

**US Burning Plasma Organization**  
**Meeting of the Council**  
**October 8, 2008 (1:00-3:00 p.m. EDT)**  
**(by videoconference)**

**Council Members in attendance:**

C.S. Chang  
Martin Greenwald  
Rich Hawryluk  
Ed Synakowski  
Tony Taylor  
Mike Ulrickson  
Mike Zarnstorff – *Vice Chair*  
Amanda Hubbard – *Chair*  
Stan Milora – *US ITER Chief Technologist*

**Ex-officio participants in attendance:**

Erol Oktay – *USDOE*

Jim Van Dam – *USBPO Director and US ITER Chief Scientist*

**Others in attendance:**

Chuck Greenfield — *USBPO Deputy Director*  
Nermin Uckan — *USBPO Asst. Director for ITER Liaison*  
Curt Bolton – *USDOE*  
Earl Marmar

**Unable to attend:**

Bill Nevins  
Martin Peng  
John Sarff  
George Tynan

## Notes

**1. Roll call**

The meeting was called to order at 1:35 EDT. Attendance was as noted above, with 9 of the current 13 voting members present for a quorum.

**2. Review of minutes from July 16, 2008.**

It was noted that minutes had been distributed on September 3<sup>rd</sup>. There were no corrections or additions. The minutes were approved and will be posted on the Council web page.

**3. Report on NRC CRISPP**

Council Vice-Chair Mike Zarnstorff presented a summary of the recent NRC Committee to Review the U.S. ITER Science Participation Planning Process (CRISPP). Both he and Tony Taylor were members of this panel, which was chaired by Pat Colestock, and took leaves of absence from Council during their service to avoid any conflict. They were welcomed back. A prepublication version of the report is now available, with the final

report expected in a few weeks. The panel consisted of both fusion and non-fusion experts.

Zarnstorff went through a presentation which he recently gave to Pat Dehmer, Deputy Director of the DOE Office of Science, and other government officials in Washington. The general tone of the report was quite positive, with the committee impressed by the way the EPAct plan is already being put into action, evidenced in particular by the strong US contributions to the recent ITER design review. It was noted that international representatives who presented to the panel regarded USBPO as a model for other parties to organize their physics research programs. CRISPP anticipated that USBPO would evolve into a 'home team' to carry out the ITER research program.

The panel recommended that the US plan for ITER participation continue to be developed, and suggested some additional metrics to judge its progress. It was recommended that it be placed in the context of a longer term fusion development plan, noting that other parties have such plans. It was urged that the burning plasma program engage all of the US community, including "broad academic and industrial participation". The plan should include a strong domestic program apart from ITER, and include recruitment and training of younger scientists who will be needed to conduct research on ITER.

The greatest concern raised by the CRISPP panel was regarding the uncertain commitment of the US to full and stable funding of its ITER commitment, as evidenced by the FY08 budget enacted as part of the US Consolidated Appropriations Act allocating "\$0 for the U.S. Contribution to ITER", which occurred during the deliberations.

Discussion by Council of the report centered on this recommendation, with members sharing the concern, particularly in light of the coming change in administration and generally tight U.S. fiscal situation. It was agreed there would be a need to inform incoming officials about the importance of the ITER project, and discussion of how USBPO could help do this. Curt Bolton noted that OFES is developing a position paper, and would welcome input.

Council members suggested that USBPO select some of the suggested new metrics and track them in coming years as a gauge of progress.

#### **4. Strategic Planning: Report from Subcommittee on US-ITER Participation**

Earl Marmar reported on the progress of a related activity, the Council subcommittee which is preparing a new plan for US-ITER participation, which can be seen as an update of the EPAct report reviewed by CRISPPP. Marmar distributed a draft version of the report to Council before the meeting. It is now complete except for the Executive Summary, though still under revision. Council members were invited to send comments over the next few weeks.

Marmar explained that the report is taking the same questions considered in the EPAct charge, but organizing by the Science Campaigns, with a chapter on each topic. The group has tried to list a few priority topics in each area, as opposed to all possible issues. Points of concern raised in the report are whether ITER will have enough fluctuation diagnostics to carry out the Transport studies of interest to the US, and the amount of fusion engineering sciences testing which can be carried out on ITER. He envisaged that the Plan would be updated about every three years, but that there should not be a continuous panel.

In discussion by Council, members asked whether the report was informed by recent documents on ITER Research needs, and aligned with the ITER Research Plan. Marmar noted that his Panel had been aware of these documents, and in particular that one member, Mike Bell, was part of the IRP working group and served as a liaison between the parallel activities. The panel's work focuses on ITER research through the first phase of DT operations. It was noted that the report should provide useful input into the OFES Research Needs Workshops now being organized, and suggested that further emphasis in the report on integrated simulation might be timely.

## 5. Update on USBPO activities and plans

USBPO Director Jim Van Dam and Deputy Director Chuck Greenfield reported on USBPO activities since the last Council meeting. Topics covered by Greenfield included:

- **Preparations for APS.** A number of USBPO activities are being planned for the 2008 APS-DPP meeting in Dallas. These include a contributed Oral session on research in support of ITER, and an evening Town Meeting on ITER. Speakers for this session include David Campbell of the ITER Organization, Charlie Baker, and Jim Van Dam. An overall goal is to inform the US community as to how they can continue to effectively contribute to ITER research needs.
- **Research Committee.** The Research Committee continues to meet regularly. Now that the urgent tasks of the design review are being completed, more effort is being directed to BPO-initiated tasks groups. Those underway or in planning stages include:
  - Study of ITER heating and current drive mix, led by Chuck Kessel.
  - Test blanket modules, including both technology and physics aspects, led by Nermin Uckan.
  - Supporting development of ITER Program Plan.

