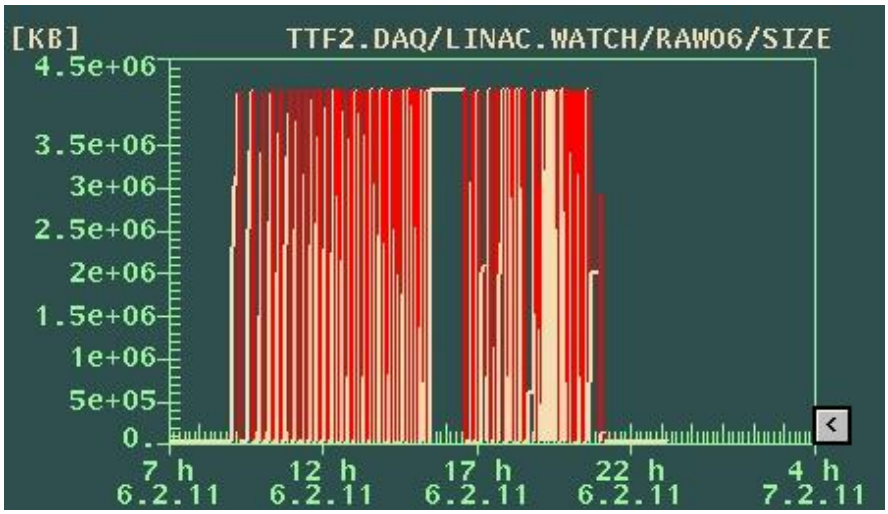
? 06.02.2011 23:08 oracle **Shift summary**

06.02.2011 23:09 ttflinac **History of memory usage by RAW6 server**

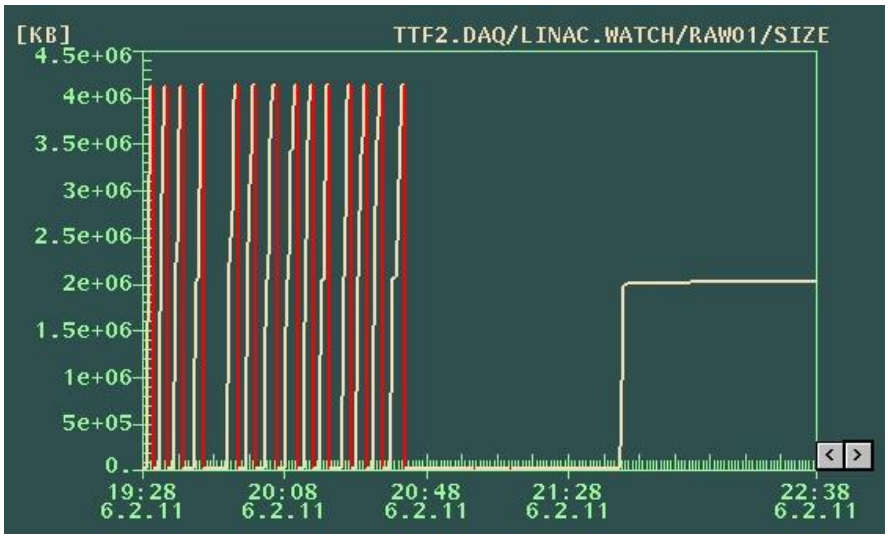
```
It can be noticed that starting from aprox. 9 am the server memory usage increased rapidly - causing
 finally server crash - no data stored from DAQ.
After ttf2daq3 reboot - situation stabilized
```



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:09:44-00.JPG

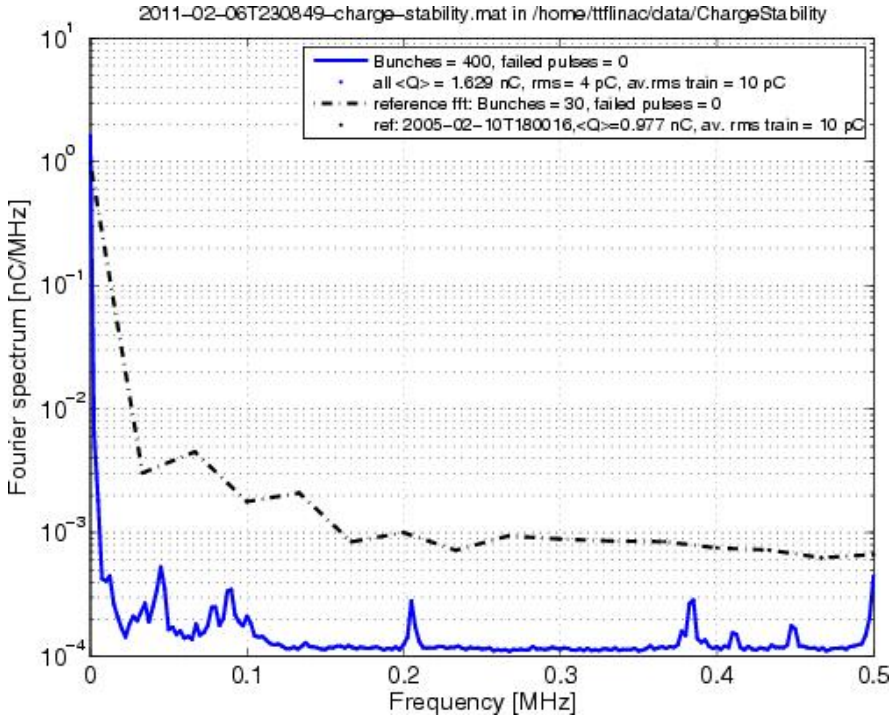
06.02.2011 23:10 ttflinac **History of memory usage by RAW1 server**

```
see entry below
```



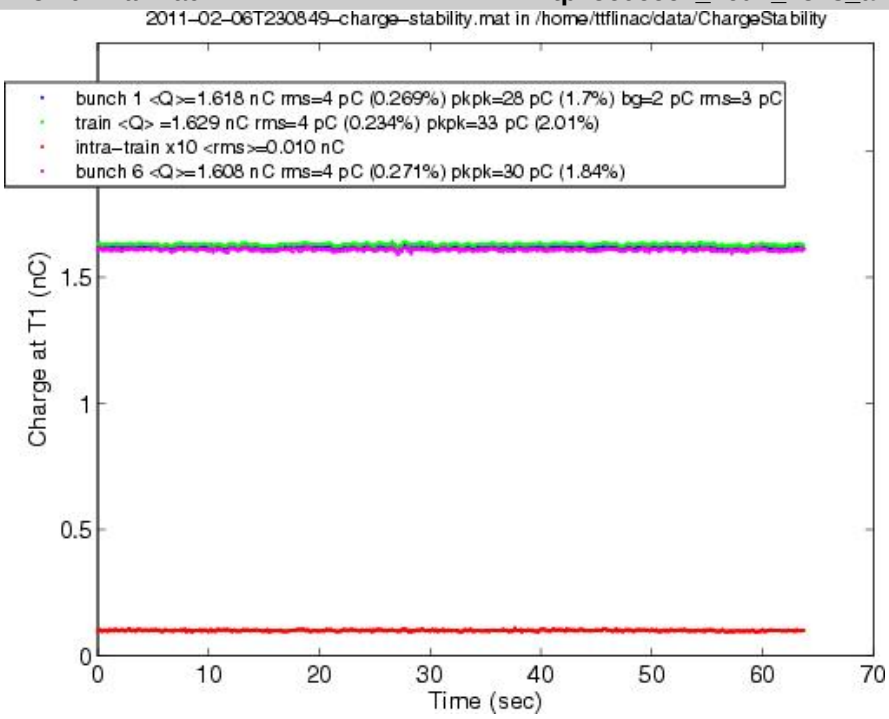
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:10:19-00.JPG

06.02.2011 23:10 krueger **Begin of standard shift documentation**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:10:25-00.ps

06.02.2011 23:10 ttflinac **tp45c0cec1_26d4_4543_a493_5f64ecd1afa7.ps**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:10:32-00.ps

06.02.2011 23:10 ttflinac **Main linac parameters**

shift documentation

Laser

```
Number of bunches ...... 400
Bunch frequency ........ 1000 kHz
Macropulse rep'rate .... 10.0 Hz
Pump time_3 ............ 0.0030 ms
Pump current_3 ......... 5.00 V
Pre-amp start time ..... 2.42 ms
Booster start time ..... 2.68 ms
Attenuator SP .......... 5.42
```

Gun

```
Feedforward/Feedback ... on/on
FSM .................... on
Pfwd SP ................ 3.64
VS ampl. ............... 18.31
Phase SP ............... -10.20 deg
VS phase ............... 6.28 deg
Pfwd (peak) ............ 3.901 MW
Prefl (peak) ........... 2.929 MW
```

```
Iris diameter .......... 17072 steps
Iris diameter .......... 2.39 mm
```

```
Pfwd sample point ...... 700
Pfwd (at sample point) . 18.309 MW
Prefl sample point ..... 720
Prefl (at sample point)  5.727 MW
Flat top ............... 460 us
Water temperature SP ... 72.75 deg C
Main solenoid (RBV) .... -301.04 A
Bucking coil (RBV) ..... 20.70 A
Gun dipole (RBV) ....... 0.000 A
Charge 3GUN(T1) ........ 1.62 nC
DC kicker delay ........ 6.80 ms
DC kicker HV ........... not local
DC kicker HV ........... disabled
DC kicker HV ........... off
DC kicker SP ........... 60.00 V
DC kicker start ........ 124.00 ns
```

ACC1

```
Feedforward/Feedback ... on/on
Feedback gain .......... 2.0
Pfwd SP ................ 163.70
Pfwd RBV ............... 163.70
Phase SP ............... 3.50 deg
Phase RBV .............. 3.53 deg
Pfwd C1.ACC1 ........... 186.9 kW
Pfwd C5.ACC1 ........... <error>
Flat top ............... 800 us
Dipole BC2 (RBV) ....... 73.11 A
Pyro 9DBC2.1 ........... -0.0774 V
Radiator 9DBC2 ......... out
Slow phase feedback .... off
Slow ph. FB target/gain  -0.400/-0.1
Slow ph. FB pyrodet.used Pyro 9DBC2.1 (fine, old ADC)
```

ACC39

```
Feedforward/Feedback ... on/on
Feedback gain .......... 10.0
Pfwd SP ................ 19.00
Phase SP ............... -4.20 deg
Pfwd C1.ACC39 .......... <error>
Flat top ............... 800 us
```

ACC2/3

```
Feedforward/Feedback ... on/on
Feedback gain .......... 2.0
Pfwd SP ................ 297.50
Pfwd RBV ............... 297.65
Phase SP ............... -1.00 deg
Phase RBV .............. -1.02 deg
Pfwd C5.ACC2 ........... 126.44 kW
Pfwd C1.ACC3 ........... 217.91 kW
Flat top ............... 450 us
Dipole BC3 (RBV) ....... 56.00 A
Pyro 4DBC3.1 ........... -0.0109 V
Pyro 4DBC3.3 ........... 0.0017 V
Radiator 4DBC3 ......... out
```

ACC4/5

```
Feedforward/Feedback ... on/on
Feedback gain .......... 40.0
Pfwd SP ................ 345.00
Pfwd RBV ............... 345.35
Phase SP ............... -8.90 deg
Phase RBV .............. -8.93 deg
Pfwd C1.ACC4 ........... 160.52 kW
Pfwd C2.ACC5 ........... 167.53 kW
Pfwd C1.ACC6 ........... 0.61 kW
Flat top ............... 800 us
```

ACC6/7

```
Feedforward/Feedback ... on/on
Feedback gain .......... 50.0
Pfwd SP ................ 183.50
Pfwd RBV ............... 183.94
Phase SP ............... -5.00 deg
Phase RBV .............. -5.20 deg
Pfwd C1.ACC6 ........... 112.34 kW
Pfwd C1.ACC7 ........... 129.77 kW
Flat top ............... 800 us
```

Bypass

```
Dipole D1BYP (RBV) ..... 0.00 A
Energy bypass .......... 1211.4 MeV
RF vector sum ALL ...... 778.2 MeV
Charge 16BYP ........... -0.00 nC
```

Collimator

```
Dipole D1ECOL (RBV) .... 176.89 A
Energy dogleg .......... 998.5 MeV
Charge 7ORS ............ 1.66 nC
```

Undulator

```
1SFUND1 gap RBV ........ 220.0 mm
1SFUND2 gap RBV ........ 220.0 mm
1SFUND3 gap RBV ........ 220.0 mm
1SFUND4 gap RBV ........ 180.0 mm
```

Dump

```
Dipole D9SMATCH (RBV) .. 0.00 A
Dipole D1DUMP (RBV) .... 0.00 A
Dipole D6DUMP (RBV) .... 209.60 A
Rotator RD13DUMP (RBV) . 9.13 A
Charge 9DUMP ........... 1.52 nC
```

Feedbacks

```
Charge feedback gain ... <error>
Charge feedback SP ..... <error>
PTO feedback ........... on
```

Photon beamline

```
Aperture 1 ............ 10 mm
Offset h/v ............ 0/-1 mm
Aperture 2 ............ 10 mm
Offset h/v ............ 1/0 mm
```

```
Status saved in machine file 2011-02-06T23_10_27+01
Orbit reference for the root tool saved in /home/ttflinac/measurements/xy_jitter/2011-02-06T231027
```

```
also in 'save and restore' files:
Magnets saved to: /home/ttflinac/save_restore/Magnets/autosaved/all_Magnets_20110206T231027.sr
uMovers saved to: /home/ttflinac/save_restore/Micromovers/autosaved/uMovers_20110206T231027.sr
from computer: flashbkr2.desy.de
```

06.02.2011 23:11 ttflinac **SASE tuning parameters**

Misc. parameters

Energy / Wavelength: 998.51 MeV / 6.3 nm

```
Charge:              1.62 nC
Main solenoid:       -301.0 A
Bucking coil:        +20.7 A
Dipoles BC2/BC3:     +73.1 A / +56.0 A
```

RF parameters

	GUN	ACC1	ACC39	ACC2/3	ACC4/5	ACC6/7
Power/Gradient	+3.640	+163.70	+19.00	+297.50	+345.00	+183.50
Readback	3.90	163.7	19.0	297.8	345.4	184.0
Phase	-10.20	+3.50	-4.20	-1.00	-8.90	-5.00
on-crest		-1.0		-3.0	-5.0	-0.0
Readback	6.5	3.5	-4.2	-1.0	-8.9	-5.2

Undulator steerers and aircoils

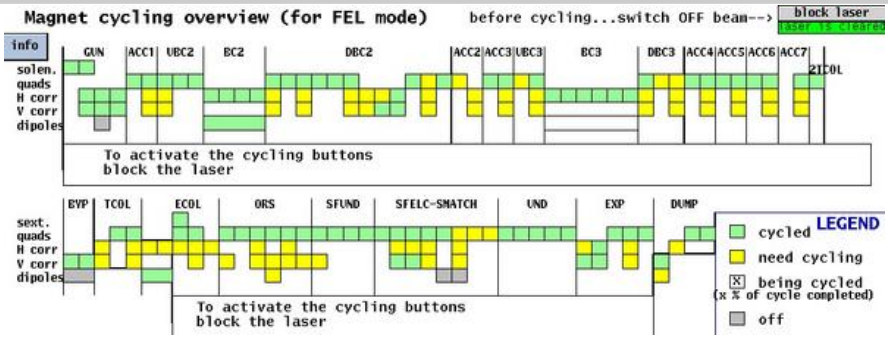
H7SMATCH	H12SMATCH
+0.184	**-1.988**

V7SMATCH	V12SMATCH
-0.153	**-1.988**

Intra-undulator steerers

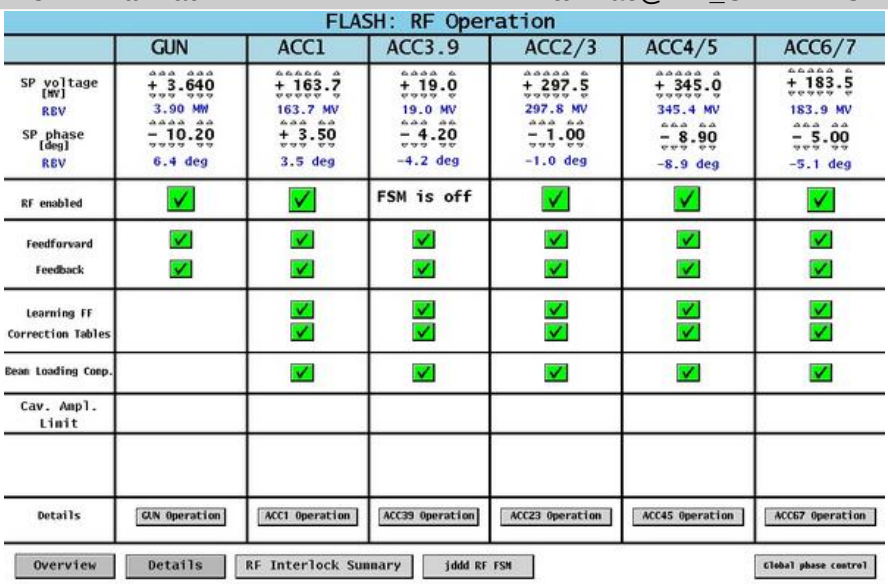
H3UND1	H3UND2	H3UND3	H3UND4	H3UND5	H3UND6
-4.90	**-4.30**	**-4.90**	**-4.70**	**-4.90**	**-5.00**

