

(Unofficial Translation)

## **Guidelines for applying to the “Decommissioning, Contaminated Water and Treated Water Management (Development of Analysis and Estimation Technology for Characterization of Fuel Debris)”**

Date: February 24, 2023

Management Office for the Project of Decommissioning,  
Contaminated Water and Treated Water Management

The Management Office for the Project of Decommissioning, Contaminated Water and Treated Water Management (hereinafter referred to as “PMO”) solicits entities to implement subsidies for the “Subsidized Project of Decommissioning, Contaminated Water and Treated Water Management (Development of Analysis and Estimation Technology for Characterization of Fuel Debris). Details of the project are stipulated in this Guidelines; furthermore, the procedures for implementation of the project are stipulated in the “Grant Policy for Subsidy for the Project of Decommissioning, Contaminated Water and Treated Water Management”.

### 1. Purpose of Project

This project aims to support development of technologies contributing to decommissioning, contaminated water and treated water management of the Fukushima Daiichi Nuclear Power Station (hereinafter referred to as “Fukushima Daiichi NPS”) of the Tokyo Electric Power Company Holdings, Incorporated (hereinafter referred to as “TEPCO”) based upon the “Mid-and-Long-Term Roadmap” towards the Decommissioning of the Fukushima Daiichi Nuclear Power Station of Tokyo Electric Power Company Holdings, Incorporated” (hereinafter referred to as “Mid-and-Long-Term Roadmap”) and “The Decommissioning Research and Development Plan for FY 2023” (The 111th meeting of Secretariat of the Team for Decommissioning, Contaminated Water and Treated Water Countermeasures / PMO), so that the decommissioning, contaminated water and treated water management of the Fukushima Daiichi NPS can be implemented smoothly, and that may lead to the improvement of Japan’s science and technology standards.

Please note that this project is implemented under the engineering and project administration activities performed by TEPCO in the Fukushima Daiichi NPS, and the results obtained from this project will be utilized for the engineering activities conducted by TEPCO.

### 2. Contents of Project

In decommissioning the Fukushima Daiichi NPS, it is necessary that the data and information on fuel debris and deposits, etc. obtained inside of the Primary Containment Vessel (hereinafter referred

as to “PCV”), shall contribute to grasp the properties of fuel debris that exist inside the reactor, by way of conducting the investigation of retrieval, containing and storage, and subsequent processing and disposal, etc. of fuel debris. Also, to ensure that the data and information thus acquired be useful for decommissioning, it is necessary to develop technologies for analyzing fuel debris actually retrieved and samples obtained in the in-reactor investigations, etc. as well as for correctly estimating the fuel debris and surroundings and those conditions expected in the future.

The accident in the Fukushima Daiichi NPS is the first accident that has ever occurred in the Boiling Water Reactor (hereinafter referred to as “BWR”) in the world. Those reactor cores of Unit 1 through 3 have been damaged. It is presumed that fuel assemblies and the control rods had been melted in the reactor at a temperature higher than normal operation temperature in superheating steam and then they had been flown out from RPV involved surrounding structures. After that water was injected into reactors by fire engines, since the quantity of water having reached into the reactor core remains unknown and seawater was injected, it may contain a lot of seawater constituent. In addition, temperature data was not recorded since the electric power failure occurred during the accident. Thus, it is presumed that the chemical composition and structure of the fuel debris are considerably quite complicated since many substances existed in the area where melting and solidification occurred, and the temperature history was unclear. Many elements are solidly dissolved or precipitated in fuel debris, or encapsulated or dispersed as impurities in the matrix phase, resulting in changes in mechanical properties and chemical stability. Even if the chemical composition of fuel debris has been grasped by chemical analysis, its properties vary depending on its chemical form and microstructure, such as oxides. Therefore, it is important to determine the properties of fuel debris comprehensively based on the analysis results of not only chemical composition but also chemical form and crystal structure.

When analyzing fuel debris from the Fukushima Daiichi NPS, which contains many elements and whose properties are unknown, it is necessary to establish a technology and system that have sufficient analytical capability for fuel debris and can evaluate the properties of the fuel debris. To this end, it is necessary to clarify the quantity of data, which enable to appropriate integration of data and information obtained by several institutions. Therefore, it is necessary to review the quality of data and information obtained at overseas analysis facilities and to incorporate valuable knowledge on analytical technologies held by overseas research institutes into the analysis of fuel debris at the Fukushima Daiichi NPS to further advance, and to improve the analytical technologies. In addition, since the analysis is performed in parallel with the fuel debris retrieval works, the development of analytical technology for simplified and speed-up detection of fuel components at or near the work site (in-situ) is essential to improve the efficiency and labor saving of the fuel debris retrieval works. Furthermore, based on the above analysis results and the results of investigations so far, it is important for investigations of the decommissioning process to verify the phenomena that occurred during the accident and to estimate the damage in the reactor by simulation analysis and mock-up tests and so on.

For this reason, the technologies mentioned in (1) to (3) below shall be developed. In addition to the results of (1), information via PMO from other Subsidized Project Operating Entities on their results of “Development of Analysis and Estimation Technology for Characterization of Fuel Debris (Development of Estimation Technology of Aging Properties of Fuel Debris)”(FY2021/2022) and “Development of Analysis and Estimation Technology for Characterization of Fuel Debris (Development of Technologies for Enhanced Analysis Accuracy, Thermal Behavior Estimation, and Abbreviated Analysis)” (FY2021/2022), shall be reflected, enhanced and updated the estimation of fuel debris properties utilized as basic information for decommissioning works including fuel debris retrieval.

\*When preparing a proposal for this project, take into consideration the results of preceding projects, “Upgrading Level of Grasping State inside Reactor” (FY2016/2017) and “Development of Analysis and Estimation Technology for Characterization of Fuel Debris” (FY2021/2022). After a grant decision, this project shall start upon publication and confirmation of the FY2022 results of the preceding projects of “Development of Analysis and Estimation Technology for Characterization of Fuel Debris” (FY2021/2022), “Project of Decommissioning and Contaminated Water Management (Development of Analysis and Estimation Technology for Characterization of Fuel Debris (Development of Technologies for Enhanced Analysis Accuracy, Thermal Behavior Estimation, and Abbreviated Analysis))” (FY2021/2022), and “Development of Analysis and Estimation Technology for Characterization of Fuel Debris (Development of Estimation Technologies of RPV Damaged Condition, etc.)” (FY2022). For those project results, refer to the following links:

< HP link to “Upgrading Level of Grasping State inside Reactor” (FY2016/2017)>  
<https://en.dccc-program.jp/786>

< HP link to “Development of Analysis and Estimation Technology for Characterization of Fuel Debris” (FY2021/2022)>  
<https://en.dccc-program.jp/4622>

<HP link to the Results of Subsidized Projects>  
<https://en.dccc-program.jp/category/result>

#### (1) Development of Technologies for Analysis of Fuel Debris characterization

##### [1] Analysis of obtained fuel debris samples, etc.

It is important for investigations of the decommissioning process to grasp the properties of samples of fuel debris and deposits collected through trial retrieval and internal investigations in the future.

- The samples of fuel debris and deposits, etc. to be obtained from the PCV by the trial retrieval and in-depth investigations in the future shall be analyzed. Fuel debris sample obtainment is affected by the progress of the development of the trial retrieval device, the

internal investigation device and the improvement of on-site situations, etc. Therefore, considering the schedule, priorities, sample conditions, etc., the analysis target shall be examined and decided together with TEPCO.

- Collected fuel debris samples shall be analyzed in research institutions with hot laboratories equipped with shielding and confinement function since those samples contain nuclear fuel, fission products and radioisotope, etc. and emit strong radiation.
- The research institution shall have knowledge and technologies for radiation spectrometry measurement, mass measurement, visual observation, micro observation, elements mapping, crystal structure analysis, etc., as well as the preprocessing of analyzation/observation.
- Regardless of the amount of samples collected, radiation spectrometry measurements, visual observation, microscopic observation, and elemental mapping shall be performed. For analysis items that depend on the amounts of samples collected, analysis shall be conducted after considering with TEPCO which analysis items should be prioritized.

#### [2] Advancement of estimation on properties of fuel debris

Grasping all properties of fuel debris by analysis of collected samples is under difficult situation from the perspective of the amount of samples collected and the limited amount of fuel handled at each hot facility. It is necessary to estimate the properties of fuel debris to be retrieved in the future by comparing the analysis of collected samples with the knowledge of the analysis of fuel debris and fuel debris simulant generated at nuclear facilities in the past.

- Based on the analytical results of sample obtainment, the estimation of fuel debris properties shall be further advanced.
- It is estimated that the composition and characteristics of fuel debris in Units 1 to 3 at Fukushima Daiichi NPS differ due to differences in the operation time of cooling equipment at the time of the accident. In order to improve the estimation of the properties of particles and fuel debris containing uranium, a method shall be established for identifying the contained elements, evaluating errors in the quantitative values of elements and nuclides, and evaluating crystal structure analysis with high precision. At the same time, investigation shall be conducted combining with the cooling conditions of each unit at the time of the accident, the results of accident progress analysis to date, the results of investigations inside the PCV of each unit, and the results of analysis of sediment samples collected from each unit.
- The knowledge obtained from the analyses and investigations in (1) [1] and [2] shall be used to estimate the accident progression, to understand the in-reactor conditions, and to consider safety measures during fuel debris retrieval, temporary storage, waste management, processing and disposal, etc.

#### [3] Technology development to enhance analytic accuracy

In the analysis of the chemical form and microstructure of fuel debris, it is important to make a

comprehensive determination based on the results of metallographic observation by optical microscopy, elemental mapping by scanning electron microscopy, structural analysis by transmission electron microscopy (hereinafter referred to as "TEM"), structural analysis by observation, and inductively coupled plasma mass spectrometry (hereinafter referred to as "ICP-MS"). It is an effective approach for comparison and verification of analytical methods and enhancement of analysis accuracy to use the fuel debris simulant which has been prepared in advance by mixing and melting unirradiated natural uranium and structural materials (zirconium, iron, concrete, etc.), as a sample. On the other hand, due to the importance of handling easiness for analysis process, fuel debris simulant is not suitable for determining the isotopic composition of U and also it has some differences from actual fuel debris, such as the absence of transuranium elements represented by Pu, fission products and radioactive substances and the absence of background radiation effects from gamma-ray emitting nuclides. Before the start of analysis of actual fuel debris, it is important to confirm the validity of the analysis process by using samples whose composition and characteristics are similar to those of the fuel debris, thus improving the accuracy of the analysis.

