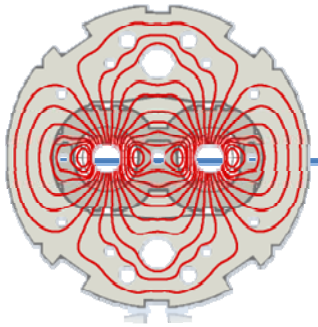


Intervention Sector 4-5

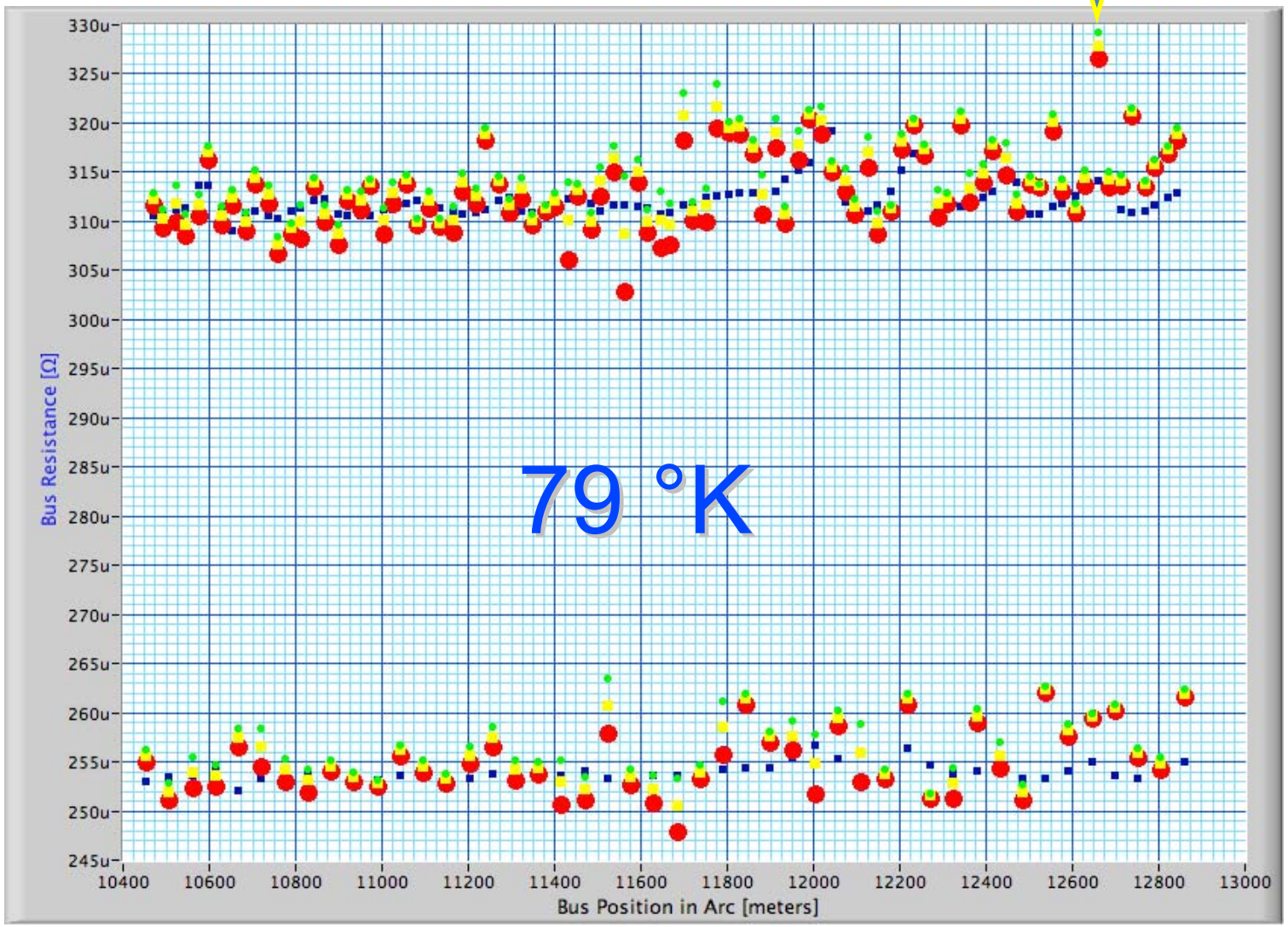
Francesco Bertinelli – TE/MSC

(10 minutes)

