

MAC reviewed and supported the modifications of Task Agreements made since the previous MAC Meeting (July 1999) the credit changes of which are more than 500 IUA or 2.5 PPY, or more than 20%. MAC took note of the modifications of Task Agreements since the MAC Meeting in July 1999 the credit changes of which are not more than 500 IUA or 2.5 PPY, or not more than 20%.

MAC reviewed and supported the Design Task sharing proposals among the three Parties for the 2000-01 Comprehensive Task Agreements.

Schedule of ITER Meetings

MAC reviewed and supported the plan of Technical Meetings and Workshops. MAC noted that as far as possible before each Expert Group Meeting an international pre-meeting on generic tokamak physics issues is proposed in order to favor continued interaction with US physicists in areas of common interest.

SCHEDULE OF TECHNICAL MEETINGS AND WORKSHOPS FOR ITER

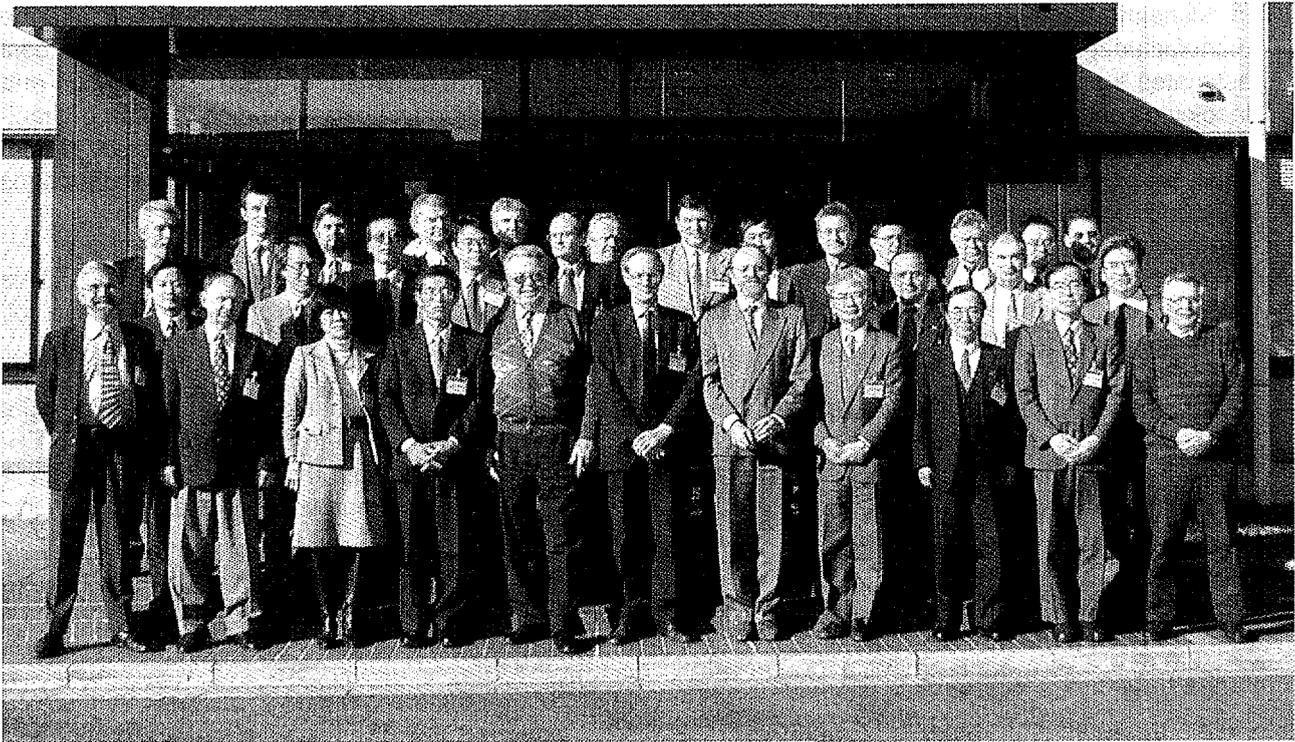
Date	Meeting/Activity	Location
10-11 Jan, 2000	MHD, Disruption and Control Expert Group	Naka
24-25 Jan, 2000	ITER Physics Committee (for MAC information)	Naka
31 Jan-4 Feb, 2000	Technical Meeting on Materials for In-vessel Components	Garching
27-31 Mar, 2000	3rd Combined Workshop of the Core Confinement & Internal Transport Barrier, Confinement Database & Modeling, and Edge Pedestal Physics Expert Groups	Naka
14-18 Feb, 2000	Safety and Environment	Garching
23-24 Feb, 2000	Nuclear Analysis for the Final Report	Garching
10-14 April, 2000	12th Diagnostics Physics Expert Group	Moscow
13-17 Oct, 2000	4th Combined Workshop of the Core Confinement & Internal Transport Barrier, Confinement Database & Modeling, and Edge Pedestal Physics Expert Groups	Garching
Autumn 2000	13th Diagnostics Physics Expert Group	Garching

