Observations during MD of June 2nd to June 3rd, 2010 and Future Plans for SPS Kickers

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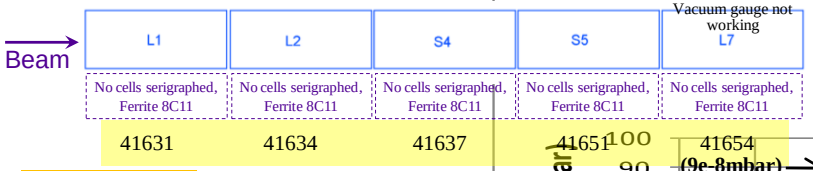
TE/ABT/FPS

SPS Kicker Summary

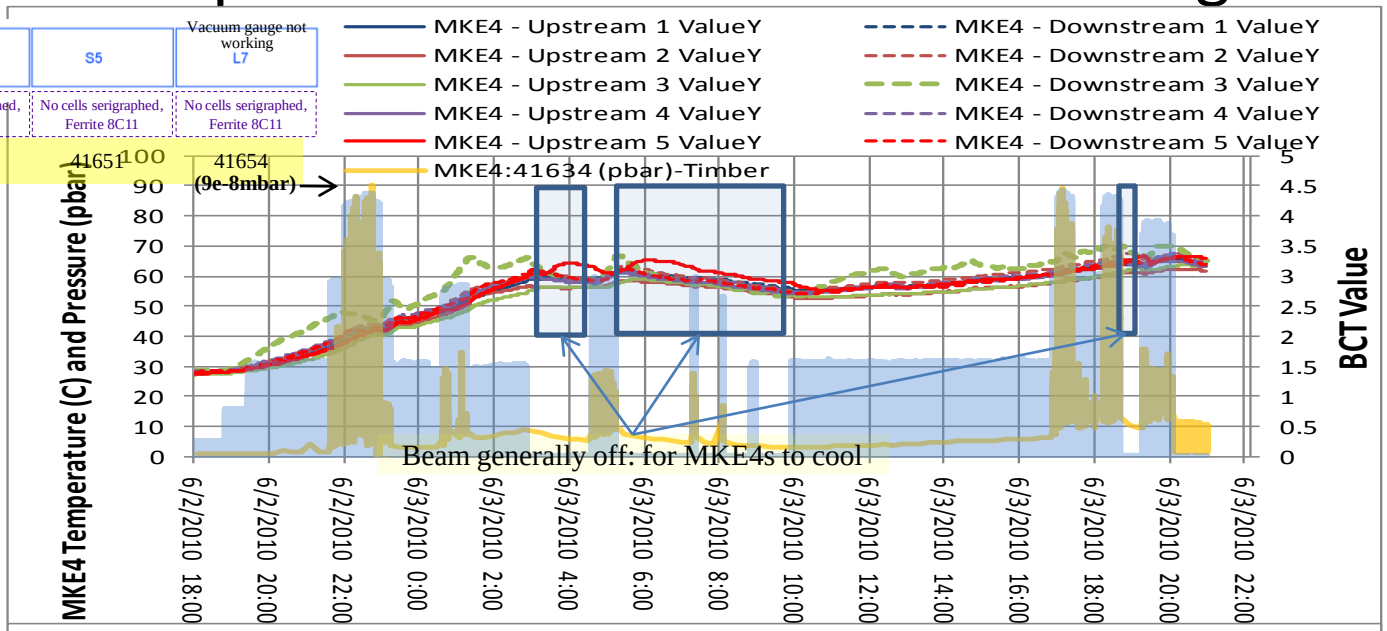
System	Maximum Temperature (°C) [MD of June 2-3, 2010]	Maximum Pressure (mbar) [MD of June 2-3, 2010]	Comments
MKE4	70+	9.1×10^{-8}	**MD of June 2-3 stopped three times to permit cool-down of MKE4s.** No serigraphed magnets. Transition pieces installed.
MKE6	~37	9×10^{-7}	**Very high out-gassing: Ion pump VPIB_61635 went to "Not valid state" after MD of June 2-3.** All 3 magnets serigraphed. Transition pieces installed.
MKP	~35	1.8×10^{-7}	**Significant out-gassing of the TIDVG, especially between 21:30hrs and 23:00hrs on June 2.** **VGPIB_11902 not working??** Transition pieces installed for 3 S-type modules.
MKDH1/2/3	No PT100	1.2×10^{-7}	Laminated steel. No transition pieces.
MKDV1/2	~31 (MKDV1 & 2)	1.1×10^{-7}	Transition pieces on MKDV1 only.
MKQH	No PT100	1×10^{-7}	Metallic stripes on ceramic. No transition pieces.
MKQV	No PT100	2.5×10^{-7}	No transition pieces.