06.02.2011 23:12 ttflinac **ttflinac@:magnet_cycle_overview_fel**



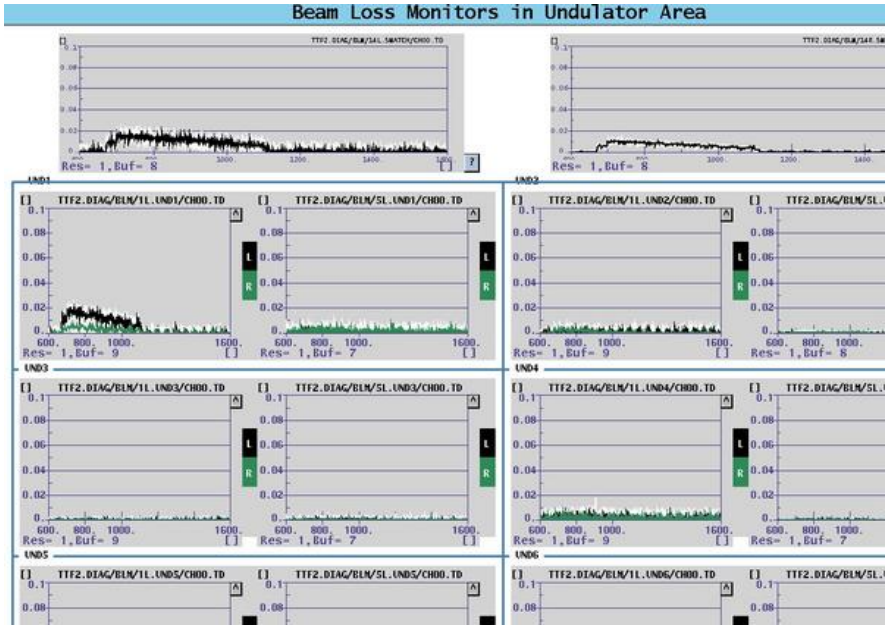
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:12:11-00.JPG

06.02.2011 23:12 ttflinac **ttflinac@:RF_OPERATION**



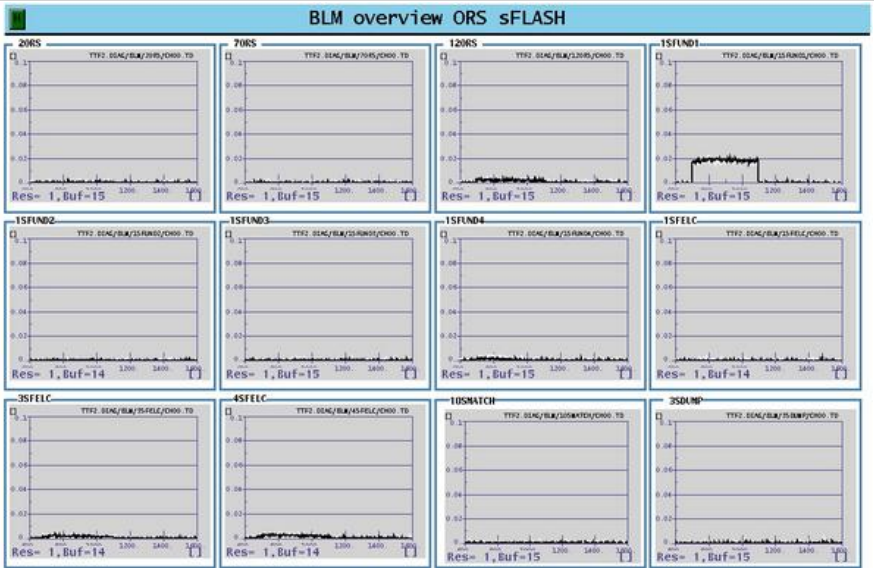
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:12:24-00.JPG

06.02.2011 23:12 ttflinac **ttflinac@:BLM_UNDULATORS**



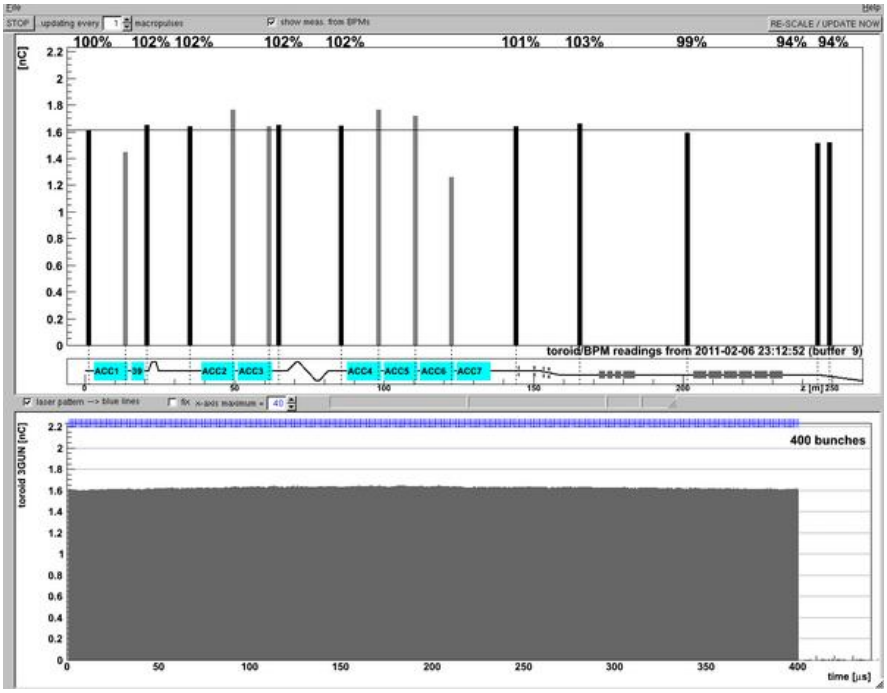
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:12:46-00.JPG

06.02.2011 23:12 ttflinac **ttflinac@:blm_overview_ORS**



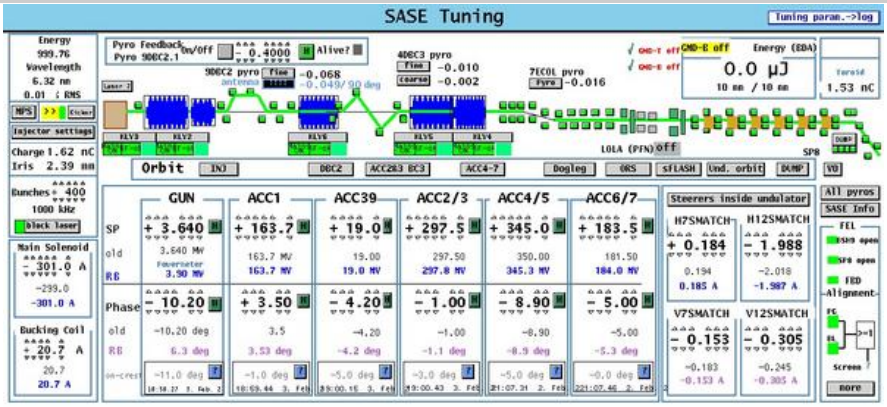
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:12:57-00.JPG

06.02.2011 23:13 ttflinac **toroid charge readings**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:13:13-00.ps

06.02.2011 23:13 ttflinac **ttflinac@:SASE_tuning**

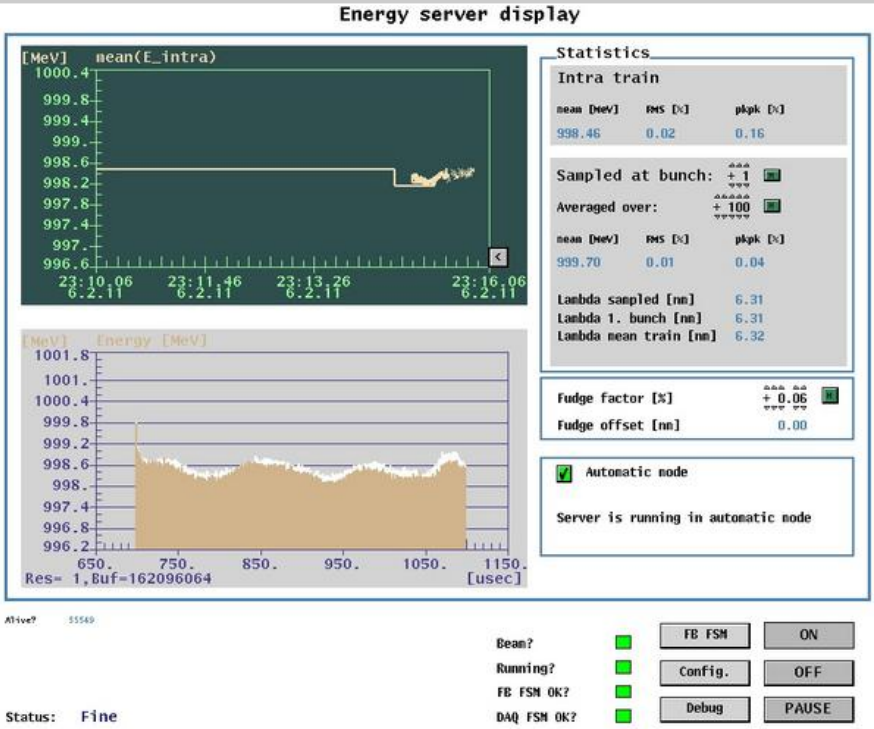


File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:13:38-00.JPG

06.02.2011 23:14 ttflinac **ttflinac@:dose_und**

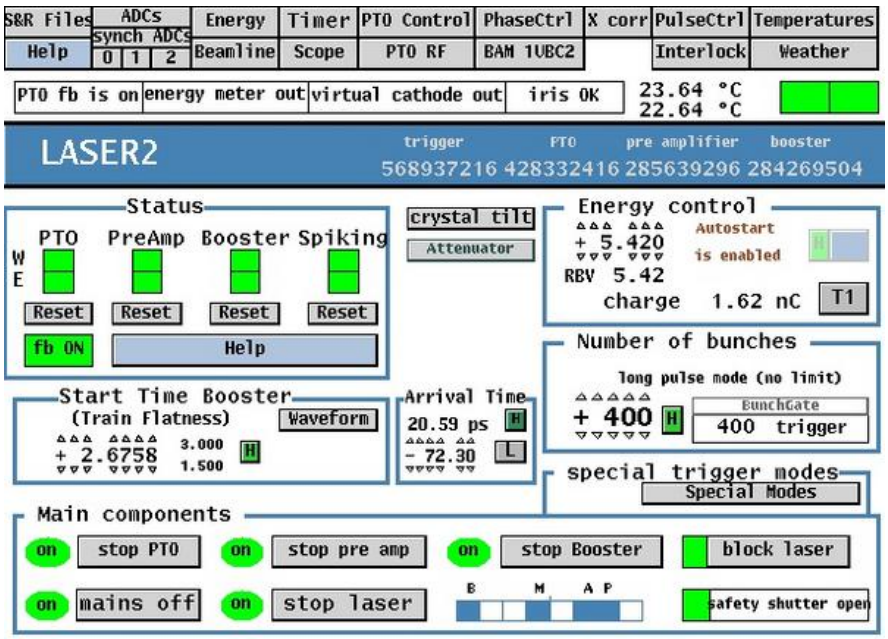
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:14:16-00.JPG

06.02.2011 23:16 ttflinac **ttflinac@:Energyfbm_display**



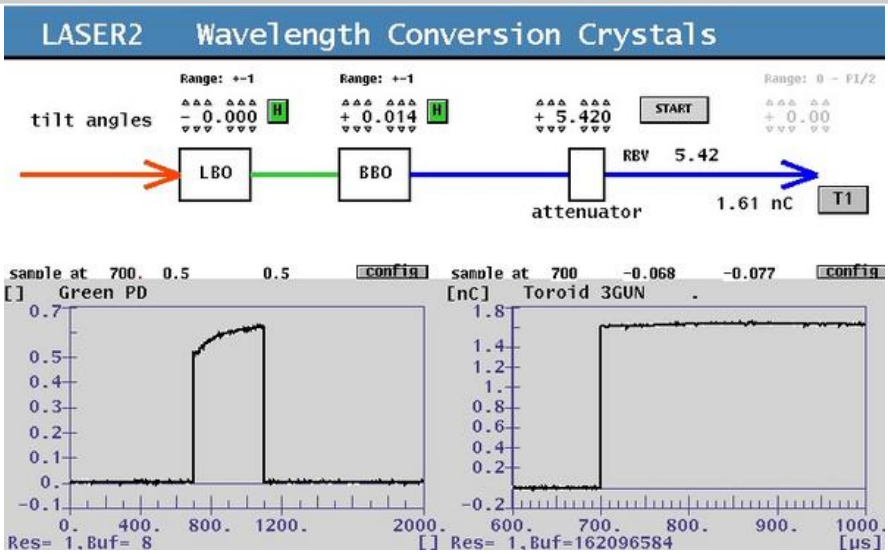
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:16:07-00.JPG

06.02.2011 23:16 ttflinac **ttflinac@:laser2_control**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:16:50-00.JPG

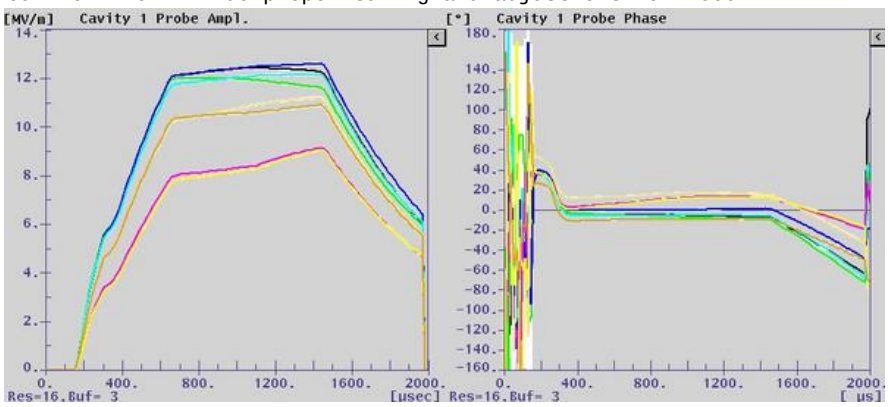
06.02.2011 23:16 krueger **End of shift documentation**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:16:59-00.JPG

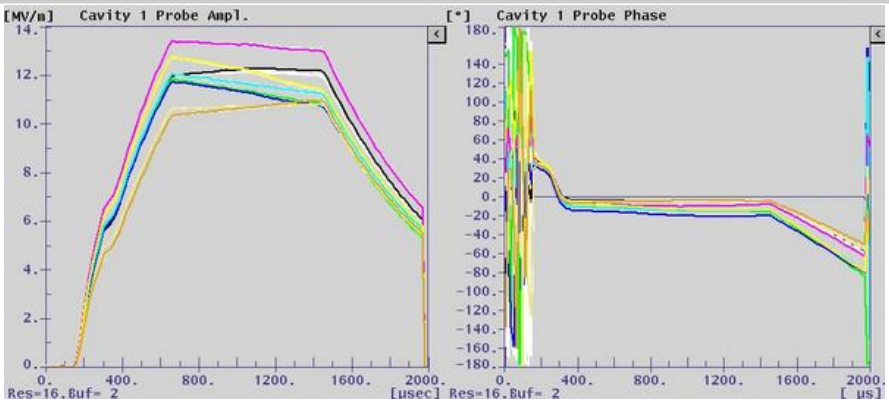
06.02.2011 23:25 Ayvazyan, Branlard, Cancelo **ACC6 status**

ACC6/7 are detuned about 350 Hz for this energy. LLRF settings aren't optimized for this energy.
Thats why we can see strange shape on probe signals on ACC6/7.
Before starting our work we will do proper tuning and adjustment for ACC67.



