



Available diagnostics to detect further degradation of the TDE

MPP 29/09/2017

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with input from S. Roesler and C. Wiesner

Available diagnostics to detect further degradation of the TDE

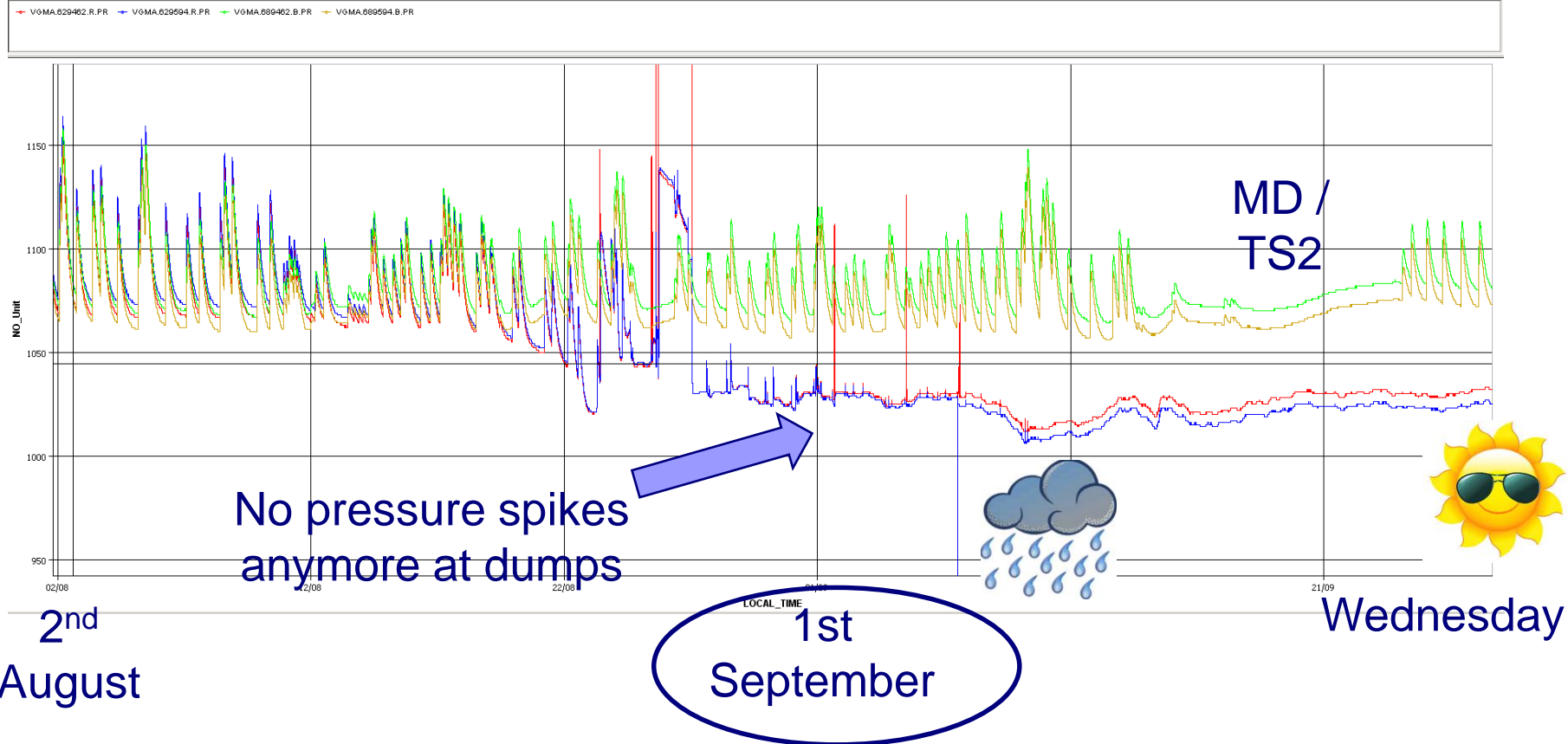
- How do we know that the TDE is still in a “good” condition?
 - At this very moment but even more important following a dilution failure (missing MKBs) with high intensity and high energy beams
 - At very high temperatures there is a risk of a reduction of the graphite core being ‘consumed’, see previous presentations
- Diagnostics is very limited, but is available. It will only be able to indicate something in case of major problems

