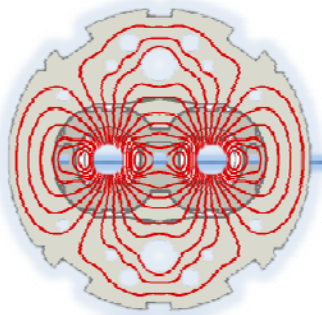
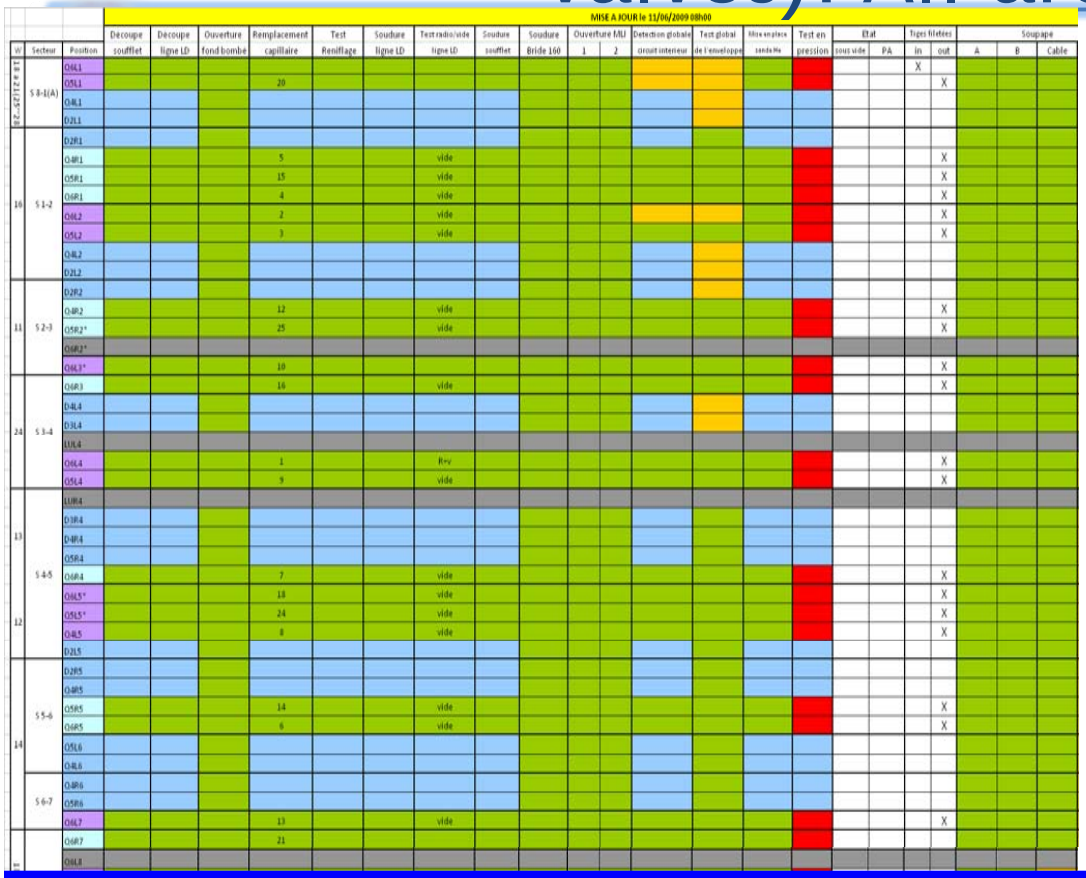


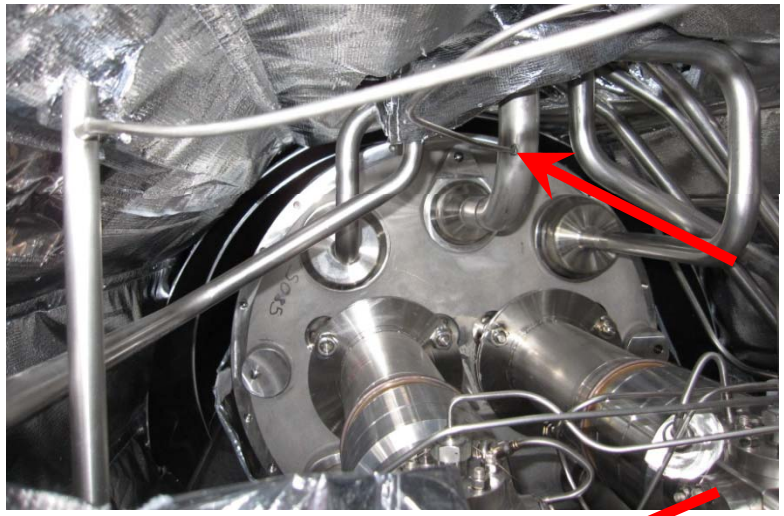
Status Report of Magnet Work Week 23 / 2009

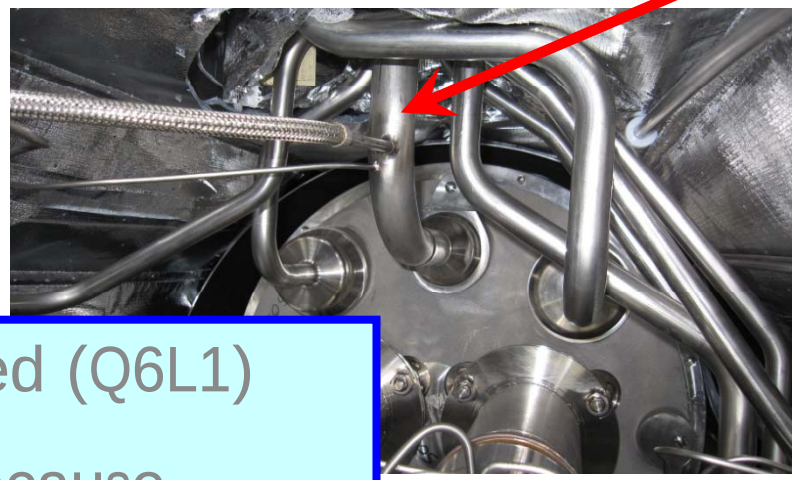
F Bertinelli /J Ph Tock – TE/MSC

On behalf of - and with several contributions from - surface and IC teams

SAM Helium level gauges (and relief valves): All are replaced







Last SAM Helium level gauge replaced (Q6L1)

Q6R2 and Q6L8 for next shutdown because linked to cold sectors, **only if required (ALARA)**

