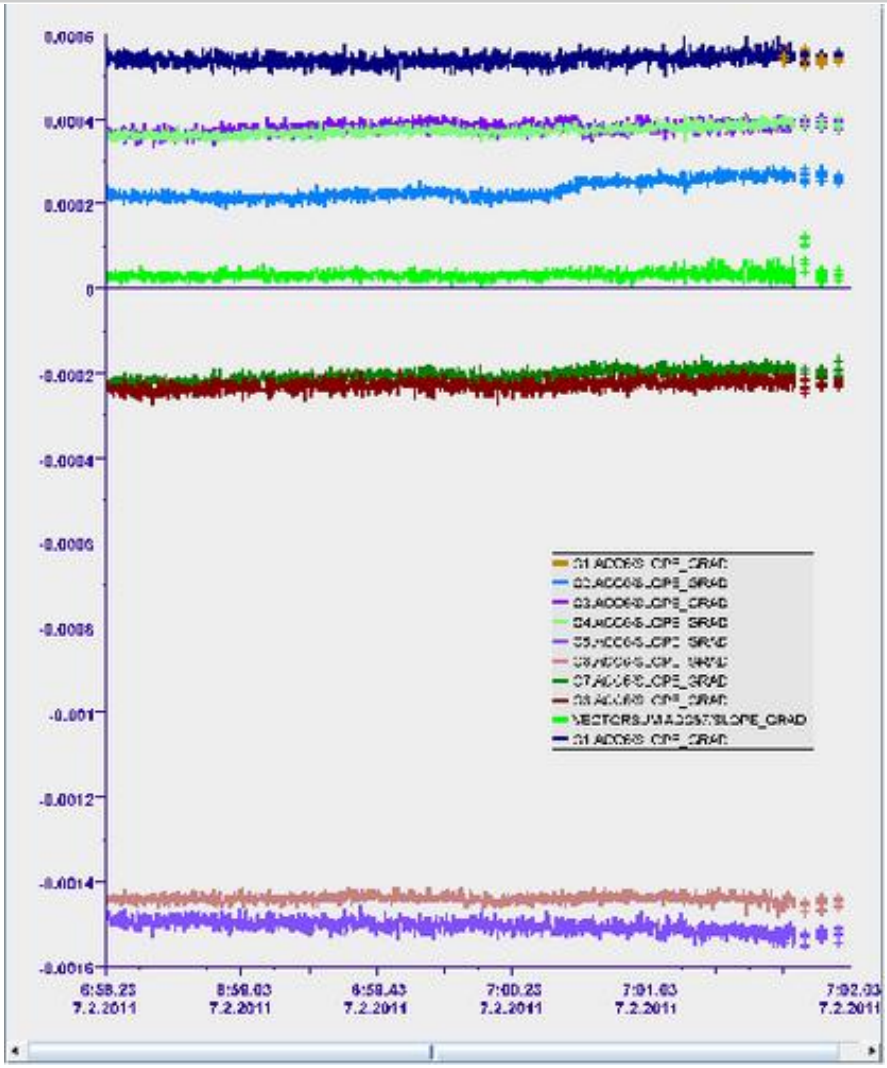
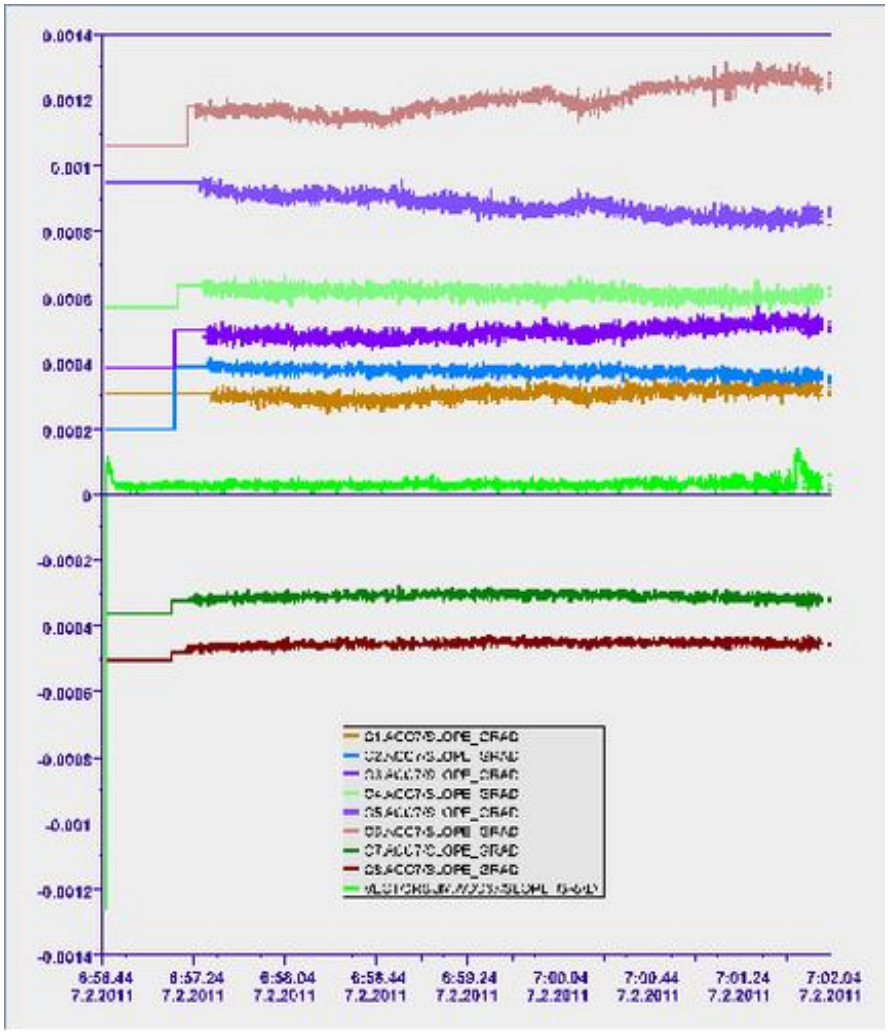
? 07.02.2011	07:37	oracle	**Shift summary**

07.02.2011	07:05	ttflinac	**jddd Screenshot**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:05:56-00.ps

07.02.2011	07:06	ttflinac	**jddd Screenshot**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:06:08-00.ps

07.02.2011 07:11 mscholz **Start shift documentation**

07.02.2011 07:14 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
Iris diameter ..... 17072 steps
Iris diameter ..... 2.39 mm

Gun

Feedforward/Feedback ... on/on
FSM ..... on
Pfwd SP 3.64
VS ampl. 18.31
Phase SP ..... -10.20 deg
VS phase ..... 6.23 deg
Pfwd (peak) ..... 3.914 MW
Prefl (peak) ..... 2.933 MW
Pfwd sample point 700
Pfwd (at sample point) . 18.336 MW
Prefl sample point 720
Prefl (at sample point) 5.701 MW
Flat top ..... 460 us
Water temperature SP ... 72.75 deg C
Main solenoid (RBV) .... -301.03 A
Bucking coil (RBV) ..... 20.70 A
Gun dipole (RBV) ..... 0.000 A
Charge 3GUN(T1) ..... 1.60 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

ACC39

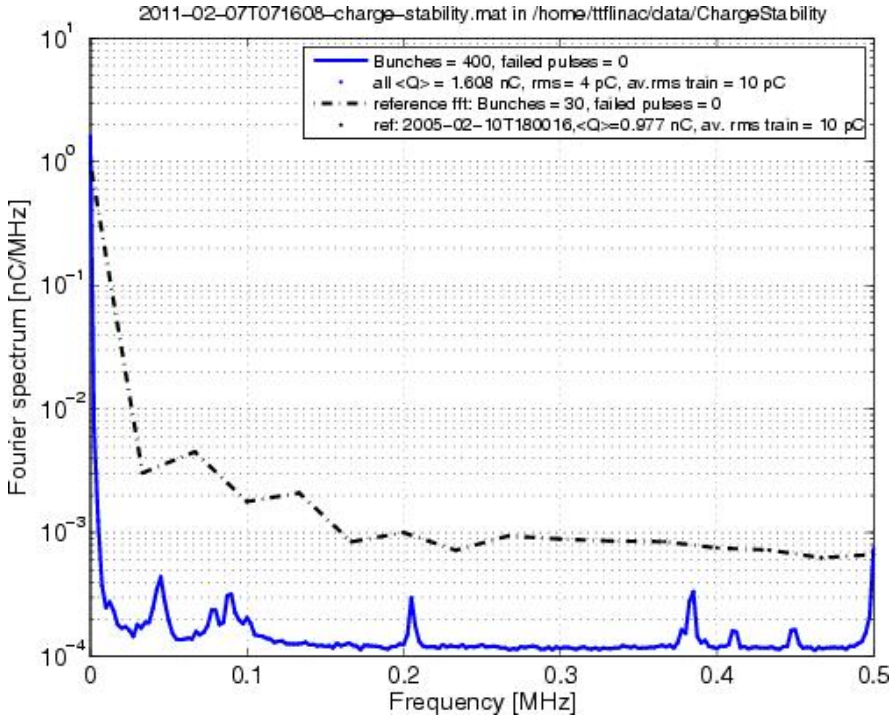
Feedforward/Feedback ... on/on
Feedback gain 10.0
Pfwd SP 19.00

```
Pfwd RBV ............... 163.69                Phase SP ............... -4.20 deg
Phase SP ............... 3.40 deg              Pfwd C1.ACC39 .......... <error>
Phase RBV .............. 3.47 deg              Flat top ............... 800 us
Pfwd C1.ACC1 ........... 186.5 kW
Pfwd C5.ACC1 ........... 177.9 kW
Flat top ............... 800 us
Dipole BC2 (RBV) ....... 73.11 A
Pyro 9DBC2.1 ........... -0.0620 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)
ACC2/3                                         ACC4/5
Feedforward/Feedback ... on/on                 Feedforward/Feedback ... on/on
Feedback gain .......... 2.0                   Feedback gain .......... 40.0
Pfwd SP ................ 297.50               Pfwd SP ................ 345.00
Pfwd RBV ............... 297.80               Pfwd RBV ............... 345.27
Phase SP ............... -1.00 deg            Phase SP ............... -8.90 deg
Phase RBV .............. -1.05 deg            Phase RBV .............. -8.86 deg
Pfwd C5.ACC2 ........... 126.01 kW            Pfwd C1.ACC4 ........... 161.46 kW
Pfwd C1.ACC3 ........... 218.56 kW            Pfwd C2.ACC5 ........... 169.05 kW
Flat top ............... 450 us               Pfwd C1.ACC6 ........... 0.61 kW
Dipole BC3 (RBV) ....... 56.00 A               Flat top ............... 800 us
Pyro 4DBC3.1 ........... -0.0085 V
Pyro 4DBC3.3 ........... 0.0018 V
Radiator 4DBC3 ......... out
ACC6/7                                         Bypass
Feedforward/Feedback ... on/on                 Dipole D1BYP (RBV) ..... 0.00 A
Feedback gain .......... 50.0                  Energy bypass .......... 1211.4 MeV
Pfwd SP ................ 183.50               RF vector sum ALL ...... 777.9 MeV
Pfwd RBV ............... 184.06               Charge 16BYP ........... -0.00 nC
Phase SP ............... -5.00 deg
Phase RBV .............. -5.12 deg
Pfwd C1.ACC6 ........... 107.75 kW
Pfwd C1.ACC7 ........... 120.00 kW
Flat top ............... 800 us
Collimator                                     Undulator
Dipole D1ECOL (RBV) .... 176.89 A              1SFUND1 gap RBV ........ 220.0 mm
Energy dogleg .......... 998.7 MeV             1SFUND2 gap RBV ........ 220.0 mm
Charge 7ORS ............ 1.65 nC               1SFUND3 gap RBV ........ 220.0 mm
                                               1SFUND4 gap RBV ........ 180.0 mm
Dump                                           Feedbacks
Dipole D9SMATCH (RBV) .. 0.00 A                Charge feedback gain ... <error>
Dipole D1DUMP (RBV) .... 0.00 A                Charge feedback SP ..... <error>
Dipole D6DUMP (RBV) .... 209.59 A              PTO feedback ........... on
Rotator RD13DUMP (RBV) . 9.13 A
Charge 9DUMP ........... 1.51 nC
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 2011-02-07T07_13_51+01
Orbit reference for the root tool saved in /home/ttflinac/measurements/xy_jitter/2011-02-07T071351
```