Diagnostics on the TDE

- TDE core
 - BLM behind the TDE
 - Radiation monitoring in the TDE cavern
 - Radiation of the extracted air
- The TDE enclosure (leak)
 - N2 pressure measurement at the dump
 - N2 pressure in the bottle (not a diagnostics but a precaution)

Pressure measurements on the TDE volume

Timeseries Chart between 2017-08-01 16:13:00.000 and 2017-09-27 16:13:00.985 (LOCAL_TIME)

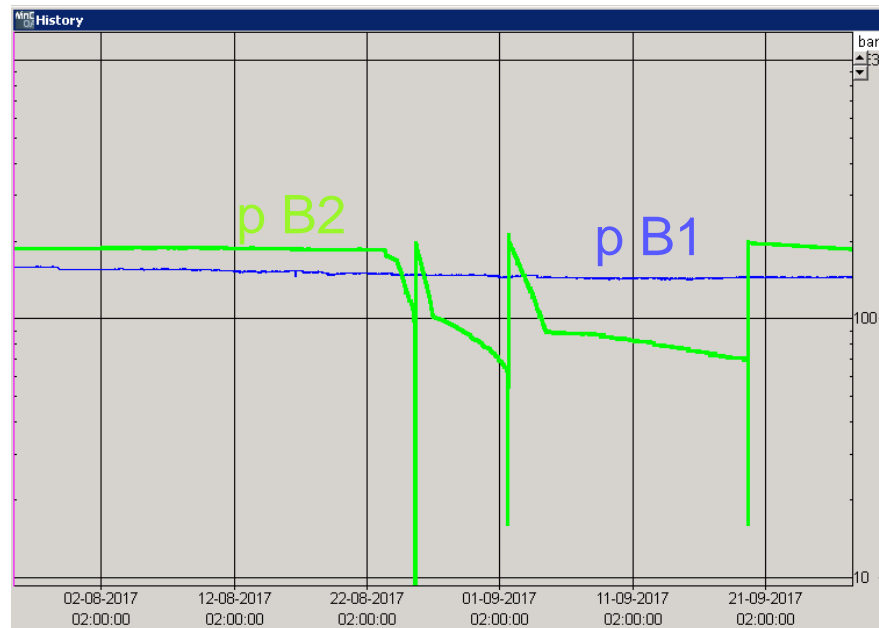


Pressure of N2 bottle

- Does not give any information on the state of the TDE itself
- However, as we want to have a (small) N2 flow, we want to see the pressure slowly decreasing

