



CM47 13th February 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.

Upcoming run ISIS 2016/05 starts 14/02/17

- Plan to ramp magnets to operating point tomorrow.
- ~20 day run, **near** fully staffed for running 24/7

Liquid Hydrogen

- Stop data-taking early to install Liquid H₂ system.
- Plan to re-position SS magnets next shutdown
 - Eases Absorber changes.
- Magnet to PRY braces complete, 2 of 6 placed – not in use – yet. Awaiting pressure vessel approval followed by collaboration approval.



Controls & Monitoring



Pierrick Hanlet now left MICE and started new employment.

Controls
Experiment Integration Scientist
US local magnet expert
Local staff

Ajit Kurup
Paul Hodgson
Un-filled
Durga Rajaram
Paolo Franchini
Josef Boehm

- Several associated problems
 - Hand-over not well documented, working to build documentation as we work
 - Ajit Kurup migrating code from Dev to Pro.
 - DL help mandatory and freely given.

6 man DL team at RAL last week

- Full task list completed, magnets ramped to 10A .
- RAL team ramped magnets to 15A with QPS early this week
Current problem with Canbus – Watchdog fail.

Hall Operations

- Roof water chiller upgrade – manager, tuning to prevent excessive on/off cycling.
- New circuit to allow cooling of beamline magnets using chiller in loading bay.
- O2 sensor service
- 2nd beam stop pumpset repair and service
- Diffuser performance check
- Proton absorber tuning
- Back-up compressed air service
- Cooling for SS diode in event of roof chiller fail.
- Start of install of cooling for RF.
- Various repairs/small stuff/housekeeping



Liquid Hydrogen

- Reduced heat loads in turret and absorber
 - Now low enough that operation with H₂ is possible
- Tests with neon
 - Regulated operation at 27K
 - Delta T condenser to absorber <1K
 - Level indication from absorber sensors even without re-calibration.
- Project is now dominated by Liquid Hydrogen installation.
- Transplant R9 'turret' into MICE hall magnet.
- Dominated by resource requirements on vacuum and cryogenic expertise.
- Additional resource available from PPD
- Next step – discussion with ISIS regarding available expertise and support. Partly required during ISIS run period.



Liquid Hydrogen

Stop data-taking 6th March

- Plan to slightly re-position SS magnets
 - Eases Absorber changes.
- Move FC off line
- Swap 'turret'
- Check for vacuum leaks
- Move FC back on line and re-couple to SS magnets
- Check for vacuum leaks.
- Complete wiring and test.
- ISIS safety review
- Fill with Hydrogen – 5 days?
- 24 hour cover required once full.



Safety

All tasks resulting from most recent SoPS now completed.

- PPD review
 - Long fairly intensive day but very productive
 - Immediate feedback – PPD reassured, selection of ‘nice things’ said
 - Thanks must go to PPD and John Thomason and Duncan Francis of ISIS.
- C&M review – winding up.
 -
- Review of incident completed December.
- Outcomes
 - Administrative controls tightened.
 - Technical changes (instruction set reduction, confirmation pop-up)
 - Clarification of use of SC permit.

	Active Risk	12									
	Retired Risk	13									
ID	Risk Description	Potential impact on project	Risk score			Ownership	Proposed Action	Post-action risk score			Comment / Conclusion
			L	I	LxI			L	I	LxI	
MICE 3	Magnetic field effecting operation of electrical equipment relating to the continued operation of the cooling channel magnet systems and detectors.	Inability to operate the cooling channel	5	5	25	MICE - UK / MAP	Installation of a partial return yoke has mitigated the major risk. Movement of the control and power supply equipment to a dedicated room outside of the magnetic field.	1	4	4	Much work has been completed. Non staff risk persists in the event of additional material being required.
MICE 4	Extended period of re-training for the lattice of magnets.	Timescales for the training period, cost of the amount of LHe required to carry out the training. Expert personnel required to be available for magnet operations over a protracted period of time.	4	5	20	MICE-UK / MAP	Magnet integration task force to define commissioning method to keep schedule and cost to a minimum.	4	4	16	Each re-cool and fill of the Spectrometer Solenoid can take upto 500l LHe, AFC remebers it's training. Each full lattice quench could cost in the region of £7K. BOC LHe will be available during the commissioning period.
MICE 8	Resourcing issues from the STFC and national labs	inability to complete significant sections of work on agreed time or cost scales.	4	5	20	MICE - UK / MAP	Realised. Escalation of the issue to the STFC and DOE.	2	4	8	Project scope has changed leading to a different labour profile required to complete the project.
MICE 16	Failure of a Focus Coil Magnet	Internal cold mass or associated equipment deep within the assembly. LTS leads.	3	5	15	MICE UK	Follow all specific operational aspects as defined by the experts for the superconducting magnet	1	5	5	Investigation and fix would be extremely costly and extensive with regard to schedule.
MICE 17.1	Failure of Upstream Spectrometer Solenoid Magnet	Internal cold mass or associated equipment deep within the assembly. LTS leads.	4	5	20	MAP	New quench protection system	1	5	5	Has the same design issues as SSD, confidence improving with operation and testing with forces.
MICE 19	Failure of M2 in SSD.	Reduction in scientific output and resulting cooling effect.	3	4	12	MICE-UK / MAP	Maximise data collection before running M2.	2	4	8	Consider completing data set for one absorber.
MICE 20	Failure of Helium space feedthrough in SSD.	Reduction in scientific output and resulting cooling effect.	3	4	12	MICE-UK / MAP	Limit number of quenches	2	4	8	
MICE 23	Risk of equipment failure/breakage	Cost of repair/replacement. Time lost during recovery	3	3	9	MICE UK	Spares inventory / proper planned maintenance	3	1	3	to some degree inevitable due to age of equipment
MICE 24	Problems during magnet string commissioning	Further compromise of SSD / Delays to program	3	5	15	MICE UK	Conservative magnet settings.	3	3	9	Always recognised as a challenge - complicated and exacerbated by SSD situation
MICE 28	Inability to cool absorber to required temp	No H2 absorber / reduced science	3	5	15	H2 Group	Heat load modelling/design revision	2	5	10	improvements to heat load design.
MICE 29	Further compromise of SSD performance	Slower data-taking, more remedial action required	3	5	15	MICE-UK / MAP	Power supply improvements, feedthrough heating improvements.	3	5	15	Anomalous earth leakage and noise seen - now absent, but as yet unexplained.
MICE 30	Insufficient international manpower available.	Delay in remediation of non-UK assets and associated reduction in effort on other tasks.	4	3	12	MICE-UK / MAP	Discussion with international management to maximise staff availability.	3	3	9	Long standing issue.
MICE 38	Decreased in depth knowledge of controls and monitoring system.	Higher fraction of 'lost time' during data-taking due to longer time to troubleshoot	5	3	15	MICE	Support new team, extended period for 'run-up' in advance of ISIS run.	3	3	9	Anticipated difficulty with directing staff effort during changeover has been realised. New team in place, excellent co-operation and effort now bearing fruit.

Risk

- 'New' risk – C&M personnel changes add 'skill transfer risk
- US intend to 'retire' all risks 'in our direction?'

