VII. Consideration for strengthening standards and other matters

1. Efforts being made by the Nuclear Safety Commission (NSC)

(1) Presentation of advice and basic policy by the NSC

After June, the NSC continues to give various advice and opinions on various kinds of technical matters, etc. to the Nuclear Emergency Response Headquarters and other entities in response to their request, in accordance with the law on Special Measures Concerning Nuclear Emergency Preparedness, in order to prevent the expansion of the accident and to reduce the risk of public radiation exposure. (Attachment VII-1)

The NSC has also outlined the basic policy as below, recognizing the responsibility of openly explaining the background of its past advice, etc. in order to achieve accountability of their own.

Upon presenting these advice and basic policy, NSC has been taking actions based on the views presented by the International Atomic Energy Agency (IAEA) and the International Commission on Radiological Protection (ICRP).

The NSC applied the concept of a “Reference Level” used at the “Emergency Exposure Situation” and the “Existing Exposure Situation” for the first time as the radiation protection measures. This concept was defined first by the ICRP’s 2007 Recommendation and in more details, by the ICRP issued reports (Publ. 109 and Publ. 111) afterward. NSC would like to express our gratitude for ICRP to make every supports at the occasion of the accident of the Fukushima Dai-ichi NPS, in particular providing necessary message [Attachment VI1-1] and documents on how to apply the “Reference Level” on time. These documents were quite useful and appreciated in order to advice on the radiation protection measurements for the accident of TEPCO ‘s Fukushima Dai-ichi NPS.

Insofar as the existing exposure situation may continue for quite some time into the future, it is expected that the Radiation Review Council work on incorporating technical standards for each issue based on this situation into laws and ordinances, consultation, etc. requested by the Heads of relevant administrative organizations in the future, The NSC has taken the above-mentioned action as an urgent countermeasure to the nuclear accident.

1) Near-term policy to ensure the safety for treating and disposing contaminated waste around the site of Fukushima Dai-ichi Nuclear Power

Plants (on June 3, 2011) (Attachment VII-2)

The NSC has been giving advice over the approach for the immediate future related to the handling of contaminated wastes such as debris and the secondary byproducts of sewerage treatment process.

The waste affected by this accident includes a wide range of types, such as secondary byproducts of the water purification process, incinerated ash, trees and plants, and soil generated as a result of decontamination activities, etc. It can be expected that handling will include reuse, incineration, temporary storage in provisional locations and then final disposal, etc.

It is important that safe and proper treatment and disposal, etc. of these wastes are carried out based on a common policy. Thus, on June 3, the NSC presented "Near-term policy to ensure the safety for treating and disposing contaminated waste around the site of Fukushima Dai-ichi Nuclear Power Plants" as an approach for the immediate future that ensures safety related to the 1) reuse, 2) treatment and storage, etc., and 3) disposal of wastes affected by this accident, based on its approach thus far regarding the treatment and disposal, etc. of radioactive waste.

The relevant ministries and agencies are undertaking specific responses in accordance with this policy, including "The Approach to Immediate Handling of Secondary Byproducts of Water and Sewage Treatment in Which Radioactive Materials Were Detected" released by the Nuclear Emergency Response Headquarters on June 16 and the "Policy on the Disposal of Disaster Waste in Fukushima Prefecture" compiled by the Ministry of the Environment on June 23.

2) Basic Policy of the Nuclear Safety Commission of Japan on Radiation Protection for Termination of Evacuation and Reconstruction (on July 19, 2011) (Attachment VII-3)

The NSC has been giving various kinds of technical advice about radiation protection to residents in the surrounding areas, etc. Also, the NSC released "Commission's views as the basis of advices on radiation protection" to the public on May 19, recognizing that it should be accountable with regard to the approach of the NSC concerning the advice it had been providing until that time.

Furthermore, in the light of subsequent situation, considering necessary measures on various kinds of radiation protection, "Basic Policy of the

Nuclear Safety Commission of Japan on Radiation Protection for Termination of Evacuation and Reconstruction," which contains measures stated below and so on, was released on July 19.

- Radiation protection measures are to be taken in accordance with the exposure situation, specifically emergency exposure situations and existing exposure situations.
- It is important to set up an environmental monitoring system and an individual radiation dose estimation system, and furthermore a health assessment system that is based on the previous two systems. These systems can constitute the basic grounds for administrative decision to conduct decontamination or other remedial actions and so on, to lift evacuation measures, and so on.
- Facilitating people's involvement in the radiation protection while planning radiation protection measures, such as decontamination or other remedial actions.

