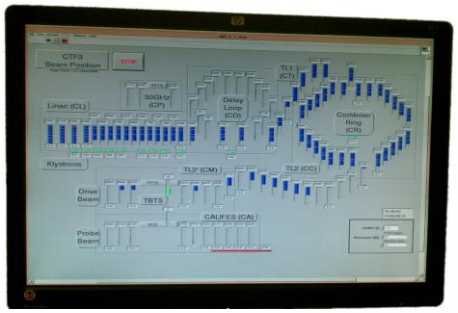


CTF3 Experimental program for end 2012

R. Corsini for the CTF3 Team

Drive beam quality

- Chicane & CT line (& DL): Comparisons of quad scan measurements in CT and CTS lines. Consolidate low R_{56} optics. Repeat bunch length measurements, using DL.
  1 week.

- CR: Precise measurement of transverse matching by quad scans. Closed orbit correction. Improve orbit closure (will profit by better understanding of BPI response). 1-2 weeks.

- TL2, CLEX beam lines: optics studies (kick studies, quad scans & rematching).
  1 week.

- Set-up of combination factor 8 (2 TWTs).
  1-2 weeks.

- First priority
- Total time 4-6 weeks
- Target goals:
  - control bunch length (to 1.5 mm rms in CLEX)
  - Target emittance (150 um) in both planes for combination factor 4 (below 300 um for horizontal, factor 8)
  - Total losses from linac to CLEX below 10%
  - Factor 8 stability < 5 10^{-3} rms
  - Define & implement in control system nominal machine(s) (magnet strengths) for all beams

CTF3 beams

Types of CTF3 beams:

1.5 GHz	"straight"	4 A, bypassing DL & ring	destinations: TBL, TBTS
	factor 4	16 A, bypassing DL	destinations: TBL, TBTS
	factor 8	~ 26 A peak	destinations: TBL, TBTS
3 GHz	"straight"	4 A, bypassing DL & ring	destinations: TBL, TBTS
	factor 4	16 A, bypassing DL	destinations: TBL, TBTS

+ "study" beams, e.g., short pulse, low current…

+ different "standard" optics (e.g., chicane R56 = 0., 0.2, 0.45)

TBTS

- Structures conditioning: careful conditioning, take BD rate measurement and collect flash-box signals in parallel. Standard operation with factor 4 + recirculation @ 2.5 Hz.
  Mainly during night and week-ends, at least for the next month.

- Wake-field monitor tests. Both without drive beam and with.
  2-3 weeks total. High priority.

- PETS on/off, measure break-down rates in different conditions (recirculation high-power, nominal on, nominal off).
  Mainly in parallel with normal operation, low priority.

- RF pulse shaping tests.
  Next run (from mid-January).

TBL

- RF power production: 12-13 PETS tanks, from 20 A to 30 A, deceleration in the 30%-50% range.
  High priority, 1-2 weeks.

- Dispersion free steering, optics studies – also extend to high current/large deceleration. Reduced resources at present. Mid priority, possibly postponed to next year.

- Possibly, a new PETS prototype for TBL+ to be tested before the end of the year (input coupler, mini-tank, PETS On/Off).
  Postponed to next year.

Drive Beam feed-forward and feedback (CTF3-002)

- Test of drive beam phase monitors.
  High priority, < 1 week.

Timeline & Organization

- First phase, next 3-4 weeks, focused on drive beam quality studies. Mainly 3 GHz beam. MDs from Monday to Thursday afternoon, then TBTS or TBL operation. Includes drive beam phase monitor commissioning and wake-field monitor tests with probe beam only.

- Second phase, following 2-3 weeks, mixed. Two days per week (+ nights and week-ends) for TBL and TBTS. First priority on TBL high current and factor 8 drive beam. Expect to condition TBTS structures up to nominal.