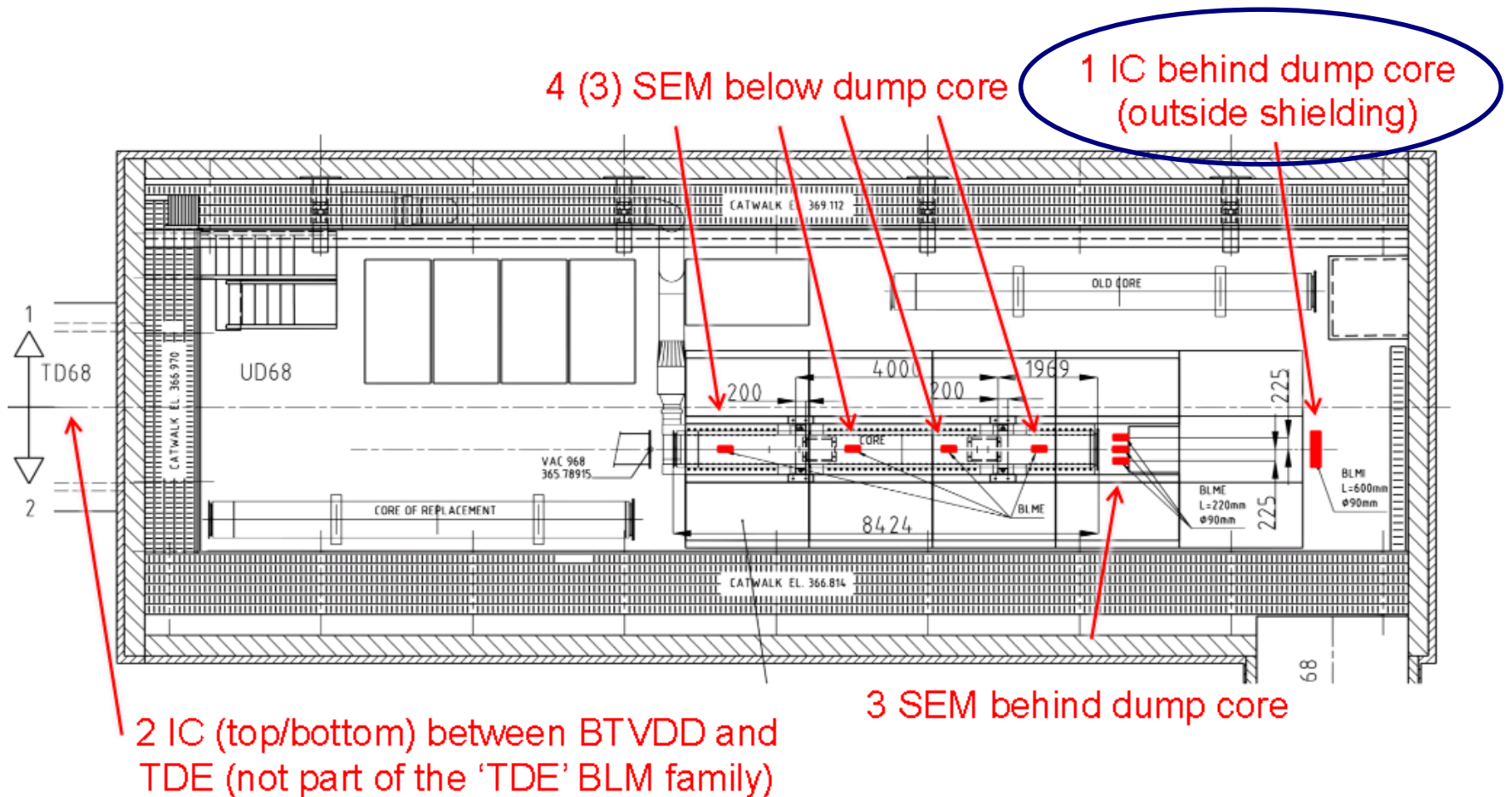
Pressure in bottles
(six-pack) over last
two months

