COBRA STATUS W. Ootani

Feb. 15th, 2006 MEG Review Meeting

Power Supply Trouble

Power supply for the compensation coils was burned. Fire brigade and (even) police came to the area. Relatively big incident. Any interlock protection system in the power supply didn't work. It was really good that I was working around there.



What was the failure?

Over-voltage detector is triggered (probably by external noise) and opened thyristor TH13. A big current (320A) flowed through the protection resistor R6. Generated heat: 100kW!

Crucial interlock protections were missing.

- ─ TH13 open → shutdown
 - Temperature sensor on R6



Repair Work

The power supply is already starting to work only one week after the problem happened thanks to an excellent work of two engineers from the company.



What Measures To Take?

We have to make sure that it never happens again. Possible measures

- Remove R6+THY13 because they're not necessary in our case.
 - The company misunderstood the polarity of the over-voltage caused by the SC quench...
- Add thermal sensors to all the power supplies.
- Smoke detector?
- No problem in the SC power supply.
- This problem might explain the frequent quenches in the last beam time.

Plan for Field Measurement

- The field measurement is delayed by two weeks because of the PS trouble.
 Plan for the measurement
 - Surveying+calibration: 1week
 - Measurement: 2-3 weeks

 - Possibly with finer mesh for the central region
 - Independent measurement of the BTS fringe field
 - Measure long term stability of the field using NMR

We are starting the field measurement this week. Supposed to complete within February.

He-Tight COBRA Cryostat

- **COBRA** cryostat was not He-tight because of the Viton O-ring.
 - Calculated partial pressure rise after one year operation: 40Pa
 - Deterioration of the thermal and electrical insulation of the vacuum.
- Fill up the gap and the screw hole with RTV elastic adhesive (Threebond 1530).
- The inside of the COBRA is filled with He-gas for the first time last December.
- Pressure rise after two weeks: 1x10⁻³Pa
- Much smaller than expected without the Threebond, but there's still leak.
- We are thinking of permanent pumping for safety.





Fringe Field Shielding in TTE3

- The side wall and the floor in the E3 are tiled with 10mm-thick soft iron plates.
- The shield plates are mobile.
- It worked as expected.
 - The residual field around the detector was measured to be 2Gauss with the shieldings. (cf. 4-5Gauss without the shieldings)
- Stray field problem is fixed, finally.



Air Conditioning

Air conditioning device and fan filter for the calorimeter maintenance work are installed in the detector hut.

conditioning

