



Mice Collaboration Meeting CM33

Glasgow University 25th – 29th June 2012

STFC Daresbury Laboratory Electrical Infrastructure Report

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Recent Electrical Infrastructure work

Power feeds for Cryo compressors via distribution boards.

5th Board added to cover additional compressors (31)

Final Location of compressors to be agreed.



New up-rated Sub Station 25 installed to provide sufficient power to run all of MICE.

Power Distribution



400 / 208 V Distribution transformer installed for Cooling channel power supplies. Local distribution board to feed magnet power supplies for Step IV has also been installed adjacent to rack positions.



Water cooling pumping system for cooling channel compressors to be modified , with an automatic pump changeover control system.

Can this equipment cope with the high magnet field in the services trench ?



Personnel Protection System

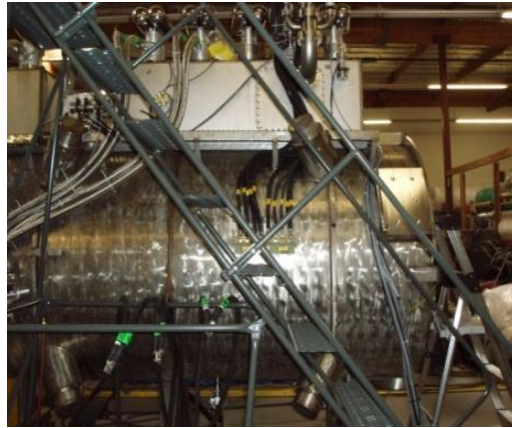
- *PPS field wiring in MICE Hall complete and the search and lockout system has been in use for a while now. Any feedback comments on its operation would be welcome.*
- *Some modifications are planned to the signage/key locking system at the large entrance door/personnel door.*
- *Other modifications may be required to cover the additional shielding that's planned for the Step IV control rack locations ?*
- *Move Search Points etc.*



Recent Electrical Control Systems

Spectrometer Test Rack at Wang NMR.

Interfaced to Magnet power supply Rack & Fermi Lab Quench Protection system.



*AFC Test Rack for Use in R9
Equipped with VME EPICS control system, instrumentation to control and monitor the feedback sensors and the Magnet power supply.*

· Will be ready for tests in July



Recent Electrical Control Systems cont.

*Temporary Tracker Control system for Mice Hall Tests
Allows remote control and monitoring and interlock status.*

The functionality of this control system will be incorporated into the full hall control system in Step IV.





Future Electrical Work for MICE

• STEP IV Proposals

- Build the Mice Hall Control system for all the instrumentation in the cooling channel. (Temp, He level, Pressure etc.)
- Build a separate control rack behind the beam dump for Cryo compressor control, vacuum control and Tracker II.
- Install cable management systems from the North Mezzanine extension upper level to the South side, (service routes to be agreed.)
- Similarly install additional under floor cable routes from the trench, to provide magnet power supply feeds for Step IV and Step VI.
- Install all cabling required for the above to Spectrometers & AFC modules.
- Commission and test all control feedback.
- Complete software, using feedback from tests on Spectrometer, AFC & Tracker as a base platform.



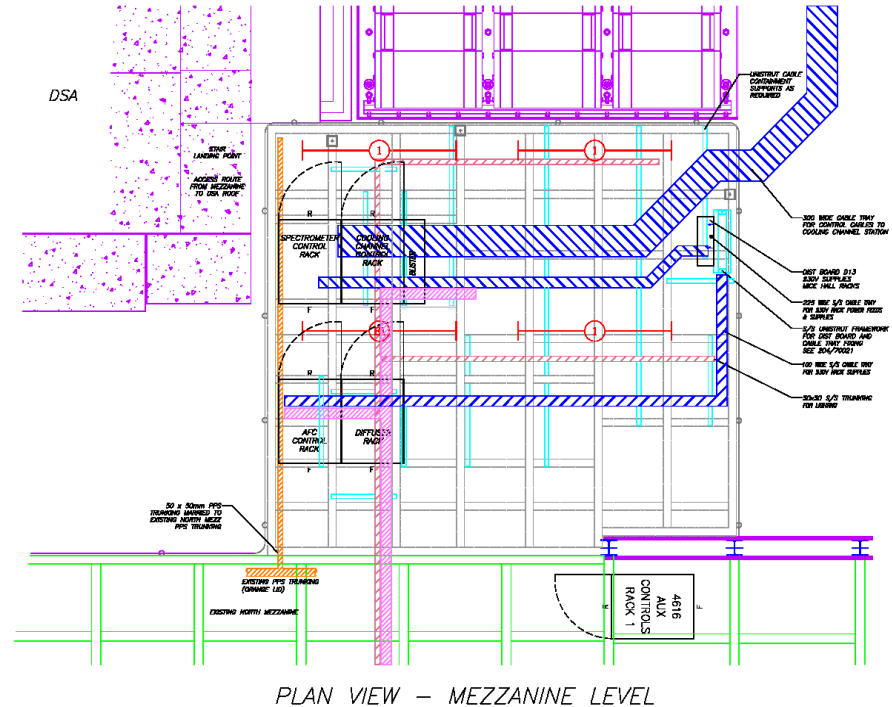
Recommendations/Layout of Racks for Step IV