B1 is not having a
six-pack



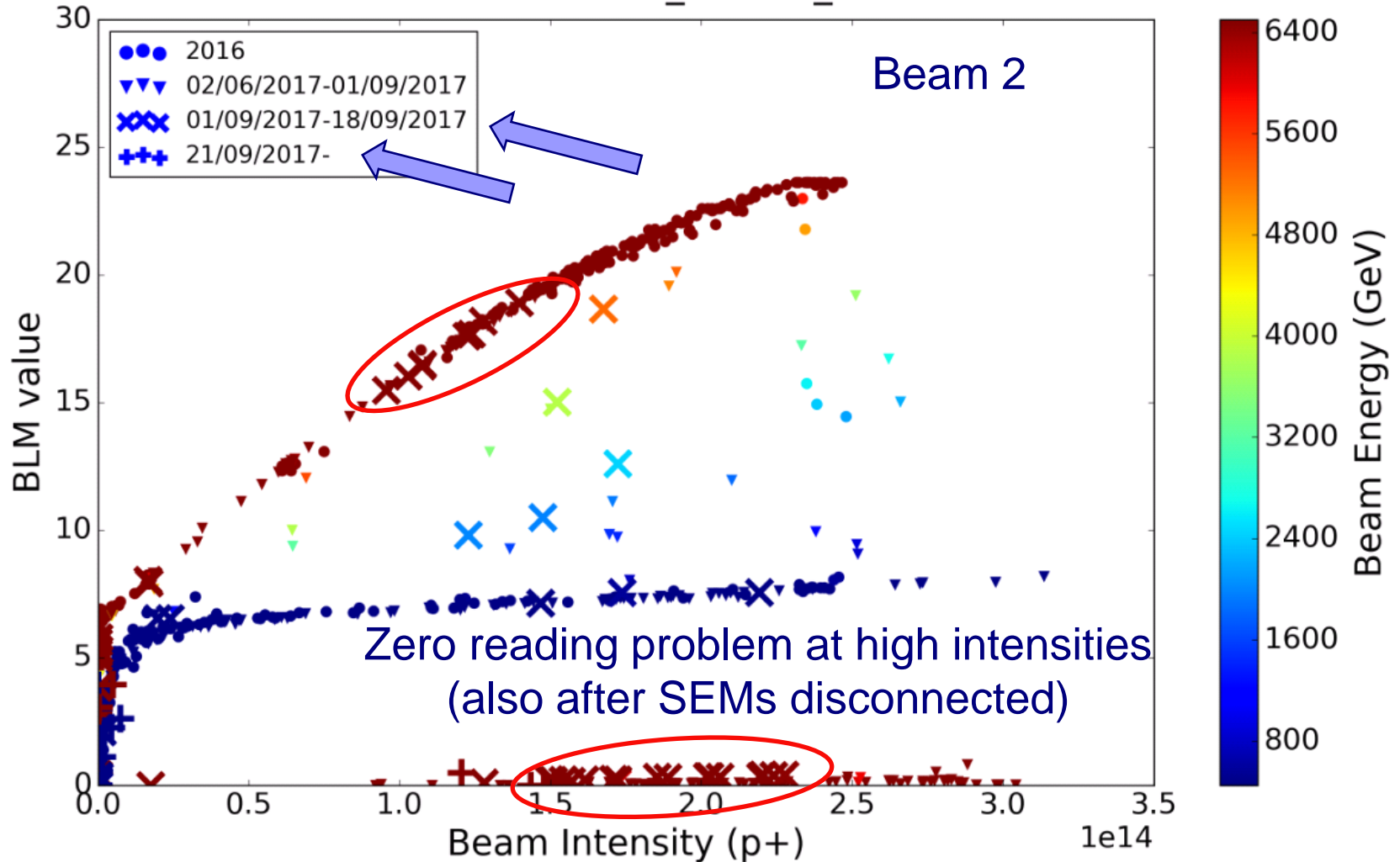
Back to TDE diagnostics

From LIBD meeting 23/8/2017, C. Wiesner

