



# CM45 July 29<sup>th</sup> 2016

## Project Manager's Report

# Step IV



## STFC award Step IV

- data-taking through July 2017.
- analysis through July 2018.
- Students to March 2020.

## SS QP/QD.

- Modification to fast ramp down circuit implemented.
- Installation completed and signed off.
- 'Missing' VTs found

## Magnet commissioning

- Magnet readiness review RAL 28<sup>th</sup> June 2016
  - Recommended:
    - conservative running.
    - Data-taking before running M2D coil.
- Collaboration agrees no M2D operation this ISIS cycle.
- FC trained to 90A - ready for operation.
  - Data with FC July 14<sup>th</sup>, 15<sup>th</sup>



# Spectrometer Solenoids

## SSU and SSD

- QD thresholds tightened now we have the full set of VTs
- Extra FNAL documentation now on wiki.  
[http://micewww.pp.rl.ac.uk/projects/quench-protection/wiki/SSUSSD\\_Quench\\_Protection\\_System](http://micewww.pp.rl.ac.uk/projects/quench-protection/wiki/SSUSSD_Quench_Protection_System)
- Tight thresholds for protection of LTS leads internal to cold mass
  - eased to 200mV. Stable running
- All 3 magnets ran Tuesday night – Wednesday night 17<sup>th</sup>–28<sup>th</sup> July.
  - Congratulations to magnet team – excellent progress.
  - Data taken
  - 50x increase in total data recorded to date.
- Not out of the woods – yet.
  - Improvements to SS QD system in progress
  - Recording of FC quench data
  - See next slide..

# Magnet & PRY movement

## PRY movement detectors

- additional channels added – upper end plates, vertical movement monitors & magnet OVC.
- Movement detectors for SS OVCs
- total relative movement between Magnet OVC and PRY of ~4mm at ~210A
- Draw wires show 2mm PRY movement at 210A
- OVC draw wire reading at 120A – 0.2mm movement – possible indication of stick-slip movement of OVC.
- Working to design OVC – PRY brace – J Tarrant.
  - Requires Pressure vessel code approval.

# Water



- Chiller external plumbing completed/cleaned/test run.
- All prep work for cryo-cooler connections completed.
- ‘Trench’ circuit for magnet power supplies
  - Plumbing complete up to ‘cut-in’ point.
  - New, reduced diameter ‘main line’ to aid air ‘bleeding’
  - Ion exchange cartridge in place
  - Controls installed
  - Pumps wired.
- Ready for end ISIS user cycle – now – today.
- Warm magnets re-balanced for higher current operation of ‘middle’ quad in each triplet.



# Liquid Hydrogen



- Gas supply re-configuration due to chiller – done
  - New plinth in place.
  - Gas panels installed.
- Test of wiring mods in R9.
- Absorber bodies ‘agreed good to go’
- Full scaffold assembled ready for testing in R9
- End-cap delay due to OM –
  - Delivery on-schedule 21<sup>st</sup> July – tomorrow.
- Now planning best time to install in MICE hall.
  - Christmas/New Year.
  - November shut down too short – 2 weeks
  - Scheduling difficult with vacation



