



PSAG 6th April 2017

Project Manager's Report



Current Status

Excellent Data-taking run ISIS 2016/04.

- Fully staffed 24/7
- Efficient data taking, 160% of expectation achieved.

ISIS 2016/05 14/02/17 to 07/03/2017

- ~20 day run, fully staffed for running 24/7
- Ramp magnets to operating point – FC quench at 160/165A.
- Row back to more conservative magnet setting – developed several ‘speculative’ models of FC quench limiting factors .
- Plan to investigate FC quench – training?

Agreement in principal to operate over ISIS 2017/02 Mid–Sept to End Oct 2017.

Controls & Monitoring



- Static operation of state machine.
- Alarm handler – much progress.
- Majority of Controls review recommendations now implemented.
 - Magnet power supply control limits from DL.
 - IOC restarts
- Network errors much reduced.
- FC quench logging in final validation.

Safety

- PPD review
 - Report now issued. Conclusions mostly applicable to STFC provision of local expert effort.
 - Thanks must go to PPD and John Thomason and Duncan Francis of ISIS.
- C&M review – winding up – final actions in preparation – Durga R.
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- Review of incident completed December.
 - Traced overheating of Sumitomo compressors, 1 single stray 0.2mm diameter strand of wire.
- Outcomes
 - Administrative controls tightened.
 - Technical changes (instruction set reduction, confirmation pop-up)
 - Clarification of use of SC permit.

Hall Operations

- Roof water chiller upgrade – manager, now restored and fully functional
- New circuit to allow cooling of beamline magnets using chiller in loading bay now fully commissioned
- O2 sensor service complete
- 2nd beam stop pumpset repair and service
- Diffuser ‘sticking’ issue diagnosed and repaired – awaiting magnet powering to test.
- Back-up compressed air service
- Cooling for SS diode in event of roof chiller fail – ready to commission.



Tracker

- Service of cold heads for cryos 1&2 complete.
- Decided to leave 3 & 4 alone as 4 has thermal contact issues which mitigate against thermal cycling.
- Sunday 2nd April (not April 1st)
 - cryo 4 cold head failed.
- Sumitomo to recondition recovered cold heads and return 'in 2 to 3 weeks'

Liquid Hydrogen



Now at mid-point of installation schedule, 2 new issues.

1. Pressure rating of hydrogen safety volume envelope.
2. Pressure relief in event of freezing at condenser.

HAZOP will be required – agreed with J Thomason and ISIS, external input required – contact established, timing TBC.

Agreed to continue with current programme to complete Neon test – opportunity to fully test and de-bug system.

Required mods to be pursued in parallel.

Liquid Hydrogen 1

Pressure rating of hydrogen safety volume

- Windows are rated minimum 6 bar, mounting structures are not.
 - Tesla did not consider asymmetric loading case – were not asked to.
 - Potential to damage FC if pressures are not managed.
 - ‘Top hat’ is flexible, but adequate.
- Must rigorously respect 1.25 bar differential pressure rating
- Upgrade to ‘quench’ pipework.
 - Capacity / Bends.
 - Routing at turbo / turbo backing line / burst disc.
 - New blow off valve x2.
- ‘worst case scenario’ is now key
 - Amount of hydrogen, rate of deposition and appropriate volume/area for calculations determine pressure rise.

Liquid Hydrogen 2

Pressure relief in case of freezing

- New pipe added. Runs from close to absorber to above condenser near hydrogen return to 'cabinet' on South wall.
- New pipe will be heat sunk to radiation shield at 50K minimum, well above 12K freeze temperature of H₂.
- Thermal break below turret to minimise heat load.
- No active components added all functions provided in cabinet.
- 2nd turrent has been opened and dis-assembled for modifications.
- Welding and x-ray testing agreed.
- Parts made Strathclyde.

Move existing heater on return pipework to connection point with condenser. Provides active control for prevention of return path ice-up.