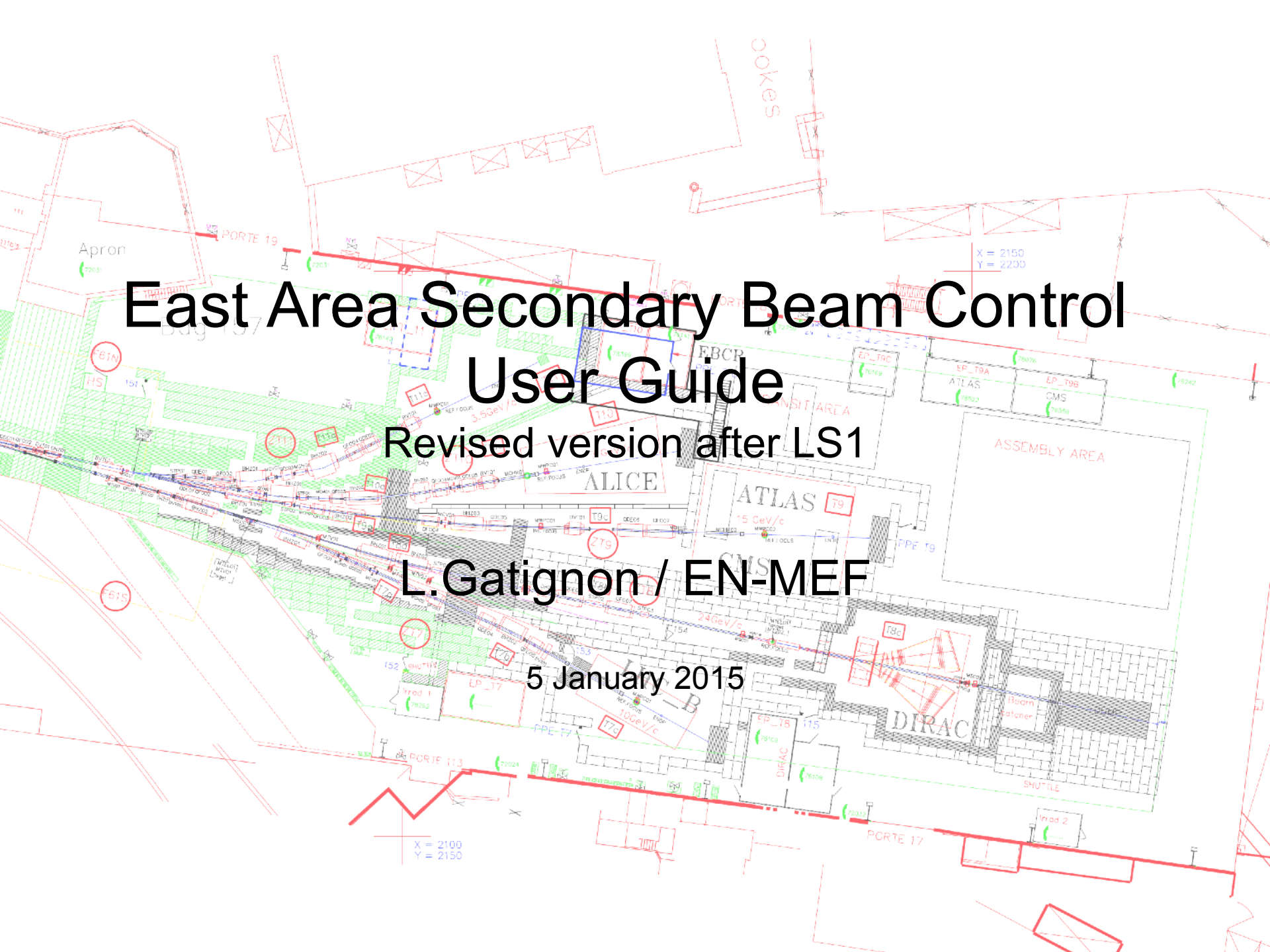


East Area Secondary Beam Control User Guide

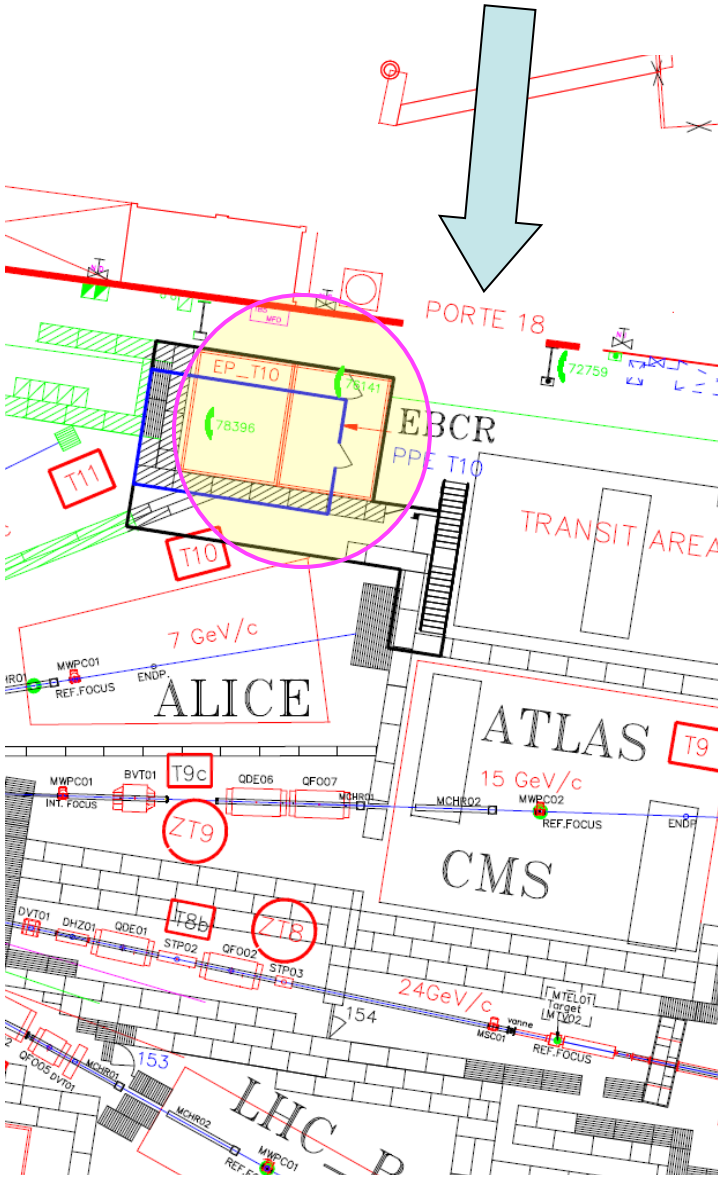
Revised version after LS1

L.Gatignon / EN-MEF

5 January 2015

From where

- The East Area secondary beam lines are controlled from the EBCR. This room is located on the first floor, above the T10 control room, downstream of the T11 area.
  You can access this room easily from the big gate (Porte 18) on the Bldg 251/252 side.
- Many beam elements can be controlled from the user control rooms.

