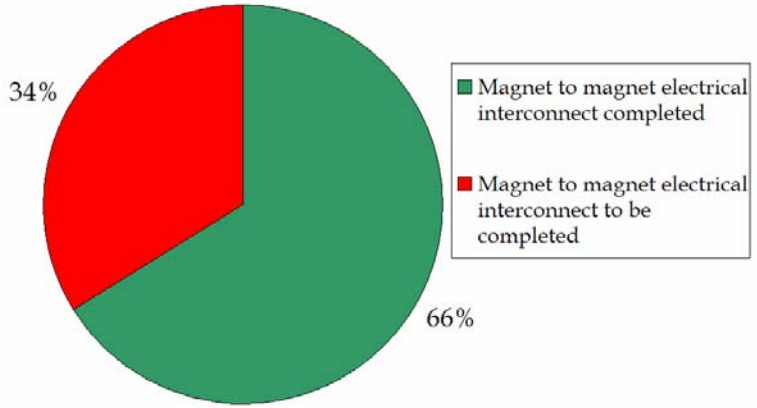
# Report on LHC arc interconnect

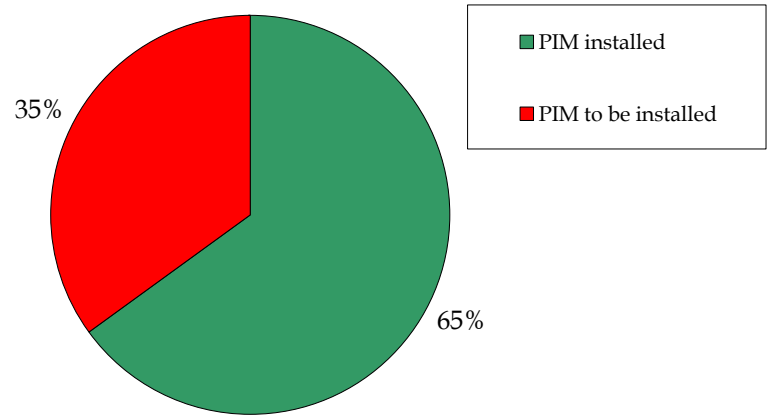
P. Fessia On behalf of all the teams involved

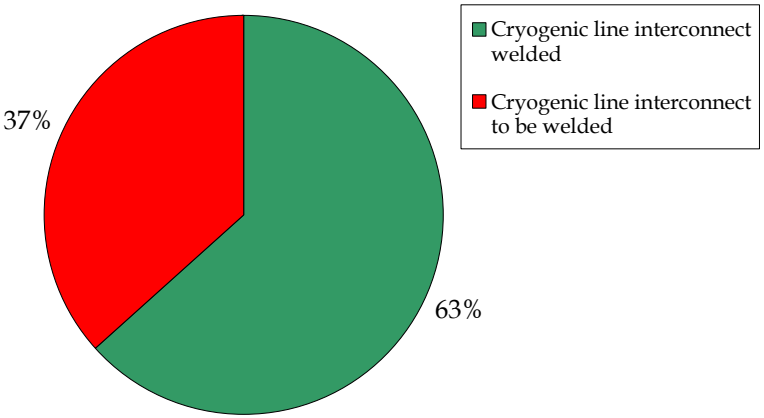
AT-MCS AT-MEL AT-VAC

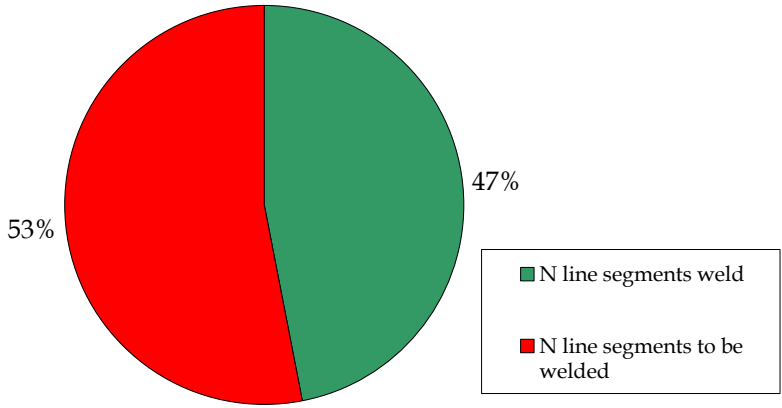
# Summary

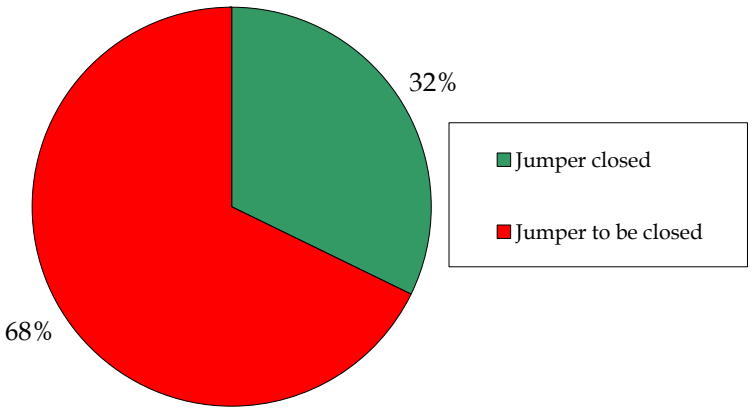
- LHC interconnect a a glance
- Closure resume
- Sector detail
- Pending issues
- Consideration on productivity