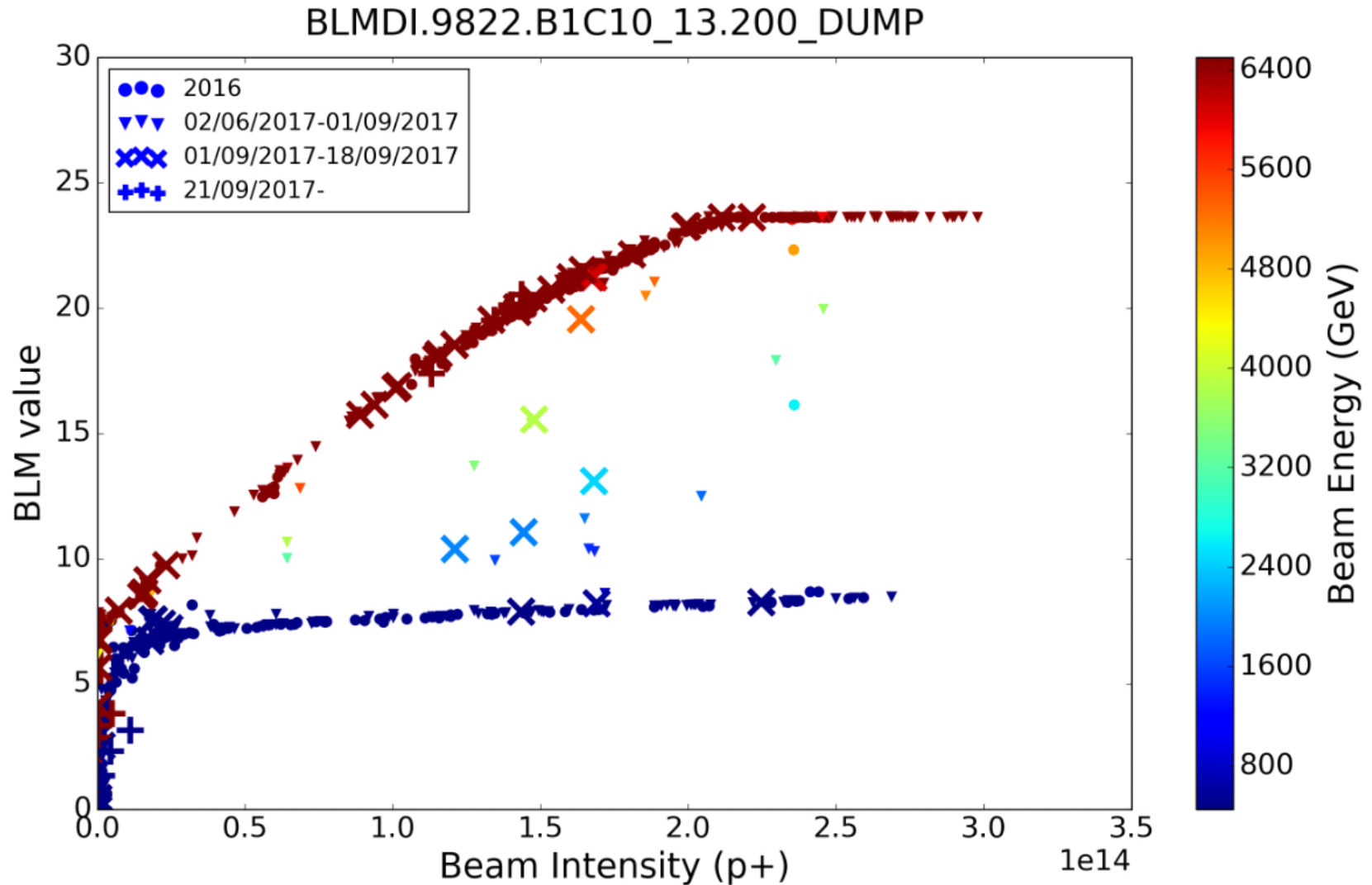


BLM Ionisation Chamber Measurements before and after 1 September (CW)

