BE-ABP Flash Presentation

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LS2 DAYS
29-30 SEPTEMBER 2015

http://indico.cern.ch/event/436424/

Accelerators and Beam Physics

- The following will be mentioned:
  - Beam Physics Support
  - LHC collimation consolidation
  - Injectors
  - Low Energy REX and ELENA

Beam Physics – Equipment Design

- ABP is in many cases leading the specification of the LIU and HL-LHC equipment, writing some ECRs, as well as managing some of the projects (LIU-PS, LIU-IONS).
- All equipment to be installed in the accelerator should be assessed for its impact on the beam dynamics. For example:
  - Impedance (simulation/calculation and impact).
  - Machine aperture.
  - Electron Cloud (SPS and LHC).
- Please allow sufficient time for the calculations to be done.
- **Use the PLAN tool to add a request for assessment by ABP.**
- Please do not wait until the ECR is issued to discuss this with us!
- Similarly, equipment non-conformities can be assessed for their impact on the beam.

LHC

- BE-ABP hosts the LHC collimation project (production by EN-STI).
- Collimation consolidation programme for LHC treated here.
- Only a fraction are approved at the moment by the cons project.
- A small number of collimators will be installed. The installations are fast (thanks to the plug-n-play developments) will not be the driver of any LS2 schedules in the tunnel.

LHC collimation

		Consolidation approved?	Units	LHC Installation dates?
	Recovery of collimator 5th axes for TCT's in IR1/5	Y	12	YETS15-16
	Robust TCT collimators for IR1/5	N	4	LS2
	Control system consolidation	N	-	
	Primary collimator spares	N	8	LS2
	Passive absorbers in IR7 for MQW consolidation	N	2	LS2

Injectors and Experimental Areas

- Linac4 Connection – ABP beam commissioning
  - Commissioning of 160 MeV beam through LT-LTB-LBE lines mid LS2 (includes PS switchyard). Linac4 restarting mid 2nd year. See Julie's presentations.

- Linac2
  - Part of transfer line to be removed for Linac4 connection. The rest of the installation is mothballed until after LS2.
  - Source maintenance to be performed at each year end TS.

Injectors and Experimental Areas

- Linac3 – ABP provide the technical co-ordinator.
  - YETS2015 – 100ms quadrupoles and RF, Magnet interlocks, low energy modifications (delay critical in the workshop), diagnostics improvements.
  - LS2 – Removal of asbestos (PS-CONS), ventilation renovation (PS-CONS), not yet approved.
  - LS2 – Consolidation proposal to build Linac3 spare drift tubes and install in LS2 (end), not yet approved and a low priority – could wait until LS3.
  - Source maintenance to be performed at each year end TS.
  - Restart of source early in 2016 (LIU Ion upgrade commissioning) and 2017 (Xe beam commissioning). See IEFC-150.