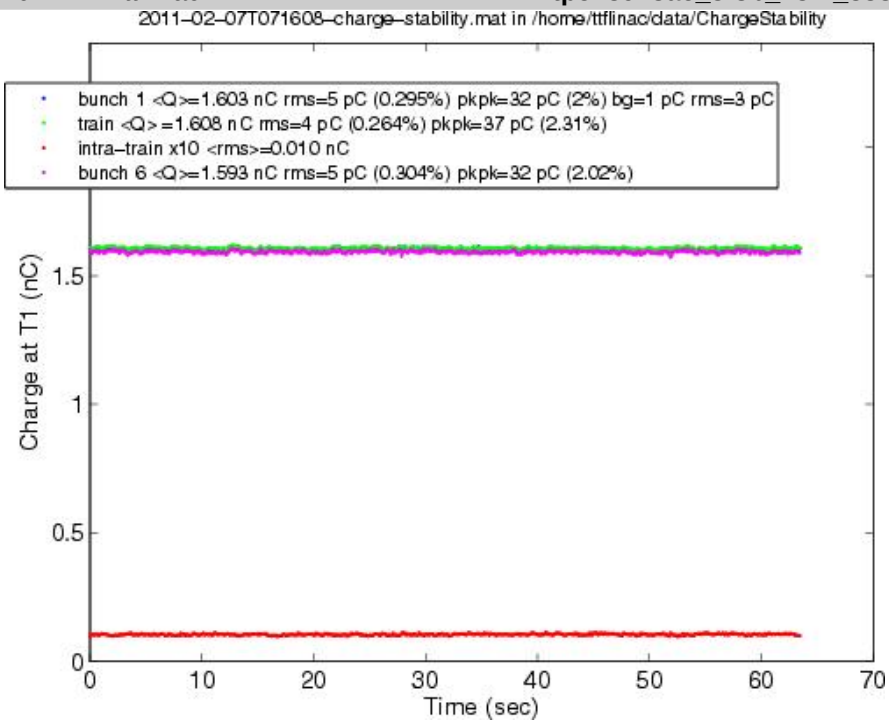
```
also in 'save and restore' files:
Magnets saved to: /home/ttflinac/save_restore/Magnets/autosaved/all_Magnets_20110207T071351.sr
uMovers saved to: /home/ttflinac/save_restore/Micromovers/autosaved/uMovers_20110207T071351.sr
from computer: flashbkr2
```

07.02.2011 07:17 ttflinac **tp258d9e34_cc01_40f3_865a_9fc88661ccc5.ps**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:17:31-00.ps

07.02.2011 07:17 ttflinac **tp528948ae_3f8b_43f1_8880_c40b5d23efdf.ps**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:17:37-00.ps

