

NCSX Project Update and Plans

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NCSX Project Manager

NCSX Project Meeting

June 11, 2001

Project Update Since January Project Meeting

Physics Validation Review / FESAC PoP Readiness Review

- Documentation, presentations: an outstanding team accomplishment!
- Very positive results:
 - CS potential to solve MFE problems recognized.
 - NCSX pre-conceptual design is appropriate approach.
 - FESAC endorsed: CS now qualifies for PoP designation.
- 29 physics recommendations, e.g.
 - Carefully justify size (is it too small?)
 - Heating and diagnostics should be well integrated with design, well mapped to physics goals.
 - Physics analysis: finite-build coils, flux surfaces, neutral penetration.
 - Emphasize program leadership.

Responding to the PVR Recommendations- I

Disposition Plan Has Been Developed

- Provides an initial response and follow-up plan for each recommendation.
- Posted on the web site in the PVR area: please review.
- Suggestions for improvement are welcome.
- Response plans should be folded into our Conceptual Design Review (CDR) preparation plans. Address at this meeting.
- Will provide formal progress reports in Sept. '01 and at CDR (Apr. '02), but many items can and should be closed out (much) sooner.
- Bob Simmons will coordinate disposition.

Machine Size Concerns (is it “too small”?)

- Design point choice will be reviewed as part of updating the configuration.
- Goals: ensure adequacy for physics program, avoid cost growth.
- Needs to be done in the next few weeks.
- John Schmidt will coordinate response.

Responding to the PVR Recommendations - II

Scientific leadership role for NCSX, as seen by panel:

- NCSX as a focus and driver for 3D plasma physics.
- NCSX as the center of the national compact stellarator program.
 - Including theory, CE experiments, int'l. collaboration, reactor studies.
- In response, NCSX project will encourage/support improved coordination among stellarator program activities, e.g.:
 - 3D Theory Planning Workshop.
 - Collaboration on LHD and W7-AS.
 - Work with ARIES team on stellarator reactor studies.
 - Cooperation among experiments in design and manufacturing.
 - Broaden scope of PPPL's PAC to advise on all PPPL's stellarator activities, not just NCSX.

FY-2001 Milestones

Milestone

- Deliverables

Schedule

Status

Conduct Physics Validation Review

- Documentation and presentations

March 2001

Completed

March, 2001

Conduct FY-2003 Project Validation

- Update of Outyear Project Plans / Milestones
- Mission Need Approval (CD-0)

May 2001

Completed

May, 2001

High-level milestone:

Update Reference Configuration for CDR

Sept. 2001

Project-level milestones leading up:

- Update VV design concept.
- Complete VV access studies (diagnostics, maint.)
- Finalize EM design of modular, TF, and PF coils
- Develop structural design of modular coils
- Develop requirements.
- VV & modular coil mfg. study contracts ready to award.

July, 2001

July, 2001

Aug., 2001

Aug., 2001

Sep., 2001

Sep., 2001

Issues for This Meeting

- Review progress toward updating the NCSX design for the CDR.
 - Are we on track to complete the FY-01 milestones on schedule?
- Review project plans through the CDR (April, 2002).
 - Conceptual design is just beginning; resources will be quite limited; are the priorities clear?
 - Are we addressing the PVR recommendations?
 - Are the requirements well defined? Are we filling in the gaps?
 - Are physics and engineering plans consistent?
 - Are the plans consistent with the priorities?

Calendar

June 18-22. EPS Conference, Madeira, Portugal. (M. Zarnstorff invited paper.)

Aug. 1-2. FESAC meeting, PPPL. (Compact stellarator program discussion)

Aug. 28-29. (tentative) Next NCSX Project Meeting.

Late Aug.? Workshop: “Future Directions in Theory of 3D Magnetic Confinement Systems” (D. Batchelor, organizer)

Sept. 24-28. 13th International Stellarator Workshop, Canberra, Australia.

Sept. 25-26. FPA Symposium, “Frontiers in Fusion Research,” Washington.

Oct. 2-5. Symposium on Fusion Engineering, Atlantic City.

Oct. 17-18. (tentative) Next PPPL Stellarator PAC.

Oct. 29-Nov. 2. APS/DPP Meeting, Long Beach. (Abstracts due July 20)

Other Items

- Planning is under way to publish the PVR document as a special issue.
 - Details not yet finalized.
- Pamela Hampton (phampton@pppl.gov) is new project secretary.