

**National Spherical Torus Experiment
Program Advisory Committee
19th Meeting**

**Princeton Plasma Physics Laboratory
Conference Room LSB-318
February 22-24, 2006**

CHARGE

There has been substantial progress towards an international Joint Implementing Agreement for ITER, resulting in the formation of the US Burning Plasma Organization and increased focus on ITPA Joint Experiments. The recent FESAC Facilities Panel Report identified key areas in which NSTX can make unique, important contributions to the science basis for ITER. The report also identified unique, important information that NSTX can provide in support of a compact U.S. Component Test Facility. It is critical that NSTX research plans support both burning plasma physics and the development of the ST configuration. Fortunately there is very substantial overlap between these goals.

NSTX has recently added critical new capability, including a unique system for highly localized high-k scattering measurements, active control of RWM coils in a configuration similar to that proposed for ITER, and intense lithium coating.

- 1) Do the proposed research plans for FY2006-08 take appropriate advantage of the new capabilities of NSTX to address both burning-plasma and ST-specific scientific goals?
- 2) Do the proposed facility and diagnostics upgrades for the FY2006-08 time frame position NSTX to maximize its contributions, given financial constraints?

AGENDA

Wednesday, February 22, 2006

1:00 Coffee & Donuts, PAC Executive Session
1:15 Rob Goldston Welcome and Charge to the PAC
1:25 Steve Eckstrand Comments from DOE
1:30 Jim VanDam Agenda and Plan of Meeting
1:35 **Jon Menard** **Scientific Accomplishments**
2:35 **Martin Peng** **Strategic Goals & Research Plan**
(3:00 Coffee)
3:20 **Masa Ono** **Facility Plans**
4:05 PAC Executive Session
6:05 Adjourn
7:00 PAC Dinner TBD

Thursday, February 23, 2006

8:00 Coffee & Donuts
8:30 Jim VanDam Feedback and Questions
8:40 **Stan Kaye** **Confinement and Transport**
9:10 **Mike Bell** **Turbulence and High-k Scattering**
9:40 **Aaron Sontag** **EF and RWM Control**
10:20 Coffee
10:30 **Eric Fredrickson** **Super-Alfvénic Ion Driven Instabilities and Transport**
11:10 **Gary Taylor** **EBW and HHFW (include Pegasus)**
11:50 Lunch
12:50 **Dennis Mueller** **Transient CHI**
1:20 **Henry Kugel** **Lithium Wall Coating and Recycling Control**
1:45 **Rajesh Maingi** **H-mode Pedestal Physics (include detachment and
“blobs”)**
2:30 **Dave Gates** **Toward Stable Steady State Operation (include
rampup)**
3:10 Coffee
3:20 **Roger Raman** **Run Plan for FY06**
4:00 PAC Executive Session
6:00 Adjourn

Friday, February 24, 2006

8:30 Coffee & Donuts
8:40 Jim VanDam Feedback and Questions
8:50 PAC Executive Session
(10:00 Coffee)
(12:00 Lunch)
1:00 Jim VanDam Debriefing
1:30 Adjourn

Rob's earlier guidance on the agenda would be to structure it as follows:

Menard, 1 hour: Talk on scientific accomplishments relevant to ITER and ST. Focus on last year, but provide results from previous years for context.

Point of View: NSTX has done very important work in support of burning plasma physics and ST concept development; there is very substantial overlap between these goals, but we are also doing burning-plasma specific items and ST-specific items.

Peng, 1 hour (now 45 min): High level strategic goals for 06 – 08, including ITPA involvement and ST-specific items. Response to earlier PAC input. POV: NSTX has an exciting program planned out, with unique and important contributions and strong overlap between ITER and ST goals.

Ono, 1 hour (now 45 min): Plans for machine and diagnostic upgrades to support milestones, ITPA and ST-specific items outlined by Martin. Includes discussion of decision points on EBW and pumping/fueling and of 06-08 CS upgrades. [Rich thinks new CS will be done in the course of CY 2006.] POV: NSTX is a flexible, extensible facility, with exciting upgrades planned out, that can make unique and important contributions to ITER and ST goals.

Series of science presentations: Each one is about 1 hour (now 25 – 45 min), and focuses in more detail on scientific accomplishments and plans. POV of each talk: NSTX has made unique and important scientific contributions to both burning plasma and ST science, and has plans to do even more.

Roger, 1 hour (now 40 min): Run plan for FY06. POV: We are going to do as much as humanly possible in 11 weeks to support ITER and ST concept development, achieve our milestones, find out if there is something dramatic in lithium evaporation, and bang out as close to 22 different ITPA contributions as we can.

Rich's guidance on January 30, 2006:

Regarding the POV, you need to (*provide*) further details (*regarding*) which speaker covers which topics. In particular, they need to address what will be done during this run (largely the ET leaders) but also what will be done in '07 and '08 and how the scientific results relate to the ITPA, ITER, and STs.

Jim Van Dam's request on February 1, 2006:

Please have the talks directly address the charges. The PAC would like to hear the NSTX thinking and then decide whether it is correct, needs to be revised, etc.

Also, as before, making the talks available to PAC members in advance of the meeting will be highly appreciated.