07.02.2011 07:19 ttflinac **SASE tuning parameters**

Misc. parameters

```
Energy / Wavelength: 998.80 MeV / 6.3 nm
Charge:              1.60 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	3.92	163.7	19.0	297.8	345.4	184.0
Phase	-10.20	+3.40	-4.20	-1.00	-8.90	-5.00
on-crest		-1.0		-3.0	-5.0	-0.0
Readback	6.2	3.4	-4.2	-1.0	-8.9	-5.1

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**

07.02.2011 07:20 ttflinac **SASE tuning parameters**

Misc. parameters

Energy / Wavelength:	998.74 MeV / 6.3 nm
Charge:	1.61 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	3.91	163.7	19.0	297.8	345.3	184.0
Phase	-10.20	+3.40	-4.20	-1.00	-8.90	-5.00
on-crest		-1.0		-3.0	-5.0	-0.0
Readback	6.5	3.4	-4.2	-1.1	-8.9	-5.2

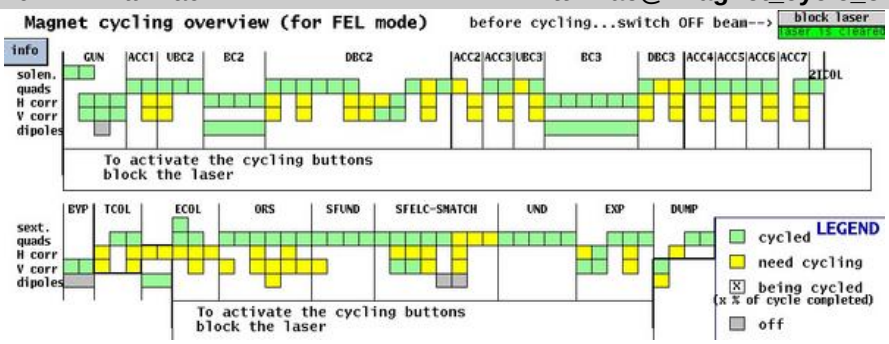
Undulator steerers and aircoils

H7SMATCH	H12SMATCH
+0.184	**-1.988**
V7SMATCH	V12SMATCH
-0.153	**-1.988**

Intra-undulator steerers

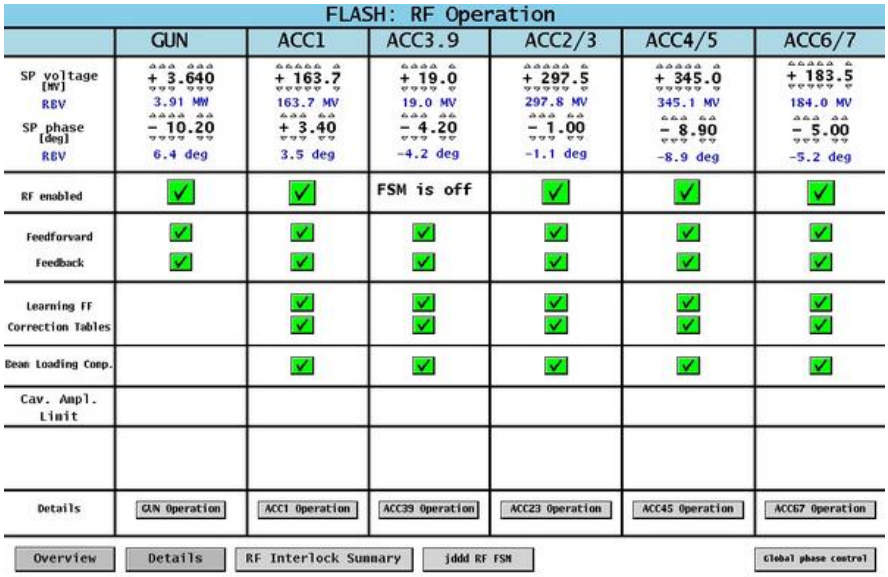
H3UND1	H3UND2	H3UND3	H3UND4	H3UND5	H3UND6
-4.90	**-4.30**	**-4.90**	**-4.70**	**-4.90**	**-5.00**

07.02.2011 07:21 ttflinac **ttflinac@:magnet_cycle_overview_fel**



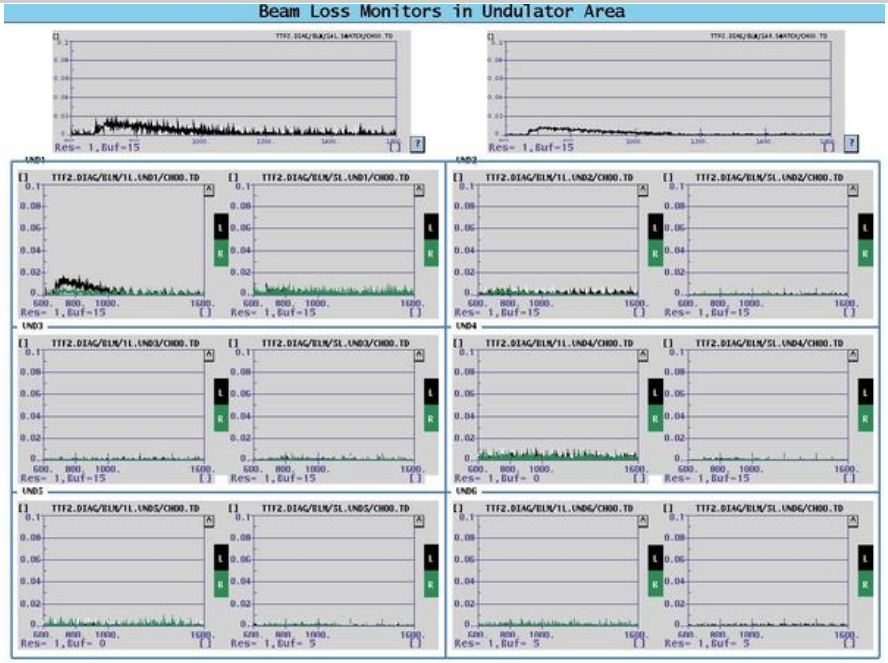
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:21:38-00.JPG

07.02.2011 07:22 ttflinac **ttflinac@:RF_OPERATION**



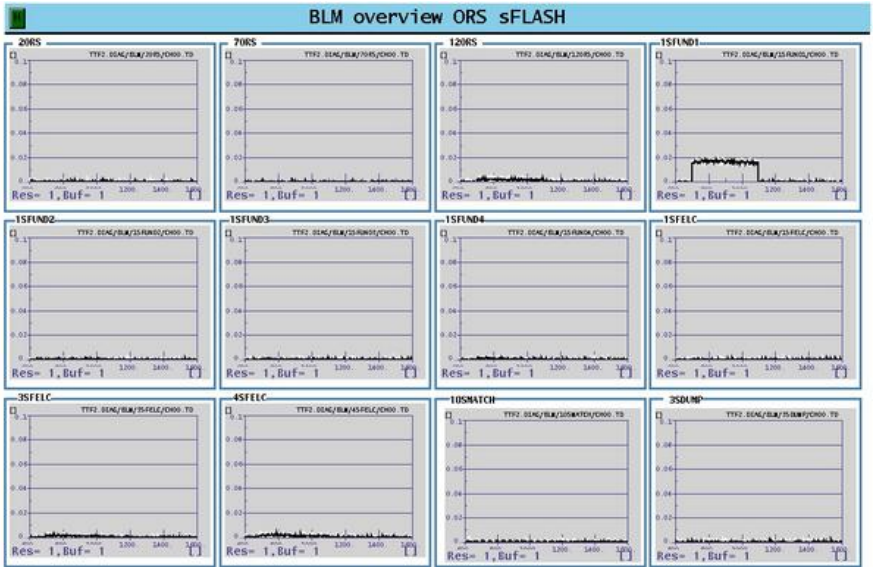
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:22:51-00.JPG

07.02.2011 07:23 ttflinac **ttflinac@:BLM_UNDULATORS**



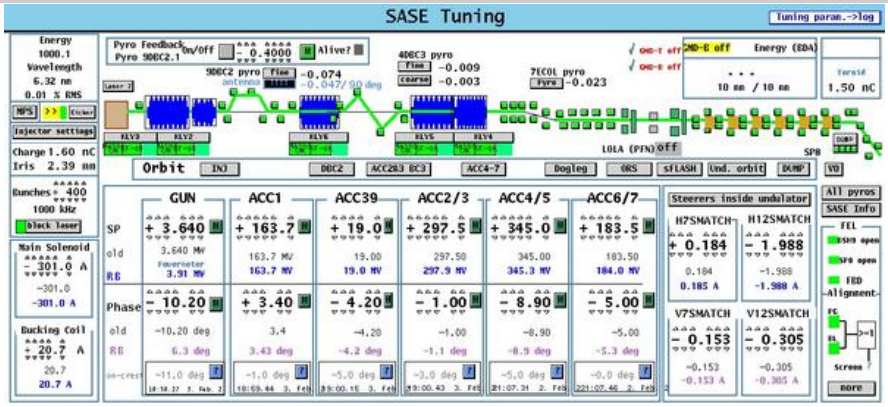
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:23:16-00.JPG

07.02.2011 07:23 ttflinac **ttflinac@:blm_overview_ORS**



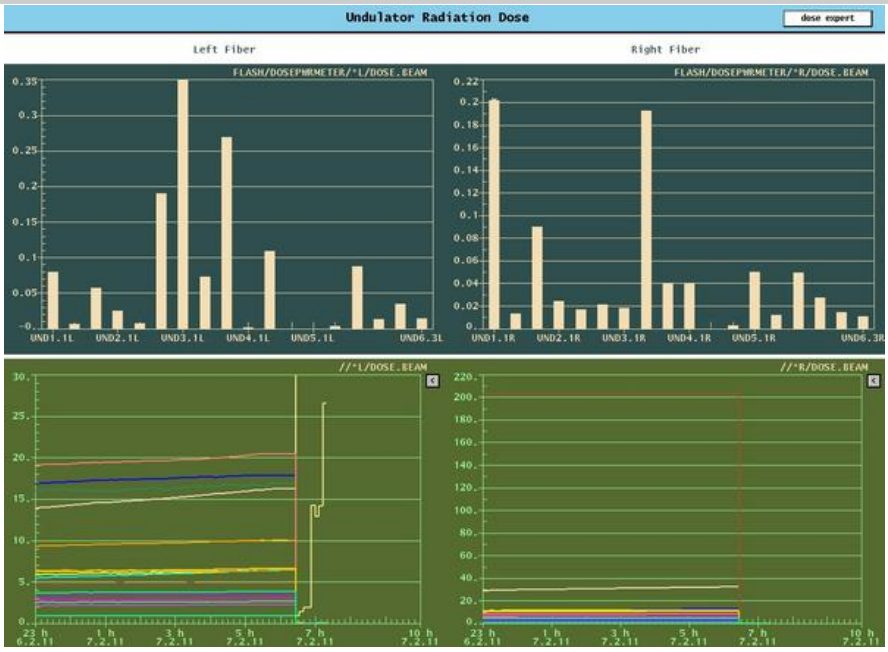
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:23:36-00.JPG

07.02.2011 07:24 ttflinac **ttflinac@:SASE_tuning**



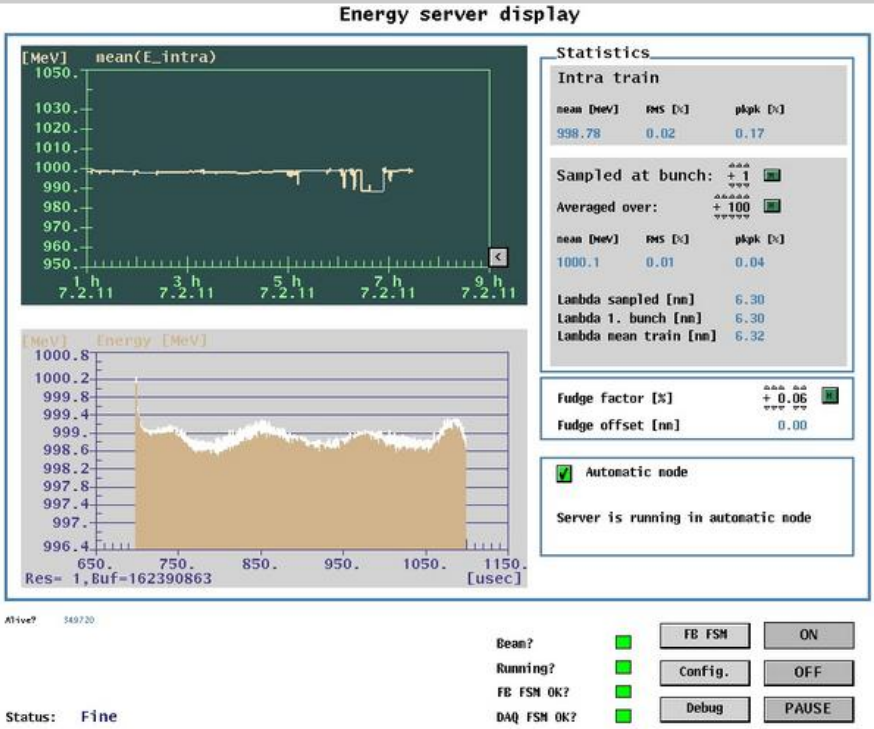
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:24:18-00.JPG

07.02.2011 07:25 ttflinac **ttflinac@:dose_und**



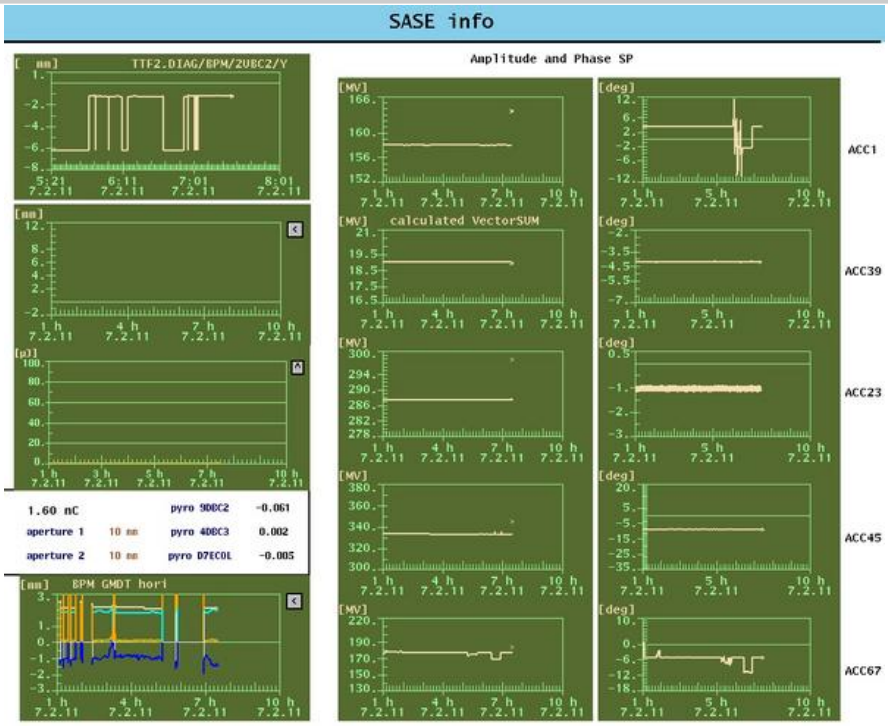
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:25:45-00.JPG

07.02.2011 07:27 ttflinac **ttflinac@:Energyfbm_display**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:27:26-00.JPG

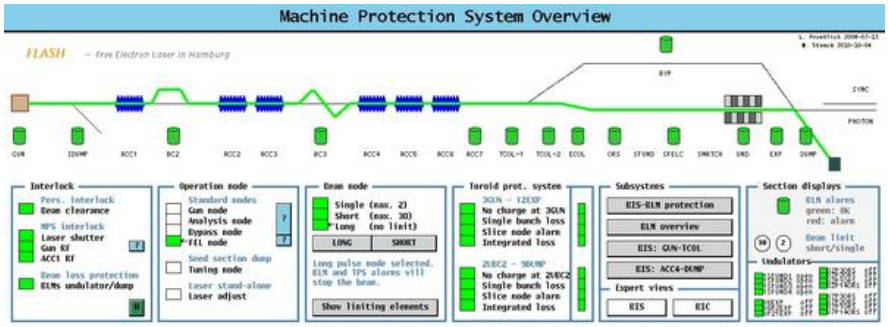
07.02.2011 07:29 ttflinac **ttflinac@:SASE_info**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:29:02-00.JPG

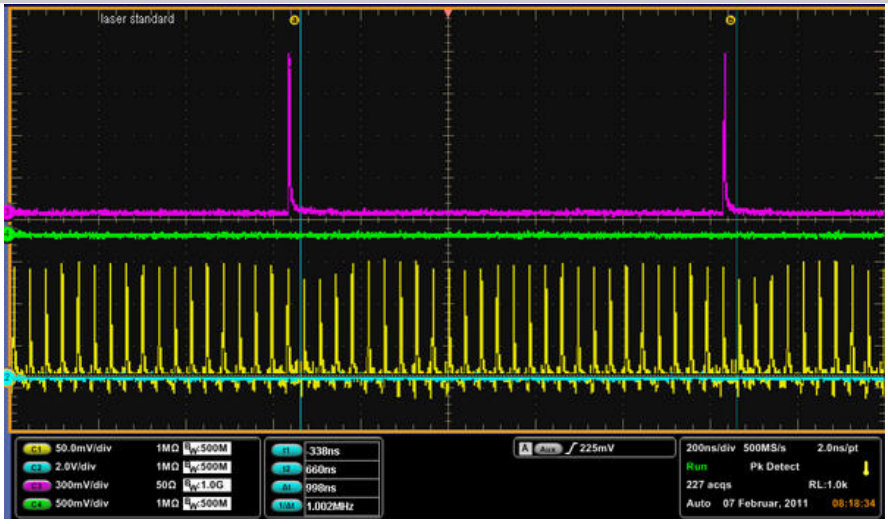
07.02.2011 07:30 ttflinac **ttflinac@:MPS_overview**

End shift documentation



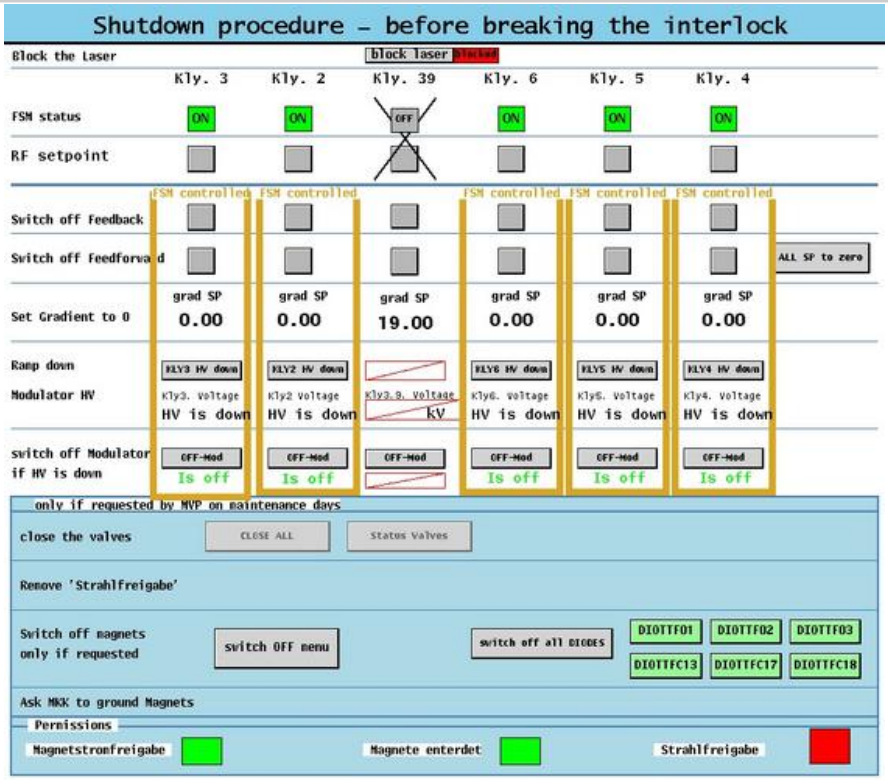
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T07:30:34-00.JPG

07.02.2011 08:18 S. Schreiber **laser 2**



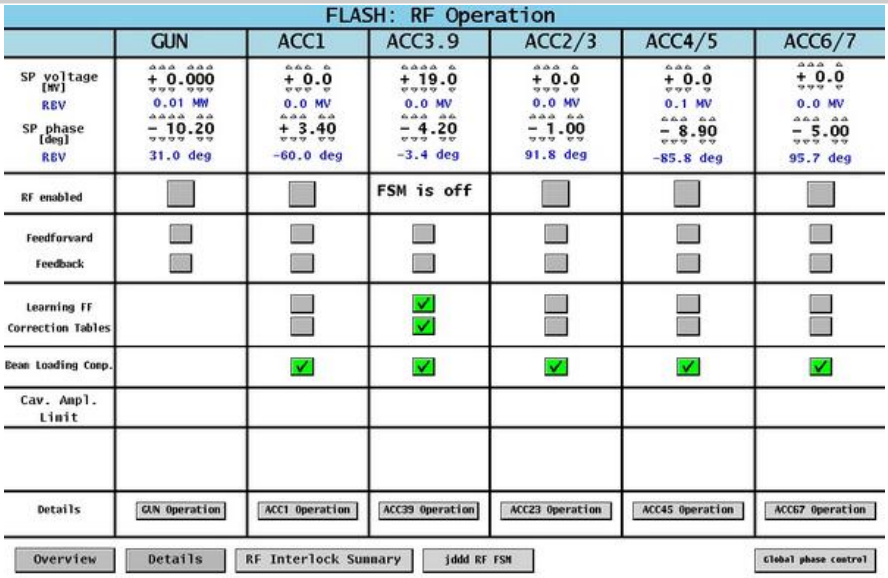
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:18:41-00.png

07.02.2011 08:18 ttflinac **ttflinac@:procedure_linac_shutdown-FSM**



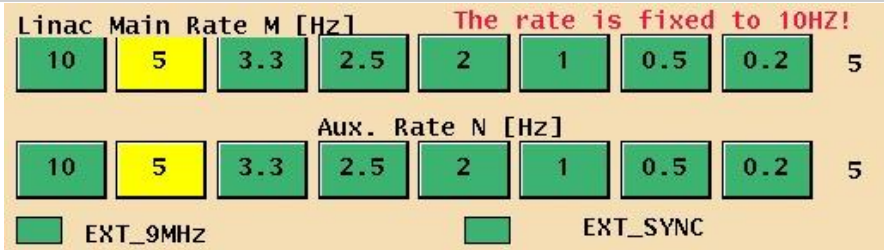
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:18:52-00.JPG

07.02.2011 08:19 ttflinac **ttflinac@:RF_OPERATION**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:19:01-00.JPG

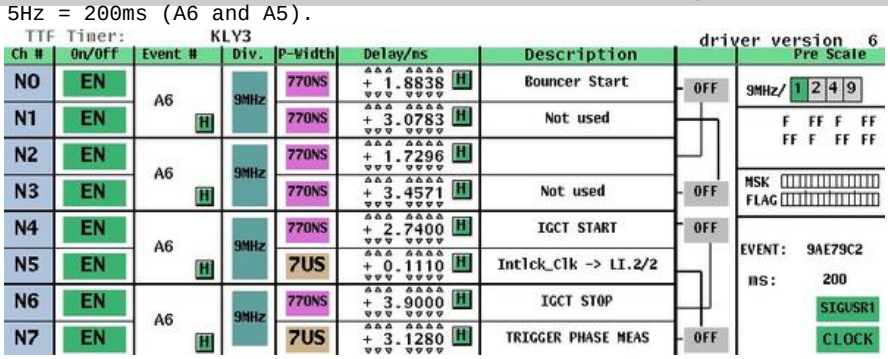
07.02.2011 08:33 doocsadm **doocsadm@:iprep_win**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:33:39-00.JPG

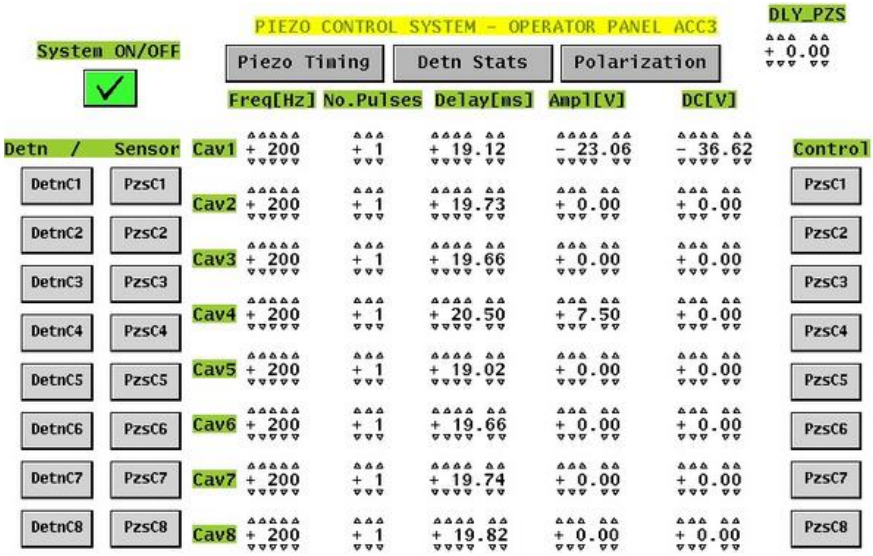
07.02.2011 08:34 doocsadm **doocsadm@:IPTIMER**

Linac runs with 5Hz = 200ms (A6 and A5).



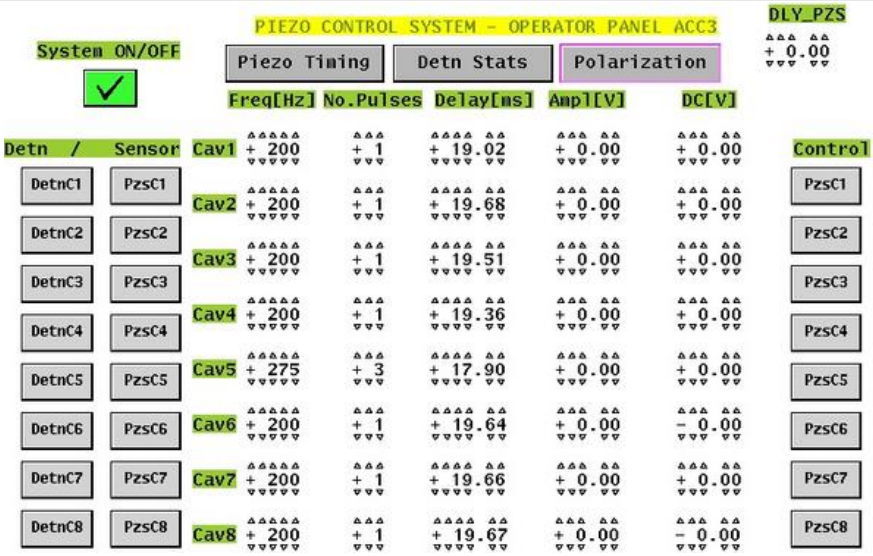
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:34:03-00.JPG

07.02.2011 08:43 ttflinac **ttflinac@ttfsun3:piezo_ctl_acc**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:43:08-00.JPG

07.02.2011 08:43 ttflinac **ttflinac@ttfsun3:piezo_ctl_acc**

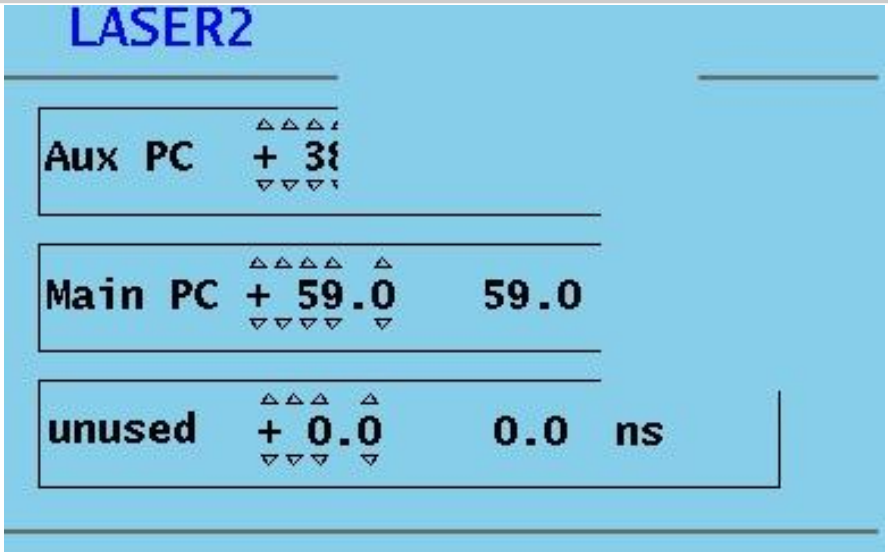


File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:43:20-00.JPG

07.02.2011 08:54 ttflinac **699-1**

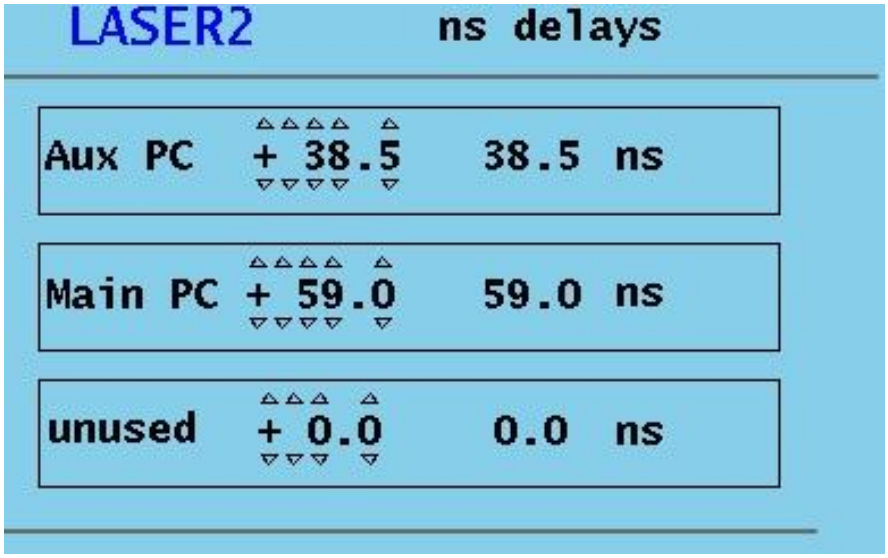
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:54:35-00.JPG

07.02.2011 08:55 ttflinac **706-1**



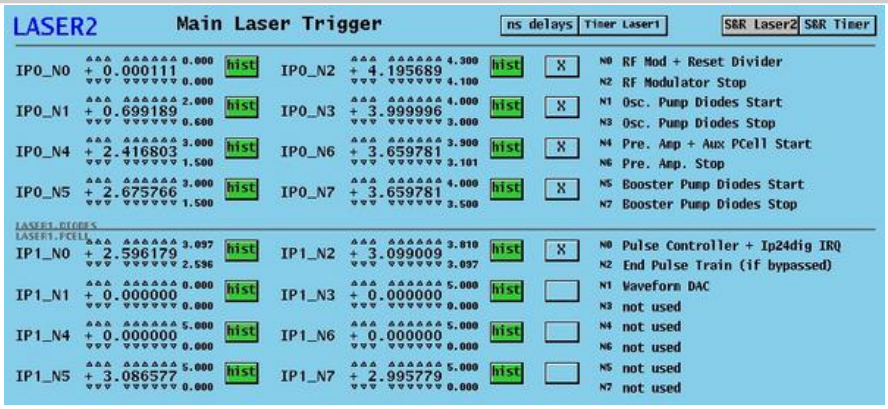
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:55:39-00.JPG

07.02.2011 08:55 ttflinac **707-1**



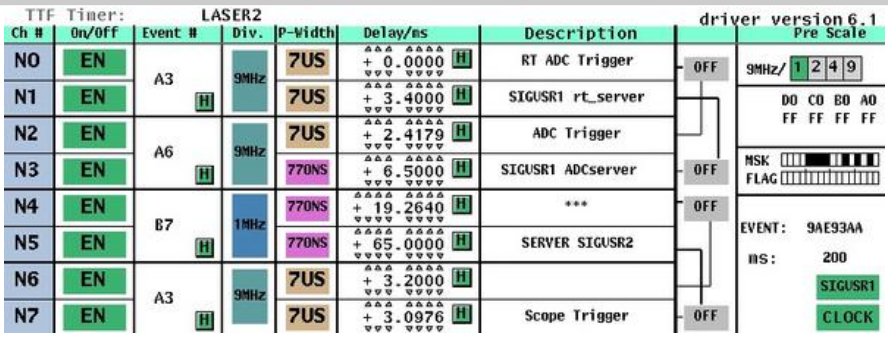
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:55:46-00.JPG

07.02.2011 08:55 ttflinac **708-1**



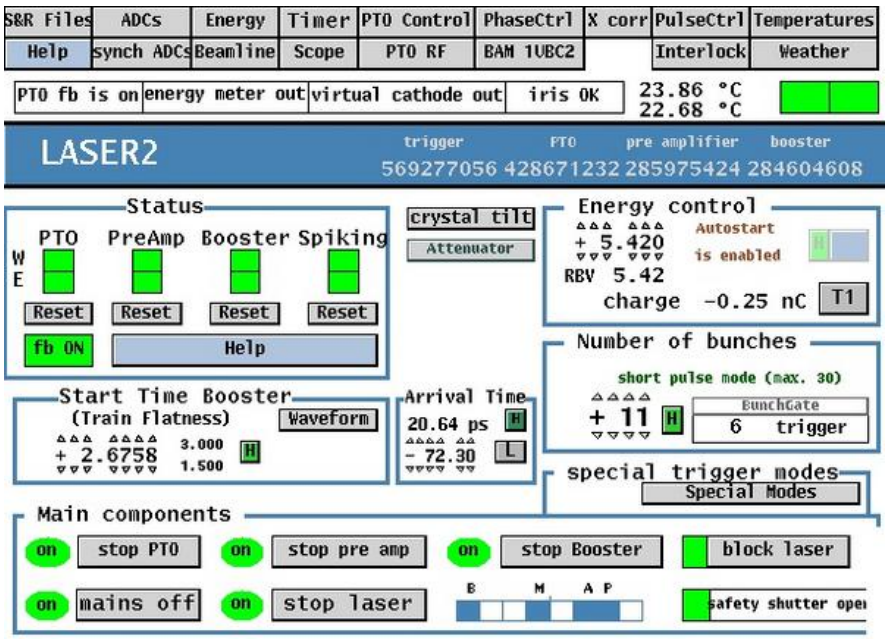
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:55:52-00.JPG

07.02.2011 08:56 ttflinac **709-1**



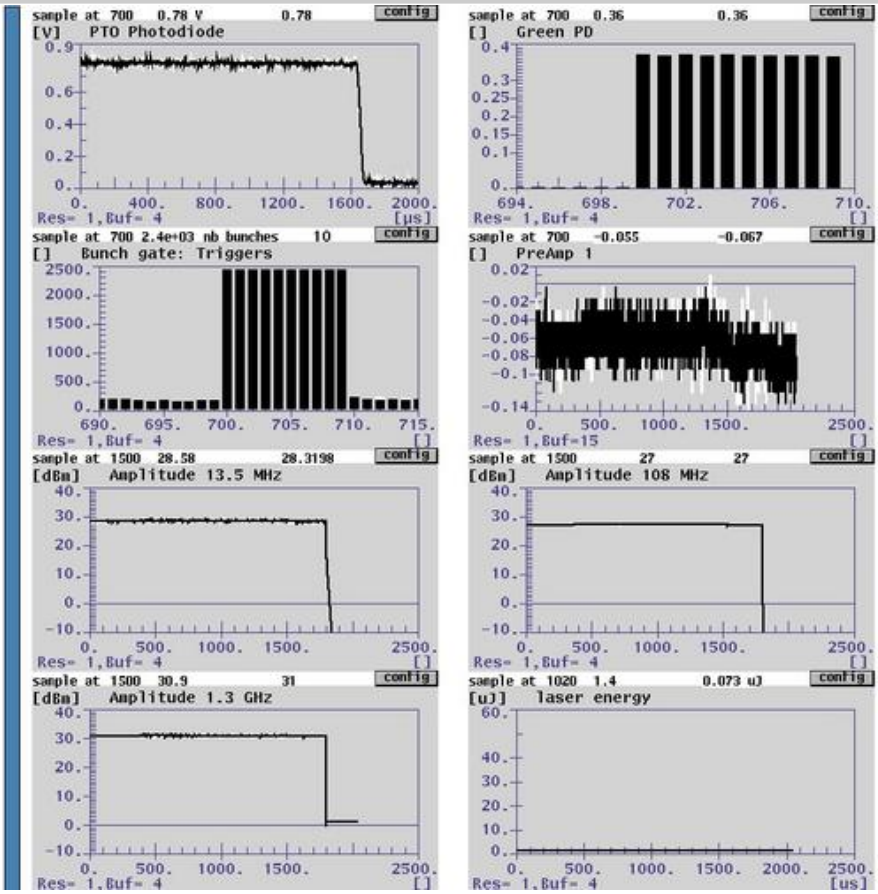
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:56:07-00.JPG

07.02.2011 08:56 ttflinac **710-1**



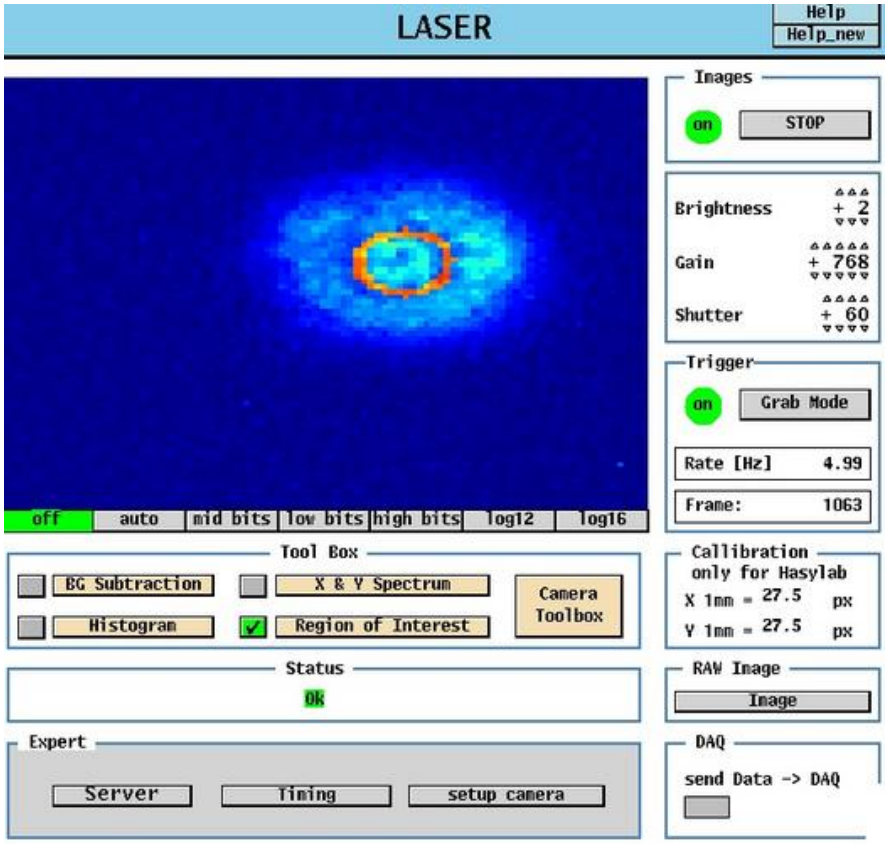
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T08:56:24-00.JPG

07.02.2011 09:07 ttflinac **237-1**



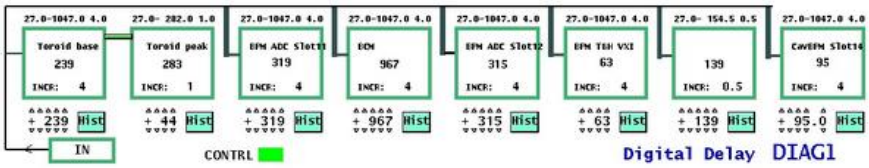
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T09:07:48-00.JPG

07.02.2011 09:12 ttflinac **365-1**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T09:12:16-00.JPG

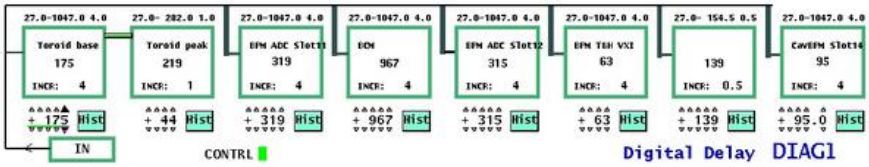
07.02.2011 09:17 ttflinac **702-1**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T09:17:54-00.JPG

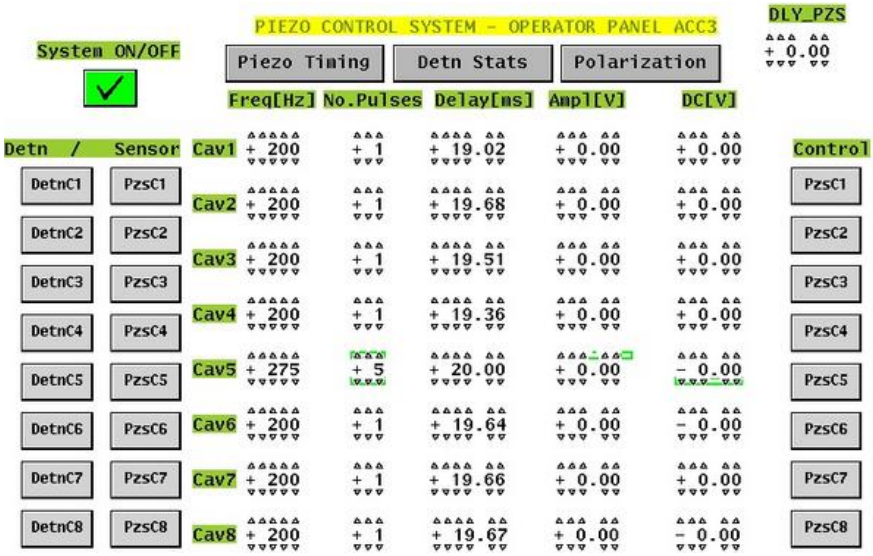
07.02.2011 09:19 S. Schreiber **toroid timing**

