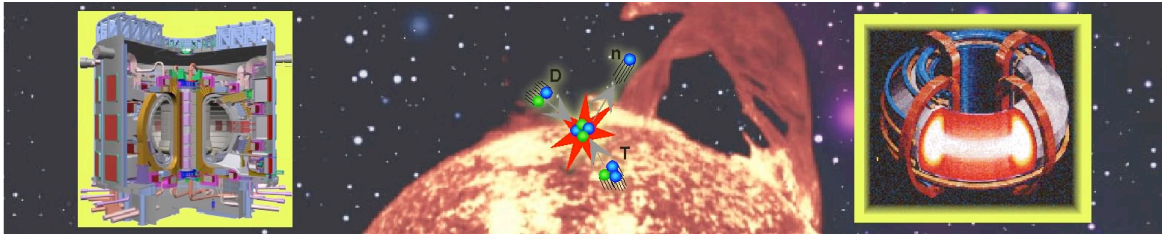


# ACTIVITIES OF U.S. BURNING PLASMA ORGANIZATION

*Progress Report submitted March 7, 2008*



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**DOE Grant Number:** DE-FG02-07ER54938

**Is this a collaboration?** Yes

Principal Investigator: Prof. Chris C. Hegna (University of Wisconsin–Madison)  
Progress Report will be submitted separately

# Progress Report for Activities of the U.S. Burning Plasma Organization

## 1. Executive Summary

The U.S. Burning Plasma Organization (USBPO) is a national organization of scientists involved in researching the properties of magnetically confined burning fusion plasmas. Its main activities are the coordination, facilitation, and promotion of research activities in the U.S. fusion energy sciences program relevant to burning plasma science and, specifically, of preparations for U.S. participation in the international ITER experiment.

Specifically, the USBPO mission is to advance the scientific understanding of burning plasmas and to ensure the greatest benefit from a burning plasma experiment by coordinating relevant U.S. fusion research with broad community participation.

Its stated goals are the following:

- Coordinate and advocate U.S. Burning Plasma research
- Provide a U.S. organizational structure for participation in BP program
- Optimize U.S. ITER participation and address issues beyond ITER
- Educate and advocate BP science to the wider scientific community
- Closely coordinate U.S. activities with U.S. ITER Project Office
- Facilitate strong interactions with international partners

## 2. Directorate

The USBPO Directorate acts to facilitate definition, participation, and execution of burning plasma research activities. The USBPO leadership is as follows:

- Director: James W. Van Dam (University of Texas)
- Deputy Director: Charles Greenfield (General Atomics)
- Assistant Director for ITER Liaison: Nermin Uckan (Oak Ridge National Laboratory)
- Administrator: Emily Hooks (University of Texas)
- Web site manager: James DeKock (University of Wisconsin)

The Directorate also includes the leaders and deputy leaders of the USBPO Topical Groups, who constitute the Research Committee. Meetings of the Research Committee are held every other week. The Deputy Director serves as the chair of the Research Committee.

The Director, Deputy Director, and Assistant Director for ITER Liaison also meet on a semi-regular basis with the USBPO Council to discuss and make decisions concerning policy and directions.

### **3. Council**

The Council is the advisory body of the USBPO. It provides oversight of USBPO activities, and is responsible for long-term strategic planning of burning plasma research. The Council sets the policies and procedures of the USBPO, including the Charter and By-laws governing USBPO operations.

The leadership of the Council is as follows:

- Chair: Amanda Hubbard (Massachusetts Institute of Technology)
- Vice-Chair: Michael Zarnstorff (Princeton Plasma Physics Laboratory)

The members of the Council are listed in Table 1. Beginning in mid-2008 the Council plans to replace about one-third of its membership each year.