In particular, what is necessary when lifting an evacuation designation is the transition from an emergency exposure situation to an existing exposure situation. In light of this, the followings and so on should be implemented;

- Taking into account an overall consideration of radiation exposure from all estimated pathways
- Following the recommendation of ICRP with regard to the exposure dose, adopting a lower past within the limit of 1~20mSv per year as reference level, and setting a target of 1mSv over the long term, conducting proper protective measures including decontamination or other remedial actions;
- And, when making administrative decisions related to radiation protection, giving comprehensive consideration to various aspects such as health, environment, society, economy, ethics, psychology, politics, etc. Also, maintaining transparency in the deliberation process and conducting sufficient consultations with stakeholders;

3) Basic Policy on Radiation Monitoring from Now on (on July 21, 2011) (Attachment VII-4)

As the basic approach to radiation monitoring from now on, the NSC has presented the "Basic Policy on Radiation Monitoring from Now on" on July 21. It indicates objectives, items and points of concern for radiation monitoring. The objectives are explanation of a detailed situation of

radiological contamination of the inhabited areas and places; the evaluation of the radiation dose of the surrounding population exposed up to now from the onset of the accident and the estimation of future radiation dose to be exposed; planning and decision on measures to reduce exposure doses; and reviewing and judgment on lifting/modification of evacuation areas, etc. Based on this, a "Comprehensive Monitoring Plan" was made on August 2 at the Monitoring Coordination Conference.

4) Standpoint of the Nuclear Safety Commission for the Termination of Urgent Protective Actions implemented for the Accident at Fukushima Dai-ichi Nuclear Power Plant (on August 4, 2011) (Attachment VII-5)

On August 4, the NSC was asked its opinion by the head of the Nuclear Emergency Response Headquarters regarding the modalities of zones in which emergency measures should be conducted, including re-examination of the zoning itself, at the Evacuation-Prepared Areas in Case of Emergency, Deliberate Evacuation Areas and Restricted Areas, and regarding the matters of which residents within the zone should be made aware, considering the improving situation at TEPCO's Fukushima Dai-ichi NPS.

Upon receiving this, the NSC presented the "Standpoint of the Nuclear Safety Commission for the Termination of Urgent Protective Actions implemented for the Accident at Fukushima Dai-ichi Nuclear Power Plant" on the same day. Within this, a basic approach to the lifting of emergency protection measures was provided, as indicated below.

- In consideration of the purpose of emergency protection measures, there is no necessity or justification for continuing such measures.
- Before lifting the emergency protection measures, establish the timing, method, content and other necessary preparations in an appropriate manner.
- When lifting the emergency protection measures and making new plans for protection measures for proper control and decontamination/remedial actions, etc., make a framework in which relevant local authorities/residents, etc. can participate, and operate them properly.

Along with presenting these basic concepts, it specifies ideas regarding the lifting of the designation for each type of area (evacuation-prepared area in case of emergency, deliberate evacuation area and restricted area) where

major emergency protection measures are now applied, on the basis of those concepts.

Based on 2) and this standpoint, the Nuclear Emergency Response Headquarters concluded “Concept on Re-Examination of Evacuation Zone, etc.” onAugust 9.

(2) Review on Regulatory Guides, etc.

1) Review on Safety Examination Guidelines

Upon conducting a safety examination, the NSC developed Regulatory Guides, such as “Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities” (hereinafter referred to as “Regulatory Guide for Reviewing Safety Design”), the “Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities” (hereinafter referred to as “Regulatory Guide for Reviewing Seismic Design”), and so on as a baseline for the consideration of safety validity. Also, the report of the Special Committee for Nuclear Safety Standards and Guidelines and Bylaws of the Committee on Examination of Reactor Safety and Committee on Examination of Nuclear Fuel Safety are used in a complementary fashion. Collectively, these are referred to as the “Regulatory Guides.”