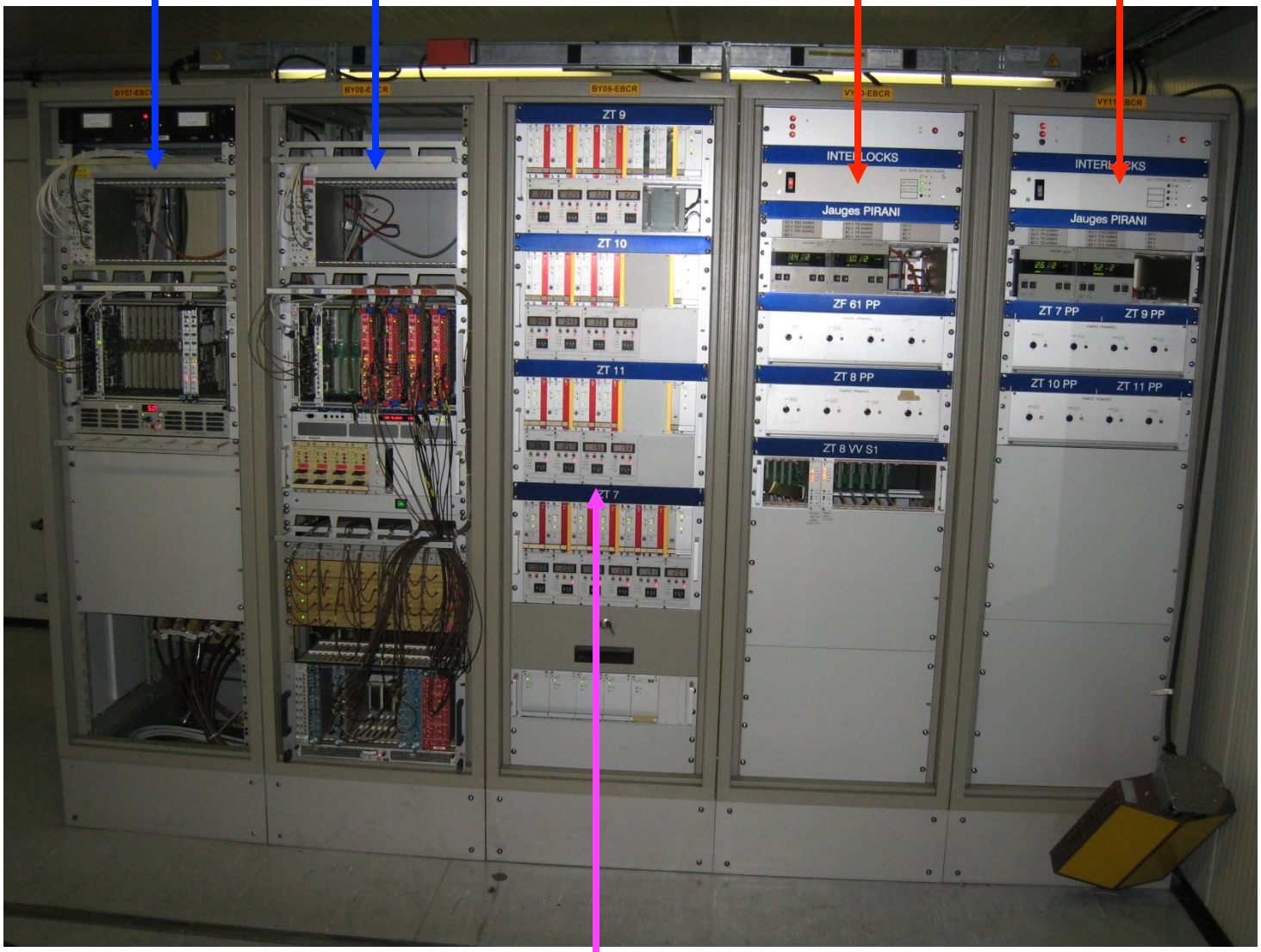


Tools for Beam Control

- There is a PC for magnet control (both beam and spectrometer magnets) and detector readout

- A series of racks allows to control collimators, vacuum, access signals from the barracks and get timing signals

For experts:



For users:

TIMING AND OTHER SIGNALS

Two more racks provide timing signals and connections with the user barracks

Communication with user barracks

Communication with APRON (primary beam electronics and RP barrack)

Timing distribution

Magnet and detector control

Beam control PC (user: eaop
passwd: . . . . .)

Folder with reference settings and general info

Magnets and detectors are controlled and read from the Linux PC in the EBCR or from the beam computers in the user control rooms

- Magnets and detectors are controlled from the CESAR beam control program.
- The use of Cesar is described in the Control Summary Sheets (quick User Guide: http://sba.web.cern.ch/sba/Documentations/docs/Controls-Summary-Sheet.pdf
  also available as plastified sheets in the EBCR.

Magnets: Which current?

Lists of currents for each energy are available in the green folder.

Whenever you change energy, all currents must be modified using the knobs.

Normally the sign of the current corresponds to the sign of the beam particles

(except possibly for ZT9.QFO03 – ask your liaison physicist)

Please check carefully that you are changing the right rectifier in the right beam!