BLMDI.9822.B2C10_13.200_DUMP

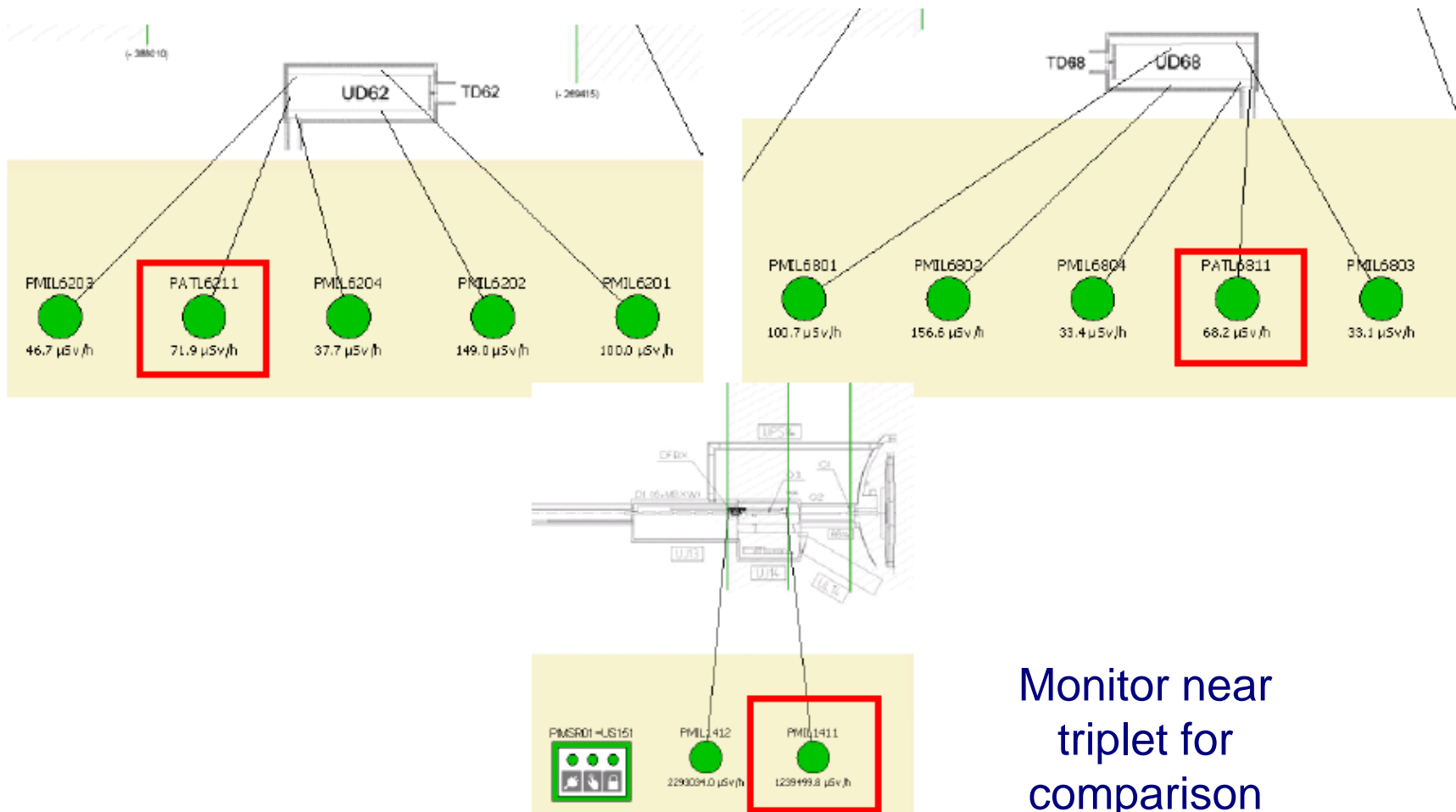


Beam 1 for comparison, no zero reading problems



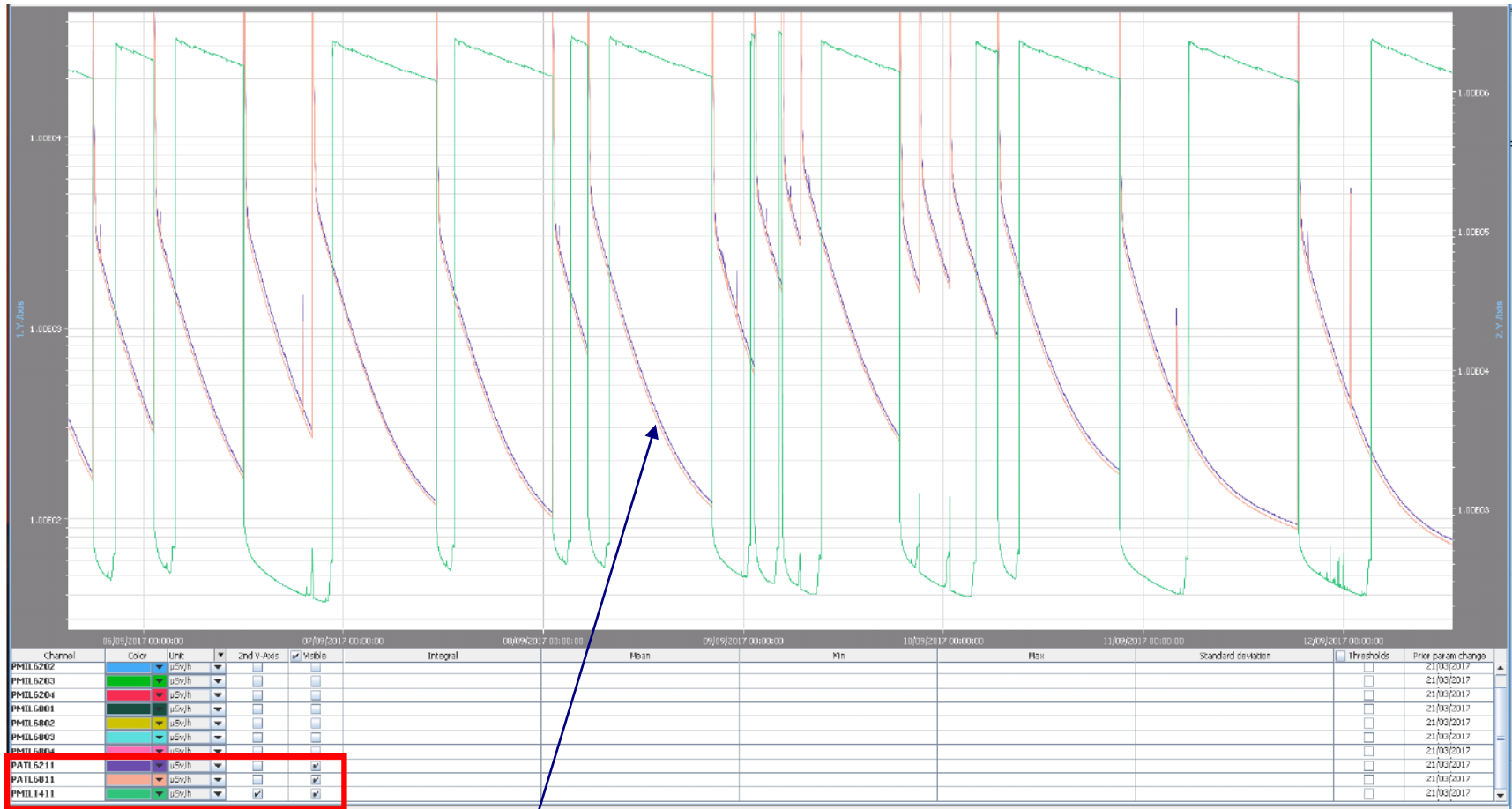
Radiation Monitoring in dump caverns

Data from Stefan Roesler



