INTERNATIONAL THERMONUCLEAR EXPERIMENTAL REACTOR

ITER EDA NEWSLETTER

VOL. 8, NO. 6 JUNE 1999

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ISSN 1024–5642

CEREMONY FOR THE SUCCESSFUL FABRICATION OF THE CS MODEL COILS

by Dr. H. Tsuji, Head, Superconducting Magnet Laboratory, JAERI-Naka

A ceremony was held on June 1, 1999 at the Naka Fusion Research Establishment of JAERI to celebrate the successful development and fabrication of the ITER Central Solenoid (CS) Model Coil Inner Module and Outer Module and the CS Insert Coil. In attendance were Dr. Martha Krebs, Director, Office of Science, U. S. Department of Energy, Mr. Tsutomu Imamura, Deputy Director-General, Atomic Energy Bureau, Science and Technology Agency of Japan, Mr. Shojiro Matsuura, President of JAERI, Dr. Masaji Yoshikawa, the co-chair of the ITER Council and Dr. Michel Huguet, Deputy Director of the JCT, Prof. Masami Fujiwara, the chair of the ITER-TAC and about 60 ladies and gentlemen who have made significant contributions to the successful achievements, including the representatives of General Atomics, Toshiba, Mitsubishi Elec., Hitachi, Showa Wire and Cable, Furukawa Elec., Hitachi Cable and Sumitomo Elec. The invitation had been extended by Dr. Mitsuru Ohta, the Director General of the JAERI-Naka.

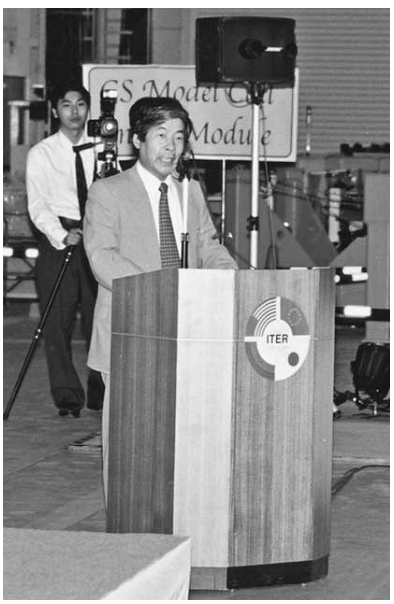
The CS Model Coil Project has been carried out world-wide under the coordination of the JCT. 10 institutes, 11 industries for superconducting strand and cable fabrication, 3 industries for jacket and conductor fabrication and 7 industries for winding and coil fabrication participated in the effort. The superconducting strands and cables, including copper cables for trial winding, were fabricated by the EU, JA, RF and US, the Incoloy jacket was fabricated by the US, and cable and jacket were assembled by the EU. The 13-T, 46-kA ITER CS conductors thus made were transferred to the US and JA, and the winding of the CS Model Coil Inner Module was done by the US and the windings of the CS Model Coil Outer Module and the CS Insert Coil were done by the JA. All three coils necessary for testing got together by the end of May 1999 at the testing site of JAERI-Naka.

The Ceremony was initiated by the opening address given by Mr. Matsuura with the CS Model Coil on the left.

Shoujiro Matsuura
President of JAERI

Mr. Matsuura reminded the participants that, seven years ago in 1992 when they initiated the Program of the ITER Engineering Design Activity, they had only a limited technology at their disposal in order to design and fabricate such advanced superconducting coils that can generate a maximum field of 13 T with a stored energy of 640 MJ at an operating current of 46 kA. He emphasized that all four partners had succeeded in developing a high-performance superconducting strand and its cable that could be operated at 13 T in the difficult pulsed mode and that the conductor winding provided by the EU and its heat treatment for activation of superconductors done by the US and JA had also been a difficult challenge in the new technology leading to the coil they had on that day.Finally, Mr. Matsuura expressed his sincere gratitude to everyone in the institutes and industries who had participated in this really important international project. He concluded: "Each of them has made a valuable effort. We understand well that the ITER CS Model Coils could not have been here in front of us without the dedication of every single person present. Thank you."

