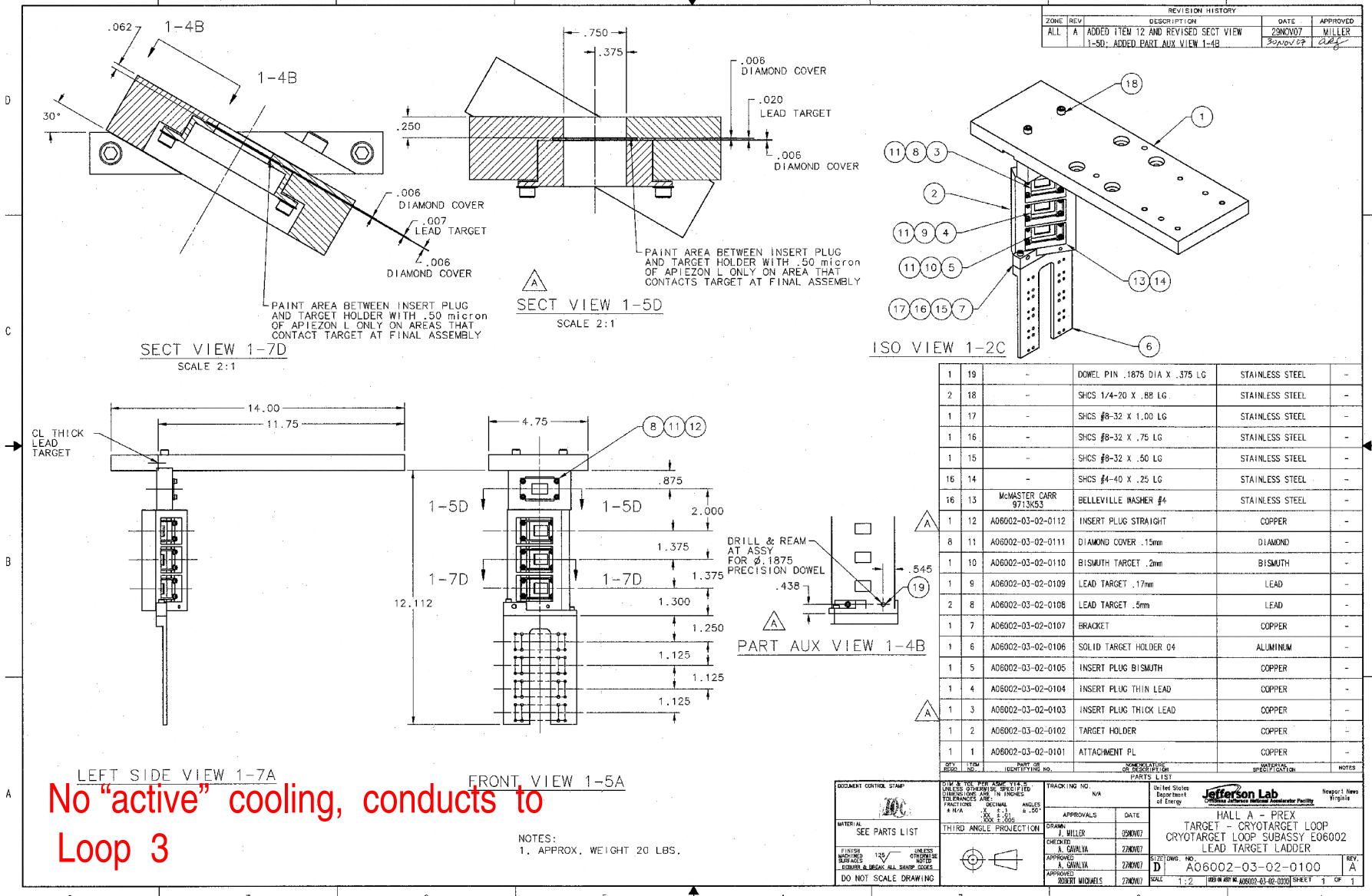


Test Target for PREX and e06007

(tilted)



