

SVT Commissioning v1.1

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I. Establish SVT system operations, procedures, and monitoring

- A. How to Power On. How to restore power after beam trip.
- B. How to start and run chillers, monitor temps, flow, etc.
- C. Interlock operations. Identifying cause of trip.

II. SVT Calibration and Readiness for Data Acquisition

- A. Experts will calibrate
- B. Experts will evaluate gains, thresholds, S/N once system is up.
- C. Complete DAQ integration with Sergey
- D. SVT DAQ instructions in manual

III. Beamline Pre-requisite for opportunistic SVT operations

(Once SVT DAQ is operational and beam has been centered in ECal vac chamber and Beamline Commissioning Step D, can proceed directly to IV (below). If some items in IV are not ready, proceed as follows...)

- A. Leave SVT in full out position
- B. Time in SVT with <10nA beams, single cluster trigger, with expert procedures.
- C. Take data and begin data validation

IV. Beamline Pre-requisites for full SVT operations

- A. Beam set up with formal procedures from Arne and Mike
- B. Beam size, tails, and skewness OK
- C. Set up beam position with SVT wires (Beamline Commissioning E)
- D. Set up SVT Protection Collimator (Beamline Commissioning F)
- E. Set trip levels and monitor beam stability (Beamline Commissioning G&H)

If SVT has not yet been timed in, return to III.B.

V. Check SVT data OK

- A. Amount of data/event? Sampling rate? Max data rate possible?
- B. Validate SVT data OK

VI. Analyze beam trip and beam-off/beam-on sequences (from Beamline commissioning H) for evidence of vertical beam motion. Proceed with SVT commissioning only when it's clear that there is no significant vertical beam motion during a trip, during restoration of beam from a trip, or during restoration from a period where beam was off briefly.

- A. Multi hour study of beam trips and beam off
 - 1. Evidence for vertical beam motion in trip, in beam restoration?
 - 2. Evidence for vertical beam motion when beam off, beam returns?
- B. Stability of beam position with orbit locks on
 - 1. Study history of beam x,y from bpm at 2H02, also beam angle
 - 2. Study history of halo/ecal rates when beam close to collimator edge

VII. Measure Occupancy at 25 mrad

- A. Set opening angle to 25 mrad (si edge 1.5 mm from beam in layer 1) and SVT protection collimator in place with 3mm gap.
- B. Measure Occupancy vs Beam Current and compare with MC by taking data at each of the following currents with 4 um W target in.
 - 1. 20 nA
 - 2. 50 nA
 - 3. 100 nA

4. 200 nA

C. Take data for > 4hours at 200 nA.

D. Examine data for anomalous occupancy corresponding to trip times or beam restoration times. Examine bpm record for excursions in x,y or excursions in noise in halo counters or ecal.

E. If benign, proceed...

VIII. Measure Occupancy at 20 mrad

If beam trips and beam off and restoration look benign, Repeat VII but at 20 mrad.

IX. Measure occupancy at 15 mrad

If beam trips and beam off and restoration look benign, Repeat VII but at 15 mrad.

X. Take data at 2.007 GeV, 15 mrad opening angle, 4 um W target