(*In each knob the name of the magnet contains the name of its beam line, e.g. ZT9.BHZ1)*

Lau Gatignon, 27-02-2006

Currents for T9 test beam optics

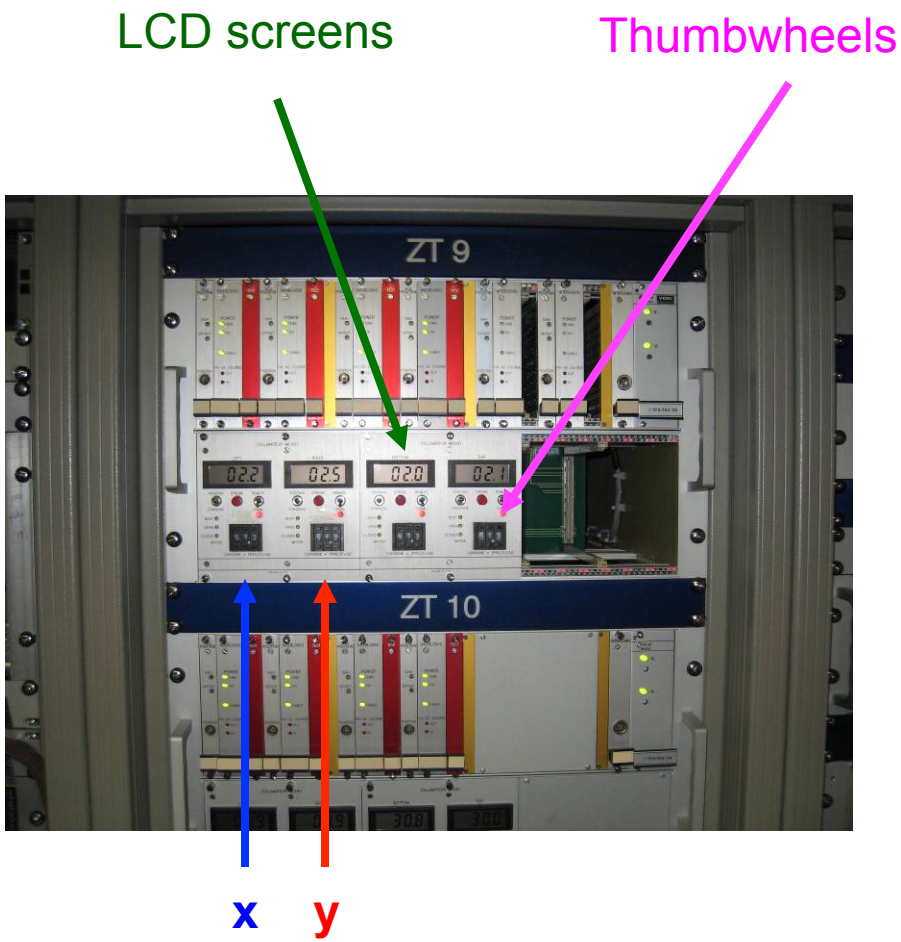
Momentum	QDE1	QFO2	BHZ1	QFO3	BHZ2	QFO4	BHZ3	QDE5	BVT1	QDE6	QFO7
0.50	20.3329	19.8743	44.6390	14.5070	12.2724	7.6799	12.2724	13.2079	17.9140	19.7352	19.0499
1.00	40.6645	38.0741	89.2780	29.0140	24.5449	15.3598	24.5449	26.4158	35.8326	39.4738	38.1029
1.50	60.9943	55.2230	133.9169	43.5210	36.8173	23.0396	36.8173	39.6237	53.7573	59.2194	57.1622
2.00	81.3214	72.0033	178.5644	58.0280	49.0898	30.7195	49.0898	52.8317	71.6923	78.9759	76.2312
2.50	101.6450	88.7659	223.2114	72.5350	61.3622	38.3994	61.3622	66.0396	89.6410	98.7473	95.3136
3.00	121.9645	105.7098	267.8624	87.0420	73.6347	46.0793	73.6347	79.2475	107.6067	118.5385	114.4133
3.50	142.2793	122.9414	312.5182	101.5490	85.9071	53.7591	85.9071	92.4554	125.5929	138.3544	133.5356
4.00	162.5892	140.4961	357.1794	116.0559	98.1796	61.4390	98.1796	105.6633	143.6030	158.2011	152.6848
4.50	182.8944	158.3518	401.8471	130.5629	110.4520	69.1189	110.4520	118.8712	161.6405	178.0854	171.8672
5.00	203.1952	176.4420	446.5219	145.0699	122.7244	76.7988	122.7244	132.0791	179.7090	198.0152	191.0896
6.00	243.7878	212.9473	535.8959	174.0839	147.2693	92.1585	147.2693	158.4949	215.9616	238.0487	229.6864
7.00	284.3798	249.2946	625.3080	203.0979	171.8142	107.5183	171.8142	184.9108	252.3817	278.3930	268.5529
8.00	324.9971	285.1042	714.7646	232.1119	196.3591	122.8780	196.3591	211.3266	289.0048	319.1699	307.7912
9.00	365.6804	320.4332	804.2720	261.1259	220.9040	138.2378	220.9040	237.7424	325.8642	360.5444	347.5386
10.00	406.4941	355.6641	893.8365	290.1399	245.4489	153.5975	245.4489	264.1583	362.9955	402.7434	387.9804
11.00	447.5341	391.3894	983.4688	319.4118	269.9938	168.9573	269.9938	290.5741	400.4425	446.0857	429.3710
12.00	488.9418	428.3690	1073.1692	350.8842	294.5387	184.3170	294.5387	317.1945	438.2386	491.0378	472.0738
13.00	530.9243	467.5558	1162.9468	385.6329	319.0836	199.6768	319.0836	345.4978	476.4316	538.3231	516.6287
14.00	573.7927	510.1595	1252.8085	424.9618	343.6285	215.0365	343.6285	376.1945	515.0705	589.1680	563.8976
15.00	618.0289	557.7490	1342.7610	471.3700	373.3065	230.3963	373.3065	410.0194	554.2129	645.9753	615.4128

