Muon Collider-Neutrino Factory Collaboration Target Design Meeting

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High-Power Mercury Jet Target System Program Schedule

September 1, 2004
Oak Ridge National Laboratory
# Schedule for Target System Development and Testing

## Solenoid/Cryostat Milestones

<table>
<thead>
<tr>
<th>Task</th>
<th>Start Date</th>
<th>Finish Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabricate</td>
<td>5/31/04</td>
<td>6/28/04</td>
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<tr>
<td>Deliver/Install at MIT</td>
<td>11/1/04</td>
<td>11/19/04</td>
</tr>
<tr>
<td>System Test</td>
<td>11/22/04</td>
<td>12/17/04</td>
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<tr>
<td>Integrated Test at MIT</td>
<td>10/31/05</td>
<td>12/20/05</td>
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<tr>
<td>Ship to CERN</td>
<td>1/2/06</td>
<td>1/10/06</td>
</tr>
<tr>
<td>Install</td>
<td>2/1/06</td>
<td>2/8/06</td>
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<tr>
<td>Commission Test Equipment at CERN</td>
<td>3/1/06</td>
<td>3/31/06</td>
</tr>
<tr>
<td>Beam On Experiment</td>
<td>4/3/06</td>
<td>4/21/06</td>
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<tr>
<td>Decommission</td>
<td>4/24/06</td>
<td>4/28/06</td>
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</table>

The schedule for the "Solenoid/Cryostat" is based on that presented to MUTAC by H. Kirk on 4/28/04; however, the MIT integrated systems testing is delayed until Nov.-Dec. 2005 because of design, fabrication, and testing for the Hg target system. This likely change is shown on this schedule.

## Hg Target System

### 1. System Design

1a. Engineering Coordination
   - 7/1/04 to 8/18/04

1b. Establish Interfaces & Obtain Requirements
   - 8/2/04 to 8/31/04

1c. Neutronics Calcs (BNL)
   - 8/2/04 to 8/31/04

1d. Develop Interface Dwgs
   - 8/2/04 to 8/31/04

1e. Design Hg Flow Loop System
   - 9/1/04 to 2/23/05

1f. Develop Procurement Specification
   - 3/1/05 to 5/31/05

1g. Design Optical Diagnostics (BNL)
   - 9/1/04 to 11/12/04

1h. Design Target Windows (BNL)
   - 9/1/04 to 11/12/04

1i. Design Hg Nozzle (Princeton)
   - 9/1/04 to 11/12/04

1j. Procurement (Bid & Award)
   - 3/1/05 to 5/31/05

1k. Fabrication
   - 6/1/05 to 8/30/05

1l. Assembly and Systems Test
   - 7/1/05 to 9/30/05

1m. Ship to MIT, assemble target components
   - 10/1/05 to 12/30/05

### 2. Assist w/ Integrated Test at MIT
   - 10/3/05 to 12/30/05

### 3. Coordinate Design Effort with CERN
   - 9/1/04 to 1/31/05

### 4. Develop Decommissioning and Disposition Plan
   - 2/1/05 to 5/31/05

### 5. Develop Shipping & Installation Plan for MIT and CERN
   - 6/1/05 to 9/30/05

### 6. Provide Engineering Support for the High-Power Tests at CERN
   - 2/27/06 to 4/28/06

(Dates as of Nov. 4, 2004)

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**BNL, MIT, ORNL, and P at CERN**

**Use ORNL Transportation Group**

**D&D Plan Signed By All Parties**

**Hg-only Tests**

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**Hg-only Tests**
MIT Integrated System Testing Delayed 3 Mos.

• These tests demonstrate all of the operating conditions except, for the proton beam
• Original schedule was Aug.-Sept. ’05 (Nov-Dec ‘05)
• Change in schedule caused by target system development
  – design - 5.5 mos. beginning Sept. 1
  – procurement - 3 mos.
  – fabrication - 1 to 2 mos.
  – testing - 3 mos.

The overall schedule that meets the April ’06 experiment is tight!
Possible Areas To Make Up Schedule Time

- Schedule shows 1 month for shipping to CERN and 1 month for equipment set up - *reduce to 5 or 6 weeks* ???
- 3 months for target procurement - *expedite to 2 months* ???
- 3 months for target equipment assembly and testing - *with luck, 2 months* !!!
- Shorten schedule by 2 ½ months if everything goes better than planned for!

*Maybe… with some luck, 2 months can be made up if everything goes well!*