```
in order to see beam with the toroids,
the timing required a change from 239 to 175 ns
dt=64 ns
with the laser Pockels cells I can only jump in steps of 36 ns:
one jump -> 215 ns dt = 24 ns
next jump brings us to 251 ns -> dt = -12 ns
-> we need to touch phases
after fixing the clock duty cycle of the laser timer, we have an additional 38 ns, which is one
 27 MHz cyle
we now are at 215 ns for the toroids with initial Pockels cell timing dt = 24 ns
one jump gives now 251 ns
```



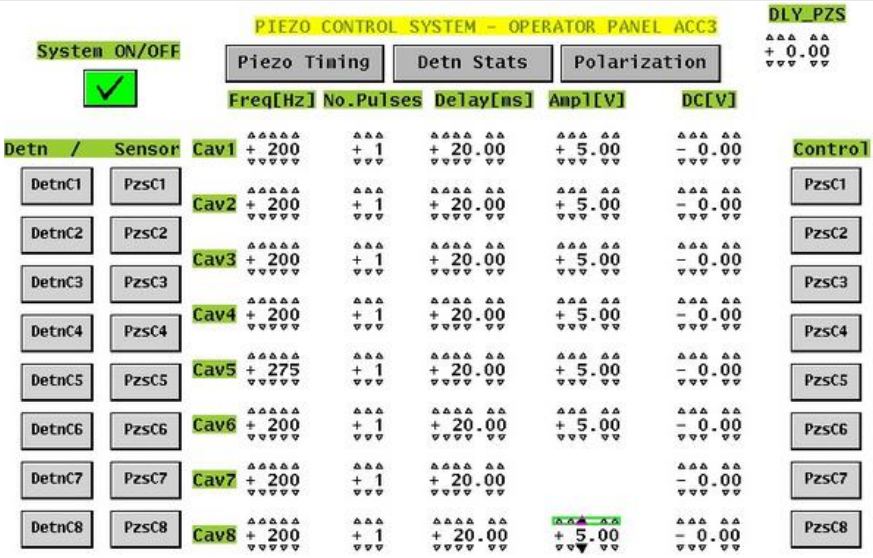
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T09:19:42-00.JPG

07.02.2011 10:50 doocsadm **doocsadm@flashbkr5:piezo_ctl_acc**



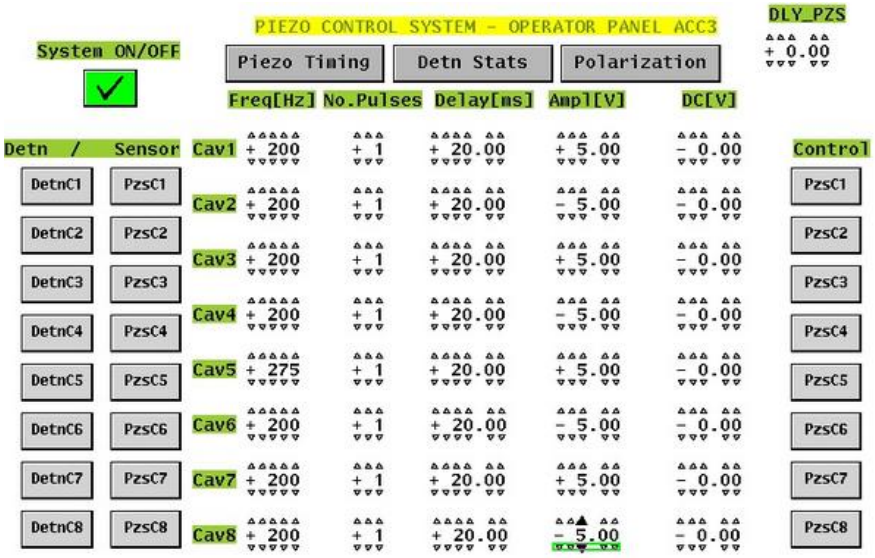
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T10:50:06-00.JPG

07.02.2011 10:52 doocsadm **doocsadm@flashbkr5:piezo_ctl_acc**



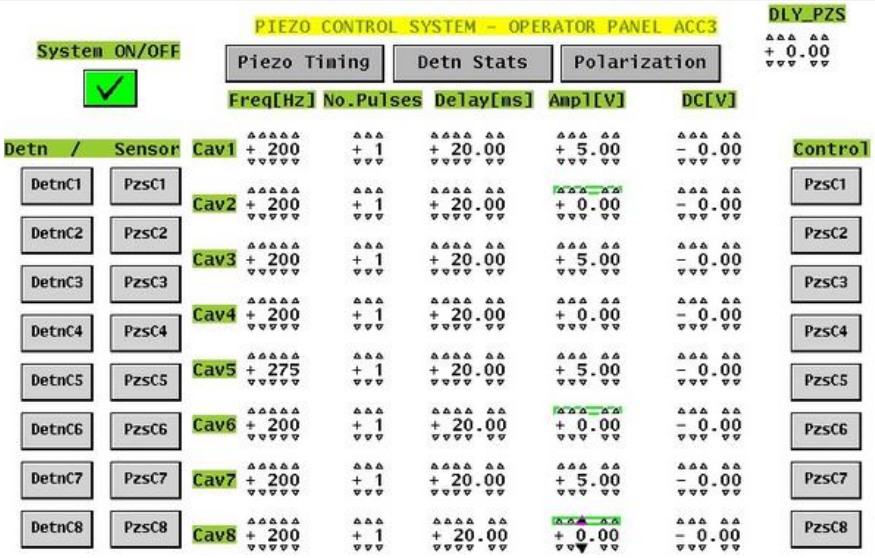
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T10:52:08-00.JPG

07.02.2011 10:52 doocsadm **doocsadm@flashbkr5:piezo_ctl_acc**



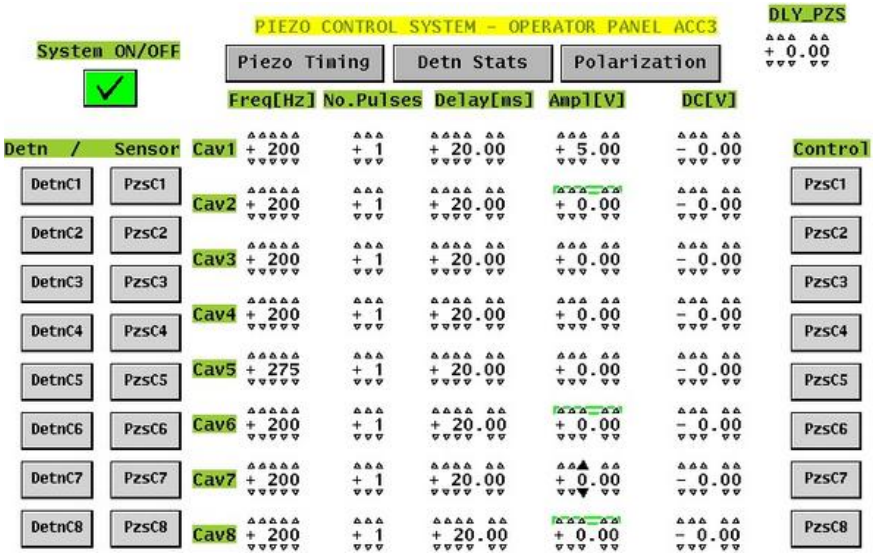
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T10:52:34-00.JPG

07.02.2011 10:52 doocsadm **doocsadm@flashbkr5:piezo_ctl_acc**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T10:52:51-00.JPG

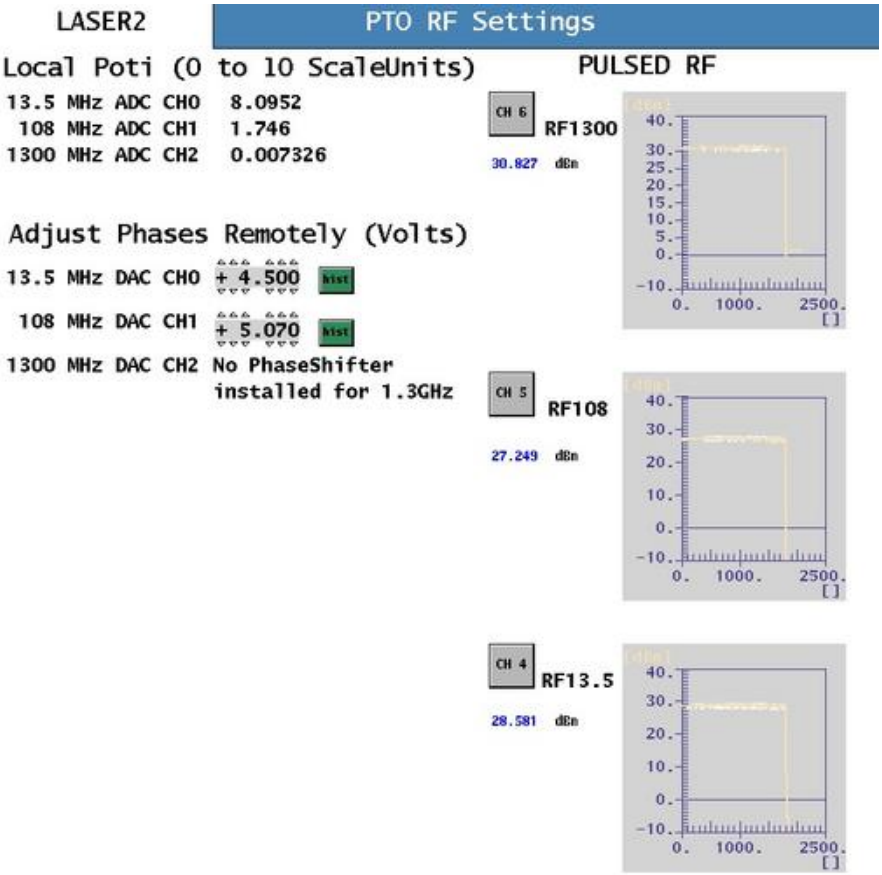
07.02.2011 10:53 doocsadm **doocsadm@flashbkr5:piezo_ctl_acc**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T10:53:28-00.JPG

07.02.2011 10:56 S. Schreiber **laser timing**

