

TREX Meeting Minutes PPS Rotation in YETS

Date: 5 Nov 2024

<https://indico.cern.ch/event/1475443/>

Attendees: Dmitry DRUZHKIN, Joachim BAECHLER, Mario DEILE (all EP-CMT), Xavier PONS (EP-DT), Dragoslav LAZIC (EP-UCM), Stephane FARTOUKH (BE-ARP), Alban VIEILLE (BE-GM), Maria BARBARAN, Jean-Pierre CORSO, Bruno FERRAL (all EN-ACE), Angelo INFANTINO (HSE-RP), Josef SESTAK (TE-VSC), Francisco SANCHEZ GALAN, Marija MAJSTORIVIC, Oliver BOETTCHER (all BE-EA)

Attendees via Zoom: Andrea GADDI (EP-CMX), Frederik VAN DER VEKEN, Stefano REDAELLI (all BE-ARP), Gloria CORTI (EP-LBD), Jean-Philippe TOCK (EN-ACE), Jonathan HOLLAR (EP-UCM), Jörg WENNINGER (BE-OP), Peter STEINBERG (EP-UAT), Safouane EL-IDRISSI (HSE-RP),

This TREX meeting is focused on the actions to rotate the PPS during the next YETS.

As this would be a major intervention in PPS (not yet done), the goal of the meeting would be to be sure that all the possible implications and safety aspects can be completed in a very short time (November) to allow an eventual early start of intervention in the tunnel (ideally in December), tbc by machine coordination.

D. Druzhkin, J. Baechler & M. Deile presented the main points concerning the intervention.

<https://indico.cern.ch/event/1475443/contributions/6213420/attachments/2960991/5207968/Reinstallation%20of%20PPS%20in%20YETS%202024-2025.pdf>

1. Introduction

- The official decision to reverse polarity is still pending. The team awaits an update at the next LMC meeting (scheduled for tomorrow).
- If polarity reversal is approved, significant impacts are expected on the current PPS layout, as both Diamond and tracking detectors will fall out of acceptance.

2. Detector Rotation Proposal:

- To address acceptance issues, a mechanical rotation of all detectors by 27 degrees has been proposed. This would achieve 100% acceptance for the timing detector and mostly restore tracking detector acceptance.
- The outlined work includes modifications in half-cells C6R5 and C6L5 (from Q5 to Q6).
- Specifically, horizontal XRP units are to be rotated with the installation of a mechanical bracket, while vertical units remain unchanged.
- A rotation test on one XRP unit will be conducted on the surface (P5) before any underground activities begin.

3. Detailed Sequence of Underground Activities

- A sequence of tasks was presented (see slides), including:
 - **Survey and Vacuum Teams:** Both teams will be required at the beginning and end phases, especially for opening vacuum bellows (16 in total, including ionic pumps).
 - **Cabling Disconnection:** Following electrical lock-out, EP and PPS teams will remove cabling.
 - **Rotation Operation:** PPS teams will handle rotation and installation of brackets and shimming independently, using their own tooling (no additional support from EN-HE required). During craning, a protective cover may be placed on the incoming vacuum pipe.
 - **Post-Installation tests & realignment :** A 1000-cycle movement test will be conducted overnight, followed by final realignment after beam start-up.

4. Reference Operations:

- Similar operations were performed twice, during EYETS 2016-2017 [ECR in EDMS 4522018] and at the start of LS2 2018 [Fiducialization in EDMS 2345567].

5. Q/A

- M. Barberan requested duration estimates for each activity, including transport passage blockages. She commented that access will not be possible for the first two weeks of YETS.
- A. Infantino confirmed this aligns with RP needs and requested a WDP (Work Development Plan) near TCL6.
- B. Feral mentioned the need for an ECR and authorization for QRL work. He will provide the template to the PPS team, suggesting that existing documents could serve as a basis.
- J. Sestak confirmed that from a Vacuum perspective, the clear priority is to venting only once and pumping only once, he asked whether the intervention could be done without touching the internal beam line (confirmed by PPS team) and commented that the largest space gained with the removal of the warm modules is about 300mm (PPS confirmed that should be enough). He also asked whether the proposed shimming will work when the center of gravity is changed. No objections to advance the vacuum activities if the activity is approved.
- K. Widuch confirmed that the survey team could do the jobs in December, maybe in line with LSS5 smoothing activities. Additional tooling might be necessary.
- S. Fartouk emphasized that the presented simulations need review by the Collimation Working Group, with S. Redaelli confirming.
- F. Sanchez asked whether CV need to do any intervention for the services. PPS team confirmed that in principle the flexibility of piping should be enough, but needs to be seen in-situ. He also commented on whether the change could also induce changes in the RP conditions as could have been the cause in P1 for ARP, where electronics are failing more often.
- S. Redaelli commented that for the time being there is not a clear correlation in the charge of polarity with the machine losses.
- A. Infantino confirmed that accesses are much more frequent and access conditions changed from ALARA 1 to ALARA 2. A crosscheck by F. Cerutti's team would be valuable.

- J. P. Corso asked for a 3D model (PPS 2 confirmed they will provide it) and commented his concern about the position of the survey targets after rotation (some of them could point towards the wall. PPS2 team commented that this could be the case for one of them and will look for a solution).
 - **The outcome of the meeting is that on a first sight, timing and feasibility of an early (December) intervention seems ok, as no showstoppers arise. Nevertheless, the reduced time for preparing the intervention makes it challenging**
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6. Actions

- **PPS Team:** Provide a 3D model to J.P. Corso and assess survey target positioning post-rotation.
- **B. Feral:** Send ECR template to PPS team.
- **Machine Coordination, Vacuum and Survey Teams:** Coordinate timing with PPS for early survey and vacuum interventions.
- **S. Redaelli & Collimation Working Group:** Review simulations and provide feedback.
- **F. Cerutti's Team:** Conduct a cross-check on RP conditions post-change in polarity.

Next Steps:

- Awaiting the polarity reversal decision at the next LMC meeting.
- Schedule rotation test for XRP at P5.
- Finalize detailed activity timeline and duration estimates.

Next Meeting: [Friday 22 Nov 2024]

Minutes prepared by Francisco Sanchez Galan, attendance list provided by Oliver Boettcher