Attachment 2

IAEA OSART review-results-list Recommendations

№	Assessment Field	Item	Findings by the IAEA (Report excerpts translated into Japanese)	TEPCO Response Policy
①	Leadership and management for safety	Power station group structure and functions	The power station needs to establish work safety policy standards, clearly convey standards that meet the risks to leaders, have the leaders understand those risks, and make sure the standards are met. Potential accidents and low-level events should be reported and recorded, and subjected to trend analysis.	● Standards (detailed scope of application and numeric values, etc.) corresponding to the risks shall be clarified for all work safety rules【standards to be created in December 2015】 ● Management observation (MO) shall be dispatched to observe the workers' movements during field patrols. Also, by coordinating activities conducted by the VERIFY teams*, record and analyze trends with understanding and complying of the rules onsite.【In Progress】 *Team for performing onsite checks to determine whether or not recurrence risks and rules are being complied to with regards to past work accidents and fires, and identifying problem areas.
②	Education and training	Employee certification training	The power station needs to employ a training method that complements lectures in order to maintain the effectiveness of lectures.	● In order to improve the effectiveness of lectures, "Instructor Guidelines (methods for conveying the objectives and expectations of lectures, and methods for promoting dialogue and giving lectures in an easy-to-understand manner by using diagrams and photographs)" will be created and instructors shall give lectures based on the Instructor Guidelines. 【To begin in December 2015】
③	Operation	Groups and functions	Operations Management needs to create a more comprehensive guideline for activities related to operation tasks	● Confirm the gaps with IAEA safety standards and make the following improvements: ・Guidance regarding activities related to operation tasks shall be drawn up while referring to U.S. guidance.【Scheduled to be enacted April 2016】 ・Clarify responsibilities and restrictions of positions below the shift supervisor and document in the manual.【Scheduled to be reflected on the February 2016 manual】 ・Consider method to verify (alcohol check etc.) operators's ability to work.【Under consideration】
④	Maintenance and technical support	Equipment certification	The power station needs to establish and implement a comprehensive equipment certification program.	● Manuals and guidelines shall be created for equipment critical for safety to continue with the following activities:【list being created】 ・A master list of equipment certification requirements, such as environmental resistance, shall be created and used for maintenance management. ・Any fluctuations in plant operation conditions and environmental conditions shall be periodically measured and a continual assessment shall be conducted to guarantee that equipment critical for safety meet certification requirements. ・If certification standards, such as environmental resistance are revised, the impact of the revision shall be
⑤	Items to verify regarding feedback for operating experience	Operating experience program effectiveness	The power station needs to implement an integrated system that manages all information regarding operating experience (OE), and adequately establish and implement elements of the OE program regarding reporting, selection, analysis, corrective action, trend analysis and effectiveness evaluation.	● A mechanism for gathering and analyzing minor events, such as close calls, for the entire power station to be built.【to be done in December 2015】 ● Operating experience (OE) information, including information from overseas, shall be continually applied to further improve safety and work processes.【OE information planned to be actively utilized starting in December 2015】

⑥	Emergency response plan and countermeasures	Emergency countermeasures	The power station, based on the current emergency plan (Nuclear Power Operator Disaster Prevention Plan), shall prepare its own emergency response plan which includes operation concepts and basic functions of all primary emergency response departments. Also, existing emergency procedures and guidelines shall be completed, and its details shall be comprehensive and clear. There is also a necessity to enforce standardization.	● A basic plan for handling a state of emergency and nuclear emergencies shall be created along with individual procedures that clarify how each functional unit is to respond.【to be done in December 2015】 ● Training will be continually implemented in a planned manner based on the emergency response plan and individual procedures. 【To be implemented after creation of the procedures】