```
Poties 108 MHz 1.8
       1.3 GHz 0.0
       13.5 MHZ 8.3
we moved the laser pulses using the 13.5 MHz to the old timing (so that the toroid delay is again
 239 ns)
new Poties
1.3 GHz = 0
13.5 MHz = 3.2
108 MHz = 1.8
now the laser is within some ns correct
-> need to check phases now
rf gun:
38 dg off zero crossing = -7 dg
the SASE tuning panels says -11 dg from 3.2.
-> that's OK
```

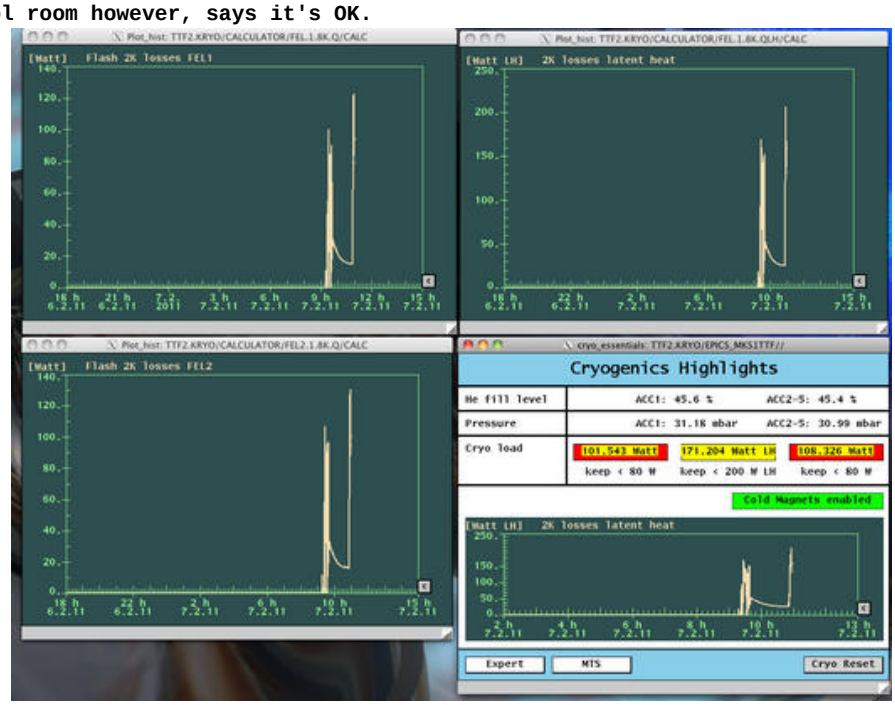


File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T10:56:51-00.JPG

⚠ 07.02.2011 10:59 **weird readings from the cryo losses**

- Why are the losses zero before 09:00 ???
- Why do they go through the roof shortly after that, then recover and now explode again ???

The cryo control room however, says it's OK.

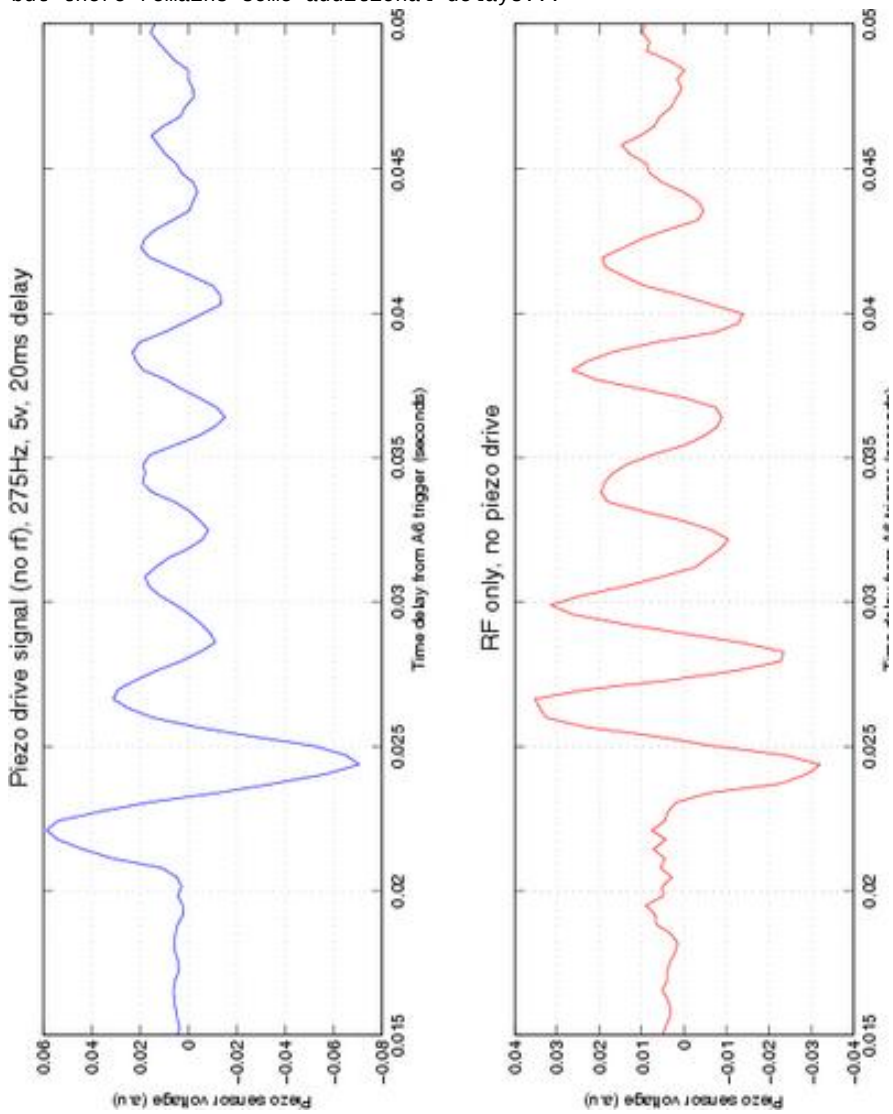


File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T10:59:25-00.png

07.02.2011 11:40 Carwardine **Comparison of piezo sensor response to**

rf pulse and piezo drive (C5 ACC7)

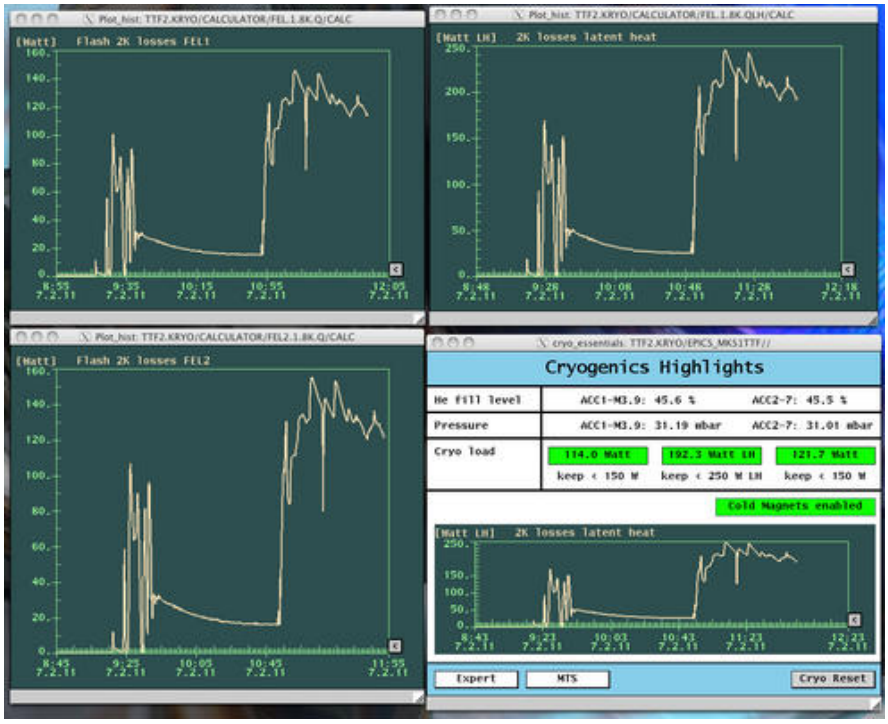
Top trace: no rf, piezo drive on with 275Hz drive, one pulse, +5v
Piezo driver was set up for a 20ms delay wrt A6 (should be the start of the rf timing window - 700us before first bunch)
Bottom trace: rf only with vector sum setpoint for rf pulse was 183MV
According to this trace, the piezo drive signal is seen on the sense signal with no delay, but the response from the rf pulse comes later. About 0.5ms can be explained by the fill-time trigger delay, but there remains some additional delays...



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T11:40:55-00.ps

07.02.2011 11:53

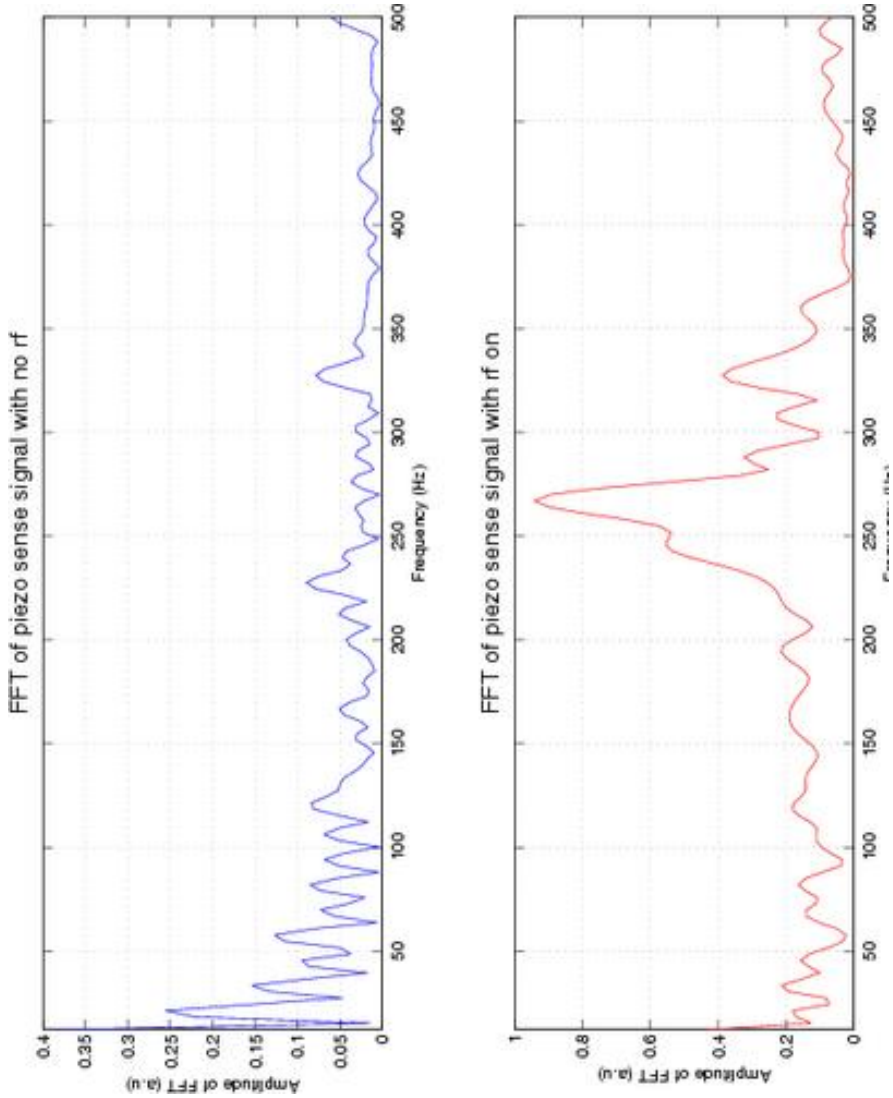
Cryo team said, the values are fine.



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T11:53:27-00.png

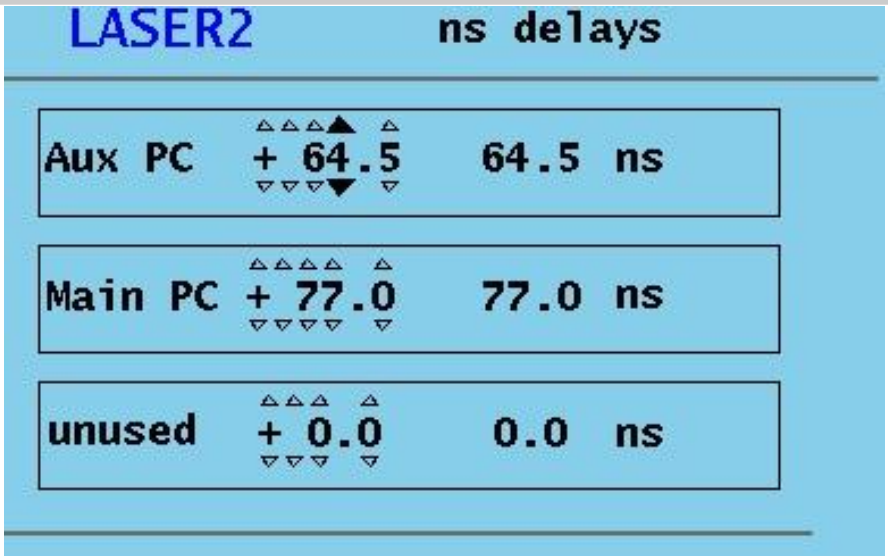
07.02.2011 11:54 Carwardine **FFT of piezo sensor signals on C5.ACC7**