New task groups on disruption mitigation and wall issues are being considered. Strong collaboration with ITPA is a goal in all areas. The recently increased integration of BPO and US-ITPA leadership should strengthen these connections.

With regard to the ITER Program Plan, Council member Ed Synakowski, who is a member of the IRP working group, confirmed that there have not been recent requests for

active involvement of the working group or research community in development of new versions of the plan. Continued communication is needed.

Van Dam began his report by thanking USBPO leaders Zarnstorff, Taylor and Whyte for their efforts on the CRISPP, and commented that the report was very useful. He also attended the briefing on October 6. Other recent activities included:

- Presentation to IPO Technical Advisory Committee in Oak Ridge, August 14-14, 2008. This was well received, and TAC commented positively on US physics support for ITER. They suggested that a technology presentation from VLT would be useful next year. Other notable presentations at the TAC included a talk by Wayne Reiersen about concerns re systems engineering on ITER.
- A number of US presentations re ITER R&D will be presented at the upcoming IAEA meeting, including a talk by Council member Rich Hawryluk. USBPO will track these as an additional metric of US involvement.
- The idea of holding regular meetings between USBPO and leadership of US fusion programs, to inform them of key R&D needs, proposed by the Fusion Facilities Coordinating Committee, is being seriously considered.
- Van Dam participated in an initial meeting of “chief scientists” from all ITER parties on October 1. The meeting focused on discussion of the (very) recently released ITER Research Plans being prepared by the IO for various topical areas. It is expected and encouraged that these meetings continue.
- USBPO held a briefing for STAC members on October 7, in preparation for the STAC-5 meeting to be held October 20-22. These meetings continue to be a good source of information and updates on key technical issues in advance of the STAC meetings, and the time and input of the community is appreciated.
- USBPO personnel will play key roles in the upcoming Research Needs Workshops. In particular, Van Dam will chair the Theme on Burning Plasmas which is expected to have strong USBPO involvement.
- **Outreach:** Van Dam gave a talk in Japan at the ICPP meeting on September 12, and plans a talk on Burning Plasmas at the international workshop on Frontiers in Space and Fusion Energy Science in Taiwan in November. Because this conflicts with the FESAC meeting on November 6-7, Greenfield will represent USBPO at that meeting. There is a new USBPO logo for use in such presentations, and on the website. Thanks to Emily Hooks for her efforts on this.

In discussion, Erol Oktay mentioned an upcoming IEA/ITPA Program leaders’ meeting to be held at MIT in December 2008, hosted by Earl Marmor. This will cover both joint experiments and ITPA plans for high priority research needs, presented by ITPA Topical Group Leaders. Council members asked for more information on the systems engineering concerns raised at TAC. It was noted that the ITER Management Advisory Committee (MAC) is also discussing the need for uniform systems.

## **6. Discussion of proposed USBPO role in coordinating international collaborations**

Mike Zarnstorff informed the Council about a proposed new Coordinating Committee covering International Tokamak Collaborations. This is motivated by multiple factors, in particular regarding collaborations on long-pulse Asian superconducting tokamaks (EAST, KSTAR, JT60SA). Asian partners, most notably Korea, seek more collaborations with the US. In the NRC CRISPP panel, it became apparent that our partners see experience on long-pulse superconducting devices as needed to prepare for ITER. In the ReNeW activity, it will be necessary to consider collaboration opportunities in to meet needs in the Steady State Theme. OFES is thus considering setting up a working group, perhaps under BPO auspices as a task group, to look at such collaborations. This could report both to OFES and the ReNeW panels.

In discussion by Council of this proposal, Erol Oktay stated that he felt the USBPO was the appropriate organization to oversee tokamak collaborations, and noted that there are similar coordinating committees for US stellarator and ST research. However, he clarified that it would have oversight of general research priorities, and would not be expected to deal with administrative details of the collaborations. Funding for such collaborative work would come from the OFES budget for International Collaborations. It was commented that overlap of the new Committee with the responsibilities of ITPA should be avoided.

## **7. Any other business**

The meeting concluded with some additional discussion of topics which had come up earlier in the agenda. The need to be proactive in impacting the ITER Research Plan, whether or not IO is directly asking for input at this time, was raised. US members of the working group are willing to continue their efforts, and other US scientists may be added. It was suggested that Van Dam raise this issue at future “chief scientist” meetings and/or at STAC, and to continue discussions with David Campbell. In parallel, a US task force or workshop should be considered. Areas for development include better integration of the Test Blanket Module and plasma physics research plans, and examination of the heating and current drive mix and future upgrades.

As a future outreach opportunity, it was mentioned that the ITER Summer School rotates among parties and the US could consider hosting in future.

The next Council meeting will be held in person at the APS-DPP meeting in Dallas, November 18<sup>th</sup>.

The meeting was adjourned at 1:56 p.m. EDT.