

## RAT in P4 - *Status of Sector 45* - Preparation of Cool-Down

HARDWARE COMMISSIONING COORDINATION - WEEK 23

08<sup>st</sup> June POINT 4 (2485 2-001 SX4)

Present: A.Bouillot, C.Fernandez Robles, J.J.Gras, P.Maesen, B.Perea Solano, M.Solfaroli, A.Suraci.

A detailed plan of the following 2 weeks coming before the cooldown of sector 45 can be found attached.

### **Sector 45 & Sector 34 (B.Perea/M.Solfaroli for HC)**

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#### **Installation**

- C.Fernandez informed that the ventilation door at the level of RB44 needed for the controlled access during the cooldown will be installed next week.

#### **Vacuum -Cryogenics (A.Bouillot)**

- A.Bouillot informed that the new puppet seems to be good but a decision will take only this afternoon. If everything goes well the puppet will be produced next week and installed at the end of the flushing. 30 valves need to be installed and this will take more or less 1 hour per valve (about 3 days). After this installation a small flushing will be probably repeated to clean the line.
- Flushing isn't started yet because a problem with the control of the return module was detected yesterday. All the lines in the BCDNF connector are together and the valves are not reachable by the SCADA system. The problem will be hopefully sorted out today. Then flushing will be performed during week 24-25.

#### **Beam Instrumentation (J.J.Gras)**

- J-J.Gras reported on the problem occurred between the bake out and the BGIs. An error on the setting of the program made the BGIs reached 300 C and they are probably dead. During the bake-out a leak appeared and the MGM could have "seen" the atmosphere. A decision will take on Monday or Tuesday after the first inspection (performed on Monday). J-J pointed out that there are no BGIs in spare.
- Everything is in line with the installation and commissioning of the BSRT to be carried out during weeks 24-25. The telescope will be transported on Monday and the camera controlled by Ethernet will be checked today.
- Installation of the BTVs will be performed after the cooldown.
- The installation of the cable of the RCTs will be done next week.

#### **Cryo-Instrumentation (A.Suraci)**

- The commissioning of the crates is still going on (80%-85% done). The last 15%-20% will be done next week.

- The alcoves need to be recommissioned
- TS/EL has to pull the cable for 13kA circuits needed by EIQA team (TP4B). This activity should be done quickly because they need time to make the connectors and besides A.Suraci needs the cable for commissioning the crates.
- A.Suraci reported that they are working with the RF people in order to fill MTF database with all the information they already have.
- A.Suraci informed that the code for the PLC is being implemented and should be finished in the next week.
- VAC-CRYO interlock test: two signals didn't work properly (sorted out next week). AT/ACR needs to get ready and make some change in the connectors.

#### **Radio Frequency (P.Maesen)**

- Power test on the 8 klystrons have been restarted and they are going on.
- RF Warm Recovery Line: leak and pressure test after the enlargement has been performed. Some part have been soldered but not tested yet.
- P.Maesen informed that they decided together with U.Wagner to close some valves in order to avoid leak between sector 45 and sector 34.

#### **60A Orbit Correctors (M.Solfaroli)**

- All the circuits are now released for the ELQA-DOC that is being finished and non-conformities being corrected.

week 24							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
POINT 4	Access blocked at PM45 from 17:30			Access blocked at PM45 from 17:30		Access blocked for PM45 et le PZ4 Nobody can access the service areas and point 4 site	
	LSS4L & LSS4R cleaning						
LSS4R	DFBML						
	D3-D4	Transport BSRT	BSRT HC				
		FE Cabling of the BGI detectors					
	DFBMK						
	DFBMG						
DFBAH							
ARC	Cryo-Instrumentation						
	Conditioning & Flushing						
LSS5L	DFBLD						
	DFBAI						
	TAN	CMS ZDC Installation & Commissioning					
	DFBXE						
	RR53	TS/EL intervention on the PCs of 6kA					

week 25						
	Monday	Tuesday	Wednesday	Thursday	Friday	
POINT 4						
RF	Bake-out of IP4 and B5L4					
LSS4R	DFBML				ELQA-TP4-B (Access Restricted)	
	D3-D4	BSRT HC				
	DFBMK					
	DFBMG					
	DFBAH					
ARC	Cryo-Vac Interlock Tests					
	Flushing					
LSS5L	DFBLD					
	DFBAI					
	TAN					
	DFBXE					
	UA47	TS/EL intervention on the PCs of 6kA				

NOTE: The Flushing is not an activity only in the arc but in all the QRL and all Magnets, including the stand alone.