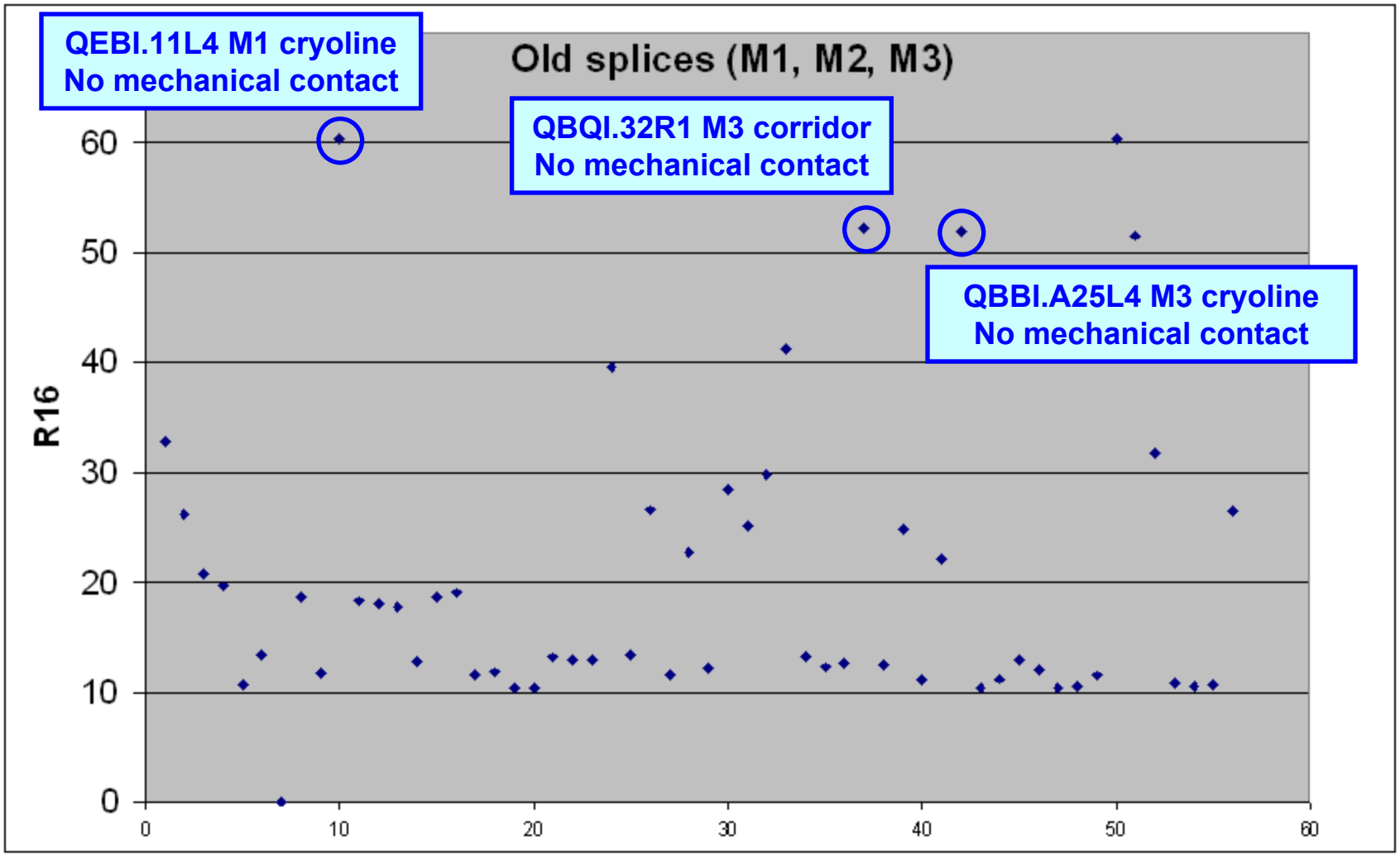
On behalf of - and with several contributions from - surface and IC teams

If time/interest, also update on copper stabiliser resistance measurements

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]

13kA splices



Sector 45 - Cases studied

- Case A – No action:
  - Wk. 26: SK test & RF ball test
  - Wk. 27: Vacuum pumping
- Case B – 1 bad splice:
  - Wk. 26: SK test & RF ball test & start of opening
  - Wk.27-28: repairs and closure
  - Wk.29-30: Vacuum leak test and pumping

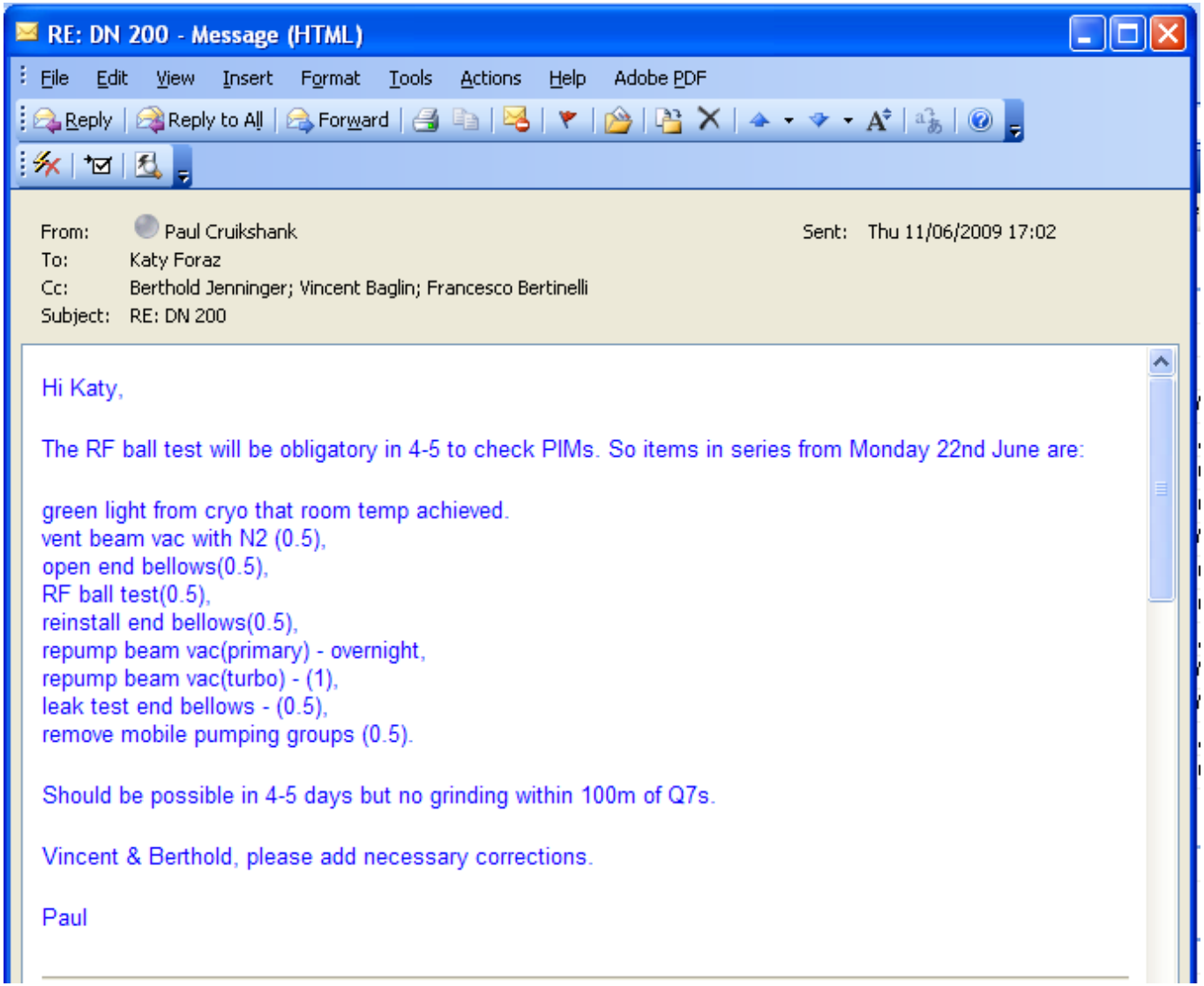
- Case C– 15 bad splice:
  - Wk. 26: SK test & RF ball test & start of opening
  - Wk.27-30: repairs and closure
  - Wk.31-32: Vacuum leak test and pumping
- Case D – all consolidation
  - Wk. 26: SK test & RF ball test
  - Estimated time for the works : 8 wks + 2wks for leak tests