Do not use the currents in the old printed User manuals. They are obsolete.

Please consult the liaison physicist if you have special beam requirements, e.g. different focusing of the beam.

Collimator control

- Find the crate controlling the collimators in your beam line
- If you want to open to (-x, +y) mm, dial **50+x/2** and **50+y/2** with the thumbwheels
- Push on the red **STROBE** buttons
- The final position in mm is shown on the LCD screens. Push STROBE again if the setting reached is not precise enough.
- The horizontal collimators usually define Δp/p with typically Δp/p=±1% for ±5 mm gap (see User manual). The vertical collimators control the angular acceptance and hence the beam flux and the divergence at your detector. Check in the green folder



Vacuum control

- The vacuum control is regularly checked by experts from the AT/VAC group.
- However, the user can check the vacuum in his beam line in case of problems.
- Typical values are in the few 10^{-2} mbar ballpark

TIMING SIGNALS

Pulse at start of extraction (→ **delay**)

Delay (in msec) from start of PS cycle

Select the wanted cycles

Signal during full PS cycles selected

Paper documentation

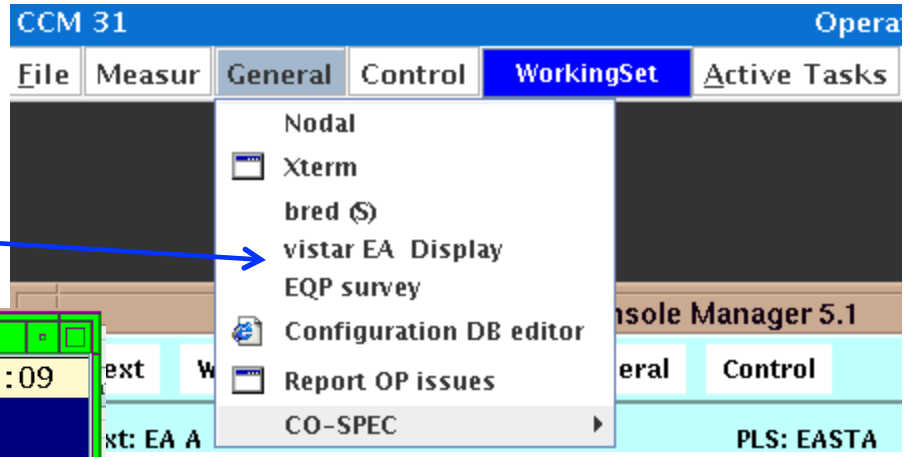
- The detailed documentation is available in the paper document inside the module
- The North branch (T9, T10, T11) uses EASTA cycles, the T7 line and IRRAD the EASTC cycles. DIRAC uses EASTB.

