

Preparations for the NCSX Manufacturing Information Meeting

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Outline:

Overview of the Planned Information Meeting

Status

CBD Announcement

Draft of meeting goals

Draft of agenda

Meeting Overview

- Will be held at PPPL in B-318 on Wednesday, August 22.
 - Meeting scope will include:
 - Coil castings
 - Modular coil windings
 - TF windings
 - Coil / casting assembly
 - Vacuum vessel
- (For NCSX and QPS)

Current Status of Preparations

- CBD announcement is being advertised starting today.
- Letters are being sent to identified potential manufacturers. These include: GA; AES; Ansaldo; Atlantic Technical Components; US Bronze; Southern Centrifugal; Everson Electric; Carondolet; ABB-Chattanooga; CTD; New England Electric Wire Corporation; Mitsubishi; Hitachi.
 - Other nominations will be gratefully accepted!
- The manufacturing web site is up and is being updated.
 - Draft specs are being prepared for the coils and vacuum vessel and will be added.
 - Internal review of specs planned for the first week of August.
- We plan to make participation from the web possible.

The Announcement:

The Princeton Plasma Physics Laboratory (PPPL), in partnership with the Oak Ridge National Laboratory, is developing a new class of experimental fusion research devices known as compact stellarators. Potential manufacturers are currently being sought for two of the key components of a new device, the NCSX (National Compact Stellarator Experiment): the electromagnets (modular stellarator coils) and the vacuum vessel. All of the magnets are wound of flexible compacted copper cable. They are cooled by gas at liquid nitrogen temperatures flowing through chill plates bonded to the windings. The windings are supported by highly shaped, machined stainless steel castings. A typical overall magnet envelope is 80in x 80 in x 40 in.; each completed magnet will weigh approximately 3000 lbs. There are four distinct geometric magnet types (ie, geometric shapes). A total of 21 magnets are required. The vacuum vessel is a highly shaped toroidal shell manufactured of Inconel 625 (or equivalent) 0.375" thick. . The vessel shape has a periodicity of three and will be manufactured in 3 sections with bolted flanges. Press forming, explosive forming, or casting are potential manufacturing methods. The vessel has multiple ports and flanges that are also part of this assembly. The assembled vessel has an average major diameter of approximately 120 inches, an average minor diameter of 45 inches, and weighs about 12000 lbs. An information meeting is planned for Wednesday, August 22, 2001, at the Princeton Plasma Physics Laboratory, located on US Rt. 1 in Princeton, NJ. Details of these components will be discussed and questions will be answered. Contracts for manufacturing studies will be placed late in CY 01. Contracts for prototypes are anticipated in CY 02. The actual component manufacture is scheduled to begin in CY 03. In addition to the NCSX components described above, a similar set of modular coils will be required by a second compact stellarator, the Quasi-Poloidal Stellarator, QPS, on approximately the same schedule. Additional information is available at the NCSX web site, located at http://www.pppl.gov/me/NCSX_MFG/. This information is also available on request on CD-ROMs. Please call R. Templon at (609)-243-2443 for registration and further information.

Meeting Goals

1. To present and discuss the NCSX design to potential manufacturers so the Project can get feedback:
 - on our proposed designs and specifications so we can refine them to provide the best value to the Project and make sure they are within the state of the art.
 - on our proposed development and procurement strategy so we can develop one that facilitates the process.
2. To solicit expressions of interest on R&D, prototypes, and component manufacture.
3. To expose manufacturers that may only have partial capability to others with complementary capability with whom they may partner. *Our preference is to subcontract for the castings-TF-stellarator coils as one package and the VV-ports-flanges as one package.*

Draft Agenda

- **Welcome** – R. Hawryluk (10 min.)
- **Meeting Goals** – P. Heitzenroeder (10 min.)
- **Project Overview** – H. Neilson (20 min.)
- **Engineering Overview of Coils** (NCSX and QPS)- B. Nelson; 45 min.
 - Castings ; Stellarator windings; TF windings; Assembly and Testing
 - Draft specification
 - Questions and answers
- **Engineering Overview of Vacuum Vessel** (NCSX) – B. Nelson; 45 min.
 - Vessel forming and forming options; ports and flanges
 - Draft specification
 - Questions and answers
- **Discussion of R&D, Prototyping, and Manufacturing Plans and Schedules** – P. Heitzenroeder, 20 min.
- **Open Discussions and Conclusions** – P. Heitzenroeder / B. Nelson; 20 min.