

PS status 18 May – 1 June 2018

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Thanks to A. Huschauer for the input on transverse studies

PS status 18th May – 1st June

- **Difficult weeks for the PS Complex with about 90% beam availability**
- Injection septum breakdown on Thursday
 - **Broken stripline connection and damaged feedthrough**
 - **All day intervention in the PS tunnel to repair**
 - **16h45 downtime** for all beams
- Pole face winding power converter PR.WFW down on Tuesday-Wednesday
 - **Intervention by piquet(s) and specialist**
 - **Auxiliary power supply of main dB/dt compensation exchanged**
 - **6h50 downtime** for all beams
- No user beams in PS during Wednesday MDs (10 h), exception: **low intensity TOF**

Status of operational beams

Fixed target beams	Status	Comment
EAST Irrad/North	Operational	With parasitic TOF
MTE	Operational	Delivered to SPS at $\sim 1.6 \cdot 10^{13}$ ppp
TOF	Operational	Up to $\sim 7.5 \cdot 10^{12}$ ppp
AD	Operational	$\sim 1.44 \cdot 10^{13}$ ppp (back to nominal)
LHC-type beams	Status	Comment
LHC PROBE, LHC INDIV	Operational	
LHC25 (12b, 72b)	Operational	
LHC25 BCMS (12b, 48b)	Operational	
EARLY Pb ⁵⁴⁺	Basic setting-up	Taken for setting-up in SPS ($h = 16/21$)
ILHC100 (4b)	Basic setting-up	Taken for setting-up in SPS

Preparation of proton beams

- MTE using $h = 1$ synchronization in PSB
 - Longitudinal setting-up completed in the PSB some weeks ago
 - Transverse settings updated to present operational MTE beam
 - Validation ongoing in PS
- 100 ns bunch spacing with protons
 - Basic setting-up in PSB and PS
 - Increased longitudinal emittance from PSB to keep beam stable at PS flat-bottom
 - Still requires fine adjustments in PS with higher intensity

Preparation of ion beams

- Single-bunch Pb^{54+} (early)
 - New scheme with acceleration from intermediate flat-top on $h = 21 \rightarrow$ operational
- Pb^{54+} with 75 ns bunch spacing
 - 3-bunch transfer LEIR-PS established
 - First iteration setting-up of all RF manipulations in PS
 - Batch compression from $h = 21$ to 28 and re-bucketing $h = 28/169$ critical

Status of transverse studies

- MD2586 – beam missteering at injection
 - Measuring emittances at various times after injection
- MD3104 – space charge studies
 - Brightness scan with adiabatic bunch compression
- MD3105 – tune diagram measurements
 - Continued investigation of remnant magnetic fields of different non-linear elements
- MD3106 – amplitude detuning measurements
 - Investigation of remnant fields with turn-by-turn data
- MD3187 – nTOF with longitudinal blow-up at 2.5 GeV
 - Improved transmission at operational intensities, further improvement studied

Status of transverse studies

- MD3367 – tune shift vs. intensity
 - Comparison with past measurement and reference before LS2
- MD3368 – optics measurements
 - External waveform generator to use transverse feedback as AC dipole
- Dedicated MD for injection line rematching
- MD3404 - reliability checks to use KFAs as SEM grid protection

Status of longitudinal studies

- MD3184 – beam measurements of resistive broad-band impedance
 - First intensity scan: long. quadrupolar beam-transfer function and bunch distance
- MD3319/3364 – intensity ramp-up with LHC 25 ns beam
 - Pushing intensity to limit → seems longitudinally more stable than in 2016/17
 - Not quite expected with hardware upgrades during YETS, investigating
- MD3320 – lead ion beam with 75 ns spacing
 - Longitudinal manipulations sensitive; investigating satellite population
- MD3387 – beam measurements of cavity impedances
 - Beam induced voltage of 40 MHz and 80 MHz cavities (and 10 MHz)
- MD3390 – fixed target beam with $h = 1$ synchronization in the PSB
 - Fine tuning in PSB and PS

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Availability

89.9%

Blocking Faults

39

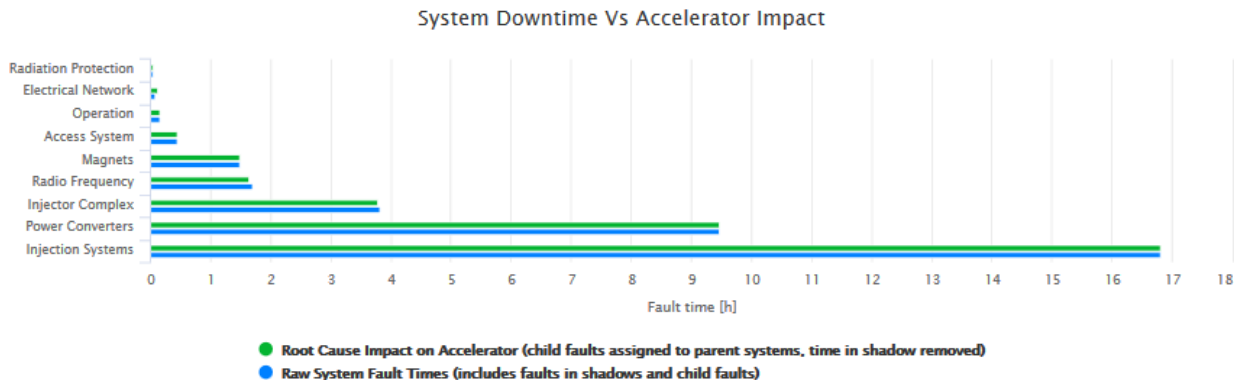
Total Faults

44

Fault Duration (overlap excluded)

34.3h

Blocking Faults by Root Cause



Faults Timeline

