

*Department of Energy  
Review Committee Report*

on the

Technical, Cost, Schedule,  
ES&H, and Management Review

of the

**NATIONAL COMPACT  
STELLARATOR  
EXPERIMENT (NCSX)  
PROJECT**

May 21-23, 2002

Department of Energy Review  
of the  
National Compact Stellarator Experiment (NCSX) Project

## DOE EXECUTIVE SESSION AGENDA

Tuesday, May 21, 2002

- 8:00 a.m. Introduction and Overview ..... J. Carney
- 8:15 a.m. FES Program Perspective ..... W. Marton
- 8:30 a.m. DOE Federal Project Manager ..... G. Pitonak
- 8:45 a.m. Questions/Discussion
- 8:55 a.m. Adjourn

**Department of Energy Review  
of the  
National Compact Stellarator Experiment (NCSX) Project  
May 21-23, 2002**

**James R. Carney, DOE/SC, Chairperson**

<b>SC1-A</b>	<b>SC1-B</b>	<b>SC2</b>	<b>SC3</b>	<b>SC4</b>
<b>Physics</b>	<b>Engineering</b>	<b>Heating</b>	<b>Diagnostics</b>	<b>Power Systems</b>
* Harold Weitzner, NYU Jeffrey Harris, ANU Peter Polizer, GA [Dave Anderson, U of Wisconsin]	* Dave Anderson, U. of Wisconsin Paul Anderson, GA Jorst-Henrich Feist, M-PI Ron Parker, MIT [Jeffrey Harris, ANU] [Peter Politzer, GA] [Harold Weitzner, NYU]	* Jorst-Henrich Feist, M-PI Peter Politzer, GA	* Jeffrey Harris, ANU Dave Anderson, U. of Wisconsin Peter Polizer, GA	* Ron Parker, MIT Jorst-Henrich Feist, M-PI
<b>SC5 Central I&amp;C Data Acquisition</b>	<b>SC6 Site and Utilities</b>	<b>SC7 Assembly Commissioning</b>	<b>SC8 Management</b>	<b>SC9 ES&amp;H</b>
* Jeffrey Harris, ANU Peter Polizer, GA	* Paul Anderson, GA Joseph Minervini, MIT	* Dave Anderson, U. of Wisconsin Paul Anderson, GA Jorst-Henrich Feist, M-PI Joseph Minervini, MIT	* Ron Parker, MIT Jeff Hoy, DOE/SC Joseph Minervini, MIT	* Clarence Hickey, DOE/SC Ray Schwartz, DOE/SC
<b>SC10 Cost Schedule and Funding</b>	<b>SC11 Plans for Research Program</b>	<b>Observers</b>	<b>LEGEND</b>	
* Jeff Hoy, DOE/SC Marty Fallier, BNL	* Harold Weitzner, NYU Peter Polizer, GA Jeffrey Harris, ANU	Charles Finfgeld, DOE/SC Esther Ku, DOE/SC Warren Marton, DOE/SC Gene Nardella, DOE/SC John Willis, DOE/SC Jerry Faul, DOE/Princeton Greg Pitonak, DOE/Princeton	SC Subcommittee * Chairperson [ ] Part-time Subcom. Member	

**Count: 13 (excluding observers)**

February 13, 2002

MEMORANDUM FOR DANIEL R. LEHMAN, DIRECTOR  
CONSTRUCTION MANAGEMENT SUPPORT DIVISION

FROM: N. Anne Davies  
Associate Director for Fusion Energy Sciences

SUBJECT: Office of Science Conceptual Design Report Review for the  
National Compact Stellarator Experiment Project

I would like to request that Jim Carney from your office organize and lead an Office of Science Conceptual Design Report (CDR) review of the National Compact Stellarator Experiment (NCSX) project.

The purpose of the review is to assess all aspects of the Conceptual Design Report - technical, cost, schedule, management, and ES&H. The review should be held at PPPL on May 21-23, 2002. The NCSX project has a DOE approved Mission Need (CD-0), and the project has successfully completed a Physics Validation Review (PVR).

In carrying out its charge, the review committee should also respond to the following items:

1. Comment on the progress made by the project to address and resolve the comments from the PVR pertaining to NCSX design and fabrication. Also, comment on the likelihood of the project to meet the NCSX technical mission based upon physics analysis completed and physics analysis planned for the future.
2. With regard to the engineering design, fabrication and commissioning of NCSX, comment on the likelihood of the project to meet the NCSX technical mission considering (a) the current status and future plans for completing the design and (b) R&D results and future plans for additional R&D, if any. Also, comment on manufacturability and constructability of the critical systems and plans for commissioning.
3. With regard to the cost, schedule and management aspects of the project, comment on the cost and schedule estimates for the project, including (a) adequacy of the contingency estimates considering the current stage of project definition, and (b) the management plans and procedures identified for carrying out the project.
4. Are ES&H aspects being properly addressed given the project's current stage of development?

