

2nd NCSX PAC Meeting, Dec. 2-3, 1998

G. H. Neilson, Stellarator Working Group, 12/10/98

Charge

Advise on

- design requirements and constraints
- plasma, coil, and machine options
- analyses

Committee

D. Anderson, Wisconsin

A. Boozer (chair), Columbia

C. Hegna, Wisconsin

S. Knowlton, Auburn

J. Lyon, ORNL

E. Marmor, MIT

K. Matsuoka, NIFS

W. Nevins, LLNL

P. Politzer, GA

D. Ross, Texas

E. Synakowski, PPPL

F. Wagner, IPP-Garching

H. Weitzner, NYU

**National Compact Stellarator Experiment
Informal Program Advisory Committee Meeting #2
Princeton Plasma Physics Laboratory, Room LSB-318
December 2-3, 1998**

Agenda

Wednesday, December 2, 1998

- 8:30 Committee Executive Session
- 9:00 Welcome and PPPL Perspectives (R. Goldston)
- 9:15 DOE Perspectives (R. Blanken)
- 9:30 Stellarator Program Update (J. Lyon)
- 10:00 Break
- 10:15 NCSX Project Update and Plans (G. Neilson)
- 10:45 Physics Goals and Requirements (M. Zarnstorff)
- 11:30 Plasma Configurations (A. Reiman)
- 12:10 Discussion
- 12:30 Lunch
- 1:30 Confinement (H. Mynick)
- 1:50 Coil Design Methodology (S. Hirshman)
- 2:30 Coil Design for Reference Plasma (A. Brooks)
- 2:50 Break
- 3:10 Committee Executive Session
- 4:30 Committee / Team Discussion (Questions to team)
- 5:30 Adjourn
- 7:00 Dinner at Gratella Restaurant, Forrester Hotel

Thursday, December 3, 1998

- 8:45 Committee Executive Session
- 9:00 Engineering Design of the NCSX (W. Reiersen and B. Nelson)
- 10:00 Break
- 10:15 Engineering Design of the NCSX, cont'd.
- 11:15 QOS Design Status (D. Spong)
- 11:45 Discussion
- 12:00 Lunch
- 1:00 Committee / Team Discussion (Responses from team)
- 1:45 Committee Executive Session
- 2:30 Break
- 3:30 Committee Debriefing
- 4:00 Adjourn

Conclusions from PAC Meeting

- An interactive, highly productive meeting
- Design schedule: aim for a PVR in May-June. (i.e before Snowmass)
- PAC: NCSX team can succeed given enough time; not clear if they can resolve all issues by May-June.
- Critical-path issue for PVR: coil design (reconstructability, buildability)
- Decide in-PBX vs ex-PBX in December to meet PVR schedule. Define rationale. *Task force established to cost and compare options.*
- Extend confinement analyses to include radial dependences, improve criteria.
- Set priorities among physics design goals and criteria.
- Define a startup scenario.
- Other issues: pulse length requirement, eddy currents/field errors, Alfvén modes/energetic particles, ECH, ICRF.
- Establish closer ties to world stellarator program, esp. W7-AS, CHS.

Costing Task Force

Option I (in-PBX)

C10 plasma + saddle coils in PBX-M with minimal disassembly.

Cost & risk of in-vessel assembly operations?

Option II (in-PBX)

C10 plasma + saddle coils in PBX-M via TF coil disassembly/reassembly.

Cost & risk of TF coil disassembly/reassembly?

Option III (ex-PBX)

C10 plasma + saddle coils + new TF coils.

Cost of all-new machine components vs reduced assembly time & risk?

Option IV (ex-PBX)

Modular coils.

Develop cost estimates for each option by Christmas.

Decide on which concept to develop for PVR starting.