- For the analysis items of fuel debris, such as the morphology, nuclide/element amounts, phase state/distribution, density, etc. of the analyzed sample, the fuel debris from the Three Mile Island NPS Unit 2 (hereinafter referred to as "TMI-2") shall be analyzed at plural analytical laboratories. Since TMI-2 fuel debris contains fission products/radioactive substances and emits strong radiation, analysis shall be conducted in a hot laboratory with shielding and confinement capabilities. In the TMI-2 accident, the temperature history, extent of core damage, accident progress, etc. have been clearly defined, and it make possible to compare to information from TMI-2. By using the latest analysis technology that have not existed at the time of the TMI-2 accident, it is possible to accurately compare the similarities and differences with the fuel debris of the Fukushima Daiichi NPS, which can be obtained in the future, and it can contribute to the estimation of the accident progression process.
- The fuel debris shall be imaged with an X-ray CT system to obtain a general view of the internal structure. The sample shall be cut to observe the metallographic structure inside the fuel debris. Since fuel debris is heterogeneous in composition and microstructure, it is not always possible to find uranium at the cut position. It is necessary to determine in advance whether inside the fuel debris contain heavy elements such as uranium or porosity/pores, to find the appropriate cutting position and then it can contribute to the efficiency and optimization of the analysis.
- In order to understand the internal structure of microparticles of several micrometers, focused ion beam (hereinafter referred to as "FIB") and TEM are used for microscopic observation, elemental distribution, and structural analysis. FIB microfabrication techniques did not exist at the time of the TMI-2 accident, but now it is possible to fabricate

any part of the sample and take a sample for TEM. The combination of FIB and TEM provides information on the mixing ratio of U and Zr in a microscopic area, crystal structure, etc. Therefore, it can contribute to the estimation of the surrounding conditions during the fuel melting and solidification processes.

- Elemental and nuclide composition analysis by ICP-MS or surface ionization mass spectrometry shall be performed to obtain data on the chemical and isotopic composition of the fuel debris. Data on chemical and isotopic compositions were obtained by the analytical program after the TMI-2 accident. Recently, the performance of analyzers has been improved, and it is now possible to obtain data with higher precision and resolution than before. In order to remove errors, variations, etc. caused by analyzers, it is important to use an analyzer with the same performance as those used for the analysis of fuel debris at the Fukushima Daiichi NPS.
- In the analysis of TMI-2 fuel debris, emphasis shall be placed on confirming the validity of the analytical process and improvement in analytical accuracy by using the latest analytical techniques. In addition, data that is expected to be labor-saving and efficient due to technological advances, such as the advances of digital technology, and that do not require a great deal of labor for data acquisition shall be also obtained from the TMI-2 fuel debris. As an example, a metallographic photograph shall be obtained when what was previously a Polaroid photograph has been converted to a digital photograph, as in metallographic observation.
- The knowledge obtained from the analysis of TMI-2 fuel debris shall be used to study the formation process of fuel debris, accident progression estimate, safety measures during fuel debris retrieval, temporary storage, and waste management.

[4] International cooperation to collect knowledge on fuel debris analysis and to improve the accuracy of analysis

In order to develop analytical technologies while utilizing international knowledge, it is important to collect knowledge on fuel debris and fuel debris simulant from various countries and apply it to fuel debris analysis at the Fukushima Daiichi NPS.

- It is necessary to review the analytical items and properties of the fuel debris in the Fukushima Daiichi NPS by comparing with the knowledge from various countries on fuel debris and fuel debris simulant.
- Evaluation of the uranium characterization by the fuel debris simulant used other global cooperating R&D shall be conducted under international cooperation. In doing so, along with sharing the result of on-site survey and analyzed results, the cooperative contacts shall be established with international conferences & forums, etc. (for example, TCOFF-2 by the OECD/NEA, etc.) having knowledge on the thermophysical properties of materials. And efforts for technological development shall be pursued while adopting such knowledge as necessity arises.

## (2) Technology Development for Abbreviated (In-situ) Analysis of Fuel Debris

During the fuel debris retrieval, if it is found that the content of fuel which is contained in deposits of internal structures such as grating and support pillars is quite small quantity or lower than the lower detection limit, there is no possibility of criticality. If there is no possibility of criticality, there is no need to place the debris in a storage container that incorporates shape control as a criticality countermeasure. The development of analytical technologies for simplified and speed-up detection of the presence or absence of uranium or nuclear fuel in deposits at or near the work site can reduce the number of cuttings and improve the throughput of fuel debris and other retrieval works. However, since the development of new analytical technologies require a long period of time and significant resources, only analytical technologies for which some basic and fundamental technologies have been established shall be purposed to be applied on-site at the Fukushima Daiichi NPS.

- It is important to confirm the presence or absence of uranium in the measured object by qualitative analysis. The analysis technologies shall not require complicated pretreatment, nor contaminate the surrounding area, nor increase radiation exposure, nor generate a large amount of waste or liquid waste.
- The measurement shall be validated by using a sample simulant containing uranium. Measurements shall be made on a simulated sample of unirradiated natural uranium, to clarify the lower limit of uranium detection, by using a sample with a reduced concentration. In addition, since the uranium content of the samples to be measured is assumed to be low, it is also important to investigate a method for improving the detection efficiency.
- Fuel debris is expected to contain a lot of zirconium and iron as well as uranium. The high amount of zirconium, iron, etc. means that the amount of uranium is relatively low. Even if the amount of uranium is lower than the lower detection limit, it is necessary to storage and manage as radioactive waste. Therefore, in terms of clarifying the measure materials that compose the waste, the detection of zirconium and iron should also be studied and measured.
- Due to the high levels of induced radiation from the target sample or from the surrounding environment at the site of fuel debris retrieval, measurements shall be performed and validated in a radiation environment. If possible, measurements shall be conducted using spent fuel or fuel debris, etc., and the results shall be verified.
- Since this measurement is to be conducted remotely, it is necessary to establish a connection method and a signal amplification method for the wired mechanism connecting the measuring unit and the operating unit.
- During fuel debris retrieval works, it is presumed that water may be poured or sprayed as a dust control measure. For this reason, it is necessary to establish a measure for measuring samples whose surfaces are wet with water or whose internal pores contain

water.

- It is required to consider how to carry an analytical device into the reactor building and also to design a small and portable one. If radioactive materials adhere to the analytical device and contaminate it during its usage in the reactor building, and thus the analytical device is difficult to carry out from the Fukushima Daiichi NPS, then it may be treated as waste. To reduce the amount of waste, the structure and material of the analytical device must be designed to be resistant to radioactive materials adhesion or easy to decontaminate when adhered.
- In general, analytical devices are precision instruments, whereas on the premises of the Fukushima Daiichi NPS, environmental factors such as dust, sea salt particles, temperature changes associated with seasonal changes, and condensation in winter, affect measurements. Therefore, It is necessary to develop a measure to reduce the influence of environmental factors other than radiation and then it shall be investigated the measures that the analytical devices ensure long-term stable measurements.
- It is necessary to define and evaluate issues and their applicable ranges during the above measurements and feed the results back to the study of on-site application of the entire device.

### (3) Development of Estimation Technologies of RPV Damaged Condition and Fuel Debris Migration Behavior in PCV, etc.

In the project of "Upgrading Level of Grasping State inside Reactor" (FY2016/2017), an information aggregation chart and an estimation chart of the state inside the reactors have been prepared. After the completion of the project, the analysis on the samples, which were collected during the internal PCV investigation of Units 1 through 3, the R/B site investigation, and the investigation of the piping room of the standby gas treatment system, had been performed. With consideration of these results, an information aggregation chart and an estimation chart of the state inside the reactors have partly been updated. The results of these investigation, analysis, updated estimation chart, etc. are published by Nuclear Regulation Authority, METI, and TEPCO. Based on these results, accident progression analysis codes shall be evaluated, and simulated melting tests and flow simulations shall be also evaluated. Using the evaluation results, the validity of processes of such matters as fuel melting, RPV damage, and fuel debris spillage and expansion during an accident shall be verified. In order to contribute to the investigation of the fuel debris retrieval method, the validated results shall be reflected in the information aggregation chart for each unit and the estimation chart of the state inside the reactors, etc.

- The melting reaction between the fuel and surrounding materials due to decay heat and oxidation reaction generated during the accident, the amount of molten material, etc. shall be evaluated using the severe accident progression analysis code. In this evaluation, plant

parameters such as RPV pressure and PCV pressure at the time of the accident for each unit and the operation status of the emergency cooling system shall fully be considered to improve the reproducibility of each plant parameter, etc.

- If necessary, a mock-up melting test shall be conducted to simulate the melting process of the in-core structure of BWR, the damage process of RPV, etc. When conducting these tests, the characteristics of the cooling process and the accident progression process of each unit shall be considered.
- After setting scenarios for realistic migration of damaged portions and melting substances/fuel debris in the RPV, based on the results of the PCV internal investigation, the evaluation of accident progression analysis code, the results of simulated melt tests, etc., migration behavior of core materials flowing out of the RPV shall be evaluated by flow simulation. In such evaluation, it is important to keep in mind in which area the fuel components are mostly distributed, so that the evaluation results can be reflected in the fuel debris retrieval method.
- For Unit 1, the PCV internal survey has been conducted from FY2022, and deposited samples will be collected. Based on the results of the survey and the analysis of deposited samples which will be performed in (1)[1], it shall be investigated comprehensively damage and deterioration phenomena of concrete to define the damage process of the pedestal and the process of deposits generation and deposition at the periphery of the pedestal. By comparing the results of that investigation with the environmental conditions assumed to exist at the time of the accident, it is required to comprehensively evaluate and investigate the time series of concrete damage and deterioration phenomena assumed to have occurred at the time of the accident.
- As the Nuclear Regulation Authority, Osaka University, and TEPCO have been also investigating the reproducible testing of concrete damage and deterioration phenomena, the status of their implementation shall be reflected in the investigation. If additional reproducible testing or simulation is necessary, a reasonable testing or simulation method shall be investigated.
- The results obtained from previous investigations, analyses, tests, etc. shall be reflected and updated in the information aggregation charts and the estimation chart of the state inside reactors, etc., which have been prepared in the previous projects, and then the investigation results shall be the latest. With regard to knowledge from other studies, surveys, evaluations, etc., excluding this project, it is necessary to examine the appropriateness of reflecting them. If the information is considered appropriate to be reflected, it shall be reflected in the information aggregation charts, and the estimation chart of the state inside reactors, etc. When reflecting the information in the information aggregation chart and the estimation chart of the state inside reactors, etc., a three-dimensional estimation chart shall be prepared to reflect the damage and fuel debris

distribution status for each unit in an easy-to-understand visual manner.

