

Introduction of Examples for Reducing Exposure Dose during the Decontamination at the Reactor Building in the Fukushima Daiichi Nuclear Power Plant Unit 3

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Activities toward decommissioning have been promoted at the Fukushima Daiichi Nuclear Power Plant. However, the dose rate inside buildings, especially in the reactor building, is still high, and long-time activities by human workers are not realistic. Under the initiative of the Ministry of Economy, Trade and Industry, we have participated in the national project, called “Development of Remote Decontamination Technology in the Reactor Building”. We have developed a remote decontamination machine and a remote handling robot, “MHI-MEISTeR”. We have been engaged in decontamination works and in investigation of decontamination measures (based on sampling of materials) at Unit 1, Unit 2 and Unit 3 using these machines.

Among the decontamination works done using MHI-MEISTeR, here we introduce decontamination works for the Unit 3 reactor building, describe the major causes that have contributed to high exposure doses in the remote handling works, and detail the exposure reduction measures taken for each cause and their effect.

The MHI-MEISTeR was developed as a remote handling decontamination machine; however, the decontamination processes cannot be conducted entirely remotely, human intervention is needed. Human workers are required to support the activities of the robot: e.g., workers must transport the robot into or from buildings and assist its movement inside buildings. Human workers were working near the entrance of the buildings, and that was the major cause for exposure during the work period. Therefore, in the decontamination works at Unit 3, efforts were made to reduce the number of times it was necessary to transport the robot by getting cooperation among relevant parties, and the rest area for workers was changed (common use of a rest area for workers engaged in other works). As a result, the exposure dose was reduced.

This report also includes descriptions of matters that required coordination and points to be noted in implementing exposure dose reduction measures.