Courtesy K. Foraz

4-5 Intervention Scenario i/ii

- Segment resistance measurements ("Bob's"):
  - Both dipole and quadrupole lines
  - W26 ~ 22 to 24 June
- Cross-checking with R16 and repair of outlier
- RF Ball test and PIM replacements (arc ends?)
- Connection Cryostat 11L5, one busbar
- Pressure relief nozzles:
  - DN200 DS zones, 7R4 and 7L5
  - DN200 Central sector 31R4
  - DN200 1st MB outlier, 11L5 and 15L5
  - Total: 60 DN200 nozzles (35%)
  - DFBAs pressure relief nozzles

4-5 RF Ball Test 24 June



RE: DN 200 - Message (HTML)

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Reply | Reply to All | Forward

From: Paul Cruikshank
Sent: Thu 11/06/2009 17:02
To: Katy Foraz
Cc: Berthold Jenninger; Vincent Baglin; Francesco Bertinelli
Subject: RE: DN 200

Hi Katy,

The RF ball test will be obligatory in 4-5 to check PIMs. So items in series from Monday 22nd June are:

green light from cryo that room temp achieved.
vent beam vac with N2 (0.5),
open end bellows(0.5),
RF ball test(0.5),
reinstall end bellows(0.5),
repump beam vac(primary) - overnight,
repump beam vac(turbo) - (1),
leak test end bellows - (0.5),
remove mobile pumping groups (0.5).

Should be possible in 4-5 days but no grinding within 100m of Q7s.

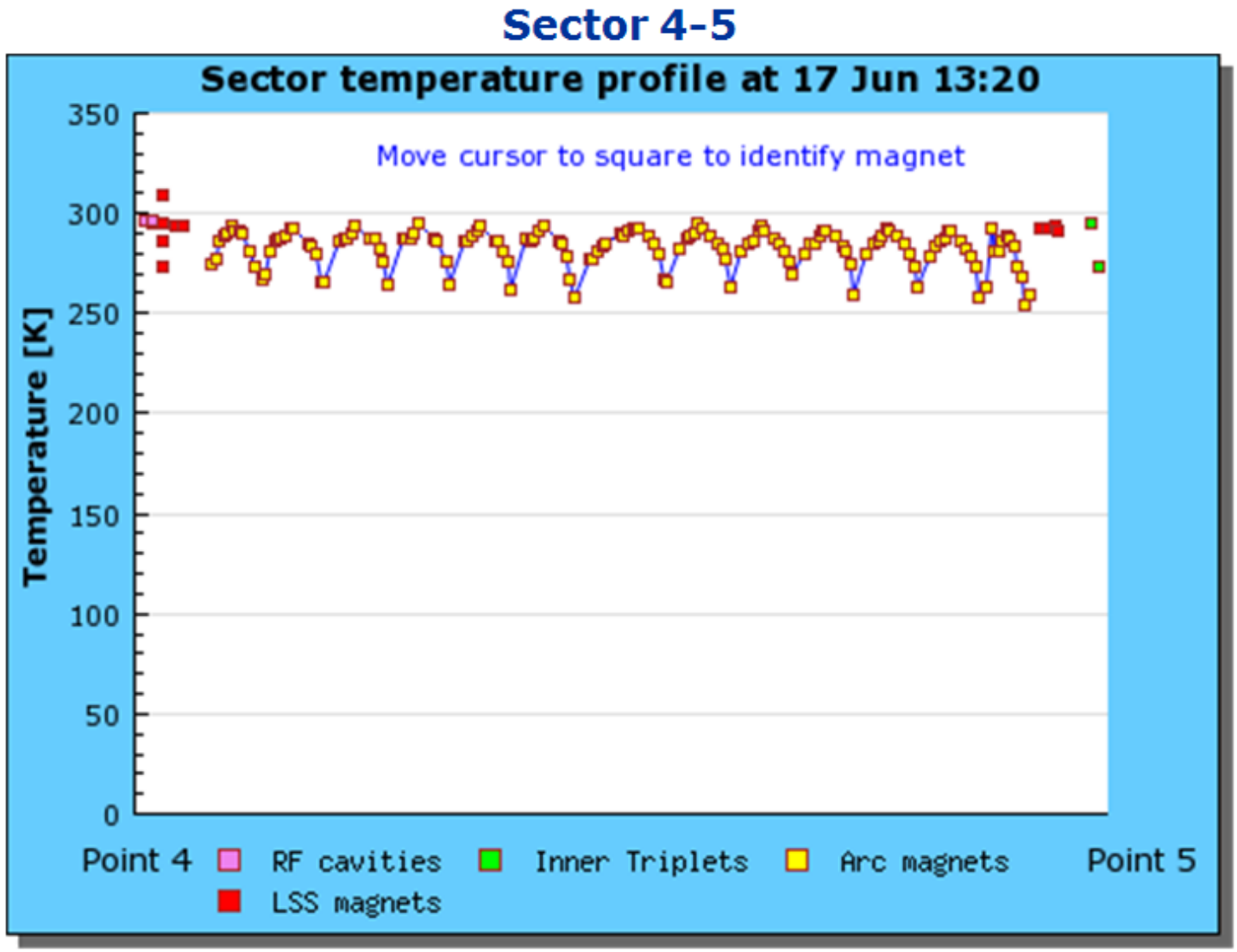
Vincent & Berthold, please add necessary corrections.

