NLC Strategic Plan

Project Engineering and Management Break-Out Session

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NLC Strategic Plan

International Collaboration and Competition

U.S.-led project built in the U.S. with major foreign participation.

or

Foreign-led project built elsewhere with major U.S. participation.

Either way we will need

Complete project appraisal.
Engineering and management for a major U.S. investment.

DOE Life-Cycle Asset Management (LCAM) Milestones

<table>
<thead>
<tr>
<th>Preconceptual Activities</th>
<th>Present</th>
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<tbody>
<tr>
<td>R&amp;D</td>
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<tr>
<td>CD-1 Decision of Mission Need</td>
<td>Spring 1999</td>
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<tr>
<td>Conceptual Design</td>
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<tr>
<td>CD-2 Project Baseline Approval</td>
<td>Spring 2001</td>
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<tr>
<td>Preconstruction Engineering and Design</td>
<td></td>
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<td>CD-3 Construction Start</td>
<td>Fall 2002</td>
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<tr>
<td>Congressional Approval for Title I Construction</td>
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<tr>
<td>Title I Engineering and Design</td>
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<tr>
<td>Congressional Approval of Title I Baseline</td>
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<td>CD-4 Operational Approval</td>
<td>Fall 2008</td>
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Present day reality - Low tolerance for escalation of CD-2 baseline cost or schedule.
NLC Strategy

Build on proven and well understood technologies
   X-Band extrapolation of SLC

Comprehensive preconceptual accelerator design
   ZDR

Develop international consensus and ability to contribute to NLC
   Shared R&D
   MOU with KEK

Develop engineering and project management part and parcel with Conceptual Design of the accelerator

   “How do the people who have to make money do it?”
     Hire some people who have made money at it!

Balance of performance, reliability, and cost
   Design for manufacture (DFM)
   Reliability as part of engineering design review (FMEA)

Integration of multiple phases of the project
   Early involvement of industry
   Drive learning throughout production process
   Documentation and Configuration Control

Authorization from DOE to extend normal practices to include these.
Where are we now?

Just at the beginning.

Project management techniques
- Project Management Plan
- Scope of work
  - WBS/RBS
  - Technical specifications, descriptions, and choices
- Schedule of work
  - Project milestones and analysis
  - Detailed work schedules
- Risk analysis
  - Multidimensional

Reliability
- Systematic application at each stage of the project
- Part of the design process
- Part of configuration control

Costs
- One-ofs to thousands - learning curves
- Contingency deduced from risk analysis
- No roll-up at this review

Development of practices with prototype systems
- Magnet-DC Power
PDM System Development

Project Planning and Coordination
We are currently in this phase.