NCSX Project Overview

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NCSX Project Manager

NCSX Project Meeting

December 19, 2000

Project Update Since Nov. Project Meeting

Coil Design

- We are developing NCSX machine concept based on 1017 modular coils.
- Modular coil design improvements are expected and encouraged, e.g.,
  - Geometry mods to suppress islands; smaller/fewer coils; improve manufacturability.
- Improved saddle coil physics performance being pursued as time and resources permit (potential backup to modulars).
- Trim coils: still looking for a workable concept (high priority).

Machine Siting Study

- Confirmed C-Site choice after re-visiting D-Site options.
- Magnets can be powered by D-Site power supplies without moving them.
- NBI relocation costs are a major differentiator between C & D-Sites.
- Siting at center of combined PLT/PBX-M test cell accommodates envisioned NBI configurations around machine.

Project Update II

Project Scope and Cost Study (Main Effort)

- Based on reference requirements: LI383 plasma & 1017 coils @R≈1.7 m, B=2 T, 4 NB's (some capabilities deferred).
- For each subsystem, clarify & update:
  - requirements, work scope, interfaces, design, cost, and schedule.
- Kick-off meeting was Dec. 8; guidance posted.
- Schedule: series of internal mini-reviews (~2 subsystems/wk) thru Feb. 7.

Alternative, Lower-Cost Design Study (Smaller Effort)

- What would a 20% cheaper machine look like? and how would physics capabilities and risk be affected?
- Report by mid-January.

Subsystem Mini-Review Schedule (1st Round)

NCSX Cost and Schedule Reviews

Friday Meetings

WBS	System	Lead Presenter	Date of Review	Reviewer(s)
21,22,25	Fueling, Vac. Pumping, NBs, boronization, GDC	H. Kugel	15-Dec-00	M. Williams
9	Prep. For Operations	H. Kugel	15-Dec-00	C. Neumeyer
4	Power Systems	C. Neumeyer	21-Dec-00	R. Hatcher
7	Machine Assembly	J. Chrzanowski	3-Jan-01	
3	Diagnostics	D. Johnson	5-Jan-01	K. Young
64,65,66,67	Cryo, waste handling, Utilities, Facilities	L. Dudek	12-Jan-01	R. Hawryluk
8	Project Oversight and Support	R. Simmons	12-Jan-01	T. Egebo
241	ECH	T. Bigelow	19-Jan-01	J. Hosea
232	HHFW	R. Majeski	19-Jan-01	J. Hosea

Subsystem Mini-Review Schedule (2nd Round)

13,14,16	TF, PF, Modular, Trim Coils, support structure	B. Nelson	24-Jan-01
12	Vac. Vessel	B . Nelson	24-Jan-01
11	PFCs	B . Nelson	24-Jan-01
15	Cryostat	B . Nelson	24-Jan-01
21,22,5,9	Fueling, Vac. Pumping, NBs, boronization, GDC	H. Kugel	26-Jan-01
4	Power Systems	C. Neumeyer	26-Jan-01
5	I&C; Data Acquisition	G. Oliaro	26-Jan-01
3	Diagnostics	D. Johnson	26-Jan-01
64,65,66,67	Cryo, waste handling, Utilities, Facilities	L. Dudek	2-Feb-01
8	Project Oversight and Support	R. Simmons	2-Feb-01
241	ECH	T. Bigelow	2-Feb-01
232	HHFW	R. Majeski	2-Feb-01
7	Machine Assembly	J. Chrzanowski	2-Feb-01
	Presentation of Combined Cost and Schedule	**R. Simmons**	**7-Feb-01**

Proposed FY-2001 Milestones

Milestone • Deliverables	Scheduled Completion
Conduct Physics Validation Review • Documentation and presentations	**March 2001**
Conduct FY-2003 Project Validation • Technical backup for cost and schedule • Preliminary assessment of any post-PVR changes. • Project Plans	**May 2001**
Update Reference Configuration for CDR • Updated requirements, models, specs.	**Sept. 2001**

Calendar

Dec. 20. Partial draft of physics documentation due.

Jan. 30-31. Project Meeting. Complete first draft of physics doc. due.

Feb. 27-28. Project Meeting.

Feb. 27-28. *FESAC Meeting, Gaithersburg, MD.*

Mar. 13-15. *DOE/OFES Annual Budget (FWP) Meeting.*

Mar. 14. PVR Documents Issued.

Mar. 28-30. NCSX Physics Validation Review.

Apr. 2-4. *Sherwood Meeting.*

Apr. 24-25. *QOS Physics Validation Review.*

~May 21. *ORNL Theory Review.*

May 16-19. *Transport Task Force Meeting, Fairbanks, AK.*

May 30-31. DOE Project Validation for FY-2003.

June 18-22. EPS Conference. (Abstracts Feb. 16)

Other: Seminars at fusion institutions, FWP preparation.

Goals for This Meeting

- Update requirements
  - Reference scenarios, flexibility, trim coil, P&PH, size, B.
- Review progress of physics analysis and documentation for PVR.
- Review progress of stellarator core and power supply design.