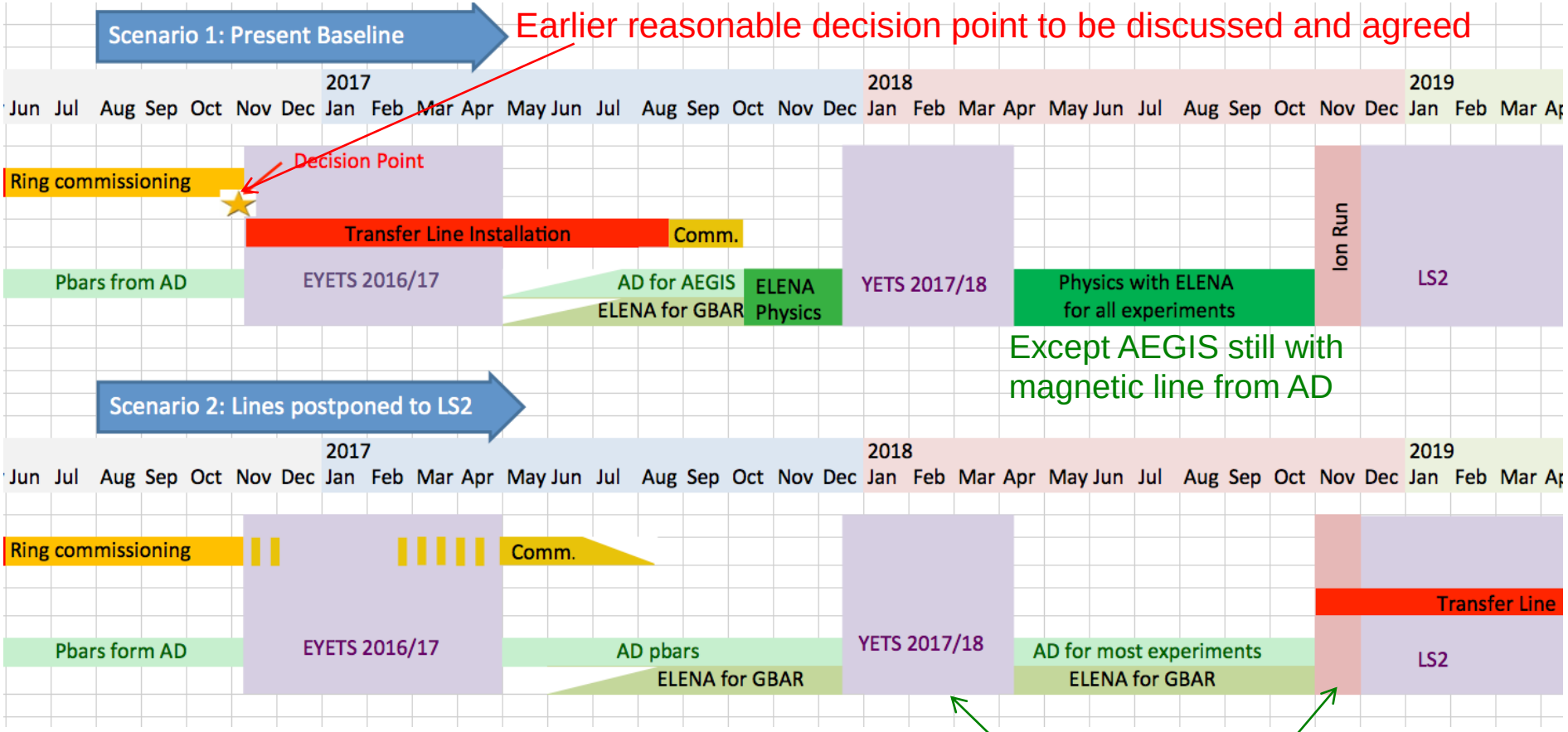
- REX – Possible upgrade of the Electron Beam Ion Source solenoid to a 5T unit – external funding being sought. Installation proposed for LS2.

ELENA

- Installation of ring and lines until spring/summer 2016
  - Workload for many groups over YETS 2015/16 and thereafter
  - Followed by ELENA ring commissioning mainly with external source in parallel to AD physics run
- Two Scenarios for the replacement of the magnetic lines from AD to the experiments by electrostatic lines from ELENA
  - Baseline: activity takes place starting in November after the 2016 run until autumn 2017
    - Heavy workload for many groups during EYETS 2016/17 and thereafter (removal of existing magnets, instrumentation, vacuum equipment, supports, cables, power converters … followed by installation cables, supports, electrostatic transfer elements, vacuum equipment, instrumentation …)
    - Tight planning aiming at commissioning new lines and a brief 100 keV antiproton physics run for all experiments by the end of 2017
  - Plan B with ELENA ring commissioning not sufficiently advanced: postpone to LS2
    - Heavy workload for many groups during LS2
    - Control system availability to commission new lines using beam from the external H- and proton source during LS2

  => When do we have to take the decision to keep the baseline or to delay new lines to LS2?
    - Early enough to leave groups time for planning (latest decision without additional cost?)
    - Not too early to leave enough time for ELENA commissioning

ELENA



With confirmation of later LS2 start
=> More attractive to install new lines in 2017
provided ELENA is ready (otherwise most experiments see 100 keV antiprotons from 2020 on)

Detailed planning not yet available (dates guessed)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