10. Activities of Rokkasho Research Centre

At Rokkasho village in Aomori prefecture, the facilities of 1) International Fusion Energy Research Centre (IFERC) and 2) International Fusion Materials Irradiation Facility/Engineering Validation and Engineering Design Activities (IFMIF/EVEDA) have been constructed. 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 March 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 complement ITER and to contribute to an early realization of the DEMO reactor, and so IFERC implements the 3 sub-projects; DEMO Design and R&D Coordination Centre, Computational 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 pre-conceptual Design and on R&D of DEMO technology. The mission of CSC is to provide a state-of-the-art supercomputer and 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 prepare ITER remote experiments and to verify the functions, and the practical contents are to prepare the ITER Remote Experiment Room and connection of network and to verify the function by using JT-60SA and an EU tokamak from 2012.

IFERC project progresses on time. The DEMO Design Activity (DDA) started the joint work stage, Phase Two-B (2013-2014). The DDA has been jointly conducted by the DDA Integrated Project Team (DDA-IPT), and covered all tasks for Phase Two-B in 2013 defined in the Procurement Arrangement (DDA-PA). Especially, the validation of the systems codes came to be confirmed through the benchmark of the systems codes and a common understanding between JA and EU has been formed that the major radius varies between R_P=~9.3m for pulsed operation and R_P=~8.2m for steady state one. Also, conventional and advanced divertor research and the safety research were conducted by DDA-IPT. The DEMO R&D activities in the five task areas (T1: SiC_f/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 2013 and 2014 as well as Procurement Arrangements (PAs). In particular, as EU/JA collaboration, research on SiC_f/SiC composites and JET tile analysis are progressing, and further activities on common database of structural materials between EU and JA are planned. Moreover, taking account of the recommendations by the peer review panel of R&D done in 2012, close communications between DDA and R&D have been accelerated through the yearly DEMO Joint Technical Coordination Meeting.

In 2013, the CSC activity was performed by the IAs under the supervision of the PL and in coordination with the SWG-1 regarding, in particular, the preparation of the PA for the enhancement of the CSC and with the Standing Committee (StC) regarding the selection of simulation projects, allocation of computer resources (CPU time) and evaluation of user reports. During this year, the CSC activity has progressed in full accordance with the project plan and with the schedule of the various PAs related to the CSC. The Integrated Project Team (IPT) of CSC including HPC team continuously and dedicatedly supports the users and operation of Helios, leading to the stable operation with the high availability ratio and the high utilization rate. The 2nd cycle of the regular simulation projects has been completed, and the 3rd cycle is ongoing.

In order to realize the overall plan of REC approved at the 11th BA SC in a manner of optimized resource usage, the REC Coordination Group has been established with 8 small working groups corresponding to key issues of REC, and the overall schedule was re-established. The urgent tasks were identified and the corresponding procurement arrangements were agreed. The IFERC network system composed of the IFERC inner network at the Rokkasho site and the access line to the SINET 4 is in operation safely and stably. Site activities have been implemented in order to support the BA activities at Rokkasho site.

In addition, the Rokkasho Research Centre performs communication works with the organization related to ITER-BA, Aomori prefectural office, and Rokkosho village office, and publicity works to have villagers understand the research of the nuclear fusion.

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