No "active" cooling, conducts to Loop 3

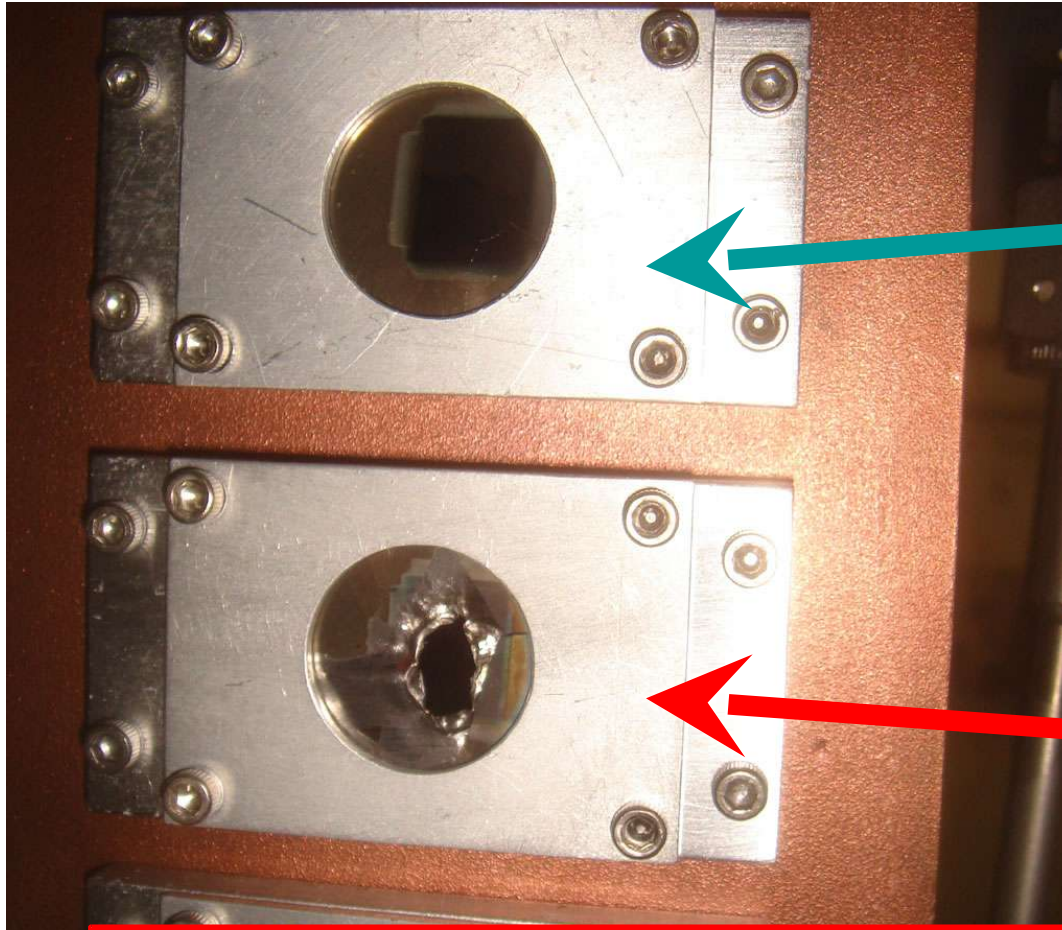
Lead Target Assembly

- Ladder Design is in machine shop
- Fabrication completed Jan 7.
- Install Pb / diamond sandwiches (~ Jan 10)
- Belleville washers maintain pressure & contact.
- Use vacuum grease (except thin lead)

- Some chance can improve contact with vacuum deposition of C12 and cold welding (Bogdan)

Reminder: History in 2007
Targets)

(E06007 Lead



Pb #4
Ran 2 weeks @ 45 uA

discoloration from beam
(rastered)

Pb #3
Ran 2 days @ 55 uA
Failed near 85 uA

Also : A test in Y2000 of a design closer to the design : Jan 2008
Ran 82 uA , 20 min no
failure

Lead Target Test Plan

1. Center the beam on target. Raster 4 mm. Use a “holey” ladder and the tilted targets – which have tighter clearance than our target). target in
2. VDCs off. Scintillators on. Measure rates in scint.
6. Establish rates up to 0.5 μA *Do not exceed 10 Mhz!*
*See * below*
4. Use Lumi as another rate monitor.
5. Protect the HRS detectors (if necessary (*) detune HRS magnets. Leave scintillators on as a relative rate monitor.)

** If using $E = 2.77$ GeV beam, the rates should not be a problem.*

(continued ...)

Lead Target Test Plan (cont.)

6. Ramp the beam up slowly to 100 μA .
7. Steps of 10 μA , pausing 20 min. each step
8. Monitor the following:
 - Rates in scintillators and Lumi
 - Target temperatures
 - Vacuum pressures
 - Radiation monitors
9. Run at “M” μA for “N” hours. (perhaps $M = 100$, $N = 8$)

*(Note, the tilted targets are only rated for $\sim 80 \mu\text{A}$. We **don't** really want to melt targets. Creates a huge mess.)*

Idea to Improve Contact (Bogdan)

- Vacuum deposit pure C12 on lead and on diamond. Layer is ~1 um.
- Press the lead / diamond sandwich under vacuum (“Cold welding”)
- No need for vacuum grease.
- Reliable, 100% contact of lead & diamond.
- Arun Saha and SRF group may succeed in time, practicing with chemically pure lead and thin carbon foils.