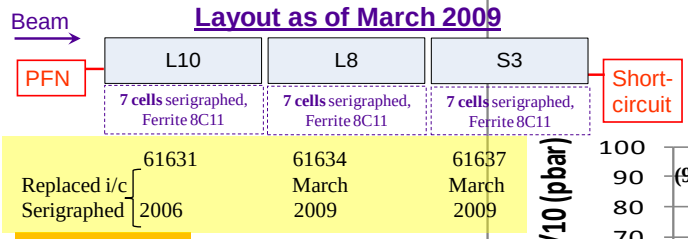
MKE4 & MKE6: Temperature & Vacuum of Worst Magnet



MKE4

Pressure in MKE4 41634 (maximum of 9.1e-8 mbar) is an order of magnitude less than in MKE6.

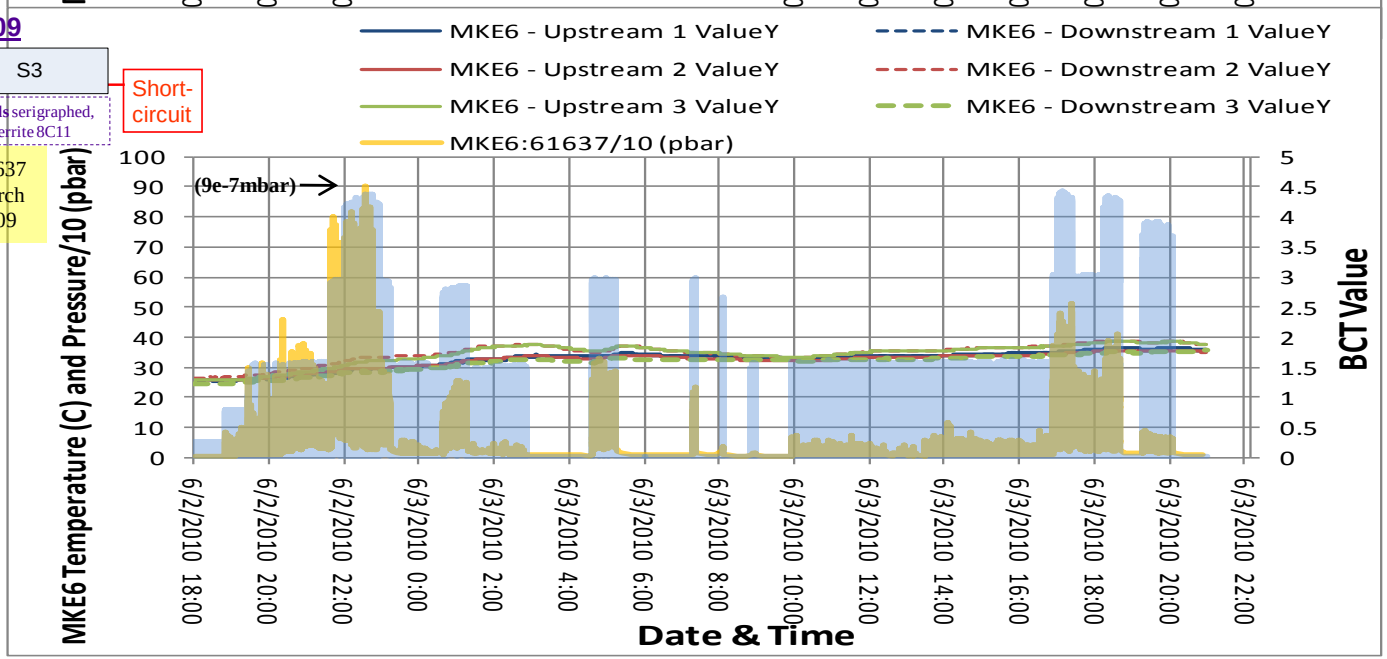




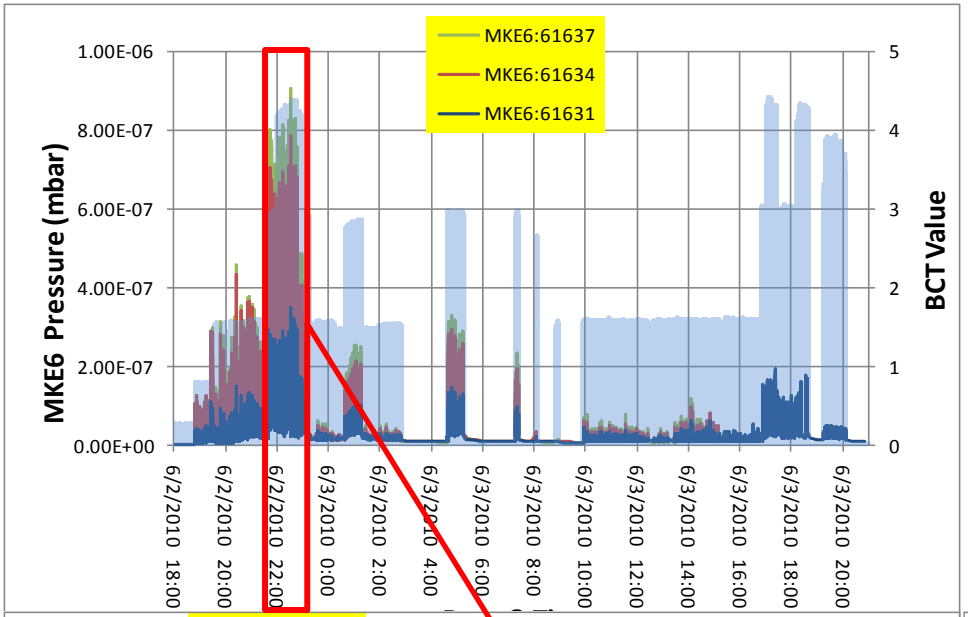
MKE6