Monitor near
triplet for
comparison

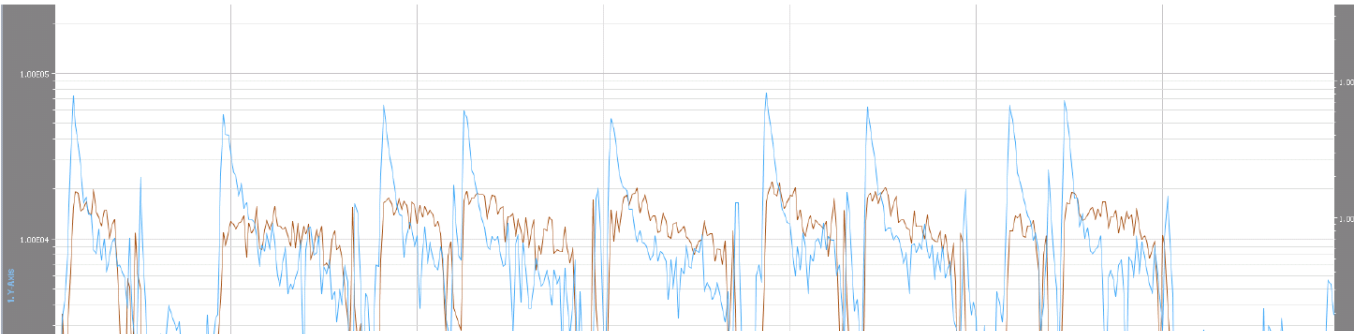
Comparison between dump Caverns



Equivalent monitors in the two caverns overlap, check made for several monitors in the cavern

