LHC ARC INTERCONNECTION MONTHLY REPORT

P.FESSIA

In behalf of the interconnection team

(MCS-IC, MCS-QA, MCS-ET,…)

Summary

- Status sectors
  - 7-8
  - 8-1
- Problems and actions taken and new organization
- Status sectors
  - 1-2
  - 2-3
  - 5-6
  - 3-4
  - 4-5

7-8 & 8-1

- 7-8
  - To meet deadline the highest priority is put on this sector ;
  - This has negative impact on the schedule of LSSs (especially DSL 1L and LSS5)
- 8-1
  - has the lower priority to focus on 7-8 and mass production in 4-5,3-4 and soon 5-6.

New organization

LHC Arc Interconnection Worksite Manager team in charge of:

4-5 3-4 5-6 2-3 6-7 1-2

-P.Fessia

-A. Musso

-*M Struik* (from week 46)

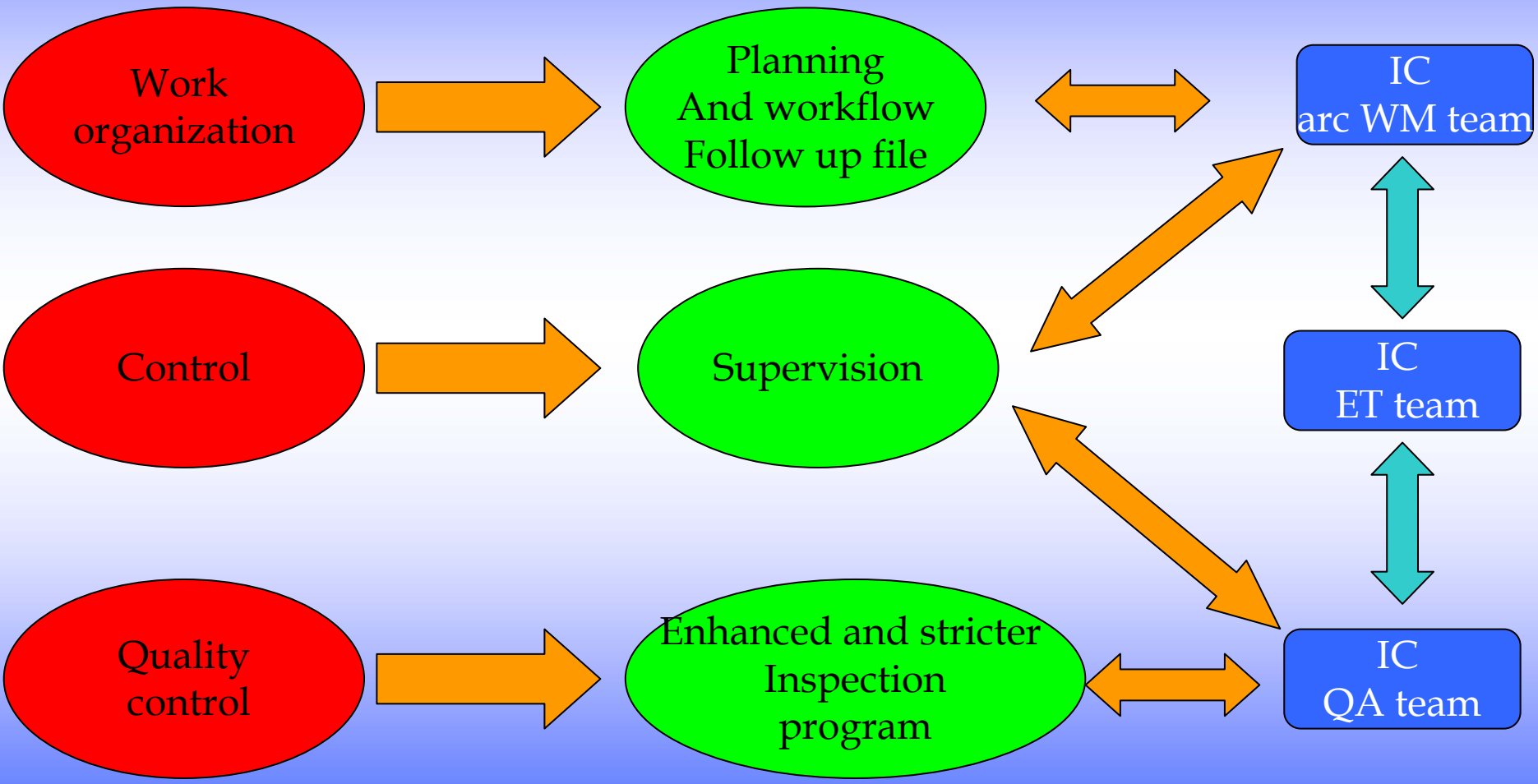
-C. Vollinger (50%)

Not managed by the team:

7-8: F . Seyvet

8-1: M. Struik

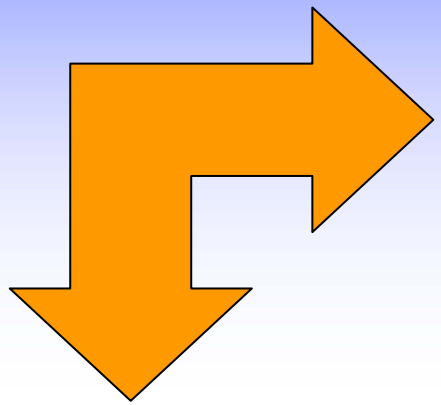
Problems and actions

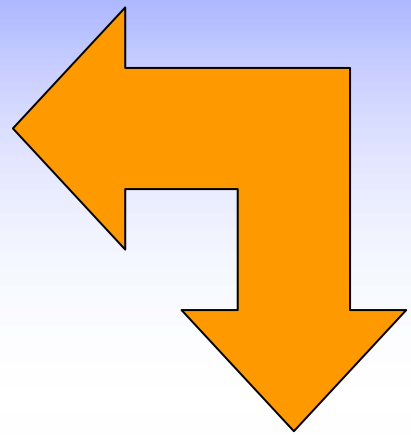


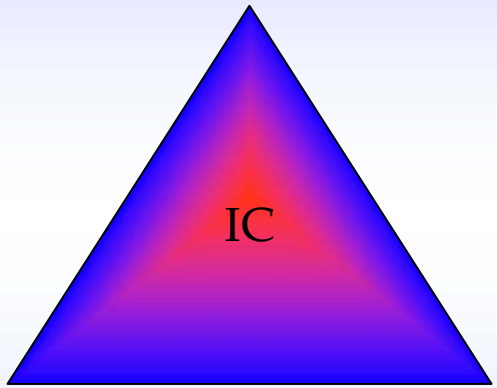
QA enhanced inspection program

- 100% inspection of welds on
  - V lines: condition for vacuum test
  - E lines: condition for vacuum test
  - X lines: condition for vacuum test
  - C’ lines: condition for vacuum test
  - K1 K2 lines: not condition for vacuum test
  - M lines: before test
  - N lines: before test
- IC quality certification:
  - Required for green light for IC W bellow closure
  - Verification of the whole IC including quality documentation

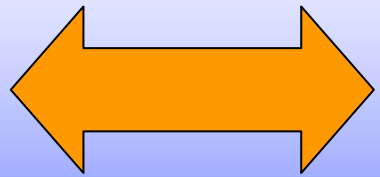
Workflow
-unique reference of operation
-unique procedural reference







Planning:
-allocation of resources
-compatibility among sectors
-establish correct sequence of operation and their geographical development
-identify and mitigate known and new problems (DS…)



Follow up file:
-Release of work
-Record of work and test
-Translation of workflow for tunnel Sector specificities

New workflow V 2.0

- Release of the

"MASTER INTERCONNECTION FLOW DIAGRAM for ARC (Q11R to Q11L) sectors from 3-4 Q25L4 till 7-8 Q25L8 via 4-5, 5-6, 6-7"