• “With the Strong Magnetic Fields in Mind the Plan is to populate the racks as shown below:

Upper Tier (Step IV)

- Spectrometer Control System (2 racks and blister)
- AFC Control Rack & Diffuser

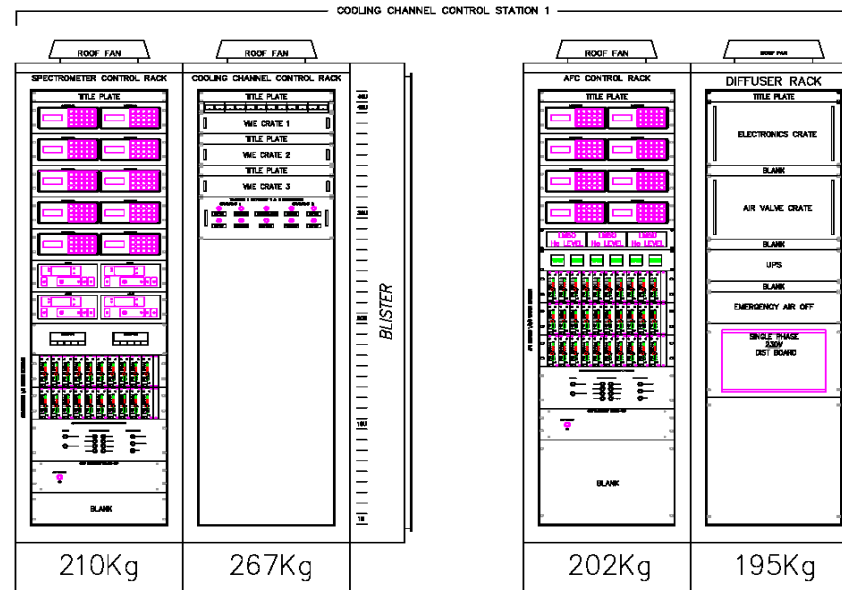
Shielding Proposal available from Jason for this layout



