

Title: Advanced Technologies for Fuel Debris Retrieval towards Fukushima Daiichi Decommissioning

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The accident at Fukushima Daiichi (March 2011) resulted in fuel core melt down inside reactors of Units 1-3. The molten fuel – in other words, fuel debris represent lot of risks such as criticality, decay heat, high radiation or degradation of supporting structures. Obviously the fuel debris must be retrieved before the operator starts a normal decommissioning process. However it is quite difficult to investigate the characteristic of the fuel debris and the condition in the reactor building due to the high radiation and complicated accessibility. Therefore the current challenge is how to clarify the characteristic or the condition without a direct measurement.

The operator and the relevant governmental institutes in Japan have tackled these technical difficulties and made some progress. Since the access to the debris is quite limited at this moment, a sort of indirect measurement is going on with combination of several advanced methods. Those methods comprise robotics, detection of cosmic rays, computer simulation, estimation based on similar cases available knowledge etc. Each of them is developed as an advanced approach specialized in the fuel debris retrieval. However it is also a great challenge to combine the measurement results and analyse it to obtain better overview. The operator and the Government are going to decide the policy of the fuel debris retrieval method in 2017, which will be discussed based on the available evaluations and estimations. Thus Japan is getting close to a critical phase in a whole schedule for debris retrieval.

In this presentation will be introduced current status of the fuel debris in Fukushima Daiichi, milestones and time schedule of debris retrieval, and multiple technologies to investigate the condition inside the reactor building. The technical options for retrieval will be mentioned as well.