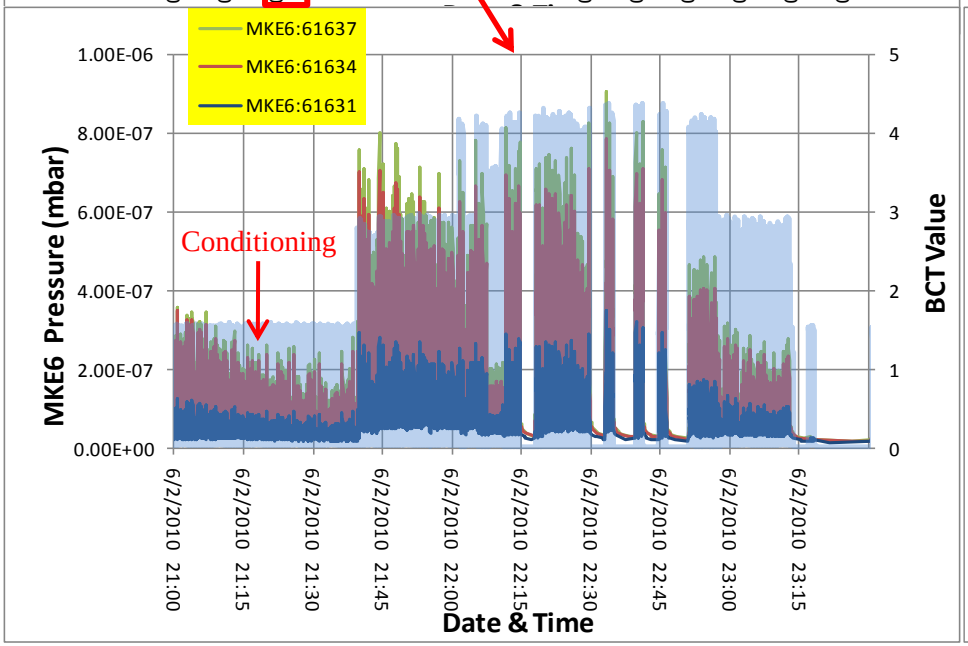
High pressure in MKE6 (9e-7mbar in 61637) – as per week 17 MD. Note: 3 serigraphed magnets.
Pressure rise is an order of magnitude more than MKE4:

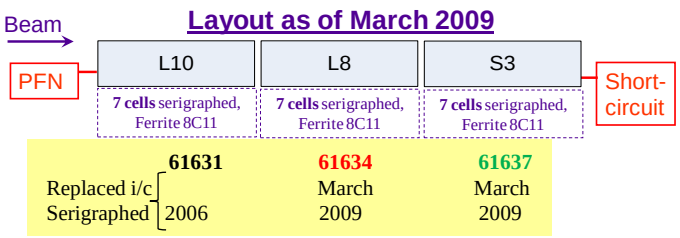
- Out-gassing of silver paint (serigraphy)?;
- Electron cloud? (Mauro to measure SEY).