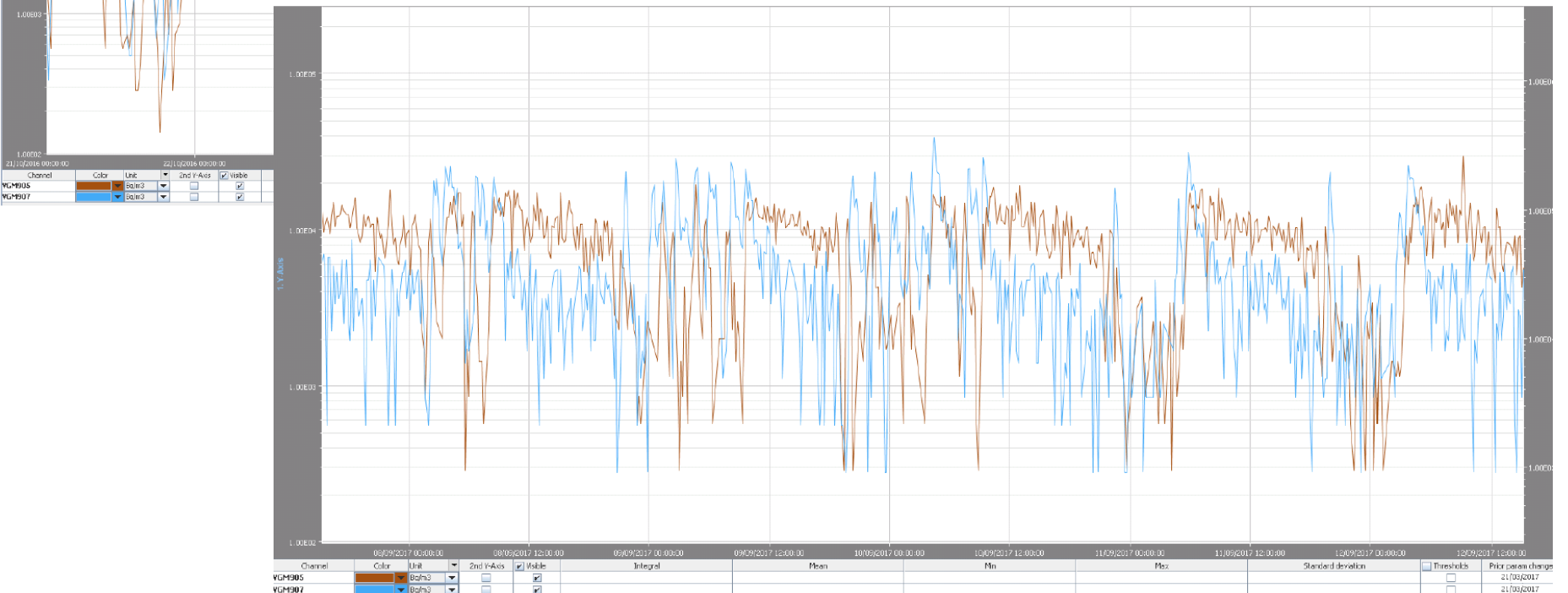
Air Release Comparison 2016 and September 2017

Releases Point 5 (brown) vs Point 7 (blue) - 2016



No significant change in behaviour

Releases Point 5 (brown) vs Point 7 (blue) - 2017



Conclusions

- We have some limited diagnostics so see if something has really gone wrong with the dump cores
- This becomes especially important after a dilution failure
- So far no anomalies seen
- Recommendations:
 - Will be good to repeat checks in a few weeks
 - Would be good to 'fix' the ionisation chamber behind the dump, if possible