## Open Issues

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### Current Leads

- 15.01.07 Current Lead heater functional tests LSS5L (DFBAI) and LSS4R (DFBAH) (L.Poyet)
- 22.05.07 NCRs CL heater cables DFBAI (S.Pelletier)
- 22.05.07 NCRs CL heater cable DFBAH (S.Pelletier)
- 27.04.07 Connectors of the cables No 1421742, 1421737, 1421731 don't have the right convention for cabling (S.Pelletier)

### QPS

- 31.01.07 LSS5L DFBAI, DFBL, DFBXE continuity/assignment cables and HVT - non-conformities to be repaired by J.Mourao and TS/EL(R.Denz)
- 31.01.07 LSS4R DFBAH, DFBMK/L/G continuity/assignment cables and HVT - non-conformities to be repaired by J.Mourao and TS/EL(R.Denz)

### Cryogenics

- 10.05.07 Isolation of DBX jumpers in view of the cool down (insulation vacuum) (J.P.Tock)
- 30.03.07 RF instrumentation and SCADA system will be carried out week 15 and 16 (A.Suraci)
- 30.03.07 Mobile test bench tests in Arc45 (wk15 on) (A.Suraci)
- 16.02.07 Manipulation of cryo valves in sector 45 - compressed-air problem with 3 or 4 valves and coherence tests (A.Suraci)
- 16.02.07 Connection of the temperature sensors and control cables (A.Suraci)

### Beam Instrumentation

- 11.05.07 Installation of the BSRT - wk 24/wk 25 (J-J.Gras)
- 13.04.07 BGI Commissioning (J-J.Gras)

### ELQA

- 16.05.07 NC 842369 in MCB Circuit Q5R4
- 16.05.07 NC 842358 in Q5, Q6 L5 - Wrong polarity of 120 A circuit (M.Zerlauth)
- 16.05.07 NC 842324 - Abnormal resistance on the current lead DFLDS.30R4.2 (AT/MCS)
- 20.04.07 ELQA-TP4A in LSS4R and LSS5L (D.Bozzini/V.Chareyre)
- 22.02.07 Non-conformity (EDMS 816458) at the level of the cable trays installed above the DFBXE (D.Bozzini)

### Energy Extraction

- 16.03.07 Verification of the connection of the 13kA EE-quench detectors arc (K.Dahlerup-Petersen)

### Power Converters

- 20.03.07 60 A Orbit Correctors (S45)-50kHz/26V RPLA34L5.RCBH33 (H.Thiesen)

### AOB

- 23.03.07 DFBXE T sensor boxes from D.Bozzini, grounding of the 120 A cables, insulation vacuum of the current leads, the coating of the insulator.
- 27.03.07 Installation of the control equipment (second half of June) in sector 34 and 45 (2wk each) (S.Infante)

### **Open Issues (followed by TS/IC)**

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27.03.07 Inner Triplet repair in LSS5L

#### AC non-conformity

- 13.11.06 Non-conformity of the crates of cryo instrumentation in Sector34 and Sector 45 (inrush current) (A.Suraci: ready next year)

#### DC cabling

- 23.03.07 Cabling campaign LSS4L & LSS4R for Beam Instrumentation wk13 (S.Pelletier)

#### Warm Vacuum - NEG Activation

- 23.03.07 RF vacuum pipe installation wk 23-24. NEG-Activation wk 25 (P.Maesen)
- 05.02.07 NEG Activation in D5L4 in LSS4L (Wk 23)

#### WorldFip

- 10.05.07 Installation of two connection boxes for the Radiation Monitoring WorldFip in Point 3 (A5R3 and UJ32) (C.Dehavay-J-C.Guillaume)
- 23.03.07 Short or missing WorldFip Cables for Cryo, QPS, PO, BI in the arc 34 (x10) and 45 (x10) (S.Pelletier)

#### Other issues

- 10.05.07 Installation of MQKA in LSS4L - wk 22 (L.Ducimetiere)
- 12.02.07 Activity on the water pressure valves for the ACNs