IAEA OSART　review-results-list　Proposals

№	Assessment field	Item	Findings by the IAEA (Report excerpts translated into Japanese)	TEPCO Response Policy
①	Training and certification	Employee certification and training	The power station should consider creating pass or fail criteria for periodic Main Control Room (MCR) operator evaluations	● A standard for determining whether an operator is fit to continue work in his/her position shall be created and used. 【to begin in December 2015】 ● Methods for re-evaluation and follow-up training for employees that do not meet these standards to continue
②			The power station should consider establishing an official on-going training program based on systematic education and training methods for maintenance and engineering personnel (radiation protection, chemistry, fuel management, etc.)	●In order to maintain and improve performance, training to be implemented constantly will be added to the changes and training for new equipment to be conducted by each department. 【education and training criteria will be determined in December 2015】
③	Operations	Fire protection program	The power station needs to make a decision for organizing onsite fire brigade, and onsite dedicated fire brigade re-training and protection in order to guarantee an effective response to fire alarms.	● Upon reviewing the meeting point with the operator, conduct training so that the onsite fire brigade's firefighting personnel can arrive at the scene of fire in the shortest amount of time and make any necessary improvements. 【to be reflected in December 2015】
④	Maintenance and technical support	Configuration management	The power station and the head office need to officially approve the design rights function and establish methods for ensuring that important plant design documents are complete, reliable, and available, and also that detailed design documents can be stored for a longtime while the power station is in operation.	● To understand the systems and equipment designs, equipment drawings are to be reorganized and confirmed so that the location of systems and equipment shown in the documents match the actual equipment. This should guarantee that the manufacturing and operations are maintained as designed. 【Reorganization to start in October 2015】
⑤	Radiation protection	Radiation task management	The power station needs to examine what would be the appropriate organization and common practices for contamination management.	●During work, contamination inspectors will always be placed at the exits of contaminated areas to inspect workers and objects for contamination. (only objects were inspected previously) 【To be implemented from November 2015】 ●Improve the area so that workers can be checked for contamination before using toilets in controlled areas. 【To be implemented from November 2015】 ●Enhance contamination inspection at the exit of controlled areas. (review frequency of inspections for supplies used in the controlled area and start contamination inspection when transporting materials from the large freight entrances) 【To be implemented from November 2015】
⑥		Occupational exposure management	The power station needs to examine how to improve the organization and common practices according to ALARA (As Low As Reasonably Achievable) principles.	●Set a value and manage personal dose. 【done November 2015】 ●Devise measures for protecting workers who engage in sampling during accidents from radiation, to be reflected in the procedures. 【started November 2015】
⑦	Emergency response plan and countermeasures	Emergency countermeasures	The power station needs to examine how to reconfigure and improve the TSC (technical support center) layout based on operating experience, training and designs of other similar facilities.	● The layout of the seismic isolated building will be reviewed to design new areas for main office personnel and work areas for each division. The work areas of each work unit will be changed, such as using existing conference rooms inside the seismic isolated building 【review layout: completed November 2015】

⑧	Severe accident management	Procedures and guidelines	The power station needs to update EOP (Emergency Operating P), SOP (Severe Accident Operating Procedures) and AMG (Accident Management Guide) in order to expand the scope of documents to cover accidents at spent fuel pools during operation shutdown and design extension conditions. The plant has AOP (Abnormal Operating Procedures) and fixed response plans noted in the tsunami AMG, but these plans need to be formally incorporated into EOP/SOP.	● The findings with regards to EOP/SOP/AMG (including the current AOP and details already mentioned in tsunami AMG) to be organized and EOP/SOP/AMG to be revised are to include procedures that contain policies for responding to shutdown accidents and spent fuel pool accidents. 【procedures to be drafted in December 2015】
⑨		Verification and confirmation of procedures and guidelines	The power station should consider creating an official approval procedure regarding the feasibility of these procedures when an accident occurs.	● Narrow the gap between world standards (IAEA, BWR-OG) and the validation and verification of EOP/SOP/ AMG revisions.【An adequacy assessment has been underway since October 2015】 ● Validation and verification for each guide of EOP/SOP/AMG revision will be created while referencing overseas case studies and following IAEA safety standards guidelines. 【The adequacy confirmation guide has been created. Verification guide planned to be created by March 2016】