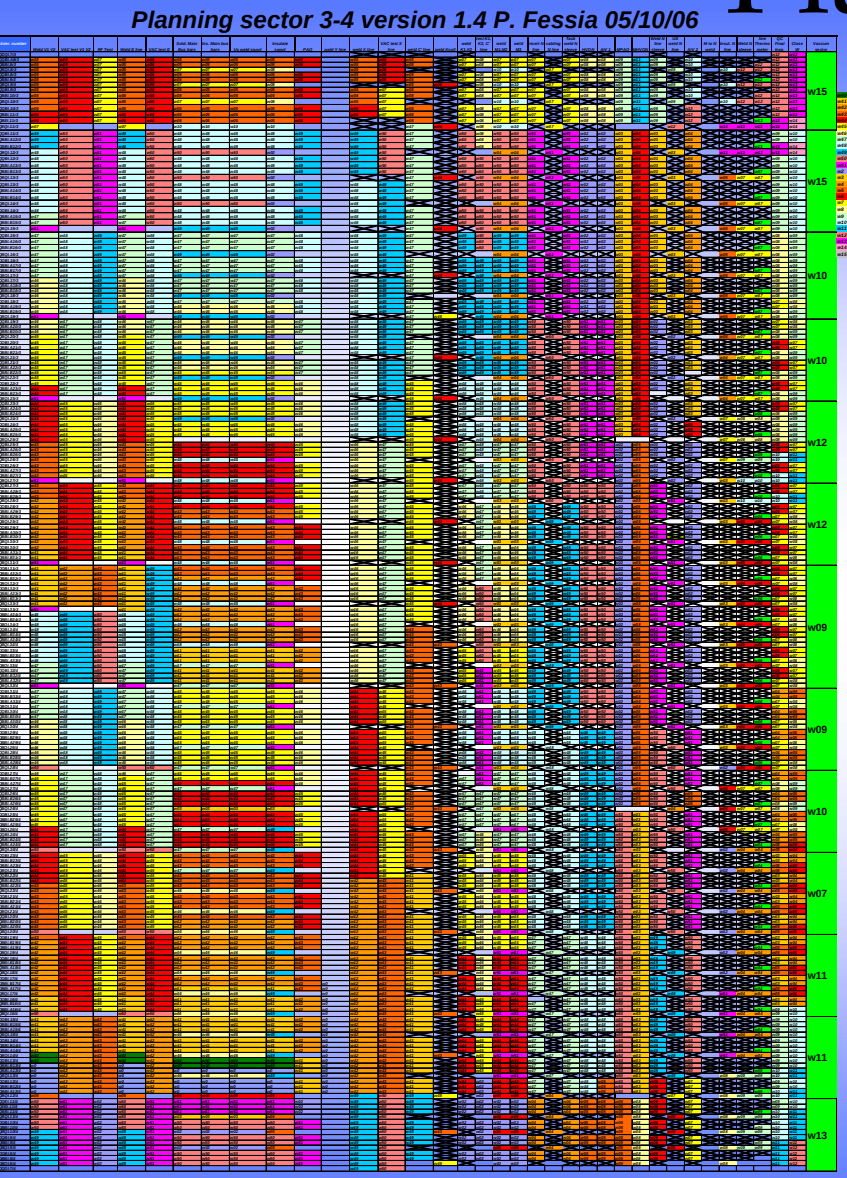
- Document integrating in *1* workflow all aspects of the IC work
  - Construction
  - Electrical tests
  - Vacuum tests
  - Visual inspection
  - Quality certification
- Modifications vs 1.0
  - Modified link between PAQ and HVQN
  - MPAQ and MHQN
  - Jumper interconnection in 1 go
  - Vacuum sector test with IFS pumping
  - Weld quality inspection
  - IC quality certification
- Available at \\cern.ch\dfs\Workspaces\s\Sector81Interconnect\workflow
- To be put in EDMS in 1 week, after integration of comments *if any*