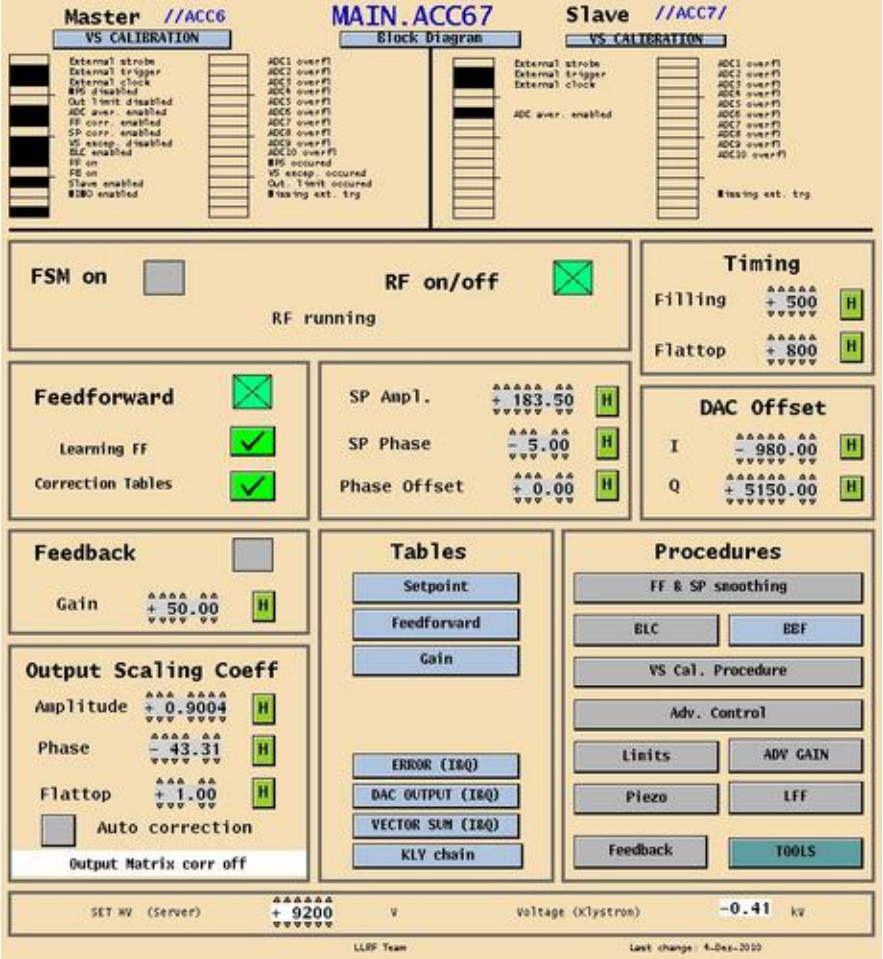
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:25:28-00.JPG

06.02.2011 23:25 ttflinac **ACC7 status before adjustment**



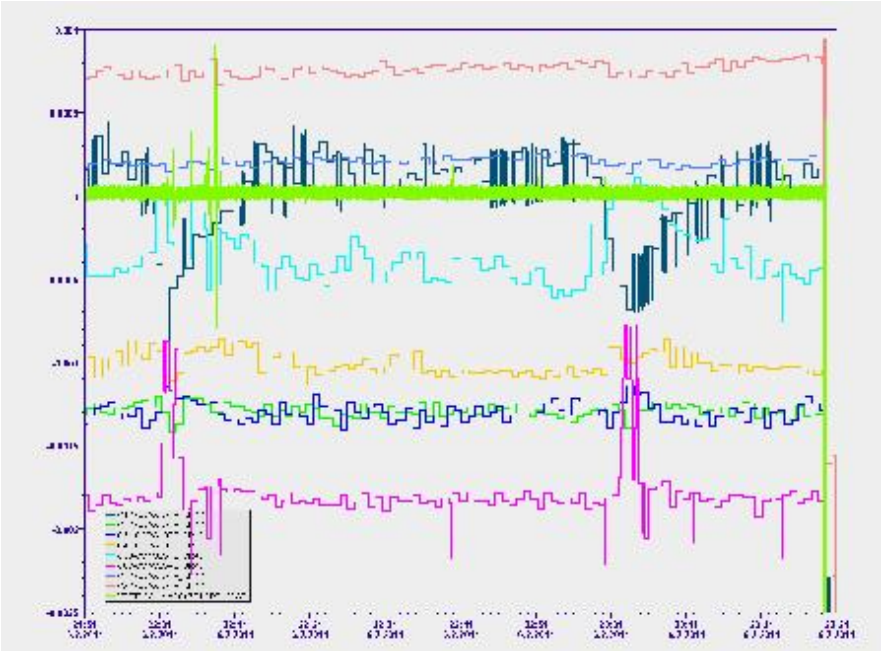
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:25:35-00.JPG

06.02.2011 23:30 ttflinac **LLRF settings before adjustment**



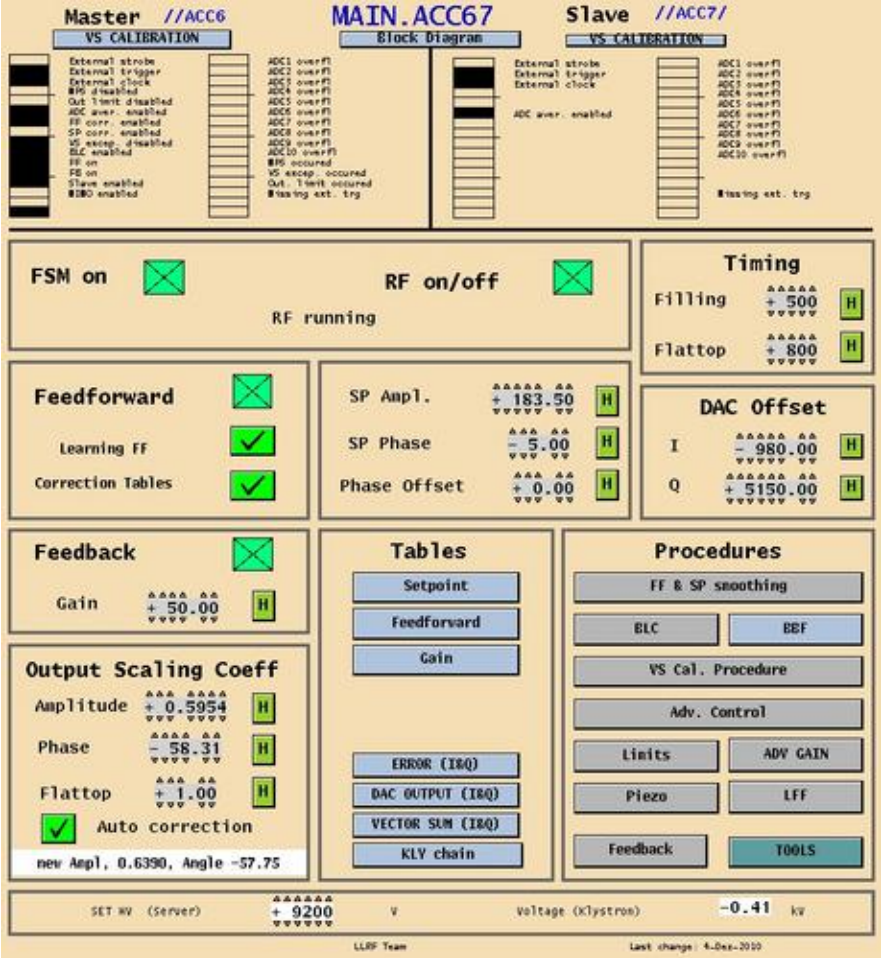
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:30:40-00.JPG

06.02.2011 23:41 W. Cichalewski **Cavity gradients slopes Acc7**



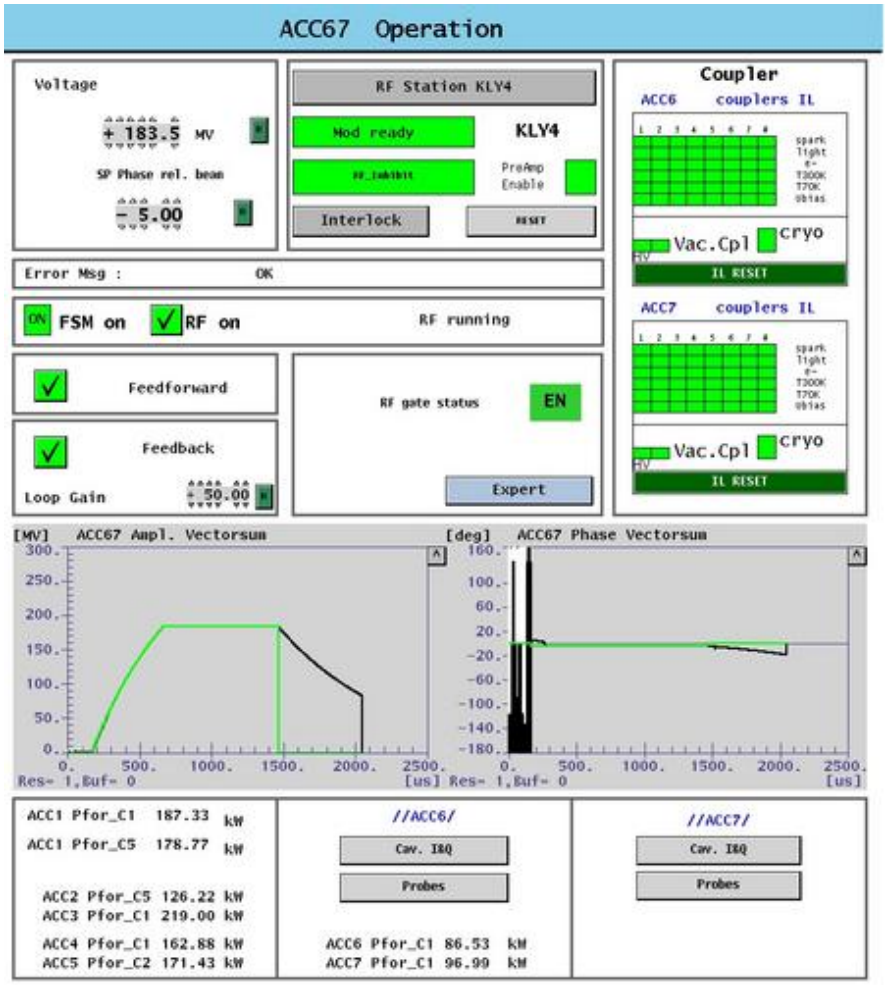
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:41:06-00.ps

06.02.2011 23:43 ttflinac **ACC6/7 LLRF settings after adjustment**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:43:18-00.JPG

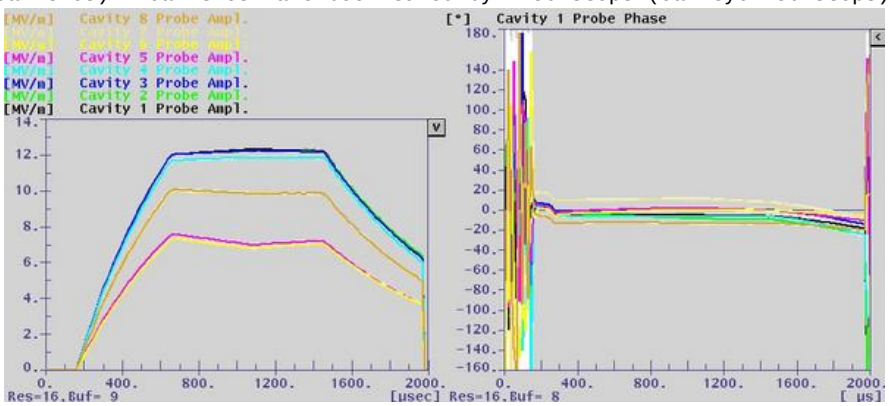
06.02.2011 23:43 ttflinac **ttflinac@:SIMCON_Operation**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-06T23:43:26-00.JPG

07.02.2011 00:01 Ayvazyan, Branlard, Cancelo **ACC6 status after adjustment**

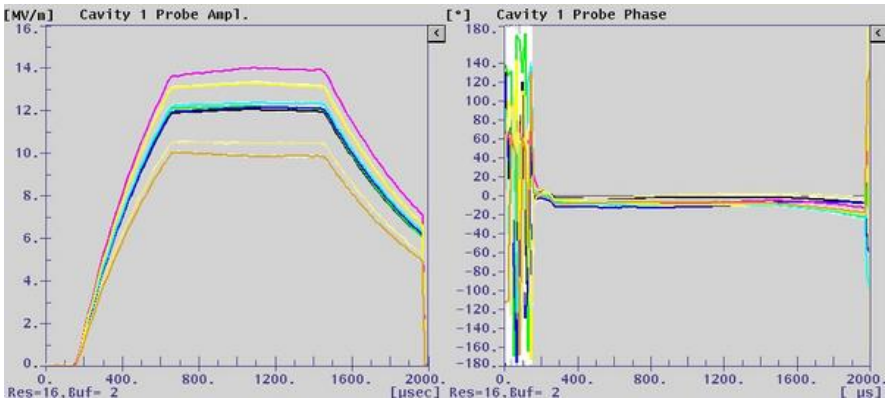
ACC6 status after adjustment. One can see tilt on gradients at cavities 5 & 6 (low gradient cavities). Cavities have been tuned by ~250 steps (cavity6 150 steps)



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:01:42-00.JPG

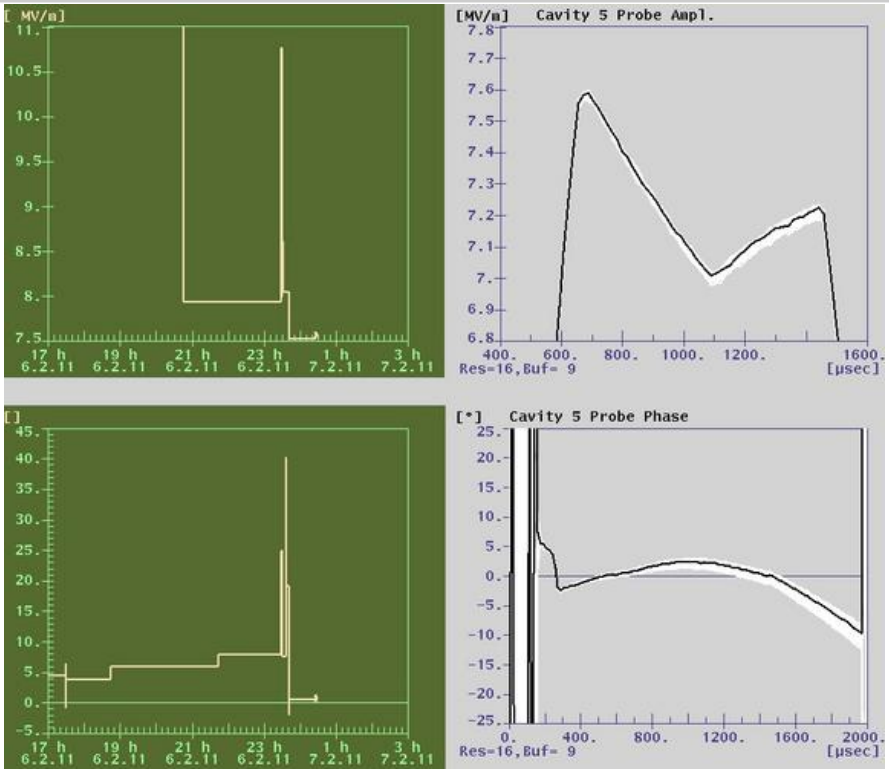
07.02.2011 00:01 ttflinac **ACC7 status after adjustment**

ACC7 cavities have been tuned by ~400 steps for this energy (183.5MV).