The Council held meetings on the following dates:

- Tuesday, February 27, 2007, 3:00-5:00 p.m. (via video conference)
- Wednesday, June 13, 2007, 12:30-2:30 p.m. (via video conference)
- Tuesday, November 13, 2007, 12:30-2:30 p.m. (during the APS-DPP Annual Meeting in Orlando, FL)
- Wednesday, March 5, 2008, 1:00-3:00 p.m. (via video conference)

Minutes of the Council meetings are posted on the USBPO web site.

#### ***Charter and Bylaws Subcommittee***

A subcommittee of the Council, led by George Tynan (UCSD), began work in 2006 to draft a Charter and Bylaws for the USBPO. The final meeting of this subcommittee was held on February 19, 2007, by teleconference. The Council adopted the Charter proposed by this subcommittee on December 15, 2006. The Council adopted the Bylaws on April 6, 2007. Subsequently, on November 13, 2007, the Council adopted an amendment to the USBPO Charter and Bylaws to create Associate Membership status for non-US-based burning plasma scientists interested in joining the USBPO. The amended Charter and Bylaws documents are posted on the USBPO web site.

#### ***ITER Participation Subcommittee***

In March 2007, a subcommittee of the Council was set up to carry out long-range planning related to burning plasma scientific research. This group is being led by Earl Marmor and includes both Council members and other experts from the fusion community: Steve Allen, Michael Bell, Steve Knowlton, Farroukh Najmabadi, Hutch Neilson, Martin Peng, Phil Snyder, Ted Strait, George Tynan, and Nermin Uckan. (Cary Forest and Dennis Whyte were also members until they were asked to serve on the NRC panel to review US involvement in ITER.) This subcommittee is essentially a successor to the USBPO Task Force led by Ray Fonck that wrote the EPAct Report in 2006 in response to the congressional Energy Policy Act of 2005. That report had recommended that the initial planning exercises be continued and expanded by the USBPO, taking into account the evolving plans of the international ITER organization. The new subcommittee is working to write a report that will examine and update plans for US participation in ITER. Thus far the subcommittee has held the following meetings:

- Tuesday, May 15, 2007 (via video conference)
- Monday, June 4, 2007 (via video conference)

- Tuesday, June 12, 2007 (via video conference)
- Monday, October 15, 2007 (via video conference)
- Tuesday, October 30, 2007 (via video conference)
- Monday, November 12, 2007 (at APS-DPP Meeting)
- Friday, January 18, 2008 (via video conference)

### ***Executive Committee***

The USBPO Executive Committee consists of the Council Chair and Vice-Chair, along with the Director, the Deputy Director, the Assistant Director for ITER Liaison, and the OFES ITER Science Manager. The Executive Committee holds meetings by teleconference usually every other week at 12:00 noon ET for approximately one hour. A list of action items is circulated after each meeting. The following meetings were held:

- Friday, February 16, 2007
- Wednesday, February 28, 2007
- Friday, March 9, 2007
- Friday, March 30, 2007
- Thursday, April 12, 2007
- Friday, May 4, 2007
- Friday, May 18, 2007
- Friday, June 1, 2007
- Friday, June 22, 2007
- Friday, July 13, 2007
- Friday, August 10, 2007
- Thursday, September 20, 2007
- Friday, October 4, 2007
- Friday, November 2, 2007
- Friday, January 11, 2008
- Friday, February 1, 2008
- Friday, February 22, 2008

## **4. USBPO Topical Groups**

The Topical Groups represent the resources and expertise of the USBPO. They exist to address the science issues of burning plasmas and provide a venue for community-based burning plasma research. The Topical Groups stimulate, support, organize, define, and execute burning plasma-related research tasks in the U.S. fusion program.

The USBPO has so far established ten Topical Groups focused on distinct sub-areas of burning plasma science. These Topical Groups are the basic organizational structure by which scientists in the US fusion community are involved in USBPO burning plasma research activities. Each Topical Group has a leader and deputy leader(s). The leadership of each Topical Group identifies and promotes research activities for the members of that group. The Topical Groups and their respective leaders and deputy leaders are listed in Table 2. The Director provides guidance for the rotation and selection of new Topical Group leaders, in accordance with the USBPO Charter and Bylaws.

