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*Dear Burning Plasma Aficionados:*

This newsletter provides a short update on U.S. Burning Plasma Organization activities. E-News is also available online at <http://burningplasma.org/enews.html>. Comments on articles in the newsletter may be sent to the editor (R. Nazikian [rnazikian@pppl.gov](mailto:rnazikian@pppl.gov)) or assistant editor (Rita Wilkinson [ritaw@mail.utexas.edu](mailto:ritaw@mail.utexas.edu)).

Thank you for your interest in Burning Plasma research in the U.S.!

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## Director's Corner by J. Van Dam

### Election for USBPO Council

In last month's column, I reported about the process that was then underway for electing two new members of the USBPO Council. It's a pleasure to announce that Michael Bell (PPPL) and Phil Snyder (GA) have been elected to three-year terms. Congratulations to both of them.

### ITER Oral Session at APS

As it did last year, the USBPO will again organize a special session of contributed talks about research work related to ITER at the APS Division of Plasma Physics Annual Meeting (November 2-6, Atlanta). USBPO Deputy Director Chuck Greenfield reports that this session appears to be quite popular, since more papers have been submitted than can be accommodated within the time allocation. By next month we expect to be able to provide a preview of this special session.

### More ITER Physics Task Solicitations

Another batch of solicitations has arrived from the ITER Organization:

- *Simulations of runaway electrons in ITER*
- *Task for H&CD physics assessments by updated F3D OFMC and ACCOME codes*
- *Task for edge magnetic field structure for ELM control in ITER and associated power/particle fluxes to plasma-facing components*

The texts of the solicitations are posted on the Reference Files page of the USBPO web site (<http://burningplasma.org/reference.html>). Because these solicitations have a final response date to the ITER Organization around the end of August, the US ITER Project Office needs to receive proposals by midnight **August 17** to allow time for selection of teaming partner, credit determination, and document

finalization. The same rules as before: Pricing information should be submitted separately from the proposal, since this information is not forwarded to the ITER Organization. The US ITER Project Office will then determine the appropriate “credit” to request from the ITER Organization, acquire approval signatures, and finalize the submittals. If the ITER Organization accepts the proposal, then the US ITER Project Office will establish the necessary contracts with the performers and provide the funding.

### **ITER International Summer School**

The third in this series of summer schools was held June 22-26 in Aix-en-Provence, France, at the Institut d'Etudes Politiques, organized by the University of Provence. Twenty-one lecturers presented talks on various aspects of the general theme of the summer school, which was “Plasma-Surface Interactions in Controlled Fusion Devices.” The lectures are posted on the school’s web site (<http://sites.univ-provence.fr/iterschool/program.html>). About 100 students participated from around the world. During one of the afternoons, the participants were taken on a tour of the Tore Supra tokamak facility at the CEA Cadarache laboratory and of the ITER Site, where Sir Chris Llewelyn-Smith, Chair of the ITER Council, spoke to them. Dr. David Campbell of the ITER Organization chaired an evening panel session on materials for ITER. The two previous ITER Summer Schools were held in Kyushu, Japan (2008) and Aix-en-Provence (2007).

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## **Reports**

### **ITER and Export Control**

*Written by John Glowienka, USDOE Office of Fusion Energy Sciences*

The excitement around ITER has been building. The ITER Agreement has been signed and entered into force. The site has been cleared and leveled for beginning of civil construction. Real fabrication of ITER components by the seven Members is poised to start. So what does export control have to do with this?

The ITER Agreement formally declares the commitment of the Members to build ITER; yet, as stated in Article 20 of the Agreement, nothing in the Agreement shall require any Member to violate its national export control laws and regulations. For its part, the U.S. has a very structured and well-established approach to export control. Depending on the nature of the export, jurisdiction is parsed out to several government agencies, for example, the Nuclear Regulatory Commission and the Department of Commerce, Department of Defense, and Department of Energy. The Department of Commerce is the regulator for most fusion export control activities. By law, any material item being prepared for shipment outside the country—be it a paper clip, food, or weapon system—is export controlled. Also controlled is the supporting technology; mere discussion of the technology at home or abroad with a non-U.S. person can be considered a “deemed export.” Most “control” is easily achieved by following the well-publicized procedures for such exports; however, in certain sensitive areas (e.g., nuclear hardware, isotope separation, hot cells, and missile systems) and for items that have “dual use” possibilities (i.e., commercial and military use), the supplier must go further by obtaining an export license from the regulator before shipment of the hardware and transfer of the supporting technology to the end user. In the license, the regulator outlines the conditions (“provisos”) for transfer.