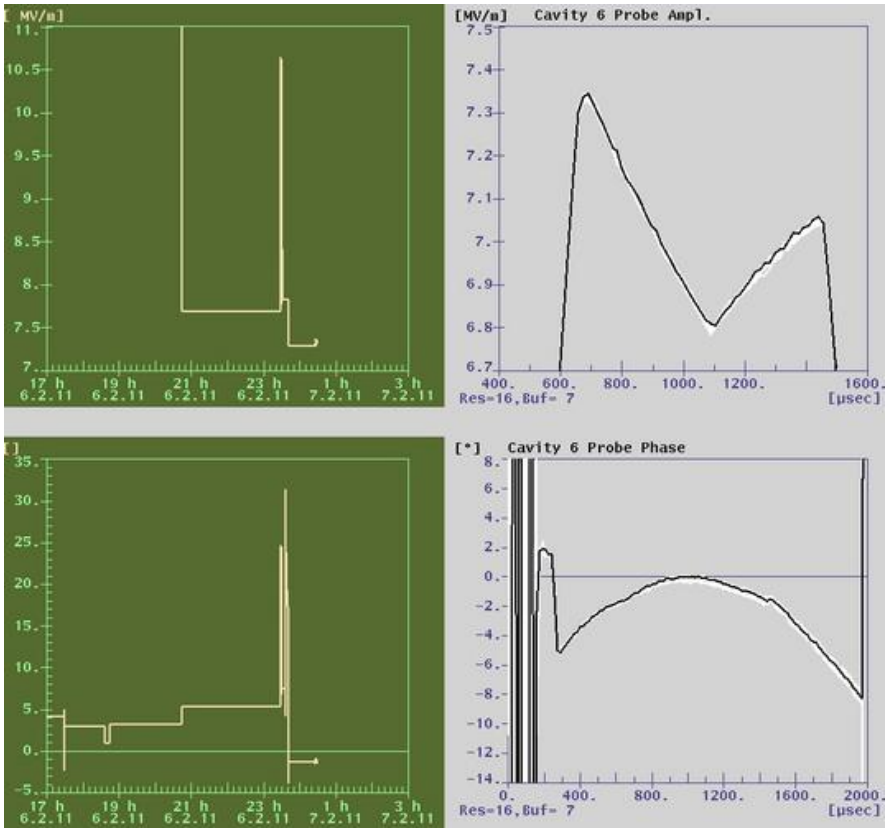
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:01:49-00.JPG

07.02.2011	00:27	ttflinac	**ttflinac@:ADC_RF_win2**



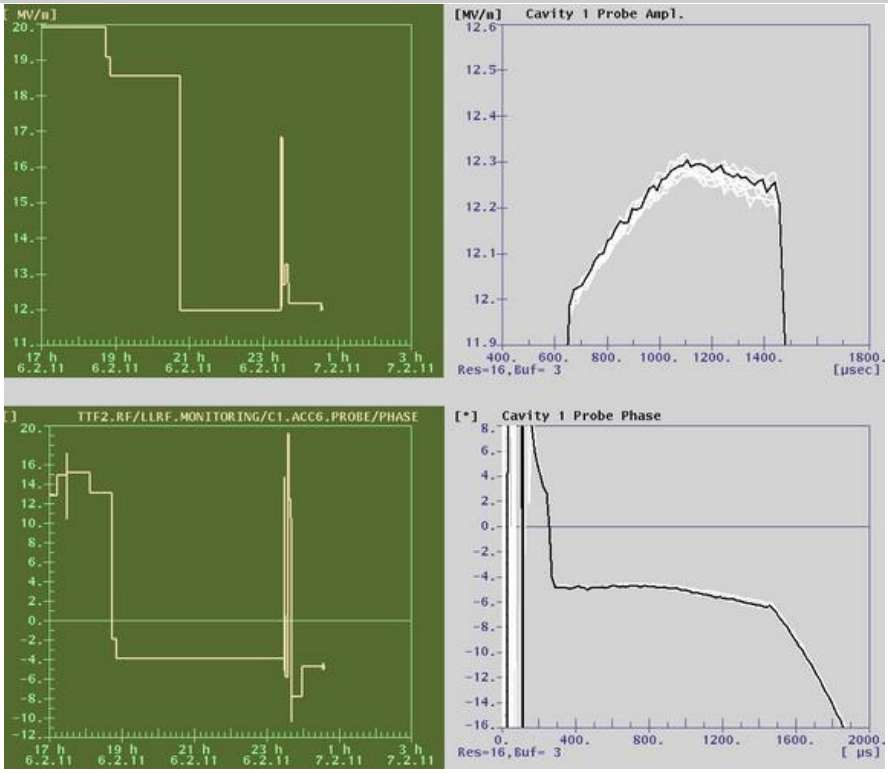
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:27:42-00.JPG

07.02.2011	00:27	ttflinac	**ttflinac@:ADC_RF_win2**



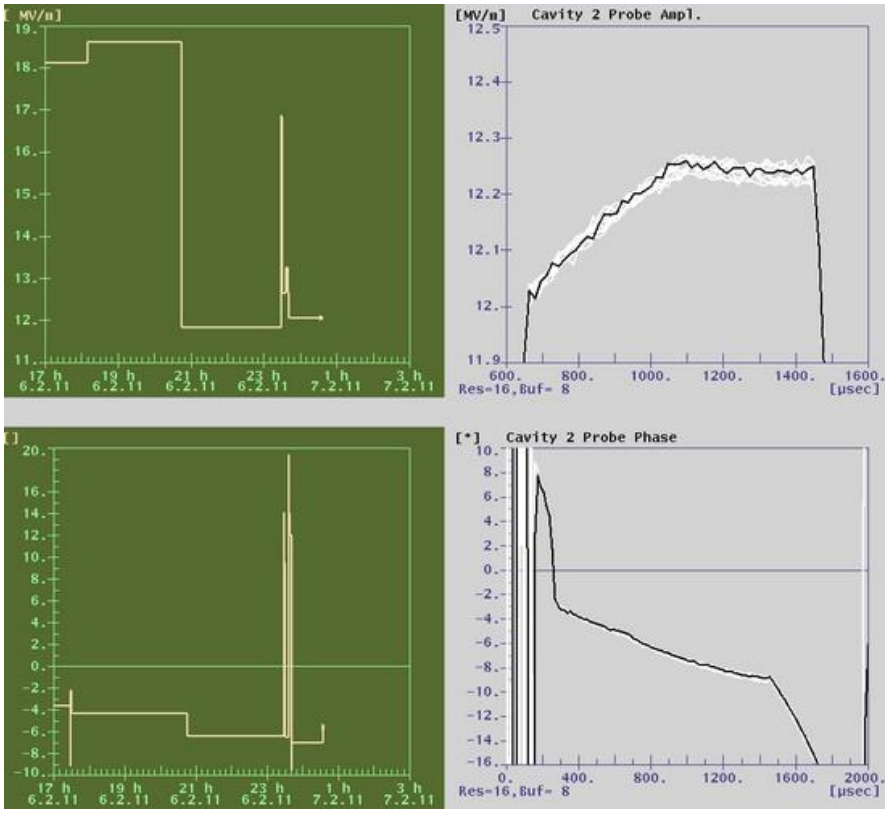
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:27:51-00.JPG

07.02.2011 00:34 ttflinac **ttflinac@:ADC_RF_win2**



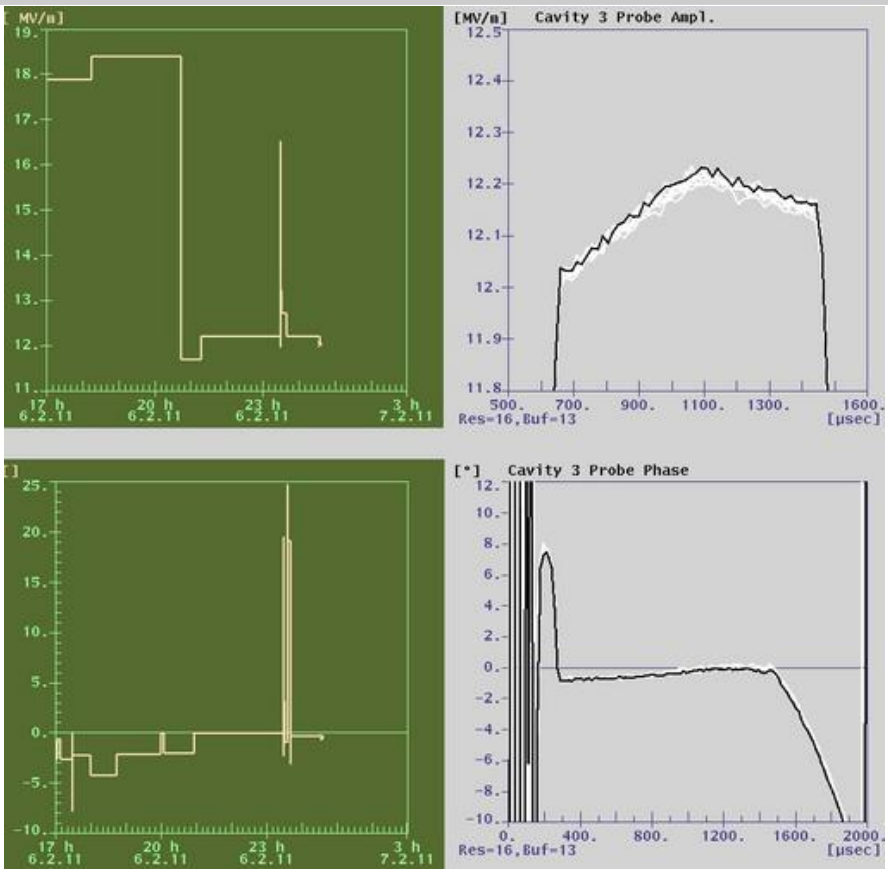
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:34:40-00.JPG

07.02.2011 00:35 ttflinac **ttflinac@:ADC_RF_win2**



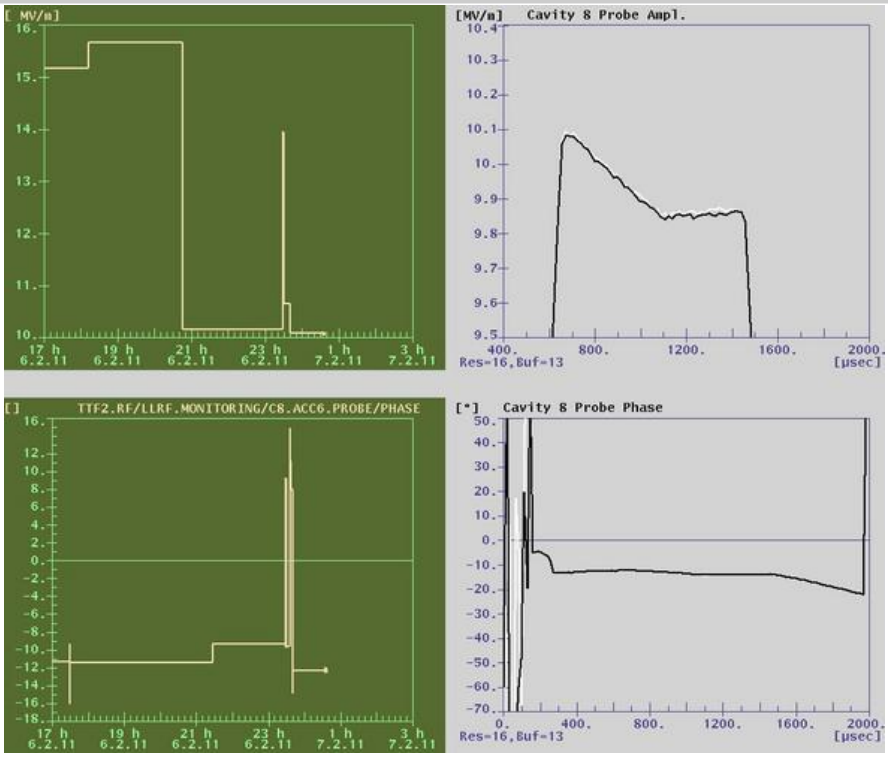
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:35:04-00.JPG

07.02.2011 00:35 ttflinac **ttflinac@:ADC_RF_win2**



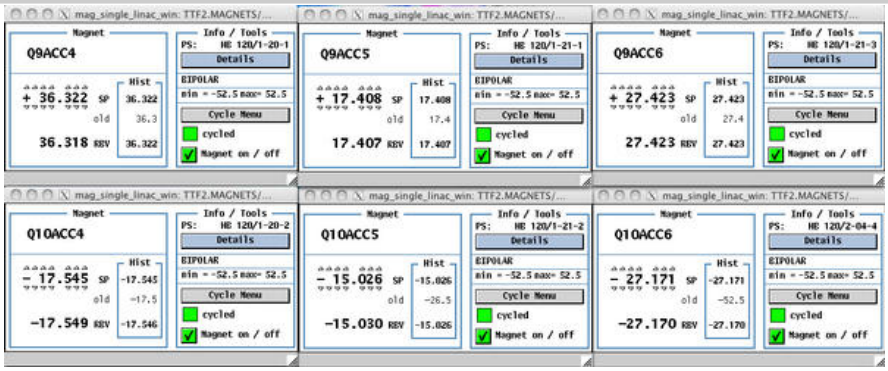
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:35:24-00.JPG

07.02.2011	00:36	ttflinac	**ttflinac@:ADC_RF_win2**



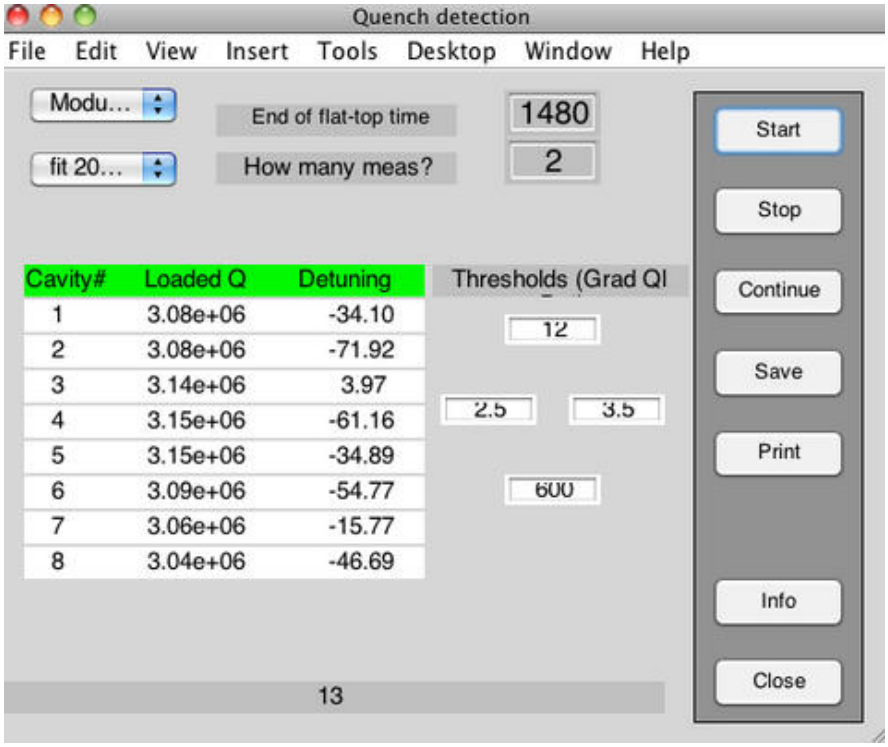
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:36:37-00.JPG

07.02.2011	00:38	Ayvazyan, Branland, Cancelo Krueger	**ACC6 QL Initial measurement**



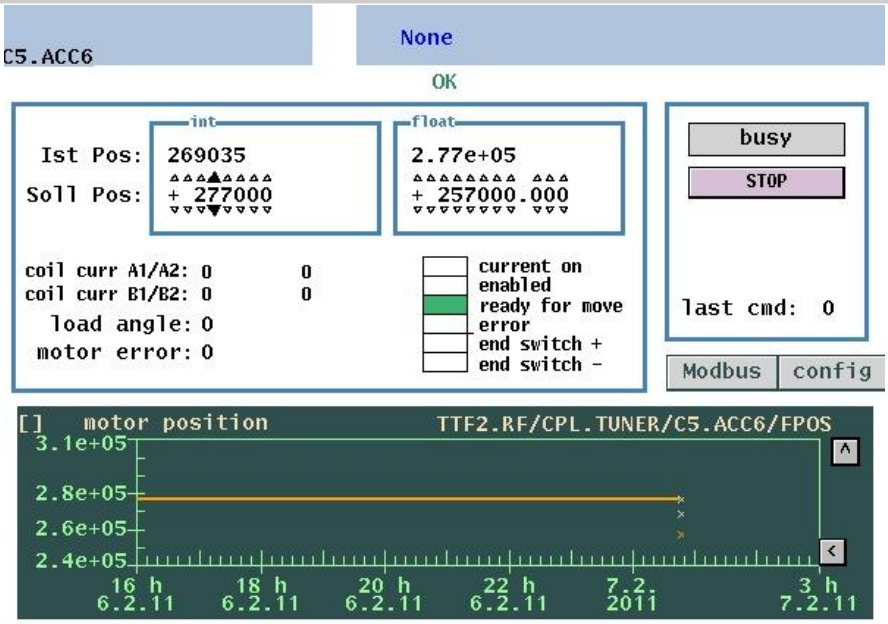
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:38:40-00.png

07.02.2011	00:42	Ayvazyan, Branland, Cancelo Krueger	**ACC7 QL Initial measurement**