Along with the Directorate, the Topical Groups have recently participated in identifying U.S. experts who could address urgent issues related to the current design review activities of the ITER International Office. Coordinating and carrying out this design review research has been a major focus for the USBPO during calendar year 2007 and into 2008.

Another important activity for the Topical Groups is to integrate USBPO activities with other existing frameworks in the U.S. fusion science community. In particular, the USBPO and the ITPA agreed to integrate their respective topical group activities at the topical group leadership level. One result is that ITPA meetings and activities are now publicized on the USBPO web site.

The leaders and deputy leaders of the Topical Groups constitute the Research Committee, which is chaired by the USBPO Deputy Director. The Research Committee held meetings on the following dates, via the ESnet videoconference connection, at 12:00 noon ET for approximately one hour:

- Thursday, February 8, 2007
- Thursday, February 22, 2007
- Thursday, March 8, 2007
- Thursday, March 22, 2007
- Thursday, April 5, 2007
- Thursday, April 26, 2007
- Wednesday, May 9, 2007
- Thursday, May 24, 2007
- Wednesday, June 6, 2007
- Thursday, June 21, 2007
- Thursday, July 5, 2007
- Thursday, July 19, 2007
- Wednesday, August 1, 2007
- Thursday, August 16, 2007
- Thursday, August 30, 2007
- Thursday, September 13, 2007
- Thursday, September 27, 2007
- Thursday, October 11, 2007
- Thursday, November 8, 2007
- Thursday, November 29, 2007
- Thursday, January 10, 2008
- Thursday, January 31, 2008
- Wednesday, February 13, 2008
- Wednesday, February 27, 2008

Beginning in mid-2008 the Council plans to replace about one-half of its membership each year.

### ***Activities of Topical Groups***

Here are some examples of activities of various Topical Groups; this list is not necessarily meant to be exhaustive:

- In early 2007, the members of the Research Committee held three cyberspace virtual retreats in order to draft a document with guidelines about Topical Group research activities.

- The USBPO Topical Group on Diagnostics held a workshop on ITER diagnostics February 6-8, 2007, at General Atomics. The meeting was organized in close collaboration with the US ITER Project Office and the ITER International Office. Approximately 50 people attended the meeting, with an additional 10-15 attending remotely through a video and audio link. Alan Costley (ITER) presented the latest in ITER diagnostic plans, and David Johnson (USIPO) presented the latest plans and technical aspects of the procurement and design of the U.S. diagnostic packages. At the workshop it was generally recognized that the US needs an initiative for the development of innovative diagnostics for burning plasma experiments. Subsequently the three Diagnostics topical group leaders (Rejean Boivin, Jim Terry, and Steve Allen) took the lead in writing an ITER Diagnostics White Paper, which was submitted to the Office of Fusion Energy Sciences on July 12.
- The USBPO topical group on plasma-wave interactions held an afternoon workshop on May 9 following the 17th Topical Conference on Radio Frequency Power in Plasmas, that was held in Clearwater, FL.
- Members of the USBPO topical group on modeling and simulation participated in the Fusion Simulation Project workshop, May 16-17, in Washington, D.C. Also, the leaders of this topical group wrote a white paper about Fusion Simulation Project integrated simulations for ITER.
- Various USBPO Topical Group leaders were selected to serve as panel discussion moderators at the National Tokamak Planning Workshop (Boston, MA, September 17-19, 2007).
- Members of various USBPO topical groups participated in recent ITPA meetings on Pedestal (Garching), SOL/Divertor (Garching), Transport (Lausanne), Confinement Data Base and Modeling (Lausanne), and Steady-State Operation (Daejeon).

