

Final activation of DOROS BPMs in SIS in view of reduction of beta* after TS2



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152nd MPP Meeting

Outline

1. Interlocking concept and motivation **RECAP**
2. Validation status
 - Log file analysis **RECAP**
 - Dedicated Tests with a beam
3. Summary

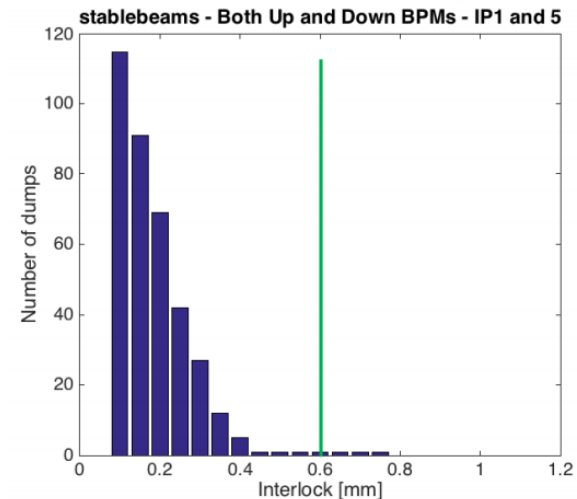
Motivation

RECAP

SIS follows the **collimator beam center** measured from the **embedded BPMs**.

Following the TCT BPM performance analysis (*A. Mereghetti et.al, Evian2016*)

- 600 μm interlock limit was set (from 2016)



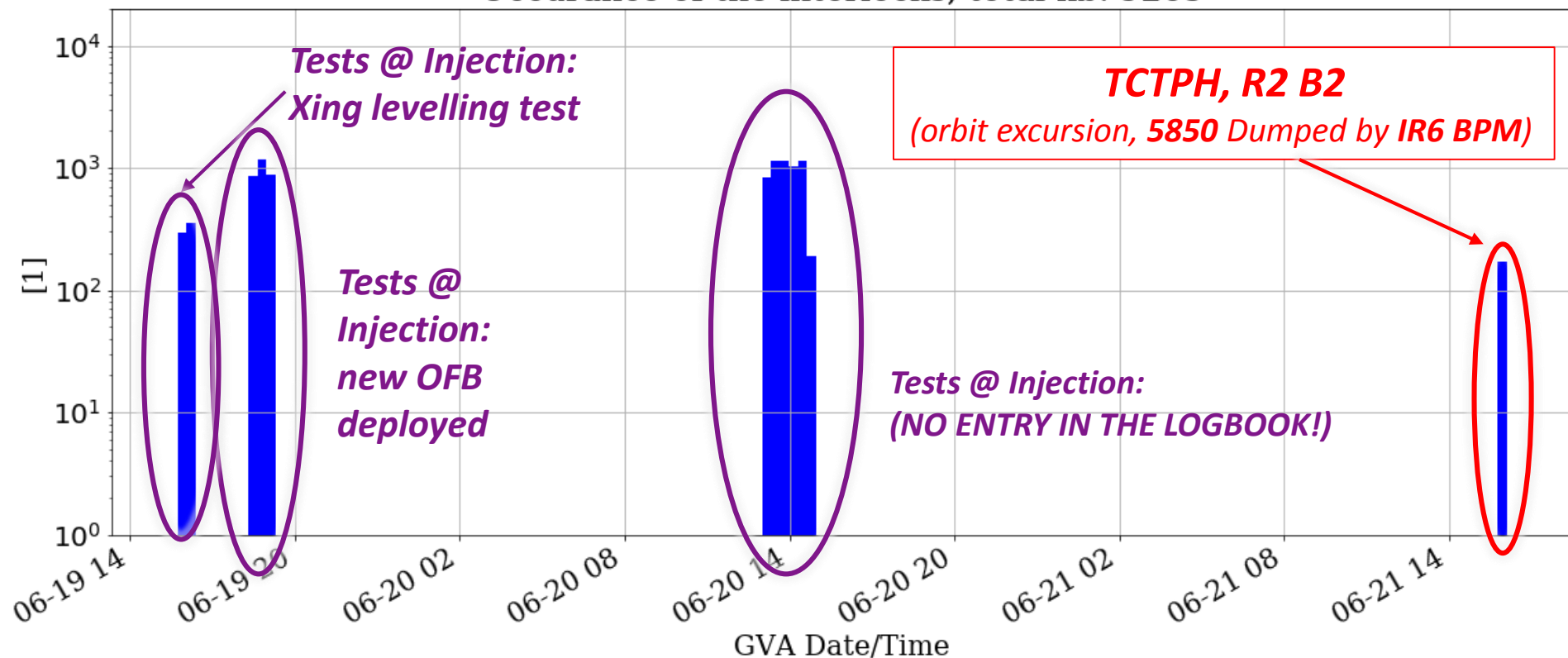
In addition to the analysis of orbit quality/stability, this **new analysis of sis logs will also provide an assessment of the overall chain**, addressing the complete implementation (status of acquisitions, etc) and **the reliability**.