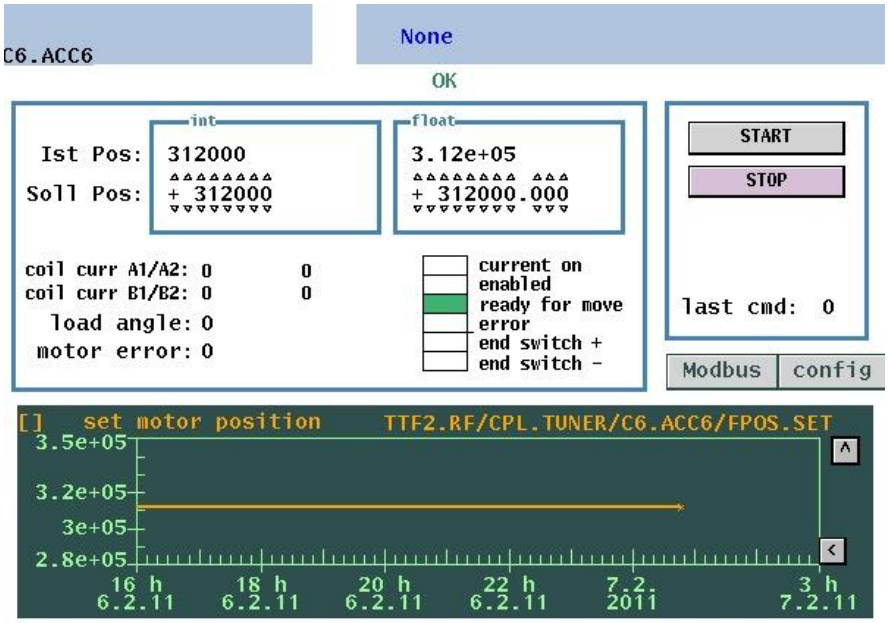
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:42:42-00.png

07.02.2011 00:46 doocsadm **doocsadm@flashbkr3.desy.de:Tuner_KL2531_sec**



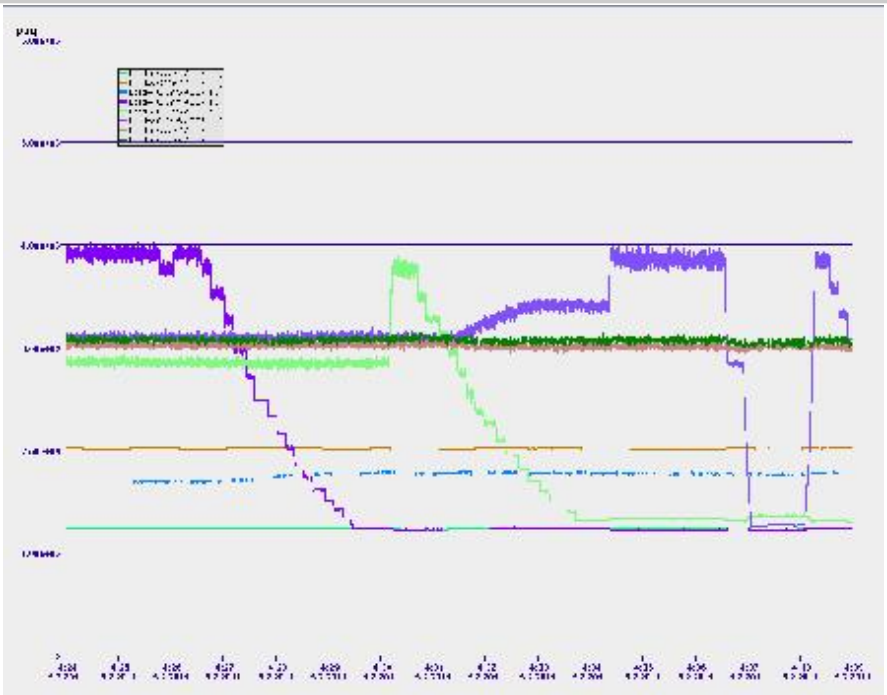
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:46:55-00.JPG

07.02.2011 00:47 doocsadm **doocsadm@flashbkr3.desy.de:Tuner_KL2531_sec**



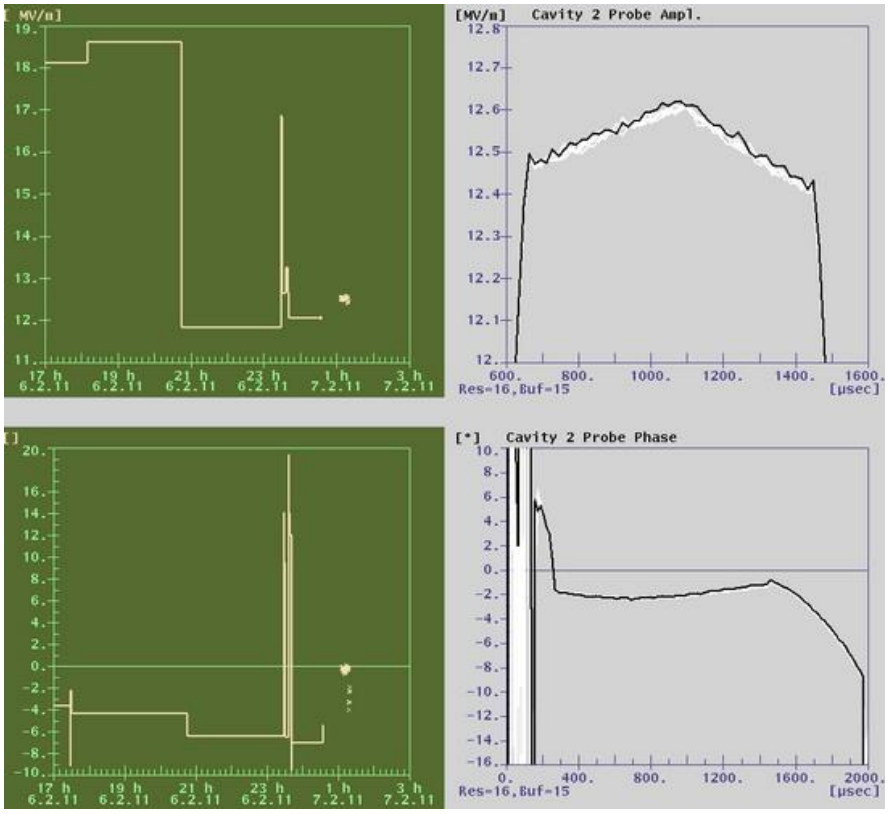
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:47:01-00.JPG

07.02.2011	00:52	ttflinac	**jddd Screenshot**



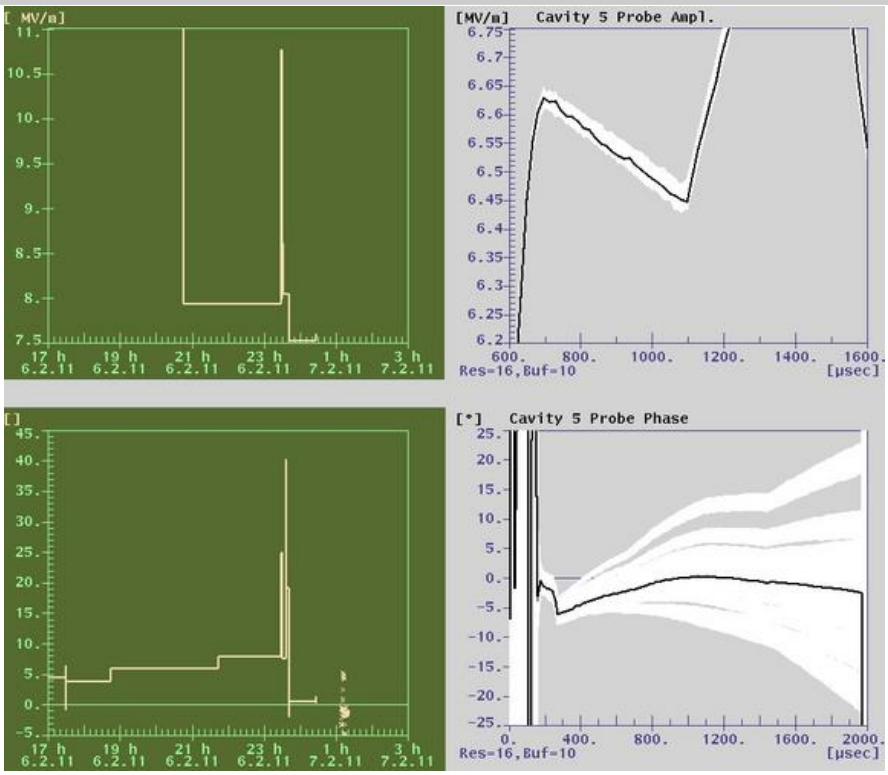
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T00:52:50-00.ps

07.02.2011	01:19	ttflinac	**ttflinac@:ADC_RF_win2**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:19:43-00.JPG

07.02.2011	01:19	ttflinac	**ttflinac@:ADC_RF_win2**



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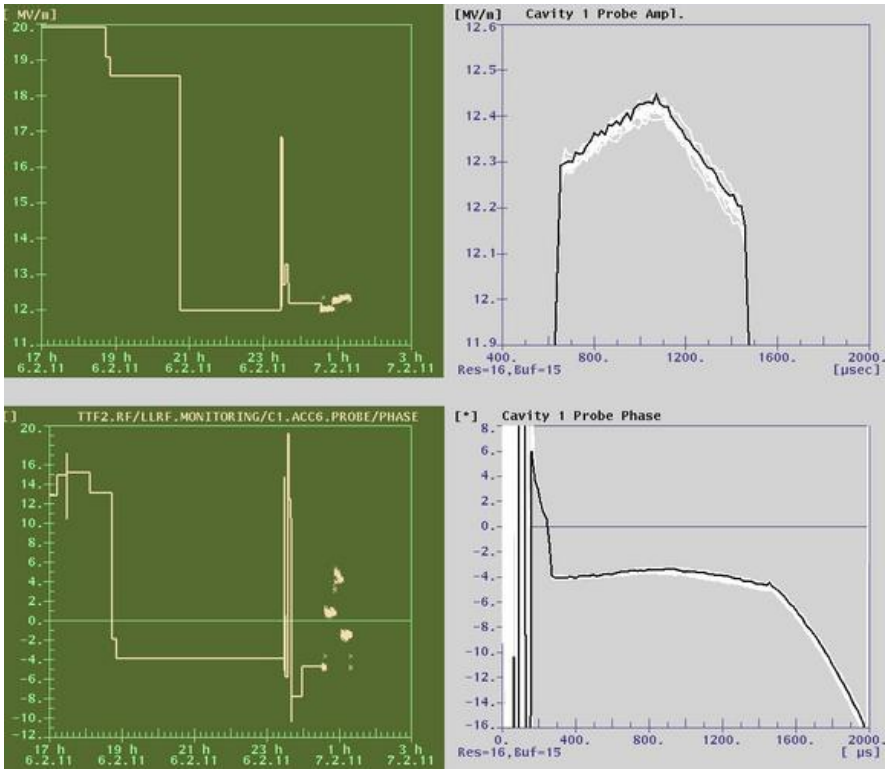
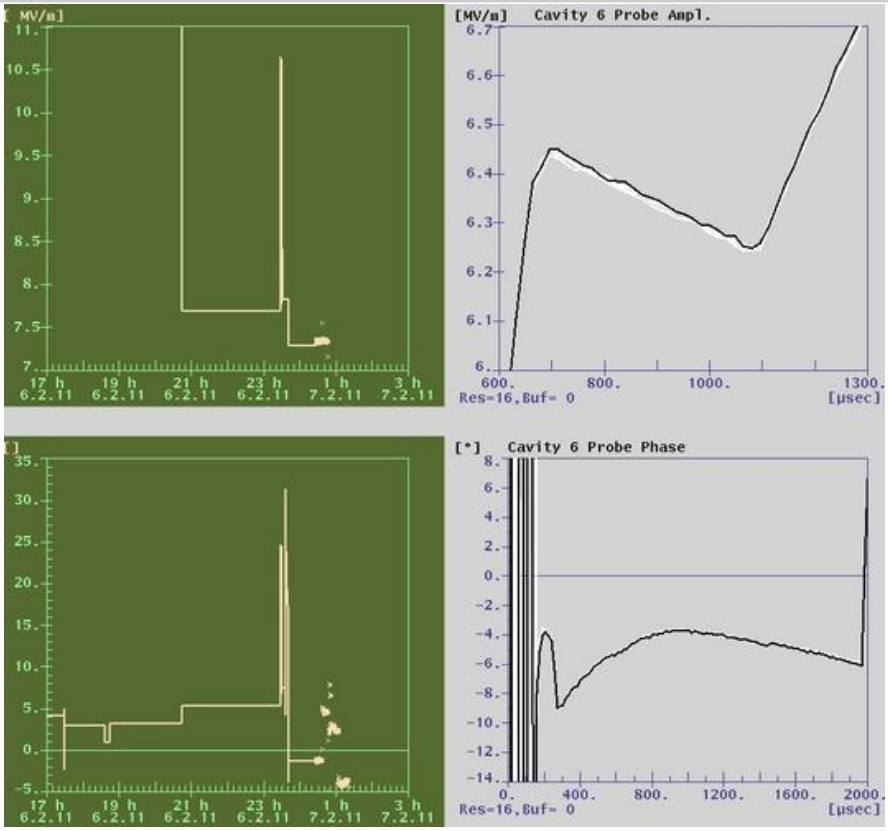
07.02.2011	01:20	ttflinac	**ttflinac@:ADC_RF_win2**



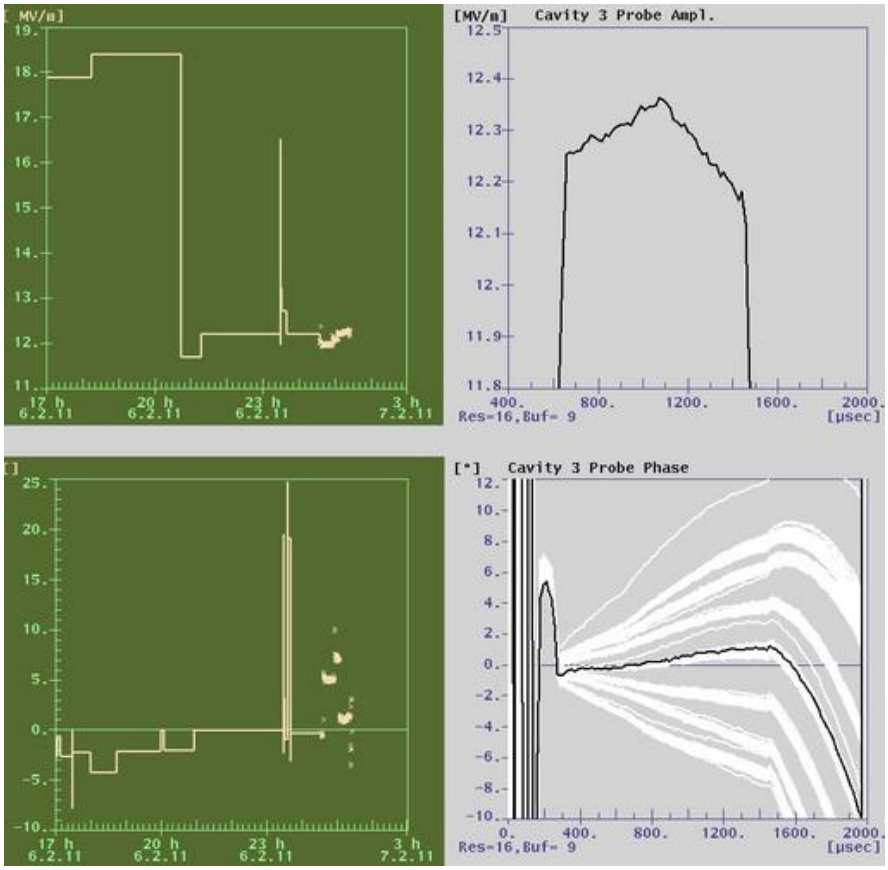
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:20:33-00.JPG