Courtesy J. Mazet

1-2 : All splices repaired/validated
Sector closed

		Insulation		QC		M3 Weld		M3 TIG Inspection		K1 weld		K1 TIG Inspection		Leak test M3		Leak test K		Inspection		Closure	
QBBI.B29R1	I	D Etiembre	2-Jun-09	C Scheuerlein	2-Jun-09	P Mesenge	3-Jun-09	P Heudent	4-Jun-09	J Fereirra	4-Jun-09	P Heudent	8-Jun-09	A Grimaud	4-Jun-09	A Grimaud	5-Jun-09	O Housiaux	8-Jun	R Menolascina	9-Jun
QBQI.29R1	I	D Etiembre	2-Jun-09	C Scheuerlein	2-Jun-09	P Mesenge	3-Jun-09	P Heudent	4-Jun-09	[redacted]				A Grimaud	4-Jun-09	A Grimaud	5-Jun-09	O Housiaux	8-Jun	R Menolascina	9-Jun
QQBI.29R1		D Etiembre	2-Jun-09	C Scheuerlein	2-Jun-09	P Mesenge	3-Jun-09	N Zartarian	3-Jun-09	M Jamain	3-Jun-09	N Zartarian	3-Jun-09	A Grimaud	4-Jun-09	A Grimaud	5-Jun-09	O Housiaux	8-Jun	R Menolascina	9-Jun
QBBI.B32R1		D Etiembre	2-Jun-09	C Scheuerlein	2-Jun-09	P Mesenge	3-Jun-09	N Zartarian	3-Jun-09	M Jamain	3-Jun-09	N Zartarian	3-Jun-09	A Grimaud	4-Jun-09	A Grimaud	5-Jun-09	O Housiaux	8-Jun	R Menolascina	9-Jun
QBQI.32R1		D Etiembre	2-Jun-09	C Scheuerlein	2-Jun-09	P Mesenge	2-Jun-09	N Zartarian	2-Jun-09	[redacted]				A Grimaud	4-Jun-09	A Grimaud	5-Jun-09	O Housiaux	8-Jun	R Menolascina	9-Jun
QQBI.32R1		D Etiembre	2-Jun-09	C Scheuerlein	3-Jun-09	P Mesenge	3-Jun-09	P Heudent	4-Jun-09	J Fereirra	4-Jun-09	P Heudent	4-Jun-09	A Grimaud	4-Jun-09	A Grimaud	5-Jun-09	O Housiaux	8-Jun	R Menolascina	9-Jun
QQBI.30L2	No splice ; only W																				
QBBI.B30L2	I	D Etiembre	2-Jun-09	C Scheuerlein	2-Jun-09	P Mesenge	2-Jun-09	N Zartarian	2-Jun-09	M Jamain	2-Jun-09	N Zartarian	2-Jun-09	A Grimaud	8-Jun-09	A Grimaud	8-Jun-09	O Housiaux	8-Jun	R Menolascina	10-Jun
QBBI.A30L2		D Etiembre	2-Jun-09	C Scheuerlein	3-Jun-09	P Mesenge	4-Jun-09	P Heudent	4-Jun-09	J Fereirra	4-Jun-09	P Heudent	4-Jun-09	A Grimaud	8-Jun-09	A Grimaud	8-Jun-09	O Housiaux	8-Jun	R Menolascina	10-Jun
QQBI.23L2	No splice ; only W																				
QBQI.18L2		D Etiembre	3-Jun-09	C Scheuerlein	3-Jun-09	P Mesenge	4-Jun-09	P Heudent	4-Jun-09	[redacted]				A Grimaud	8-Jun-09	A Grimaud	8-Jun-09	O Housiaux	8-Jun	R Menolascina	10-Jun
QQBI.17L2		D Etiembre	3-Jun-09	C Scheuerlein	3-Jun-09	P Mesenge	4-Jun-09	P Heudent	4-Jun-09	J Fereirra	4-Jun-09	P Heudent	4-Jun-09	A Grimaud	9-Jun-09	A Grimaud	9-Jun-09	O Housiaux	9-Jun	R Menolascina	10-Jun
QBBI.B17L2		D Etiembre	2-Jun-09	C Scheuerlein	3-Jun-09	P Mesenge	4-Jun-09	P Heudent	4-Jun-09	J Fereirra	4-Jun-09	P Heudent	4-Jun-09	A Grimaud	9-Jun-09	A Grimaud	9-Jun-09	O Housiaux	9-Jun	R Menolascina	10-Jun
QBBI.A17L2		D Etiembre	2-Jun-09	C Scheuerlein	3-Jun-09	P Mesenge	4-Jun-09	P Heudent	4-Jun-09	J Fereirra	4-Jun-09	P Heudent	4-Jun-09	A Grimaud	9-Jun-09	A Grimaud	9-Jun-09	O Housiaux	9-Jun	R Menolascina	10-Jun

