Updates of the Accident at the Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi Nuclear Power Plant[1]

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Madam Chairperson
Excellencies,
Ladies and gentlemen,

It is a great pleasure and honor for me to update to you the onsite and offsite situations after the accident at the Fukushima Daiichi Nuclear Power Plant.

The Great East-Japan Earthquake and the resulting tsunamis struck the Fukushima Daiichi Plant on March 11, this year and caused a serious nuclear accident. The fact that this accident has raised concerns around the world about the safety of nuclear power generation is a matter which we take with the utmost seriousness and remorse. At the same time, I would like to express Japan's sincere gratitude to you all as Japan has received support and expressions of solidarity from around the world in the face of this hardship.

The Government of Japan has already presented two reports to the IAEA on the course of events based on the determination that we will disclose to the international community all the information related to this accident in swift and accurate manner.

In the following, I would like to give you a quick overview of onsite and offsite situation at Fukushima.

First, the onsite situation. When the earthquake hit the plant, unit 1 to 3 were in operation and unit 4 was in a maintenance mode. Sensing the earthquake, the operating units were shutdown automatically and as external power sources were interrupted due to the earthquake, emergency diesel generators of all units and shutdown cooling systems supported by them were started successfully.

[1] Presented at the IFNEC 2nd Executive Committee Meeting held at Warsaw, Poland on September 29th, 2011.

In 40 minutes or so, huge tsunamis flooded the site to the level of 4m height and the emergency diesel generators became inoperable as the plant was not prepared for such flooding and therefore the shutdown cooling system and the path to the ultimate heat sink became unavailable.

Although alternative core cooling systems started instantly and worked for some time, their capability was eventually lost due to the depletion of DC batteries. According to severe accident management guides, operators were requested in such occasion to depressurize the Reactor Pressure Vessel and start the fire pump to inject water into the core and vent the Containment Vessel to assist the core cooling. Operators could not do so timely at this time, however, presumably due to insufficient preparation and training.

Consequently the core melting started, the hydrogen that was generated due to zirconium-water reaction in the core leaked out to containment vessel and then to reactor building as the pressure and temperature of containment vessel became high enough for damaging the containment vessel penetration seals and the damaged seals provided leak path for hydrogen, and the upper parts of reactor building of unit 1 and 3 were destroyed due to hydrogen explosion.

The fission products and hydrogen leaked out in the containment vessel were released in a large scale to the environment owing to the damage of the containment vessel due to the delay in containment venting in most cases. In the cases of unit 1 and 3, however, some of fission products were trapped in the water of suppression pool in the course of wet-well venting operation.

Currently the damaged cores are being cooled by the injected water, which is leaked out to the bottom of reactor building from suppression pool through the leak path and is pumped up and decontaminated before being injected into reactors again. As the temperature of damaged fuel is low, the release rate of radioactive materials is quite low. We are pursuing to attain both the cold shutdown state and the reduction of the total amount of contaminated water in the reactor building before the end of the year.

After the attainment of these goals, we will start the mid and long term activities of removing spent fuel and then the damaged fuel from these reactors so as to be able to start the decommissioning of the plant. We have just started the deliberation of technologies necessary for such activities and planning of their R&D.

Second, the offsite issues. As shown in this figure, a large area around the site was contaminated owing to the large release of radioactive materials. To limit existing and potential annual exposures of a people due to the contamination, the Government is currently pursuing a) the restriction of inhabiting in the area where expected annual additional dose is larger than 20 mSv, b) strict shipping control for agricultural products, animal products and marine products through comprehensive radiological surveys and c) step-by-step decontamination of the land.

The government strategy for decontamination is composed of three directions. The first is to reduce the areas where estimated annual additional exposure is larger than 20 mSv through step by step decontamination activities. The second is to reduce the annual additional exposure to below 1 mSv on a long term basis in the areas where it is currently below 20 mSv but above 1 mSv. The third is to recommend municipalities in the area where annual additional exposure is below 1 mSv to focus decontamination activities on the hot spots.

In the inhabitation area, municipal governments are leading the execution of such decontamination activities. Asking experts for advice, they have established “decontamination guideline”, and have been promoting regional decontamination in highly contaminated areas and spot-wise decontamination in relatively low contamination areas, identifying hot spots such as those locations where sludge in the drains or gutters has collected. Special attention has been paid for the decontamination of schools including play grounds so as to reduce the exposure of children as low as practicable. As a result, the effective annual additional exposure at most schools in this area has been reduced to 1 mSv already.

As for evacuated areas, the Government is promoting a set of demonstration decontamination projects to test the effectiveness of various decontamination approaches, and prepare guides for executing safe, effective and efficient decontamination activities. Utilizing such guides, the Government will plan and promote a large scale decontamination activity before the end of the year, in cooperation with the municipal governments, so that more than 150, 000 of people can return to home as soon as possible.

One of the biggest challenges for the Government and municipalities is to find places for temporary storage facility to store contaminated soil and waste collected by such decontamination activities. The Government hopes that each municipality or community will find the place for the facility by themselves, promising that a large-scale interim storage

facility that accepts both soil and waste will be available in a few years. We believe it also important to introduce waste volume reduction technology such as mobile soil decontamination facilities before or after the temporary storage of contaminated soil.

Before closing, I would like to express our deepest gratitude to you all for a wide array of support and suggestions, once again. As we should intensify the decontamination of highly contaminated area from now on, your continued support will be most helpful.

Thank you for your kind attention.