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16 May 2007

## On Site

### ITER parents appoint representatives for International School Manosque

On 24 April, a briefing meeting organised jointly by Agence ITER France and the IO was held in the Château de Cadarache, to inform ITER parents on progress on the International School Manosque. The new school will open on the premises of the Lycée Les Iscles in September 2007. The parents chose six representatives to liaise with the ITER Organization and Agence ITER France, the International School, and relevant regional educational authorities. The representatives will play an important role in the intensive consultations between all parties that are required in the preparation of the International School Manosque.

### Progress review Meeting on Neutronics Analysis for ITER



Twenty-nine specialists in neutronics analysis from US, China, Japan, India and Europe, gathered at the Château de Cadarache for a meeting on 26-27 March. The main interest was the comparison of different software systems that take a description of the ITER design from the ITER CAD system and

convert it into a form that can be used in computer codes for nuclear analysis, in particular the "Monte Carlo" code MCNP. Such systems are in development in Germany, Japan, China and the US.



Participants in the Neutronics meeting in Cadarache. Click on picture for high-res.

Following a previous meeting held in Madison, Wisconsin in July 2006, participants had used their systems for

## News

### ITER Vacuum vessel discussed in Korea and Cadarache

A meeting was held on 16-17 March 2007 in Seoul, Korea with representatives of the IO, EU, and Korea, to discuss the procurement scheme for the ITER vacuum vessel, and to agree on the general roadmap for implementation. The main vessel including the blanket manifolds and hydraulic connectors will be jointly constructed by the EU and Korea. (The construction of the ports will be shared between the Russian Federation and Korea, while India will be responsible for the shielding.) The possibility of forming a consortium between EU and KO industry to produce the vessel was discussed, as it would offer important advantages.



IO, Korea and EU Representatives at Hyundai Heavy Industries Facility in Ulsan, Korea. Click on picture for high-res.

As part of this meeting, IO and EU representatives visited the Doosan and Hyundai heavy industry facilities in Korea. These companies manufactured major components of the KSTAR tokamak.

Since then, a second meeting was held in Cadarache (May 10-11) with EU and KO representatives, where the Vacuum Vessel procurement scheme was discussed in more detail. Earlier in the week, KO industry representatives visited several industrial facilities in Europe.

### ITER QA Working Group meeting held in Korea

The 5th ITER Quality Assurance Working Group meeting was held from 17-19 April in Daejeon, Korea and was hosted

## Directors' Corner

### The Tokamak Department

The Tokamak Department is responsible for some of the largest and most complex systems on the project, including the superconducting magnets, the vessels (vacuum vessel and cryostat) and internal components such as the blanket and divertor. Assembly and remote handling of these systems are also



Gary Johnson,  
DDG Nominee  
Tokamak  
Department

included. The total value of these systems is more than 2 billion Euro, so (on average) each of the 32 members of the department is responsible for 62.5 M Euro worth of equipment. Together, we are responsible for assuring that the designs of all of these systems satisfy the requirements, that the hardware and systems that are produced by the Parties satisfy our specifications (particularly regarding quality), and that they are installed and tested correctly. This is a staggering responsibility and even as the department grows (to about 42 persons by summer) the challenges for each of us will remain immense.

In the near term, the priority of the department (like in the rest of the ITER Organization) is to complete the design and issue the procurement arrangements. This is critically important because it is the first step in the procurement process for the Parties. The department is responsible for 39 packages and several of these are for critical path activities like the magnets and vacuum vessel.

The first Procurement Packages for the project are for the magnet conductors (toroidal and poloidal field coils and the central solenoid) and these must be issued later this year. These are the first and some of the most complex because they involves six parties, are technically challenging, and have a high value (530 million Euro). To help assure that the technical specification is correct and complete, the External Conductor Procurement Review Committee was formed. This committee of external experts met for the first time in late April and will continue until a final version is accepted by both the IO and the DA's. Other equally critical procurement packages will follow in early 2008 (including magnet structures and the vacuum vessel) and in

analysis of a common 3-D model of a sector of ITER. Comparing the results was the main topic of the Cadarache meeting. Apart from a few issues still to be resolved, the systems appear mature enough to be put into regular use. The way forward to establish a new reference model for nuclear analysis of the current ITER design was discussed. Other topics included nuclear data developments, comparisons of calculation results with new experimental measurements, and quality assurance.

### First Technical Advisory Group meeting held at Cadarache

The first meeting of the Technical Advisory Group (TAG) was held on April 25-27 at the Chateau in Cadarache. The TAG's function is to advise the ITER Director-General and Principal Deputy Director General on procurement and construction aspects of the project and to provide an independent assessment on the status of the design.



The TAG is made up of a maximum of 12 experts selected by the DG and PDDG from leading fusion scientists and technical managers from industries and laboratories who have been involved in projects comparable in size and scope to ITER. The current chairman is Dr. Michel Huguët, former Deputy Director of the ITER Joint Central Team and Head of Site at the Naka Joint Work Site in Japan.