- The results of the investigation, including a three-dimensional estimation chart, shall be provided for the fuel debris retrieval works. In order to improve the understanding of the receiver of the information and to efficiently study a fuel debris retrieval method, the three-dimensional estimation charts must include the vertical and horizontal cross-sectional views. The piping and equipment in the PCV shall be detachable.
- Regarding the above-mentioned updated information aggregation charts and the estimation chart of the state inside reactors, etc. shall be consistent with “Estimation of Conditions in RPV and PCV after the Accident at Fukushima Daiichi Nuclear Power Plant” (\*1), published by TEPCO.
- When evaluating the above-mentioned RPV damaged condition and fuel debris spillage, fuel debris migration into the pedestal, and expansion behavior on the pedestal floor, etc., it is important to make the shape and structure of RPV, the position of welding lines, etc. consistent with the corresponding data from the Nuclear Regulation Authority (\*2). Dimensions, etc., of RPVs and PCVs shall be consistent with those of the International Research Institute for Nuclear Decommissioning (\*3).
- The accident summary and the data measurement on the phenomena progression during the accident shall be consistent with the data used in the OECD/NEA BSAF project (\*4).
- The results of on-site investigations and measurements such as the PCV internal investigation, and the analysis results of samples collected during the investigations and measurements shall be consistent with the documents from METI Decommissioning, Contaminated Water, and Treated Water Team Meeting and for PMO Meeting(\*5) and the documents from the Nuclear Regulation Authority for the Study Group on the Analysis of the Accident at TEPCO's Fukushima Daiichi Nuclear Power Station (\*6).

\*1 Estimation of Conditions in RPV and PCV after the Accident at Fukushima Daiichi Nuclear Power Plant

[https://www.tepco.co.jp/decommission/information/accident\\_unconfirmed/pdf/20210719.pdf](https://www.tepco.co.jp/decommission/information/accident_unconfirmed/pdf/20210719.pdf)

[https://www.tepco.co.jp/library/movie/detail-j.html?catid=61709&video\\_uuid=m88yqm90](https://www.tepco.co.jp/library/movie/detail-j.html?catid=61709&video_uuid=m88yqm90)

\*2 Results of an investigation on manufacturing methods and manufacturers of reactor vessels, etc.

Search “[www.nsr.go.jp/data/000167067.pdf](http://www.nsr.go.jp/data/000167067.pdf)” in the National Diet Library Web Archiving Project ([https://warp.da.ndl.go.jp/?\\_lang=en](https://warp.da.ndl.go.jp/?_lang=en)).

\*3 Documents from International Research Institute for Nuclear Decommissioning

[https://irid.or.jp/debris/Reference\\_E.pdf](https://irid.or.jp/debris/Reference_E.pdf)

\*4 Information Portal for the Fukushima Daiichi Accident Analysis and Decommissioning Activities

<https://fdada.info/en/home2/accident2/>

\*5 Documents for the Decommissioning, Contaminated Water, and Treated Water Team Meeting and for PMO Meeting

[https://www.meti.go.jp/earthquake/nuclear/decommissioning.html#team\\_jimukyoku](https://www.meti.go.jp/earthquake/nuclear/decommissioning.html#team_jimukyoku)

\*6 Documents for the Study Group on the Analysis of the Accident at TEPCO's Fukushima Daiichi Nuclear Power Station

[https://www.nsr.go.jp/disclosure/committee/youushikisya/jiko\\_bunseki01/index.html](https://www.nsr.go.jp/disclosure/committee/youushikisya/jiko_bunseki01/index.html)

### 3. Operation of research and development

#### (1) Gathering Domestic and Overseas Wisdom

Projects must be conducted by utilizing Japan and abroad wisdom. In particular, they must consider introducing necessary technologies and knowledge both from Japan and abroad broadly. In case of development of machines and equipment, establishment of common basis of the machines and equipment (utilization of widely used goods and goods which have already been developed, etc.) must be taken into account as much as possible in order to promote reasonable development. Furthermore, the development of evaluation method is important to be confirmed and reviewed objectively by third parties such as academic societies, etc. Hence, such validation must distinctively be placed in the development plan or a milestone.

In implementing the project by introducing Japan and abroad technologies and knowledge, if necessary, the external organization shall be chosen through a solicitation such as a open competitive bidding in a timely manner; and in order to ensure transparency and fulfill accountability, the solicitation information must be published on the website and the link to the information must appear the PMO's website, with the intention to disseminate it widely.

#### (2) Establishing Decommissioning Industrial Cluster to Fukushima and Innovation Coast Framework Realization

It shall be considered to work with companies, which run business in Hamadori area and other region in Fukushima prefecture\*, in an aim to promote local companies engaged in decommissioning related industry and establish decommissioning industrial cluster to Fukushima.

It shall be also considered to use decommissioning related facilities (e.g. Naraha Center for Remote Control Technology Development (mock-up testing facility)), which play a role in Fukushima Innovation Coast Framework.

##### \*Area

Iwaki city, Soma city, Tamura city, Minami Soma city, Kawamata town, Hirono town, Naraha town, Tomioka town, Kawauchi village, Okuma town, Futaba town, Namie town, Katsurao village, Shinchi town, Iitate village

#### (3) Human resource development for medium and long-term

Efforts need to be made to strengthen the relationship with universities, research

organizations, etc. through implementing joint research, etc. from the viewpoint of human resource development in the middle and long-term. Cooperation also needs to be made positively to strengthen the activities which focus on human resource development by the government and related organizations.

(4) Clarification of tests conditions and specifications for development

Consideration of requirement level necessary for implementing decommissioning activities must be done before commencement of elemental tests and equipment design; furthermore, evaluation of to what extent existing technologies can be utilized must be done as quantitatively as possible (Present the current Technology Readiness Level (TRL)). Based upon these, information on the target of the degree of the tests and equipment development compared to the requirement level must be shared with concerned organizations, and the test conditions and design specifications must be established.

(5) Definition of criterion for judgment of degree of objective achievement

Comprehensible criteria which can be a measure for the judgment of objective achievement of the project must be defined using numerical values, etc. ( Present the current TRL); and they must be validated whether or not the objective will have been achieved at the completion of the project.

Table 1 Definition of Technology Readiness Level (TRL)

Level	Definition corresponding to this project	Phase
7	At the stage of completion of practical utilization	Practical use
6	At the stage of being demonstrated in the field	Field demonstration
5	At the stage of production of prototype with the scale of practical use, and demonstration in a simulated environment such as in a factory, etc.	Demonstration of simulation
4	At the stage of implementation of function tests at the level of trial production as a process of development and engineering	Research for practical use
3	At the stage of proceeding with development or engineering using application or combination of existing experiences. Or at the stage of proceeding with development or engineering based upon elementary data in the area with lack of existing experiences.	Application research
2	At the stage of proceeding with development or engineering in the area nearly without applicable existing experiences, and with setting up the specifications.	Application research
1	At the stage of clarifying elementary contents regarding development or engineering.	Elementary research

(6) Cooperation with decommissioning activities and associated research and development projects

Clarify how the results obtained could contribute to the decommissioning activities and

associated research and development projects, and positive cooperation and collaboration with the associated research & development projects shall be conducted. For this purpose, it is necessary to share harmonized input /output information among the associated research and development projects. In order to realize this information sharing, coordination among the entities involved must be done using Form 4 at the commencement of the project and other suitable timings; and it must also be regularly shared with and confirmed by PMO and other concerned entities. Furthermore, the information on implementation of the project (such as progress situation, acquired data, challenges, etc.) must be shared with and offered to PMO and the concerned entities in a timely and appropriate manner. Also, Non-Disclosure Agreement must be concluded among the Subsidized Project Operating Entities, the associated research & development project entities and PMO, if necessary. PMO will conduct the necessary coordination.

(7) Research management

The project must be proceeded with bearing in mind that the achievement goals of the project (such as the contents of outputs, target schedule, etc.) were established so as to achieve high-rank goals of this project.

Furthermore, it is necessary to create a flexible implementation organization that can reflect the following matters to the project, because understanding about the situation of the inside of PCV and necessary R&D to retrieve fuel debris is still limited, and a great deal of uncertainties remain in respect of the preconditions for research development.

[1] Discussions about the Mid-and-Long-Term Roadmap, discussions at meetings of the Secretariat of the Team for Decommissioning, Contaminated Water and Treated Water Countermeasures, and instructions and advices given by the Agency for Natural Resources and Energy, and so forth.

[2] Discussions concerning the “Technical Strategic Plan for Decommissioning of the Fukushima Daiichi Nuclear Power Station of Tokyo Electric Power Company Holdings, Inc.”, discussions at meetings held by and instructions and advice given by Nuclear Damage Compensation and Decommissioning Facilitation Corporation, and so forth.

[3] Progress management, instructions and advices given by PMO in which Nuclear Damage Compensation and Decommissioning Facilitation Corporation have joined.

In particular, in order to achieve the project outcome targets, it is important to promptly understand and reflect the current status of Fukushima Daiichi NPS, the progress of TEPCO’s engineering, internal investigation, R&D, on-site working environment improvement such as dose reduction, lowering water level, space availability, etc. It is also important to check whether the prerequisites of the project are satisfied not only at the early stage of the project but also at any time to during the project from the viewpoint of on-site applicability, and to take measures promptly if any issues are found.

Therefore, under the project management of TEPCO, it is required to establish organization

to conduct R&D. When grant application, the application shall be made jointly with TEPCO. However, TEPCO does not claim for any expenses for this project. When working at Fukushima Daiichi NPS, etc. for on-site investigation and demonstration test and so on, sufficient coordination shall be made beforehand with TEPCO, management system shall be constructed with understanding the compliance issues and precautions, etc., and appropriate security measures shall be taken.

