WBS 8. NCSX Project Management and Integration

Description

The NCSX Fabrication Project budget includes an amount for project management and integration activities that are not specific to a particular hardware work scope. These costs are budgeted in WBS 8, Project Management and Integration. These activities include the day-to-day management functions of the project manager and deputy project managers; project engineering management; project physics; project control; system engineering; environment, safety, and health and quality assurance. Further details of these functions are provided in the NCSX Project Execution Plan and the System Engineering Management Plan. It is composed of the following sub-elements:

- WBS 81 – Project Management and Control. – This task includes the overall project direction, administrative support, and project control support including budgeting, scheduling, and tracking activities. Personnel included in under this element are the:
  - Advanced Projects Department Head (PPPL)
  - NCSX Project Manager (PPPL)
  - NCSX Deputy Project Manager (ORNL)
  - Project Control Staff (PPPL and ORNL)
  - NCSX Project Secretary (PPPL)

- WBS 82 – Project Engineering – This task includes all the overall engineering management and system engineering activities. Specific tasks budgeted under this element include:
  - Day-to-day engineering management;
  - Engineering requirements and interface definition;
  - Overall project design integration and global models;
  - Configuration management and control; and
  - Systems level studies
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- WBS 83 – ES&H and Quality Assurance/Control - This task includes all the ES&H and quality assurance/quality control support of the project. It includes the following activities: Construction Safety;
  - Electrical Safety;
  - Radiation Safety;
  - NEPA & Safety Assessment Review & Coordination;
  - Industrial Hygiene & Safety;
  - Quality Assurance; and
  - Quality Control of the procurement and construction processes.

  Further details are provided in the Project Execution Plan. Support for the NCSX Project under this category is funded as an indirect cost via the PPPL G&A overhead, so no direct costs are budgeted

- WBS 84 – Project Physics – This WBS includes the project physics activities in direct support of the NCSX fabrication project. It includes the following activities:
    - Physics requirements definition; and
    - Physics analysis in support of design and fabrication activities.

  Physicists involved in the design and fabrication of hardware, such as Heating, Fueling, and Vacuum (WBS 2), or Diagnostics (WBS 3) are covered in those work packages, respectively. Physicists involved in project management are covered in WBS 81.

Cost Estimate

The activities falling under WBS 8 continue throughout the life of the project. The effort peaks slightly in the first two years, after which the physics input to the design process will be complete. Without contingency, the total costs (assuming a mid-FY2007 first plasma target) are approximately $5.7M in year of expenditure dollars. The approximate spending profile is provided in the table that follows:

WBS 8 Spending Profile

WBS	FY2003 ($K)	FY2004 ($K)	FY2005 ($K)	FY2006 ($K)	FY2007 ($K)	TOTALS ($K)
81	723	677	661	660	350	3,070
82	473	474	446	460	247	2,100
84	289	132	31	32	21	505
Totals	1,484	1,282	1,138	1,152	618	5,675

Contingency

The risk factor is only moderate in this WBS element. Resource-loading estimates have been developed from the bottoms-up based on previous experience from earlier projects. Accordingly, a contingency allocation of 15% has been assigned. Should the project be extended due to either technical or funding problems, this WBS element will experience an increase in costs directly correlated to the amount of the delay.

PPPL Allocations

In addition, PPPL allocates certain costs directly to projects, including NCSX. These charges will be collected under WBS 8 as a separate WBS element (WBS 85). The direct allocation charges cover the Computer Division's support and maintenance of the VAX, UNIX and CADD computer systems and desktop computer support at PPPL and the diagnostic and rf development activities at PPPL. Based on experience gained from similar projects and the current projections of funding at PPPL during the NCSX design and fabrication project, the estimated direct allocations are approximately $853K over the life of the project.