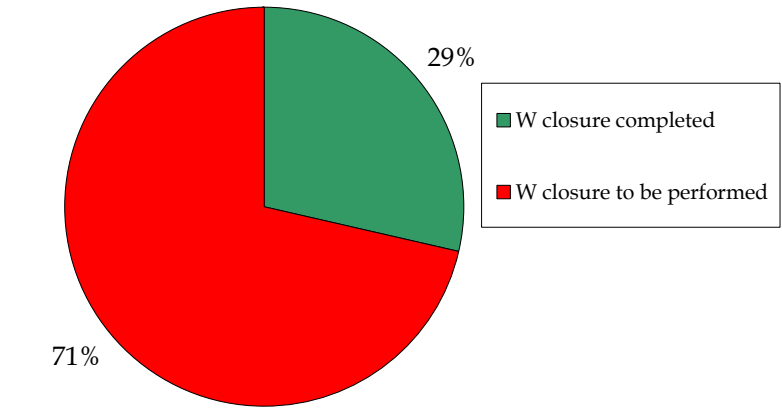

34%
66%
Magnet to magnet electrical interconnect completed
Magnet to magnet electrical interconnect to be completed


35%
65%
PIM installed
PIM to be installed


37%
63%
Cryogenic line interconnect welded
Cryogenic line interconnect to be welded