(8) Progress report

The entity is required to report implementation plan, progress situation, project results, etc. to PMO on request. Specifically, the followings are included.

- [1] Interim report meetings and final report meeting: For the purpose of confirming created results, advancing the result on the future and improving on-site applicability, the entity is required to report contents of research and development to committee members and concerned organizations about once in six months.
- [2] Concerned organization meeting: For the purpose of discussion for issues of proceeding projects among concerned organizations, the entity is required to report implementation plan and progress situation after launched new subsidized project or at key times of project progress.
- [3] Progress report: the entity is required to report project progress by using the example of implementation schedule (Reference Document 2) etc. every end of month.
- [4] Project review meeting: For the purpose of confirming whether the plan is for the target established at the start of project, and engineering for on-site and on-site applicability, the entity is required to report the contents of research and development to concerned organizations and experts designated by PMO about once or twice a year.
- [5] Report of project outcome: The entity is required to submit final report of project outcome for the specific outcome of subsidized project. (The report at final report meeting is possible to utilize for this report of project outcome)
- [6] Project result report: After the completion of the project, the entity is required to submit project result report.

The information reported and submitted to PMO may be shared among concerned organizations based on the 5. Implementing Scheme considering the non-disclosure information mentioned in “Act on Access to Information Held by Administrative Organs (Act No. 42 of 1999) ”.

(9) Enhancement of dissemination of information

Comprehensible explanation to the public regarding the project contents and results is indispensable. The entity is also required to actively cooperate with the government and the concerned organizations for dissemination of information. In addition, any results of the project, which could be made public, should be summarized as a report of project outcome for publication and disclosed as soon as possible after its completion.

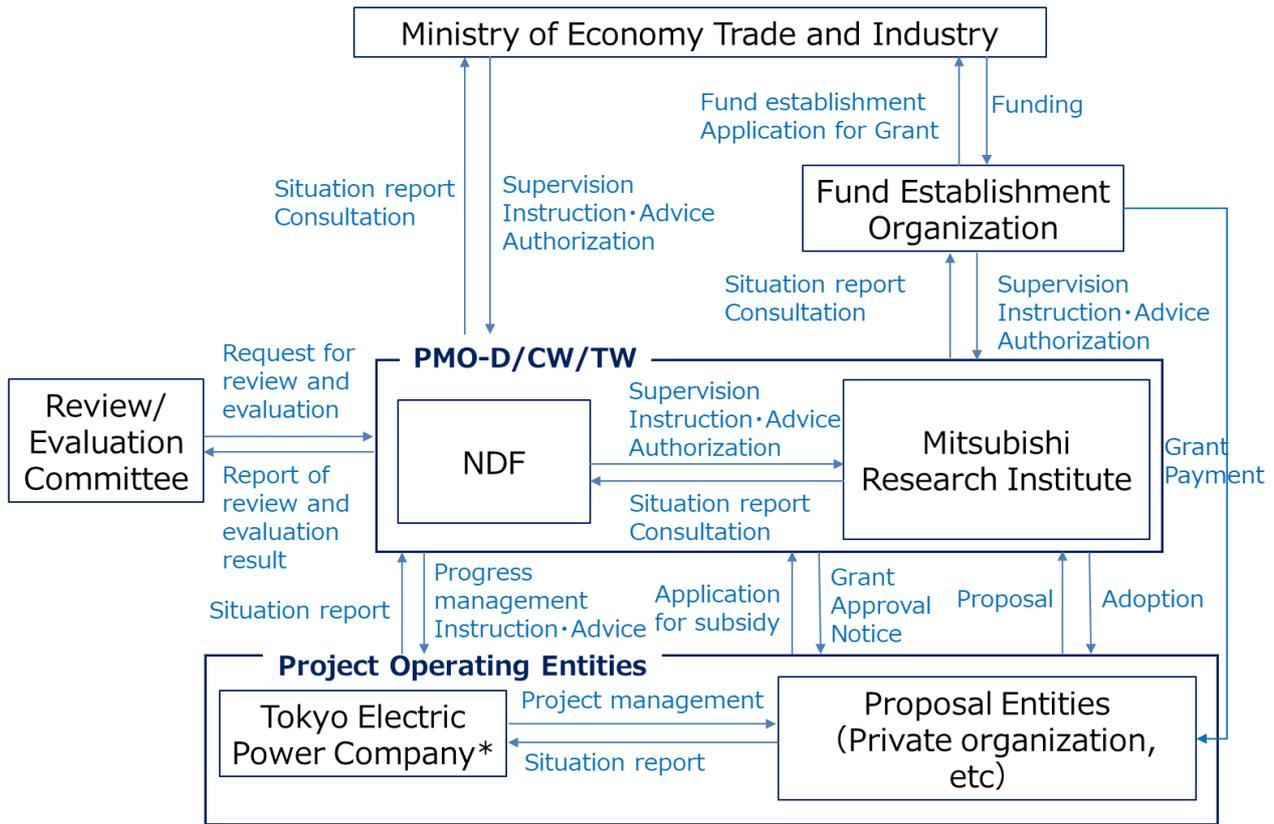
(10) Preparation of other options

Alternative options should be prepared if necessary in advance for the case that the project cannot be proceeded with as planned during the project term. If the alternative options are prepared or revised, the information must be notified to PMO.

4. Project Term

- From the effective day (of the grant) to March 31, 2025

## 5. Implementing Scheme



\*After the proposal is adopted, application shall be made jointly with TEPCO. However, TEPCO does not claim for any expenses for this project.

## 6. Application Requirements

The private companies, etc. satisfying all of requirements (1) to (9) shown below are qualified to apply for the subsidies. Applications from consortia are also acceptable. In that case, a managing legal entity must be appointed out of each consortium and submit the project proposal. (Please note that no managing legal entity may commission the entire work to another legal entity.)

- (1) Possessing the organization for properly conducting the relevant subsidized project. If the case to subcontract to or jointly implement with a third party a part of the subsidized project, for the creation of project outcome, the appropriate cooperation organization should be established to manage the project.
- (2) Having the capacity, knowledge and experience required for conducting the relevant subsidized project.
- (3) Having the management foundation required for smoothly conducting the relevant subsidized project and sufficient ability to control the funds and other resources.
- (4) Being able to follow the appropriate accounting procedures in accordance with the "Grant Policy for Subsidy for the Project of Decommissioning, Contaminated Water and Treated Water

Management” and the “Subsidized Project Administration Manual (\*)”. With regard to overseas entities, as a general rule, being able to prepare the evidenced documents in Japanese or English and present them in Japanese territory on demand from the PMO.

(\*)<https://en.dccc-program.jp/files/20230224man.pdf>

- (5) Not foreseen to be subject to Articles 70 and 71 of the Cabinet Order concerning the Budget, Auditing and Accounting.
- (6) Not fulfilling any of the conditions stipulated in the “Guidelines for the suspension of subsidies controlled by the Ministry of Economy, Trade and Industry and the suspension of designation relating to the contracts”. (January 29, 2003, No 1) First column, the second items in Attachment
- (7) The applicant must have a compliance system under a self-regulated structure which meets the "Standards for Exporters, etc. to Meet" provided for in Article 55-10 (1) of the Foreign Exchange and Foreign Trade Act. We will confirm this system using (Form 3) "Response to Security Export Controls" when selecting applicants, so please use this form to fill in the required items and submit the required documents.

[Reference] Standards for Exporters, etc. to Meet

Regulations to be observed by parties engaged in export or provision of technology in the course of trade (exporters).

Exporters that do not handle security-sensitive "specified important goods, etc." have a duty to 1) nominate a person responsible for checking goods, etc., and 2) provide guidance to managers and export workers on compliance. Exporters that do handle security-sensitive "specified important goods, etc." have a duty to 1) identify a representative as the responsible person, 2) set out an export control system, 3) set out a procedure for checking regulated/non-regulated goods, 4) set out a procedure for confirming the usage and consumer, and confirm these in accordance with that procedure, and 5) confirm that the goods to be shipped coincide with the confirmed non-regulated goods at the time of shipping.

- (8) Admitting that the results obtained through this project can be utilized by TEPCO, etc. to leverage them for Decommissioning, Contaminated Water and Treated Water Countermeasures if they request to do so under the condition that each party is in agreement. Not preventing the utilization by behaviors such as not allowing to use the technology intentionally, asking for unreasonable compensation, etc. in spite of receiving the request.
- (9) In order to make sure of the above-mentioned item, preventing a situation where the results from this project are not be able to be utilized for Decommissioning, Contaminated Water and Treated Water Management Countermeasures at the Fukushima Daiichi NPS by ceding the above-mentioned condition in (8) to the successor if the applicant transfers the result to a third party and loses their own right to utilize it accordingly. In the case of a conflict which makes the applicant unable to make sure of the items in (8), the concerned parties must solve it by their own responsibility.

## 7. Requirement Conditions for Grant Decision

(1) Number of proposals to be adopted : One proposal or more (including proposals for implementation items (1), (2), or (3) only)

(2) Subsidy rate and maximum amount of subsidy

The subsidy is fixed in JPY.

Maximum amount: 2,000,000,000 JPY

In the case of partial proposals, the maximum amounts of subsidy are as follows:

(1) 1,070,000,000 JPY

(2) 550,000,000 JPY

(3) 380,000,000 JPY

Subsidies are paid in JPY. The contents of the project, amount of the subsidy, etc. will ultimately be settled only after coordination with PMO.

(3) Time of Payment

In principle, the subsidies are paid after the project is completed.

\*Please note that cases where the payment (i.e. the payment by estimate) before the completion of the project is permitted are limited.

(4) Confirmation of the amount of payment

The amount to be paid is decided based on the Project Result Report which is submitted by the operating entities after the project is complete as well as the results of the survey at the verification site and/or the office.

The amount to be paid will be the total of the expenses to be covered by the subsidies, which do not exceed the granted subsidy amount and have spent actually. For this reason, the books and evidential documents such as receipts are necessary for supporting all the expenses. All the expenses will be strictly inspected and evaluated. Thus, the expenses not meeting the conditions mentioned above may be rejected.

