

Demonstration Project of Technologies for the Decontamination of Contaminated Water Tanks

1. Requirements for Project Implementation

An implementation plan should be made based on the details of the demonstration implementation described below, and the functional conditions of the equipment installed for the demonstration should be confirmed using the basic conditions, and necessary information should be written in the relevant items in Form 3(3).

In addition, it is required to attend public conferences and to report on the implementation plan, progress, and results of the project. Also, upon completion of the project, a report on the implementation of the project must be prepared and submitted.

< Details of Demonstration Implementation >

From the view point to reduce the radiation exposure of workers for dismantling, demonstration tests shall be performed using mock-ups of flange-type tanks, for demonstrating the decontamination performance which will be done as pre-stage works of dismantling after drainage of contaminated water in the tanks.

<Basic Conditions>

(1) Decontamination performance

Decontamination speed of tanks and decontamination factor (DF as the ratio of dose rate before and after decontamination) must be shown in the proposal. DF is assumed at target decontamination performance for the tank whose maximum dose rate before decontamination is 10 mSv/h as 70 micro-meter dose equivalent of beta ray measured at 5 mm from the surface of tanks. In addition, devices must be presented with which the decontamination effect can be evaluated simultaneously in decontamination works.

(2) Concepts for waste

The proposal must include suggestions to reduce the amount of liquid waste as low as possible and concepts for reduction or recover secondary wastes.

(3) Countermeasure for curved inner surface of tank and joints

The proposal must include the technologies to enable the decontamination of curved inner surface of tank and joints.

(4) Countermeasure for tanks located in the area of tank yards

The proposal must include the technologies to decontaminate tanks located in the area of tank yards since some of such tanks exist in Fukushima Daiichi NPS.

<Items for Additional Points>

(1) Decontamination performance

Regarding the decontamination performance for tanks, proposals that are capable of quick and effective decontamination operation will gain additional points. The proposal with high decontamination performance will also gain additional points. Extra points will be added for the proposals of technologies to realize the decontamination in very narrow spaces.

(2) Suppression of waste generation

Points will be added to proposals that have excellent performance for reducing the amounts of wastes (low waste generation) or for the recovery of wastes (easy recovery).

(3) Presentation of experiment data

Points will be added to proposals that are able to demonstrate their feasibility with experiment data regarding the basic conditions or additional point items. Additional points will be gained by proposals which are expected to shorten the time period necessary for demonstration based on the presentation of experimental data.

<Goals and objectives>

Technical feasibility and validity of the items concerning the basic conditions and the additional point items are to be confirmed during the contract term.

2. Project Implementation Period/Subsidy Amount

From the Decision Date of Grant to March 31, 2015

In this project, it is planned that the demonstration of technologies will be carried out for the one-year period of FY2014.

3. Point Rating Method

The proposal will be scored based on the point rating described in Form 3(1). A proposal which does not meet all of the basic conditions shall not be selected.

The amount of the subsidy is a fixed amount, and its upper limit is 400 million yen. The

details of implementation, the amount of the granted subsidy, and other details shall be decided by negotiation with METI and the Project Management Office.

Name of proposer:

Title of proposed subject:

[Basic conditions]

Details of the proposal	Allocation of marks (Basic points)
<p><u>(1) Decontamination performance</u></p> <ul style="list-style-type: none"> ➤ The decontamination speed of tank is presented. ➤ Decontamination factor (DF as the ratio of dose rate before and after decontamination) is assumed at target decontamination performance for the tank whose maximum dose rate before decontamination is 10 mSv/h as 70 micro-meter dose equivalent of beta ray measured at 5 mm from the surface of tanks is presented. ➤ Devices with which the decontamination effect can be evaluated simultaneously in decontamination works are presented. 	5
<p><u>(2) Concepts for waste</u></p> <ul style="list-style-type: none"> ➤ Suggestions to reduce the amount of liquid waste as low as possible are presented. ➤ Concepts for reduction or recover secondary wastes are presented. 	5
<p><u>(3) Countermeasure for curved inner surface of tank and joints</u></p> <ul style="list-style-type: none"> ➤ Technologies to enable the decontamination of curved inner surface of tank and joints are presented. 	5
<p><u>(4) Countermeasure for tanks located in the area of tank yards</u></p> <ul style="list-style-type: none"> ➤ Technologies to decontaminate tanks located in the area of tank yards. 	5

[Additional Point Items]

Details of the proposal	Allocation of marks (Technical points)
<p><u>(1) Decontamination performance</u></p> <ul style="list-style-type: none"> ➤ Decontamination performance is high. (7) ➤ The decontamination speed is high for proposed decontamination performance (7) ➤ The number of workers for decontamination is small. (5) ➤ The required space for decontamination works and exchanging the equipment is small. (7) 	<p>26</p>
<p><u>(2) Suppression of waste generation</u></p> <ul style="list-style-type: none"> ➤ The amounts (mass and volume) of generated wastes are small. (4) ➤ The wastes can be recovered or no problem will occur without recovery. (4) 	<p>8</p>
<p><u>(4) Presentation of experimental data</u></p> <ul style="list-style-type: none"> ➤ The experiment is conducted and the data are analyzed from various points of view to confirm the effect. (2) ➤ Based on the presented data, it is expected to be shorten the time period for demonstration. (4) 	<p>6</p>

The evaluations for technical points are classified into four classes; A (factor is 5/5), B (3/5), C (1/5), D (0/5), and the technical points will be calculated by multiplying the allocated points with the factors of each class.

4. References

Information of tank

Area of inner surface of a tank (without lid surface) about 530 m²
(1,000 m³ tank, 12m diameter, 11m height)

Followings are the URL of the reference for information on the inside conditions and the blueprints of tanks;

<http://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/20130926-e.pdf>

(see page 2)

Arrangement of tank yard

<http://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/20131226-e.pdf>

(see page 3)

Longest distance from road about 150 m

Spacing between tanks (most narrow position) about 2 m