- 12 splices in 9 ICs redone

Last W bellows closed on 10th of June

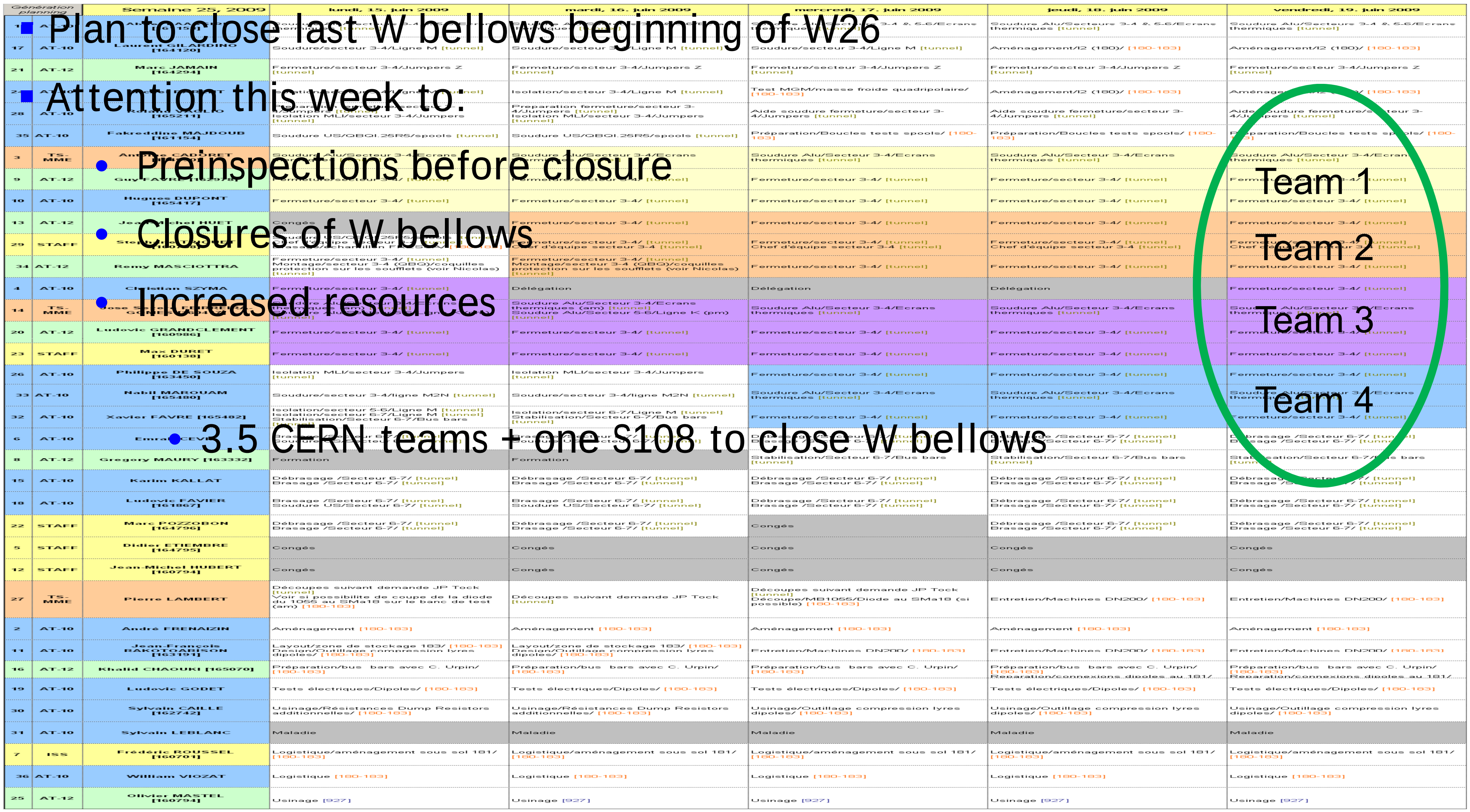
Tunnel News 3-4 D-area

IC	BR	SP	V	E	Vc	C'	Y	X	Pq	M	K	Ktest	N-I	A1	A2	N	MN	Th	J	VacSec	Pre-insp.	W	To do before to close
QBQI.19R3		2								4	3		C		2	4	4			A15R3	5	7	Reparation Thermome
QQBI.19R3															2						5	7	
QBBI.A20R3															2						5	7	
QBBI.B20R3															2			10			10	11	Th
QBQI.20R3			12							4			3		2	5	5	10			11	12	MN, Th
QQBI.20R3			12												2						11	12	
QBBI.A21R															2						3	4	CLOSED
QBBI.B21R3															2			9			9	10	Th
QBQI.21R3										8			C		2	8	8	9	4	A19R3	9	10	M, Th
QQBI.21R3																					3	4	CLOSED
QBBI.A22R																					3	4	CLOSED
QBBI.B22R3																		10			10	11	
QBQI.22R3			12							4			C			5	5	10			11	12	
QQBI.22R3																					2	3	CLOSED
QBBI.A23R																					2	3	CLOSED
QBBI.B23R3																		5			5	8	
QBQI.23R3										3			C			4	4	5			5	8	
QQBI.23R3																					2	3	CLOSED
QBBI.A24R																					2	3	CLOSED
QBBI.B24R3																		5			5	8	
QBQI.24R3										3			C			4	4	5			8	9	
QQBI.24R3																					2	3	CLOSED
QBBI.A25R3																					2	3	CLOSED
QBBI.B25R3																		10			10	11	
QBQI.25R3			12							3			C			5	5	10		A23R3	11	12	
QQBI.25R3																					2	3	CLOSED
QBBI.A26R																					2	3	CLOSED
QBBI.B26R3																		5			5	8	
QBQI.26R3										3			C			4	4	5			8	9	
QQBI.26R3																					2	3	CLOSED
QBBI.A27R																					2	3	CLOSED
QBBI.B27R3																		8			8	9	
QBQI.27R3										4			C			5	5	8	3		8	9	
QQBI.27R3																					2	3	CLOSED
QBBI.A28R			12																		11	12	
QBBI.B28R3																		5			5	8	
QBQI.28R3										2			C			4	4	5			8	9	
QQBI.28R3												5									8	9	
QBBI.A29R												5									8	9	
QBBI.B29R3												5						10			10	11	Th
QBQI.29R3										9		5	C			9	9	10	5	A27R3	10	11	Th
QQBI.29R3											3	5									8	9	
QBBI.A30R											3	5									8	9	
QBBI.B30R3											3	5						10			10	11	Th
QBQI.30R3			12							2			C			5	5	10			11	12	Th
QQBI.30R3			12									3				2					11	12	
QBBI.A31R												3				2					4	5	
QBBI.B31R3												3				2		11			11	12	Th
QBQI.31R3										10		3	C			10	10	11	8		11	12	Th
QQBI.31R3												3				2					4	5	
QBBI.A32R												3				2					4	5	
QBBI.B32R3												3				2		10			10	11	Th
QBQI.32R3			12							2			C		3	5	5	10		A31R3	11	12	N, M2N, Th
QQBI.32R3			12								3	8			3	2					11	12	
QBBI.A33R			12								3	8			3	2					11	12	
QBBI.B33R3			12								3	8			3	2		12			12	15	Th
QBQI.33R3	2	3	12							11		8	4		3	11	11	12	9		12	15	M, N, MN, Th
QQBI.33R3			12								3	8			3	6				A31L4	11	12	

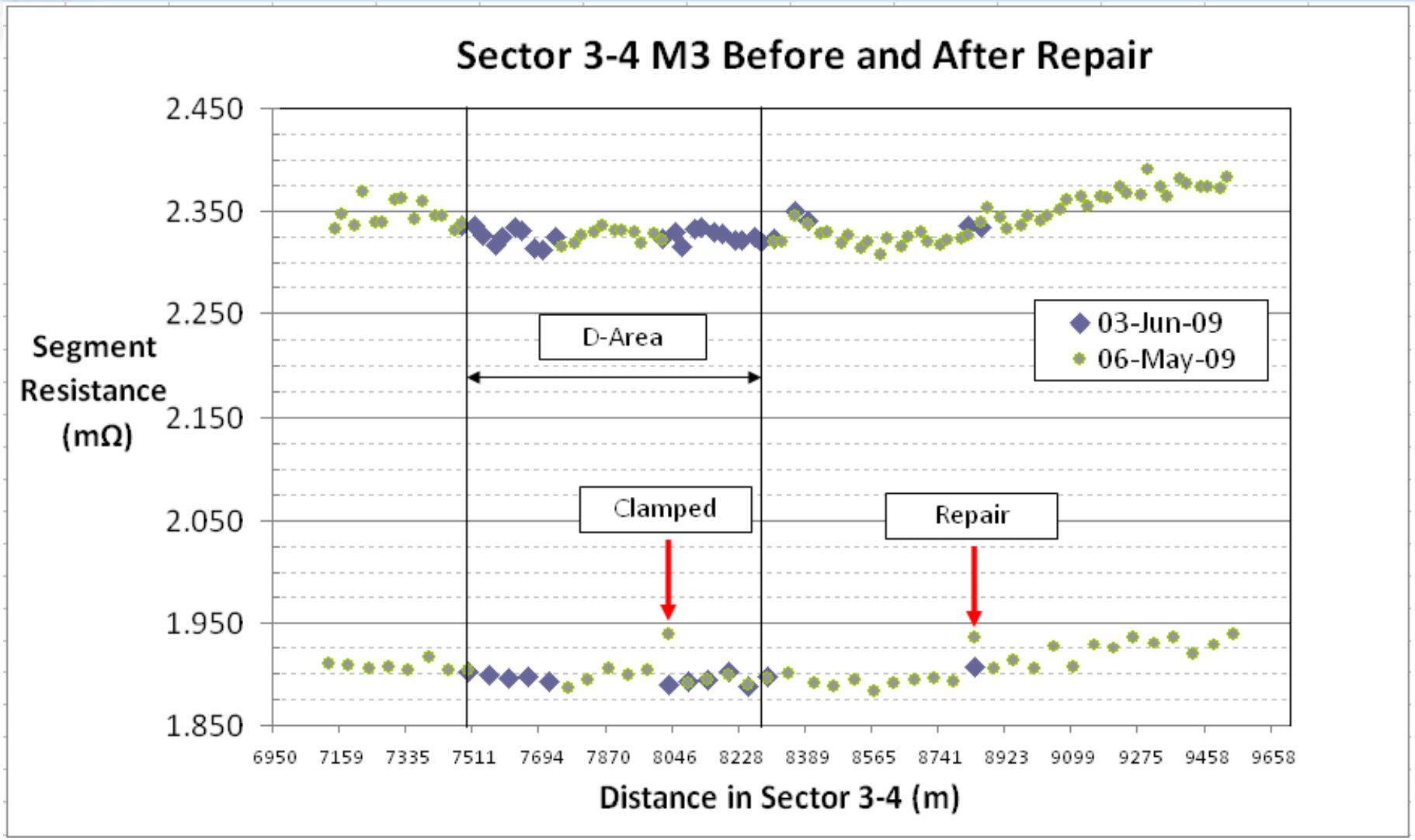
Courtesy A. Musso

Tunnel News Sector 3-4

- Some milestones:
  - 2 First VACSECs delivered for pumping and leak testing
- Plan to close last W bellows beginning of W26
- Attention this week to:
  - Preinspections before closure
  - Closures of W bellows
  - Increased resources
    - 3.5 CERN teams + one S108 to close W bellows



3-4 M3 splice resistance (copper)

