PSB Beam Readiness

G.P. Di Giovanni, on behalf of the PSB BCWG

LIU-CCC Meeting, 9th August 2019
• Tight planning for PSB beam commissioning.

• Prioritise the readiness of the various PSB beam types on beam commissioning needs of downstream machines and requests from the CERN experiments/facilities.
Beam Request in the Injector Complex

**PS Current Requests:**
- TOF ~5e12, and LHCINDIV for 1st checks, then 14 GeV MTE for alignment (at least 1E12 ppp).
- MTE higher intensity for 200 MHz blow-up (1E13 ppp).
- Later EAST, AD, nTOF and multi-bunch LHC beams.

**SPS Current Requests:**
- LHCINDIV with an intensity 1E11 ppb. The higher-than-expected bunch intensity from LHCPROBE is needed for setting the SPS RF system.
- Low intensity fixed target beam, SFTPRO, with an intensity of 5E11 ppp for aperture measurements.
- Low intensity fix target beam, SFTPRO, with an intensity of 2E12 ppp for beam-based alignment.
- Multi-bunch LHC-type beam. To be decided if LHC25 or BCMS25.
Beam Request in ISOLDE

Information from J. Alberto and R. Catherall

• “ISOLDE will work in stand-alone mode with stable beam as from summer 2020. This does not require protons. We will just work with our own self-produced beams of stable isotopes.”

• “For the start up in 2021, we are flexible. We have ear-marked April 2021 after having different conversations with different people. However, we are flexible. If you say that protons are available earlier then let us know and we will make ourselves ready (but not too early).”

Target ISOLDE beam readiness for end March 2021.
LS2 Master Schedule

- Fixed-target physics schedule.

- Keeping this in mind we have put forward a first proposal for a PSB delivery schedule for the different beams.
LHCPROBE/INDIV ready: ≥ 1 ring
TOF @ 200-400E10 ppb
TOF intensity increasing with time
LS2 Master Schedule

LHC Multi-bunch by end December
LS2 Master Schedule

AD ready
MTE @ 1E12 ppp (H2 or H1) for PS commissioning, BB align
LS2 Master Schedule

MTE @ 1E13 ppp (H2 or H1)
For PS commissioning, 200 MHz BU
LS2 Master Schedule

MTE @ 2E13 ppp (H2)
<table>
<thead>
<tr>
<th>Date</th>
<th>Beams Milestone</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Nov. 2020, Week 48</td>
<td>LHCPROBE/INDIV, at least one ring TOF @ 200-400E10 ppb MTE @ 1E12 ppp</td>
<td>TOF intensity increasing with time. MTE in H2 (H1 as a backup).</td>
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<tr>
<td>Beg. Dec 2020, Week 50</td>
<td>MTE @ 1E13 ppp</td>
<td>MTE in H2 (H1 as a backup)</td>
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<tr>
<td>Mid Dec 2020, Week 51</td>
<td>LHC Multi-bunch</td>
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<tr>
<td>End Jan. 2021, Week 5</td>
<td>AD</td>
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<tr>
<td>Mid Feb 2021, Week 7</td>
<td>MTE @ 2E13 ppp</td>
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<tr>
<td>End Mar 2021, Week 13</td>
<td>ISOLDE</td>
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- The production of other beams will follow, for instance EAST is expected by beginning of May, week 18. We should be able to match expectations for delivery.