53%
47%
N line segments weld
N line segments to be welded

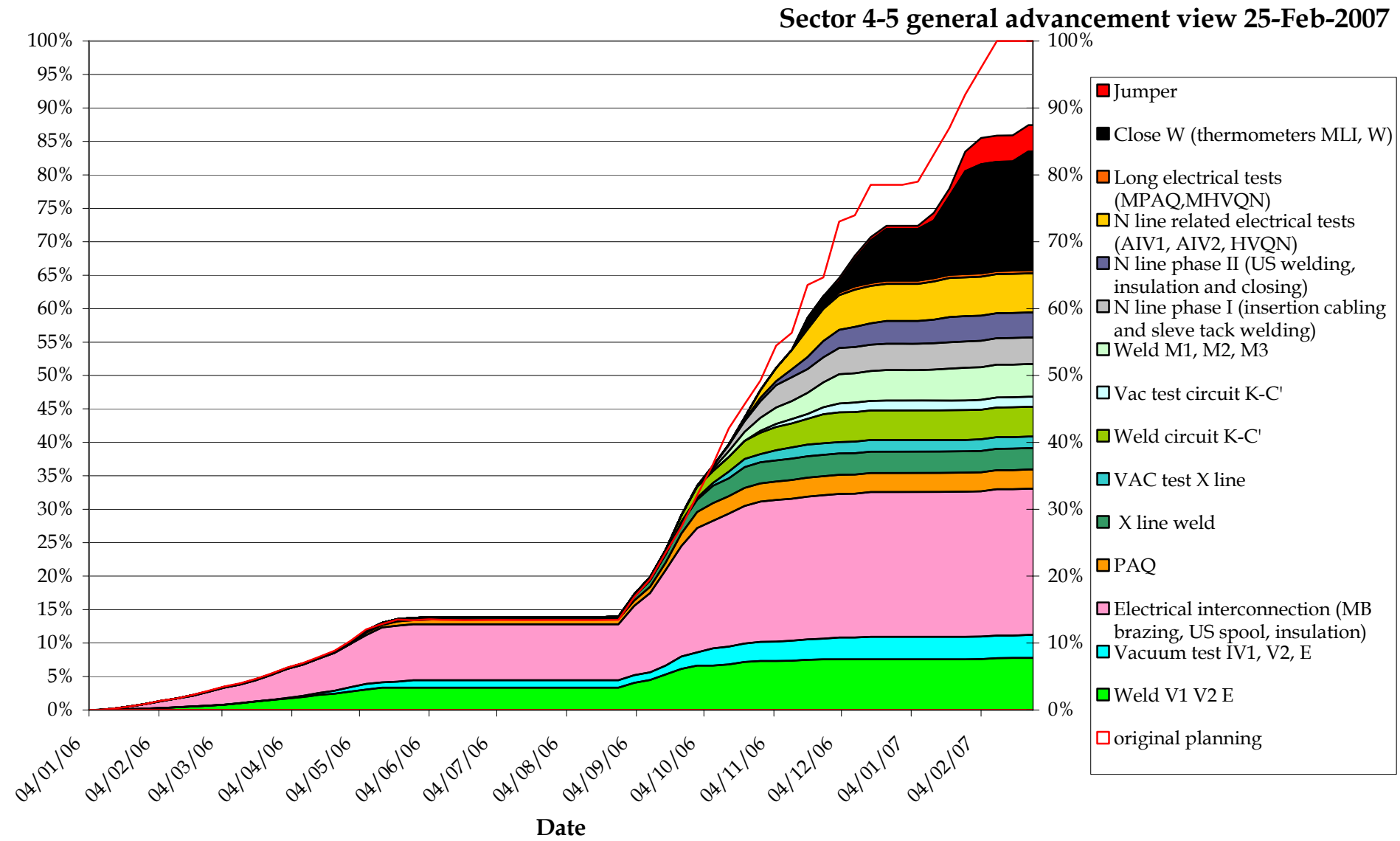

32%
68%
Jumper closed
Jumper to be closed


29%
71%
W closure completed
W closure to be performed

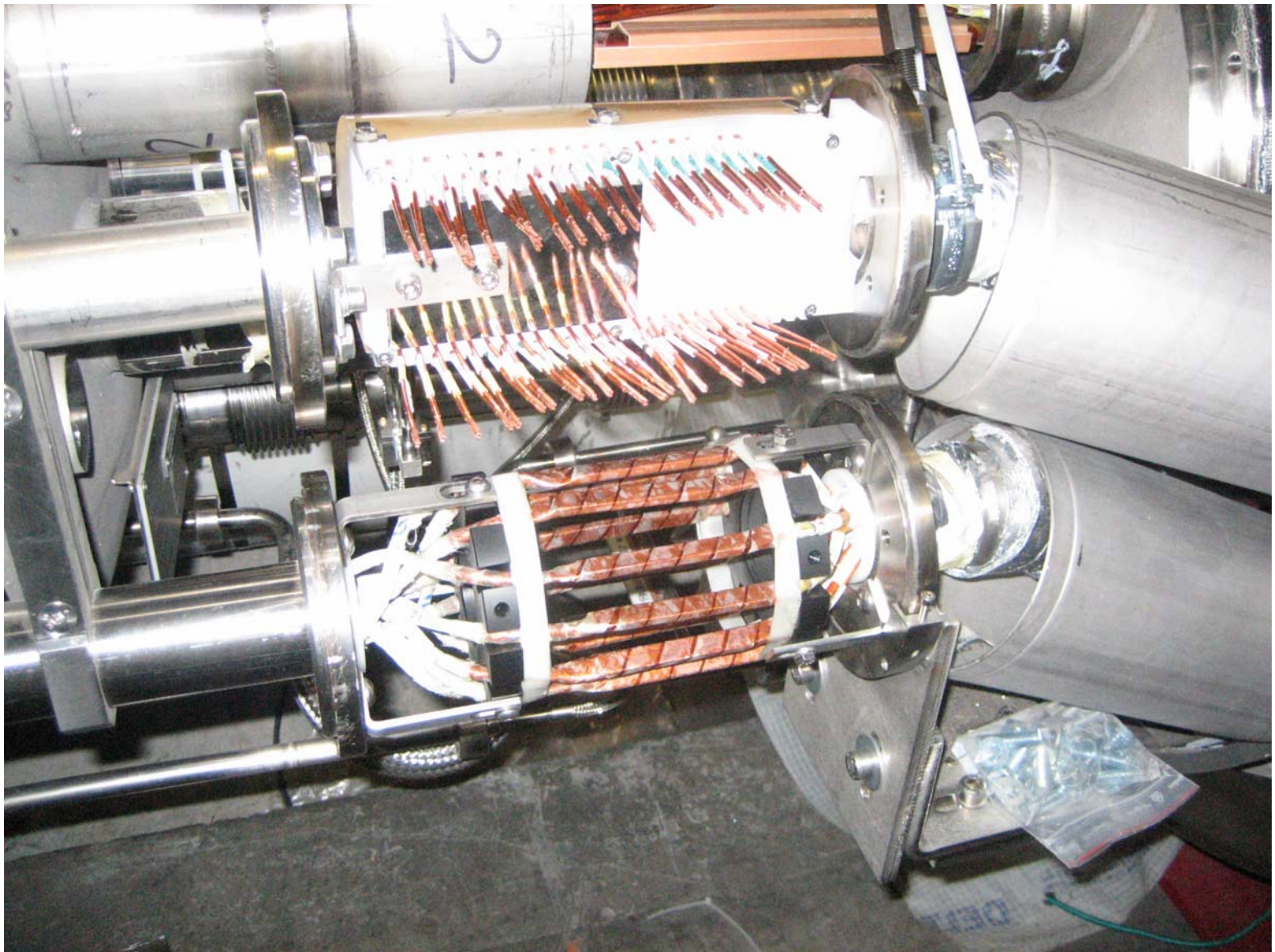
# Closures

| Sector | IC closed | Vacuum sector delivered for test | Accepted | Repaired |
|---|---|---|---|---|
| 4-5 | 176 | 10 | 5 | 3 |
| 8-1 | 82 | 4 | | |
| 3-4 | 15 | | | |