Recommendations/Layout of Racks for Step IV



COOLING CHANNEL SUITE OF RACKS



TOP TIER

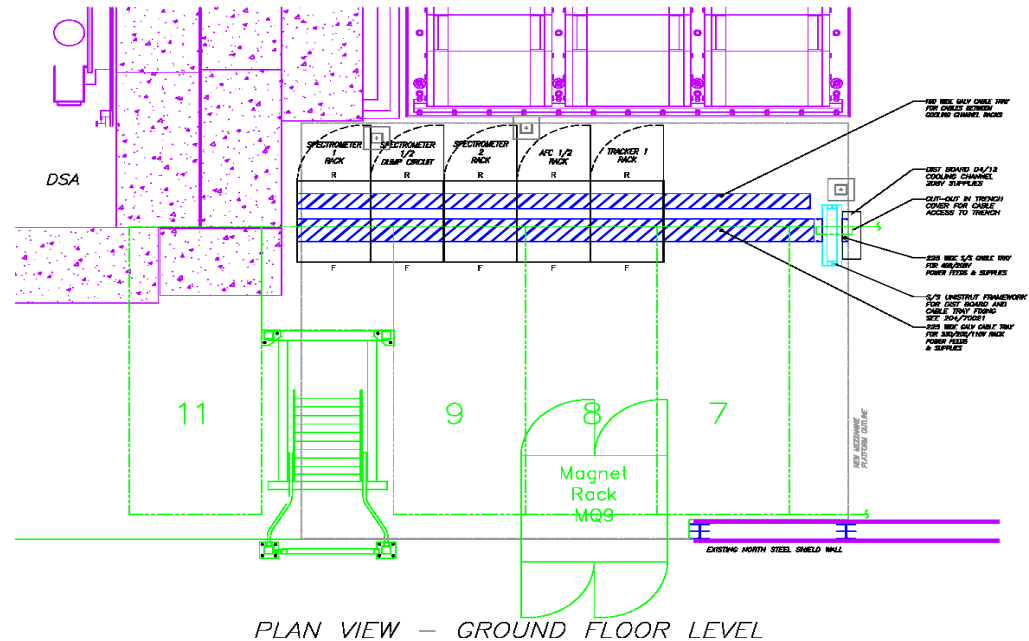
Upper Tier (left to right) Step IV

Upper Tier

- Spectrometer Control System
(2 racks and blister)
- AFC Control Rack & Diffuser

Shielding TBD

Recommendations/Layout of Racks for Step IV

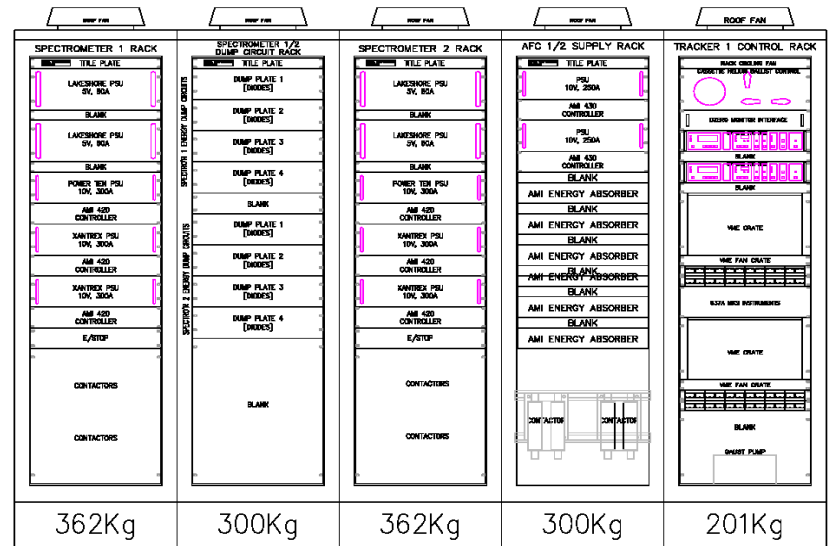


Lower Tier (left to right) Step IV

- Spectrometer Solenoid #1 Power Supplies
- Spectrometer Solenoid Dump Circuits
- Spectrometer Solenoid #2 Power Supplies
- AFC & Absorbers Circuits
- Tracker

Recommendations/Layout of Racks for Step IV

COOLING CHANNEL SUITE OF RACKS



Lower Tier (left to right) Step IV

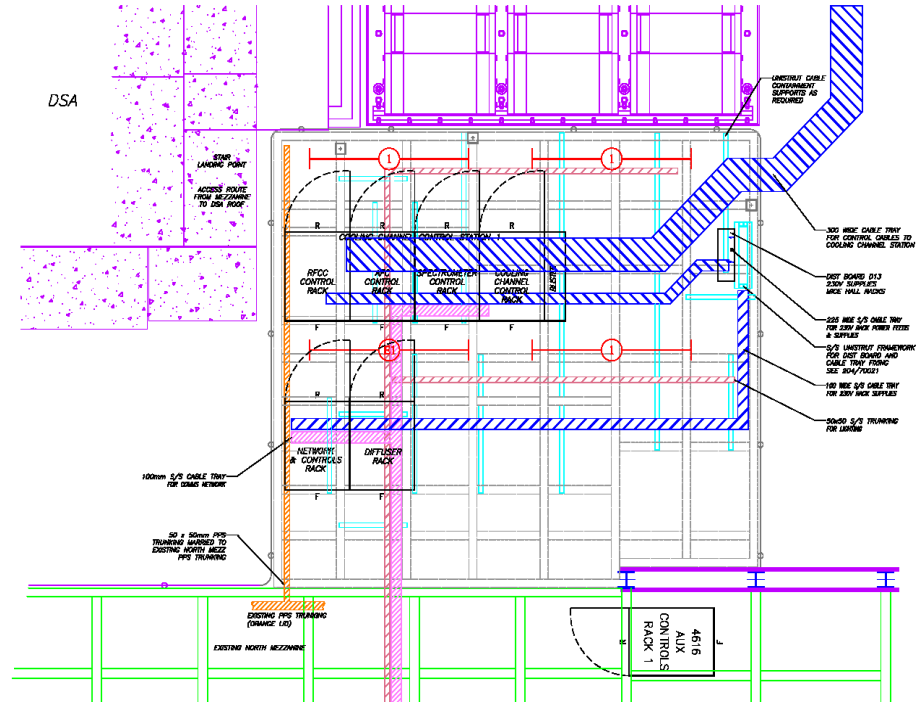
- Spectrometer Solenoid #1 Power Supplies
- Spectrometer Solenoid Dump Circuits
- Spectrometer Solenoid #2 Power Supplies
- AFC & Absorbers Circuits
- Tracker