# Hall Plan - August

|              |                    | August 16 Wk1   |   |   |                                   |   |             |   | August 16 Wk2     |           |                 |                        |             | August 16 Wk3 |                     |   |   |  |                            |
|--------------|--------------------|---|---|---|-----------------------------------|---|-------------|---|-------------------|-----------|-----------------|------------------------|-------------|---------------|---------------------|---|---|--|----------------------------|
| ISIS?        | Friday 29th        | Monday  | Tuesday   | Wednesday   | Thursday                          | Friday  | Weekend     | Monday  | Tuesday           | Wednesday | Thursday        | Friday                 | Monday      | Tuesday       | Wednesday           | Thursday                                | Friday                                  |  |                            |
|              | no                 | no  | no  | no  | no                                | no  |             | no  | no                | no        | no              | no                     | no          | no            | no                  | no                                      | no                                      |  |                            |
| Task         | Water - manifolds  | Boehm, Nichols water off- record trip. Install pipes.   | Beecham - to help with soft pipe install. water off- record trip. Install pipes.    | Drain down - close valve before pumps at roof level to isolate - drain from 2" dead legs in trench  |                                   | Move back to 'main manifolds'                               | Contingency | Contingency   |                   |           |                 |                        |             |               | HALL WATER COMPLETE |   |   |  |                            |
|              | Water - roof       | water off- record trip. Install pipes.  | water off- record trip. Install pipes.  | Fix roof chiller controls ICS.  | Contingency                       | Refill roof system, bleed through 1" valve                  | Contingency | Contingency   |                   |           |                 |                        |             |               |                     |   |   |  |                            |
|              | Water - chiller    |   |   | Switch to chiller.  | Contingency                       | Switch SS Cryo-coolers back to roof - drop circuit pressure | Contingency | Contingency   |                   |           |                 |                        |             |               |                     |   |   |  |                            |
|              | Water - trench     |   | prep for 4" pipe work in trench   | Break-in to cooling loop. Make connections between 4" line on West wall and existing manifolds. Glue in valves plus 1" valved return line on 4" line in trench. | Start connection of trench system | Contingency   | Contingency | Contingency   | Trench System     |           |                 | Test Run Trench system | Contingency | Contingency   |                     |   |   |  |                            |
|              | Water - electrical |   |   | DL staff?   |                                   |   |             |   |                   |           | work completed? |                        |             |               |                     |   |   |  |                            |
|              | SS Magnets         |   | SS QD system test pulsing RR2 - verify all time constants and electrical connectors |   |                                   |   |             |   | SS QP contingency |           |                 |                        |             |               |                     | SSU ECE to full current Soak overnight? | SSD ECE to full current Soak overnight? | SSU ECE full current + FC then SSD ECE | SSU all coils full current |
|              |                    | No warm magnet cooling - no cold magnet running due to water changes - cryo-coolers maintained at all times |   |   |                                   |   |             | Magnet running not possible - access to hall trench required. Compressor service. |                   |           |                 |                        |             |               |                     |   |   |  |                            |
|              | Liq H2             | R9 testing  |   | R9 testing  |                                   |   |             | R9 testing  |                   |           |                 |                        |             |               |                     |   |   |  |                            |
| Staff        | John Govans        | x   |   | x   | x                                 | x   | x           | x   | x                 | x         | x               | x                      | x           | x             |                     |   |   |  |                            |
|              | John Beecham       |   | x   | x   | x                                 | x   | x           | x   | x                 | x         | x               | x                      | x           |               |                     |   |   |  |                            |
|              | Roof chiller man   |   |   | x   |                                   |   |             |   |                   |           |                 |                        |             |               |                     |   |   |  |                            |
|              | Mark               | x   | x   | x   | x                                 | x   | x           | x   | x                 | x         | x               | x                      | x           |               |                     |   |   |  |                            |
|              | Sven               | x   | x   | x   | x                                 | x   | x           | x   | x                 | x         | x               | x                      | x           |               |                     |   |   |  |                            |
|              | John               | x   | x   | x   | x                                 | x   | x           | x   | x                 | x         | x               | x                      | x           |               |                     |   |   |  |                            |
|              | Josef Boehm        |   | x   |   |                                   |   |             |   |                   |           |                 |                        |             |               |                     |   |   |  |                            |
|              | Pierrick Hanlet    |   |   | x   | x                                 | x   |             |   |                   |           |                 |                        |             |               |                     |   |   |  |                            |
| Andy Nichols | x                  | x   |   |   |                                   |   | x           |   |                   |           |                 |                        |             |               |                     |   |   |  |                            |

Clock

# Longer term Planning

|                    | Aug-16                             |     |                           |     | Sep-16 |     |     |     | Oct-16             |     |     |     | Nov-16           |     |     |     | Dec-16               |     |     |     | Jan-17 |     |     |     | Feb-17 |     |     |     | Mar-17             |     |     |     |
|--------------------|------------------------------------|-----|---------------------------|-----|--------|-----|-----|-----|--------------------|-----|-----|-----|------------------|-----|-----|-----|----------------------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------------------|-----|-----|-----|
| Week               | Wk1                                | Wk2 | Wk3                       | Wk4 | Wk1    | Wk2 | Wk3 | Wk4 | Wk1                | Wk2 | Wk3 | Wk4 | Wk1              | Wk2 | Wk3 | Wk4 | Wk1                  | Wk2 | Wk3 | Wk4 | Wk1    | Wk2 | Wk3 | Wk4 | Wk1    | Wk2 | Wk3 | Wk4 | Wk1                | Wk2 | Wk3 | Wk4 |
| ISIS Cycle         |                                    |     |                           |     |        |     |     |     | ISIS cycle 2016/03 |     |     |     |                  |     |     |     | ISIS cycle 2016/04   |     |     |     |        |     |     |     |        |     |     |     | ISIS cycle 2016/05 |     |     |     |
| Absorber           |                                    |     |                           |     |        |     |     |     | Empty              |     |     |     | LiH into FC      |     |     |     | Liq H2 onto beamline |     |     |     |        |     |     |     |        |     |     |     |                    |     |     |     |
| Cold Magnets       | SSU&D QD testing<br>FC Quench mods |     | Cold Magnet Commissioning |     |        |     |     |     |                    |     |     |     |                  |     |     |     |                      |     |     |     |        |     |     |     |        |     |     |     |                    |     |     |     |
| Engineering        | PRY to Magnet vessel braces        |     |                           |     |        |     |     |     |                    |     |     |     |                  |     |     |     |                      |     |     |     |        |     |     |     |        |     |     |     |                    |     |     |     |
| Hall water         | Water change over                  |     | Contingency               |     |        |     |     |     |                    |     |     |     |                  |     |     |     |                      |     |     |     |        |     |     |     |        |     |     |     |                    |     |     |     |
| Hall Water - power | Water controller commissioning     |     |                           |     |        |     |     |     |                    |     |     |     |                  |     |     |     |                      |     |     |     |        |     |     |     |        |     |     |     |                    |     |     |     |
| Other tasks        | HPC service                        |     |                           |     |        |     |     |     |                    |     |     |     |                  |     |     |     |                      |     |     |     |        |     |     |     |        |     |     |     |                    |     |     |     |
| Hydrogen           | Liq H2 test in R9                  |     |                           |     |        |     |     |     | FC cooldown in R9  |     |     |     | Liq H2 cooldown? |     |     |     | Liq H2 5 week prep.  |     |     |     |        |     |     |     |        |     |     |     |                    |     |     |     |

- LiH running November/December
- Liquid H2 running Feb/March.
- M2D running ISIS 2017/01 – April/May