Interconnection work will follow this scheme. Validation from involved groups is necessary

MASTER INTERCONNECTION FLOW DIAGRAM

for *ARC* (Q11R to Q11L) sectors from 3-4 Q25L4 till 7-8 Q25L8 via 4-5, 5-6, 6-7

Planning



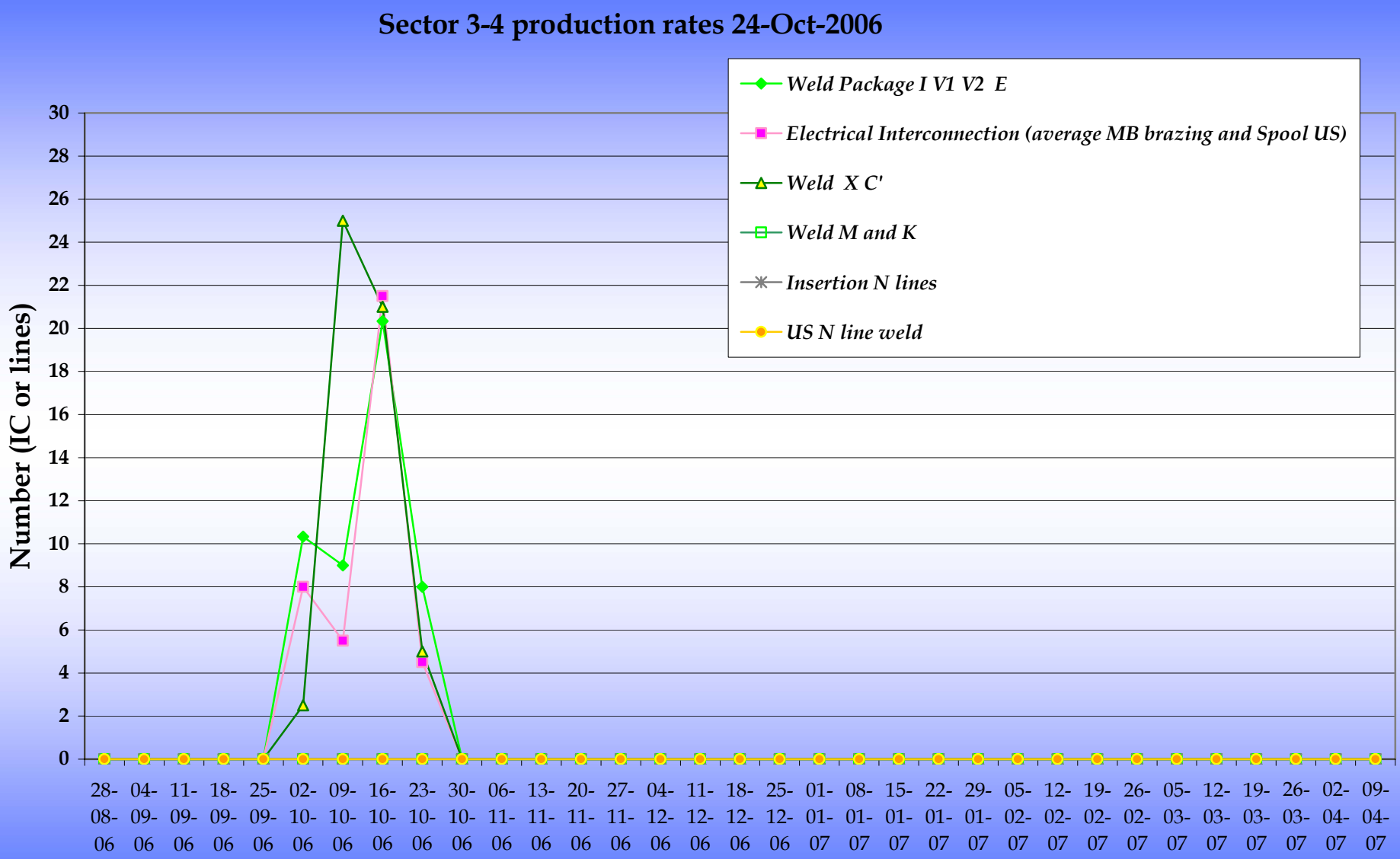
- Weekly planning of activities of
  - IEG
  - VAC
  - MEL
  - QA
- 35 different tasks/interconnect →1 sector=800 tasks planned
- Each team makes its own detailed planning in agreement with the WM team
- Updated every 3 weeks for each sector