### **Closed Issues**

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| 60 A Orbit Correctors (S45)-grounding problem (J.Pierrelot)                                  | 11.05.07 |
| NC 842336 - Continuity error in instrumentation cable Q10R4 (TS/EL)                          | 08.06.07 |
| Manipulation of cryo valves in DFBs LSS4R and LSS5L (wk17-wk18) (A.Suraci)                   | 08.06.07 |
| NC 839924 - Short-circuit in cable Q17L5 (1507116) IFS box to 60 A PC rack (pins1&2) (TS/EL) | 08.06.07 |
| Warm Magnet commissioning in P5 will start with ELQA activities wk 21                        | 08.06.07 |
| Re-positioning of the cables in LCM of the DFBAH (4R) (B.Lebeau)                             | 23.05.07 |
| Leak and pressure tests of the RF Warm Recovery Line (A.Bouillot)                            | 18.05.07 |
| Power balance in point 4 (weeks 20-21-22)  | 25.05.07 |

Two water-cooled cable crossed in DFBML in LSS4R - wk21	23.05.07
120A mechanical connection DFBAH (P.Chambouvet/P.Denis)	23.05.07
60 A Orbit Correctors (S45)-2 <sup>nd</sup> Heat Run (A.Solfaroli)	30.05.07
BGIs Installation LSS4L & LSS4R	11.05.07
ELQA-TP3 in LSS4R (D.Bozzini/V.Chareyre)	20.03.07
LSS4R Replacement of the heat exchanger cables (S.Pelletier)	27.04.07
Modification of the DFB side of the cables 1513712 and 1513713 (DTH06 instead of DTH09) (S.Pelletier)	27.04.07
Current lead cable non-conformities : 1515511 1515512 1515513 1515514 1515516 (L.Poyet + J.C.Guillaume)	27.04.07
LSS5L test on the heat exchanger cables (S.Pelletier)	27.04.07
CL Insulation Vacuum DFBLD in LSS5L (P.Denis)	20.03.07
Visualization of the cameras in the field control room in UA43 due to breakage of the door (C.Ducastel)	27.03.07
Water leaks at the level of the BCTs to be repaired (J-J.Gras)	13.04.07
CL Insulation Vacuum in LSS3R (P.Denis)	13.04.07
CL Insulation Vacuum DFBAI LSS5L (P.Denis)	13.04.07
Radio Frequency: heater connections and 8 capillaries for pressures sensors	30.03.07
Check of the 6kA and 13kA cable presentation in LSS4R (P.Denis)	12.02.07
Pre-mounting 600-120A in DFBAI LSS5L (TS/EL)	09.02.07
Pre-mounting 120A in DFBMk/L/G LSS4R (TS/EL)	06.02.07
Polarity Tests of the 120 A in DFBAH, DFBMK, DFBML and DFBMG in LSS4R (TS/EL)	29.01.07
Pre-mounting 600-120A in DFBAH (TS/EL)	26.01.07
120A mechanical connection DFBAH, DFBMK/L/G (P.Chambouvet/P.Denis)	09.03.07
CL Insulation Vacuum DFBAH, DFBML/K/G in LSS4R (P.Chambouvet)	09.03.07
Current Lead heater functional tests LSS4R (P.Chambouvet)	09.03.07
60 A Orbit Correctors S45 - 1 <sup>st</sup> 24h Heat Run - wk12 (M.Solfaroli)	23.03.07
Renco intervention on the 13kA EE System LSS5R (K.Dahlerup-Petersen)	27.03.07
Cable inversion at the fans of the 13kA EE System LSS5R/LSS4L (K.Dahlerup-Petersen)	27.03.07
Re-installation of Cryo-Instrumentation boxes in arc45 (P.Fessia)	05.04.07
CL Insulation Vacuum in LSS4L (P.Denis)	05.04.07
60 A Orbit Correctors (S34)-Individual System Tests-wk17(J.Thomson)	04.05.07
Re-positioning of the DC water-cooled cables by Flohe on the DFBAH and DFBML (LSS4R) (B.Lebeau/F.Moro)	04.05.07