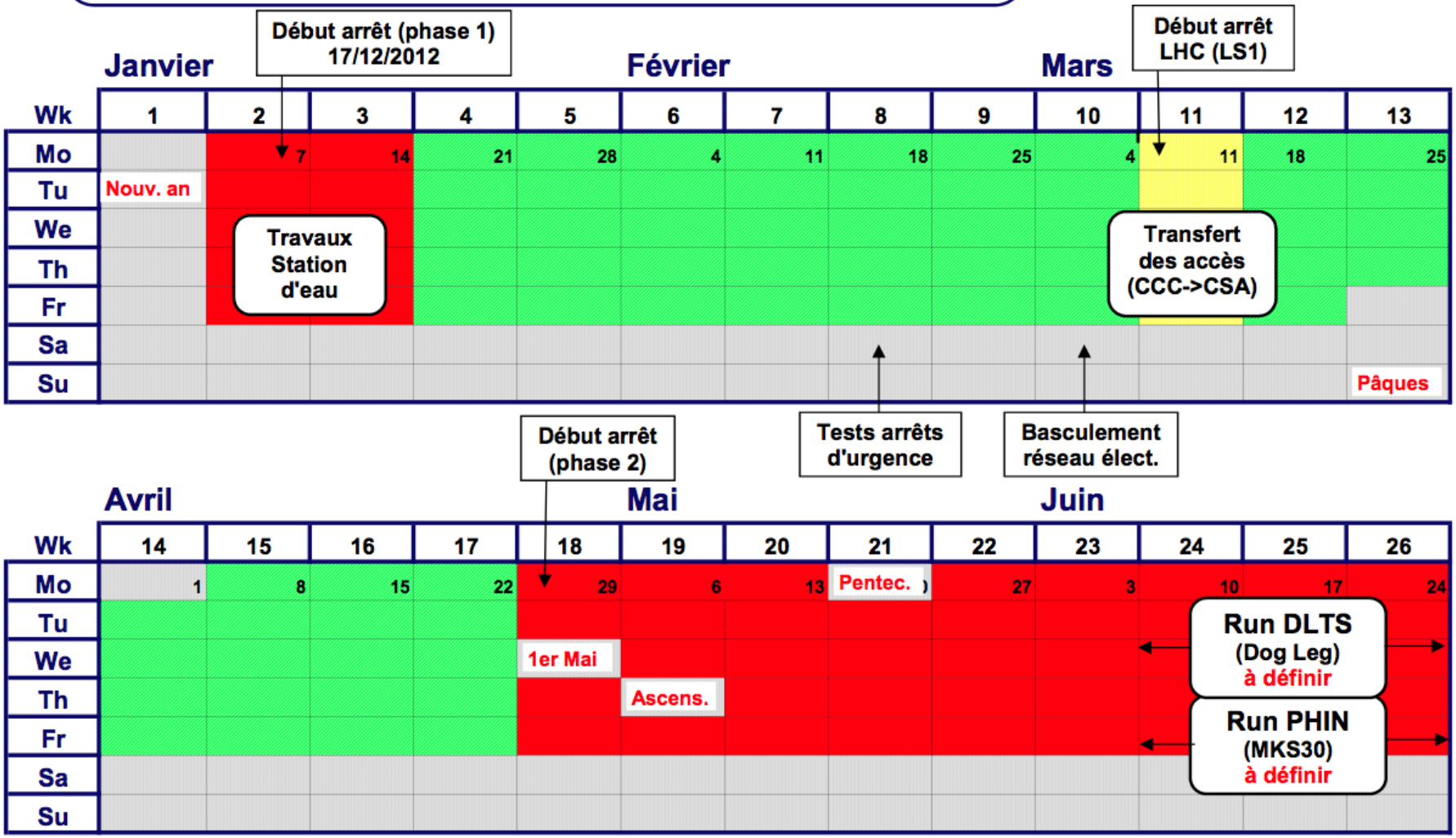
- Third phase, final 1-3 weeks, completion of planned studies. First priority on wake-field monitor studies with drive beam and any other high priority item still to be completed.