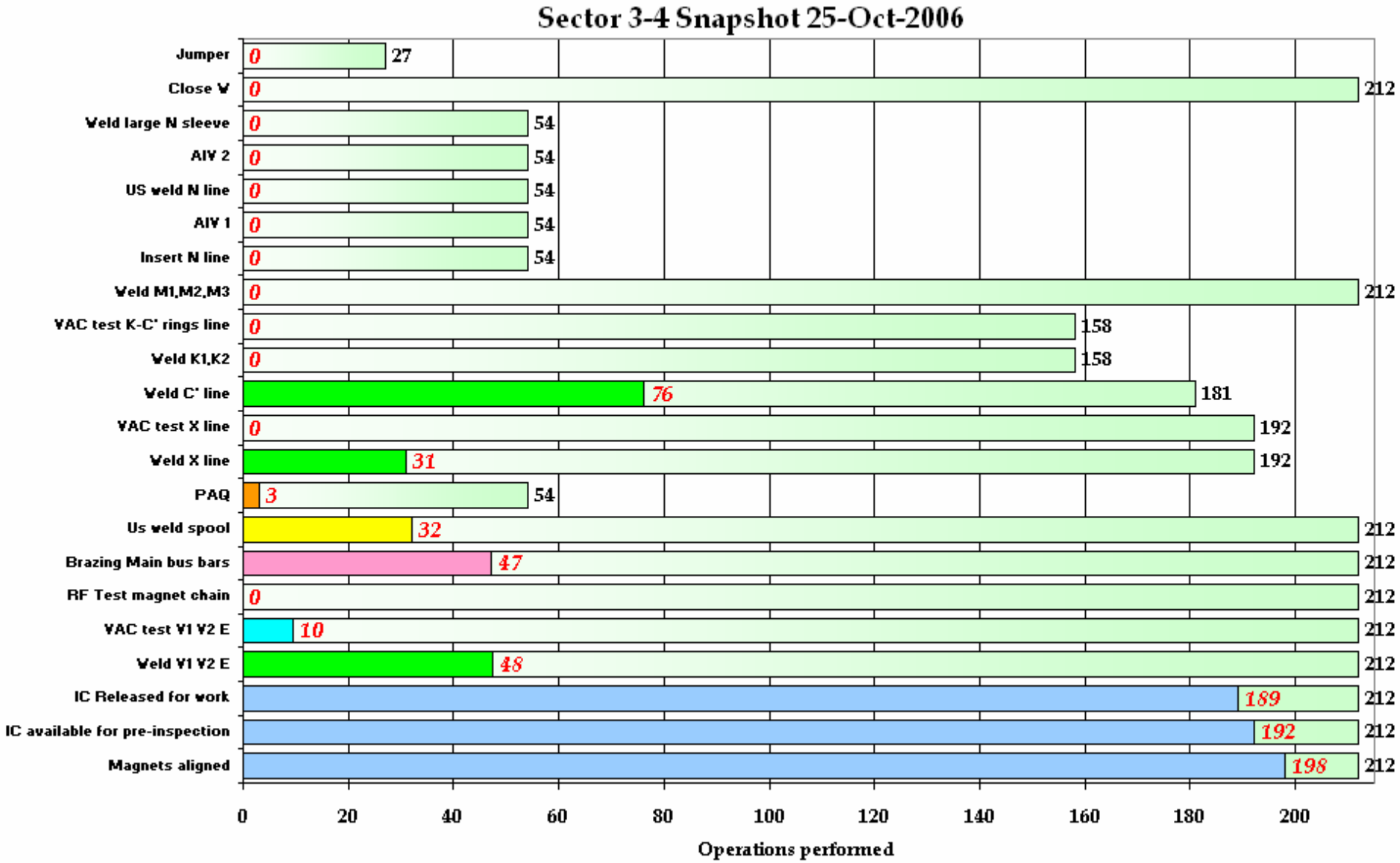
1-2, 2-3 and 5-6

- 1-2: waiting for authorization for cut
- 2-3: jumpers preparation completed
- 5-6: IC work to be started in week 44, 1 week in advance respect planning
  - 4-5 work-package I team has finished 2 weeks ahead time, 4th team probably delayed
  - Release of 20 IC week 44
  - Release ½ sector week 45
  - Release whole sector week 46

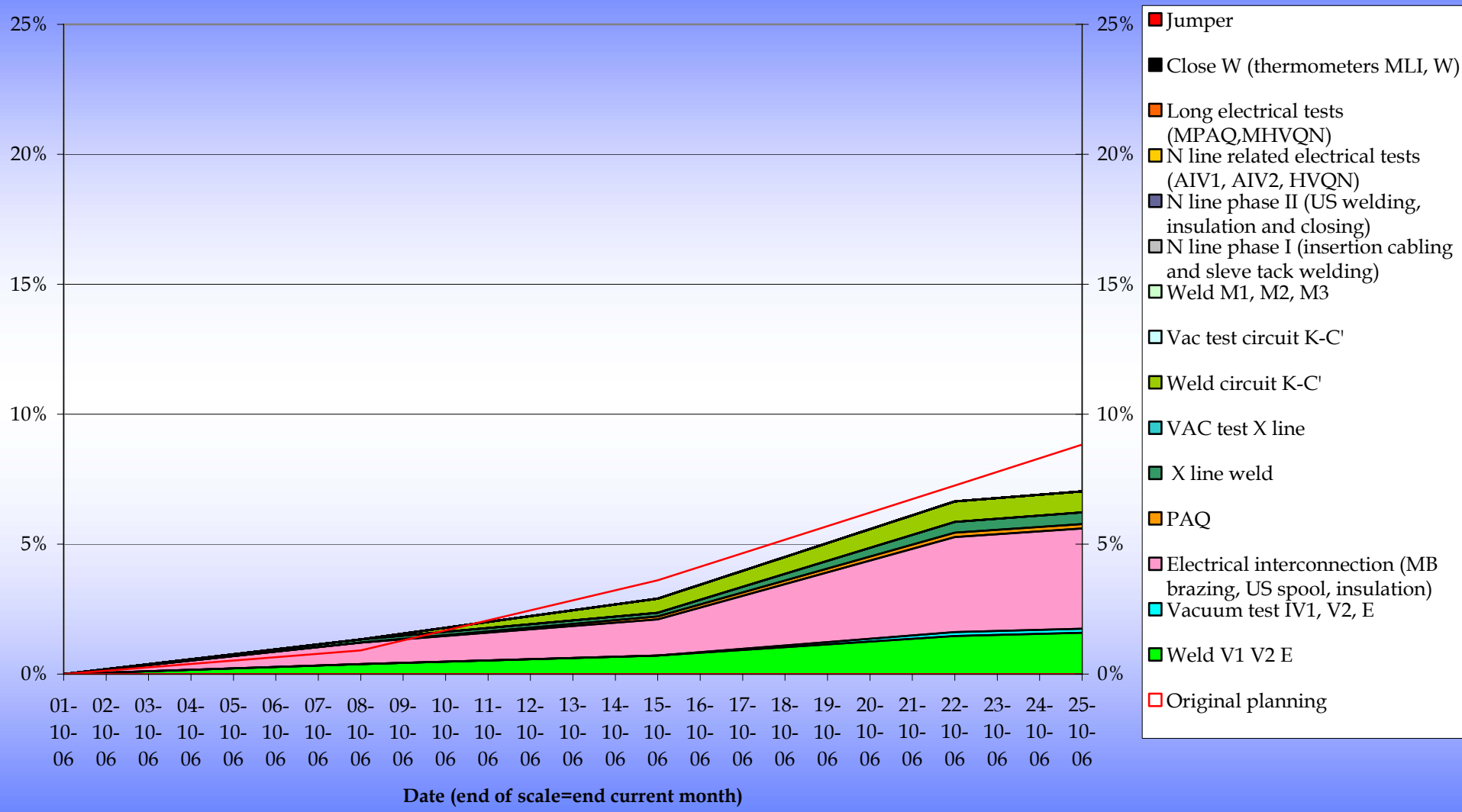
3-4

- Started in week 40
- Second team from week 41: slow start, new people, new controller
- Delay of about 1.5 weeks