IAEA OSART　review-results-list　Best Practices

№	Assessment field	Item	IAEA findings (Report excerpts translated into Japanese)	Detailed examples of findings
①	Training and certification	Employee certification and training	The power station holds training to prepare and ready design extension conditions to improve performance.	● The training simulator of Units 6 and 7 has been remodeled to simulate severe accident conditions to improve the skills of operators. ● At the Fukushima Daiichi NPS, special training is being implemented in order to deal with the physical and mental stress that operators experience during a severe accident. ● For recovery team training, workers practice drills carrying supplies with them (full facemasks and protective clothing, etc.) assuming high-dose and severe environments. ● More than 100 employees have been certified to use special vehicles during emergencies (fire trucks, debris removal vehicles, etc.), and those employees periodically take part in training.
②	Operations	Departments and functions	Organizational relicensing training period	● Operators undergo the following training on how to move between units so that they can understand the characteristics of each unit. - Unique functions and characteristics of each unit - Characteristics of remodeled places and locations where construction is underway - Differences in safety regulations for each unit
③		Fire protection program	Temporary flammable material management	●Flammable materials are being temporarily managed well in the following manner - When contractors temporarily store flammable materials, they must submit an application to the TEPCO group in charge that has jurisdiction over the area and receive a permit. - After a permit is obtained, the flammable materials storage location map information is updated so that the group in charge can perform a daily patrol inspecting the location based on the information on the field map and make corrections as necessary.
④	Maintenance and technical support	Power source related power station renovations	Flexibility and capability of alternate AC/DC power systems used to restore power during design extension conditions	● Emergency power sources, such as mobile gas turbine trucks and power-supply trucks, etc., have been positioned on high ground. ● Furthermore, cables are always connected to the emergency power supply and the power station so that these equipment can be started up in a short period of time.
⑤		Civil engineering structures safety reinforcement measures	Power station protection measures against tsunamis	● The maximum height of the tsunami that the power station is assessed, is at 8.5m (runup height) but a seawall 15m high has been constructed in order to implement conservative tsunami countermeasures. ● Furthermore, considering possible flooding on the premises of the power station, damp proof panels and watertight doors have been installed around and inside each reactor building, and the penetrability of wires have been waterproofed, making it a model example of tsunami countermeasures.
⑥	Emergency response plan and countermeasures	Emergency response	Methods for enhancing tracking of the situation	● A chat system (system that converts speech into text to share) and a common operating picture (data that puts power station parameters into visualized data) is being used as a method of communication between each work unit during an emergency to share accurate information. ● Furthermore, this information is shared with TEPCO head office, the national government, the Nuclear Regulation Agency, and local governments, etc. for organized situational awareness.
⑦		Emergency countermeasures	Intensive simulation training program for emergency response teams	● The power station has all of the emergency response departments do intense training every month. ● Training scenarios deal with complicated problems and severe conditions over a wide area in a systematic manner. Training is also conducted as realistically as possible. ● The participation rate of the power station workers for training has also reached a high level.

⑧	Severe accident management	Severe accident management analysis support	Use of computation for supporting event response	● The following computation system is being built in order to check the power station's situation during an emergency. - Software tools that can calculate the time until TAF (Top of Active Fuel) based on scram time, current RPV (reactor pressure vessel) coolant injection speed, RPV water level, RPV pressure, and PCV (reactor containment vessel) input information are being developed. - Software tools that can assess the impact of rising water temperatures in the SFP (spent fuel pools) based on input data of the temperature inside of the reactor and water levels are being developed. - Software tools that can estimate when to vent and the amount of discharged radiation are being developed.
⑨		Use of PSA, PSR and OEF	Analysis is being used proactively in order to extend the plant design to handle design extension conditions	● PSA (probabilistic safety assessment) and other analyses are being conducted to determine latent advantages to design changes during the design concept stage. ● For example, during spare analysis that was conducted, it was determined that doses to which MCR operators and onsite response personnel are exposed to can be greatly decreased by employing filter air holes, iodine filters and controlling the pH of the primary containment vessel. ● Based on this insight, iodine filters were installed, and a system was designed to use the MUWC (make-up water condensate system) to inject sodium hydroxide into the primary containment vessel in order to control pH.