Recommendations/Layout of Racks for Step VI

· If the Return Yoke Proposal is put into place:

Upper Tier (Step VI)

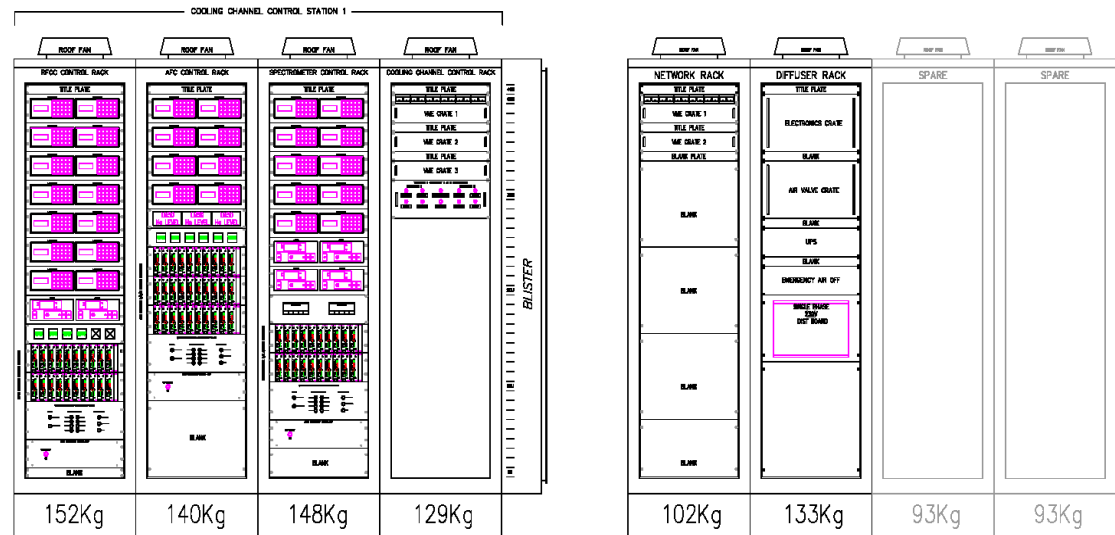
- RFCC Control Rack
- AFC Control Rack
- Spectrometer Control System
(2 racks and blister)
- RF Network/Control Rack & Diffuser Rack



PLAN VIEW – MEZZANINE LEVEL

Recommendations/Layout of Racks for Step VI

COOLING CHANNEL SUITE OF RACKS
(VIEW LOOKING TOWARDS MAGNETS MQ7-9 & SOUTH WALL)



Upper Tier (Step VI)