Sector 3-4 production rates 24-Oct-2006
Number (IC or lines)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
Weld Package I V1 V2 E
Electrical Interconnection (average MB brazing and Spool US)
Weld X C'
Weld M and K
Insertion N lines
US N line weld
28-08-06
04-09-06
11-09-06
18-09-06
25-09-06
02-10-06
09-10-06
16-10-06
23-10-06
30-10-06
06-11-06
13-11-06
20-11-06
27-11-06
04-12-06
11-12-06
18-12-06
25-12-06
01-01-07
08-01-07
15-01-07
22-01-07
29-01-07
05-02-07
12-02-07
19-02-07
26-02-07
05-03-07
12-03-07
19-03-07
26-03-07
02-04-07
09-04-07


Sector 3-4 Snapshot 25-Oct-2006
Jumper
Close V
Veld large N sleeve
AIV 2
US weld N line
AIV 1
Insert N line
Veld M1,M2,M3
VAC test K-C' rings line
Veld K1,K2
Veld C' line
VAC test X line
Veld X line
PAQ
Us weld spool
Brazing Main bus bars
RF Test magnet chain
VAC test V1 V2 E
Veld V1 V2 E
IC Released for work
IC available for pre-inspection
Magnets aligned
0
27
212
54
158
181
192
31
3
32
47
10
48
189
198
0
20
40
60
80
100
120
140
160
180
200
Operations performed

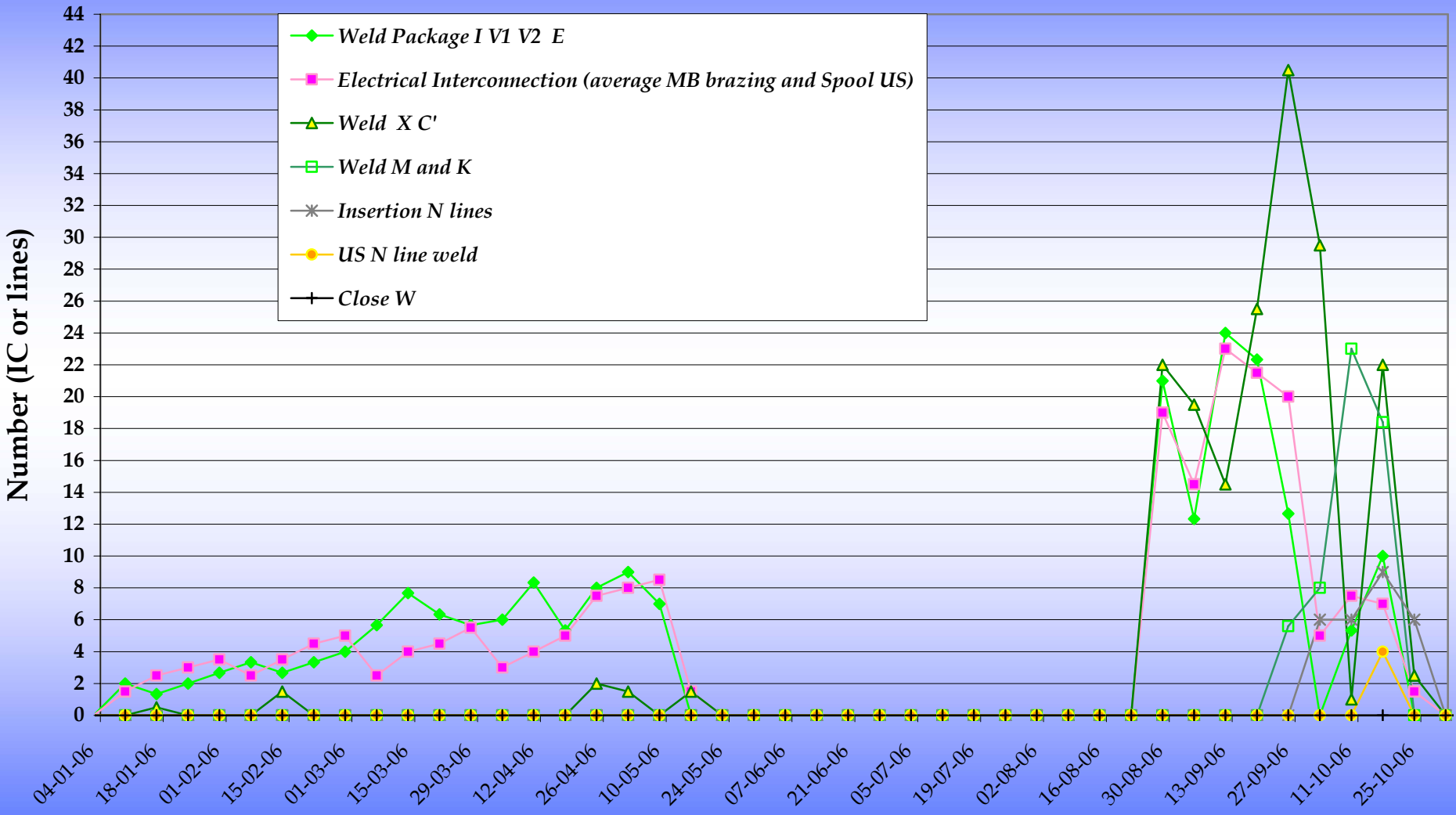
Sector 3-4 general advancement view 25-Oct-2006