The NSC adopted the “The Basic Policies for the Near-Term Initiatives of the Nuclear Safety Commission” on December 2, 2010, to represent a basic vision for nuclear safety, including 1) expressly stating the basic rules of nuclear safety, 2) examinations towards the clarification of safety goals and the utilization of risk information, 3) conducting upgrades, etc. of severe accident countermeasures at light water nuclear power reactor facilities, to further improve the operation of the nuclear safety regulation system, making considerations, etc. over the concept of development and revision for the Regulatory Guides and conducting environmental improvement to support nuclear safety regulation and so on. Consequently, it had been decided, and partially started, to discuss and exchange opinions with external experts over basic rules of ensuring safety and enhancing safety examinations, etc. when the Great East Japan Earthquake happened on March 11.

In the recent accident at TEPCO’s Fukushima Dai-ichi NPS, because of the long period of loss of all AC power and the cooling functions of the reactors

due to the earthquake and tsunamis, it had reached a serious situation that damage to the core of the reactor led to a large amount of radioactive materials to be emitted.

The NSC believes that there is a need for fundamental revision of measures of safety assurance based on knowledge accumulated so far, knowledge concerning earthquake and tsunamis at this time and lessons learned through the accident. On June 16, the chairman of the NSC indicated to the chairman of the Special Committee of Nuclear Safety Standards and Guidelines that revision of the Regulatory Guides should be considered, with the contents of the discussions to be organized and reported on by roughly March 2012.

Upon receiving this indication, the Special Committee of Nuclear Safety Standards and Guidelines held a conference on June 22 and set up a Subcommittee for Examining the Regulatory Guide for Reviewing Safety Design and a Subcommittee for Examining Earthquake/Tsunami Related Guidelines to facilitate technical and effective deliberation when the specific study is conducted.

a. Regulatory Guide for Reviewing Safety Design, etc.

At the Subcommittee for Examining Regulatory Guide for Reviewing Safety Design which was set up for studying matters to be reflected in the Regulatory Guide for Reviewing Safety Design and related guidelines, and other matters to be recognized as important, studies on measures and so on addressing the loss of all AC power lines and cooling functions of a reactor are been conducting. The subcommittee held meetings three times so far (first meeting: July 15; second meeting: August 3; third meeting: August 23).

At first, considerations on the loss of all AC power lines have started to be studied at this subcommittee. In order to study this, it was scheduled to figure out the incidence and progress of the situation of losing all AC power lines at TEPCO's Fukushima Dai-ichi NPS. The aim is to investigate the background to the point that considerations of long-term loss of all AC power lines were not necessary at Regulatory Guide for Reviewing Safety Design since 1977 and the concept of the evaluation of safety for earthquake resistance and tsunami resistance at external and internal power supply, etc., and based on this, to deliberate regulatory countermeasures on loss of all AC power lines including

revision of guides on reviewing safety design.

b. Earthquake/Tsunami Related Guidelines, and so on

At the Subcommittee for Examining Earthquake/Tsunami Related Guidelines, and so on, which was set up for studying the matters to be reflected in the Regulatory Guide for Reviewing Seismic Design and related guidelines and other matters to be recognized as important, examination and analysis of knowledge, etc. about the earthquakes and tsunamis this time are being conducted, with three meetings held thus far (first meeting: July 12; second meeting: August 3; third meeting: August 25).

At this subcommittee, the examination concerning tsunamis will be conducted first, with the background of past assessment of tsunamis at the NSC, the viewpoint of the Central Disaster Prevention Council and circumstances of examination at the Japan Society of Civil Engineers also questioned and considered. At the same time, provisions in the Regulatory Guide regarding tsunamis (impacts other than from tsunami-earthquakes and earthquake are included), matters of residual risk and the practical applecation etc. of the Regulatory Guide for Reviewing Seismic Design and its manual will be deliberated.

2) Review on Emergency Preparedness Guidelines

In the basic plan of emergency preparedness defined by the Central Disaster Prevention Council due respect has been to be paid to, the “Regulatory Guide for Emergency Preparedness for Nuclear Facilities” (Hereinafter referred to as “Emergency Preparedness Guidelines”) has been stated as being worthy of esteem regarding specialist and technical matters. The NSC organized points related to specialist and technical matters related to emergency measures as the Guideline to be used when national government, local governments and business operators plan countermeasures to nuclear disasters and operate protective measures in case of emergency, etc. As stated in the “The Basic Policies for the Near-Term Initiatives of the Nuclear Safety Commission” last December, examination was planned to be conducted to adapt global standards for Emergency Preparedness Guidelines and necessary consideration was being made appropriately

when the Great East Japan Earthquake occurred on March 11.