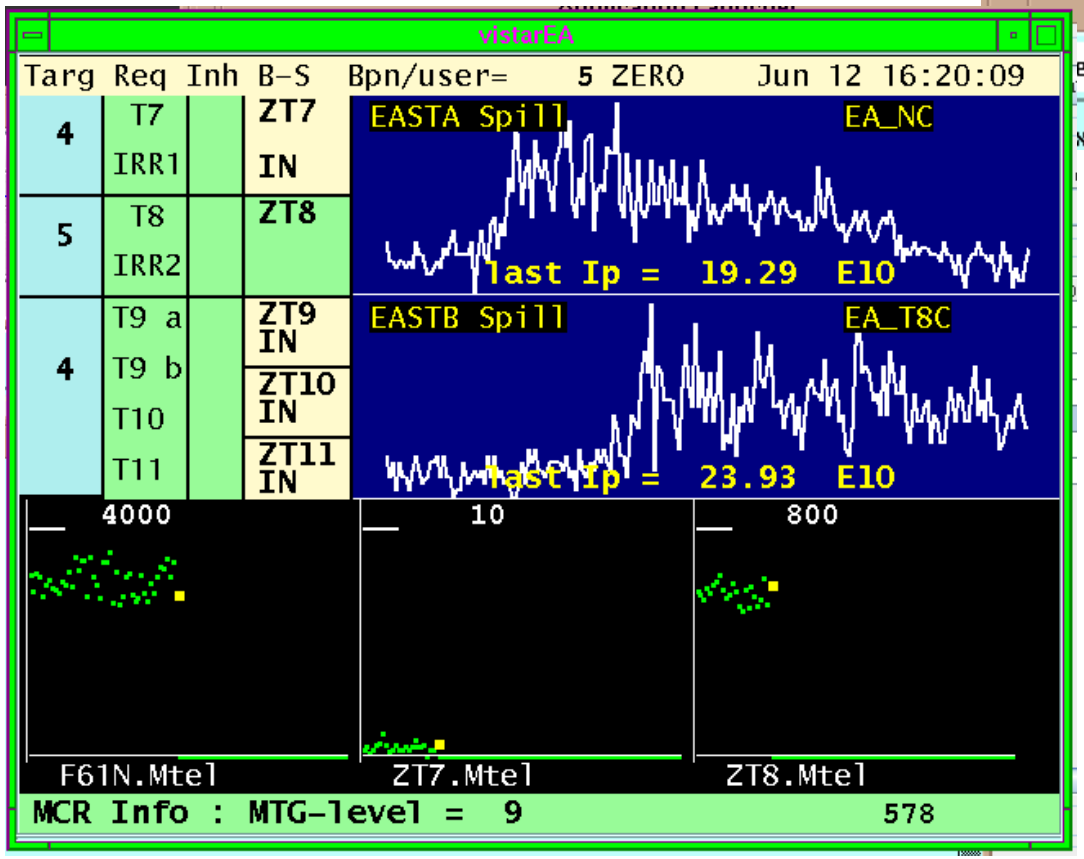
Communication with barracks

- There are several cable connections between the user barracks and the EBCR. The name of the barrack is written on the blue panels above each patch panel.
- Please check the labels for the correspondence between the barrack and EBCR connectors

Information from the PS machine

Activate EA Vistar from the General menu in the Java Console Manager:





The white curve shows The shape of the spill over Its 400 msec length

The green dots indicate the Intensity per spill for the different Target telescopes

The Vistar on the TV screen shows the overall state of the PS (+ cycles):