As part of the licensing activity, the U.S. ITER project has obtained Department of Commerce approval for an EAR99 Commodity Classification that applies to virtually all of the in-kind hardware within the U.S. ITER scope. U.S. ITER scope is defined as that list of in-kind hardware found in the Common Understandings on Procurement Allocation in the ITER Agreement and assigned to the U.S. EAR99 is the least restrictive commodity classification. With this classification, virtually all of the U.S. ITER in-kind hardware can be shipped to France—or to other Members for further fabrication and then to France—without obtaining export licenses. The technology associated with the hardware requires a license. To date, five licenses have been issued for U.S. ITER scope for an unprecedented 10-year period. Clearance and approval was obtained across many U.S. government agencies (Department of Commerce, Department of Energy, State Department, etc.). With the licenses in place and proper behavior on the part of the End User in respecting the provisos, the risk of export control issues causing

schedule delay for delivery of U.S. scope hardware can be viewed as mitigated. U.S. ITER scope may have to be revised because of *bona fide* new scope driven by the 2007 ITER Design Review and by scope swaps among the Members as the construction project approaches base-lining this November. For the U.S., for example, this could mean the addition of some portion of the ELM and Vertical Stability coils systems.

There is, however, a growing concern that the ITER Organization and some of the Members have been reaching out to experts in the U.S. fusion community for help in areas *outside* of current U.S. ITER scope. A recent example of an out-of-scope activity involved a request by India for a U.S. subject matter expert to review the design of a part of India's Diagnostic Neutral Beam system for ITER. While this can be a perfectly reasonable request from a programmatic point of view, it does need to be considered from the perspective of export control and in terms of the approach already in place for addressing the U.S. ITER scope items. In principle, a simple determination by the reviewer of adequacy might not require a license; however, a discussion of possible improvements by the reviewer might result in an uncontrolled deemed export. This activity is at the heart of the debate about the progression from "research" to "reduced to practice." Most universities and many research institutions operate on the belief that everything they do is research and is covered by the so-called Research Exemption with respect to export control. With the stipulations about sharing of information outlined and agreed to by governments in the ITER Agreement, some research activities with applications to ITER do cross the dividing line into the realm of reduced to practice and export control. A different set of rules then apply. As a result, some organizations may determine that these rules conflict with their research policy and may decide not to participate.

Suffice it to say that the need for an export license is determined by government policy rather than by scientific intuition. Rolf Migun, Export Control Program Manager at ORNL/UT-Battelle ([migunrp@ornl.gov](mailto:migunrp@ornl.gov)), has been the primary point of contact with the Department of Commerce for obtaining the existing National Laboratory licenses. With the help of the US ITER Project Office, he has recently begun to re-examine all known U.S. ITER activities with respect to the issued export control licenses. Also, he plans to consult with the Department of Commerce soon to determine a path forward to deal with the expansion of U.S. voluntary efforts in support of ITER. This activity should provide the added benefit of allaying fears that the broad universe of true scientific inquiry to learn the physics (such as that ongoing through ITPA activities) will not be stifled by export control.

So what should a researcher do if contacted by the ITER Organization or by one of the ITER Members to perform a supporting task? Here are two suggestions. First, the researcher should go within his/her organization to determine if there is a policy conflict and, if none, to ascertain the level of support available to administer a possible license application. Second, it is advisable to contact Ned Sauthoff (Director, U.S. ITER Project Office) and Rolf Migun to enable coordination within the U.S. ITER activities and to access the latest guidance on how to proceed. Consultation with the experts is the better path forward in order to avoid problems with your possible participation and to avoid risk to the U.S. contributions to the ITER Project.