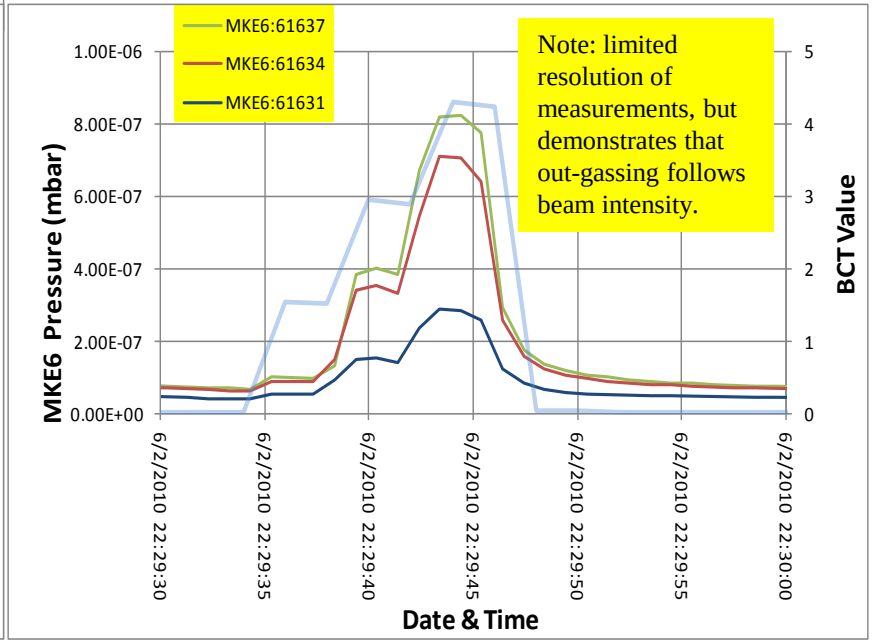
MKE6: Vacuum



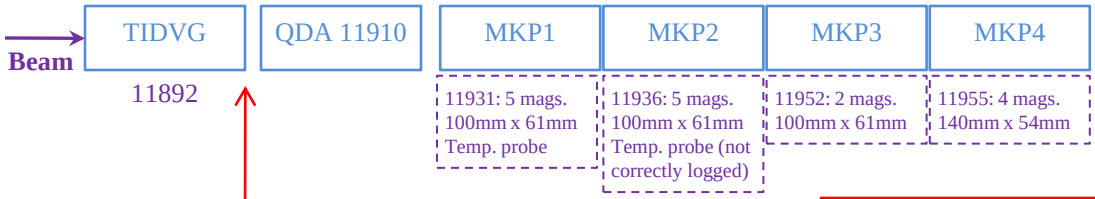


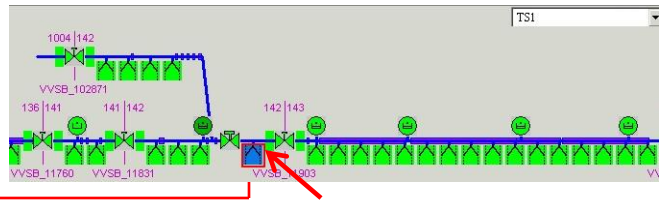


- Magnets appear to condition during MD;
- Lowest pressure rise associated with kicker installed for longest period (61631). Not able to determine if "61631" out-gassing has reduced with time (61634 was previously 4E2 ferrite, with high out-gassing rate);
- Ion pump VPIB_61635 went to "Not valid state" after this MD – maybe caused by high out-gassing?. To be investigated, by vacuum group, during short technical stop (today). Hot off the press: pump now OK.



MKP: Vacuum





Pump (VPCIB_11902) close to TIDVG (11892) in "Not Valid" state, and has been for some time (not interlocked?): needs investigating.

Plans & Ongoing Issues/Work

- **MKE4:** *Shorten period of installation of 5 serigraphed MKE4 kicker magnets, from 3 to 2 shutdowns:*
  - *During 1st shutdown (end 2010, start 2011) replace one S-type & one L-type magnet;*
    - *spares of one S-type & one L-type (serigraphed) to be prepared in advance for exchange (1 S-type done);*
  - *During 2nd shutdown replace one S-type & two L-type magnets (~2 to 3 months reqd.);*
    - *spares of one S-type & one L-type (serigraphed) to be prepared in advance for exchange;*
    - *L-type ferrite prepared ready to exchange once L-type kicker is removed from machine (requires significant manpower (1 person year) and 100kCHF investment in hardware, e.g. to help automate pulse conditioning of 3rd magnet).*
- **MKE6**
  - Ion pump in VPIB_61635 now OK (as of 24/06/2010);
  - *Measure SEY for silver paint and ferrite (Mauro);*
  - *Measure out-gassing of silver paint when it is warmed up slightly;*
  - *Transverse impedance to be measured, in clean room, for non-serigraphed and serigraphed magnet (for 2nd spare magnet being prepared).*
- **MKP**
  - Pump VPCIB_11902 (close to TIDVG and MKP1) MAY need replacing. Vacuum group has been asked to check pump at earliest opportunity [out-gassing from TIDVG is NOT good for MKPs!];
  - *Longitudinal and transverse impedances currently being measured in clean room.*