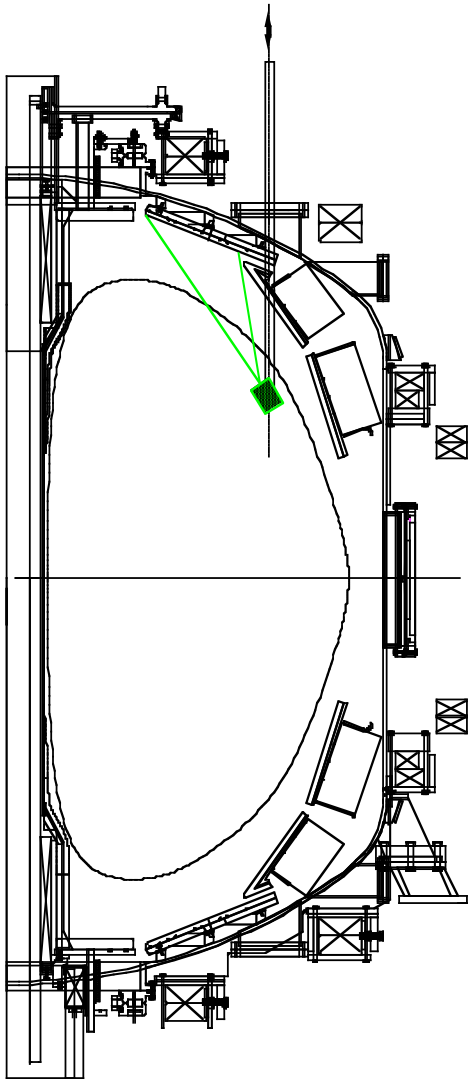
NSTX lithium divertor coatings



- Goal: Control divertor recycling using between-shots application of lithium coatings to the outer divertor tiles
  - Is lithium-on-graphite acceptable? Or is metallic lithium on an impenetrable substrate needed?
- Install an insertable e-beam (or resistively heated) deposition system (upper port as shown)
- Deposit few 1000Å of lithium. Withdraw deposition system.
  - Reminiscent of the insertable getters used in PLT, PBX
  - But time scale is different
    - » Few 10's of seconds for 1000Å coating
    - » Cycle time is dominated by insertion/removal of deposition source.
- Coat before *every shot*
  - 1000 shots ⇒ 0.1 mm accumulation
    - » Accumulation may be limited by evaporation

Run requirements

- Lithium source development
  - Joint with CDX-U
- $D_{\square}$ emission for upper, lower divertor
- Particle fueling inventory
- Shotlist:
  - Develop upper and lower single null discharges with similar fueling, $D_{\square}$ emission signatures, density evolution
  - Upper null shots (with between-shots coatings)
  - Lower null shots (no coatings)
- Required number of shots for each phase is TBD pending outcome of lithium pellet injection experiments.
  - Probably 1, possibly 2 run days.