Paul

4-5 Interventions Scenario ii/ii

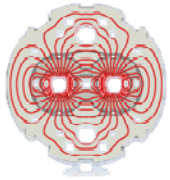
- W25
  - Insulation vacuum all 14 VACSECs degraded to 300 mbar (16 June pm.), planned to be vented with tunnel air 19 June pm.
  - BLM dismounting, priority 5 VACSECs, following all the sector
  - Paint removal starting 18 June: careful with dust
- W26
  - 22 June: start opening W bellows etc.
  - Start segment measurements
  - Redouble attention for respect of safety and for fragile equipment

4-5 warm-up

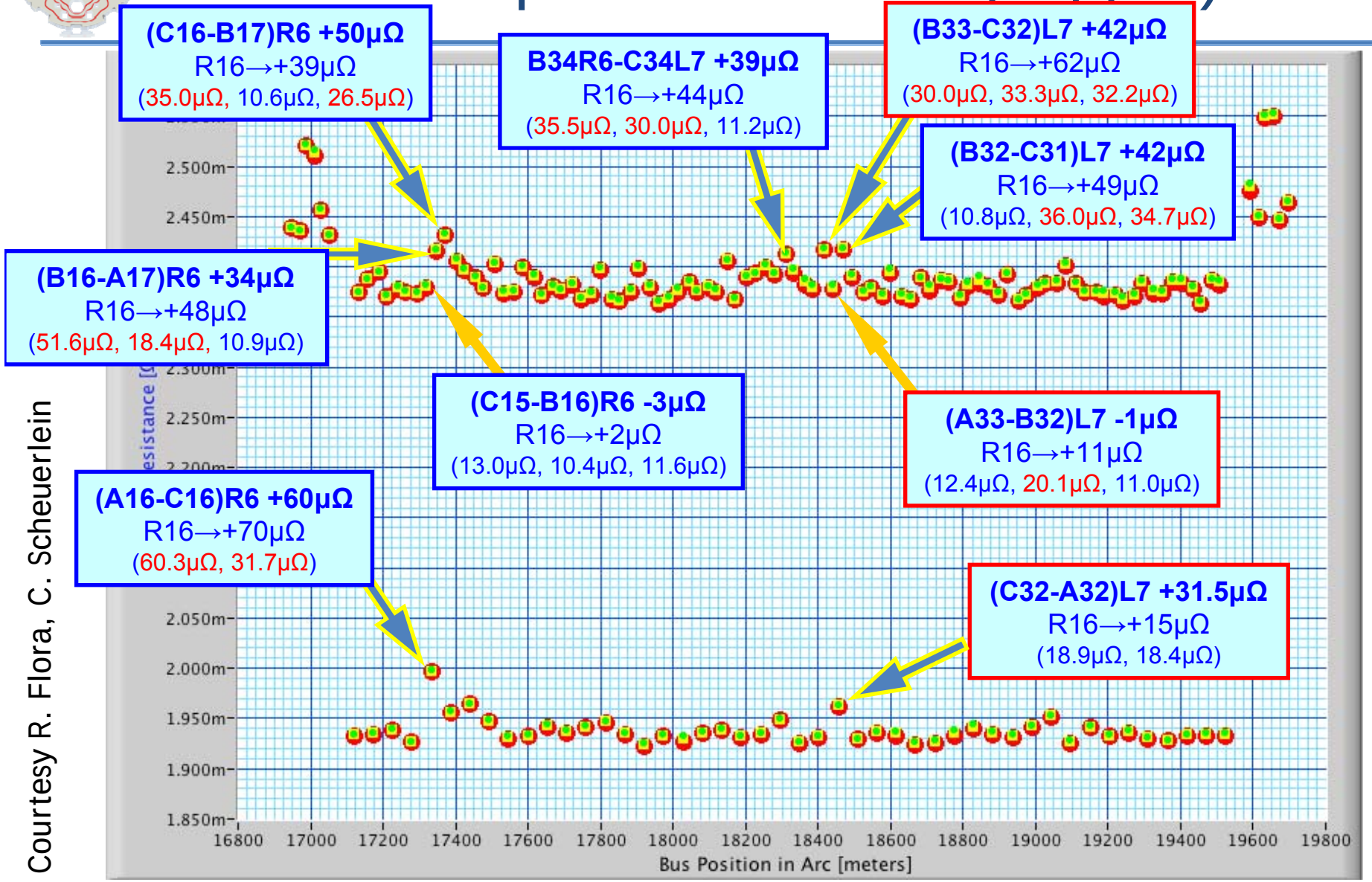

Sector 4-5
Sector temperature profile at 17 Jun 13:20
Move cursor to square to identify magnet
Temperature [K]
350
300
250
200
150
100
50
0
Point 4
RF cavities
Inner Triplets
Arc magnets
Point 5
LSS magnets

4-5 Interventions Resources

- Resources for IC work
  - Priority of existing resources on splices, PIMs and Connection Cryostat
  - Extended S108 FSU team for W openings (1 month to end July)
  - Returned 50% of S108 DN200 team (Dubna not available on short notice)
  - Discussions with EN-MME and BE-BI for DN200 support
- Issues forthcoming:
  - Priority 4-5 vs 6-7
  - More DN200 installed implies more VAC work and time when reclosing



6-7 M3 splice resistance (copper)



