

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.



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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





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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.





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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.



• "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







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







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





COOLING CHANNEL SUITE OF RACKS



BOTTOM TIER

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





· 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







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





<u>top tier</u>





Lower Tier (Step VI)

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







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

SPECTROMETER 1 RACK	SPECTROMETER 1/2	SPECTROMETER 2 RACK	AFC 1/2 SUPPLY RACK	RFCC 1/2 SUPPLY RACK	TRACKER 1 CONTROL RACK	AFC 3 SUPPLY RACK	
TILE PLATE	TITLE PLATE	TILE PLATE	TTLE PLATE	TILE PLATE	MACK COOLING FAN	TILE PLATE	
LANESHOPE PSU SV, BOA	22 DUMP PLATE 1 0 23 [DKOOES]	LWESHORE PSU SV, BOA	PSJ 10V, 200A	· ·		PSI 104, 250A	1 1 1 1
ELANK]	ST DUMP PLATE 2 "	BLANK	AMI 450 CONTROLLER	QUAD PSU 10Y, 330A		AM 430 CONTROLLER	=
LANESHORE PSU SV, 80A	C DUMP PLATE 3	LAVESHORE PSU BV, 804	PSJ 10V, 230A			BLANK Ami Energy Absorber Blank	Ξ
EL4K 2		BLANK	CONTROLLER			AM ENERGY ARSORRER	=
POWER TEN PSU 10V. 300A	§, [16065]	POMER TEN PSU *	BLANK	3.46	NAK	BLANK	
HI 420	E BLANK 1		RI ANK			AM ENERGY ABSORBER	-
CONTROLLER	OF DUMP PLATE 1	CONTROLLER	AMI ENERGY ABSORBER				-
XANTREX PSU 10V, 300A	E [OKOES]	* XANTREX PSU *	BLANK	0040 PSU 10V, 300A			_
AMI 420	DUMP PLATE 2	AMA 420	AMI ENERGY ABSORBER		WHE FAIN GRATE		=
CONTROLLER	à la	CONTROLLOR	AMI ENERGY ADSORDER	U U			300
XANTREX PSU 10V, 300A	E DUMP PLATE J	, XANTREX PSU , 10%, 300A	BLANK	° °			=
AMI 420 CONTROLLER	DUMP PLATE 4	AMI 420 CONTROLLER	AMI ENERGY ABSORBER BLANK				=
E/STOP	8 [00062] -	E/\$70P	AMI ENERGY ARSORBER		l l l		=
CONTACTORS	BLANK	ORTACTORS			MAK GUTX 		
300Kg	250Kg	300Kg	238Kg	300Kg	140Kg	192Kg	

BOTTOM TIER