```
Top trace, bottom trace: rf on
```



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T11:54:16-00.ps

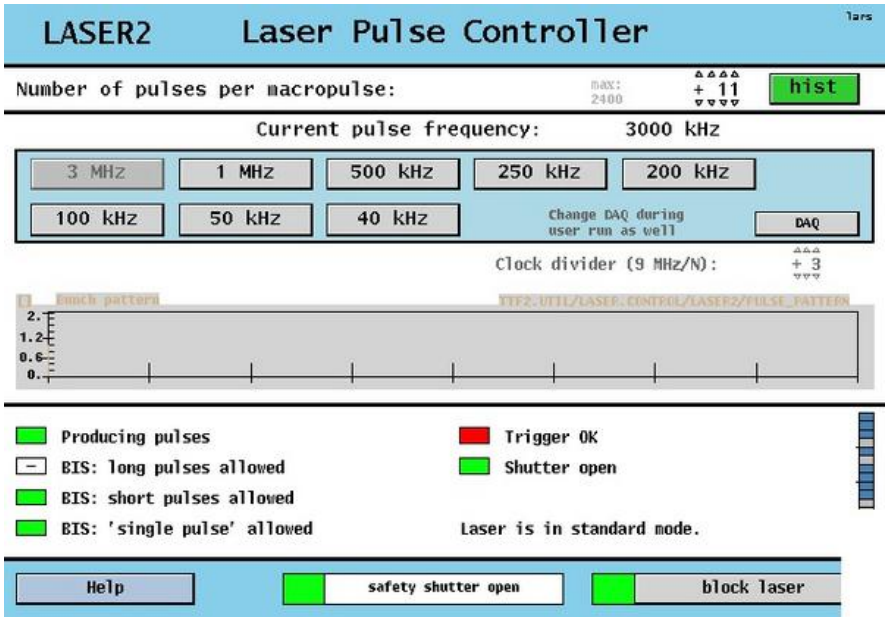
07.02.2011	11:54	ttflinac	**340-1**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T11:54:46-00.JPG

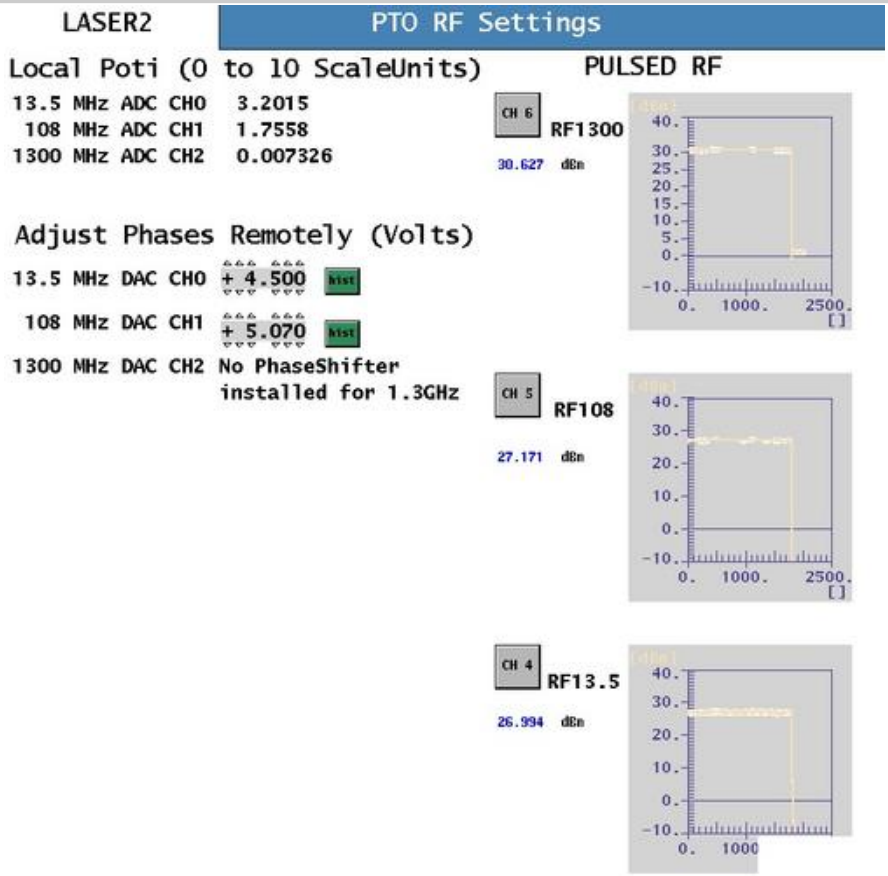
07.02.2011 12:18 S. Schreiber **laser2 at 3 MHz**