Outlook to 2013

2013 - CTF 3 - Planning

12 Septembre 2012

S. Doebert, S. Curt



Outlook to 2013

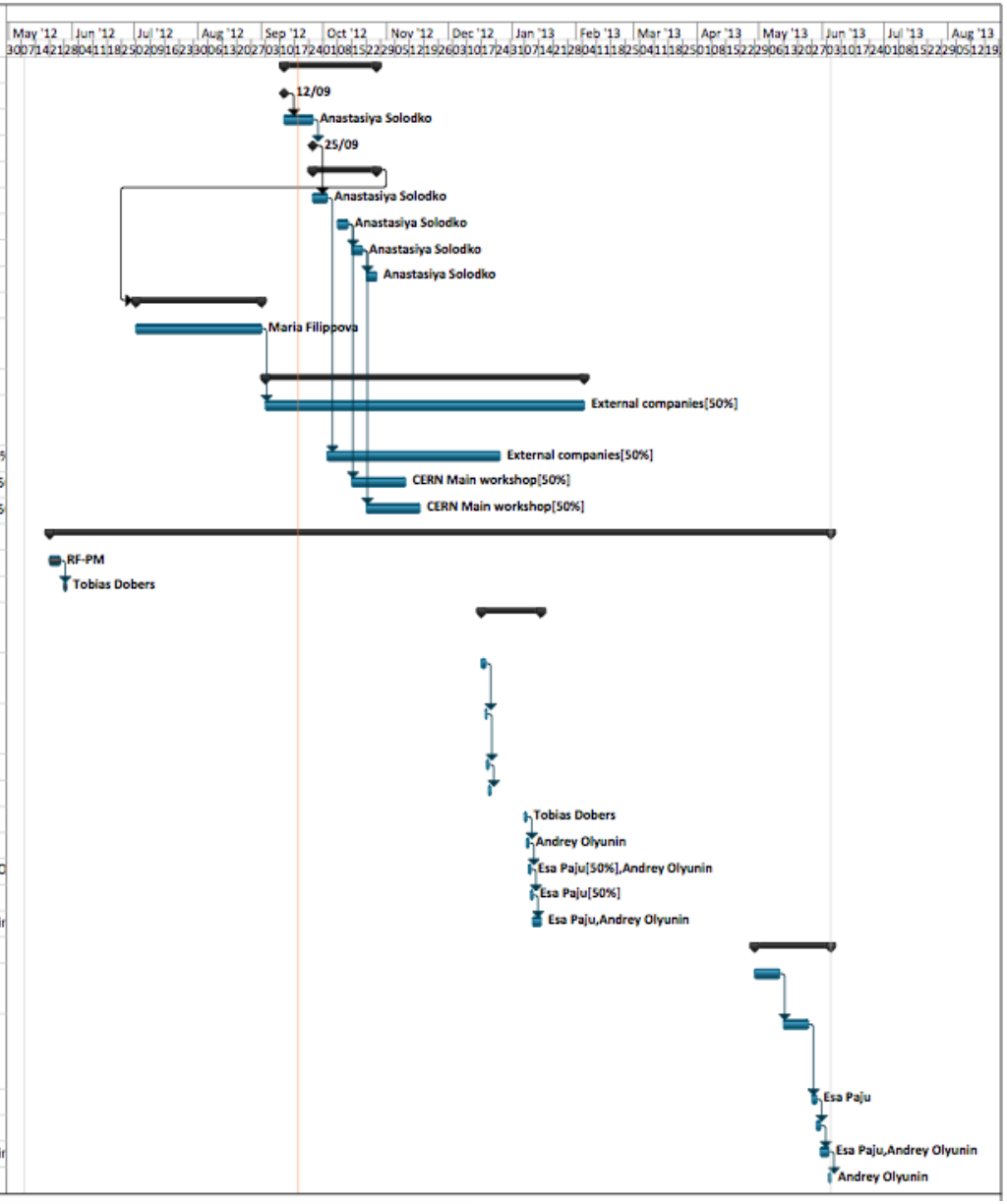
- Short winter shutdown:
  stop the machine on December 14th and restart operation with beam on January 21, 7 weeks before LHC stop.
- During the short winter shutdown some new equipment will be installed and most of the cabling work will be done. The longer maintenance of the RF system will be done in a second shutdown starting end of April. This stop will take 3 month.
- CTF3 would restart in August and run until the end of the year.

- The May-August shutdown may shift later depending on running conditions, advancement of other activities and readiness of new hardware.

- The dog-leg installation should be completed during May-June, and the beam-loading experiment may start as soon as klystrons 2 to 7 are available.

- PHIN run also possible in summer, in the shadow of modulator-klystron maintenance of the 2nd half of the CTF3 linac.