After the opening address by Mr. Matsuura, a special box with three red buttons was prepared in front of the participants. Dr. Yasuo Shimomura, who is responsible for the ITER engineering R&D in the JCT, Dr. Richard Thome and Dr. Hiroshi Tsuji were called to the platform by Dr. Hiroshi Kishimoto who chaired the ceremony. Under Kishimoto's guidance, who said "Three, Two, One, Press!," the three colleagues pressed the red buttons and the CS Model Coil Inner Module, Outer Module and the CS Insert Coil were illuminated with joyful in applause. Everyone seemed to be happy to share the memorable moment when the epoch-making achievement due to international collaboration was realized.



Hiroshi Kishimoto
Executive Director of JAERI

From the left: Yasuo Shimomura, Deputy to ITER Director, Richard Thome, US Project Manager and Hiroshi Tsuji, JA Project Manager

Martha Krebs, Director Office of Science, US DOE

Then, Dr. Martha Krebs gave a talk on the general energy situation in the coming century, the current US-DOE views on fusion science, and the potential for future U.S./Japan cooperation in fusion science. In this edition of the Newsletter, we will focus on the ITER-related portion of her talk, namely, the current US-DOE views on fusion science.

As to the general energy situation, she mentioned that, from the viewpoint of energy supply, recently the world had been blessed with very low energy prices. But she also indicated that the DOE's Energy Information Agency projected that energy demand was likely to grow dramatically, perhaps quadrupling by the end of the next century. She continued: "Growing demand and uncertain supplies will have a profound effect on future generations. And nuclear energy, I believe, is positioned to be a major part of the solution."

Then, the talk by Dr. Krebs moved into the area of the fusion energy research. She said that fusion research was part of the energy research portfolio. She admitted that Japan viewed fusion as an important energy development with project milestones, while in the Unites States fusion was viewed as a long-term, science-based investment. She emphasized that " One of the strengths of the ITER project has been mission-oriented R&D, as represented by the seven major R&D projects. Six years of difficult technical work led to this collaboration, years filled with much financial, organizational and personal stress." She took the opportunity of being in Japan during the twentieth year of the US-JA bilateral relationship to comment on this long collaboration. She noted that the US-JA relationship in the early years had been marked by the development of understanding and trust, that the middle years had been marked by the conduct of many joint projects and that the current years had been marked by the maturity and equivalence of our scientific and technical exchanges.

She continued: " Let me say that I regret the manner of our withdrawal from ITER. It is my personal belief that it would be a serious mistake to allow this unfortunate short-term problem detract from the legacy of cooperation we have built during the past two decades." She said: "Personally, I believe in the work you are doing and I believe that the potential exists for the U.S. to become involved again with ITER in the future. During the interim, we will rely upon Japan's bold leadership to carry ITER forward. We look for Japan, the European Union and the Russian Federation to continue making progress toward a possible construction decision."

She told that when the construction decisions of ITER will be made, the U.S. should make serious efforts to rejoin ITER, and that her hope was that they would be able to convince the Congress that the uncertainty they had been about was no longer a real issue. Dr. Krebs concluded her talk by referring the Mito's world famous plum trees in Kairakuen Park that had been blooming for over 150 years - - - following a long cycle of rebirth, growth and a promise of a beautiful harvest. She concluded by saying: " So, too, should we look to the long-term relationships and follow a cycle of rebirth, growth and a promise of bountiful energy supplies provided by clean fusion energy. Thank you again, for inviting me to today's important celebration. And special thank you's to JAERI for hosting this ceremony; to Robert Aymar for his brilliant leadership of ITER; and to all the scientists and technicians who have contributed to this success."