## 5. Task Groups

The Verification and Validation (V & V) Task Group was formed in December 2006 by the Confinement and Transport Topical Group. The task group was formed to address the need for active verification and validation of transport models and numerical modeling activities within the U.S. fusion program, a topic of increasing importance for theory and simulations of burning plasmas. The task group presented its initial findings at the US-European Transport Task Force Meeting in San Diego on April 18, 2007. The task group came up with several original contributions to the subject of V&V. They have written the draft of a paper that is now about ready to be submitted for publication.

## 6. Coordination with U.S. ITER Project Office

As the ITER international project grows, it is vital that there be close interaction and coordination of activities between the USBPO and the U.S. ITER Project Office (USIPO). The USBPO Director concurrently serves as the Chief Scientist for the U.S. ITER Project Office.

Working with the USIPO on the ITER Design Review Activities consumed most of the energy of the USBPO during 2007.

In addition to involvement with the ITER design review issues, the ten USBPO Topical Groups were also active in ITER issue cards, in ITER physics tasks (with 76 submitted and 14 selected, with work underway), and in burning plasma studies of broader scope.

### ***ITER Design Review***

ITER set up eight working groups to review and update its baseline design. One of these, the Design Requirements and Physics Objectives Working Group (whose U.S. members are Rich Hawryluk and Ron Stambaugh), issued a list of 12 urgent science issues. The U.S. ITER Project Office referred this list to the USBPO and asked that technical experts be identified who could help with the analysis of these issues. With the help of institutional program managers and OFES guidance, this was done in the form of a spreadsheet.

On June 15, 2007, the US Office of Management and Budget advised DOE that ITER Design Review work during CY 2007 should be funded out of the US ITER Total Project Cost. A guidance letter from the Office of Fusion Energy Sciences further indicated that this work should exceed a *de minimis* level of a couple weeks to receive such support. With advice provided by the USBPO concerning scientists with appropriate expertise for the various tasks, the US ITER Project Office contacted institutions and individuals involved in design review work, in order to set up the paperwork for support contracts.

At the conclusion of the second Integrated Design Review Meeting, held September 17-19 in Cadarache, the ITER Design Review Activity was declared to be over. The Design Review is “over” in the sense that the eight working groups of the Design Review Activity had had their second and final opportunity to recommend Design Change Requests (DCRs) for the 2007 Baseline Design. A number of the DCRs were accepted. More were put into the category of “in study.”

However, the Science and Technology Advisory Committee (STAC) of the ITER Council, when it met in early November, identified several high-priority technical issues still to be considered for the ITER design. The ITER Organization quickly organized small international topical groups to address these issues: (1) vertical stability, shape control/poloidal field coils, flux swing in Ohmic operation and central solenoid; (2) ELM control; (3) remote handling; (4) blanket manifold; (5) first wall material; (6) 17 MA discharge capability; (7) cold coil test; (8) vacuum vessel/blanket loading condition; (9) test blanket modules strategy; (10) hot cell design; (11) heating/current drive strategy, diagnostics and research plan. The topical groups, which include a number of US scientists who had previously been involved in the Design Review Activity, are urgently working to obtain results in a few months, which will be considered at a special STAC meeting to be held April 7-9. The STAC will also hold a regular meeting a month later (May 19-21) to review the proposed cost and schedule impacts of the changes that will be a part of the Overall Project Cost and Overall Project Schedule documents being prepared by the ITER Organization.

### ***ITER Science and Technology Advisory Committee***

The USBPO Director serves as a US member of the Science and Technology Advisory Committee (STAC) of the ITER Council. The US other members of the STAC are Rob Goldston (PPPL), Tony Taylor (GA), Stan Milora (ORNL), and Erol Oktay (OFES).

The first meeting of the STAC was held September 5-6 in Cadarache. (Dennis Whyte substituted for the USBPO Director at that meeting.) The second STAC meeting was November 5-7, also in Cadarache. Subsequent STAC meetings will be held April 7-9, May 19-21, and October 20-22, 2008.