## Closed Issues (followed by TS/IC)

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Installation of the roof at the level of the RF Cavities-wk20 (C.Fernandez)	22.05.07
Jacks and spacers in Q5-D4.R4. QN-LHC-4R-QBQM.5R4 NC on supporting system of the Magnets D2-Q5 (S.Weisz)	21.05.07
NEG Activation in A6L5 in LSS5L	25.05.07
BGIs connectors wk15 - problem vacuum leak A6R4 (S.Pelletier)	23.05.07
Non-conformity for damaged BPM.22R4 Sector 45 (J-J.Gras)	02.05.07
Access & Safety cable (4 short cables + 1x3km cable) Thursday-wk 22 (S.Pelletier)	25.05.07
Re-positioning of WC cables after the CV works on the DFBAH and DFBLM in LSS4R: 1408479 DFBLM;1408463 DFBAH;1408465 DFBAH;1408459 DFBAH	23.05.07
LSS4L Cabling by Flohe - 1 cable to be changed DFBA - wk21 (B.Lebeau)	23.05.07
DFBLD mechanical works LSS5L (wk15)	11.05.07
Pressure Tests on DFBAI and DFBLD (LSS5L) (A.Bouillot)	11.05.07
BPM Schottky electronics installation (wk19)	11.05.07
NEG Activation A5L5 LSS5L	11.05.07
NEG Activation A6R4 LSS4R	11.05.07
Global Leak and Pressure Tests Sector 45	13.05.07
Pressure Tests on the DFBAH	08.05.07
wk12-13 fiber installation campaign for the experiments in LSS5L	13.04.07
Installation of instrumentation cables of D3L4 (arc 34) (S.Pelletier)	27.04.07
Pulling profibus cables in UA47 and USC55 (S.Pelletier)	27.04.07
Inversion of the <i>cosses</i> of RB circuit in UA43 (J-C.Guillaume)	13.04.07
Installation of UPS PIC boxes (E.Barbero)	13.04.07
Cooling and ventilation annual maintenance	23.03.07
Cryo instrumentation racks installation in Arc 45 (A.Suraci)	16.03.07
Correction of two water-cooled cables on the DFBAI - Flohe (LSS5L)	16.03.07
Non-conformity of the AC cabling of the crates under the magnets. This concerns ACR, MEL & VAC.	16.03.07
Interconnections around DFBAI, Q5-DSL, Q4-DSL	16.03.07
Local leak and pressure tests on DFBLMs (A.Bouillot)	09.03.07
Water-cooled power cable joints replacement by Renco in UA43 and UA47	09.03.07
Interconnection and WRL connection DFBLM/L/G (LSS4R)	16.02.07
Interconnections around Q6-DSL (LSS5L)	26.01.07

Cabling 600A and 120A in DFBAI, 120A in DFBL in LSS5L(INEO)	09.02.07
13-6kA cabling at the DFBL in LSS4R (Flohe)	06.02.07
Cabling 13-6kA in DFBAI and DFBX in LSS5L(Flohe)	19.01.07
Cabling Q6, Q7, Q8, Q9 and Q10 in LSS5L (INEO)	26.01.07
Cabling of the 600-120A in DFBAH, 120A in DFBMK, DFBL and DFBMG, Q6, Q7, Q8, Q9 and Q10 in LSS4R (INEO)	26.01.07
Installation of two power outlet (required by worldfip) in the arc 45	09.03.07
Interconnection and WRL connection DFBAH (LSS4R)	09.03.07
WorldFip Tests in Arc 45 (week 08) (J.Thomsen)	09.03.07
Cabling 13-6kA in DFBAH, DFBMK\G in LSS4R(Flohe)	09.03.07
NEG activation in E5R4 and D5R4 in LSS4R	09.03.07
Interconnections around DFBAI, Q6-DSL	23.03.07
Cooling & Ventilation annual maintenance P4 (F.Moro)	30.03.07
NEG Activation in A7R4 (DFBAH) w13 or wk14	30.03.07
Installation and activities on the DFBL - meeting in the field	30.03.07
Local leak and pressure tests on DFBAH (A.Bouillot)	04.05.07
Qualification of WorldFip Segments in Sector 34 and Sector 45 - wk 15 (C.Dehavay)	04.05.07
Installation of the RF Power Converter Transformers (P.Maesen)	04.05.07
Connection of the QUI (surface to QRL) wk 11 & wk12 (A.Bouillot)	04.05.07

**Milestones: Test Schedule Sector 45 and Sector 34 (foreseen dates provided by TS/IC)**

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Sector 45	Sector 34	TASK
Wk 10-11	Wk 18-19	AB/PO short Circuit tests
Wk 17-18	Wk 28-29	ELQA-TP4A
Wk 19	Wk 25	Interconnections+Vacuum
Wk 19	Wk 34	Interconnection DFBL
Wk 19-20-21-22	Wk 34-35-36	Pressure Test + Consolidation
Wk 23-24-25		Flushing
Wk 26		Cool Down Sector 45
Wk 34		Powering Tests

E.Barbero/C.Fernandez/M.Solfaroli/B.Perea