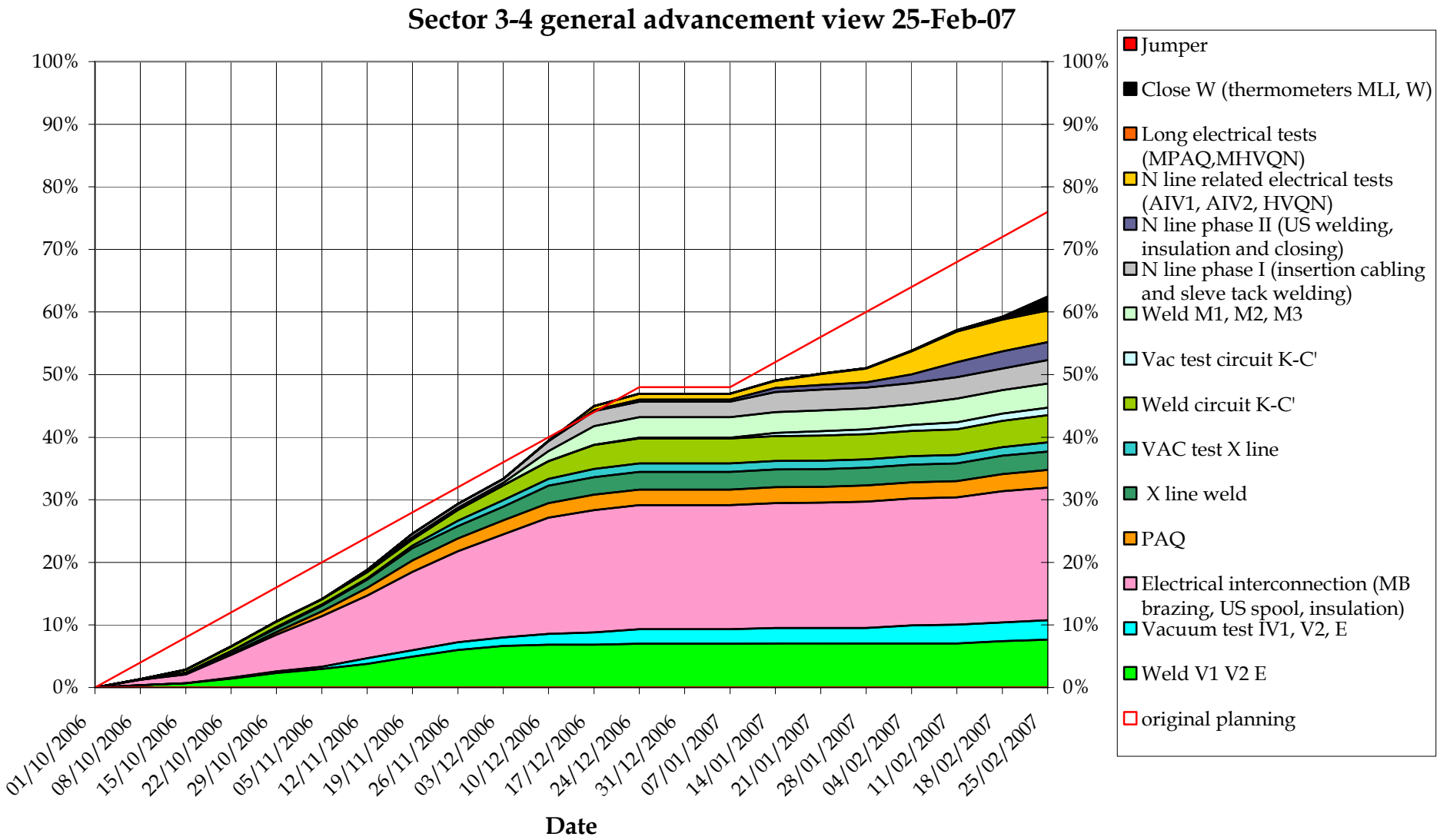
# Sector 4-5


Sector 4-5 general advancement view 25-Feb-2007
100%
95%
90%
85%
80%
75%
70%
65%
60%
55%
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
04/01/06
04/02/06
04/03/06
04/04/06
04/05/06
04/06/06
04/07/06
04/08/06
04/09/06
04/10/06
04/11/06
04/12/06
04/01/07
04/02/07
Date
Jumper
Close W (thermometers MLI, W)
Long electrical tests (MPAQ,MHVQN)
N line related electrical tests (AIV1, AIV2, HVQN)
N line phase II (US welding, insulation and closing)
N line phase I (insertion cabling and sleve tack welding)
Weld M1, M2, M3
Vac test circuit K-C'
Weld circuit K-C'
VAC test X line
X line weld
PAQ
Electrical interconnection (MB brazing, US spool, insulation)
Vacuum test IV1, V2, E
Weld V1 V2 E
original planning