```
laser 2 is now running at 3 MHz
bunch 1 is at ADC 700, as it should be
```



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T12:18:11-00.JPG

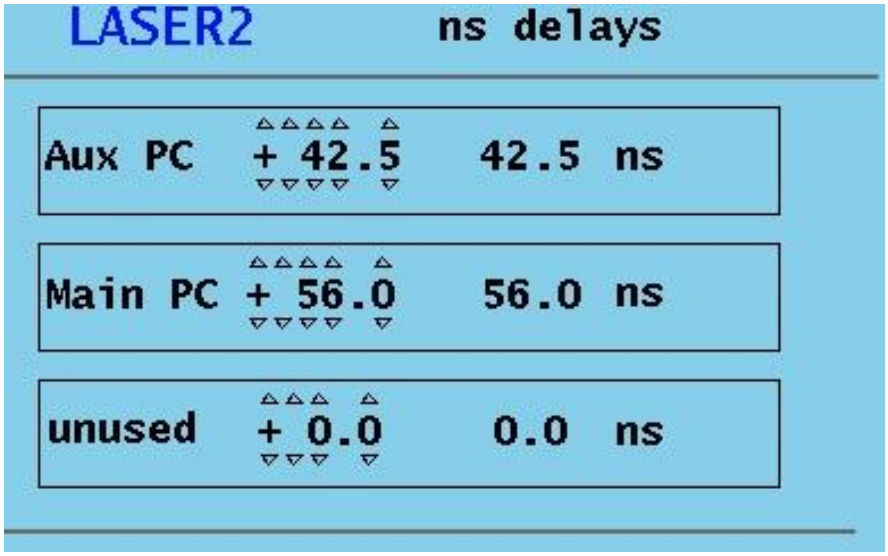
07.02.2011 12:53 ttflinac **257-1**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T12:53:03-00.JPG

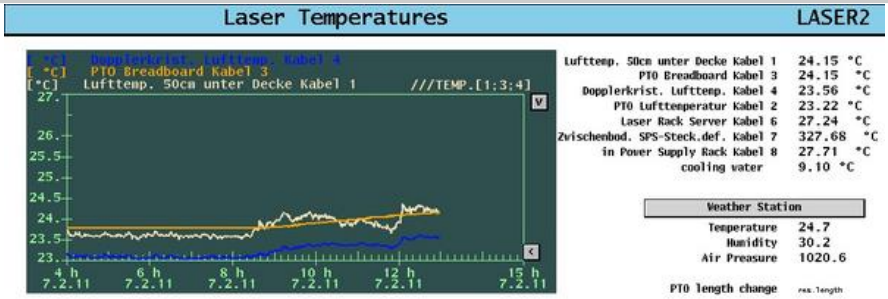
07.02.2011 12:55 S. Schreiber, M. Goerler **laser ns delay Pockels cells**

```
the 5 Hz protection box is installed, the ns delays of the Pockels cells adjusted
```



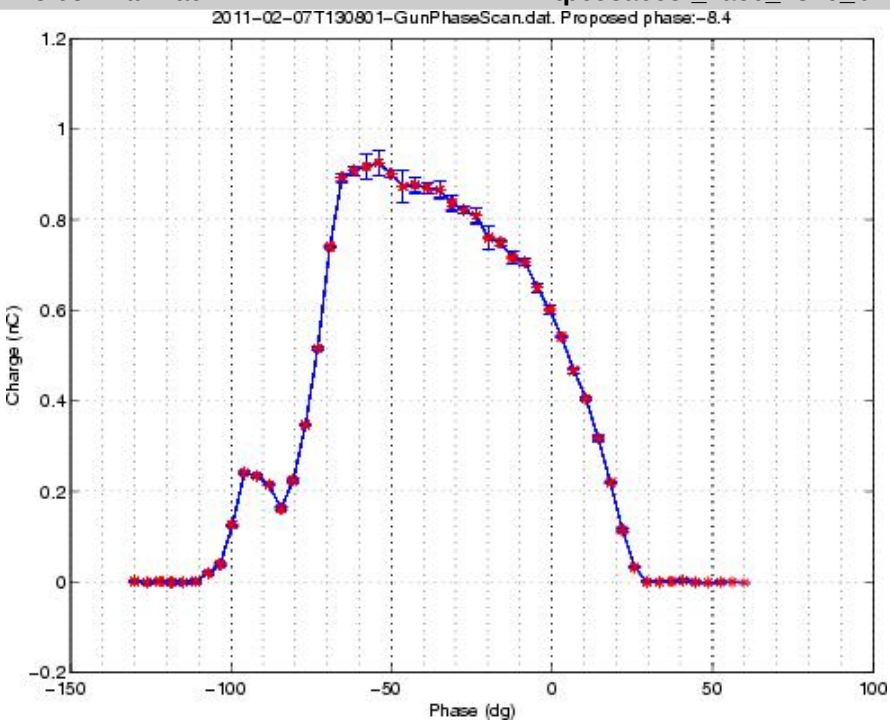
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T12:55:33-00.JPG

07.02.2011 12:56 doocsadm **doocsadm@:laser_temperatures**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T12:56:58-00.JPG

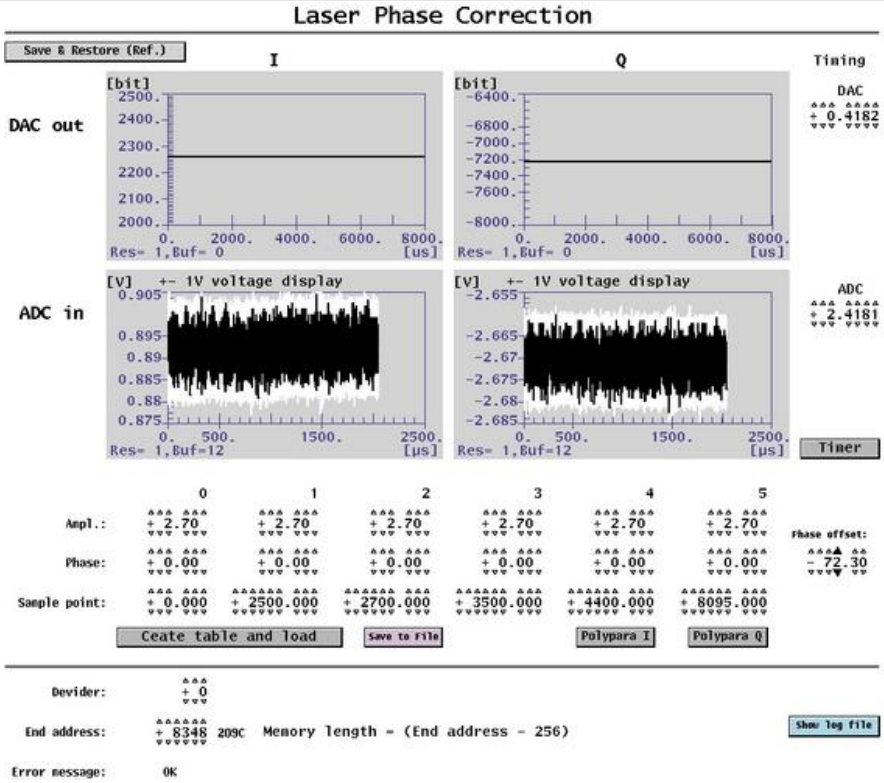
07.02.2011 13:08 ttflinac **tp693a6e5f_4ae0_4810_b431_3ae1a021635d.ps**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T13:08:14-00.ps

07.02.2011 13:08 **after gun phase scan, the phase was set to -8.4 deg.**

07.02.2011 13:12 ttflinac **ttflinac@:laser_phase_contr**



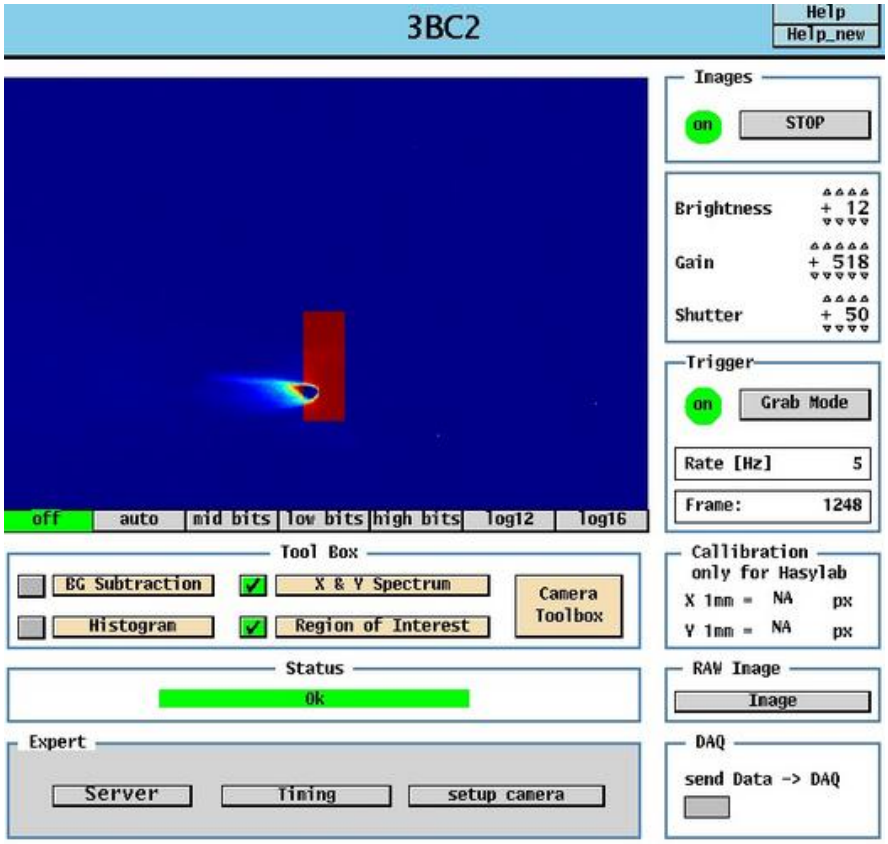
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T13:12:47-00.JPG

07.02.2011 13:16

