TE/MSC-MNC activities

LIU-PSB

A. Newborough

11th September 2018
• WU 91872 - Deliver operational Main Bending Magnet shimming & Saturation modifications
• WU 91870 - Deliver operational Main Magnet cooling mods
• WU 112579 - BI Bending (V) magnet
• WU 112582 - Quadrupole Magnets BT & BTP Quadrupoles
• WU 112580 - BI Correctors
• WU 91873 - Deliver operational Main BHZ Magnets (two Yokes + 4 coil sets)
• WU 112581 - Bending Magnet BT.BHZ 10
• WU 136495 - Bending Magnet BTM.BHZ 10
• WU 91874 - Other Magnets BT, BTP&BTM
• WU 112583 - Installation and FSU during LS2

• LINAC to PSB (LTB, BI) pulsed quadrupoles
WU 91872
Deliver operational Main Bending Magnet shimming & Saturation modifications

- **Documents**
  - PSB-MB-ER-0001
  - Indico 458040
  - ECR: MBH-EC-0001 (1st draft under approval)
- **Stainless steel plates**
  - CA 7192716
  - HEAVY MECHANICAL COMPLEX 3 – PAKISTAN
  - Delivery ~ Winter 2018
- **Laminated side plates**
  - DI 2589715
  - Van Halteren Metaal BV, Holland
  - Delivery Winter 2019
- **Shimming material & fixings**
  - CA7328748, J3049272
  - Various
  - Delivery Winter 2018

Magnetic measurement report under preparation.
WU 91870
Deliver operational Main Magnet cooling mods

• Stage 1 - upgrade of interlocks and brazed connections (COMPLETED)
  • detailed in EDMS 1393802, 1393798 and completed during LS1 with BINP collaboration
• Stage 2 - upgrade of the damping resistors
  • detailed in ECR PSB-M-EC-0001 (under approval)
  • Extensive measurements and simulations have been carried out between BE/APP, TE/EPC and TE/MSC. The initial results show that the proposal to double the ohmic value of the resistors is ‘probably’ ok and remains the baseline (installation December 2018). Beam Dynamics will be performed and Frank Schmidt will present the full findings in the near future.
Detailed: PSB-MBVDB-ER-0001, ECR: PSB-LJ-EC-0001,
2/2 magnets received
Magnetic measurement S/N1
EDMS: 1816629 (DRAFT under discussion), S/N2 to be performed in b.311 including dynamic study

https://norma-db.web.cern.ch/design/PXMBVDB4WC/
Quadrupole Magnets BT & BTP Quadrupoles

- Detailed in PSB-MQ-ER-0001
- Information already given by MSC for the ECR which is under preparation by TE/ABT
- Pre-series delivered
  - Magnetic measurements (acceptance tests) confirmed the field quality with reduced end chamfer.
  - As designed chamfer will be machine at CERN.
- Supports designs under approval.

https://norma-db.web.cern.ch/design/PXMQNCUNWP
WU 112580
BI Correctors

- Detailed in EDMS: 1277962, 1341091, ECR: PSB-LJ-EC-0001, CPS-LJ-EC-0006
- 22/22 Magnets delivered, 8 required for upgrade, 14 for consolidation
- Magnetic measurements are to be repeated in b.311
- Support structures expected end of September
  - Simple design for single units
  - Shielded design for stack to avoid magnetic cross-talk

https://norma-db.web.cern.ch/design/PXMCCLAWAP
WU 91873
Deliver operational Main BHZ Magnets (two Yokes + 4 coil sets)

- Detailed in PSB-MB-ER-0001, ECR: PSB-MBH-EC-0001 (under approval), PSB-LJ-EC-0015 (under approval).
- 16/32 coils delivered, 2 rejected with NC to be replaced by end of the week. Remain 16 coils due in 2019 (needed for installation in the magnets removed from the machine)
- 3/3 yokes delivered
- Assembly of the 1\textsuperscript{st} magnet is well underway with a plan to deliver it to magnet measurements before the end of October. Assembly of the 2\textsuperscript{nd} magnet will be started in parallel.
WU 112581
Bending Magnet BT.BHZ 10

- Detailed in PSB-MBHGA-ER-0001
- Information already given by MSC for the ECR which is under preparation by TE/ABT
- 1/2 magnets assembled at Sigmaphi, Open NC on coil shimming to be corrected before shipment to CERN. Delivery expected by end of September.
- Dedicated magnetic measurement system has been developed.

https://norma-db.web.cern.ch/design/PXMBHGAWWP
WU 136495
Bending Magnet BTM.BHZ 10

• Detailed in PSB-MBHGA-ER-0001
• Information already given by MSC for the ECR which is under preparation by TE/ABT
• 4/4 coils have been molded, 3/4 have open NC which are being treated before acceptance by CERN
• 2/2 yokes have been stacked and cured but neither of them are in tolerance and are yet to be accepted by CERN.
• On the critical path!
• Dedicated magnetic measurement system has been

https://norma-db.web.cern.ch/design/PXMBHGAWWP
• Concerns the following magnets:
  • BT1.BVT10, BT2.BVT10 & BT2.BVT20
  • BT2.DVT10, BT3.DVT20 & BT1.DVT30
• Detailed in PSB-MD-ER-0001
• Information already given by MSC for the ECR which is under preparation by TE/ABT
• Coils being fabricated at TESLA UK, pre-series expected September 2018, Series Winter 2019
• Yokes being fabricated at CERN
  • 1/3 DVT finished, 2/3 underway
  • 0/3 BV1, tooling ready
  • 0/2 BV2, tooling ready
TE/MSC are working resource ‘Master plan’, the type of resource (Collaboration, FSU, Temporary labour) needed during the installation phase will be soon decided.
Consolidation
LINAC to PSB Quadrupoles

- Detail: ATS/NOTE/2013/037, ECR PSB-LJ-EC-0001, CPS-LJ-EC-0006
- 20/20 quadrupoles received
- Magnetic measurements underway in b.311
- Support structures expected end of September.

https://norma-db.web.cern.ch/design/PXMQNBSNAP
Summary

• All work unit orders are placed
• Most work units are well advanced with deliveries expected over the next months.
• The critical items include:
  • The new BTM.BHZ10 where the manufacturer is having difficulties achieving the required tolerances on the yoke, however we believe that delivery will be ‘just in time’. Close and constant follow-up is in place.
  • The recombination dipole and bending magnets will be ready by spring 2019, on time for the planned installation.