| HL-LHC: Quality  Manufacturing and Inspection Plan – Coil Fabrication | | | | |
| --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | Prepared by: A. Bracero  Date: 12/12/2017 | Prepared by: I. Pong  Date: 05/10/2017 | | Verified by: J. Blowers  Date: 12/12/2017  Date: | Verified by: J. Blowers, I. Bejar Alonso  Date: 12/10/2017, 02/10/2017  Date: | | Approved by: N. Surname  Date: DD/MM/20YY  Date: | Approved by: G. Apollinari, E. Todesco  Date: 02/11/2017, DD/MM/20YY  Date: | | Project: HL-LHC | Supplier: FNAL | Item Eq. Code: HCMQXFC013-UP | Asset Code  (LHC Part Identifier):  HCMQXFAC013-UPNNNNNN |
| Work Package: WP3 | Client: CERN | Item description: QXFA Coils | EDMS Report No: |

| **No** | **ACTIVITY / OPÉRATION** | **APPL. STANDARDS / NORMES APPL.** | **APPLICABLE DOCUMENTS / DOCUMENTS APPLICABLES** | **REV.**  **DOC.** | **INSPECTION / CONTRÔLE** | | | | | | | | **NOTES** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SUPPLIER** | | **CLIENT** | | **3RD PARTY** | | **INSPECTION REPORT** | **REV.**  **DOC.** |
| **Code** | **Signature/Date** | **Code** | **Signature/Date** | **Code** | **Signature/Date** |
|  |  |  |  | |  |  |  |  |  |  |  |  | |
| **1.0** | **Material Receiving Inspection** |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.1 | Cable: Review data from LBNL |  | LARP/US-HiLumi SuperConducting Cable Manufacturing Summary Traveler (QXFA)  464234 |  | R |  |  |  |  |  |  |  |  |
| 1.2 | CMM Inspection:  Coil Poles (30-50%)  Spacers (30-50%)  Saddles (30-50%) |  |  |  | R |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2.0** | **Winding & Curing** |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.1 | Prep Winding & Curing |  | QXFA Prep for Coil Winding & Curing Traveler  464308 |  | R |  |  |  |  |  |  |  |  |
| 2.2 | Winding inner layer |  | QXFA Coil Winding & Curing Traveler  464311 |  | R |  |  |  |  |  |  |  |  |
| 2.3 | Curing inner layer |  | QXFA Coil Winding & Curing Traveler  464311 |  | R |  |  |  |  |  |  |  |  |
| 2.4 | Winding outer layer |  | QXFA Coil Winding & Curing Traveler  464311 |  | R |  |  |  |  |  |  |  |  |
| 2.5 | Curing outer layer |  | QXFA Coil Winding & Curing Traveler  464311 |  | R |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3.0** | **Reaction** |  |  |  |  |  |  |  |  |  |  |  |  |
| 3.1 | Prep Reaction |  | QXFA Prep for Reaction Traveler  464309 |  | R |  |  |  |  |  |  |  |  |
| 3.2 | Reaction |  | QXFA Reaction Traveler  464312 |  | R |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4.0** | **Impregnation** |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.1 | Prep Impregnation |  | QXFA Prep for Splice / Epoxy Impregnation Traveler  464310 |  | R |  |  |  |  |  |  |  |  |
| 4.2 | Splice |  | Splice / Epoxy Impregnation Traveler  464313 |  | R |  |  |  |  |  |  |  |  |
| 4.3 | Prepare outer layer |  | Splice / Epoxy Impregnation Traveler  464313 |  | R |  |  |  |  |  |  |  |  |
| 4.4 | Prepare inner layer |  | Splice / Epoxy Impregnation Traveler  464313 |  | R |  |  |  |  |  |  |  |  |
| 4.5 | Impregnation |  | Splice / Epoxy Impregnation Traveler  464313 |  | R |  |  |  |  |  |  |  |  |
| 4.6 | Coil CMM measurements |  | Splice / Epoxy Impregnation Traveler  464313 |  | R |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5.0** | **Electrical Testing** |  |  |  |  |  |  |  |  |  |  |  |  |
| 5.1 | Electrical Testing |  | QXFA Electrical Testing Traveler  464288 |  | R |  |  |  |  |  |  |  |  |
| 5.2 | Electrical ID |  | *QXFA Coil ## Electric ID.xlsx* |  | R |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6.0** | **Shipping** |  |  |  |  |  |  |  |  |  |  |  |  |
| 6.1 | Shipping to LBNL |  | QXFA Shipping to LBNL Traveler  464327 |  | R |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |

\*Add as many rows as required

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| --- | --- | --- | --- |
| **NOTE:**  H = HOLD POINT  N = NOTIFICATION POINT  R = REVIEW AND APPROVAL OF REPORT  W = WITNESS POINT | **SUPPLIER:**  **Approved by:** N. Surname  **Signature:**  **Date:** DD/MM/20YY | **CLIENT:**  **Approved by:** N. Surname  **Signature:**  **Date:** DD/MM/20YY | **3rd PARTY (if any):**  **Approved by:** N. Surname  **Signature:**  **Date:** DD/MM/20YY |
| 1. **N (Notification Point)**: CERN, or its authorized representative, is informed 5 working days in advance that a specific step has been completed and that the following step in the approved work-flow will be performed. A Notification Point does not affect the work-flow. Work can continue without CERN, or its authorized representative, reply. 2. **H (Hold Point)**: CERN, or its authorized representative, is informed that a specific step has been completed. The work-flow is stopped until CERN, or its authorized representative, provides a Hold Point Clearance. The clearance is provided within 5 working days upon submission of the quality control documentation relative to the performed step. In case of clearance the work-flow can continue. In case of rejection, a recovery plan shall be discussed with CERN and submitted to CERN for final approval within 10 working days. 3. **R (Review)**: The quality records will be reviewed. 4. **W (Witness Point)**: CERN, or its authorized representative, intends to attend any specific step of the production. The supplier will notify the client with 10 working days in advance that the activity will be performed. | | | |