Two Integrated Design Review (IDR) Meetings were held during 2007, one on July 16-19 and the next September 17-19, 2007, in Cadarache. At both of these meetings, the eight Design Review working groups proposed Design Change Requests (DCRs) for modifying the ITER baseline design.

In order to prepare the US members of the STAC for the September 5-6 meeting and the US representatives to the second IDR Meeting in September 17-19, the USBPO organized several tele/video-conference briefings:

- Aug. 13, 1:00 pm EDT, video conference on vertical stability (Dennis Whyte)
- Aug. 14, 1:00 pm EDT, video conferencing briefing for STAC participants (USIPO)
- Aug. 16, 3:30 pm EDT, teleconference on Task 1 of WG1
- Aug. 29 12-4 pm EDT videoconference briefing about WG1 task/results for STAC participants
- Sept 13 RC meeting devoted to STAC meeting reports by Erol Oktay and Dennis Whyte
- Sept 13 Update for STAC about Task 1 (integrated research plan) of WG1 by three US participants
- Sept 17-19 Stambaugh attended Design Change Requests Meeting
- Sept 27 RC meeting devoted to Ron Stambaugh's report about Design Change Requests meeting
- Oct 19 STAC & MAC conference call to prepare for STAC and MAC meetings
- Nov 1 2:00-7:00 pm EDT videoconference briefing by experts for US STAC members (mostly WG1 tasks, plus Brad Nelson and Dave Rasmussen covered WGs 2-8 and Earl Marmar covered the new Diagnostics DR subgroup)
- Nov 2 the USBPO drafted a report about US highlighted issues (to complement the EU report about five high-risk issues plus 10 other issues) for the second STAC meeting.
- November 11, 2007, STAC briefing

For the convenience of the US STAC members, the USBPO set up a limited-access STAC web page on the USBPO website. On this web page were posted all of the Design Change Requests, IO presentations, TCM minutes, TAC reports, and BPO written input (especially about plasma-facing components).

### ***USIPO Technical Advisory Committee meeting***

On September 25, the USBPO Director described the US involvement in the ITER Design Review Activity in a presentation to the Technical Advisory Committee (TAC) of the ITER Project Office (IPO), at its meeting in Oak Ridge on September 25. One of the TAC members, by the way, is Mike Zarnstorff, vice chair of the USBPO Council. After hearing the USBPO presentation about Working Group 1 and a corresponding presentation by Brad Nelson (USIPO Engineering Manager) about Working Groups 2-8, the TAC stated that it was pleased with the vitality, extent, and usefulness of the US community's involvement in the Design Review process.

## **7. Specific USBPO Activities**

### ***NRC Review Panel***

On September 29, 2007, the USBPO made a presentation to the Plasma Standing Committee of the National Research Council. The presentation, given by USBPO Deputy Director Chuck Greenfield, described the report that had been written by the USBPO last year in response to the 2005 Energy Policy Act of Congress. The presentation also described the active involvement of the US fusion community in the ITER Design Review Activity. The purpose of this input was to help the NRC as it prepared to undertake a “review of the plan for a plan” for how the US will take advantage of the ITER science and technology research program when that facility begins operation. (This presentation is available on the USBPO web site.)

The NRC then up a panel to review the US plans for participating in the research program of ITER; this review is congressionally mandated. The official name of this committee is “Committee to Review U.S. ITER Science Participation Planning Process” (or CRISPPP for short).

The CRISPPP committee met December 14 and 15, 2007, in Washington, D.C. The first day was a public session devoted to invited presentations. From the US there were talks by Erol Oktay (USDOE) and Ned Sauthoff (USIPO), Stan Milora (VLT), and Earl Marmor and Jim Van Dam representing the USBPO. Several international colleagues also presented talks: Jerome Pamela (EFDA), David Campbell (ITER), and Shinzaburo Matsuda (JAEA). All the talks are posted on the USBPO web site.