5. Although not part of a Major Item of Equipment project such as NCSX, and therefore not addressed in the CDR, the preparations made during the fabrication phase for the subsequent operations phase are important. Therefore, please comment separately on the plans and estimates to be presented by the project for such preparations including (a) diagnostic capability during operations, and (b) planning and analysis for the NCSX research program.

Warren Marton of my staff will work closely with you as necessary to plan and carry out this review. I would appreciate your committee's report by June 21, 2002.

cc:

Greg Pitonak, PAO

Jerry Faul, PAO

Jim Turi, SC

John Willis, OFES

Mike Roberts, OFES

Jim Carney, SC

Rob Goldston, PPPL

John Schmidt, PPPL

Hutch Neilson, PPPL

Jim Lyon, ORNL

Harold Clark, ORO

**Department of Energy Review  
of the  
National Compact Stellarator Experiment (NCSX) Project**

**SCHEDULE**

**Tuesday, May 21, 2002—LSB Building, Room 318**

**8:00 am DOE Full Committee Executive Session**  
9:00 am NCSX Presentations  
12:15 pm Lunch  
1:00 pm NCSX Presentations  
3:15 pm Break  
**4:00 pm DOE Subcommittee Executive Sessions**  
**5:00 pm DOE Executive Session**  
6:30 pm Adjourn

**Wednesday, May 22, 2002**

8:30 am Subcommittee Presentations/Working Sessions  
12:00 pm Lunch  
1:00 pm Subcommittee Working Sessions  
**3:00 pm DOE Committee Executive Session**

**Thursday, May 23, 2002**

**8:00 am DOE Executive Session Closeout Dry Run**  
12:00 pm Lunch  
**12:45 pm Closeout Briefing with NCSX Management**  
1:30 pm Adjourn/**Final Draft Reports Due Prior to Departing**

**Department of Energy Review  
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National Compact Stellarator Experiment (NCSX) Project**

**REPORT OUTLINE/WRITING ASSIGNMENTS**

Executive Summary.....	Marton/Carney
1. Introduction .....	Marton/Carney
2. Technical Systems Evaluations	
2.1 Physics .....	Weitzner/Subcommittee 1-A
2.1.1 Findings	
2.1.2 Comments	
2.1.3 Recommendations	
2.2 Engineering .....	D. Anderson/Subcommittee 1-B
2.3 Heating.....	Feist/Subcommittee 2
2.4 Diagnostics.....	Harris/Subcommittee 3
2.5 Power Systems .....	Parker/Subcommittee 4
2.6 Central I&C and Data Acquisition.....	Harris/Subcommittee 5
2.7 Site and Utilities.....	P. Anderson/Subcommittee 6
2.8 Assembly Commissioning.....	D. Anderson/Subcommittee 7
3. Management .....	Parker/Subcommittee 8
4. Environment, Safety and Health.....	Hickey/Subcommittee 9
5. Cost, Schedule, and Funding .....	Hoy/Subcommittee 10
6. Research Program Plans.....	Weitzner/Subcommittee 11

Appendices

- A. Charge Memorandum
- B. Review Participants
- C. Review Agenda
- D. Cost Tables
- E. Schedule Tables
- F. Management Charts
- G. Action Items

Each topic to be written, as assigned in the Table of Contents, should consider and cover in the report:

- the Research and Development required;
- technical or engineering aspects;
- is the cost estimate and the contingency reasonable at this stage in the project;
- schedule for this topic; and
- management of this topic of the project.

## FINDINGS

Narratives, focusing on areas of the review and project to compliment and those areas the reviewer finds lacking, based on the presentations. Summary of material presented that the reviewer finds is relevant to supporting the review assessment and recommendations. Assessment of background material provided during the review and the reviewer's reaction to that information. Do not number your findings.

## COMMENTS

Descriptive material assessing the findings and the conclusions based on the findings. This is narrative material and is often omitted as a separate heading and the narrative included either under Findings or Recommendations as appropriate. This heading carries more emphasis than the Findings, but does not require an action as do the Recommendations. Do not number your comments.

## RECOMMENDATIONS

These are numbered within each section and should be definite, clear recommendations as to what the proposing organization should do to correct a problem or strengthen the project. The basis for the Recommendations should be discussed under Findings. These are the items that the project (proposers) must respond to by the next review.

## ACTION ITEMS

Those recommendations that are considered particularly important may be elevated to this level or these may be any item to which a response is desired within a definite time. The Action Items are discussed in the Committee Executive Sessions and agreed to by the Committee. Action Items are agreed to in writing by the Committee Chairman, the sponsoring Program Office, the DOE field office, and the proposing organization. The Action Items can be for the proposing organization or for DOE to respond to individually or jointly and they carry a date by which response is required.

PLEASE USE THE FOLLOWING FORMAT FOR  
YOUR HAND-WRITTEN OR TYPED INPUT FOR THE DRAFT REPORT

Your Name

Version Number or Date/Time

2.1 (Section you are writing)

Findings

Include an assessment of technical, cost, schedule, and management

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Comments

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Recommendations

1. Begin with action verb.
- 2.
- 3.