June (4 - 24)

Operation related interlocks - potential dump cause?

RECAP

Occurance of the interlocks, total nb. 9265



July (9 & 10)

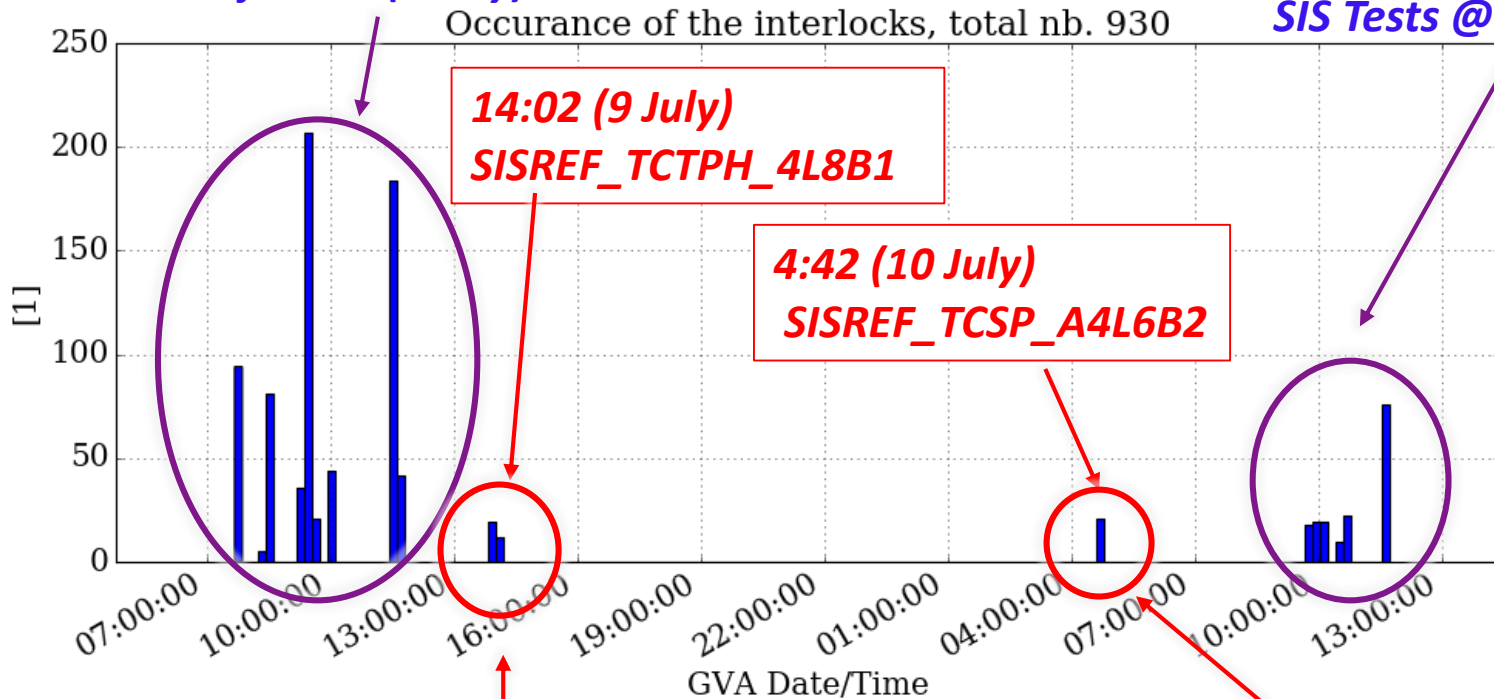
Detailed TEST results in next slides...

RECAP

Operation related interlocks - complement dump cause!

SIS Tests @ Injection (9 July)

SIS Tests @ FT (10 July)



LogBook 14:06: *RCBH16.R8B1* tripped with feedback off. **Lost beam 1 therefore.** We will refill directly and re-attempt.