Courtesy R. Flora, C. Scheuerlein

M1&M2 Hit List 300K 3 sectors

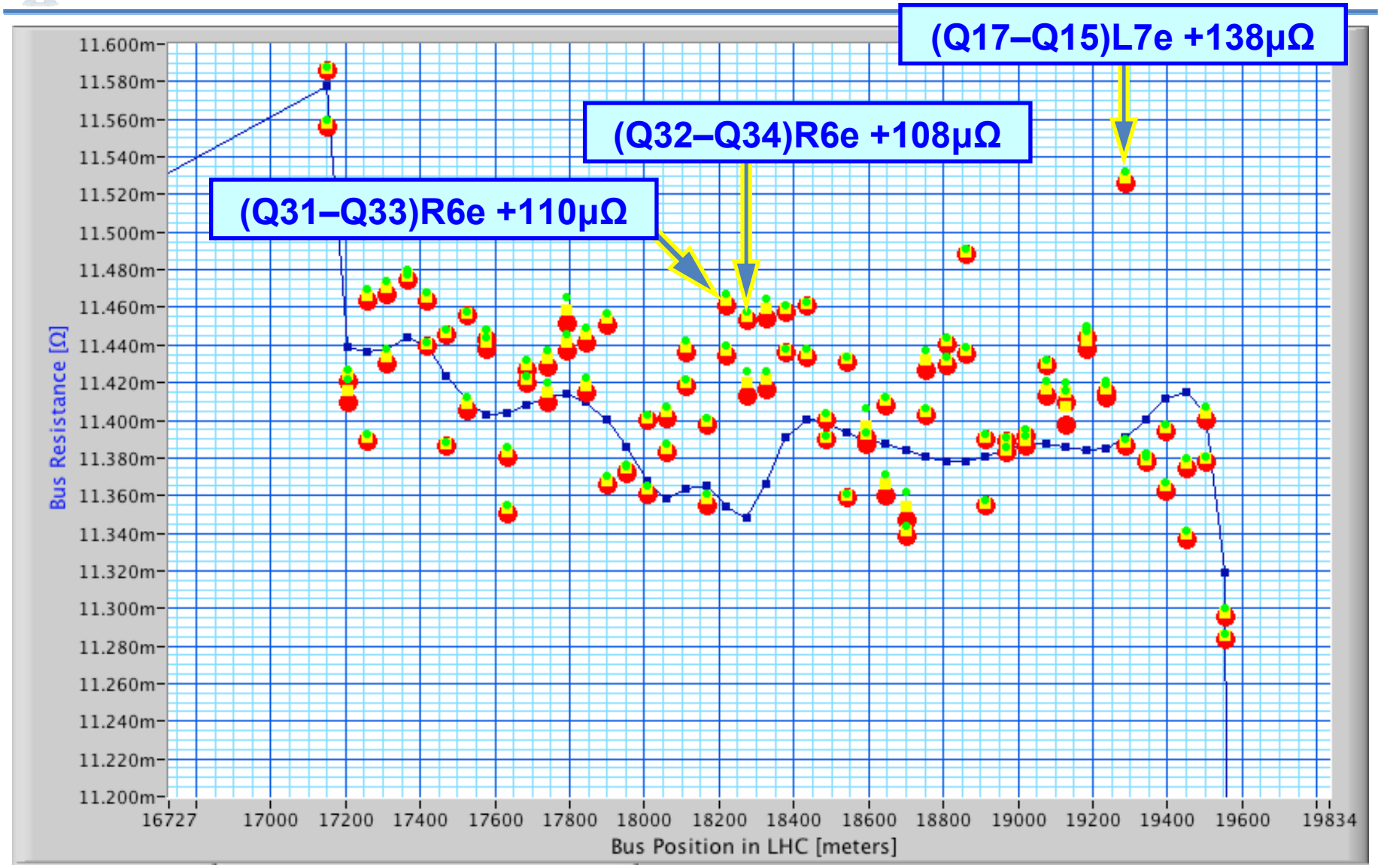
Hit List

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

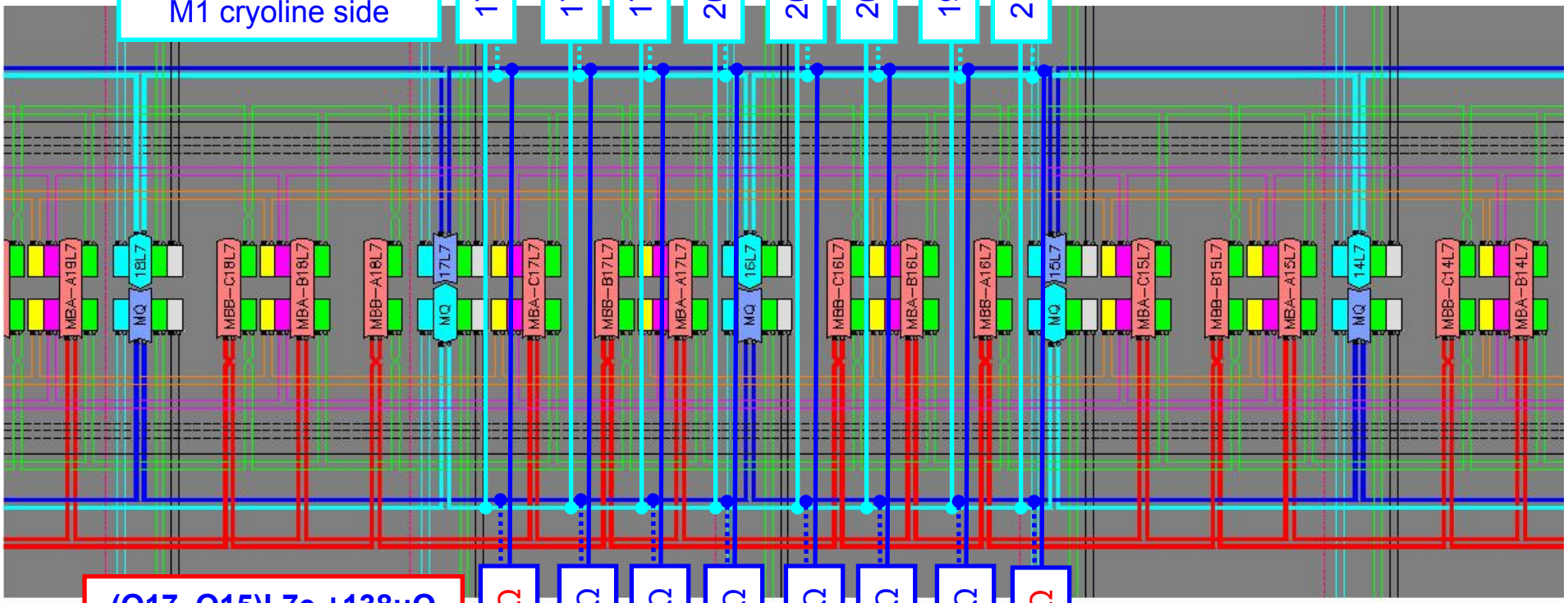