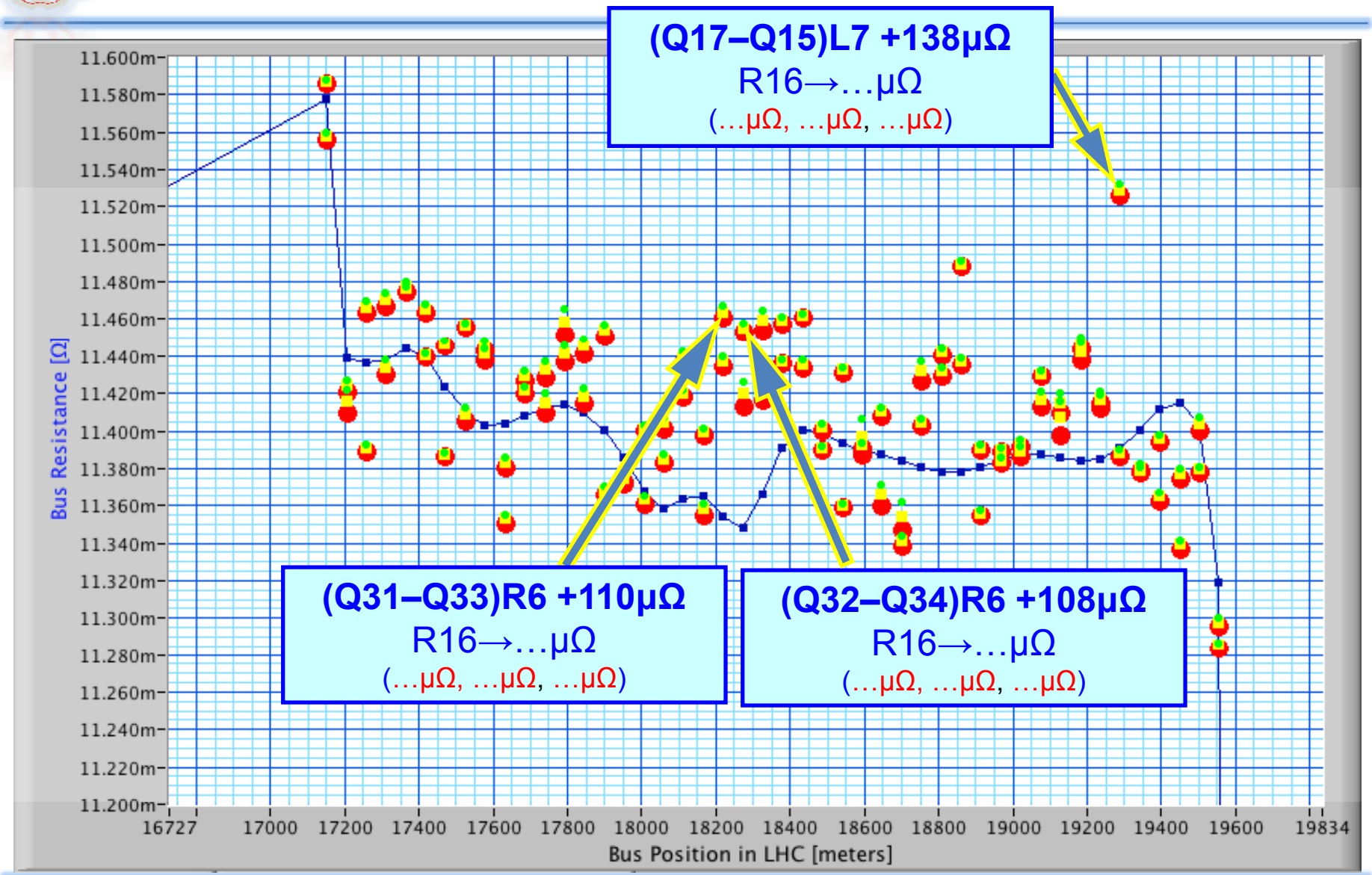


5-6 splice repair

- 13 dipole and 1 quadrupole splices in 10 ICs redone
- CC consolidation is completed
- Closure of W bellows for end of this week (W25)

			Resoldering		QC		Soudure spool		ELQA M1&2		Insulation		QC		M Weld		M TIG Inspection		K1 weld		K1 TIG Inspection		Leak test M		Leak test K		Inspection		Closure
QEQI.11R5	M3										D Etiembre	4-Jun-09	P Thonet	9-Jun-09	P Mesenge	9-Jun-09	P Heudent	10-Jun-09					A Grimaud	11-Jun-09			15-Jun-09		15-Jun-09
QBBI.B18R5	M3										D Etiembre	4-Jun-09	P Thonet	9-Jun-09	P Mesenge	9-Jun-09	P Heudent	10-Jun-09	Jose	9-Jun-09	P Heudent	10-Jun-09	A Grimaud	15-Jun-09		16-Jun-09		16-Jun-09		16-Jun-09
QBQI.18R5	M3	Cor	M Pozzobon	10-Jun	C Scheuerlein	10-Jun-09					G Maury	11-Jun-09	P Borowiec	11-Jun-09	P Mesenge	11-Jun-09		12-Jun-09						15-Jun-09				16-Jun-09		16-Jun-09
QQBI.18R5	M3										D Etiembre	2-Mar-00	P Thonet	9-Jun-09	P Mesenge	9-Jun-09	P Heudent	10-Jun-09	Jose	9-Jun-09	P Heudent	10-Jun-09		15-Jun-09		16-Jun-09		16-Jun-09		16-Jun-09
QBBI.A19R5	M3	Cryo	M Pozzobon	10-Jun	C Scheuerlein	10-Jun-09					G Maury	11-Jun-09	P Borowiec	11-Jun-09	P Mesenge	11-Jun-09		12-Jun-09		12-Jun-09		15-Jun-09		15-Jun-09		16-Jun-09		16-Jun-09		16-Jun-09
QBBI.B19R5	M3	Cor&Cryo	M Pozzobon	10-Jun	C Scheuerlein	10-Jun-09					G Maury	11-Jun-09	P Borowiec	11-Jun-09	P Mesenge	11-Jun-09		12-Jun-09		12-Jun-09		15-Jun-09		15-Jun-09		16-Jun-09		16-Jun-09		16-Jun-09
QBQI.19R5	M3	Cor&Cryo	M Pozzobon	11-Jun		12-Jun-09					G Maury	12-Jun-09	P Thonet	12-Jun-09		12-Jun-09		12-Jun-09						15-Jun-09				16-Jun-09		16-Jun-09
QBQI.25R5	M3										D Etiembre	4-Jun-09	P Thonet	8-Jun-09	P Mesenge	9-Jun-09	P Heudent	10-Jun-09						17-Jun-09				16-Jun-09		18-Jun-09
	M1	Cor&Cryo	M Pozzobon	11-Jun		12-Jun-09					G Maury	16-Jun-09	P Thonet	16-Jun-09		17-Jun-09		17-Jun-09										18-Jun-09		
QQBI.25R5	M3										D Etiembre	8-Jun-09	P Thonet	8-Jun-09	P Mesenge	9-Jun-09	P Heudent	10-Jun-09	Jose	9-Jun-09	P Heudent	10-Jun-09		16-Jun-09		16-Jun-09		16-Jun-09		17-Jun-09
QBQI.15L6	M3	Cor	M Pozzobon	9-Jun	C Scheuerlein	10-Jun-09					G Maury	11-Jun-09	C Scheuerlein	11-Jun-09		11-Jun-09		12-Jun-09		12-Jun-09		12-Jun-09		15-Jun-09		16-Jun-09		16-Jun-09		17-Jun-09
QQBI.14L6	M3	Cor&Cryo	L Favier	11-Jun		12-Jun-09					G Maury	12-Jun-09	P Thonet	11-Jun-09		11-Jun-09		12-Jun-09		12-Jun-09		12-Jun-09		15-Jun-09		16-Jun-09		16-Jun-09		17-Jun-09
QBBI.B14L6	M3	Cryo	M Pozzobon	8-Jun	C Scheuerlein	10-Jun-09					G Maury	11-Jun-09	C Scheuerlein	11-Jun-09		11-Jun-09		12-Jun-09		12-Jun-09		12-Jun-09		15-Jun-09		16-Jun-09		16-Jun-09		17-Jun-09
QBBI.A14L6	M3	Cryo	M Pozzobon	8-Jun	C Scheuerlein	10-Jun-09					G Maury	11-Jun-09	C Scheuerlein	11-Jun-09		11-Jun-09		12-Jun-09		12-Jun-09		12-Jun-09		15-Jun-09		16-Jun-09		16-Jun-09		17-Jun-09
QBQI.14L6	M3	Cor&Cryo	M Pozzobon	4-Jun	C Scheuerlein	10-Jun-09					G Maury	11-Jun-09	C Scheuerlein	11-Jun-09		11-Jun-09		12-Jun-09						15-Jun-09				16-Jun-09		18-Jun-09
QQEI.11L6	M1										D Etiembre	4-Jun-09	P Thonet	8-Jun-09	P Mesenge	10-Jun-09	P Heudent	10-Jun-09						15-Jun-09				16-Jun-09		18-Jun-09
QEBI.11L6	M1										G Maury	12-Jun-09	P Thonet	15-Jun-09		15-Jun-09		12-Jun-09						15-Jun-09						
	M2										G Maury	12-Jun-09	P Thonet	15-Jun-09		15-Jun-09		12-Jun-09		12-Jun-09		12-Jun-09		15-Jun-09		16-Jun-09		16-Jun-09		18-Jun-09
	M3										D Etiembre	4-Jun-09	P Thonet	8-Jun-09	P Mesenge	10-Jun-09	P Heudent	11-Jun-09						15-Jun-09						
QEDI.5L6	M3										D Etiembre	4-Jun-09	P Thonet	8-Jun-09	P Mesenge	9-Jun-09	P Heudent	10-Jun-09						15-Jun-09				16-Jun-09		18-Jun-09