Async dump test

Results from the beam tests (July)

RECAP

- **Injection** (Sun 9 July) tests:
 - **All channels passed the test**
 - IP2 tolerance difference: 4σ expected $\sim 6.5\sigma$ found.
 - Discrepancy comes from the ATS optics in IP2:
 - Beta* does not change while beta at TCT goes from 40m to 80m.
 - SIS mechanics follows the beta* change, and was only with one value (80m)
 - **Change the limits or SIS logic or issue not valid for the time being – no activation for IR2**
- **Flat top/ squeeze** (Mon 10 Jul):
 - **All channels passed the test!**
 - One channel (IP1 B2 V) had wrong tolerance: 1σ was expected 4σ found
 - **Fixed!**
 - IP8 tolerance (logged by SIS) found at 2.95σ ...
 - The optics correction was applied and it modified the β^* : 3.03m instead of 3.0m,
 - thus the interpolation from SIS modified the initial 2.5σ to 2.95σ
 - **Understood, to be changed! Or issue not valid as no interlock activation for IR8.**

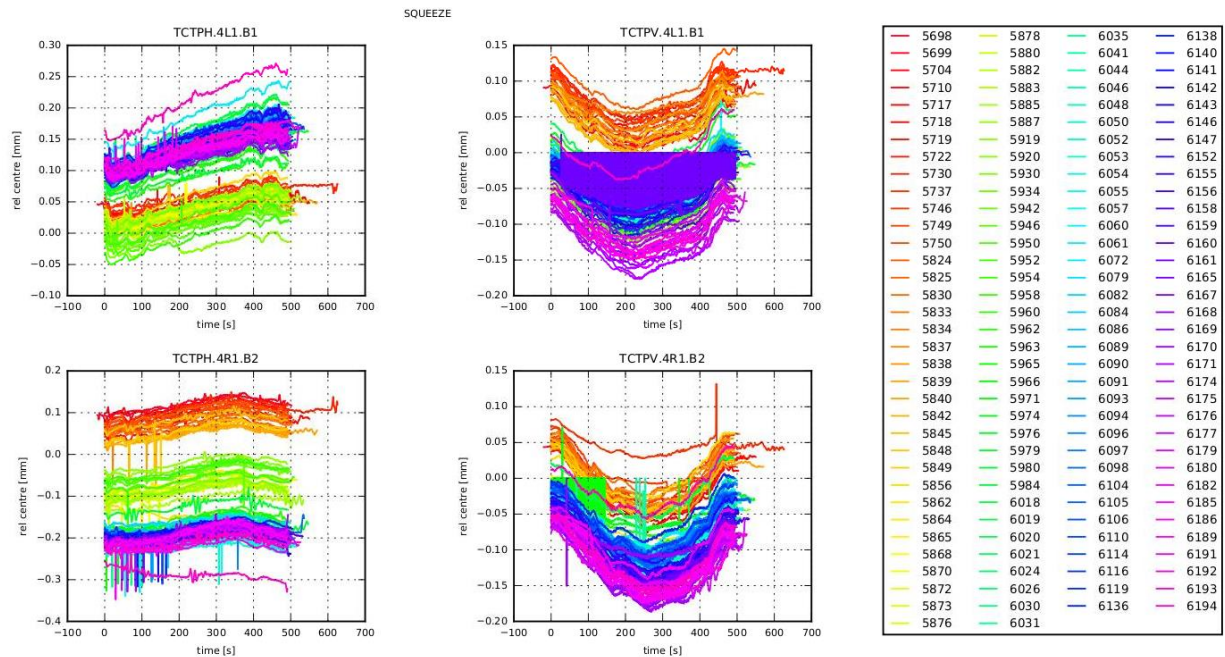
September (1-12, before the MD#3)

- **No excursions logged between 4 August and 11 September!**
 - No major exercises with machine...
- **11 September** - *Setup for commissioning cycle of $\beta^*=30\text{cm}$ with probes Several optics measurements along the cycle, finishing with Xing angle scan Dumped with MPS test for RD34.LR3 (power supply exchange)*

TCT orbit reproducibility

- Similar level of reproducibility for IR1 and IR5
 - No peaks, sudden excursions etc.
- Consistent with no drifts recorded by SIS

Example, orbit in TCT in IR1 during SQUEEZE



Summary

- **No spurious triggers**
 - Few logged cases identified and understood.
- **Successful beam tests**
 - Revealing some inconsistencies that are fixed by now!
- **Orbit very reproducible**



Recommended for operation

without IR2 and IR8, where no was
tightening done!



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