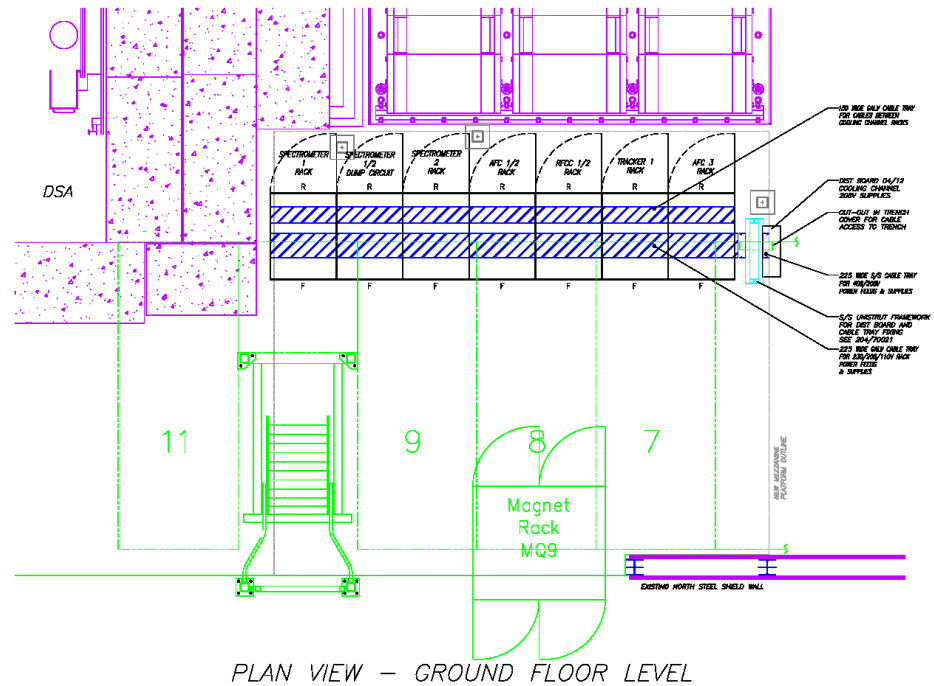
- RFCC Control Rack
- AFC Control Rack
- Spectrometer Control System
(2 racks and blister)
- RF Network/Control Rack & Diffuser Rack

TOP TIER

Recommendations/Layout of Racks for Step VI

Lower Tier (Step VI)

- Spectrometer 1
- Spectrometer 1 / 2 Dump
- Spectrometer 2
- AFC 1 / 2
- RFCC 1 / 2
- Tracker 1
- AFC 3



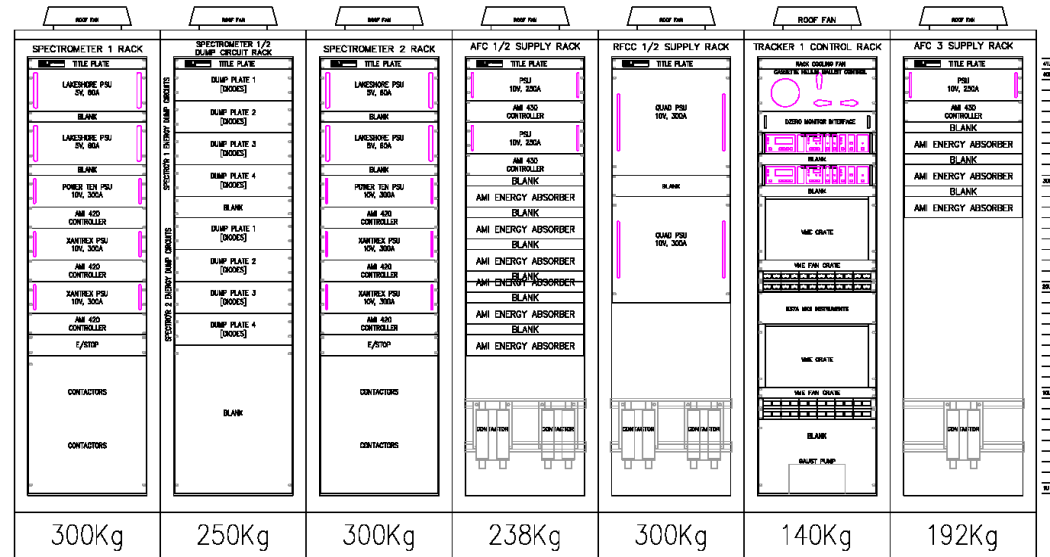
Recommendations/Layout of Racks for Step VI

COOLING CHANNEL SUITE OF RACKS

(VIEW LOOKING TOWARDS MAGNETS MQ7-9 & SOUTH WALL)

Lower Tier (Step VI)

- Spectrometer 1
- Spectrometer 1 / 2 Dump
- Spectrometer 2
- AFC 1 / 2
- RFCC 1 / 2
- Tracker 1
- AFC 3



BOTTOM TIER