6-7 M1&M2 splice resistance (copper)



Sector 6-7

- 60 opened ICs completely
- 24 (32) extra M lines opened to investigate 3 out of 4 main outliers
- Beam lines are welded and leak tested (one material leak varnished)
- Resoldering of dipole splices is starting
- Investigations are on-going on quadrupole splices

3-4 came later, but no significant change to list

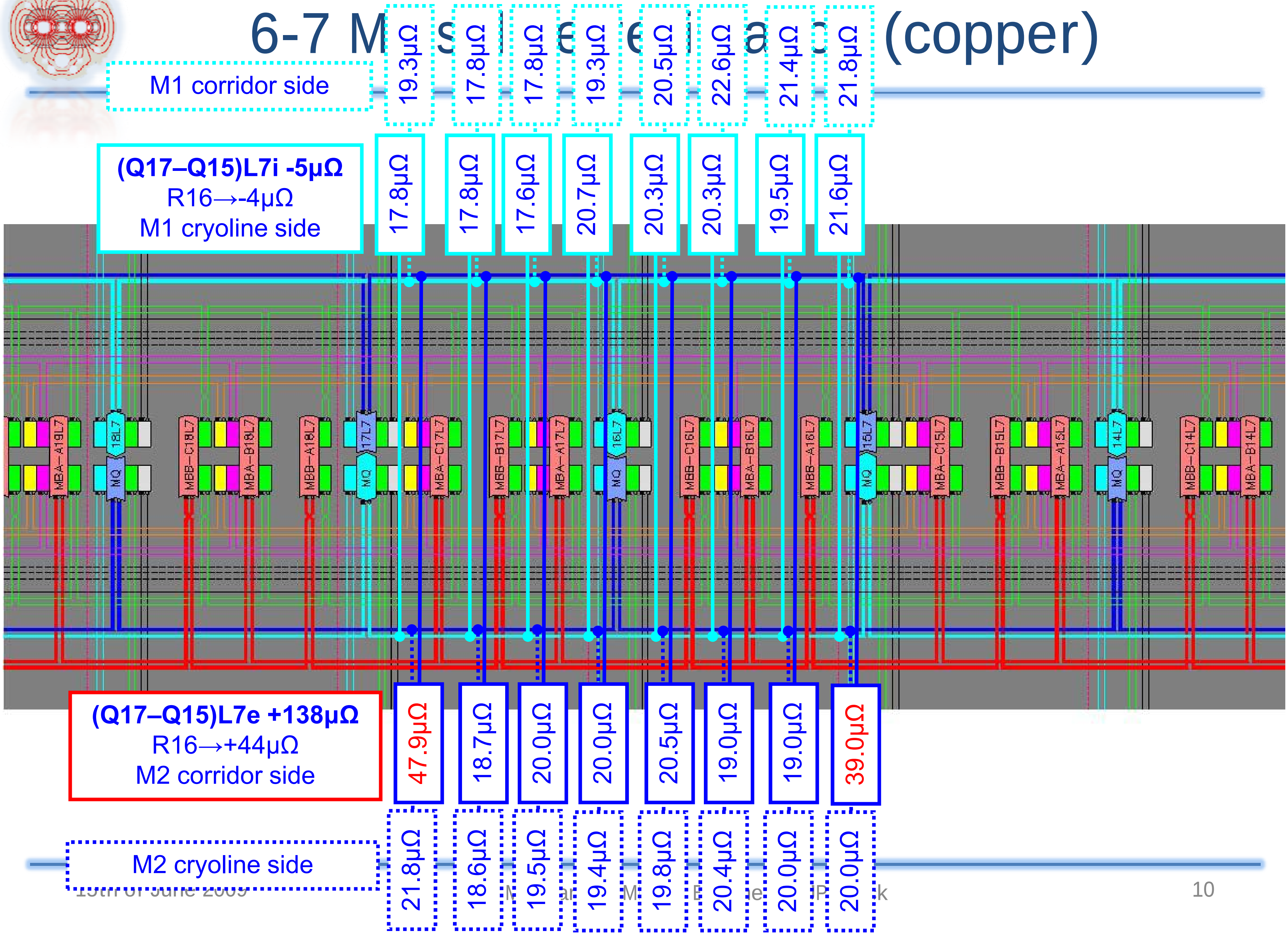
Courtesy R. Flora

Hit List

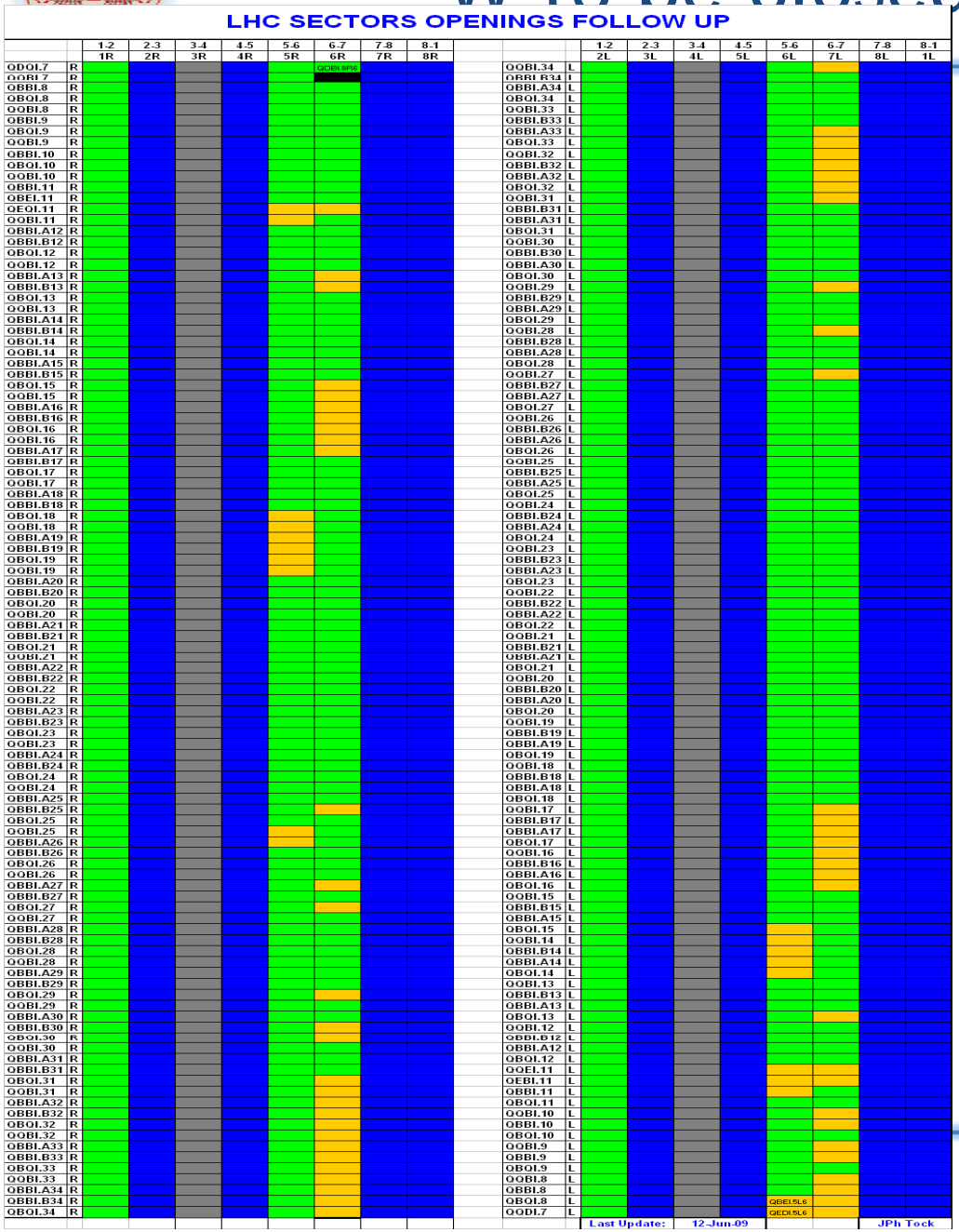
	∂R [Ω]	x [m]	Bus Segment Span
6-7	138.1u	19287	RQAT.[Q17L7<->Q15L7]e
6-7	111.6u	18859	RQOA.[Q25L7<->Q23L7]e
6-7	110.2u	18218	RQOA.[Q31R6<->Q33R6]e
6-7	107.6u	18271	RQOB.[Q32R6<->Q34R6]e
6-7	93.5u	18325	RQOA.[Q33R6<->Q33L7]e
5-6	89.9u	13977	RQAT.[Q14R5<->Q16R5]e
5-6	89.1u	14084	RQAT.[Q16R5<->Q18R5]e
1-2	85.4u	1824	RQOA.[Q32L2<->Q30L2]e
6-7	83.7u	18218	RQOA.[Q31R6<->Q33R6]i
5-6	83.4u	14832	RQOA.[Q30R5<->Q32R5]e
5-6	79.2u	13870	RQAT.[Q12R5<->Q14R5]e
6-7	75.3u	18111	RQOA.[Q29R6<->Q31R6]e
6-7	71.9u	18271	RQOB.[Q32R6<->Q34R6]i
6-7	69.0u	18378	RQOB.[Q34R6<->Q32L7]e
5-6	66.3u	15687	RQOA.[Q22L6<->Q20L6]e
1-2	65.0u	1824	RQOA.[Q32L2<->Q30L2]i
1-2	64.6u	968	RQAT.[Q20R1<->Q22R1]e
