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NSTX Organization & PAC-12 Action Items

Martin Peng

NSTX Program Advisory Committee Meeting (PAC-13)

September 30-October 1, 2002

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Research Program Organization for FY03



- Program leadership
 - [Stan Kaye](#) assumes the Run Coordinator position for FY '03, after serving as deputy in FY '02.
 - [Cynthia Phillips](#) assumes the role of Acting Physics Analysis head.
 - Deputy Run Coordinator for FY '03: to be determined.
- Experimental Task groups, leaders and deputy
 - [Gary Taylor, Phil Ryan \(ORNL\)](#): HHFW & CD
 - [Mike Bell, Roger Raman \(U. Wash\)](#): CHI
 - [Ben LeBlanc, Doug Darrow](#): Transport
 - [Steve Sabbagh \(CU\), Dave Gates](#): MHD
 - [Rajesh Maingi \(ORNL\), Jon Menard](#): Integrated Scenario Development
 - [Henry Kugel, Bob Kaita](#): Boundary Physics

PAC-12 NSTX Action Items and Status - I

PAC-12 Advice	Status
Charge #1: FY02 Experimental and Operational Plan	
1) The challenging goals of long pulse sustainment , achievement of extremely high beta with wall stabilization , non-inductive operation , etc., have all been pushed into the future due to resource limitations.	Increased run time allocation to current drive, startup, and high beta research in FY03 plan, and emphasis in the 5-year plan.
2) The PAC notes that it would be helpful to our future deliberations if the NSTX program presented a proposed research schedule .	Included in the FY03 plan presentation
3) The PAC recommends that the scientific questions to be answered by each Task group in the following run year be formulated and presented in a (short) prioritized list .	Included in the FY03 plan presentation
4) It is important that other Task groups formulate their plans taking account of the NSTX operational scenarios which are presently available, and that these other task groups integrate their planning with the Scenario Development group.	Incorporated in the FY03 plan
5) ... the PAC encourages the continuing strong commitment to development and evaluation of CHI as a means of initiating and sustaining the plasma current.	Major improvements to CHI capability being installed for implementation early in FY03 campaign

PAC-12 NSTX Action Items and Status - II

PAC-12 Advice	Status
Charge #2: FY03-04 Research Program	
1) ... articulating a limited set of overarching scientific objectives to be achieved through the enhanced research program, and then focusing the enhanced research program on achieving these scientific goals.	Included in the FY03 plan presentation; <ul style="list-style-type: none"> • High beta and tau for > tau-E • Non-inductive assist for > 1 s pulses • Heat flux dispersion
2) ... we continue to be concerned about the schedule and capabilities of the NSTX current profile diagnostics .	Present joint PPPL-Nova plan to accelerate the MSE CIF and LIF systems to meet the program needs.
4) The NSTX program management should consider how additional investment(s) could make a real difference to our understanding of transport in NSTX by FY '04 . Such investments might include more resolution (particularly near the plasma edge) on key profile diagnostics and/or better measurement of the current profile.	<ul style="list-style-type: none"> • Fluctuations measurements based on reflectometry (UCLA), reciprocating probe (UCSD) • MSE acceleration • High resolution toroidal CHERS • Preparation in FY03 for low-k imaging system (PPPL, UCD) • Baseline plan to install prototype high-k μw scattering system

PAC-12 NSTX Action Items and Status – II (cont.)

PAC-12 Advice	Status
Charge #2: FY03-04 Research Program	
<p>5) The PAC encourages the development of startup scenarios based on ECH/EBW, the use of PF coils (other than the central solenoid), or other ideas which may present themselves.</p>	<ul style="list-style-type: none"> • Installation of EBW B-X antenna on NSTX this fall • Modification of ORNL reflectometer to receive B-X-O emission • Major EBW upgrade in 5-year plan • Scenario calculations for PF-only operations underway
<p>6) It is important that the RF research (both experiment and modeling) focus on understanding both the power deposition profiles and the RF-driven current.</p>	<ul style="list-style-type: none"> • Research emphasis in FY03
<p>7) Given present budgetary realities, the PAC believes that highest priority should go to the measurement of power profiles on the divertor plates with an IR camera.</p>	<ul style="list-style-type: none"> • Research progress in FY02 and emphasis in FY03

PAC-12 NSTX Action Items and Status - III

PAC-12 Advice	Status
Charge #3: Approach to Snowmass Discussion	
The PAC encourages the development of a basic cost and schedule estimate for NSST as input to the Snowmass meeting.	<ul style="list-style-type: none"> • Prepared for the Snowmass meeting.
While the ST concept is not yet sufficiently mature to be considered as a candidate for a burning plasma experiment, their promise and current state of development merits a consideration of ST development needs in making decisions on the overall fusion energy development plan.	<ul style="list-style-type: none"> • NSST and CTF assessments including development needs are underway. • The promise of ST contributions to overall fusion energy development, and ST development needs are incorporated in the ICC and Development Path write-ups of the Snowmass meeting.
... the Snowmass presentation of the ICC would benefit from a clear description of why the NSST is needed for the development of the ST concept.	<ul style="list-style-type: none"> • The need for a PE level ST experiment, such as the NSST, is identified in the fusion development path write-up of the Snowmass meeting
The PAC recommends that the NSTX program continue to work with the ST community to further develop this plan in concert with the Snowmass working groups and the ICC communities .	<ul style="list-style-type: none"> • NSST and CTF assessments will be carried out with community participation.