Many thanks to: Fernando, Marc, Patrick, Mike, Antoine, Thierry, Pieter, Alvaro, Didier, Thibaut, Denis, Frank, Raul, Vincent, Fabrice, Abdel, Oliver, Stephane, Jeroen, James, Yves, Fulvio, Quentin, Gilles, Jean-Marc, Todor, Carlo, Heiko, Alexander, Alexandre, Matthew, Ana, Olivier, Dominique, Anthony, Hannes, Ben, Bettina, Klaus, Gil, Benoit, Ewen, Gerd, Tom, Anti, Guillaume...
Main commissioning topics of the week

• AD beam available in 3 flavours:
  • Nominal: AD_21
  • 10% of intensity: AD_21_Lowint (no comparator set up)
  • 1% of intensity: AD_21_VLI#2b
  • Beam permit given yesterday but external condition was not available on AD side

• Intensity range from 0.4 to 1.4e11 ppb on LHC25 set up for SPS scrubbing (request to use integer number of turns)

• Suggestion of SPS to inject 3+3 bunches (3-2-1 + 3-2-1) instead of 4+2 bunches (3-4-2-1 + 3-4) as PSB ring 4 was unavailable due to a watchdog issue. Setting up not too long on PS side, but could not be completed before the PSB issue was over. To be kept in mind when LHC is on the line.

• Work on TOF and EAST continued
Accelerator Fault Tracking (AFT)

- **Availability:** 78.9%
- **Total Faults:** 34
- **Fault Duration (overlap excluded):** 42.7h

### Blocking Faults by Root Cause
- **Electrical Network:** 1
- **Operation:** 1
- **Radio Frequency:** 2
- **Extraction Systems:** 2
- **Power Converters:** 6
- **Cooling and Ventilation:** 1
- **Injector Complex:** 18

### Faults Timeline by System

- **Cooling and Ventilation:**
- **Electrical Network:**
- **Extraction Systems:**
- **Injector Complex:**
- **Operation:**
- **Other:**
- **Power Converters:**
- **Radio Frequency:**

- **PS ACCESS:**
- **LLRF: harmonic distribution:**

- **Other:**

### Destination Availability
- **Availability:** 78.958%
- **Faulty Periods Count:** 29
- **Faulty Periods Duration:** 35.3 hours
- **Total Faults Count:** 31

### Graphs
- Availability
- Faulty Periods Count
- Faulty Periods Duration
- Total Faults Count
Since last FOM

- Availability: 72.6%
- Total Faults: 28
- Fault Duration (overlap excluded): 53.4h

### Blocking Faults by Root Cause
- Electrical Network: 1 fault
- Radio Frequency: 2 faults
- Extraction Systems: 1 fault
- Cooling and Ventilation: 6 faults
- Power Converters: 14 faults
- Injector Complex: 0 faults

### Faults Timeline by System

- Cooling and Ventilation
- Electrical Network
- Extraction Systems
- Injector Complex
- Other
- Power Converters
- Radio Frequency

- Fault durations:
  - 4h 12min 25s
  - 4h 17min
  - 15h 5min 3s
  - 4h 18min 58s
  - 11h 7min 1s

### Destination Availability
- SPS: 79.172%
- Faulty Periods Count: 25
- Faulty Periods Duration: 35 hours
- Total Faults Count: 25
Issues and problems (1)

- Timing servers stopped because temperature in bldg. 353 reached 32C during a hot Wednesday afternoon.
- Piquet SADES called, worked hard until temperature decreased towards the end of the day.
- It seems that the temperature regulation of that room had been malfunctioning for a few days before the issue occurred.
- The next morning, temperature started to increase again, called EN-CV specialist who restored stable temperature in the room.
- The abrupt switch-off of the timing servers seems to have had consequences (several cavities could not restart after the temperature came down).
- The RF team informed that one should cut all beams in case the temperature is above 30C as there is a chance of equipment damage if the servers are cut at the wrong moment.
  - Level 1 alarm now at 28C (was 30C)
  - Level 2 alarm now at 30C (was 32C)
  - Procedure linked to the TI alarm
- A final intervention was organized on Friday morning to replace a used belt, and the temperature has been well under control since then.
**Issues and problems (2)**

- **Water leak reported by TI on Monday:** warm water circuit for ventilation system, turned out to be leaking into another circuit through a leaky exchanger. Will need to exchange the exchanger, but not immediately.

- **Several cavity issues:** required calling the piquet (40MHz AC40-78 on Tuesday, AC10-76 and 81 on Thursday, for which an access was needed, AC10-11 and AC10-56 on Saturday night, AC10-66 on Monday)

- **KFA71:** several trips of module 6 on Tuesday, seemingly worked on by specialist, then no trips. Then several trips of various modules along the week (modules 2, 5, 9 and 12 twice).

- **SMH16:** active filter issue solved by the piquet

- **Pole Face Windings:** hardware issue with the power converter PR.WDNI since 22:00 yesterday evening. EPC piquet (3 experts) intervened and switched to the spare but also has cooling issues. Stopped working at 03:30, waiting for the expert of that power converter (Olivier Michels).
# Summary of operational beams

<table>
<thead>
<tr>
<th>Fixed target beams</th>
<th>Status</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFTPRO (core only)</td>
<td>Operational</td>
<td>Delivered to SPS at ~6...7 \cdot 10^{11} p/p</td>
</tr>
<tr>
<td>SFTPRO (5 turn extraction)</td>
<td>Intensity increase</td>
<td>2-5 \cdot 10^{12} p/p delivered to SPS at 4.5 \cdot 10^{12} p/p</td>
</tr>
<tr>
<td>AD</td>
<td>Operational</td>
<td>1.4 \cdot 10^{13} p (and lower intensity flavours)</td>
</tr>
<tr>
<td>TOF</td>
<td>Setup</td>
<td>Until 600e10 p/b, extracted to D3, needs RF setup</td>
</tr>
<tr>
<td>EAST</td>
<td>Setup</td>
<td>First basics, parasitic TOF to D3, EAST bunch internal dumped at 24 GeV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LHC-type beams</th>
<th>Status</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHCPROBE, LHCINDIV</td>
<td>Operational</td>
<td></td>
</tr>
<tr>
<td>LHC25 (72b)</td>
<td>Operational</td>
<td>Polished up to 1.3 \cdot 10^{11} p/b</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( \varepsilon_h ) (arrival flat-top) \approx 1.8 \text{ mm mrad}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( \varepsilon_v ) (end flat-bottom) \approx 1.6 \text{ mm mrad}</td>
</tr>
<tr>
<td>LHC25 (12b or 24b)</td>
<td>Temporary</td>
<td>3 BP cycle delivered to SPS</td>
</tr>
<tr>
<td>LHC25 BCMS (48b)</td>
<td>Operational</td>
<td>Polished up to 1.3 \cdot 10^{11} p/b</td>
</tr>
</tbody>
</table>
Plans for this week

• Send beam to AD target

• Optimisation of SFTPRO to continue with intensity ramp up to be ready for end of June

• RF and transverse set-up of TOF to continue this week

• Put the coupled bunch feedback into operation to increase LHC25 bunch intensity beyond 1.5e11 p/b

• Continue BGI and WS commissioning
Questions and Comments

PS Supervisor of the week 25 – Frank Tecker

8:45 Daily Zoom meeting during beam commissioning
Web address: https://cern.zoom.us/j/9372114100?pwd=L29BcmIHUENCdFBRSytxYVcrM1B4Zz09
Meeting ID: 937 211 4100
Passcode: 525463