In February 2008, at the request of the CRISPP committee, the USBPO provided several pages of statistics and metric information by which US involvement in ITER could be measured.

### ***Winter School***

In 2007 the USBPO considered the idea of organizing a summer school on burning plasma physics for graduate students and young researchers. As an initial step the USBPO proposed to join forces with the OFES Center for Multi-scale Plasma Dynamics, which already operates an excellent annual Winter School at UCLA in conjunction with the Center for Magnetic Self-Organization. Their organizing board agreed to incorporate a day’s worth of lectures on Alfvén instabilities in burning plasmas in this year’s school (January 7-12, 2008), whose overall theme was “Plasma Instabilities.” The lectures are posted on the Winter School web site (<http://home.physics.ucla.edu/calendar/conferences/cmpd/>). The burning plasma lectures on Saturday, January 12, were presented by Jim Van Dam, Boris Breizman, and Bill Heidbrink and were very well received by the approximately 100 students who participated in the Winter School.

### ***APS Division of Plasma Physics Meeting***

There were a number of USBPO-sponsored activities during the APS Division of Plasma Physics Annual Meeting (November 12-16, Orlando, FL):

- On Tuesday evening, a well-attended Town Meeting on the ITER Design Review was held, with very informative presentations by Guenter Janeschitz (Design Review Coordinator) and Rich Hawryluk and Ron Stambaugh (members of Design Review Working Group 1). Their talks have been posted on the USBPO web site.

- The USBPO helped to support a mini-conference “The First Microns of the First Wall” (organized by the Edge Coordinating Committee).
- A list was prepared of burning plasma-related contributions at the meeting. The list included 8 invited talks (one given by a USBPO Topical Group leader), 10 oral contributed, 58 posters, 1 review talk (given by a USBPO Topical Group leader), 1 tutorial (given by yours truly), the First Microns mini-conference (22 talks), and the Town Meeting (3 talks). This list was posted on the USBPO web site for general information.
- The tutorial talk entitled “The Scientific Challenges of Burning Plasmas” by the USBPO Director has been posted on the USBPO web site.

### ***ITPA Coordinating Committee Meeting***

The USBPO Director is one of the US members of the ITPA Coordinating Committee, the others being Erol Oktay, Ned Sauthoff, and Ron Stambaugh (ITPA chair). The annual ITPA Coordinating Committee meeting was held June 18-20 in Cadarache, France. On the agenda for this meeting were several presentations about the ITER design review, reports about the status and plans of the programs of the seven ITER partners, reports from the ITPA topical physics groups, and a discussion of the relationship of the ITPA with the new ITER international organization.

### ***Test Blanket Module for ITER***

A workshop sponsored by the Virtual Laboratory for Technology, a sister organization to the USBPO, was held May 30-June 1 at Oak Ridge National Laboratory. Nermin Uckan, leader of the USBPO topical group on fusion engineering science, served as a member of and the secretary for the review panel. Dave Petti, a member of the USBPO Council, did an excellent job chairing the review panel. The USBPO Director attended this workshop and was invited to function as a de facto member of the panel, so that USBPO views about test blanket modules could be represented.

## **8. Communication and Outreach Activities**

The USBPO is committed to making a variety of electronic communication tools available to its members in order to facilitate participation in USBPO research and leadership activities. These tools include the following:

- Support for teleconferences, facilitated by USBPO administration
- Web-based file sharing
- Bulletin board support for Topical Group and Task Group research work and file exchange
- E-mail list servers for easy group communications
- Supported scalable video-conferencing for small and large group discussions
- Periodic electronic newsletters to the fusion community

Internet and communications technology support is carried out at the University of Wisconsin. The server purchased for the USBPO in 2006 and maintained at Wisconsin has continued to be used. An IT expert at Wisconsin (Mr. James DeKock), who helped build the USBPO web site,

continued to manage it. A small separate grant supports Mr. DeKock's part-time service to the USBPO through the University of Wisconsin (via Prof. Chris Hegna, PI).

