**Parts exchange between US HL-LHC AUP & CERN HL-LHC WP3**

January 25, 2018

**Parts expected from CERN:**

**NbTi Cables and Traces:**

* Nb-Ti cables to be used for MQXFA leads: **1000 m** (10 m per coil)
* Nb-Ti cable for LMQXFA bus-bars: **720 m** (60 m of per Cold Mass plus one spare)
* Traces: **96 sets** (set = Inner and outer layer trace)

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| --- | --- | --- |
| Need by Date | Qt. of NbTi cable (m) | Qt. of Traces (#) |
| April, 2018 | **400** | **12** |
| April, 2019 | **400** | **18** |
| April, 2020 | **400** | **26** |
| April, 2021 | **400** | **24** |
| April, 2022 | **120** | **16** |

**Structure:**

* Long bladders if present R&D at CERN is successful

**Cold mass:**

* 2x13 End domes – a.k.a. end covers
* 13 Cold bore tubes
* 2x13
* 12x13 mirrors to be installed on the SS shell for survey
* 2x13 Low cobalt SS plates (to be paid for by HL-LHC-AUP)

**Cryostat:**

* All parts including assembly tooling (US safety analysis to be performed by US engineer)

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| --- | --- |
| Need by Date | Cold Mass Parts |
| October, 2018 | **Prototype** |
| October, 2019 | **6 sets** |
| February, 2022 | **6 sets** |

|  |  |
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| Need by Date | Cryostat |
| May, 2019 | **Tooling and Prototype kit** |
| March, 2020 | **5 kits** |
| June, 2022 | **5 kits** |

**Cold Tests:**

* Heater Firing Units for Cryo-assembly test: 24 + 2 spares

**Need by date: March 2019**

**Parts expected from AUP:**

* Wedge sleeve (RC-15MM-28 sleeve that is manufactured using S2 glass yarn with 493 silane based sizing)
  + Length per coil: 40 m
  + Total number of coils 65
  + Total length: 2600 m
  + Total cost: 2600 \* 20 = 52000 US $
  + **Need by dates:** 
    - **200 m by April 2018**
    - **All the rest by December 2018**
* BGF 6576
  + Length per coil: 20 m
  + Total number of coils 65
  + Total length: 1300 m
  + Total cost: 1300 \* 14 = 18000 US $
  + **Need by date: December 2018**
* Bus-bars for Q2 cold masses: To Be Decided

**Strand exchange**

* CERN and HL-LHC-AUP could exchange B-OST-RRP 500 m units (from CERN to AUP) and B-OST-RRP 840 m units to optimize the strand production; up to a maximum of 300 km.