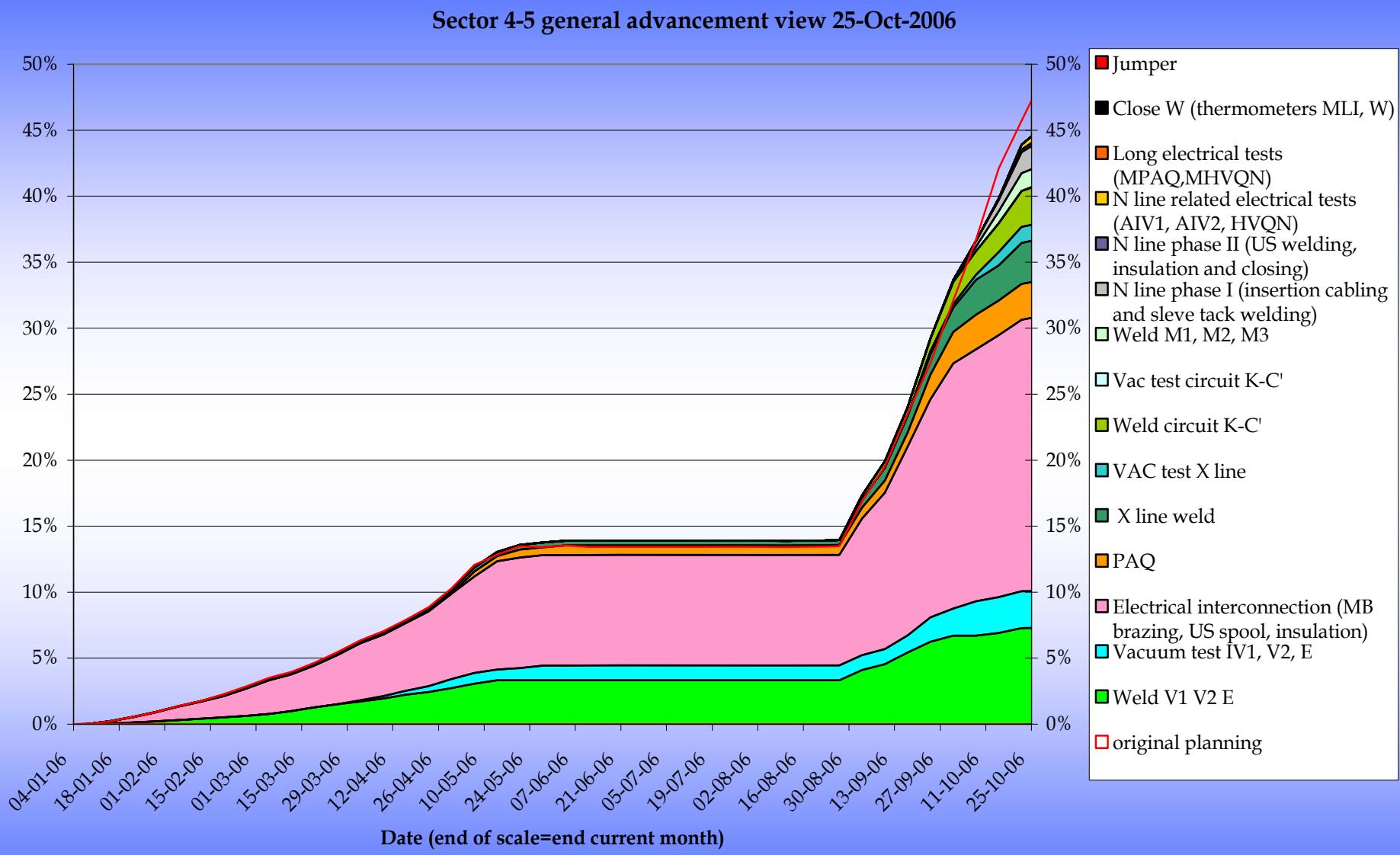


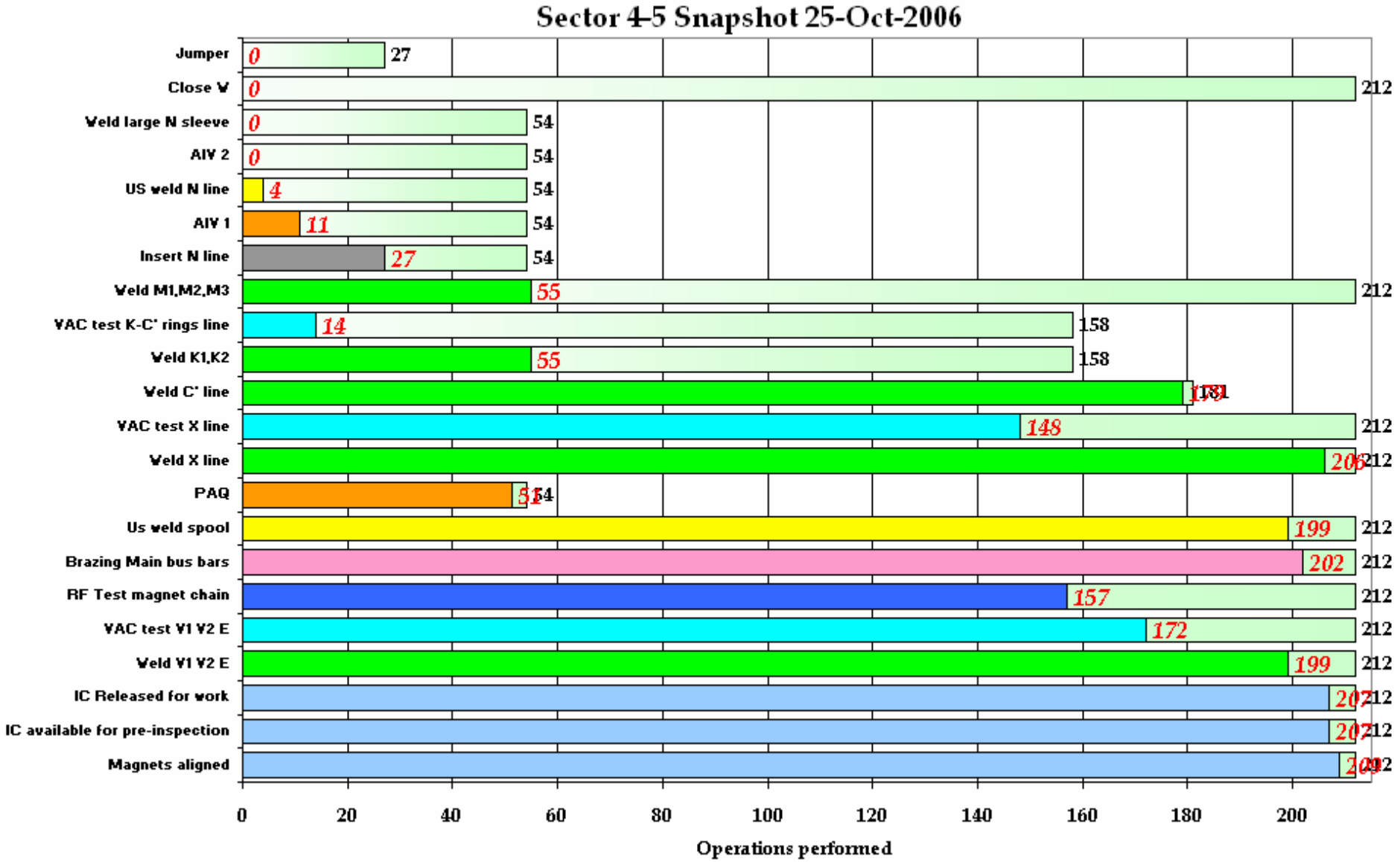
4-5

- Work-package I completed
- Reduction of resources for M-K and delayed start, present delay of 1 week. It could impact on final results
- Other reason of shift in planning
  - Introduction of 100% visual check of welds
  - Limited resources in electrical test for last 2 weeks (7-8)

Sector 4-5 production rates 24-Oct-2006




Sector 4-5 general advancement view 25-Oct-2006
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
04-01-06
18-01-06
01-02-06
15-02-06
01-03-06
15-03-06
29-03-06
12-04-06
26-04-06
10-05-06
24-05-06
07-06-06
21-06-06
05-07-06
19-07-06
02-08-06
16-08-06
30-08-06
13-09-06
27-09-06
11-10-06
25-10-06
Date (end of scale=end current month)
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 4-5 Snapshot 25-Oct-2006
Jumper
Close V
Weld large N sleeve
AIV 2
US weld N line
AIV 1
Insert N line
Weld M1,M2,M3
VAC test K-C' rings line
Weld K1,K2
Weld C' line
VAC test X line
Weld X line
PAQ
Us weld spool
Brazing Main bus bars
RF Test magnet chain
VAC test V1 V2 E
Weld V1 V2 E
IC Released for work
IC available for pre-inspection
Magnets aligned
0
27
0
212
0
54
0
54
4
54
11
54
27
54
55
212
14
158
55
158
148
212
206
212
199
212
202
212
157
212
172
212
199
212
207
212
207
212
0
20
40
60
80
100
120
140
160
180
200
Operations performed