Mu2e Status and Progress

D. Glenzinski, Fermilab (on behalf of the Mu2e Collaboration)
All Experimenter’s Meeting
10 February 2014
Current Status

• Obtained CD-1 July 2012
• Next CD milestones
  – CD-3a scheduled for Q2 FY2014
  – CD-2/3 scheduled for Q4 FY2014
• Fully funded in FY2014 budget
  – $15M PED + $20M Construction
  – Need CD-3 to access Construction funds
• Critical path runs through the solenoids
Preparations for CD-3a

• CD-3a will allow us to procure production quantities of long lead items affecting our critical path
  – 70 km of superconductor for our solenoids
  – Doing so ahead of CD-2 advances our schedule by about 6 months
  – The DOE supports this strategy
  – We need to complete our conductor R&D
  – Meet with DOE 27 February to discuss plan for moving forward with this
Conductor R&D

- Our solenoids require four different conductor geometries
  - Production Solenoid (PS)
  - Transport Solenoid (TS)
  - Detector Solenoid (DS-1, DS-2)

- To produce conductor, 3 main steps
  - Superconducting strand
  - Rutherford cable
  - Extruded superconductor

- Vendors contracted in early 2013 to produce R&D quantities of each conductor
Conductor R&D

- Vendors making excellent progress
- Conductor R&D campaign nearly complete
- We expect to be in a position to place orders for production lengths in March 2014

<table>
<thead>
<tr>
<th>Conductor Type</th>
<th>Strand</th>
<th>Cable</th>
<th>Final Extrusion</th>
<th>In Hand</th>
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</thead>
<tbody>
<tr>
<td>PS</td>
<td>meets spec</td>
<td>meets spec</td>
<td>meets spec*</td>
<td>70%</td>
</tr>
<tr>
<td>TS</td>
<td>meets spec</td>
<td>meets spec</td>
<td>meets spec</td>
<td>100%</td>
</tr>
<tr>
<td>DS-1</td>
<td>meets spec</td>
<td>meets spec</td>
<td>meets spec</td>
<td>70%</td>
</tr>
<tr>
<td>DS-2</td>
<td>meets spec</td>
<td>meets spec</td>
<td>meets spec</td>
<td>100%</td>
</tr>
</tbody>
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*except RRR, investigating
Preparations for CD2/3

• Principle efforts
  – Develop reference designs for PS and DS and solicit bids from industry for “Final Design and Fabricate”
  – Complete building design and solicit bids
  – Prepare documentation for DOE review
    • Technical Design Report
    • Cost and schedule information
    • ESH and QA plans
Solenoid Design Progress

• Solicitation packages for PS and DS are on the street
  – 3D solid model
  – Mature reference design
  – Detailed interface specifications
  – Detailed technical specifications and tolerances

• Expect bids back in about 11w
  – Ahead of CD-2/3 review
Building Design Progress

- Building design 100% complete
  - We will have bids in hand ahead of CD-2/3 review
CD-2/3 Documentation

• Drafts of many TDR chapters exist
• Focus of most all project personnel is to produce the BOEs and work with project controls to implement in the schedule
  – Will be ready for 27 Feb mini-review
• Significant simulation work on-going to estimate sensitivity of the apparatus we’re designing/costing
Collaboration News

- ~130 Collaborators, 26 Institutions, 3 Countries
  one new group admitted since last PAC – INFN Genoa
Collaboration News
Summary

• Mu2e is making excellent progress
  – Should be ready for CD-3a in March 2014
  – Aim to be ready for CD-2/3 in summer 2014
  – Mini-review 27th February will include a discussion of the plan for these upcoming CD reviews
  – If successful, will break ground on building this fall