Items discussed included the status of the ITER Organization including technical coordination of activities, budget and resources, the status of the design review, the integrated project schedule, status and organization of procurements and an overview of the development of the ITER Departments.

### Fusion World

by the Korean Participant Team Leader Dr. KJ Jung. The purpose of the QA meetings is to share information on the ITER QA standards and procedures, and to discuss the developing QA programs in the ITER Parties.



Participants to the 5th ITER QA meeting held in Daejeon, Korea. Click for high-res.

The meeting included visits to several Korean industrial companies—the Korean Power Engineering Company KOPEC and DOOSAN Heavy Industries & Construction—and the headquarters of the National Fusion Research Center NFRC, with a tour of the KSTAR facility. The meeting participants included representatives from all seven Participant Teams, five members of the ITER Organization, and numerous people from the industrial firms KOPEC and KINS, and the NFRC.

### People

#### "After work, I consider myself a hunter-gatherer" Interviews with five US ITER Secondees

By Cindy Lundi, US ITER

Nine employees affiliated with the U.S. ITER Project have been assigned to the site in the South of France and are working with the ITER Organization. U.S. ITER "secondees" in Cadarache include Dennis Baker, who has spent the previous 34 years of his professional career supporting the DOE's Savannah River Site. He has experience in reactor operations support, safety analysis, and safety basis development. He helped develop DOE's Magnetic Fusion Safety Standards and was seconded to ITER in the Safety Division in San Diego during the project's engineering design phase. In France, he is in the safety group developing and defending the ITER safety basis.

"This assignment has been an adventure," Baker said. "I have enjoyed the technical work and have already been given assignments with considerable significance. For example, I updated the general ITER confinement strategy and participated in presentations on it to the Safety Working Group of the Design Review Activity and the French Nuclear Regulatory Authority in Paris."

"I have also very much enjoyed working with people from other countries and experiencing the culture of the Region of Provence. I have joined a choir at the Darius Milhaud National Conservatory of Music in

2009 the packages for internal components like the blanket and divertor will be issued.

### ITER Parties

#### Current status ratification ITER Agreement

Before ITER can be established formally as an International Organization, the ITER Joint Implementation Agreement needs to be ratified (or approved, depending on local requirements) by the governments of the ITER Parties. The current status is that the governments of five ITER Parties have either ratified or approved the ITER Agreement: the EU (represented by EURATOM), Japan, Korea, India and the US. In the Russian Federation and China, the process has not been concluded yet.

#### ITER web applications made in India

The sharing and managing of information are done in the only way ITER does things: on a global scale. 24,000 documents and 100,000 cross references provide the starting challenge for the ITER IT development team, which needs to find solutions for a fast-growing demand for user-friendly web-based applications to manage information. About six weeks ago, the SilverTouch Technologies Ltd company in Ahmedabad, India, has joined this effort as part of a contribution from the Indian Party, bringing fresh ideas to the existing expertise at ITER.



ITER IT specialist Carlo Capuano (below, middle), with members of the Indian IT team. Click picture for high-res.

For two weeks, ITER IT specialist Carlo Capuano worked together with the Indian team to set up the collaboration and to create the basis of the new application, which will be the future reference point of ITER information and documentation.

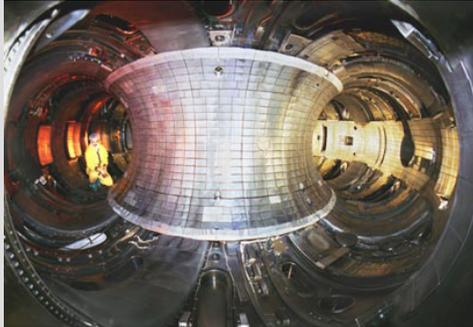
#### Links to the Domestic Agencies

Information [EU Domestic Agency](#)  
Website [Domestic Agency India](#)  
Website [Domestic Agency Japan](#)  
Website [Domestic Agency USA](#)

### Industry

## 10th anniversary of end of operations TFTR tokamak

It was ten years ago on 4 April that the Tokamak Fusion Test Reactor (TFTR), at the Princeton Plasma Physics Laboratory (PPPL), USA, closed after 15 years of operation. The construction of TFTR started in March 1976 as part of a major US Energy R&D effort in response to the Gulf oil embargo of the mid-1970s.



Interior of the TFTR tokamak. Photo courtesy PPPL.

TFTR was the first of the three large tokamaks (TFTR, JET and JT-60) to begin operation, on 24 December, 1982. For the next 15 years, TFTR operation performed at the frontier of fusion research. In 1996, the US fusion budget was cut by 35% forcing a restructuring of the US fusion program that resulted in the premature termination of TFTR operation on 4 April 1997.

TFTR achieved all of the original project goals and made numerous contributions to fusion physics and the understanding of tokamaks.