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## **Announcements**

Submit BPO-related announcements for next month's eNews to Raffi Nazikian at [rnazikian@pppl.gov](mailto:rnazikian@pppl.gov).

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## **2009 Burning Plasma Events**

May 2-5  
Sherwood Theory Fusion Conference/APS April Meeting  
Boulder, CO

May 5-8  
ITPA Sol & Divertor Topical Group Meeting  
Utrecht Amsterdam, FOM Rijnhuizen

May 11-14  
12<sup>th</sup> International Workshop on Plasma-Facing Materials & Components for Fusion Applications  
Julich, Germany

May 25-27  
ITER Science and Technology Advisory Committee STAC-6 Meeting  
Cadarache, France

May 27-28  
ITER Management Advisory Committee MAC-5 Meeting  
Cadarache, France

May 29-30  
ITER Council Contact Persons Working Group Meeting  
Cadarache, France

May 31-Jun 5  
ICOPS-SOFE 2009 Conference  
San Diego, CA USA

Jun 14-18  
ANS Annual Meeting  
Atlanta, GA USA

Jun 24-26  
18th Conference on RF Power in Plasmas  
Gent, Belgium

Jun 29-Jul 3  
14th International Conference on Emerging Nuclear Energy Systems (ICENES-2009)  
Ericeira, Portugal

Jul 15-16  
ITPA Coordinating Committee Meeting  
Cadarache, France

Jul 15-17  
8th IAEA TM Fusion Power Plant Safety  
Vienna, Austria

Aug 10-14  
7th IAEA TM on Steady State Operation of Magnetic Fusion Devices  
Moscow, Russia

Sept 6-11  
[6th International Conference on Inertial Fusion Sciences and Applications \(IFSA 2009\)](#)  
San Francisco, CA USA

Sept 7-12  
[14th International Conference on Fusion Reactor Materials \(ICFRM-14\)](#)  
Sapporo, Japan

Sept 21-23  
[11th IAEA Technical Meeting on Energetic Particles in Magnetic Confinement Systems](#)  
Kiev, Ukraine

Sept 21-24  
[14th International Symposium on Laser-Aided Plasma Diagnostics \(LAPD-14\)](#)  
Castelbrando, Treviso, Italy

Sept 24-25  
ITPA Energetic Particle Topical Group Meeting  
Kiev, Ukraine

Sept 30-Oct 2  
[12th Int'l Workshop on "H-mode Physics and Transport Barriers"](#)  
Princeton, USA

Oct 5-7  
ITPA Transport & Confinement Topical Group Meeting  
PPPL, USA

Oct 5-7  
ITPA Pedestal & Edge Physics Topical Group Meeting  
Princeton, New Jersey, USA

Oct 6-9  
Meeting of the ITPA Topical Group on MHD  
Abingdon, UK

Oct 11-16  
[9th International Symposium on Fusion Nuclear Technology \(ISFNT-9\)](#)  
Dalian, China

Oct 12-16  
ITPA Diagnostics Topical Group Meeting  
Pohang, Korea

Oct 20-23  
ITPA Integrated Operation Scenarios Topical Group Meeting  
San Diego, CA USA

Oct 24-29  
9<sup>th</sup> Int'l Conference on Tritium Science and Technology  
Nara, Japan

Nov 2-6  
[51st APS-DPP Meeting](#)  
Atlanta, GA USA

Nov 9-11  
[14th Workshop on MHD Stability and Control](#)  
Princeton, USA

Nov 15-19  
[ANS Winter Meeting](#)  
Washington, DC USA

Dec 3-4  
Fusion Power Associates Annual Meeting  
Washington, DC USA

Dec 8-11  
[The 19th International Toki Conference \(ITC19\)](#)  
Ceratopia Toki-City, Gifu, Japan

Dec 14-18  
ITPA SOL & Divertor Topical Group Meeting  
San Diego, CA USA

Fusion Research-related events can also be seen on the USBPO website at <http://burningplasma.org/events.html>.