```
laser phase was shifted by +3 deg.
```

07.02.2011 13:25 ttflinac **ttflinac@:camera_server_bc2_new**

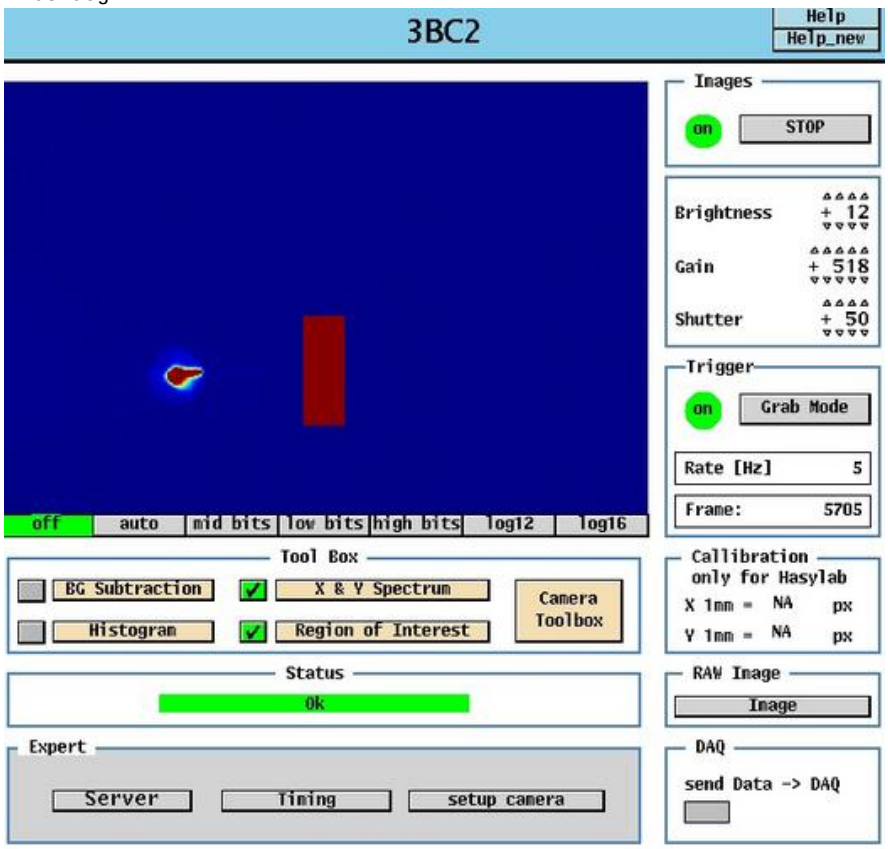
```
ACC1 = 146 MV, -3.6 deg
ACC39 = 0 MV
```



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T13:25:53-00.JPG

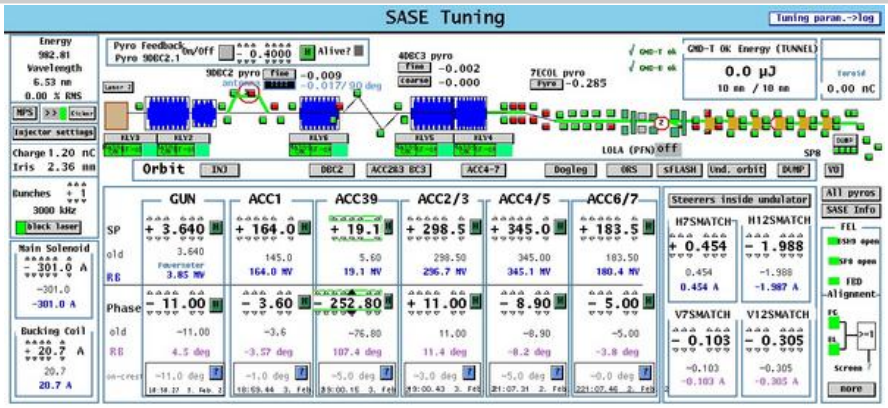
07.02.2011 13:40 ttflinac **ttflinac@:camera_server_bc2_new**

```
ACC1 = 164 MV, -3.6 deg
ACC39 = 19.1 MV, 108 deg
```



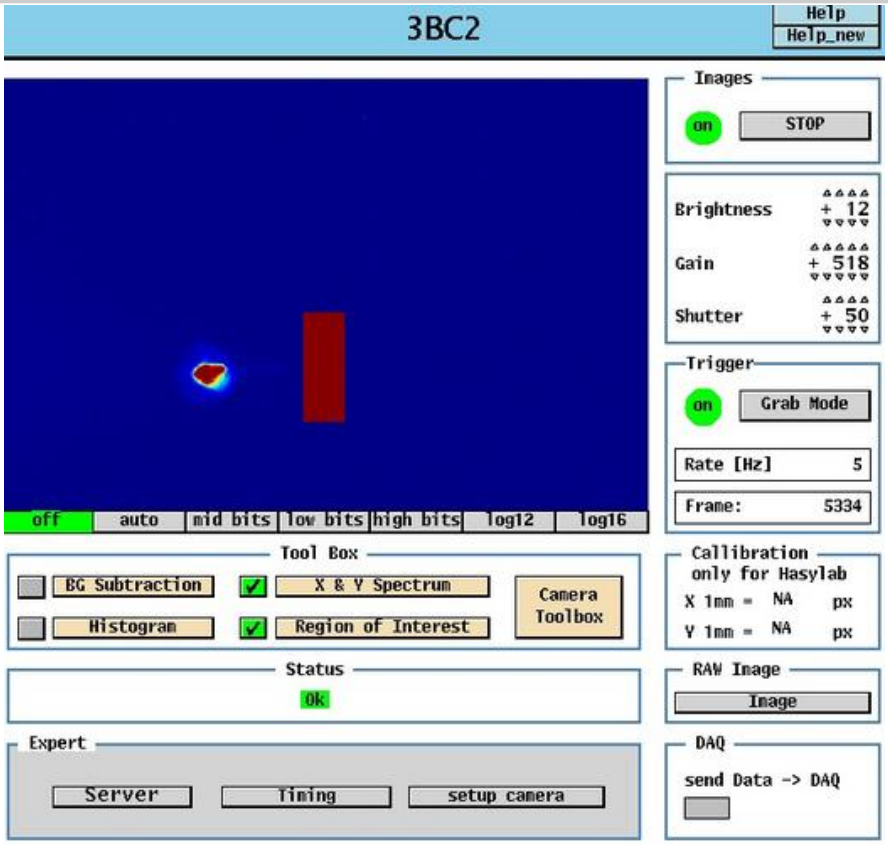
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T13:40:44-00.JPG

07.02.2011 13:40 ttflinac **ttflinac@:SASE_tuning**



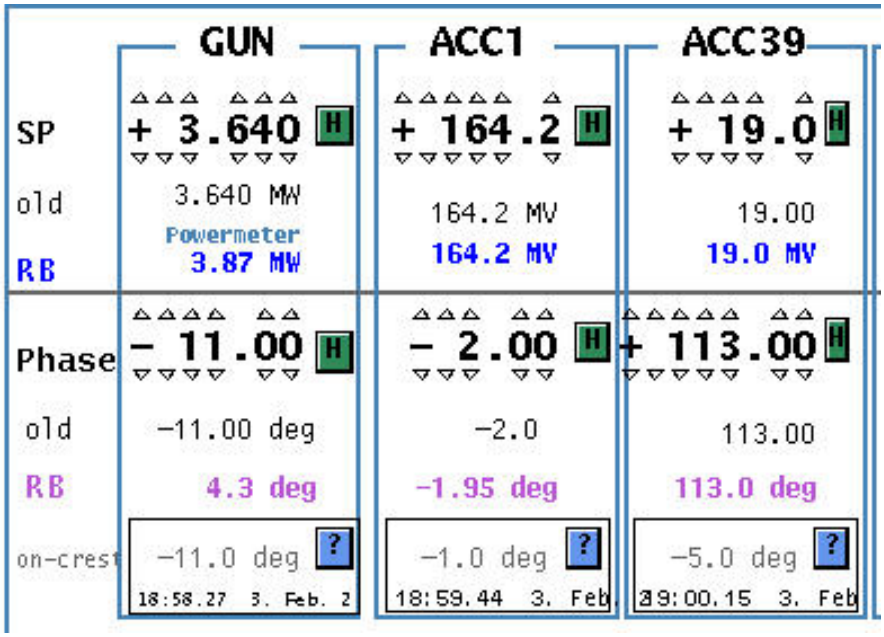
File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T13:40:53-00.JPG

07.02.2011 14:01 ttflinac **ttflinac@:camera_server_bc2_new**



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T14:01:42-00.JPG

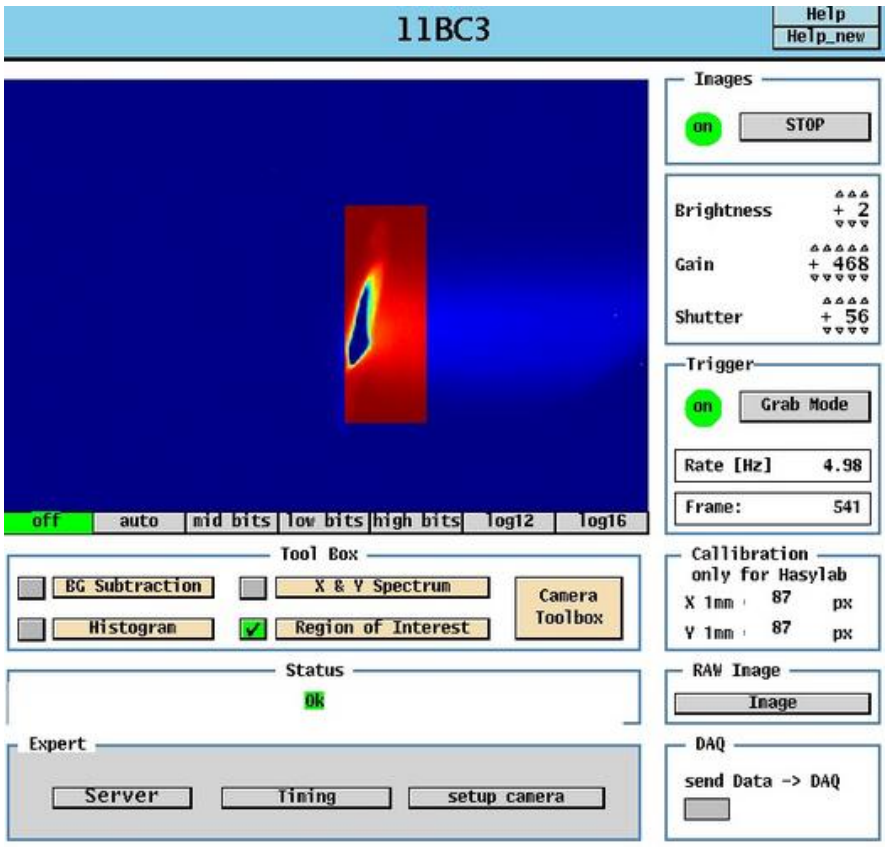
07.02.2011 14:02 ttflinac



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T14:02:50-00.png

07.02.2011 14:22 ttflinac **ttflinac@:camera_server_bc2_new**

```
ACC2/3 = -5 deg
```



File: http://ttfinfo.desy.de/TTFelog/data/2011/06/07.02_M/2011-02-07T14:22:45-00.JPG