07.02.2011 01:23 ttflinac **ttflinac@:ADC_RF_win2**



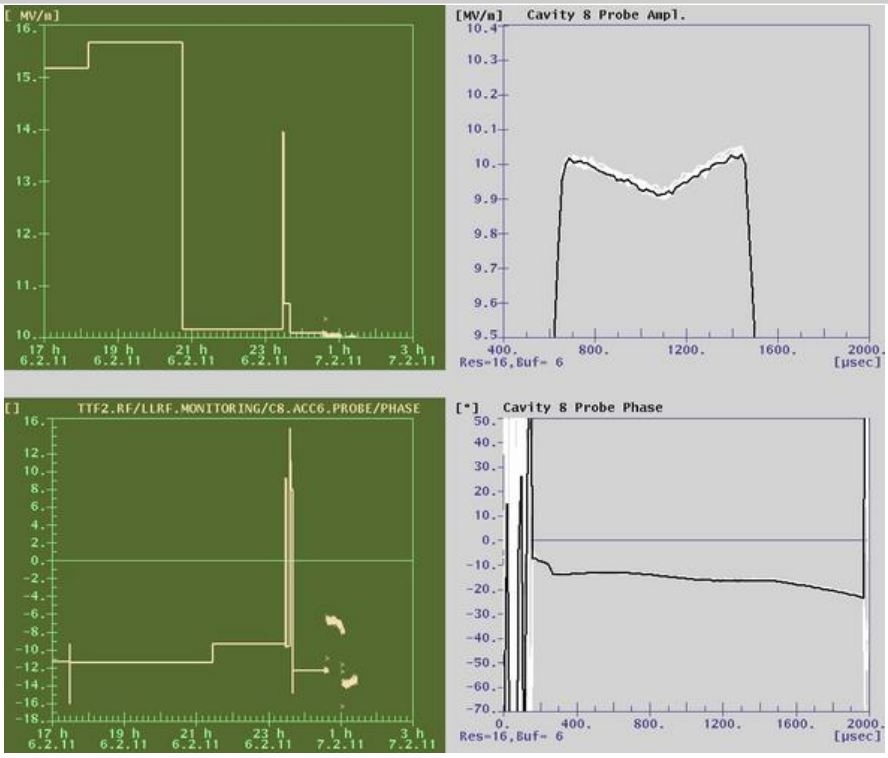
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:23:28-00.JPG

07.02.2011 01:26 ttflinac **ttflinac@:ADC_RF_win2**



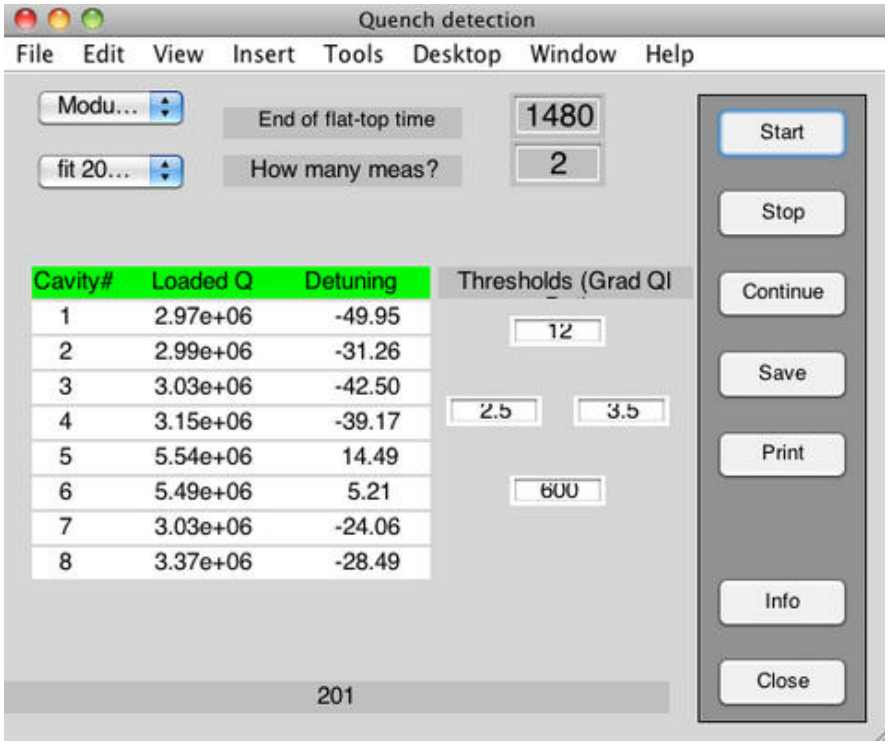
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:26:18-00.JPG

07.02.2011 01:26 ttflinac **ttflinac@:ADC_RF_win2**



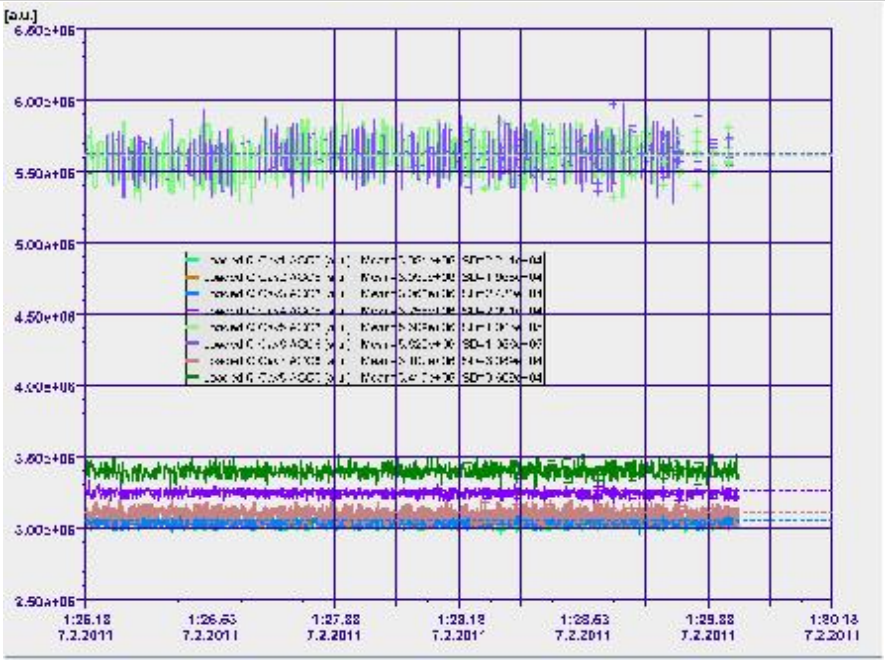
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:26:29-00.JPG

07.02.2011 01:28 **ACC6 Loded Qs after changing**



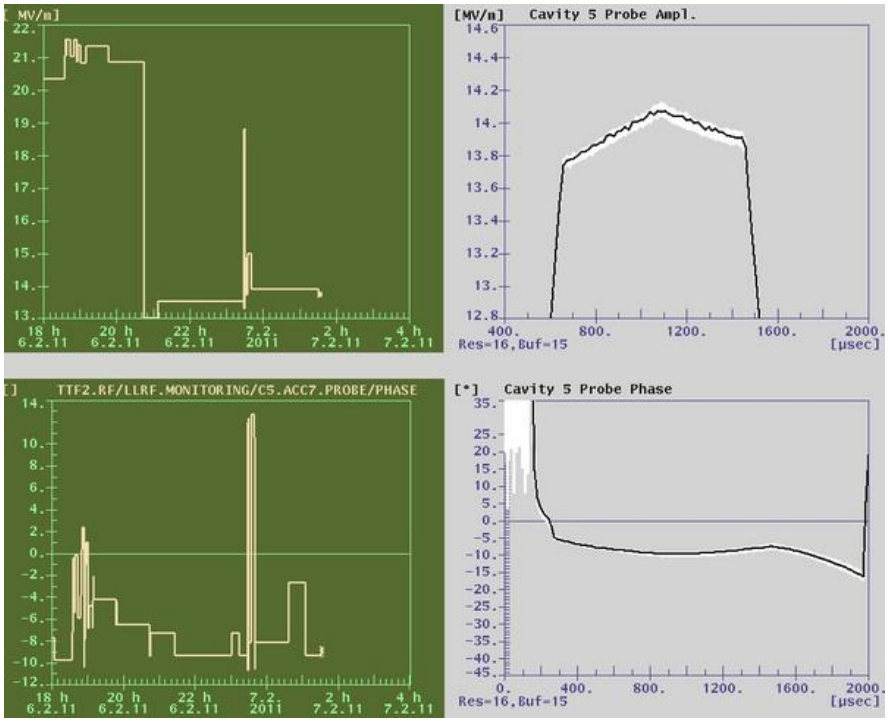
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:28:55-00.png

07.02.2011	01:29	W. Cichalewski	**LLRF.DIAGNOSTICS - Loded Q settings for module ACC6**



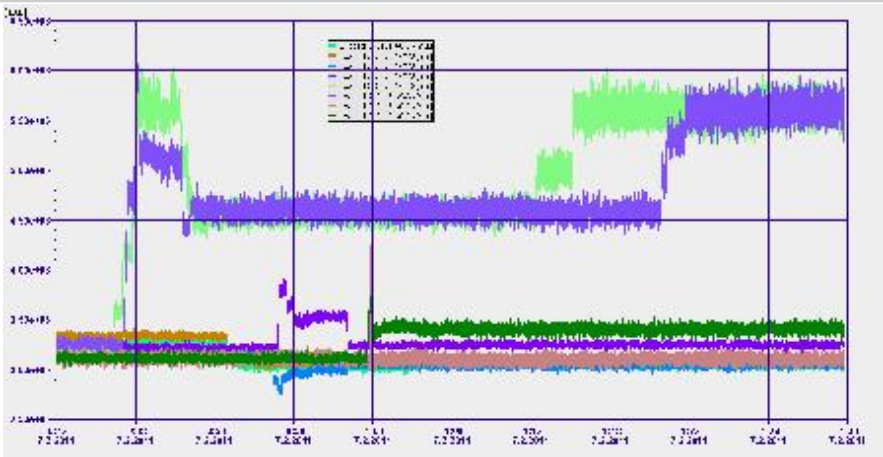
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:29:54-00.ps

07.02.2011	01:34	ttflinac	**ttflinac@:ADC_RF_win2**



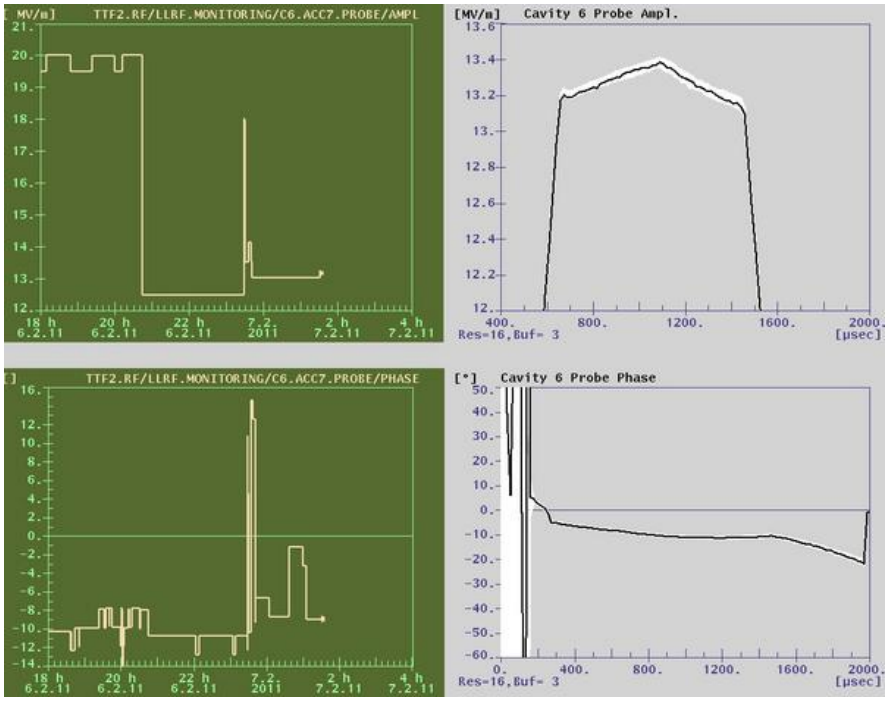
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:34:34-00.JPG

07.02.2011	01:34	W. Cichalewski	**LLRF.DIAGNOSTICS - Loded Q change for module ACC6**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:34:44-00.ps

07.02.2011	01:34	ttflinac	**ttflinac@:ADC_RF_win2**

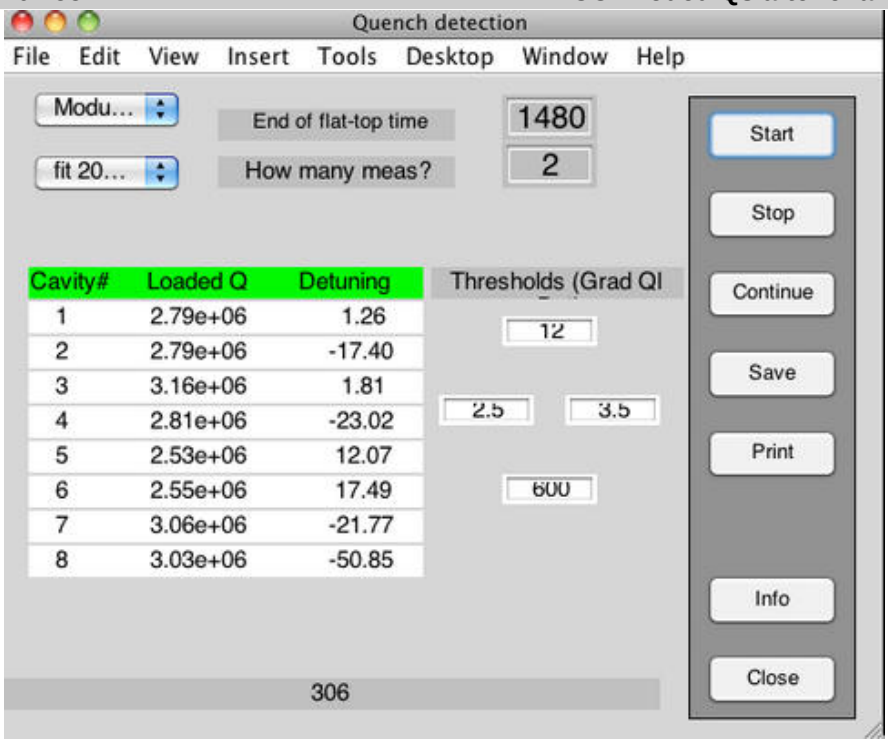


File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:34:55-00.JPG

07.02.2011 01:48 ttflinac

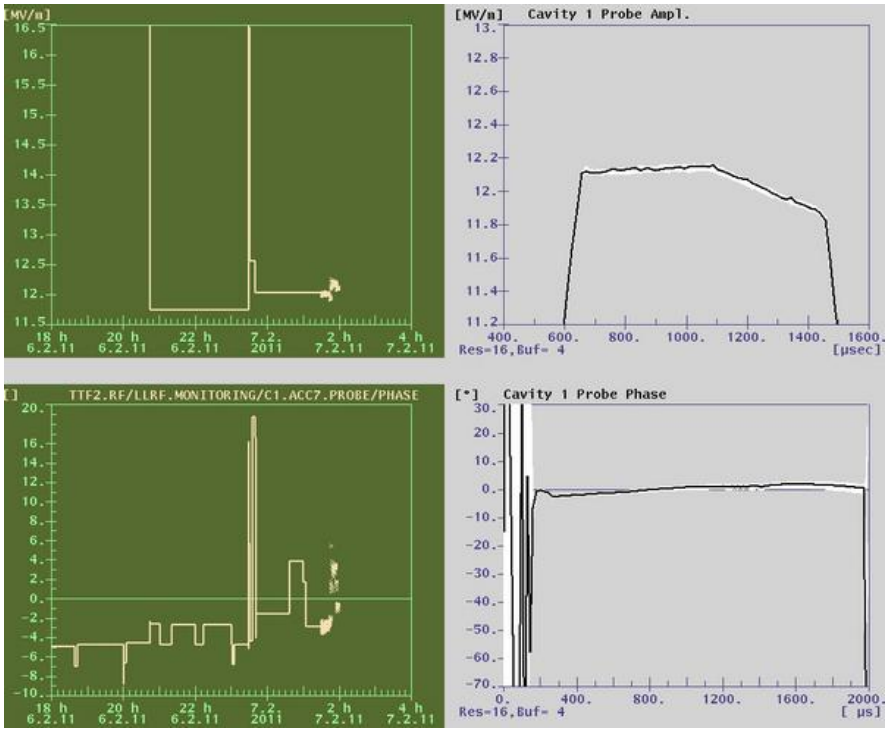
```
We adjusted cavity Qls as described below:
 ACC6-cav1: new QL --> 3.0
 ACC6-cav2: new QL --> 3.0
 ACC6-cav3: new QL --> 2.9
 ACC6-cav5: new QL --> 5.5
 ACC6-cav6: new QL --> 5.5
 ACC6-cav8: new QL --> 3.4
```