- 3-4 came later, but no significant change to list
- 1st, 3rd and 4th outlier opened

Courtesy R. Flora

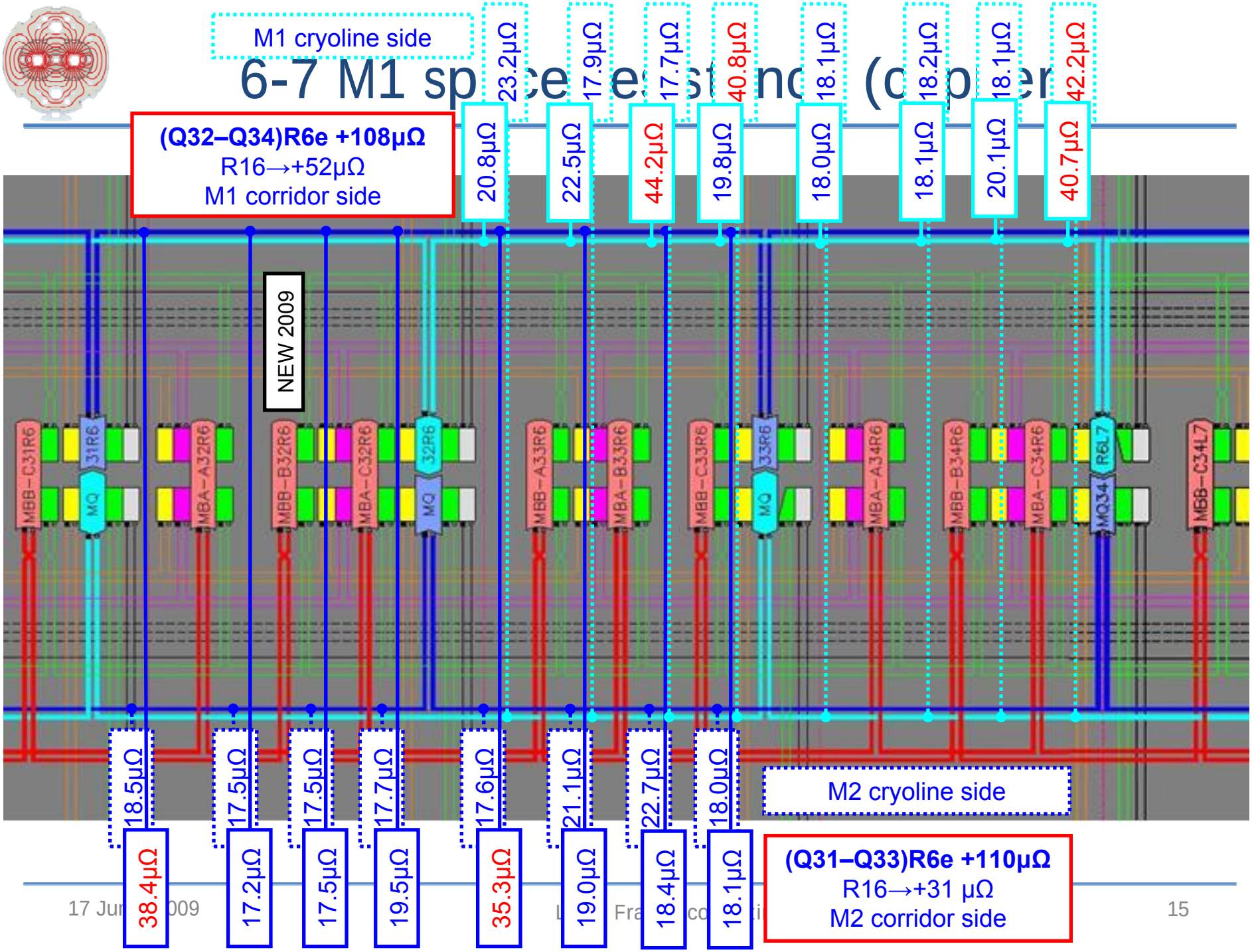
6-7 M1&M2 splice resistance (copper)