6-7	64.2u	18806	RQOB.[Q26L7<->Q24L7]e

Investigated outliers

6-7 M … (copper)


M1 corridor side
19.3μΩ
17.8μΩ
17.8μΩ
19.3μΩ
20.5μΩ
22.6μΩ
21.4μΩ
21.8μΩ
(Q17–Q15)L7i -5μΩ
R16→-4μΩ
M1 cryoline side
17.8μΩ
17.8μΩ
17.6μΩ
20.7μΩ
20.3μΩ
20.3μΩ
19.5μΩ
21.6μΩ
(Q17–Q15)L7e +138μΩ
R16→+44μΩ
M2 corridor side
47.9μΩ
18.7μΩ
20.0μΩ
20.0μΩ
20.5μΩ
19.0μΩ
19.0μΩ
39.0μΩ
M2 cryoline side
21.8μΩ
18.6μΩ
19.5μΩ
19.4μΩ
19.8μΩ
20.4μΩ
20.0μΩ
20.0μΩ

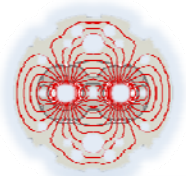
W to be closed : decreasing



	Closed IC
	Cold sector
	Opened IC
	Opening > 33 %
	Non existing IC
	Critical NC

1-2	0
2-3	0
3-4	> 70
4-5	0
5-6	20
6-7	60
7-8	0
8-1	0
LSSs	0
TOTAL	> 150

- 1-2 closed
- More openings in 6-7
- 4-5 coming soon



3-4 M3 splice resistance (copper)

Note:

- D-area (new splices) vs outside D-area (old splices)
- temperature effect: ends of Sector 3-4 are warmer
- repaired splice, before and after
- clamped splice, then soldered
- ~12 remeasured segments, good repetitiveness

Sector 4-5

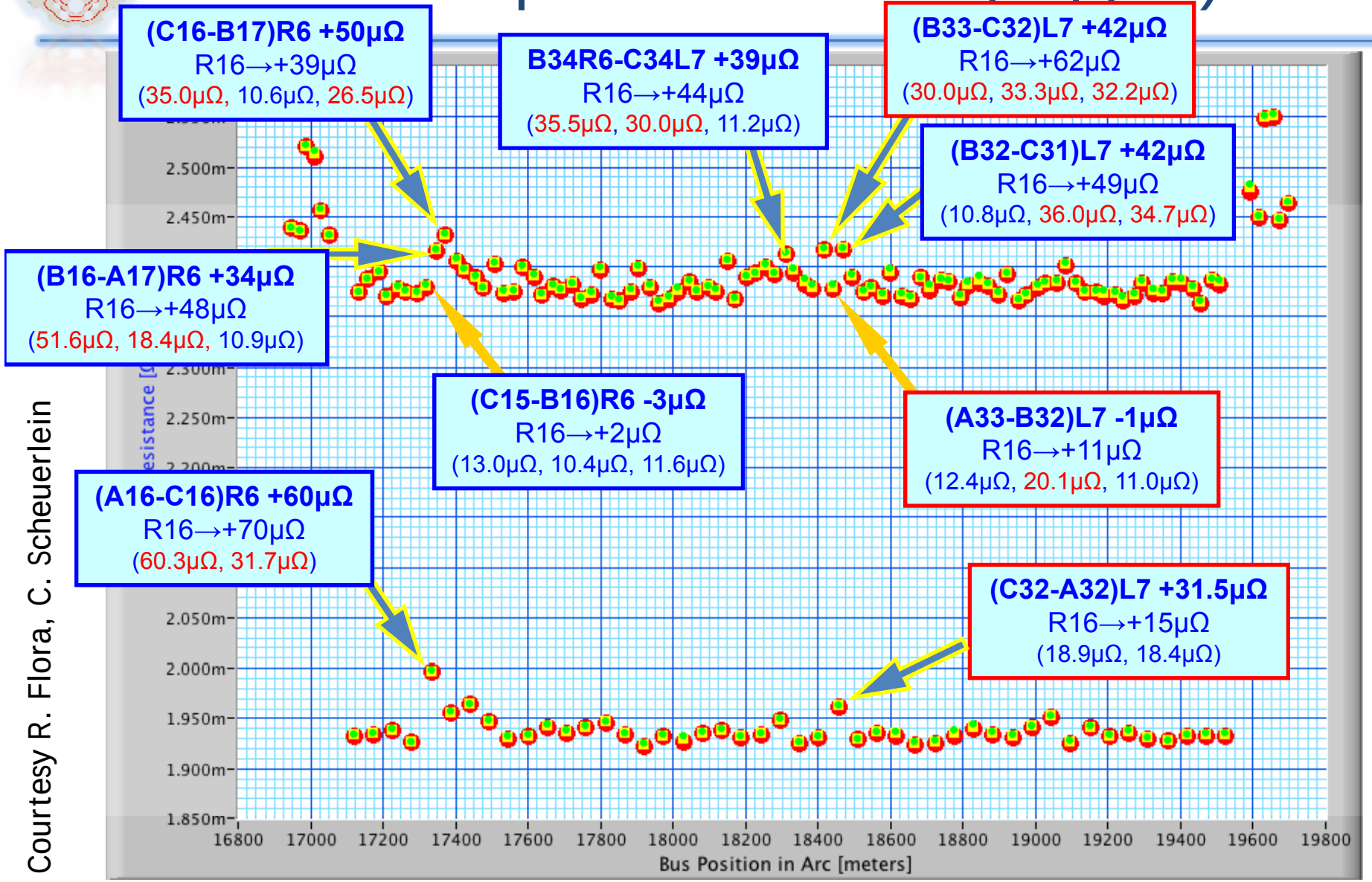
- Interventions planned :
  - Elec tests
  - RF ball test and PIMs replacement (if any)

