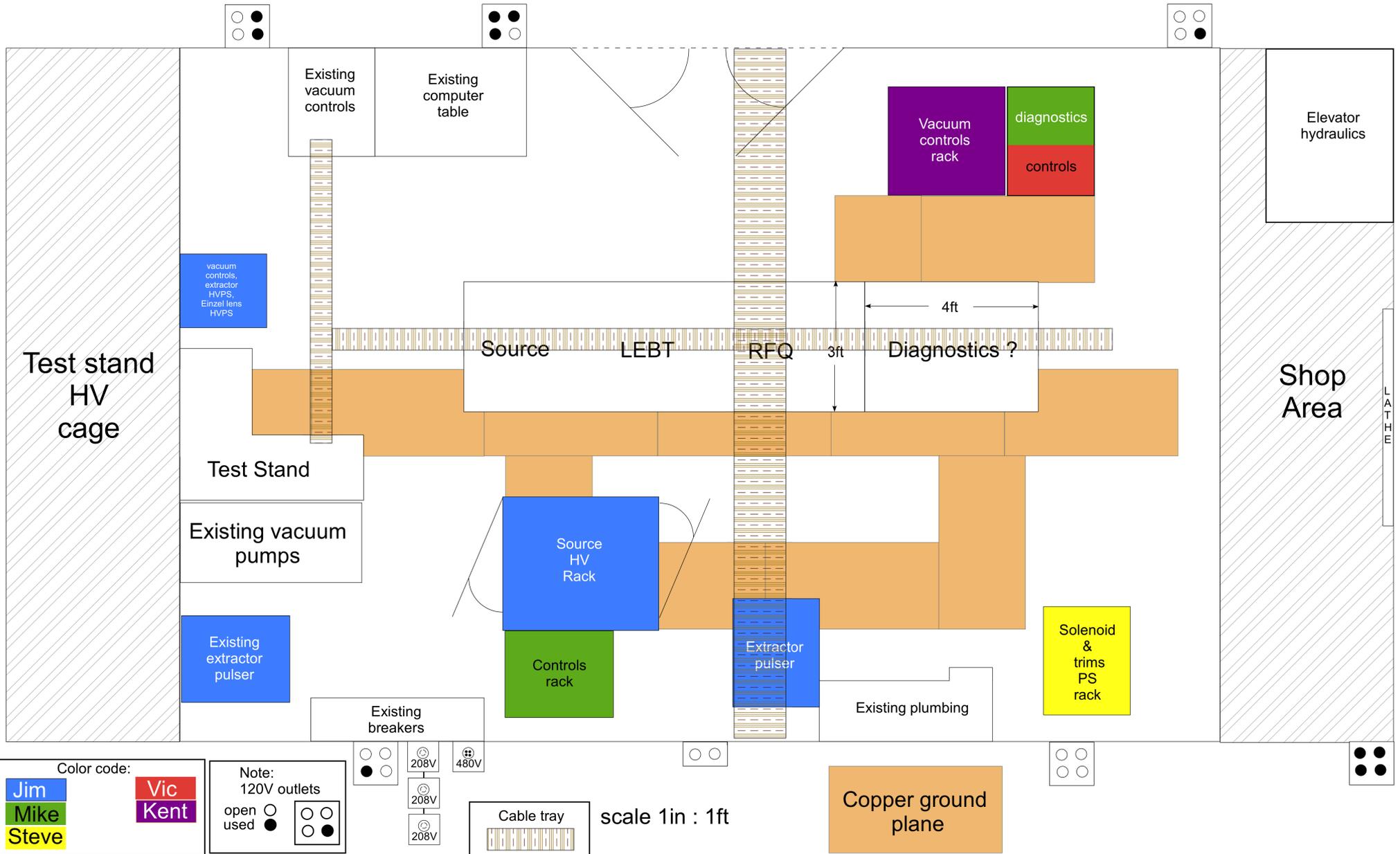
Plunger at 20.56 mm gives 201.25 MHz under vacuum.

Difference between cover off and in vacuum is ~160 kHz.