07.02.2011 01:58 **ACC7 Loded Qs after changing**



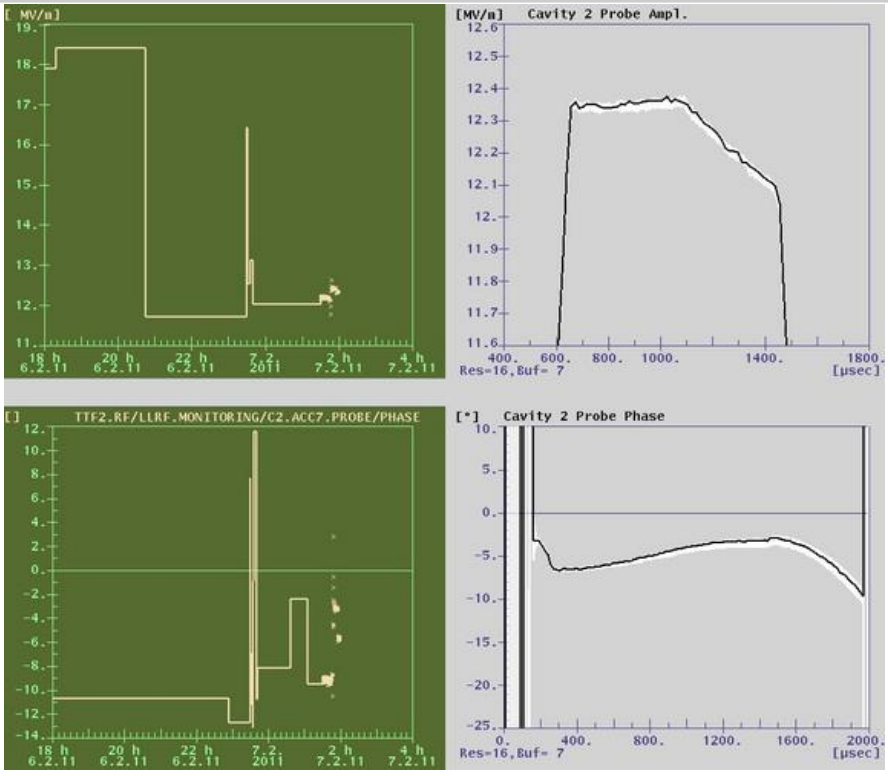
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T01:58:11-00.png

07.02.2011 02:00 ttflinac **ttflinac@:ADC_RF_win2**



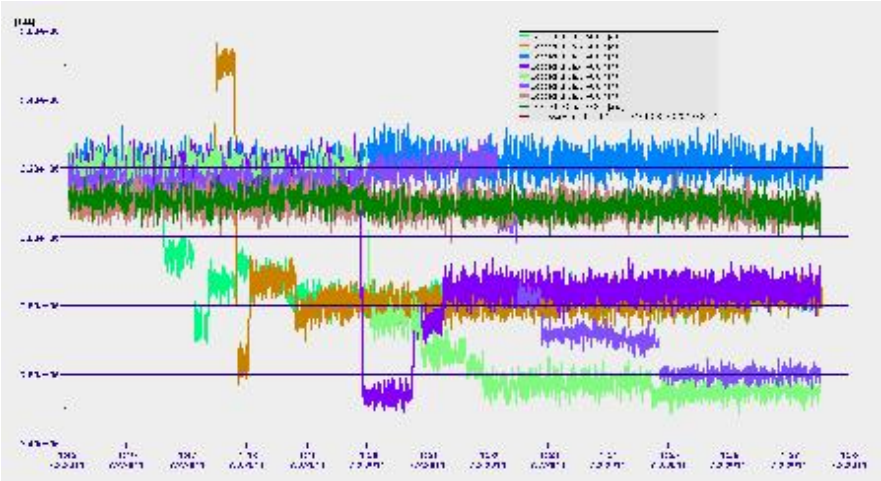
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T02:00:02-00.JPG

07.02.2011 02:00 ttflinac **ttflinac@:ADC_RF_win2**



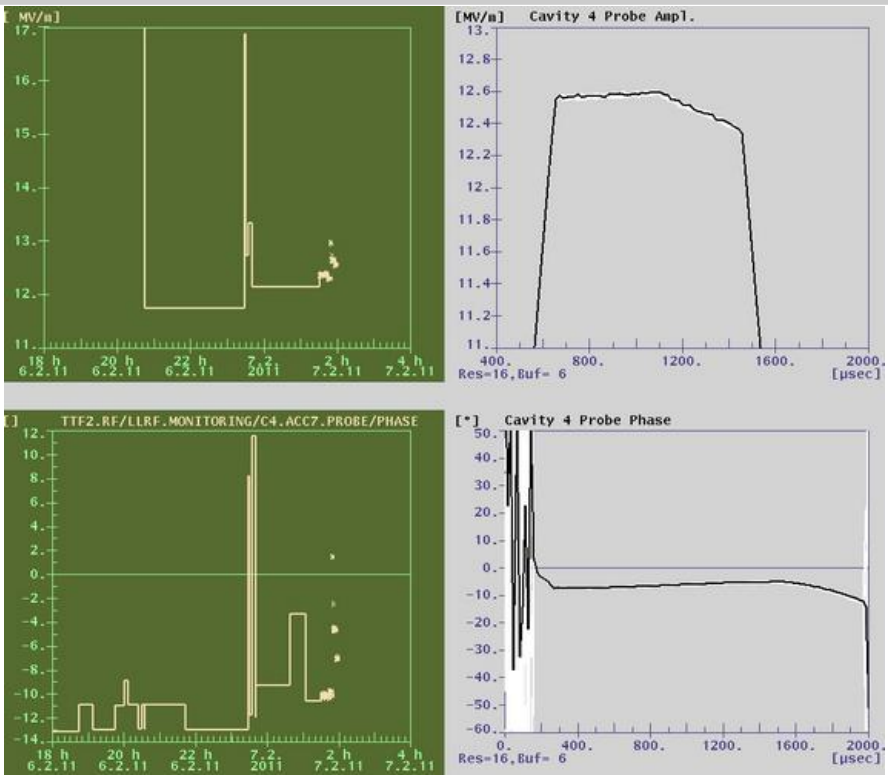
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T02:00:12-00.JPG

07.02.2011 02:00 W. Cichalewski **LLRF.DIAGNOSTICS - Loded Q change for module ACC7**



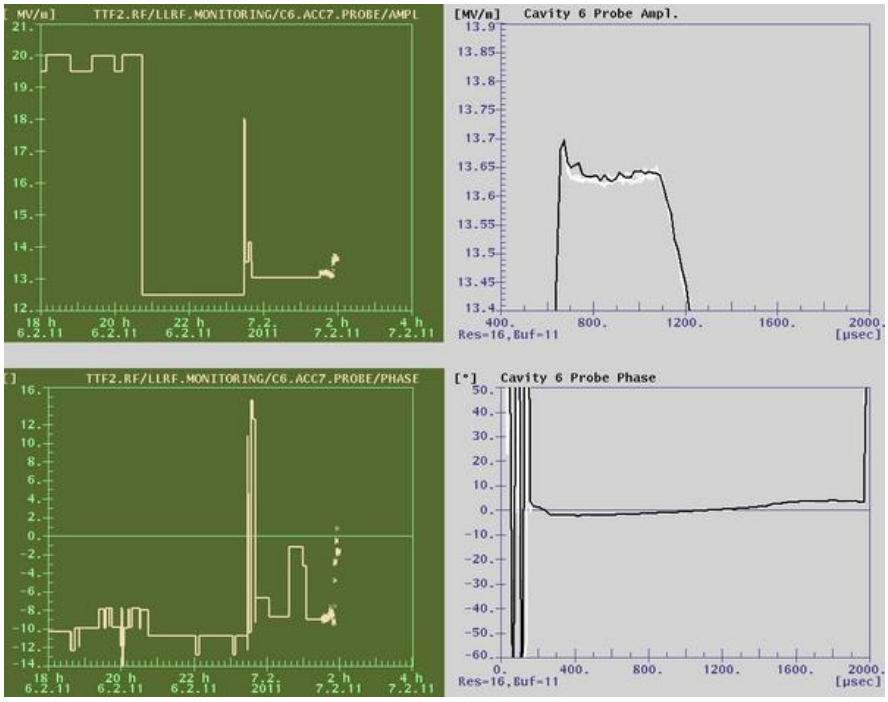
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T02:00:21-00.ps

07.02.2011	02:00	ttflinac	**ttflinac@:ADC_RF_win2**



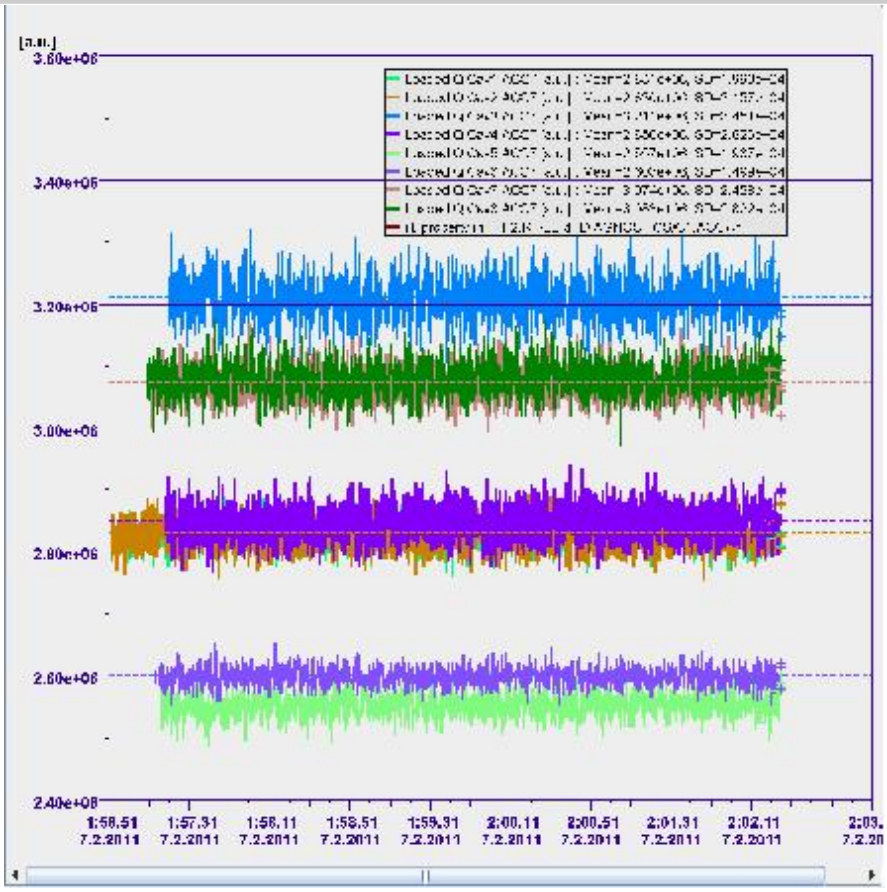
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T02:00:36-00.JPG

07.02.2011	02:00	ttflinac	**ttflinac@:ADC_RF_win2**



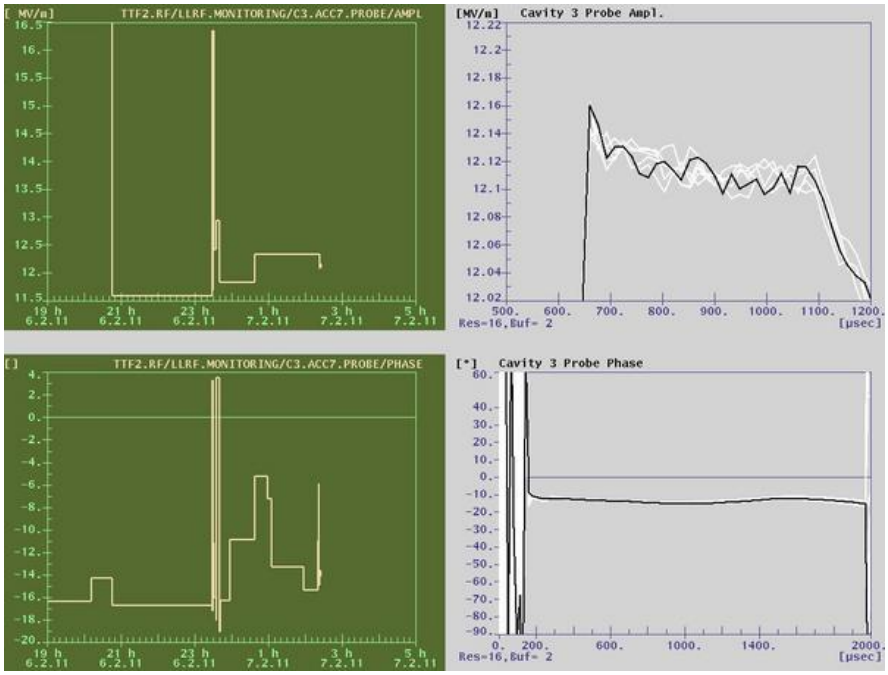
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T02:00:44-00.JPG

07.02.2011 02:02 W. Cichalewski **LLRF.DIAGNOSTICS - Loded Q settings for module ACC7**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T02:02:41-00.ps

07.02.2011 02:25 ttflinac **ttflinac@:ADC_RF_win2**

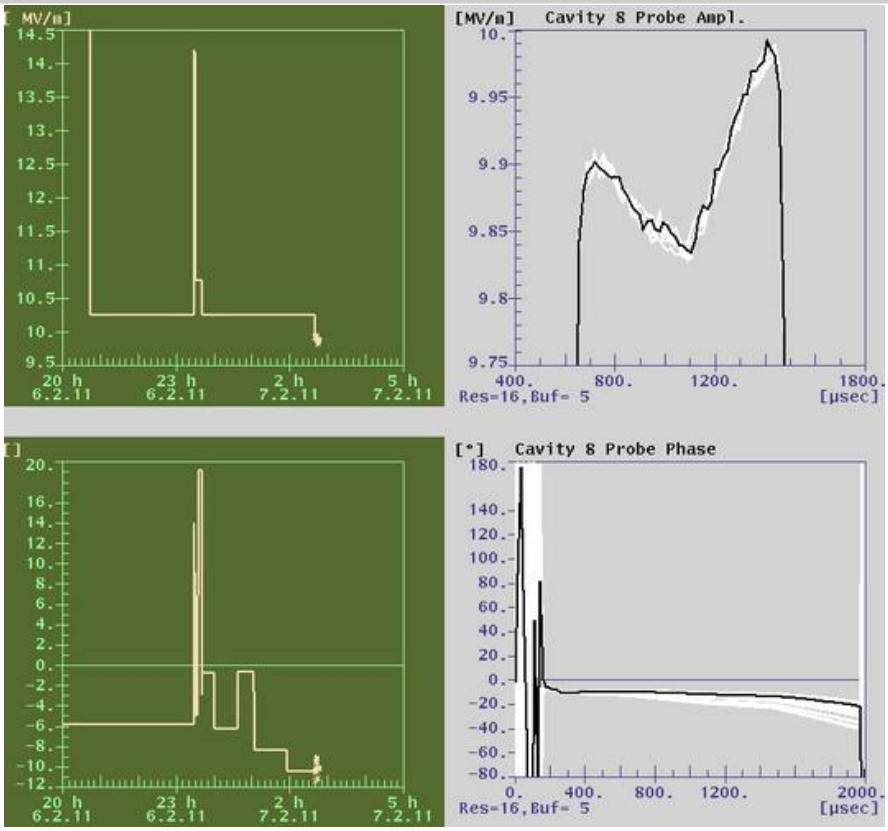


File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T02:25:34-00.JPG

07.02.2011 02:26 ttflinac

```
We adjusted ACC7-cav3 : new QL --> 2.8e6
(plot below)
```

07.02.2011 02:48 ttflinac **ttflinac@:ADC_RF_win2**



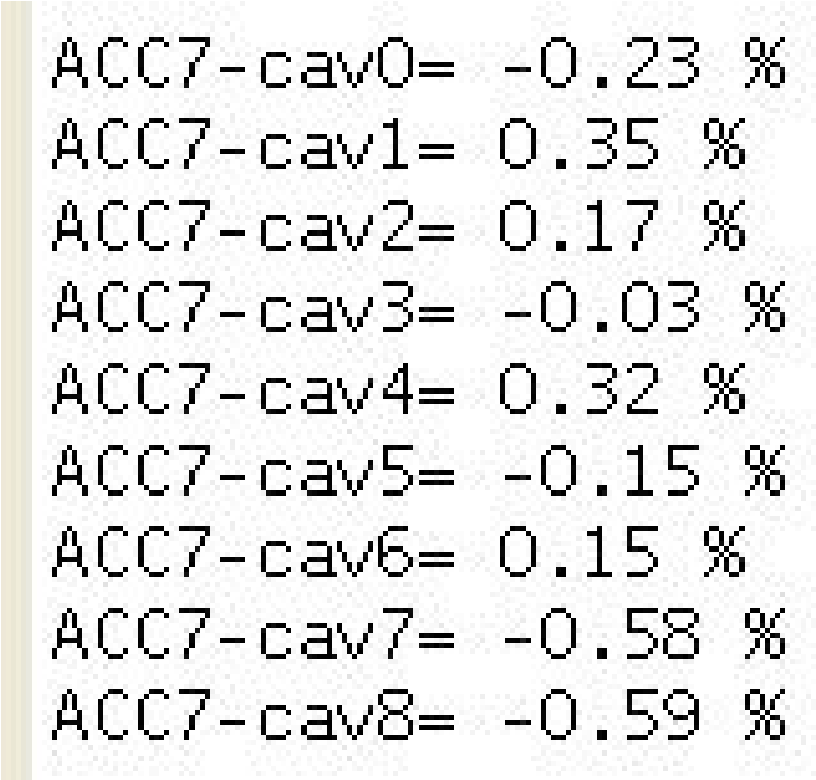
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T02:48:08-00.JPG

