

Promoting fundamental research towards decommissioning by collecting wisdom from around the world

International Collaborative Research Building of the Collaborative Laboratories for Advanced Decommissioning Science completed

TOPICS Fukushima June 8,



The International Collaborative Research Building of the Collaborative Laboratories for Advanced Decommissioning Science (CLADS) that has been constructed by the Japan Atomic Energy Agency (JAEA) in Tomioka Town, Futaba County, Fukushima Prefecture was completed. The International Collaborative Research Building of CLADS is a facility where research and development towards the decommissioning of the Fukushima Daiichi Nuclear Power Station (1F) and the development of human resources responsible for future decommissioning research are conducted. About 150 people including representatives of the Government, Fukushima Prefecture and Tomioka Town, and the local elected members of Diet participated in the opening ceremony on April 23, 2017.

CLADS playing a central role in decommissioning research

Since just after the accident of the Fukushima Daiichi Nuclear Power Station (1F) of the Tokyo Electric Power Company Holdings Inc. (TEPCO), Japan Atomic Energy Agency (JAEA) has been conducting research on the extraction of nuclear fuel debris melted in the reactors and disposal of radioactive waste produced by the accident. At the same time, the Collaborative Laboratories for Advanced Decommissioning Science (CLADS) was founded at JAEA in April 2015, based on the “Acceleration Plan of Reactor Decommissioning R&D for Fukushima Daiichi Nuclear Power Station, TEPCO”, published by the Ministry of Education, Culture, Sports, Science and Technology in June 2014. The objective of the CLADS is to accelerate the research/development towards the 1F decommissioning and the development of human resources responsible for the future decommissioning research by collecting wisdom from around the world. Until now, JAEA has been conducting research and development towards decommissioning using the existing JAEA’s facilities at the Tokai and Oarai districts in Ibaraki Prefecture.

The research cores of the CLADS are the “International Collaborative Research Building” (upper photograph) and the “Multi-purpose Test Building” (middle photograph). JAEA will conduct research activities and development of future human resource using these facilities as bases in collaboration with domestic and overseas research institutes and universities.

Now, let’s introduce CLADS.



CLADS consisting of four research divisions

There are four research divisions in the CLADS as shown in the right figure..

In the Waste Management Division, the research on grasping the property and stable storage/disposal of waste produced in 1F are conducted. More specifically, the division promotes, 1) analysis of contaminated water and secondary waste produced by its disposal, 2) estimation of radioactivity in various waste, and 3) research on the

methods for stable storage of secondary waste produced by water disposal. Further, the division is constructing appropriate disposal concept towards the disposal of waste produced by the accident, and preparing the basic technology for safety evaluation.

In the Fuel Debris Handling and Analysis Division, the research on the property of the fuel debris produced by the accident, which is necessary to the extraction of the debris, is conducted. In addition, the division conducts evaluation of the radiation dose distribution in the reactor containment vessels and technological development on in-situ measurements of elemental composition of the fuel debris and unknown materials in the reactors.

In the Severe Accident Propagation Behavior Evaluation Division, the research for grasping the situation of the reactor cores after the accident is conducted. For this purpose, the division conducts, 1) evaluation of cesium adsorption on stainless steel, 2) technological development of thermal-hydraulic behavior for the evaluation of a severe accident progression, and 3) evaluation for the melting behavior of fuel assemblies and the solidification behavior of fuel debris.

In the Remote System and Sensing Technology Division, the research on the remote-control technology for extracting fuel debris, which is the most important subject in decommissioning, is conducted. Specifically, the division conducts, 1) technological development of remote-control and radiation measurement for inspecting the fuel debris extraction, and 2) research on the visualization of radioactive materials, which is necessary to the smooth promotion of decommissioning.



Organization structure of the Collaborative Laboratories for Advanced Decommissioning Science (CLADS)

CLADS aiming for collecting related wisdom and its utilization

The CLADS is conducting not only specific research described above. Let's give an example. It is necessary to develop advanced technology for the extraction of fuel debris. In order to obtain knowledge from wide fields, which is essential to support the advanced technology, the CLADS sets four research goals; 1) preparation of the place in which the wisdom gathers from around the world, 2) strengthening of the domestic and oversea decommissioning research, 3) medium-to-long term strengthening of the human resource development function, and 4) preparation of the information transmission function. In order to promote these works integrally, CLADS is operating the "Platform for basic research on decommissioning project".

In the "Platform for basic research on decommissioning project", the research topics of the project are proposed by the industry-academia-government collaboration. The research which contributes to the real decommissioning works is conducted utilizing the "Decommissioning Basic Research: Human Resource Development Program" hosted by the Ministry of Education, Culture, Sports, Science and Technology, while the needs and information are provided from the real sites.

One of the main activities in the Platform is the "Fukushima Research Conference (FRC)". The FRC has been continuously held in Fukushima Prefecture with the topics on basic research related to the decommissioning. Many researchers who are actively working in various fields related to decommissioning gathered in the FRC from around the world, and discussed future research progress.

The topics in the FRC are not limited to the nuclear energy field. The conference picks up topics to which researchers in various fields can easily access, and aims to collect the related knowledge in the respective fields and utilize the respective technology. We hope that many students and young researchers participate in the FRC and discuss with leading researchers. By doing so, the FRC also aims to broaden the base of researchers and students who are interested in decommissioning research.

There still remain lots of problems in the decommissioning of 1F. Therefore, we have to accumulate "wisdom" such as the advanced technology in the respective research fields, and utilize it in solving the problems. The CLADS is expected to become a "place" that is a foothold for such efforts



Photographs of the Fukushima Research Conference

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