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# CM and Cryo meeting #1

S. Feher

3/6/2017

# Agenda

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|------------------------------------------------------|-----------------|
| 1. Cold Mass design work progress and plans          | H. Prin         |
| 2. Cryostat design work progress and plans           | D. Ramos Duarte |
| 3. Cold Mass & Cryostat requirements document status | S. Feher        |
| 4. Welding equipment and procedures                  | T. Vouris       |
| 5. Parts to be procured by CERN and FNAL             | All             |
| 6. Safety doc status                                 | All             |
| 7. Schedule                                          |                 |
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# Preparation for CD1 DOE Review

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- Couple of Reviews:
  - CD1 director's Review in June 13<sup>th</sup>
  - CD1 DOE Review August 1<sup>st</sup>
- We need to prepare:
  - Functional Requirements documents for both CM and Cryostat
    - CM has a draft version no even a draft for the Cryostat work
  - CDR for the US built magnets – CM&Cryo included
    - Conceptual Design – Fabrication plan, Interfaces, tooling
    - Safety docs and agreements to make sure that the product will meet all the standards
  - Basis of Estimates – CM (Labor and M&S) Cryostat (Labor)
    - Part list procurement plan between CERN and FNAL
  - Risk registry – risk needs to show up as a cost to the project
  - Schedule – for prototype and for production

# Cold Mass Functional Requirement Specifications

- Written by Ruben so far has not been reviewed
- Needs to be signed of by CERN and FNAL
- Alignment is not consistent:
  - “The two MQXFA axis with respect to the common axes must be within  $\pm 0.5$  mm, for the center and  $\pm 2$  mrad for the axis direction”
- No electrical agreement
- Radiation hardness:
  - Low cobalt 304LN
- What are the next steps in Safety?
- Who signs the partlists?

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# Schedule

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- Prototype Cryo-assembly (Full magnet) ready for testing: **June 16, 2019**
- Prototype Cryo assembly Fabrication start date: **October 23, 2018**
- Important Milestones for CM prototype:
  - Interface specifications need to be completed ~ January, 2018
  - Parts need to be received by Fermilab: some of them June, 2018
- Important Milestones for Cryostat prototype:
  - Tooling design – to prepare the tables and floor space: September, 2018
  - Start of the Cryostat work at FNAL: April 16<sup>th</sup>, 2019
- Important Milestones for Stand for Test facility:
  - Interface specifications – to be able to make the relevant shuffling unit:  
January, 2018

## Parts list to be provided by CERN

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- 316LN Plates (low cobalt content) or shells (shaped plates)
  - Is there any 304L low cobalt content material?
- End domes (a.k.a end covers)
- Cold bore tube
- Heat exchanger tube
- 18kA Busbars (+others if the integration study is not retained by CRG)
- External busbar lines
- Temperature sensors?
- Instrumentation wires?

*Any parts US to provide?*