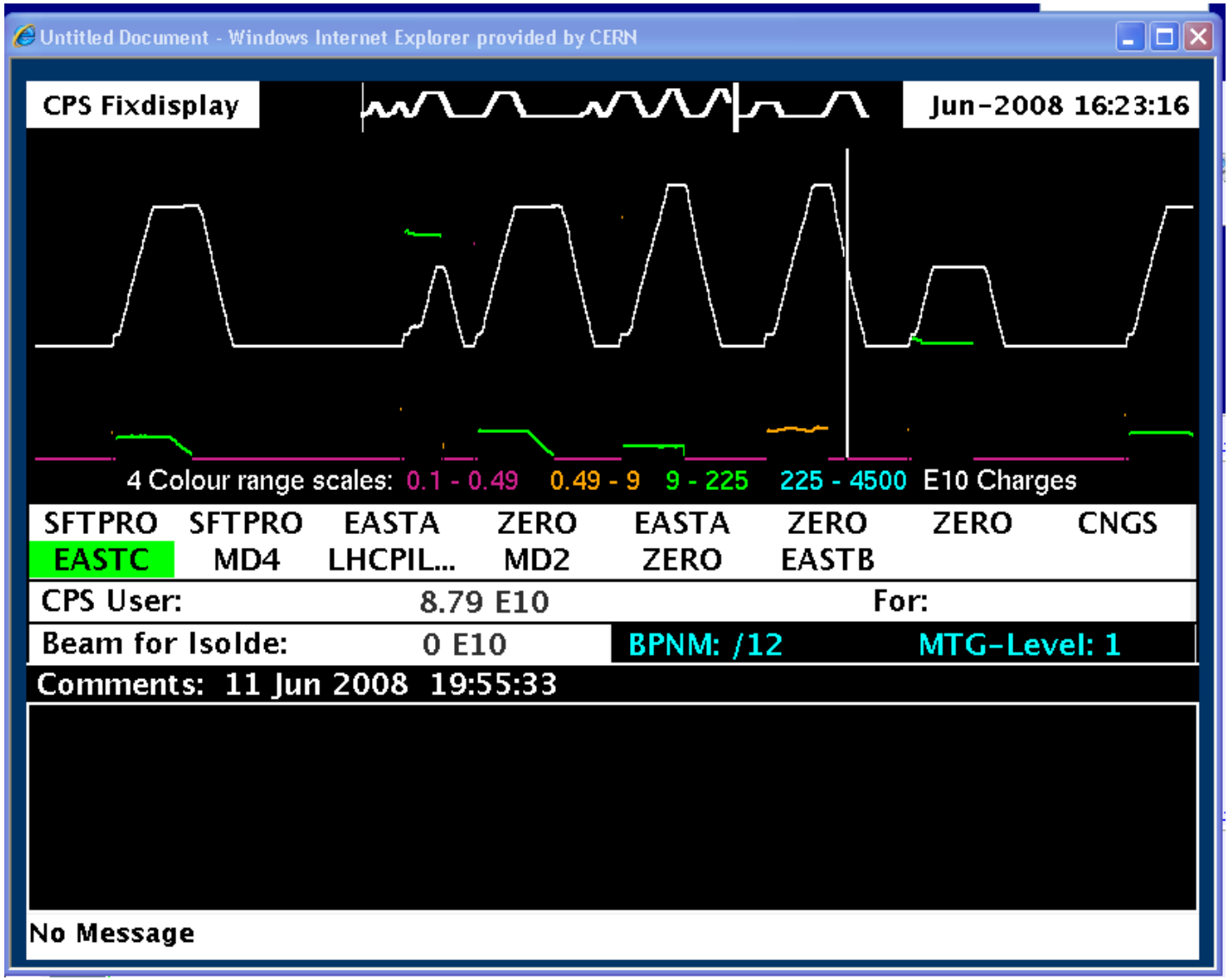
Magnet current

Inst. Intensity

Active cycle

Cycle intensity

Comments from the operators



Further Information

- There is a web page:
  http://cern.ch/gatignon/EastArea
- The access system operation is described in
  http://cern.ch/gatignon/EastArea/Access.html
- Call the CCC (76677) for operational problems
  (24 hrs/day, 7 days/week)
- Call your liaison physicist (L.Gatignon, 163554) for other questions and requests (during working hours)