

February 3, 2017

Dear Jon,

Thank you very much for the update on the status of NSTX-U that you and your team gave the PAC via a video conference on Jan 7, 2017. It was important for us (as representatives of the outside community) to hear about these plans and to hear about your strategies for bring NSTX-U back into operation and to find meaningful work for your scientific staff during the substantial downtime.

Here are some reflections from the PAC as feedback.

Status of the Recovery Effort: The PAC is convinced that PPPL is taking the recovery of NSTX-U from its coil failure very seriously. While the PAC is not sufficiently qualified to review the management tools and engineering details, we were impressed by the postmortem analysis of the coil failure and have confidence that the revised management structure will be capable of a reconstruction which will not lead to a repeat of the same failure. We also commend the extensive effort being made to review other device sub-systems in order to mitigate additional failure mechanisms.

Activities of NSTX-U Scientific Staff During Recovery: It's clear to the committee that the plans for collaborations outside NSTX-U during the recovery project shutdown period are extensive already. This includes a national campaign on DIII-D which will help to facilitate experiments supporting NSTX-U research goals in an expeditious manner, and keep NSTX-U scientists active and producing leading-edge results. However, the PAC feels very strongly that the **recovery project should be given the highest priority** and we encourage you to make sure that this message is very clear to the NSTX-U team, as the prospects of international collaboration and producing physics results will form a strong enticement. If there are financial or personnel resource choices, you must focus on the recovery.

The national campaign on DIII-D has created additional run time for NSTX-U researchers, for which proposals competed through a separate process from the main DIII-D campaign. It's easy for those outside PPPL to view such as a form of entitlement. The PAC would like to see the clear justification for how the NSTX-U led DIII-D campaign will in fact help NSTX-U more quickly achieve its primary goal of "calling the question" on the spherical torus.

Morale and Overall Plan for Near Term Activities: The PAC feels strongly that there were many balls in the air at the time of the PAC meeting. Decisions about the recovery were imminent that affect Scientific Staff, outside collaborators, potential future University Users of the NSTX-U facility and so forth. Laying out a clear plan, with dates and specific milestones, and then communicating this plan as soon as possible to diverse participants in the project is very important to do well.

5 Year Plan: The PAC understands that the 5 year plan is a major effort that will occupy a good fraction of near-term efforts by the NSTX-U leadership. Starting this activity early will ensure that its done well. However, given the large delay in enacting the current 5 year plan, it seems self-evident that a large fraction of the planning for the next five years has already been done in preparing for the current 5 year period. Would it be prudent (or even possible) to work with DoE on either delaying the deadline by the estimated time of the recovery phase?

University involvement on NSTX-U: The PAC greatly appreciates the effort to make the NSTX-U program and facility a more effective opportunity for academic users. We suggest that NSTX-U continue to participate in the national discussion on the role of fusion research at Universities and how DoE facilities and the management thereof might be better optimized to benefit academic teams. Keeping this concern an element of future PAC meeting charges and discussion is strongly recommended.

Sincerely,

Professor Cary Forest  
University of Wisconsin - Madison