    Sector already warmed-up and failed PIMs changed/ SSSs moved 2mm downstream
  - Reinforce insulation in CC L5
  - Install DN200 at critical locations and/or where effort is reasonable and time available
    - Central VACSEC
    - DSL5
    - 1st outlier
    - DSR4
    - VACSEC opened for PIMs/splices

[m]	InspDate	M1Up	M2Up	M3Up	M1Ds	M2Ds	M3Ds	Total	Insp	Meas
11R1	28-Feb-08	OK	OK	OK	OK	OK	OK	11R1	Yes	No
11L2	6-Mar-08	OK	OK	OK	OK	OK	OK	11L2	Yes	No
11R2	10-Mar-08	OK	OK	1.39	OK	OK	1.01	11R2	Yes	Part
11L3	12-Mar-08	OK	1.17	1.76	OK	OK	1.5	11L3	Yes	PArt
11R3	27-Mar-08	OK	OK	OK	OK	OK	OK	11R3	Yes	No
11L4	1-Apr-08 2-Apr-09	OK	OK	OK	1.01	1.04	1.04	11L4	Yes	Part
11R4	4-Apr-08	OK	OK	OK	OK	OK	OK	11R4	Yes	No
11L5	9-Apr-08	OK	OK	2.07	OK	OK	OK	11L5	Yes	Part
11R5	3-Feb-09	OK	OK	OK	OK	OK	1.57	11R5	Yes	Part
11L6	13-Feb-09 31-Mar-09	1.52	OK	1.28	1.07	1.2	2.16	11L6	Yes	Part
5L6*	20-Feb-09	OK	OK	OK	OK	OK	OK	5L6	Yes	Yes
11R6	18-Feb-08 31-Mar-09	OK	OK	OK	1.03	1.25	1.21	11R6	Yes	Part
11L7	19-Feb-08 6/16-Mar-09	OK	OK	1.5	OK	OK	1.8	11L7	Yes	Part
11R7	7-Feb-08	OK	OK	OK	OK	OK	OK	11R7	Yes	No
11L8	Not done	?	?	?	?	?	?	11L8	No	No
11R8	25-Feb-08	OK	OK	OK	1.14	OK	1.16	11R8	Yes	Part
11L1	26-Feb-08	OK	OK	1.7	OK	OK	OK	11L1	Yes	No

  - Grind paint wherever possible in the allocated time window

6-7 M3 splice resistance (copper)

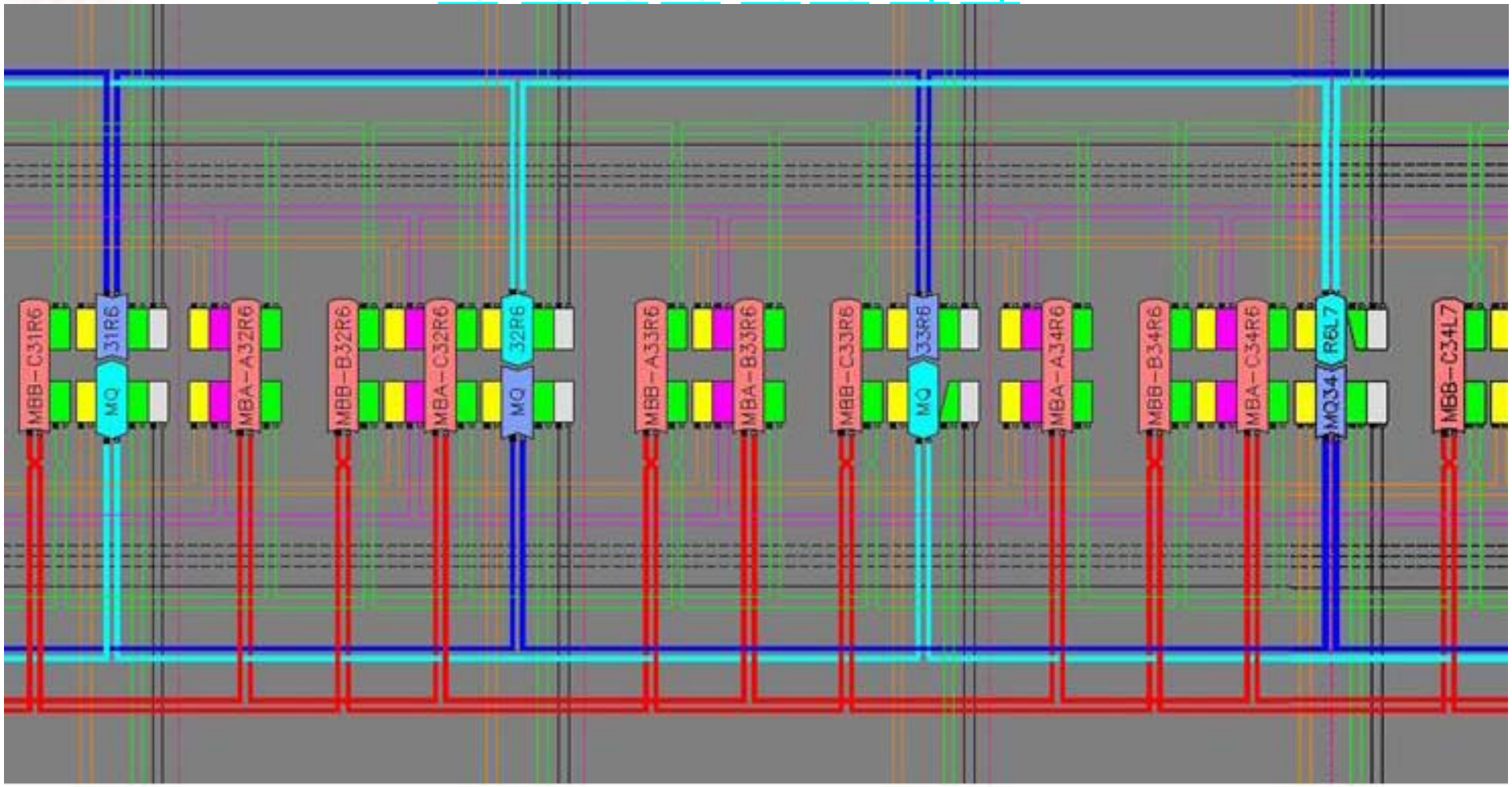


Courtesy R. Flora, C. Scheuerlein

6-7 M… s… … m… e… a… (copper)