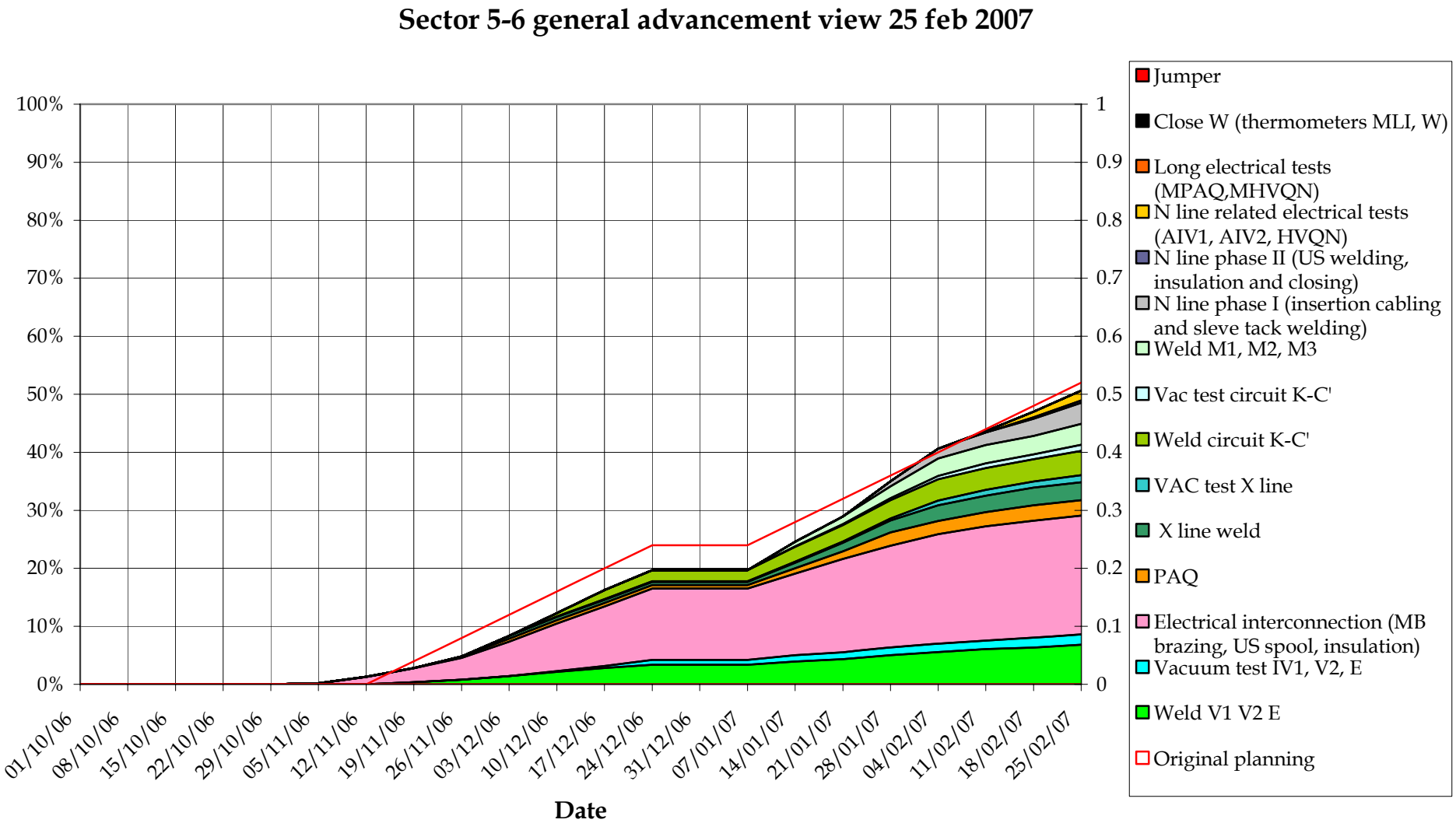
# DS L5 6 KA completed



# Sector 3-4


Sector 3-4 general advancement view 25-Feb-07
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
01/10/2006
08/10/2006
15/10/2006
22/10/2006
29/10/2006
05/11/2006
12/11/2006
19/11/2006
26/11/2006
03/12/2006
10/12/2006
17/12/2006
24/12/2006
31/12/2006
07/01/2007
14/01/2007
21/01/2007
28/01/2007
04/02/2007
11/02/2007
18/02/2007
25/02/2007
Date
Jumper
Close W (thermometers MLI, W)
Long electrical tests (MPAQ,MHVQN)
N line related electrical tests (AIV1, AIV2, HVQN)
N line phase II (US welding, insulation and closing)
N line phase I (insertion cabling and sleve tack welding)
Weld M1, M2, M3
Vac test circuit K-C'
Weld circuit K-C'
VAC test X line
X line weld
PAQ
Electrical interconnection (MB brazing, US spool, insulation)
Vacuum test IV1, V2, E
Weld V1 V2 E
original planning