ID	Task Name	Duration	Start	Finish	Pred	Resource Names
1	**Design and integration**	**33 days**	**Wed 12/09/12**	**Fri 26/10/12**		
2	Receiving of the update input	0 days	Wed 12/09/12	Wed 12/09/12		Anastasiya Solodko
3	Update the 3D layout	2 wks	Wed 12/09/12	Tue 25/09/12	2	Anastasiya Solodko
4	Approval of the 3D layout	0 days	Tue 25/09/12	Tue 25/09/12	3	Igor Syratchev
5	**Create drawings (2D)**	**23 days**	**Wed 26/09/12**	**Fri 26/10/12**		
6	Waveguides	5 days	Wed 26/09/12	Tue 02/10/12	4	Anastasiya Solodko
7	Vacuum chambers	5 days	Mon 08/10/12	Fri 12/10/12		Anastasiya Solodko
8	Supports for RF components	5 days	Mon 15/10/12	Fri 19/10/12	7	Anastasiya Solodko
9	Assemblies	5 days	Mon 22/10/12	Fri 26/10/12	8	Anastasiya Solodko
10	**Procurement**	**45 days**	**Mon 02/07/12**	**Fri 31/08/12**	5	
11	RF components (Vacuum Gate Valve, Compact Pumping Port)	45 days	Mon 02/07/12	Fri 31/08/12		Maria Filippova
12	**Manufacturing**	**111 days**	**Mon 03/09/12**	**Mon 04/02/13**		
13	RF components (Vacuum Gate Valve, Pumping Port)	111 days	Mon 03/09/12	Mon 04/02/13	11	External companies[50%]
14	Waveguides	3 mons	Wed 03/10/12	Tue 25/12/12	6	External companies[50%
15	Vacuum chambers	1 mon	Mon 15/10/12	Fri 09/11/12	7	CERN Main workshop[5
16	Supporting system for RF components	1 mon	Mon 22/10/12	Fri 16/11/12	8	CERN Main workshop[5
17	**Installation**	**272 days**	**Mon 21/05/12**	**Tue 04/06/13**		
18	Assembly of the AS (T24) on the support	5 days	Mon 21/05/12	Fri 25/05/12		RF-PM
19	Fiducial of the structure	1 day	Mon 28/05/12	Mon 28/05/12	18	Tobias Dobers
20	**Installation of the structure in CTF3 Linac. Phase 1 (Shutdown 17/12-18/01)**	**21 days**	**Mon 17/12/12**	**Mon 14/01/13**		**RF-PM**
21	Installation of the pumping port downstream (CTFVGPUM0057)	2 days	Mon 17/12/12	Tue 18/12/12		
22	Installation of the support for alignment on the downstream BPM	0.5 days	Wed 19/12/12	Wed 19/12/12	21	
23	Installation of the structure on the girder	1 day	Wed 19/12/12	Thu 20/12/12	22	
24	Installation of RF components (loads and couplers)	1 day	Thu 20/12/12	Fri 21/12/12	23	
25	Alignment of the structure	1 day	Mon 07/01/13	Mon 07/01/13		Tobias Dobers
26	RF check	1 day	Tue 08/01/13	Tue 08/01/13	25	Andrey Olyunin
27	Change position of collimator	1 day	Wed 09/01/13	Wed 09/01/13	26	Esa Paju[50%],Andrey O
28	Installation of vacuum chambers	1 day	Thu 10/01/13	Thu 10/01/13	27	Esa Paju[50%]
29	Leak tightness test	2 days	Fri 11/01/13	Mon 14/01/13	28	Esa Paju,Andrey Olyunin
30	**Installation. Phase 2 (Shutdown 29/04-05/07)**	**27 days**	**Mon 29/04/13**	**Tue 04/06/13**		**RF-PM**
31	Dismounting of previous 30 GHz RF line components	10 days	Mon 29/04/13	Fri 10/05/13		
32	Final assembly (installation of Vacuum Gate Valve, Compact Pumping port and waveguides; connection to AS)	10 days	Mon 13/05/13	Fri 24/05/13	31	
33	Vacuum connection	2 days	Mon 27/05/13	Tue 28/05/13	32	Esa Paju
34	Cooling connection	2 days	Wed 29/05/13	Thu 30/05/13	33	
35	Leak tightness test	2 days	Fri 31/05/13	Mon 03/06/13	34	Esa Paju,Andrey Olyunin
36	RF check	1 day	Tue 04/06/13	Tue 04/06/13	35	Andrey Olyunin



S. Curt