### **eNews**

The USBPO newsletter, called *eNews*, is published monthly in electronic format. It is posted on the USBPO web site and also distributed widely via email. Included in the newsletter are the following sections:

- Director's Corner (column and commentary by the USBPO Director)
- Announcements
- Feature articles
- Reports
- Calendar of upcoming fusion events

The USBPO *eNews* was published in May, June, July, August, September, October, and November during 2007, and in January and February so far during 2008. The issues of *eNews* are archived at <http://burningplasma.org/enews.html>. Dr. Raffi Nazikian serves as the editor, with assistance from the USBPO Administrator.

### **Website**

Here are a few recent developments concerning the USBPO web site:

- The Deputy Director is developing comprehensive Communications Guidelines to determine what the online presence will be.
- The Administrator is working with a professional graphic designer to develop a new USBPO logo and masthead, which will be used online, in mailings, and during presentations. The estimated completion date is April 1, 2008.
- Announcements, presentations, *eNews* issues, and organizational changes are updated on the USBPO website when released.
- Access has been provided to the web-based USBPO Forum for subcommittees and other interim groups to share large files and other documents in a secure setting, as needed.
- Minutes of USBPO Council meetings are now posted, using a link to the public web page, in order to keep USBPO membership up to date about activities and decisions.

### **Outreach**

The USBPO played a support role in helping the US ITER Project Office prepare the ITER exhibition booth that was on display at the 2008 Annual Meeting of the American Association for the Advancement of Science (February 14-18, Boston). In particular, Dr. Don Batchelor of the USBPO provided a good deal of technical input about burning plasma science, including ICRF wave simulations for a 3D movie and also a fusion-theme computer game for children. Other support came from the USBPO Directorate and also from Princeton Plasma Physics Laboratory (John DeLooper) and General Atomics.

### **Other representational activities**

Here are some other activities:

- The USBPO Director presented an invited talk at the American Physical Society's April Meeting (Jacksonville, FL) on the subject of "How to make a big international science project happen: Lessons from ITER."

- The USBPO Director presented an invited talk on simulations for burning plasmas and participated in a panel discussion about US high-performance computing initiatives during a special symposium September 8-9, 2007, in Toki, Japan, held by the National Institute for Fusion Science to celebrate the inauguration of its new Department of Simulation Science. Useful input for this talk was received from Don Batchelor, leader of the Modeling and Simulation Topical Group.
- The USBPO Director provided a presentation about the USBPO and the ITER Design Review Activities and participated remotely in the US-Japan Coordinating Committee for Fusion Energy annual meeting (September 27, 2007).
- Nermin Uckan, the USBPO Assistant Director for ITER Liaison, presented a talk about USBPO activities at the Fusion Power Association annual meeting (December 4-5, 2007).

## 9. Summary of Presentations

During the past twelve months, the following presentations and papers were given either on behalf of or sponsored by the USBPO and are available at [burningplasma.org/reference/](http://burningplasma.org/reference/).