Power cable connected



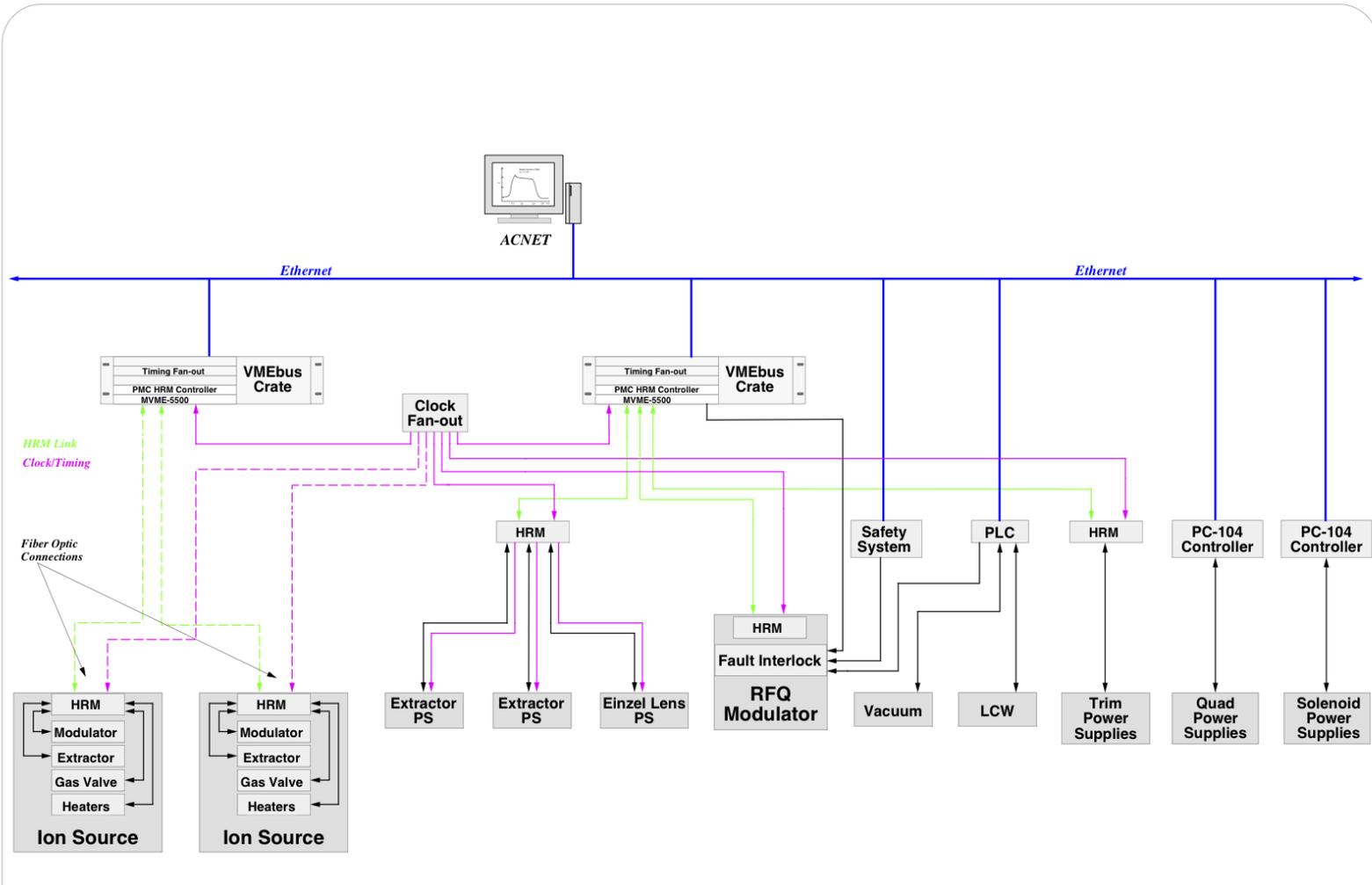
Proposed test area layout



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

Controls



Linac RFQ Upgrade Controls Block Diagram

Controls

- Problem with HRM tripping off when source sparks. Still Investigating.
 - Changed to HRM with chassis ground = analog ground(?) (22 Oct)

Safety

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