(5) Grasp the implementation organization at the time of submitting the Project Result Report

Since it is necessary to confirm the implementation organization of the project, when submitting the Project Result Report after the project is completed, as expenses are covered by the subsidy in the case of outsourcing or commissioning contract, the Subsidized Entity must attach the implementation organization document (\*) describing the name of the contractors (only for transactions of 1 million yen or more including tax), their relationship with the Subsidized Entity, their address, the contract amount and the contract content.

(\*) This document is to be confirmed at the inspection.

"travel expenses", "meeting expenses", "gratuities", "equipment expenses (including rent and hire fees)", "assistant personnel costs (including temporary staffing)" are not eligible.

In the case of subcontracting or recommissioning from the contractors (in the case of subcontracting etc., limited to transactions of 1 million yen or more including tax), please describe their information in the implementation organization document same as above (There

is no need to describe the contract amount for sub-subcontracting or re-commissioning).

[Implementation Organization Document Description Template]

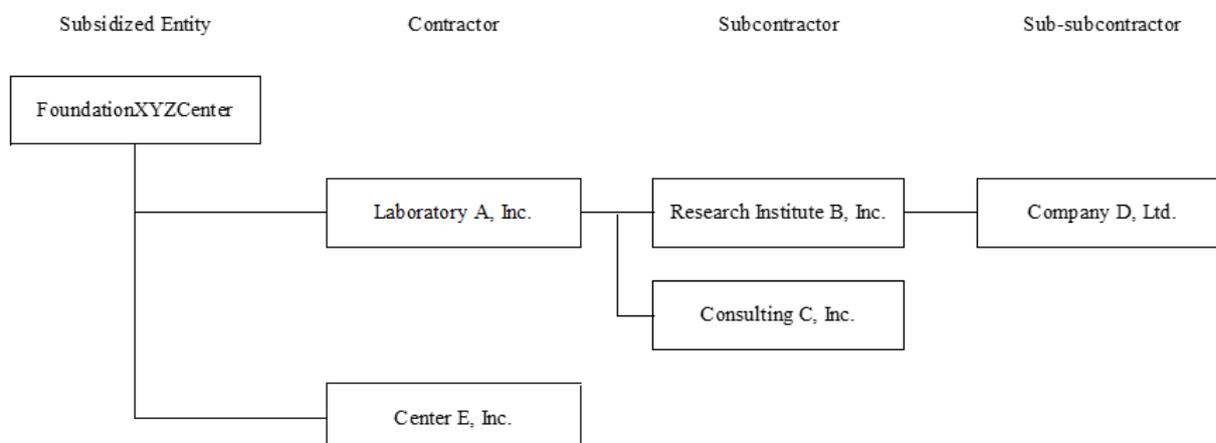
In principle, the implementation organization should be presented in the Organization Table as shown below and include the implementation organization chart. There is no prescribed form if the implementation organization, the name of the contractors, their relationship with the Subsidized Project Operating Entity, their address, the contract amount, and the contract content are clearly stated on the document.

**Implementation Organization Table (limited to contract of work/service agreement of 1 million yen or more including tax)**

Name of Outsourcing/Commissioning Company	Relationship with Subsidized Entity	Address	Contract amount (with tax)	Contract content
Laboratory A, Inc.	Contractor	XXX-ku, TokyoXXX	*Using Arabic numerals, show amounts in yen value	*Fill in as detail as possible
Research Institute B, Inc.	Subcontractor (Subcontractor of Laboratory A, Inc.)	Refer to the sample above	Refer to the sample above	Refer to the sample above
Consulting C, Inc.	Subcontractor (Subcontractor of Laboratory A, Inc.)	Refer to the sample above	Refer to the sample above	Refer to the sample above
Company D, Ltd.	Sub-subcontractor (Subcontractor of Research Institute B, Inc.)	Refer to the sample above	No need to fill in (*)	Refer to the sample above
Center E, Inc.	Contractor	XXX-ku, TokyoXXX	*Using Arabic numerals, show amounts in yen value	*Fill in as detail as possible

(\*) Company D, Ltd. is a sub sub subcontractor from the standpoint of the Subsidized Company so there is no need to write the contract amount.

**Implementation Organization Chart (limited to contract of work/service agreement of 1 million yen or more including tax)**



8. Application Procedure

(1) Application Period

Commencement: Friday, February 24, 2023

Deadline: By 10:00 AM local time on Thursday, March 16, 2023

We will not accept any proposals after this deadline.

(2) Information Session

Date and Time: 16:00 – 16:30 on Friday, March 3, 2023

Venue: Web Conference

If you would like to attend the session, please inform the contact point written in “13. Contact” by 12:00 AM local time on Thursday, March 2, 2023 via email. After that, we are going to inform you of how to access web conference. The session will be held in Japanese. If you need an interpreter, please make arrangements on your own (You are responsible for the expense). If you need an information session in English, please consult with PMO by the above deadline via email. Please note that there is possibility to limit the number of participants.

When making contact, please title your e-mail “Register for attendance to the information session for ‘Project of Decommissioning, Contaminated Water and Treated Water Management’” and include the “corporate or organization name,” “name of the attendee,” “department,” “phone number,” “e-mail address,” and “subsidized project name to apply” in the main text.

To applicants from the EEA member states:

Private information will be used only in the working related to explanation meetings and will not be distributed to any other organizations. When you have provided us with such information, we assume that we have received it with your clear understanding that you submit it in agreement to the above-said condition.

(3) Application form and other documents to be submitted

[1] Please submit the following documents in person, by mail, or by e-mail. Please title your file “Application for the subsidy program “Project of Decommissioning, Contaminated Water and Treated Water Management (Development of Analysis and Estimation Technology for Characterization of Fuel Debris)””.

- Application form (Form 1)
- Outline of Subsidized Project (Form 2)
- Certificate of Conformance (Form 3)
- Input/ Output information (Form 4)
- Response to Security Export Controls (Form 5)
- Personal Data Processing Consent Form (Form 6)
- Other documents
  - Outline of Corporation or Organization (such as a brochure, etc.)

- The financial results, and statement of revenues and expenses (of the last year)
  - The articles of association or the act of endowment
  - Other supporting documents
- \* You can describe the application documents in Japanese or English. If you bring them with you or submit them by mail, one CD-ROM must be submitted along with 1 copy using A4 paper. In case that you bring them in person, please inform us of the date beforehand. In case that you submit them by e-mail, please attach 1 copy via email to the email address for application. As a general rule, the file format must be, MS-Word, MS-PowerPoint, MS-Excel or PDF. If you have unavoidable reasons not to be able to use these formats, please contact us.
- \* If your proposal is adopted, there is a possibility that Input/ Output information will be released to other entities.

[2] All the application documents submitted will not be used for any purposes other than the evaluation in the course of the selection process. Please note that the application documents submitted will not be returned. We take the utmost care to preserve confidentiality. However, if your proposal is adopted, the information except the non-disclosure information (i.e. the personal information, the information detrimental to the legitimate interests of legal entities) may be disclosed under the “Act on Access to Information held by Administrative Organs” (Act No. 42 enacted on May 14, 1999).

To applicants from the EEA member states:

Private information included in application documents will be used only in the evaluation. Therefore, PMO will not distribute such private information to any other organizations besides METI, Fund establishment organization, NDF, and Review/Evaluation committee. When you apply for the subsidy program, you must clearly understand the above-said condition and submit Form 6.

[3] The costs spent for issuing the application documents and other documents will not be included in the expenses. Also, the costs spent for issuing those documents will not be compensated for regardless of whether the proposal is adopted or not.

[4] The matters described in your proposal are considered to be the fundamental policies which should be observed during the project. Consequently, please be sure to describe only the matters which are feasible within the budget. Also, please note that even if your proposal is adopted, it may be rejected later on if you make a significant change to it at your discretion.

[5] Appropriateness of the cost breakdown must be shown using supplemental explanation documents.

(4) Place of submission

The application documents must be delivered to the following address via hand-carry, mail or email, etc. In case that you bring them in person, please inform us of the date beforehand.

Toranomon Building 7th Floor,  
1-12 Tranomon 1-chome, Minato-ku,  
Tokyo 105-0001, JAPAN

Contact: Masaki Kawai, Fumiya Sato

Email address for submission: [hr-apply@mri.co.jp](mailto:hr-apply@mri.co.jp)

\* Please DO NOT send the application documents via fax. Incomplete documents will be rejected and not subject to evaluation. Therefore, please carefully read and follow the procedures for application to correctly fill out the documents.

\* Any application documents submitted after the closing date will not be accepted. If you send the documents by postal mail, they may not be delivered by the designated time on the closing date. Consequently, you are advised to mail them sufficiently ahead of the closing date.

## 9. Evaluation and Adoption

### (1) Method of Evaluation

Applications will firstly be evaluated through paper screening, so that the applicants for the presentation to the review committee can be selected. The review committee is planned to be held in late March 2023. Depending on the capacity of the venue, the number of the participants to the presentation may be restricted. Furthermore, hearings and on-site investigation may be conducted as required; and submission of additional documents may be requested.

### (2) Evaluation Criteria

Applications are to be comprehensively evaluated based upon the following criteria. The details of the criteria are described in the “Criteria for reviewing proposals and allocation of points for items to be reviewed”.

[1] Objective, contents, implementation method, and applicability to countermeasures for decommissioning (Including on-site applicability)

- It shall be evaluated whether or not the Project objective corresponds to the project purpose described in the “Guidelines for applying”.

- It shall be evaluated whether or not the contents of the project are consistent with the Project content indicated by the “Guidelines for applying”, and described in detail in consideration of applicability to countermeasures for decommissioning (including on-site applicability).

- It shall be evaluated whether or not the project implementation method is consistent with the objective and contents of the project.

[2] Project Implementation Schedule

- It shall be evaluated whether or not an appropriate project implementation schedule is indicated for the objective and contents of the project.

[3] Project Implementation Organization

- It shall be evaluated whether or not the applicant has an accumulation of indispensable expert knowledge to implement the project as the project implementation organization, and also whether or not the employees to be engaged in the project have an accumulation of indispensable expert knowledge to implement the project, and then whether or not the applicant has ever implemented other similar projects as an organization. Additionally, it shall be also evaluated whether or not it is described that the applicant makes contributions to the revitalizing local economy through the implementation of the project such as working with companies which run business in the Hamadori area and other region (\*) in Fukushima prefecture, or using decommissioning related facilities which play a role in Fukushima Innovation Coast Framework. Moreover, it shall be evaluated whether or not the project implementation organization including the project leader is clearly described, and then it has the implementation ability and the coordination structure to consider/judge the applicability to countermeasures for decommissioning (including on-site applicability).