M1 corridor side

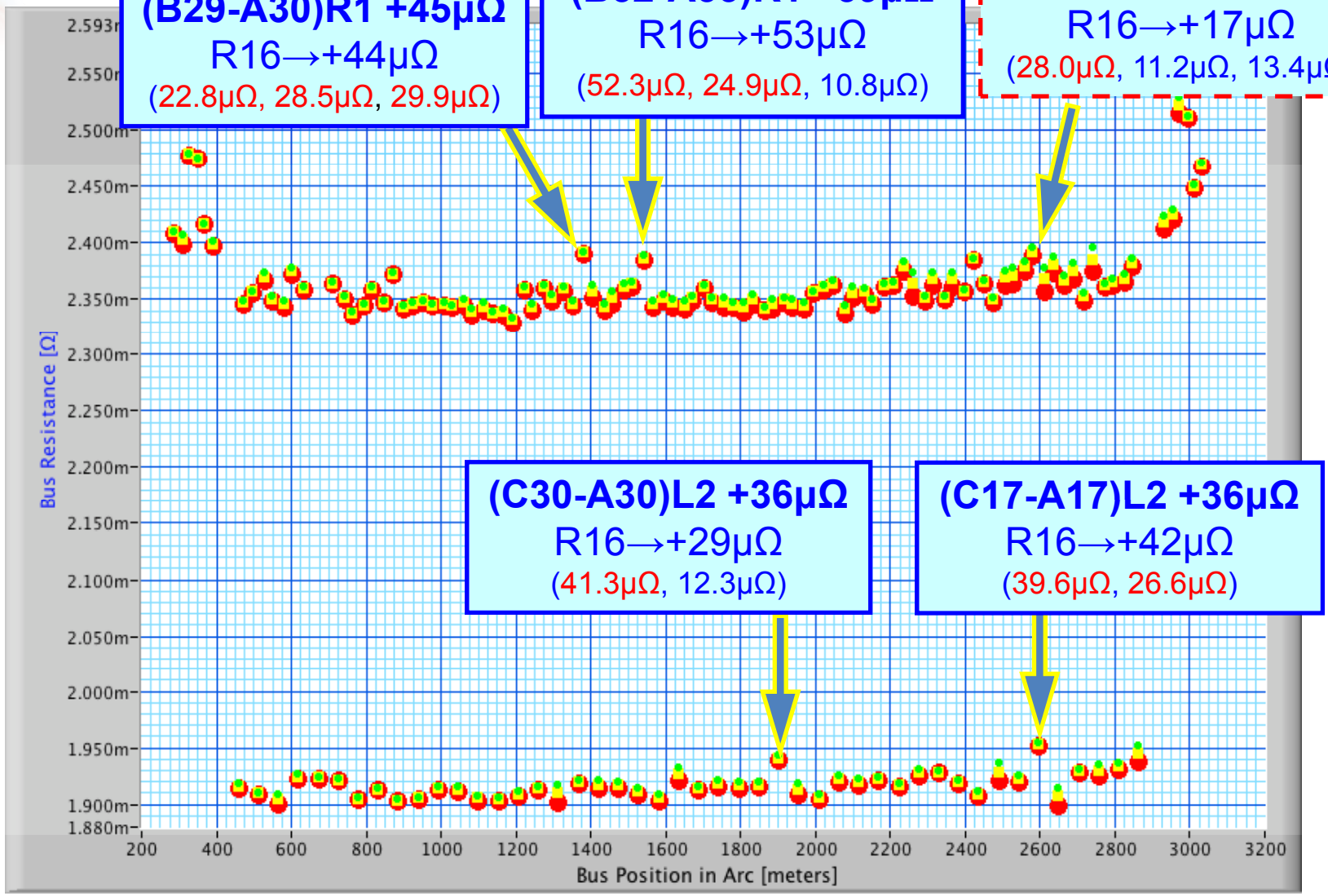
19.3μΩ 17.8μΩ 17.8μΩ 19.3μΩ 20.5μΩ 22.6μΩ 21.4μΩ 21.8μΩ



M2 cryoline side

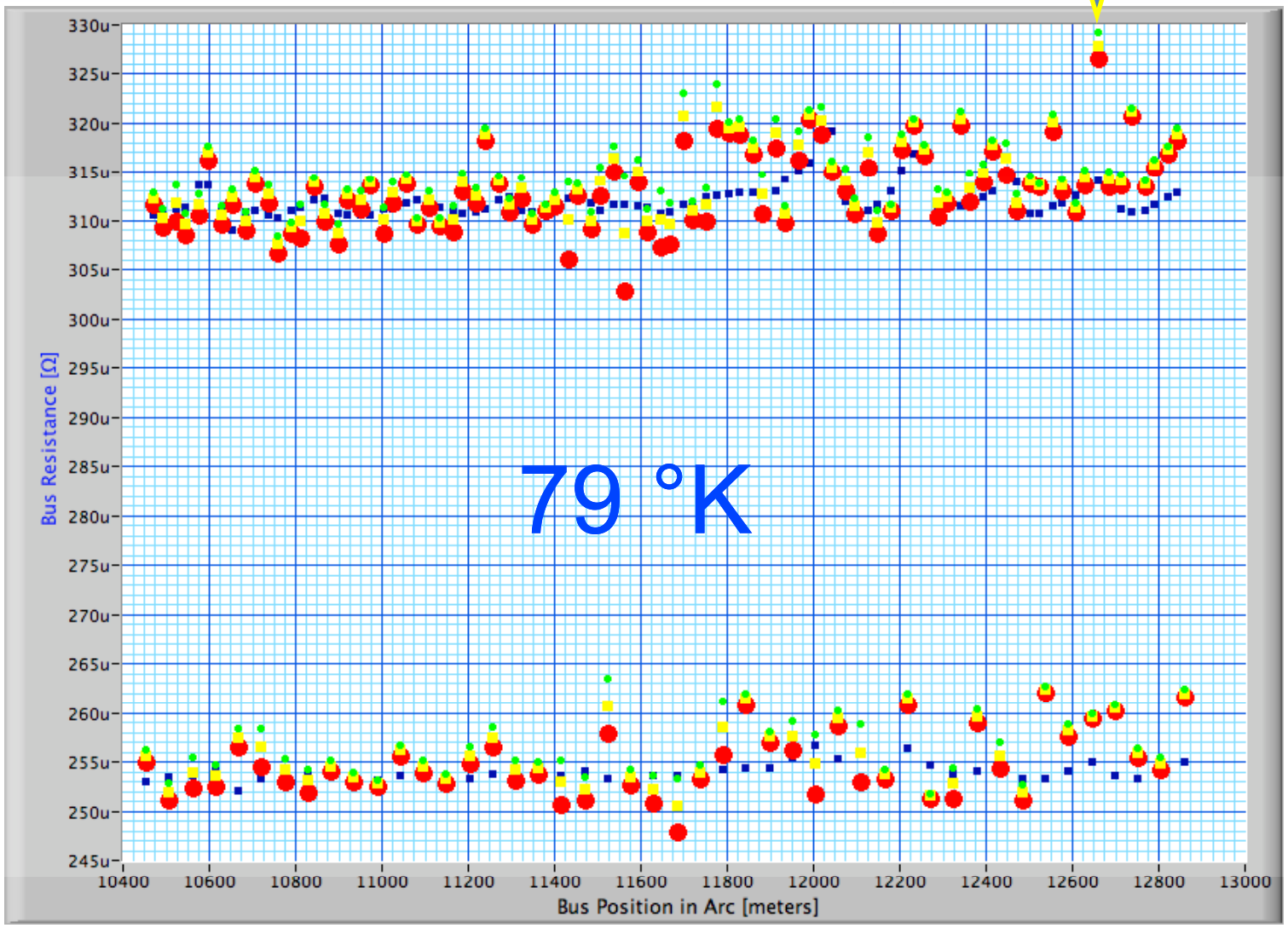
21.8μΩ 18.6μΩ 19.5μΩ 19.4μΩ 19.8μΩ 20.4μΩ …μΩ …μΩ

1-2 M3 splice resistance (copper)



Courtesy R. Flora, C. Scheuerlein

Sector 4-5


MBA (B16-C15)L5
79 °K
Bus Resistance [Ω]
330u
325u
320u
315u
310u
305u
300u
295u
290u
285u
280u
275u
270u
265u
260u
255u
250u
245u
10400
10600
10800
11000
11200
11400
11600
11800
12000
12200
12400
12600
12800
13000
Bus Position in Arc [meters]