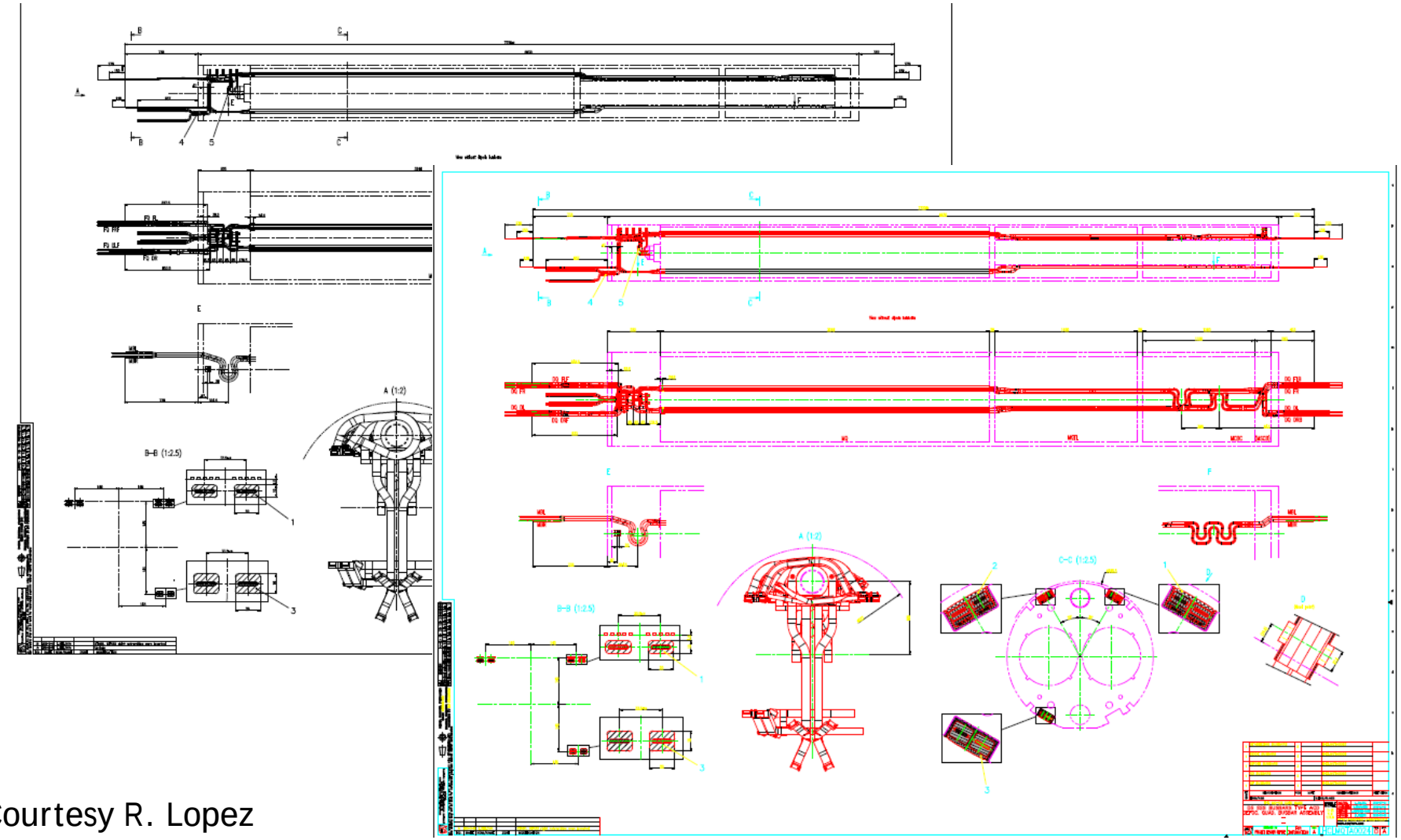
6-7 M[illegible] (copper)