\*Area:

Iwaki city, Soma city, Tamura city, Minami Soma city, Kawamata town, Hirono town, Naraha town, Tomioka town, Kawauchi village, Okuma town, Futaba town, Namie town, Katsurao village, Shinchi town, litate village

[4] Project Cost

- It shall be evaluated whether or not the project costs are appropriately allocated to the project objective and contents.

[5] Financial Basis and Management Structure for Implementation of Project

- It shall be evaluated whether or not the applicant has a financial basis and management structure for implementation of the project.

(3) Decision and Announcement of Results

PMO will release the adopted entities on our website, etc. The adopted entities will be notified of the result.

10. Grant Decision

The project shall be initiated after the adopted entity submits a grant application for the subsidy to PMO and PMO has sent a notice of grant decision in return.

It should be noted that there may be changes in the details, composition and scale of the project as well as its budget between the decision of adoption and grant, as a result of consultation with the PMO. Also, please be aware that the grant decision may not be notified if the adopting requirements are not met.

Although subsidized project operating entities may be provided with information required to implement the project after the decision of grant, they may be requested to observe the confidentiality depending on the nature of the information.

Information on the decision of grant of the subsidy (adopted date, the entity adopted (granted), effective date of the grant, corporation number in Japan, value of grant, etc.) will be shown on "gBizINFO"\* in principle.

\* "gBizINFO" by Ministry of Economy, Trade and Industry is a system, with the start of the 'My Number' system considered, to link a corporation number in Japan to corporation information such as those regarding subsidy and prize-giving. Anybody can execute batch retrieval/browsing in the system. With this system, expansion of new businesses, reduced costs in information acquisition, and more efficient businesses are expected in business enterprises and public offices. Web address: <https://info.gbiz.go.jp> (Japanese text only)

## 11. Allocation of Expenses

### (1) Classification of Expenses Covered by Subsidy

The expenses covered by the subsidy shall be those directly required for the implementation of the project and those required for compiling the project results. The specific items are listed below. Please refer to "Reference document 3" for an explanation of each cost items.

Items of Expense	Description
(1) Labor Costs	Expenses for personnel required to implement the subsidized project.
(2) Operating Costs	Expenses for raw materials, consumables, design/fabrication/processing, facility/equipment, goods purchase, research, outsourcing, travel, remunerations, rent/depreciation and other necessities.

### (2) Expenses not to be Included in Expenses Covered by Subsidy

- Office supply equipment (furniture such as desks, chairs and bookshelves, office machinery and so forth) with which the applicants should already be provided when considering the nature of the project.
- Expenses for handling accidents and disasters that occurred during the project. (However, cancellation fees incurred by reasons not attributable to subsidized project operating entities may be directly included as an expense. Please consult the person in charge on this matter.)
- Expenses unrelated to the project

### (3) Exclusion of Consumption Tax from Expenses Covered by Subsidy

If the national and local consumption taxes (hereinafter referred to as "consumption tax") are included in the subsidy amount, the applicants shall be requested to submit a report after the settlement of consumption tax amount, according to the Grant Policy for Subsidy.

This is so specified as to demand, at the time of filing an income tax return, that subsidized project operating entities should report and return the amount to which the subsidy has been applied, out of the amount of deduction for taxable purchase, so that the amount for which the subsidy has been allocated out of the amount of deduction for taxable purchase shall not be detained.

However, because the report mentioned above is based on an income tax return that will be filed after the settlement of the subsidy, occasional delinquency in reporting due to lapse of memory has been found. Also, in order to avoid the complicated office procedures that need to be followed by subsidized project operating entities, the consumption tax shall be handled as follows.

When determining the amount of subsidy applied for in the grant application, the consumption tax must be excluded from the expenses covered by the subsidy before

calculating the subsidy amount and submitting the application.

However, to avoid hindrance to the implementation of the subsidized project, such subsidized project operating entities as those listed below shall be permitted to include the consumption tax in the expenses covered by the subsidy when calculating the amount of subsidy.

- [1] Subsidized project operating entities who are not classified as taxpayers under the Consumption Tax Act
- [2] Subsidized project operating entities who are tax-exempt business entities
- [3] Subsidized project operating entities who are business providers subject to simplified tax
- [4] National or local governments (limited to cases when project is conducted with a special account), or subsidized project operating entities who are corporations listed in the attached Table 3.
- [5] Subsidized project operating entities who are using the general account of a national or local government
- [6] Subsidized project operating entities who are taxable business providers that choose a refund of consumption tax, following confirmation of consumption tax and purchase tax deductions, for instance due to a low amount of taxable sales

## 12. Miscellaneous

- (1) Any expenses incurred (including expenses for order placement) before the effective date of the grant shall not be covered by the subsidy program.
- (2) In the event that the subsidized project operating entity desires to make a purchase or other contract related to material procurement or involving an occurrence of cost, it shall invite open competitive bidding, as a general rule, from the viewpoint of cost effectiveness. If the subsidized project operating entity desires to transfer part of the subsidized project to a third party or conduct the project in partnership with a third party, it shall in advance make a contract on the implementation and report this to PMO.
- (3) Once informed that the decision on grant of the subsidy is made, the subsidized project operating entity shall not change the subsidy budget distribution or the details of the subsidized project nor interrupt or terminate the project without prior approval from PMO.
- (4) The subsidized project operating entity shall promptly report the progress of the subsidized project and so on whenever required to do so by PMO.
- (5) After the subsidized project is completed (or the project termination is approved), the subsidized project operating entity shall submit a project result report to the management office.
- (6) The subsidized project operating entity shall keep accounts on any expenditures for the subsidized project with dedicated account books accompanied by all written evidence in a way that is clearly differentiated from the other accounting to ensure that all incomes and expenditures are meticulously accounted for. The entity shall maintain the account books at least five years after the fiscal year in which the date of completion (or the date of approval for

termination) is included so that they can be accessible whenever requested by METI, fund establishment organization and PMO.

- (7) With respect to the assets acquired or the utility of which has increased through the subsidized project (hereinafter referred to as "the Acquired Assets, etc."), the subsidized project operating entity shall manage them with due care of a prudent manager even after the completion of the subsidized project, and strive to effectively make use of them in accordance with the purpose of the grant of the subsidy. All applicable Acquired Assets, etc. shall be properly controlled using an Acquired Asset Ledger during the asset disposal restriction period, which will be separately set forth.
- (8) If the subsidized project operating entity needs to dispose of (i.e., use, transfer, loan or offer as collateral assets contrary to the purpose of the grant of the subsidy) any Acquired Asset having a unit price equal to or higher than 500 thousand yen (tax excluded) during the asset disposal restriction period separately set forth, they must obtain prior approval. In this case, the entity shall pay part of or the entire subsidy amount as a general rule. (The maximum payment does not exceed the subsidy amount for the appropriate asset to be disposed of).
- (9) After the completion of the subsidized project, the Board of Audit may visit the premises of the subsidized project operating entity for inspection.

### 13. Contact

Toranomon Building 7th Floor,  
1-12 Tranomon 1-chome, Minato-ku,  
Tokyo 105-0001, JAPAN  
Contact: Masaki Kawai, Fumiya Sato  
E-mail: [hair-info@ml.mri.co.jp](mailto:hair-info@ml.mri.co.jp)

\* Contact us through e-mail. We regret that no inquiries will be accepted via telephone.

(Form 1)

No.	
*Leave blank.	

The Management Office for the Project of Decommissioning, Contaminated Water and Treated  
Water Management

Application for the subsidies for the “Project of Development of Analysis and Estimation Technology  
for Characterization of Fuel Debris”

Applicant	Corporation number (*)	
	Company/Organization Name	
	Representative (Full Name and Title)	
	Address	
Contact	Contact Person (Full Name)	
	Section/Department	
	Title	
	Telephone (Extension, if any)	
	E-mail	

\* If a corporation number in Japan has been given, fill in the 13-digit number.

If you are an individual and foreign company, etc., not having it, leave the field as it is.

(Exhibit)

1. Name of the Subsidized Project

2. Objective and contents of the Subsidized Project

*\*Describe your own understanding of the background of the project, the purpose of the project and its contents briefly.*

3. Scheduled commencement and completion dates of the Subsidized Project

(Scheduled commencement date):

(Scheduled completion date):

4. Entire costs needed for the project JPY

5. Costs subject to subsidy JPY

6. Subsidy amount to be applied for JPY

7. Allocation amount of the costs for the Subsidized Project, costs eligible for the subsidy and subsidy amount to be applied for

The contents are the same as (2) Expenditures, I. Summary table of “2. Plan of the income and expenditure of the Subsidized Project” of the Form 2, “Brief explanation of subsidized project”.

8. Bases for Calculation for the above amount

The contents are the same as (2) Expenditures, II. Distribution of Costs of “2. Plan of the income and expenditure of the Subsidized Project” of the Form 2, “Brief explanation of subsidized project”.

9. If a group is formed to conduct the Project, the names of the group and the member companies

Note 1: The “costs required for the Subsidized Project” refers to the cost required for performance of the relevant project. As a general rule, the amount must be provided after deducting the amount of the national and local consumption taxes.

Note 2: As for the amount of the “Subsidized Costs”, as a general rule, the amount of the “costs required for the Subsidized Project” eligible for the Subsidy must be provided after deducting the amount of the national and local consumption taxes.

Note 3: The “amount of the Subsidy applied for” refers to the amount of the “Subsidized Costs” for which grant of the Subsidy is requested, and the amount limit is the amount of the “Subsidized Costs” multiplied by the Subsidized Ratio (any amount less than JPY1 shall be rounded down).

Remark: The size of the paper used shall be the Japan Industrial Standards A4 Format.