**ITER TECHNICAL ADVISORY COMMITTEE MEETING**  
**by Prof. M. Fujiwara, TAC Chair**



The ITER Technical Advisory Committee (TAC) meeting took place on December 20-22, 1999 at the Naka Joint Work Site. The objective of this meeting was to review the document "Technical Basis for the ITER-FEAT Outline Design (ODR)" issued by the Director on December 10. It was also aimed at providing the ITER Meeting scheduled for January 19-20, 2000 in Tokyo with a technical assessment of the ODR and recommendations for the optimization of the anticipated plasma performance and engineering design, based on the guidelines approved by the Council in June 1998 and recommendations of the last TAC meeting.

Thirty-seven attendants, including nine TAC members, ten invited TAC experts and two Home Team Leaders participated in the review. After the introductory remarks made by the Chairman, the Director summarized the conclusions of the meetings held after the last TAC, as a background, and also made an overview talk on the descriptions of ODR. The Joint Central Team staffs then gave a total of eleven presentations, covering all aspects of the ITER-FEAT design, including safety considerations. The presentations were made on the first day of the meeting. After detailed discussions on the second day in two separate groups viz., one group for the plasma performance and control including diagnostics and the other for magnets, in-vessel components, plant facilities, assembly / maintenance and safety, the preparation of a draft report and its review was performed on the third day. Here, it was considered essential to discuss the safety issues together in the latter group. The following excerpt from the TAC report summarizes the conclusions of the meeting.



*Participants in the Meeting*

### **Overall assessment and key recommendations from TAC**

TAC appreciates the convergence of the device parameters from IAM and LAM, which has been successfully achieved in accordance with the TAC recommendations in February, 1999. TAC thereby greatly acknowledges the dedicated effort and the intensive design work done by the Director, JCT and Home Team members, since February 1999.

TAC fully endorses ODR and notes the progress made in reducing the remaining physics uncertainties and in achieving the objectives within the cost constraints. TAC finds that the ODR satisfies the detailed technical objectives provided by the SWG and endorsed by IC in 1998, and provides a sound basis for further detailed design.

The ODR was intended to establish the technical feasibility of the device, but not necessarily at minimum cost. The current cost estimate discussed in ODR is 56% of FDR. TAC recommends that every effort should be made to reduce the cost further to around 50%, in accordance with the operational requirements. However, TAC warns that the move towards cost reduction should not jeopardize the feasibility and necessary engineering margins for ITER-FEAT.

Following are the technical recommendations agreed upon in the meeting and issues of controversy noted by TAC:

- (1) TAC considers that the profile sensitivity of all the scenarios including the pedestal size should be studied to understand the variations in operating domains and the influence on achieving the objectives. Due consideration shall be devoted to plasma performance degradation near the operating boundaries ( $n / n_{GW}$ , PLH, etc.), and compatibility with successful divertor operation should be analyzed.
- (2) The divertor is a critical component of the device. Issues related to the scaling of the SOL width and to the life-time of the target due to ELMs are recognized. The scaling of the basic assumptions made in modeling should be validated on a range of experimental devices, and the implications for the divertor design and the compatibility with the various operating scenarios should be evaluated. In TAC's view, R&D's on ELM control methods should also be vigorously pursued.