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
MBA–A19L7
18L7
MQ
MBB–C18L7
MBA–B18L7
MBB–A18L7
17L7
MQ
MBA–C17L7
MBB–B17L7
MBA–A17L7
16L7
MQ
MBB–C16L7
MBA–B16L7
MBB–A16L7
15L7
MQ
MBA–C15L7
MBB–B15L7
MBA–A15L7
14L7
MQ
MBB–C14L7
MBA–B14L7
(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

6-7 M1 sp ce e st nc (c p er

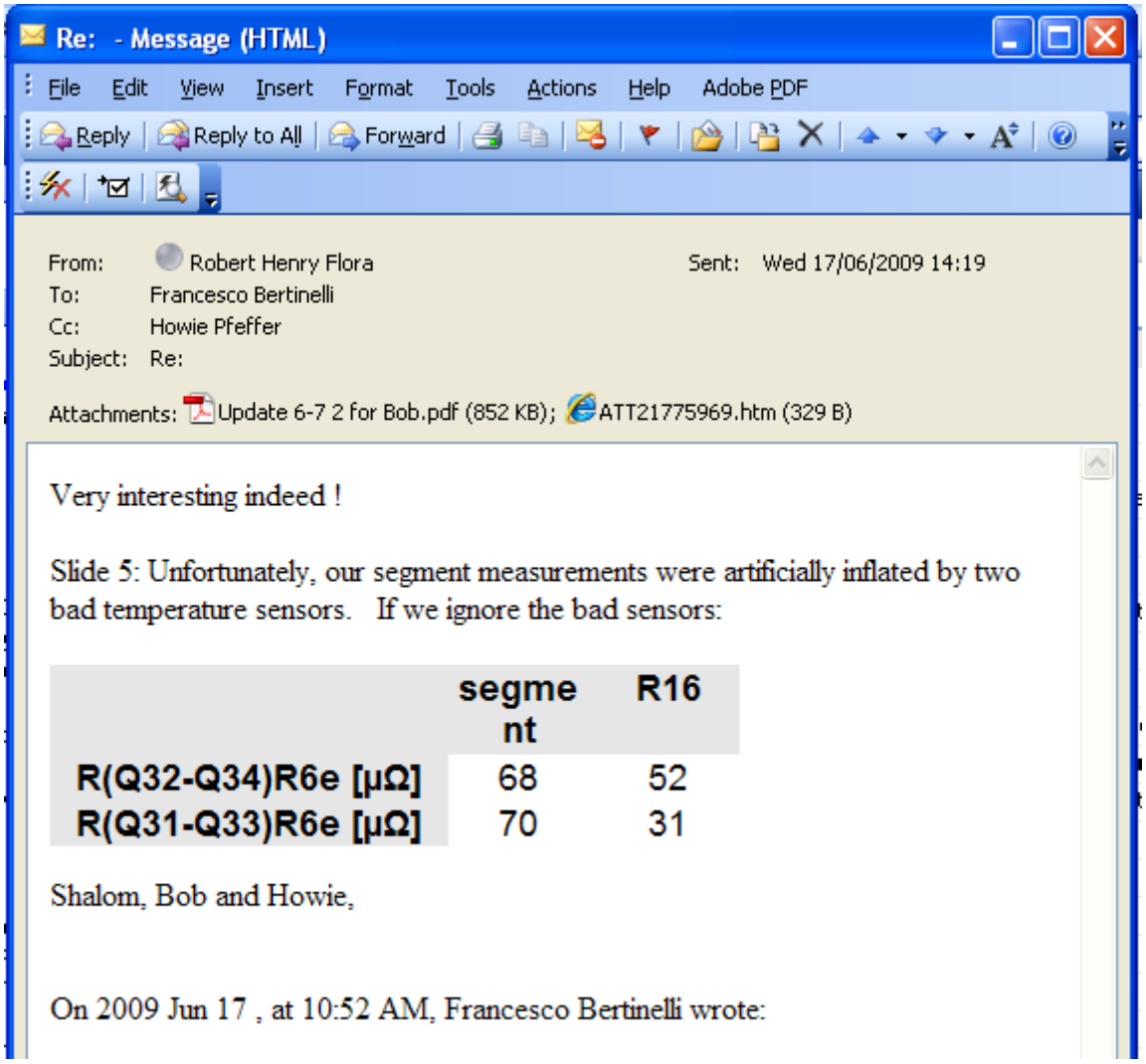


Details of M1&M2 geometry in SSS



Courtesy R. Lopez

Last Minute



Re: - Message (HTML)

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Reply | Reply to All | Forward

From: Robert Henry Flora Sent: Wed 17/06/2009 14:19
To: Francesco Bertinelli
Cc: Howie Pfeffer
Subject: Re:

Attachments: Update 6-7 2 for Bob.pdf (852 KB); ATT21775969.htm (329 B)

Very interesting indeed !

Slide 5: Unfortunately, our segment measurements were artificially inflated by two bad temperature sensors. If we ignore the bad sensors:

	segment	R16
R(Q32-Q34)R6e [μΩ]	68	52
R(Q31-Q33)R6e [μΩ]	70	31

Shalom, Bob and Howie,

On 2009 Jun 17 , at 10:52 AM, Francesco Bertinelli wrote:

Courtesy R. Flora