07.02.2011 02:48 ttflinac

```
we adjusted ACC7-cav8 new Ql--> 3.2e6
```

07.02.2011 02:49 ttflinac

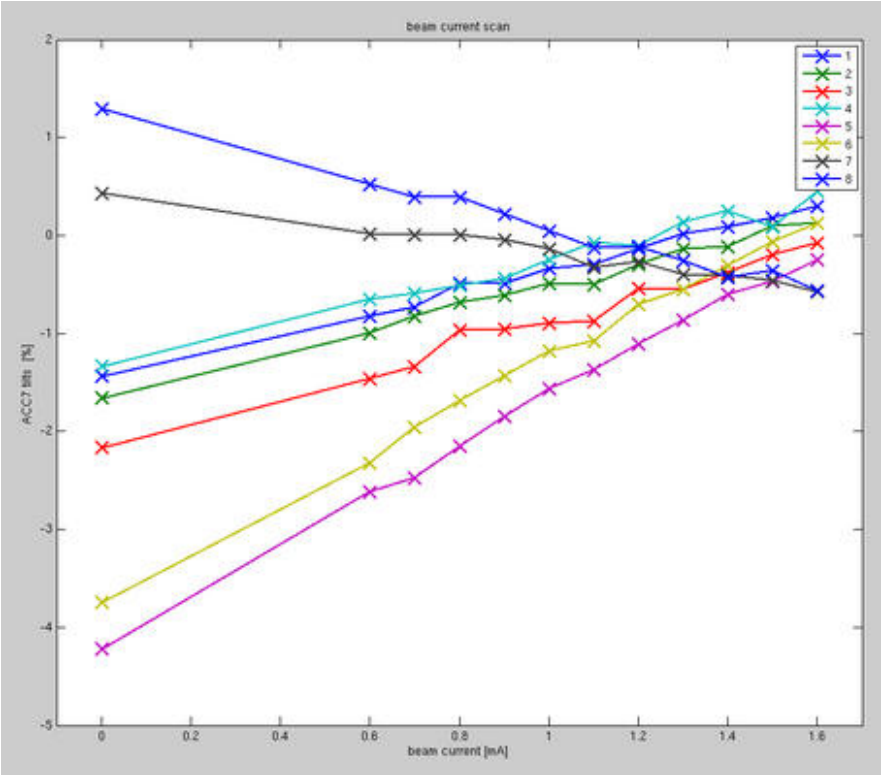
```
tilts for ACC7, with Ql optimized for 1.6nC
Ql config is for ACC7:
cav1 : 2.8
cav2 : 2.8
cav3 : 2.8
cav4 : 2.8
cav5 : 2.5
cav6 : 2.5
cav7 : 3.1
cav8 : 3.2
```



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T02:49:00-00.png

07.02.2011 03:27

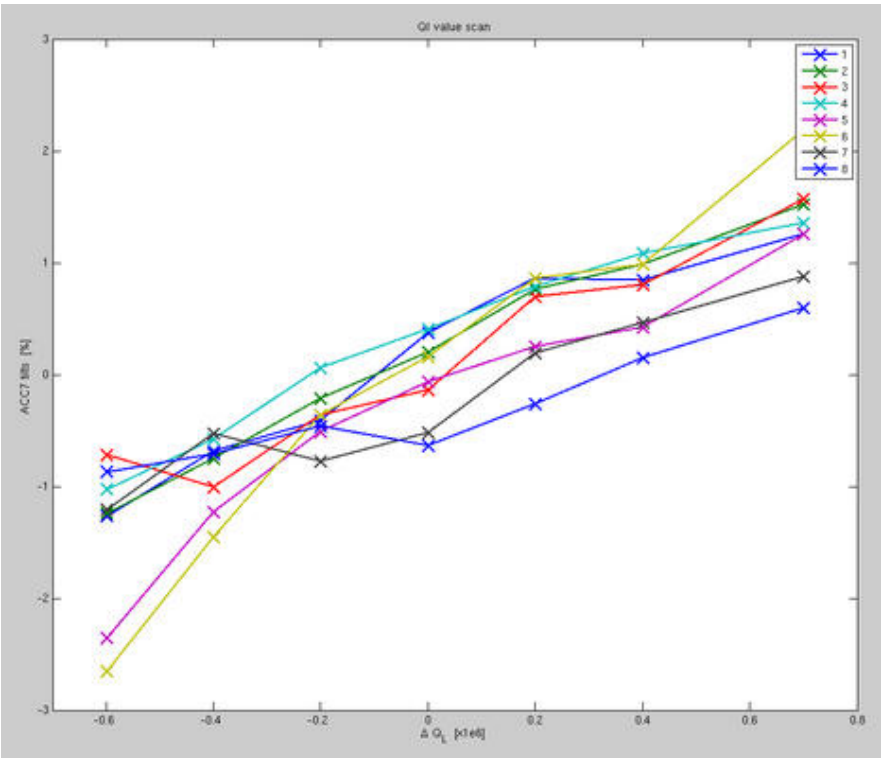
```
We performed a beam scan.
We ramped the beam current from 1.6nC down to 0.6 nC in steps of 0.1nC and measured the tilts on
 ACC7.
From the plot, it is interesting to see that we actually had the machine optimized for 1.5nC, not
 1.6nC.
This somewhat quantifies the limit in accuracy of the optimization setup. One can assume that the
 optimization is good to +/- 1nC.
A computational approach to produce the optimal Qls (as opposed to the graphical approach we have
 been using tonight) could help increase the accuracy of the optimization. Another limitation
 is the accuracy of setting the Qls. Most of the time, we were able to set the Ql's
 with an accuracy of +/- 0.05e6 form the desired value.
```



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T03:27:40-02.png

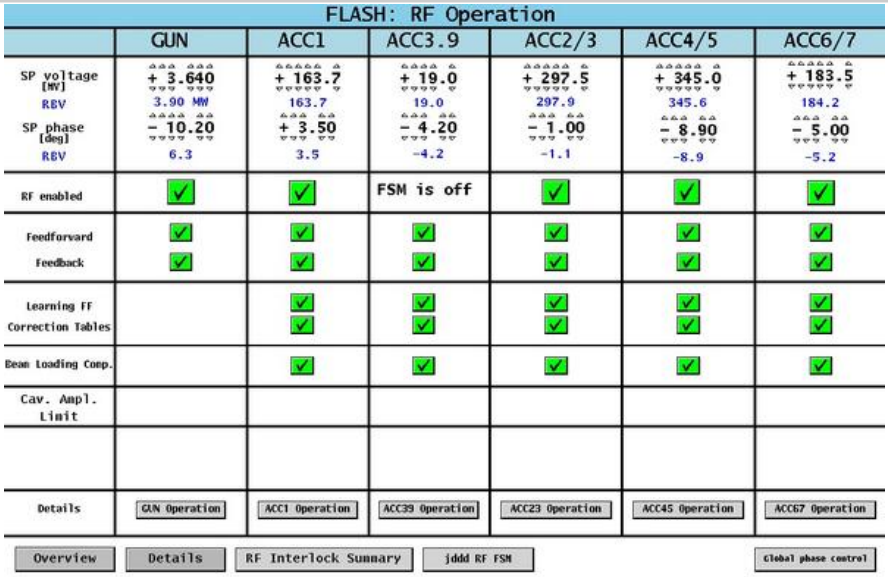
07.02.2011 05:12

We performed a Ql scan, walking away from the Ql optimized for 1.6 nC.
We ramped all Qls' by steps of 0.2e6 starting from a delta of -0.6e6 to a delta of +0.6e6 (actually +0.7e6).
As expected, the tilts were minimal for the optimized Ql which confirms that the initial Qls were indeed optimal!



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T05:12:26-01.png

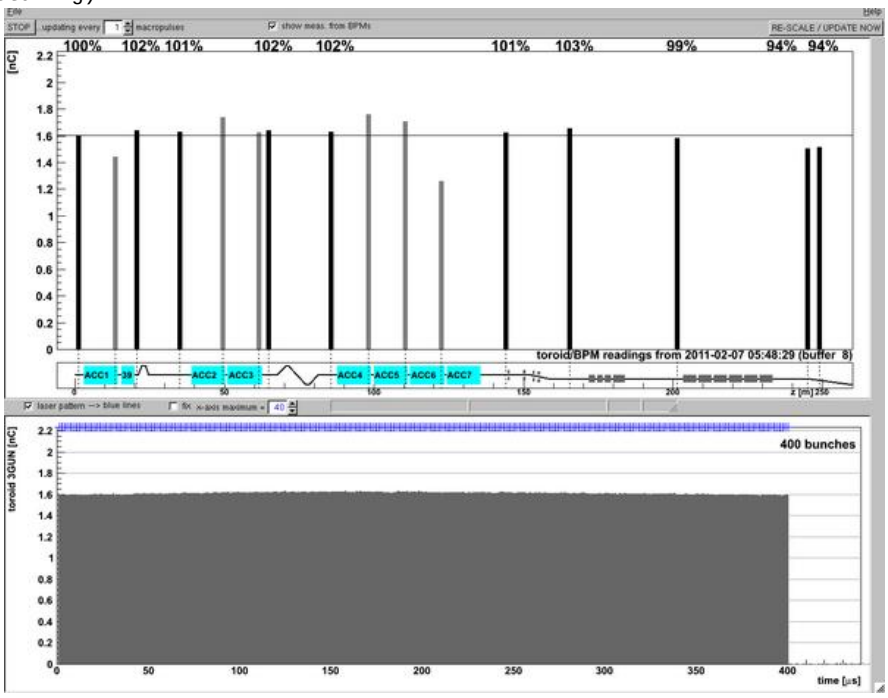
07.02.2011 05:48 doocsadm **doocsadm@flashbkr3.desy.de:RF_OPERATION**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T05:48:17-00.JPG

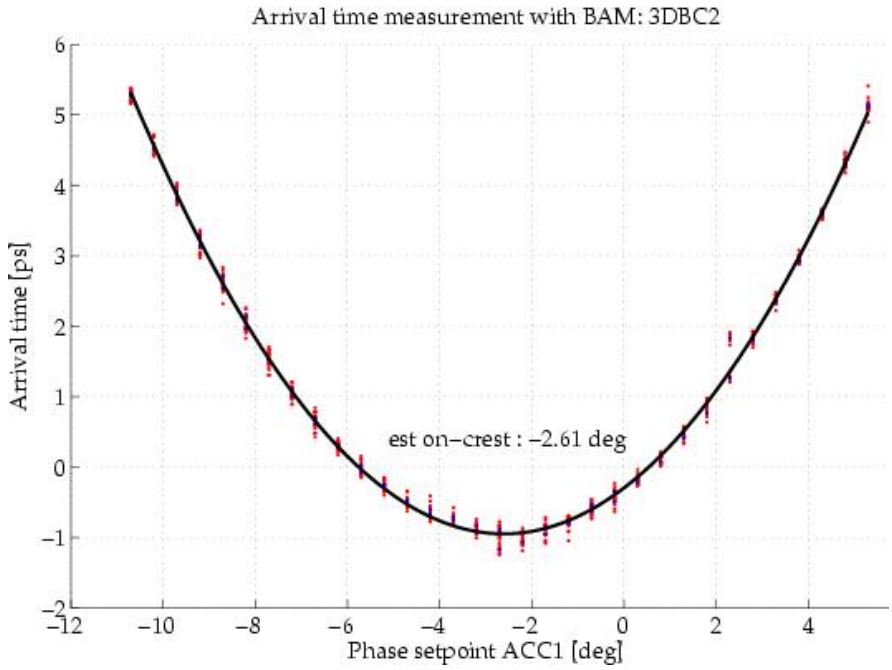
07.02.2011 05:48 ttflinac **toroid charge readings**

We returned the machine to its original state (i.e. brought all Qls to their initial value of 3e6 and adjusted detuning)



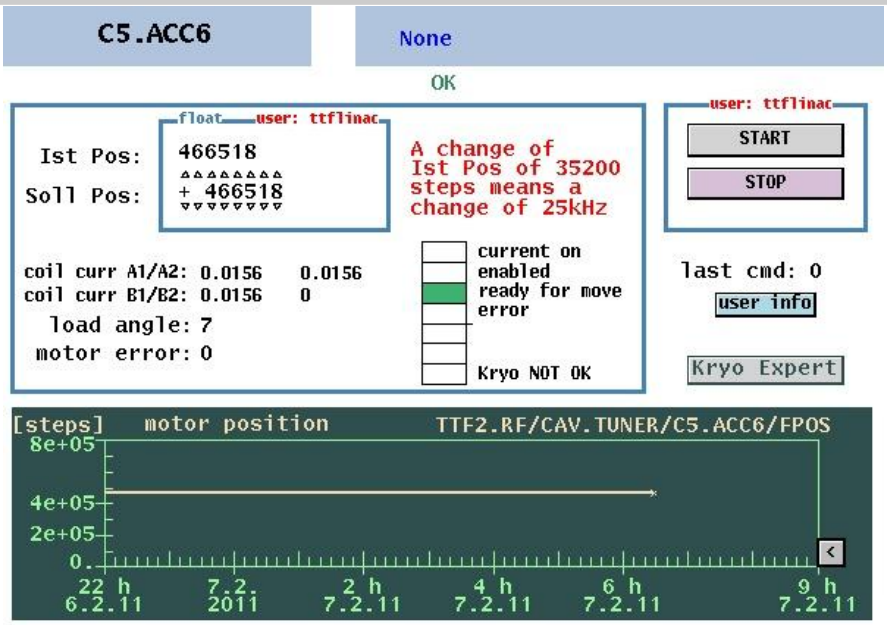
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T05:48:49-00.ps

07.02.2011 06:24 ttflinac **tp50ef8ad9_34ab_48ee_a6a5_715dfe4493ea.ps**



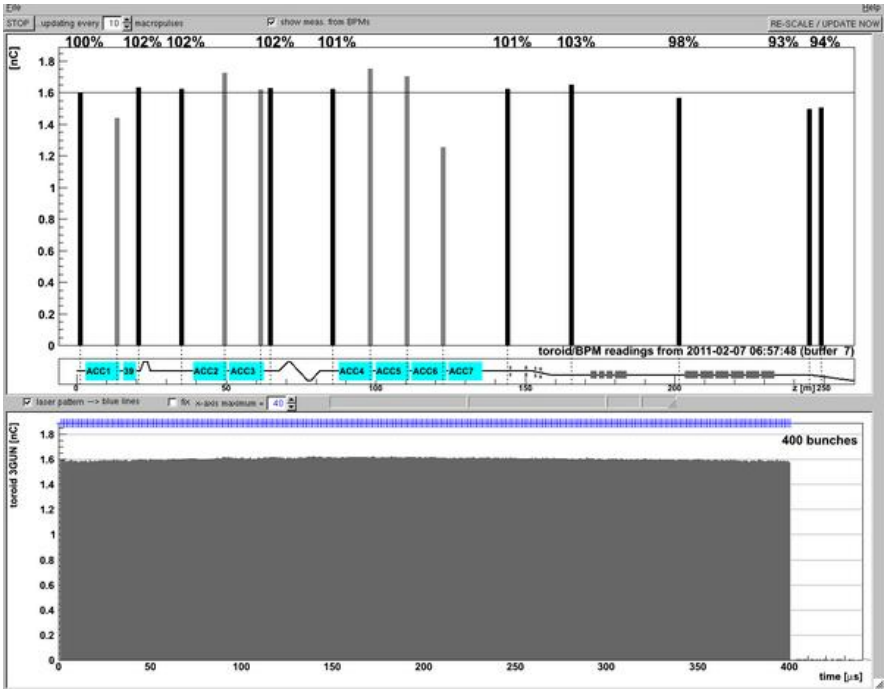
File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T06:24:18-00.ps

07.02.2011	06:28	ttflinac	**ttflinac@:Tuner_KL2531_sec_cav_FLASH**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T06:28:43-00.JPG

07.02.2011	06:58	ttflinac	**toroid charge readings**



File: http://ttfinfo.desy.de/TTFelog/data/2011/05/06.02_n/2011-02-07T06:58:10-00.ps