## Calendar

### Future meetings, conferences, workshops

**May 14-17, 2007**

5<sup>th</sup> IAEA Technical Meeting on Steady State Operations of Magnetic Fusion Devices (IAEA TMSO)

Riviera Hotel, Daejeon, Republic of Korea

**22-24 May**

[Jahrestagung Kerntechnik](#)

Karlsruhe, Germany

**23-25 May**

[11th International Workshop in Plasma Edge Theory in Fusion Devices \(11th PET\)](#)

Takayama, Japan

**3-8 June**

[13th International Conference on Emerging Nuclear Systems \(ICENES2007\)](#)

Istanbul, Turkey

**4-8 June**

[6th IAEA Technical Meeting on Control, Data Acquisition, and Remote Participation for](#)

Aix en Provence, which has afforded the opportunity to meet many new friends in the area," he added.

"I'm also living away from family, and I'm working to get comfortable finding and eating in restaurants, etc. After work, I consider myself a hunter-gatherer, spending my evenings seeking out places to eat or feeling my way through grocery stores studying microwaveable dinners."

[Read the full story >>>](#)

## Fusion World

### Twelfth Meeting of the ITPA Topical Group on Diagnostics

The Twelfth Meeting of the ITPA Topical Group on Diagnostics was held at the Princeton Plasma Physics Laboratory (PPPL), USA, from 27 - 30 March 2007. ITPA stands for "International Tokamak Physics Activity", which aims at international cooperation in the development of the physics basis for burning plasmas in tokamaks. The meeting was opened by Professor Goldston, Director of PPPL, and was attended by 71 participants drawn from China, EU, Japan, the Russian Federation, Republic of Korea, USA, and the ITER International Team.



Participants of the 12th ITPA Topical Group on Diagnostics meeting, in Princeton, USA. Click picture for high-res.

Special sessions were devoted to the identification of outstanding work needed in the field of irradiation effects on diagnostic components for ITER, on progress in the field of first mirror research and on a review of candidate diagnostic techniques for measuring confined and escaping alpha particles. Part of the ongoing ITER design review is an assessment of the integrated measurement capability. This will be carried out as a high priority topic over the next few months. [Full report >>>](#)

### FESAC panel to focus on DEMO

The US Department of Energy's Fusion Energy Sciences Advisory Committee (FESAC), which advises the US Government on its policy on developing fusion energy, will start focussing on DEMO, the demonstration fusion power plant envisaged to be constructed after ITER. At a recent meeting, the FESAC was charged with

## ITER Newsline looking for stories on Industrial preparations for ITER

This section of the ITER Newsline is dedicated to ITER-relevant developments in industry around the world. If you have information on the production of a prototype, R&D work in industry, or other interesting material, please let us know.

## Announcements and Links

### Publication ITER Newsline

Due to staff changes, it may not be possible to publish the ITER Newsline as often as we would like over the next few months, for which we would like to ask your kind understanding.

### ITER Management Chart

The ITER Management Chart which outlines the main structure of the ITER Organization, can be found [here](#)

### News from the ITER Parties

[Latest News](#) European Fusion Development

Agreement (EFDA)

[EFDA Newsletter](#)

[News and Events](#) US Domestic Agency

[Press releases](#) India Domestic Agency

### www.tokamak.info

An extensive list of current and historic tokamaks from around the world can be found on the website [www.tokamak.info](#)

## Image of the Week

### ITER Hiking Club



ITER hikers enjoying a "pique-nique" during their trip to the Luberon. Click on picture (by Giulio Sannazzaro) for high-res.

For their second trip the ITER Hiking club chose the Luberon area, where they were guided by Alain LeBris to ancient fortresses, picturesque villages, and panoramic views of the surroundings. And, of course, a game of Petanque. Next trips: the Calanques near Marseille and cycling in the Camargue.

## Newsline editors

The ITER Newsline is produced by Mark Tiele Westra and Sabina Griffith. Suggestions for future articles, comments and corrections, as well as items for the calendar are welcome, and can be sent to [mark.westra@iter.org](mailto:mark.westra@iter.org).

[Fusion Research](#)

Inuyama, Japan

18-22 June

[IEEE Pulsed Power and Plasma Science Conference \(PPPS2007\)](#)

Albuquerque, NM, USA

18-22 June

22nd IEEE/NPSS Symposium on Fusion Engineering (SOFE2007)

Albuquerque, NM, USA

For full agenda, click [here](#).

"identifying issues arising in a path to DEMO, with ITER as a central part of that effort". FESAC is chaired by Stewart Prager of the University of Wisconsin.

FESAC was asked to "identify and prioritize the broad scientific and technical questions to be answered prior to a DEMO; to assess available means (inventory), including all existing and planned facilities around the world as well as theory and modelling, to address these questions; and to identify research gaps and how they may be addressed through new facility concepts, theory and modelling." FESAC established a panel, under the chairmanship of Martin Greenwald (MIT) to respond to this charge and to report back by October 1.