

10. Activities of Rokkasho Research Centre

At Rokkasho village in Aomori prefecture, the buildings and/or facilities have been constructed of 1) International Fusion Energy Research Centre (IFERC), consisting of three sub projects; DEMO Design and R&D Coordination Centre, Computer Simulation Centre (CSC), and ITER Remote Experimentation Centre (REC), and 2) International Fusion Materials Irradiation Facility–Engineering Validation Engineering Design Activities (IFMIF-EVEDA). The related activities are shifting from the preparatory research phase to the real research phase. The roles of the Rokkasho Research Centre of NIFS are to assist NIFS and universities to cooperate with those activities, and to prepare the environment for promoting various collaborative researches including technology between activities at Rokkasho and universities. As cooperation activities, the head of the Rokkasho Research Centre of NIFS is undertaking jobs as the IFERC project leader, and the Rokkasho Research Center of NIFS has been moved at the end of Mar. 2011 from the original location to inside of the JAEA Aomori Research and Development Center, where IFERC is located.

The mission of IFERC is to contribute to ITER and to an early realization of the DEMO reactor, and so IFERC implements the following 3 sub-projects; DEMO Design and R&D Coordination Centre, Computer Simulation Centre (CSC), and ITER Remote Experimentation Centre (REC). The mission of DEMO Design and R&D Coordination Centre is to coordinate scientific and technological DEMO activities required in DEMO Design, and the practical contents are to hold seminars and meetings, and to present or exchange scientific and technological information, and to perform activities on DEMO conceptual Design and on R&D of DEMO technology. The mission of CSC is to exploit high performance and large-scale fusion simulations, and the practical contents are to introduce the high performance computer and to exploit high performance and large-scale simulations on plasmas, fusion materials and technology, in order to analyse experimental results, to prepare ITER operational scenario, to predict ITER performance, to contribute to DEMO design physics and to BA activities. In the case of REC, the mission is to perform ITER remote experiments and verify the functions, and the practical contents are to prepare the ITER Remote Experiment Room and connection of network to verify the function by using JT-60SA and others from 2012.

IFERC project progresses on time; the DEMO Design Activity entered the joint work stage, phase Two-A under the Integrated Project Team (IPT), consisting of DEMO Design unit of IFERC Project Team and JA-EU home teams, and the plan of the safety research of fusion plants has been developed through intensive discussions. The DEMO R&D activities for the five areas (T1: SiC_p/SiC composites, T2: Tritium technology, T3: Material engineering, T4: Advanced Neutron multiplier, T5: Advanced Tritium breeders) have progressed almost as

planned in the Work Programmes 2011 and 2012 as well as Procurement Arrangements (PAs). Installation of key equipment in the Rokkasho facility has been completed in 2011, and a radiation-controlled area was set in this facility on 27 Feb. 2012. In the 10th Workshop on DEMO R&D on 3 Feb. 2012, peer review presentations and discussion were performed. The review process is ongoing based on the reports submitted by IAs. Since the 9th IFERC Project committee, the CSC activity has progressed in full accordance with the project plan and with the schedule of the PA related to the CSC. The IT equipment passed the “ready to run” acceptance tests, and the ownership has been transferred into F4E in Dec. 2011. The performance of the supercomputer, Helios, is 1.2 PF in the Linpack test. The operation started from Jan. 2012, and the Lighthouse Project has been done from Jan. to Mar. under the cooperation of CSC support team, in order to show the performance of the Helios and to exploit new research fields or frontiers of the magnetic fusion simulations. In parallel, the Standing Committee has selected the simulation projects of the 1st cycle and has allocated the computer resources to the selected projects based on the results of the peer review, taking account of equivalent shearing of the computer time between EU and JA. The normal operation started from 9 Apr. In order to create an overall plan for the REC, the Preparatory Working Group (PWG), composed of four members from each party, has been established in collaboration with the STP project, based on the Terms of Reference of the PWG. Through PWG meetings, objectives of the REC activity and scopes of implementation were basically agreed, and then the required functions and technical specification of items for REC were discussed in detail through the technical presentations by the members.

In addition, the Rokkasho Research Centre performs communication works with the organization related to ITER-BA, Aomori prefectural office, and Rokkasho village office, and publicity works to have villagers understand the research of the nuclear fusion. The latter includes the regular exhibition on NIFS and the special exhibition on NIFS once per year.

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