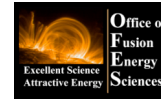


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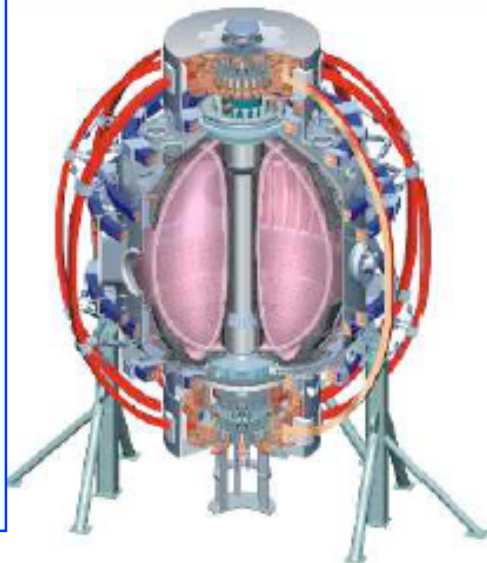


NSTX

NSTX Team Meeting

August 9, 2006

College W&M
Colorado Sch Mines
Columbia U
Comp-X
General Atomics
INEL
Johns Hopkins U
LANL
LLNL
Lodestar
MIT
Nova Photonics
New York U
Old Dominion U
ORNL
PPPL
PSI
Princeton U
SNL
Think Tank, Inc.
UC Davis
UC Irvine
UCLA
UCSD
U Colorado
U Maryland
U Rochester
U Washington
U Wisconsin



Culham Sci Ctr
U St. Andrews
York U
Chubu U
Fukui U
Hiroshima U
Hyogo U
Kyoto U
Kyushu U
Kyushu Tokai U
NIFS
Niigata U
U Tokyo
JAERI
Hebrew U
Ioffe Inst
RRC Kurchatov Inst
TRINITI
KBSI
KAIST
ENEA, Frascati
CEA, Cadarache
IPP, Jülich
IPP, Garching
ASCR, Czech Rep

NSTX Team Meeting Agenda



Time: 1:30 ~ 3:00, Place LSB-318, August 9, 2006

- General Items
- Outage updates
- Run Assessment Summary and Discussions

Some general items



- We have now in the midst of the NSTX outage (status and plan to be given.)
- The Senate Appropriations Committee has acted on the Energy and Water Bill, which funds the Office of Fusion Energy Sciences. I am pleased to report that the Committee has fully funded the President's request for fusion, as did the full House. The next steps are for the full Senate to act on this bill, and then for the House and Senate to have a Conference in which the many differences between the bills are hashed out. (June 29, Rob)
- The summer season is here. Please let Joanne know of your summer vacation plan and any summer visitor plan. Have a nice summer vacation!

Safely, Safely, Safely



- **ES&H**
- **NSTX Test Cell Access**
- **Lockout/Tagout Issues**
- **Hazard Awareness Training (W. Slavin)**
- **File Proper Visitor Forms (J. Savino)**
- **Have a safe summer vacation!**

Mid-Term Review of Major MFE Facilities

The review will be held in Germantown, MD, on September 20-21, 2006. We would like each panel member to provide a written response to the following questions for each facility:

- 1) **Progress in research and facility improvement goals:** How much progress has each program made toward the research and facility improvement goals in their original 5-year proposals, within the constraints of actual budgets they have received compared with the proposal budget request? Has the scientific and technical merit of each program been maintained at a high level relevant to the goals and mission of the U.S. fusion program?
- 2) **Adaptation to technical or programmatic changes:** Has each program adapted to any recent technical or programmatic changes in the fusion program (e.g. ITER decisions) to efficiently refocus and, if necessary, modify the research plan for the next 2 years?
- 3) **Areas of future improvements and their priorities:** If applicable, are there any areas (e.g. research planning, hardware upgrades, operational cost or scheduling) that could be improved in the next 2 years, and what are your views on their priorities?

Sept. 20, Wed: *Morning* C-Mod presentation, *Afternoon* DIII-D presentation

Sept. 21, Thurs.: *Morning* NSTX presentation, *Afternoon* Follow-up panel discussion

REVIEW PANEL: Steve Knowlton, Auburn University, Dan D'Ippolito, Lodestar, Dave Brower, University of Texas, John Sarff, University of Wisconsin, John Glowienka, Office of Fusion Energy Sciences, John Sheffield

Run Assessment Summary 1 (Al von Halle)



NSTX needs to better establish how the Research Forum, mid-run assessments, Program Committee meetings, and executive decisions set priorities, planning and schedules for Experimental Proposals.