The NSC has been examining a review of Emergency Preparedness Guidelines and conducting necessary revisions on them appropriately in light of the concept shown by the International Atomic Energy Agency (IAEA) and the International Commission on Radiological Protection (ICRP). This time, in light of the accident of TEPCO's Fukushima Dai-ichi NPS, the NSC considered that it is necessary to adopt lessons learned through the accident and the international way of thinking regarding this matter, and fundamentally review emergency measures. The chairman of the NSC indicated to the chairman of the Special Committee on Disaster Countermeasures on Nuclear Facilities on June 16 that matters to be reflected in Emergency Preparedness Guidelines and related guidelines needed to be studied and reported.

Upon receiving this indication, the Special Committee on Disaster Countermeasures on Nuclear Facilities was held on July 14, after which a working group was established for studying Emergency Preparedness Guidelines to support deliberation technically and efficiently, upon undertaking specific consideration in that Committee. The working group had been held three times so far (first meeting: July 27; second meeting: August 12; and third meeting: August 26).

Upon reviewing Emergency Preparedness Guidelines, it was decided to advance discussions taking into consideration the circumstances of the accident and the investigation and examination of the Investigation Committee on the Accident at the Fukushima Nuclear Power Stations of Tokyo Electric Power Company and at the same time, to consider the recommendations of the ICRP and the safety requirements of the IAEA, etc. and to undertake deliberations while also taking into account an investigation into nuclear emergency countermeasures in other countries as well as the actual state of affairs and the effectiveness of measures, etc. in Japan.

Besides the technical and specialist matters in the Emergency Preparedness Guidelines, there are also being conducted deliberations that include a discussion of the basic orientation and other matters regarding nuclear emergency countermeasures. It is intended to advance deliberations on the Emergency Planning Zone (EPZ) as a

priority matter for the present time, to compile an approach towards a review of EPZ by roughly October, and to formulate an interim compilation by roughly March, 2012.

(3) Responses towards Severe Accident Countermeasures

The NSC has held an "Exchange of Opinions with External Specialists to Promote Basic Policy of Present Measures" twice before the accident in Fukushima Dai-ichi NPS (on February 16 and March 2, 2011), in response to the decision on February 3, 2011 of promoting exchanges of views with external specialists and so on, regarding the basic policy of ensuring safety, (as mentioned above in (2), 1), and has been conducting discussions on severe accident countermeasures.

With regard to this accident, based on the fact that severe accident countermeasures, which had been undertaken since before as a voluntary activity of operators according to "Accident Management as a Measure against Severe Accidents at Power Generating Light Water Reactors" (decision made by NSC in May 1992), had not necessarily functioned effectively, and also based on the fact that emergency responses were mostly terminated after the transition from "Step 1" to "Step 2" regarding the accident at Fukushima Dai-ichi NPS, the NSC conducted the above-mentioned exchange of views on August 29 and resumed discussions on enhancing severe accident countermeasures.

2. Efforts made by the Nuclear and Industrial Safety Agency (NISA)

1) Efforts to strengthen domestic standards

NISA, which is developing safety standards after the stage of detailed planning, in August organized a deliberative structure that includes the Japan Nuclear Energy Safety Organization, an incorporated administrative agency, and is now examining a revised plan for standards, based on the discussions at the NSC about revisions in the "Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities", to ensure these discussions are reflected into standards after the stage of detailed planning, based on the discussions at the NSC over these revisions.

Based on the point of argument, etc. regarding the review of the NSC Regulatory Guide scheduled to be reported in roughly March 2012, concrete measures for strengthening standards are scheduled to be taken at as early a time as possible by Nuclear Safety and Security Agency (tentative), which is expected to be established in April 2012.

2) Efforts to strengthen international standards

NISA and the Japan Nuclear Energy Safety Organization are analyzing 28 lessons and proposing a plan to revise the IAEA's Seismic Design Guidelines (NS-G-1.6) and Siting Guidelines (DS433). They are also working, in cooperation with the International Seismic Safety Center of the IAEA, on developing together technical documents (a safety report and a technical document) that compile examples of concrete applications of these guidelines, taking into consideration the latest technical information on the recent accident, the status of the preparation of standards by academic societies in the field of nuclear energy, the results of research on the earthquake/tsunami conducted by Japan Nuclear Energy Safety Organization and others.