In response to this speech, Mr. Tsutomu Imamura started his talk by expressing Japan's belief that the ITER project is the most important step in the R&D of fusion energy, as one of the most promising technologies contributing to a solution of the global energy problem In the 21st Century; thus, Japan actively promotes the ITER project. He continued: "Today, I am very pleased to witness the completion of the central solenoid model coil, one of the most important and critical components of the ITER Engineering Design Activities. I believe it is of great significance in the promotion of the ITER project, that the four Parties of Japan, US, EU and Russia have together accepted and successfully completed the challenging R&D of the central solenoid coil."

Tsutomu Imamura,
Deputy Director General
STA Atomic Energy Bureau

He expressed his respect to the efforts made by JCT, Home Teams of the Parties, Industries, and of those who have been involved in this successful project. He also extended his appreciation to the US-DOE, which recognized the importance of that project and managed to fulfil its obligation by the maximal efforts in securing budget and manpower. Mr. Imamura also mentioned that it was to be regretted that the U.S. had decided to withdraw from the ITER-EDA, while in JA, the Atomic Energy Commission,the highest authority on nuclear policy in JA, decided to promote the ITER project and that Japan, based on this decision, would actively proceed with the design and R&D of the Reduced Cost ITER.

Mr. Imamura concluded by saying: "Along with the technical efforts, I recognize it is no less important to make efforts to prepare circumstances, e.g. by intensive consultations among Parties on the clarification of the criteria, so that we can make concrete judgements towards construction of ITER. From this aspect, it is notable that the four parties have agreed in the ITER meeting held in March in France to organize the Special Working Group for discussion on the concrete issues for the construction and operation of ITER. The first meeting of this SWG was held in Tokyo last week. We in Japan will a ctively participate in these international discussions toward the realization of ITER as well as in the EDA."

Then, Dr. Michel Huguet, representing the JCT, presented a celebration message from Dr. Robert Aymar, the Director of the ITER Program, who could not attend this ceremony due to a prior commitment. In his message he emphasized that conception, design and construction of this coil and its dedicated test facility constituted the largest and probably the most complex single project undertaken in the framework of the ITER EDA Agreement and that, as such, this venture, in many ways, epitomises the many features that have made the ITER EDA such a landmark achievement in successful international collaboration for fusion research. Dr. Aymar indicated that each and every one who had been involved in that project could take great pride in what they had achieved and should be ready to share and exploit the lessons learnt at the cutting edge of both superconducting magnet technology and supra-national project management. Concluding his talk, Dr. Huguet emphasized the significant contribution from General Atomics/Lockheed Martin for the CS Model Coil Inner Module, Toshiba for the Outer Module and Mitsubishi Electric for the CS Insert Coil, as well as the four Home Teams and the JCT.

Michel Huguet, ITER Deputy Director

The messages of celebration by Dr. Aymar and Dr. Huguet were followed by a warm and thoughtful message by Dr. Masami Fujiwara, the chair of the ITER-TAC, and the ceremony was concluded by a toast proposed by Dr. Masaji Yoshikawa, the co-chair of the ITER Council.

The three coils, the CS Model Coil Inner Module, the Outer Module and the CS Insert Coil, seemed to be smiling at the participants of the ceremony who had got together from all over the world at that memorable moment. All participants praised each other for their efforts during six years and emphasized their common will to kindle the new fire of fusion research and development through the ITER Program.

From the left: Yasuo Shimomura, Masami Fujiwara, Director of the National Institute for Fusion Science, Kenichi Murakami, Vice President of JAERI, Mayumi Kainuma, DOE representative of the US Embassy in Tokyo, Martha Krebs and Shoujirou Matsuura

Items to be considered for inclusion in the ITER Newsletter should be submitted to B. Kuvshinnikov, ITER Office, IAEA, Wagramer Strasse 5, P.O. Box 100, A-1400 Vienna, Austria, or Facsimile: +43 1 2633832, or e-mail: c.basaldella@iaea.org (phone +43 1 260026392).

Printed by the IAEA in Austria
August 1999

99-02290