- Michael Bell has started the planning of the Research Forum
- Let you know "executive" decisions as soon as possible
- People are unanimous of Roger Raman did a wonderful job.

Run Assessment Summary 2



NSTX needs to work more closely with research staff in setting internal milestones for scientific and publication goals, and to help with possible staffing and external research community obstacles to meeting these goals.

- NSTX regards publications to be of highest importance along with presentations at major meetings and seminars
- Physics Analysis Division to help "nurse" the publication and meeting presentation process
- Every research forum proposal should have a publication plan
- Every XP should have a publication plan

Run Assessment Summary 3



NSTX needs to establish a run schedule that allows participation in the fall meetings (APS), sets time during the run for maintenance/collaborator visits, and still allows for a timely conclusion of the run to minimize operating expenses.

- We are trying out best under the constraints. Must deal with the "standing army" issue.
- Moving up the outage schedule to allow participation in the fall meetings is something we will be looking at, e.g. pump down early enough so we can be doing leak checks and bake out during November. But not possible this year because of the planned outage scope.

Run Assessment Summary 4



NSTX needs to provide the resources to provide technical back-up for "indispensable" research and engineering staff.

- Our human resources are stretched very thin - man power resources are fixed while sophistication and diversity of research is going up! Every research and engineering staff is "indispensable"!
- Cross training and sharing of responsibilities.

Run Assessment Summary 5



A preemptive failure analysis should be performed, and appropriate spare parts should be purchased according to the findings.

The on-line NSTX Failure Reporting System has been only lightly used and needs to be put into full service for all NSTX systems. This should be followed up by an engineering study to identify subsystem weak points, then provide the necessary resources to improve.

Opportunities to improve Collaborator participation in NSTX activities.



- Implement a real time web calendar showing the NSTX schedule (We do that for the run schedule. Post the roll-over schedule on the NSTX web)
- Conference call could be better to organized to involve remote participants (Specific suggestion?)
- Access to the tool crib/stockroom should be available when the NSTX test cell is open
- A good set of basic diagnostic tools (scopes, DVM's, hand tools), as well as small parts inventories should be available
- Ensure that configuration control procedures are followed

Opportunities to optimize system performance



- Provide a platform or walkway around the top of NSTX (Will address the safety issue)
- Reduce electrical noise on the NSTX grounding system (Putting some effort in eliminating obvious problem areas)
- Include NB Power feedback and Supersonic Gas Injector (or gas puff) in PCS Control (After the new PCS system is in place)
- Develop real time plasma shape control and use on all NSTX shots (Working progress)
- Improve current balance of PF1A U/L power supplies (mutual type problem - cannot solve off line)
- Provide more troubleshooting time (Run time vs Test time)
- Reduce magnetic feedback system noise during CHI operations (longer term effort)
- Consider a standardized plotting package with shot overlay capability (Reviewplus for example)
- Consider a diagnostic visualization package (as in DIII-D's EFITviewer)
- Acquire third projector to complete NSTX Display Wall in Control Room

A large number of desired & suggested upgrades

All desirable but we need to set priorities



- P-CHERS (Pursued with highest priority)
- PCS updates and the new control computer to replace SKY (Pursued with highest priority to be ready early in the run)
- Spare OH (Collaboration with Chinese - we really need a spare)
- Bakeout temperature of all graphite tiles to $> 300^{\circ}\text{C}$ (also provide more accurate temp measurements) (Pursued with very high priority - linked to high plasma performance)
- Evaporate Li onto divertor region instead of center stack (A new design being developed - need to demonstrate particle control)
- OH X TF error field reduction (Thanks to Jon for the detective work! Pursued with high priority)
- HHFW and EBW radiometer improvements (Antenna feed/rf probe)
- High-k scattering improvements (Longer focal mirror and remote steerable mirror)
- Make PF2 bipolar (Help CHI-OH transition. A minimum sensible upgrade being assessed)
- Achieve the rated 2kV CHI operation (A minimum sensible upgrade being assessed)
- Biased GPI (Control edge transport - being reviewed)
- Use of field nulling coils to reduce CHI absorber arcs (Defer to future)
- Implement 3rd Glow Probe and modify system to perform GDC at < 1 mTorr (Defer to future due to LITER priority)