- *Update about the US Burning Plasma Organization*: J. W. Van Dam [presented at FESAC Meeting, Gaithersburg, MD, March 1-2, 2007]
- *Overview of the Burning Plasma Organization*: J. W. Van Dam [presented at DOE Budget Planning Meeting, Gaithersburg, MD, March 13-14, 2007]
- *How to Make a Big International Project Happen: Lessons from ITER* (invited talks): J. W. Van Dam [presented at APS April Meeting, Jacksonville, FL, April 14, 2007]
- *USBPO Update & ITER Design Review Activities*: J. W. Van Dam [presented at FESAC Meeting, Gaithersburg, MD, July 16, 2007]
- *Simulation Science for Burning Plasmas* (invited talk) and *Comments on US Simulation Programs: SciDAC, FSP, USBPO, and ASC* (panel discussion presentation): J. W. Van Dam [presented at Commorative Symposium on Simulation Science, National Institute for Fusion Science, Toki, Japan, September 8-9, 2007]
- *ITER Design Review Activities: WGI Design Requirements and Physics Objectives*: J. W. Van Dam [provided to US-Japan Coordinating Committee on Fusion Energy, video-conference meeting, September 27, 2007]
- *ITER Design Review Activities: WGI Design Requirements and Physics Objectives*: J. W. Van Dam [presented via video conference to USIPO Technical Advisory Committee, Oak Ridge, TN, September 29, 2007]
- *U.S. Burning Plasma Organization: Activities and Plans*: C. W. Greenfield [presented at Plasma Science Committee meeting, National Research Council, Irvine, CA, September 29, 2007]
- *The Scientific Challenge of Burning Plasmas* (tutorial talk): J. W. Van Dam [presented at APS Division of Plasma Physics Annual Meeting, Orlando, FL, November 14, 2007]
- *The US Burning Plasma Organization Activities*: N. Uckan [presented to Fusion Power Associates Annual Meeting and Symposium, Oak Ridge, TN, December 4, 2007]
- *Engagement of US Plasma/Fusion Energy Science Community in ITER Research and Reflections on USBPO Plan*; J.W. Van Dam [presented to the Committee to Review US

ITER Science Participation Planning Process (CRISPPP), National Research Council, Washington, D.C., December 14, 2007]

- *U.S. BPO Panel: Planning for ITER*; Earl Marmor [presented to the Committee to Review US ITER Science Participation Planning Process (CRISPPP), National Research Council, Washington, D.C. December 14, 2007]
- *Alfven Modes in Tokamaks and ITER*; J.W. Van Dam [presented at the CMPD-CMSO Winter School, UCLA, Los Angeles, CA, January 12, 2008]

**Table 1: USBPO Council Members**

<b>Member</b>	<b>Institution</b>
Amanda Hubbard—Chair	MIT
Michael Zarnstorff—Vice Chair	PPPL
Steven Allen	LLNL
Steven Cowley	UCLA
Richard Hawryluk	PPPL
Earl Marmor	MIT
Gerald Navratil	Columbia University
Martin Peng	ORNL
William Nevins	LLNL
David Petti	INEEL
Craig Petty	General Atomics
John Sarff	University of Wisconsin
Tony Taylor	General Atomics
George Tynan	UCSD
<b>Ex Officio</b>	<b>Title</b>
Stanley Milora	Chief Technologist, U.S. ITER Project Office
James Van Dam	USBPO Director; Chief Scientist, U.S. ITER Project Office
<b>OFES Program Managers</b>	<b>Title</b>
Erol Oktay	ITER Science Manager
Gene Nardella	ITER Technology Manager

**Table 2: USBPO Topical Groups and Leadership**

<b>Topical Group</b>	<b>Leader</b>	<b>Deputy Leader(s)</b>
MHD Macroscopic Plasma Physics	Jon Menard (PPPL)	Chris Hegna (UW)
Confinement and Transport	Paul Terry (UW)	Ed Doyle (UCLA)
Boundary	Dennis Whyte (MIT)	Tom Rognlien (LLNL)
Plasma-Wave Interactions	Cynthia Phillips (PPPL)	Stuve Wukitch (MIT)
Energetic Particles	Raffi Nazikian (PPPL)	William Heidbrink (UCI)
Integrated Scenarios	Chuck Kessel (PPPL)	Tim Luce (GA)
Fusion Engineering Science	Nermin Uckan (ORNL)	Richard Nygren (SNL)
Modeling and Simulation	Don Batchelor (ORNL)	Jon Kinsey (GA)
Operations and Control	Dave Humphreys (GA)	Dave Gates (PPPL)
Diagnostics	Rejean Boivin (GA)	Steve Allen (LLNL), Jim Terry (MIT)