

FACET Summary Feb 23-Mar 1

- Sat 23rd
 - Beam down to scavenger extraction dump. Measuring emittances. About 6×0.2 at LI02. Y emittance looks pretty good but x emittance needs work. Present throughput $\sim 80\%$. Beam is probably good enough for radiation survey scheduled for tomorrow afternoon. Will continue emittance tuning and klystron phasing. Transverse feedbacks are on. Energy feedbacks not yet.
 - After tuning, sector 2 emittance now 3.2×0.2 with 1.3×10^{10} charge and full NRTL compression. Beam now to e+ target. Sector 10 chicane energy feedback working. Orbit problem in sector 14. Suspect partially shorted quad (901).
- Sun 24th
 - Several high vacuum spikes that caused valves to go in in the NRTL line. One pump has a fairly high reading (10-4 Torr rest are 10-6). Suspect this pump is outgassing. Turned off pump on day shift. Radiation physics survey of new LCLS-II injection vault in sector 10 in early afternoon. All OK. We have clearance to use beam when contractors are present now. Phased klystrons in s12-15. Repeated trips of klys 1-5. Ok after inst. tech adjusted flow switch.
 - Sector 13 RF working again. We now have enough energy. A timing jump problem with the SXL kicker. Emittances with 1.4×10^{10} e-:

	Sec 2	Sec 4	Sec 11
– X	2.87/1.14	1.88/1.29	4.25/1.11
– Y	0.19/1.19	0.13/1.33	0.25/1.2
- Mon 25th
 - LI14 quad still partially shorted. Will address at PAMM on Wednesday. Setting bunch charge down to $1-1.2 \times 10^{10}$ e-. Retuning LI02 Emit. Concentrating on upper part of accelerator. NRTL tuning. LI02 emittance vs charge, compressor amplitude, RTL orbit & energy set point. Work on training sector 10 chicane so that orbit and dispersion match are robust to standardization (STDZ) Trouble with chicane energy BPM delayed effort (1.5 hrs).
- Tue 26th
 - Continue tuning and BBA development. Suspect a quad in LI11 from BBA studies? LI18 LGPS 601 tripped. PEM had to reset. EP01 kicker timing change caused trouble getting beam past HLAM. Pressure spikes in NRTL line caused valves to go in twice.
 - VVS2 tripped off 3 times and would not turn on remotely. Replaced hardware related to ground fault logic. Tripped again 6 hrs later and noticed a possible PPS flag trip. Under investigation. Further studies of emittance in LI02.

FACET Summary Feb 23-Mar 1 (pg 2)

- Current known problems (12:00 2/26):
 - VVS2 trips. Perhaps a PPS interlock problem.
 - Vacuum spikes in NRTL. Suspect argon instabilities from at least 2 pumps in this region. Under investigation. Will investigate scope of work to replace some of these pumps tomorrow during PAMM. May do replacement during next week's PAMM. Will probably take new pumps installed in the south.
 - Quad in LI14. To be inspected tomorrow.
 - Quad in LI11. Possible problem from BBA data.
 - EP01 kicker timing. Jumps every once in a while.
- Wed 27th
 - Trouble with an intermittent orbit jump. Narrowed down to somewhere just after the beam gets back into the Linac from the DR. Jump frequency diminished making it difficult to track down.
 - Found quad shunts swapped between 301 and 501 in LI07 which probably means 201 and 401 are also swapped (TBC). New Linac quad and RF kick studies and BBA studies with emittance tuning. Lot of data taken and needs to be analyzed.
 - PAMM. Quad in LI14 checked NTF. NRTL vacuum pumps investigated. Found that perhaps as many as 6 out of 7 pumps need to be replaced. Schedule for next week's PAMM. We will take the new pumps from the SDR. VVS 2 PPS relay contacts cleaned. Spare water pump for the DRs checked and found to not have enough pressure. Investigation continues. FACET laser installation work during PAMM.
 - During recovery, find NDR RF 480V breaker tripped. After reset, Cav A ok but Cav B tuner seems stuck so only getting about half gap voltage.
- Thu 28th
 - Continue tuning and BBA data collection. PPS BTM tripped in LCLS NEH tripping off all VVSs (LCLS and FACET) 3 hr recovery. Vacuum spike fault in NRTL. LI02 emittance tuning. 2.85×0.26 . Sent a few beam pulses down to the S20 dump. Very little background. Also cleaned up the extraction line trajectory to minimize scrapping down to the e+ target.
- Fri 1st
 - There were several more vacuum spikes over owl shift in the NRTL. Turned off another pump supply in NRTL. Pumps 824 and 414/454 are now off. Achieved 7×0.7 emittance at LI18. Have what looks like a quad offset by 3 mm in LI14. Continued with BBA and RF kick studies.