(Form 2)

Address

Name (Name of Corporation and Title/Name of Representative Person)

### Outline of Subsidized Project

#### 1. The implementation plan for the Subsidized Project (based on the period in above “4. Project Term”)

##### (1) Contents and implementation method of the project

- \* Provide the following information by project content item.*
- \* Specific implementation contents and method, based on clarification of issues for each objective of research and development*
- \* Specific implementation content and method for each item of the project content*
- \* Specific proposal to improve outcome of the project*
- \* Project location (Address and name of the location)*

##### (2) The implementation schedule

- \* Describe the implementation schedule of the project by month for each implementation contents.*
- \* Describe the implementation procedure in detail. If the stages of the research and development are different (such as design, development, tests, etc.) in each item, describe the difference clearly.*
- \* If the persons in charge of the research and development (manufacturers and subcontractors) are different in each item, describe the organization they belong to clearly so that we can distinctly understand who will actually implement the item.*
- \* Set the actual targets for achievement of the project purpose as milestones and describe them for each item.*
- \* In setting the milestones, they must be related to the points where delay of the project is foreseen.*
- \* In order to prevent delay, alternative options must be described for items with high risk.*
- \* Describe major output and input information so that correlation with other projects, comprehensive proposals, partial proposals, etc. can be grasped.*
- \* As a plan of the interim report, describe the outputs which will have been able to be achieved at the time of the report and further plan.*
- \* In reporting your progress, show your plan and actual progress in a comprehensible manner. Furthermore, describe the up-to-date situation and further work plan, etc. as a reference.*

(3) The project implementation organization

*\* Provide the implementation organization chart and the number and role of people who are engaged in the project for each item of the project contents (Annex 1, Annex 2)*

*\* After clarifying the responsible person for entire project implementation, the project leader (exclusively employed for the project) and sub-leaders responsible for each project item, provide their profile, area of expertise and experience of engagement in similar projects..*

*\* Describe outsourcing or commissioning, if planned.*

*\* Describe the name, outline, year, ordering party, etc. of similar projects. If the project was done as your own company's project, state it accordingly.*

*\* Clearly state the experiences of each participating party if you form a consortium.*

2. Plan of the income and expenditure of the Subsidized Project (based on the period in above “4. Project Term”)

(1) Income (Unit: JPY)

Item	Amount
Own fund	
*Bond issuance or borrowing	
Other	
Subsidy	
Total	

\*Attach the documents to show the funding plan relating to the relevant bond issuance or borrowing.

(2) Expenditures

I. Summary table

(Unit: JPY)

Classification of costs	Costs required for the Subsidized Project	Subsidized Costs	Classification of the cost burden	
			The amount of cost borne by the Subsidized Project Operating Entity	The amount of the Subsidy applied for
Labor Cost				
Operating cost				
Total				

II. Distribution of Costs (provide the details by project item)

*\*Describe in this sheet or other separate sheets the name of the goods, unit price, man-hour, etc. as basis for the calculation.*

*\*If you form a consortium, clearly describe the breakdown of each company or organization.*

(Unit: JPY)

Type (Example)	The cost required for the Subsidized Project	Subsidized costs	Amount of the Subsidy applied for	Remarks
【Labor Cost】				
• • •				
Sub total				
【Operating Cost 】				
Raw material				
Goods purchase				
Outsourcing				
• • •				
Sub total				
Total				

(Note 1) The “cost required for the Subsidized Project” refers to the cost required to perform the relevant project. As a general rule, provide the amount after deducting the amount of the national and local consumption taxes.

(Note 2) As a general rule, provide the “Subsidized Costs”, which is eligible for the Subsidy after deducting the amount of national and local consumption taxes in the “cost required for the Subsidized Project”.

(Note 3) The “amount of the Subsidy applied for” refers to the amount of the “Subsidized Costs” for which grant of the Subsidy is requested, and the amount limit is the amount of the “Subsidized Costs” multiplied by the Subsidized Ratio (any amount less than JPY1 shall be rounded down).

Remark: The size of the paper used shall be the Japan Industrial Standards A4 Format.

### 3. Financial basis and management structure

*\* Describe the outline of your organization; moreover, describe the grounds on which your organization has necessary management basis for smooth implementation of the project as Annex 2.*

*\* Describe the grounds on which your organization is capable of managing funds, etc. (such as organization and storage of evidence documents for expenditures). Furthermore, describe the scheme of the management of the funds (responsible persons and their roles).*

*\* If you form a consortium, all of the above-mentioned items must be described regarding every organization.*

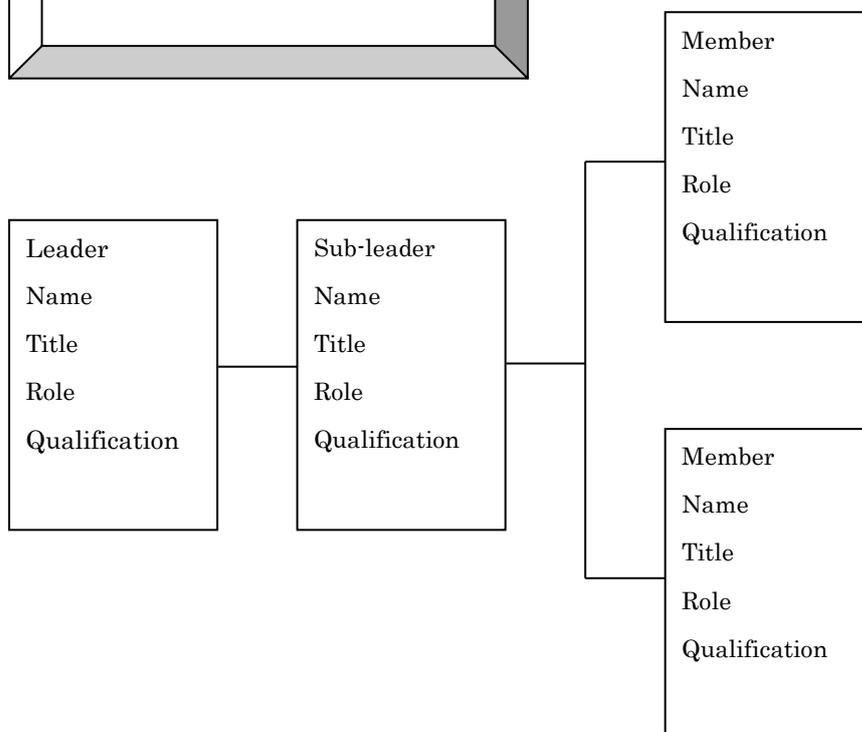
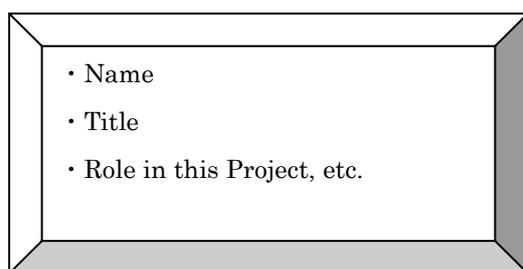
## Implementation Organization Chart

<p>Content of the descriptions</p>	<ul style="list-style-type: none"> <li>• Develop an organization chart to show the framework for implementation of the Project</li> <li>• The names, titles and division of roles of the personnel in charge must be contained in the implementation organization chart</li> <li>• Clarify persons exclusively employed for this project described in this Chart; and describe the career background, expertise, area of specialty at work, qualification associated with the project, and other relevant information must be provided about the key personnel.</li> </ul>
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### Operational Implementation Organization

\*A concrete description should be provided by showing an implementation organization chart containing the following information for each project item.

\*Specify the name of the contact person in case of a joint application



(Annex 2) Outline of your organization

Note: If you form a team and apply, you must fill in this sheet for every participant.

\*Fill in the data of the latest accounting year in non-consolidated base.

Company name					
Title/name of the representative person					
Contact information	Tel:		Fax:		
	E-mail:				
Head office's address					
Date of establishment	Date:	Account closing month		Small- or medium-sized company	○ or ×
Capital	JPY in thousands	Number of Employees		(indicate by a circle if the company is a small- or medium-sized company)	
Description of business					
Major shareholders (equity ownership)	○○○ (company limited) (60%)				
	▽□○ (company limited) (30%)				
	□○○ (company limited) (1%)				

(The title and name of the person responsible for above information:

Head of the XX Department, XX XX(Name))

Please provide the information about all officers in the list below:

Full name in Katakana Full name in Chinese characters	Date of Birth			Sex	Company Name	Title
	Japanese era name Year	Month	Day			
(Example) Taro Keizai Taro Keizai	S 35	01	01	M	Keizai Sangyo Co., Ltd.	President & Representative Director

- (Note 1) Add the columns as appropriate if the provided columns are not sufficient to provide full information.
- (Note 2) Use one-byte characters and put a space between the first and last names to provide the names in Japanese phonetic symbols (katakana).
- (Note 3) Use two-byte characters and put a space between the first and last names to provide the names in Chinese characters.
- (Note 4) The letters T, S, H or R should be used to indicate the Japanese era names for the date of birth and the year should be indicated by a two-digit number.
- (Note 5) Use M for male and F for female in one-byte characters to indicate the sex.
- (Note 6) For a foreign national, use the alphabet characters to indicate the person's full name in the "Full name in Chinese characters" and the pronunciation of the name in Katakana in the "Full name in Katakana" column.
- (Note 7) For a joint application or a Project C, provide the information about all officers of each and every member (company or otherwise) of the group.

(Remarks) The size of the paper used shall be the Japan Industrial Standards A4 Format.

(Other documents)

- (1) Outline of the company or organization such as a brochure, etc.
- (2) The financial results, and statement of revenues and expenses (for the past one year)
- (3) The articles of association or the act of endowment
- (4) Other supporting documents (as needed)

(Form 3)

**Certificate of Conformance to Qualification Requirements for  
the Project of Development of Analysis and Estimation Technology for  
Characterization of Fuel Debris**

I confirm that the applicant satisfies the qualification requirements for this subsidized project.