# Sector 5-6


Sector 5-6 general advancement view 25 feb 2007
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
01/10/06
08/10/06
15/10/06
22/10/06
29/10/06
05/11/06
12/11/06
19/11/06
26/11/06
03/12/06
10/12/06
17/12/06
24/12/06
31/12/06
07/01/07
14/01/07
21/01/07
28/01/07
04/02/07
11/02/07
18/02/07
25/02/07
Date
Jumper
Close W (thermometers MLI, W)
Long electrical tests (MPAQ,MHVQN)
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N line phase II (US welding, insulation and closing)
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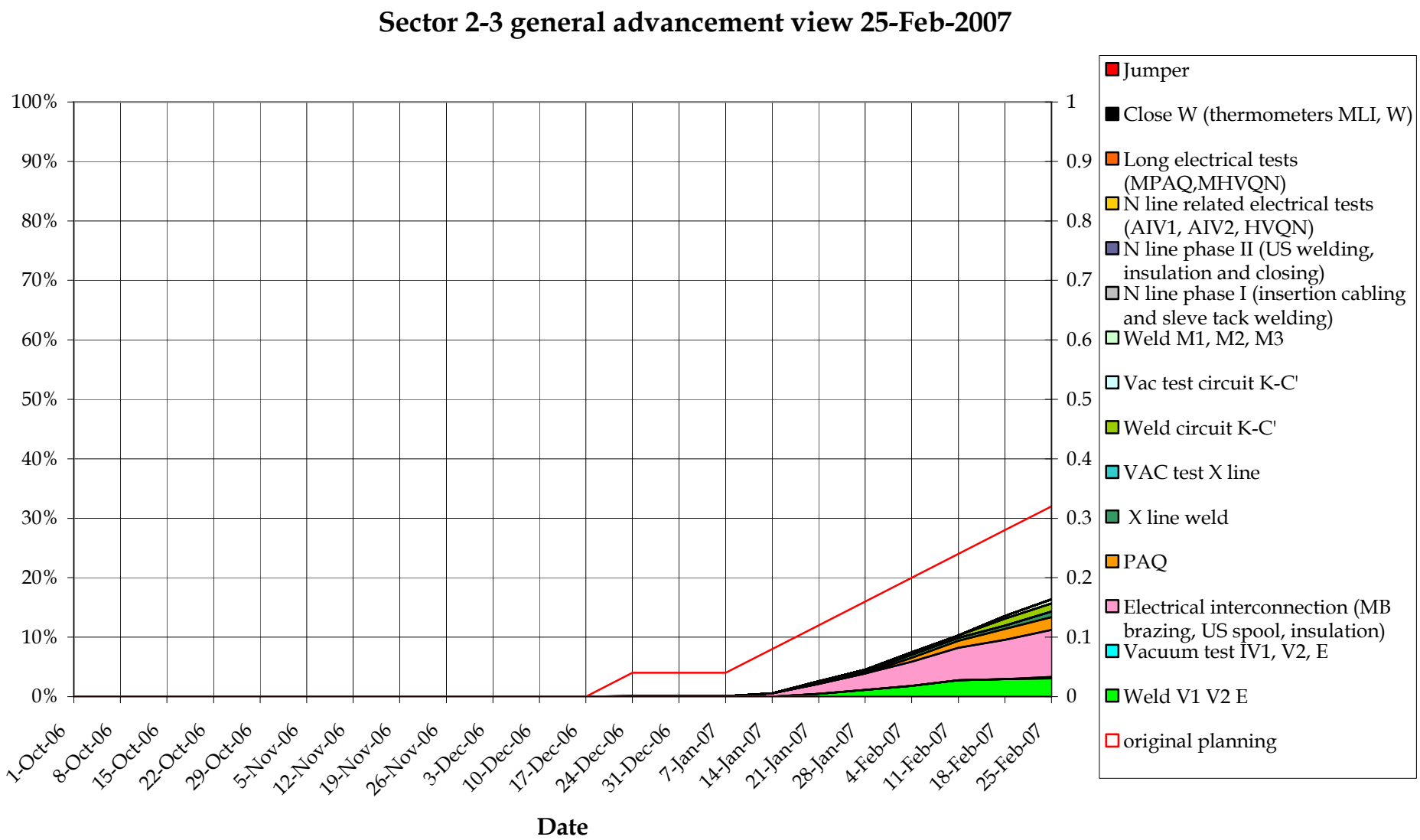
Weld M1, M2, M3
Vac test circuit K-C'
Weld circuit K-C'
VAC test X line
X line weld
PAQ
Electrical interconnection (MB brazing, US spool, insulation)
Vacuum test IV1, V2, E
Weld V1 V2 E
Original planning

# Sec 2-3


Sector 2-3 general advancement view 25-Feb-2007
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1-Oct-06
8-Oct-06
15-Oct-06
22-Oct-06
29-Oct-06
5-Nov-06
12-Nov-06
19-Nov-06
26-Nov-06
3-Dec-06
10-Dec-06
17-Dec-06
24-Dec-06
31-Dec-06
7-Jan-07
14-Jan-07
21-Jan-07
28-Jan-07
4-Feb-07
11-Feb-07
18-Feb-07
25-Feb-07
Date
Jumper
Close W (thermometers MLI, W)
Long electrical tests (MPAQ,MHVQN)
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Vac test circuit K-C'
Weld circuit K-C'
VAC test X line
X line weld
PAQ
Electrical interconnection (MB brazing, US spool, insulation)
Vacuum test IV1, V2, E
Weld V1 V2 E
original planning