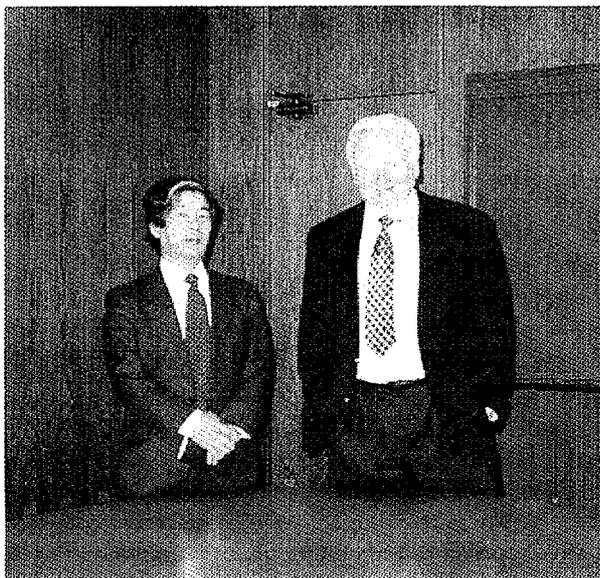
- (3) In relation to the magnets, TAC recommends that R&D work on NbTi strand should be continued, and the manufacturing capability of the NbTi and Nb3Sn strands should be assessed, together with the cost estimates that meet the reference specifications. In addition, the assessment of SS316LN, titanium and Incoloy as candidate jacket materials for the CS conductor should be finalized, including the use of titanium in the TF insert coil. The TFC design with radial plates seems feasible. However, it is necessary to continue the extended analysis of both the radial plate and square conductor options. TAC also recommends finalizing the blanket cooling design.
- (4) It has been noted that ODR includes a limited number of design options for some components. The JCT is encouraged to pursue the design selection with emphasis on improving the options presented, in close collaboration with the HT's.
- (5) TAC recommends that comprehensive and integrated safety assessments should be conducted in future to be consistent with the detailed design work, with particular attention paid to the licensability of ITER-FEAT. Further refinement on the estimation of the source terms arising from the radioactive inventory is encouraged in order to characterize the nuclear aspects of ITER and to improve the safety and licensing process in the Parties.
- (6) TAC understands that the site requirements described in ODR are technically relevant to the specific design option given in ODR.



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## MEETING OF THE ITER SWG-P2 IN VIENNA

by Prof. K. Pinkau and Dr. H. Kishimoto, Co-Chairs



*The SWG-P2 Co-Chairs,  
Prof. K. Pinkau and Dr. H. Kishimoto*

At their Meeting in Cadarache, March 10–11, 1999, ITER Council Members reconstituted the Special Working Group established under Protocol 2 to the ITER EDA Agreement (SWG-P2). The SWG-P2 held its final Meeting at the IAEA in Vienna from December 6–9, 1999, in order to report to the ITER Council in Tokyo on 19–20 January 2000.

With the aim of joint implementation, the Special Working Group has established a common understanding in the areas of Benefits, Contributions, Legal Framework, Siting, Licensing and Decommissioning, Finance and Accounting, Procurement, Staffing, Participation, Accession and Withdrawal. This is a complex process, because straightforward sharing is not possible due to the fact that ITER has to be sited in one Host Party, and the high degree of integration of a single ITER device requires also the integration of different cultural, scientific and technical traditions.

The SWG-P2 sees its work integrated into a Tentative Sequence of Events leading towards ITER construction. This Sequence of Events is synchronized among the ITER Parties' programmatic and budgetary cycles. The

SWG-P2 Report on Joint Implementation of ITER (see excerpts from this Report on the following pages), therefore, prepares a phase of Explorations which should lead, in due course, to a decision to start negotiations.

This Report was presented to the Members of the ITER Council at their Meeting in Tokyo on 19–20 January 2000. The Meeting endorsed the Report for transmission to the Parties and thanked the Co-Chairs and all participants for the successful efforts.