No.	Requirements	Verification, etc.
(1)	Possessing the organization for properly conducting the relevant subsidized project. If the case to subcontract to or jointly implement with a third party a part of the subsidized project, for the creation of project outcome, the appropriate cooperation structure should be established to manage the project.	<State that the applicant satisfies the requirements with reasons in detail ><See Form 2 "1. (3) Project Implementation Organization" when necessary.>
(2)	Having the capacity, knowledge and experience required for conducting the relevant subsidized project.	<State that the applicant satisfies the requirements with reasons in detail ><See Form 2 "1. (3) Project Implementation Organization" when necessary.>
(3)	Having the management foundation required for smoothly conducting the relevant subsidized project and sufficient ability to control the funds and other resources.	<State that the applicant satisfies the requirements with reasons in detail ><See Form 2 "3. Financial basis and management structure when necessary.>
(4)	Being able to implement the project in accordance with all the applicable laws and regulations enacted in Japan, and to follow the appropriate accounting procedures in accordance with "Grant Policy for Subsidy for the Project of Decommissioning, Contaminated Water and Treated Water Management" and "Subsidized Project Administration Manual". <a href="https://en.dccc-program.jp/files/20230224man.pdf">https://en.dccc-program.jp/files/20230224man.pdf</a>	<State that you understand the statement on the left>
(5)	Not foreseen to be subject to Articles 70 and 71 of the Cabinet Order concerning the Budget, Auditing and Accounting.	<State that it does not apply to the applicant>
(6)	Not fulfilling any of the conditions stipulated in the "Guidelines for the suspension of subsidies controlled by the Ministry of Economy, Trade and Industry and the suspension of designation relating to the contracts". (January 29, 2003, No 1) First column, the second items in Attachment	<State that it does not apply to the applicant>
(7)	Research and development companies which may require approval under the Foreign Exchange Act for any exports and imports should have an establishment of internal compliance program(ICP) under a self-control system about the "standards for exporters, etc. to meet" provided for in Article 55-10 (1) of the Foreign Exchange and Foreign Trade Act.	<Describe meeting this condition in the Form 5>
(8)	Admitting that the results obtained through this project can be utilized by TEPCO Holdings, Incorporated, etc. to leverage them for Decommissioning, Contaminated Water and Treated Water Countermeasures if they request to do so under the condition that each party is in agreement. Not preventing the utilization by behaviors such as not admitting use of the technology intentionally, asking for unreasonable compensation, etc. in spite of receiving the request.	<State that it is possible>
(9)	In order to make sure of the above-mentioned item, preventing the situation that the results from this project are not able to be utilized for measures for decommissioning, contaminated water	<State that you understand the statement on the left>

	and treated water management at the Fukushima Daiichi NPS by ceding the above-mentioned condition in (8) to the successor if the applicant hands over the result to a third party and loses their own right to utilize it accordingly. In the case of a conflict which makes the applicant unable to make sure of the items in (8), the concerned parties must solve it by their own responsibility.	
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<Note for Filling out this Form>

In the verification columns, please write the reasons why you verified that the applicant meets the requirements. When filling it out, write "Attachment" if there are any verification documents attached to this form and if not, write "No attachment."

(Form 4)

Input/Output information on Project of Development of Analysis and Estimation Technology for Characterization of Fuel Debris

*\*Please refer to the reference document 1 as an example.*

ID	Requested projects	Offered projects	Contents (outline)	Time when the project is necessary	How to use the information	Remarks
				<i>*Influences of delay (if any)</i>		<i>Such as measures for the case when you cannot ensure the accuracy, cannot keep the timeline, etc.</i>

(Form 5)

Response to Security Export Controls on Project of Development of Analysis and Estimation  
Technology for Characterization of Fuel Debris

Response to Security Export Controls	
Circle one of the following three options: handled, not handled or not required.	
Handled	Submit relevant documents (export control regulations for security trade)
Not handled	State the date of submission:      Year      Month:
	State future plans
Not required	State reasons

(Form6)

## Personal Data Processing Consent Form

### Purposes

In compliance with the Act on the Protection of Personal Information, Mitsubishi Research Institute, Inc.("MRI") requests your consent to use your personal data to evaluate of proposal.

### Data Sharing

MRI may share your personal data with cooperating organizations.

### Data Retaining

There are cases in which it is necessary to retain your personal data for the necessary period according to the requirements of Japanese law.

### Data Management

MRI will protect your personal data securely, including taking necessary measures to prevent leakage, loss, falsification, etc.

I have understood the above and give my consent to MRI to use my personal data for the above Purposes, and to carry out the above Data Sharing and Data Retaining.	
Your Full name	
Your Signature	
Date	

If you wish to modify your personal data or withdraw this consent after submission, please notify us by email to [privacy@mri.co.jp](mailto:privacy@mri.co.jp).

Mitsubishi Research Institute, Inc.  
10-3, Nagata cho 2-chome, Chiyoda-ku, Tokyo, Japan  
+81-3-6705-6004, [privacy@mri.co.jp](mailto:privacy@mri.co.jp)

PMS05\_20180718

(Reference Document 1)

Table 1 Example of Organization of Input/Output information

ID	Requested projects	Offered projects	Contents (outline)	Time when the project is necessary	How to use the information	Remarks
1_1	Advancement of Fundamental Technologies for Retrieval of Fuel Debris and Internal Structures	Development of Technologies for Containing, Transportation and Storage of Fuel Debris / Development of fuel debris criticality control technology	Size and specification of container and criticality detection device	April 2017	Examination of possibility of fuel debris sampling technology	
1_2						
1_3						
1_4	⋮	⋮	⋮	⋮	⋮	⋮

(Reference Document 2)

Table 1 Example of implementation schedule with points of attention

■ Plan

■ Result & Achievement

• Please describe the example of using symbols etc.

• Please describe the established and revised date of project schedule.

• Please describe progress reported date.

MMDD,YYYY Established

MMDD,YYYY Revised

MMDD,YYYY Reported

Project name: ○○○○○

Item	Sub Item	Entity in charge	FY20XX						FY20XX						Progress Ratio	Situation & detail of progress (Latest)					
			Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			Oct	Nov	Dec	Jan	Feb
<p>Validation on XX</p> <ul style="list-style-type: none"> <li>"Item" means implementation items described in Guidelines for applying. each tasks in Item are described in "Sub item".</li> <li>Please describe items as the same grant applications in this form.</li> <li>Please clarify project operating entity in charge of each sub item if the project is implemented as consortium.</li> </ul>	(1) Survey of on-site situation and relevant technologies	...				Summary														0%	○○○○
	(2) Machinery design	...					Design completed													0%	○○○○
	(3) Machinery production	...							Production completed												
	(4) Establishment of test plan	...				Plan established															
	(5) Test implementation	...							on-site installation						Test completed						
	(6) Evaluation of test result	...																			
	(7) Result summary	...																			
Major milestones					Establishment of test plan completed				Test started			Intrim report		Test completed				Final report			

• Please describe the plan of each implementation item and the milestone of the item specified if necessary.

• Please describe the progress of each item compared with the plan.

• Please describe revised schedule which can recognize the revised points if there have a change of schedule.

• Please describe the progress ratio by numerical figure (%) if available.

• Please add and describe the item of alternative plan if necessary.

• Please describe the progress situation as status such as not yet started/ progressing/ completed and then add supplemental explanation.

• if problems such as delay occurred, please describe explanations such as the reason and content of the problem, revised project schedule of completion plan, the impact of whole schedule and other project progress etc.

• Please add other remarkable items and concerned items if have.

• Please describe the timings of meeting plan according to requirements of progress and result report explained in Guidelines for applying.

• Please describe the timings of major milestones according to the progress of technology development such as establishment of test plan, test starting, test finished etc.

(Reference document 3)

### Regarding Subsidized Cost Items

Regarding the cost items defined in “The Decommissioning, Contaminated Water and Treated Water Management Project Implementation Guidelines”, please refer to the following table.

Cost item	Description	Correspondence with “Subsidized Project Administration Manual”
I. Labor cost	Labor cost for working hours of those engaged in the project.	3. Accounting process on labor cost
II. Operating cost		
Raw material cost	Expenses necessary for purchasing raw material or material necessary for implementing the project ※Here, “raw material” denotes what loses its nature and is used for production or manufacturing of entirely new ones; “material” denotes what does not lose its nature and is a constituent element of produced items or manufactured items only through being put to new application.	7. Accounting procedures regarding supplies expenses
Supplies expense	Cost for the purchase of goods necessary for performing the project but not belonging to raw material cost (however, only those verifiable for the use in the project)	7. Accounting procedures regarding supplies expenses
Design, production and processing costs	The thing which the subsidized entity cannot design, produce or process, or the cost necessary for outsourcing what is appropriate and does not belong to Facility and equipment cost to other entity. (contract for work)	11. Accounting procedures regarding expenses for commission fee/outsourcing cost
Facility and equipment cost	Cost necessary for purchasing, production or installation of facility or equipment necessary for undergoing the project ※The actual contents of the “facility and equipment” shall be “buildings and accompanying facilities”, “structures” and “machinery and equipment” stipulated in “Ministerial Order regarding depreciable life of depreciable assets, etc.” (Fifteenth Order of Ministry of Finance, 1965).	6. Accounting procedures regarding equipment expenses and rental and hire fees 11. Accounting procedures regarding expenses for commission fee/outsourcing cost
Procurement cost	Cost for the thing which is necessary for undertaking the project and does not belong to facility and equipment cost (at the same time, can be usable more than one year)	6. Accounting procedures regarding equipment expenses and rental and hire fees
Survey cost	The cost for outsourcing to another entity what the subsidized entity cannot survey or analyze by itself or is not suitable to be conducted by the subsidized entity itself (contract for work)	11. Accounting procedures regarding expenses for commission fee/outsourcing cost

Outsourcing cost	Cost for outsourcing to other business operator what subsidized company cannot implement on its own or not appropriate to do so and does not belong to design, production and processing costs, facility and equipment cost or survey cost (contract for work)	11. Accounting procedures regarding expenses for commission fee/outsourcing cost
Travel expenses	Cost for domestic business travels and overseas business travels necessary for performing the project.	4. Accounting process for travel expenses
Gratuities	Gratuities necessary for performing the project (gratuities for external experts who attended meetings, seminars, symposiums, etc., gratuities for giving seminars, writing of drafts, cooperation with research, etc.)	5. Accounting process for meeting expense and rewards
Rent and hire	Cost for lease and rental of machinery, equipment and the like necessary for performing the project	6. Accounting procedures regarding equipment expenses and rental and hire fees
Other expenses necessary for undertaking the project	Cost for other expenses necessary for undertaking the project which does not belong to any other items Examples Commission fee: the cost for outsourcing to other entities of the cost for assistant personnel or of the cost for temporary staffing, which cannot be done or what is not appropriate to be done by the subsidized entity	10. Accounting procedures regarding assistant labor costs 10. Accounting procedures regarding other miscellaneous expenses 11. Accounting procedures regarding expenses for commission fee/outsourcing cost, etc.