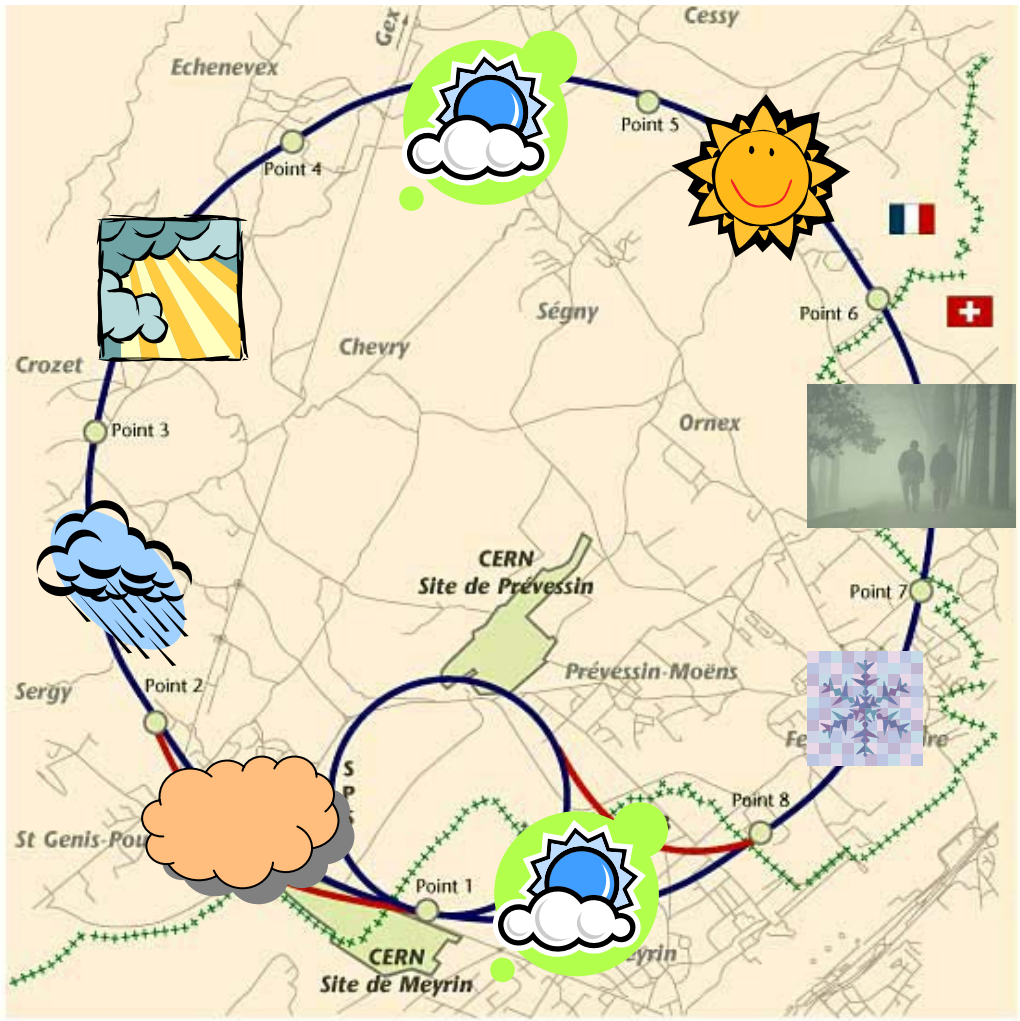
# Sector 6-7

- Started in week 8
- At the moment the installation of PIM is on hold
- Brazing had an acceptable start
- Cryogenic line started last week

# DS overview

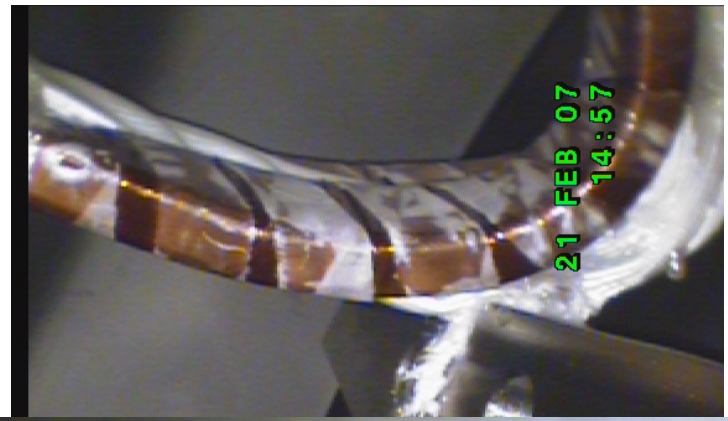
| Sector | R | L |
|---|---|---|
| 4-5 | Line inserted, being cabled | Under completion (1 week after start ag IEG ) |
| 3-4 | To be done by IEG, blocked because of problem in 10R3 | Inserted, connection 6KA started |
| 5-6 | inserted | Not av |
| 8-1 | Rep DFBAP | Under completion |
| 2-3 | Not av | Not av |
| 6-7 | Not av | Not av |
| 1-2 | Not av | Not av |

# Meteo interconnect



# SSS series 500 DF type possible general problem

- In sector 3-4 the PAQ in half cell 10R3 has put in evidence a short to ground in Q9R3 (SSS514). Endoscopic inspection shows contact between bus bar and spools with the extermity plate of 1st corrector magnet. Problem under current investigation



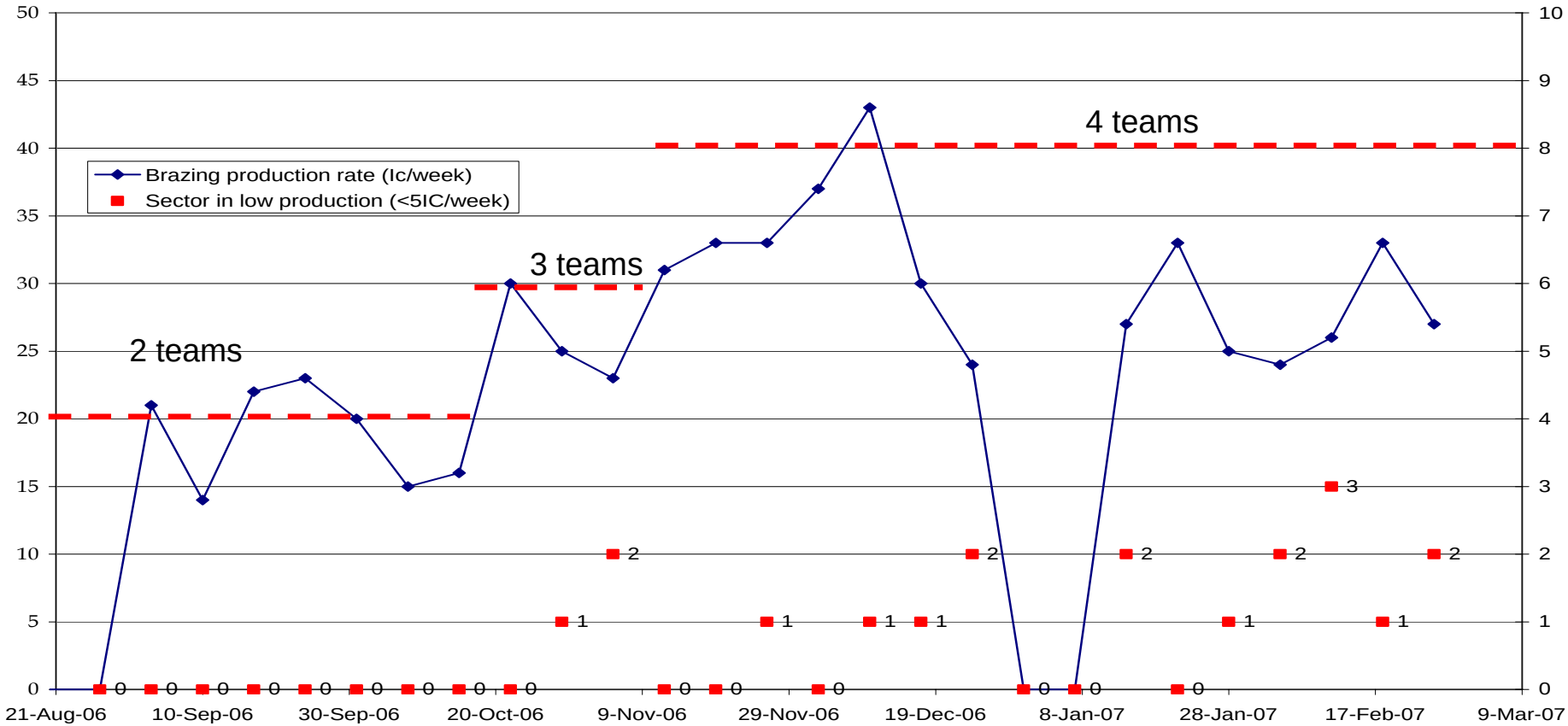

# Tunnel Security

- Several cases of burglary have occurred especially around point 2 and 6 causing important losses of material and time
- For the 1st time we were faced to a probable sabotage act against a brazing machine
- Necessity to reinforce tunnel security to avoid possible act against the LHC


# Other issues

- Protection of PIM: a reniforced procedure to prevent shocks on the PIM has been developed and is being tested in the present days. Aim reduce number of NCR impacting sector closures
- Cleaniness during brazing and following operations: new procedure is under development to improve cleaninesss during brazing and following cleaning operation to reduce risk of contaminaton of welding lips
- Components: overall inventory of components available to complete LHC interconnect work has been completed, putting in evidence the necessity to place few orders to avoid possible activity stoppage

# Effect of workflow, ncr and missing units on prod rates




| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| end 4-5 | end 4-5 | | | tail 4-5 | | tail 4-5 | tail 4-5 | end 3-4 | | | tail 3-4 | | tail 3-4 | tail 4-5 | tail 4-5 | end 5-6 | tail 3-4 |
| | start 5-6 | | | | | | | start 2-3 | | | tail 8-1 | | | tail 3-4 | start 6-7 | | end 5-6 |
| | | | | | | | | | | | | | | | tail 8-1 | | |

# Conclusions

- Sector 4-5 and 3-4 are affected by 3-4 weeks of delay
- Sector 5-6 is on plan
- Sector 2-3 presents 4 weeks of delay that will be difficult to recover
- Displacements of teams are equivalent to loss in productivity
- The scheduled duration (master planning) of 20 weeks for sectors 6-7 and 1-2 is not achievable with the present boundary condition
- Increase of tunnel security is necessary to avoid possible acts against the machine