<Reference>

Fukushima Nuclear Accident Summary & Nuclear Safety Reform Plan

March 29, 2013

Tokyo Electric Power Company, Inc.

Contents of Report

Fukushima Nuclear Accident Summary (Part 1)

[Main Points]

- During the design stage and afterward, ample consideration was not given to common cause failures originating in external events, which led to a severe situation where all power sources were lost and almost all safeguard facilities lost function.
- Continuing efforts to reduce risks were not ample, including the collection, analysis and utilization of information concerning safety enhancement measures and operational experience in other countries or the consideration and implementation of new technical knowledge. Preparation for a severe accident was somewhat deficient in terms of facility and personnel deployment.

(Reference: Root Cause Analysis, Interim Report, December 14, 2012)

* Deficiencies in severe accident countermeasures
  Believing that the likelihood of a severe accident occurring due to a loss of all power sources was sufficiently low, and, furthermore, that there was little need to make further safety improvements, the augmentation of severe accident measures stagnated.
* Deficiencies in tsunami countermeasures
  Despite tsunami being a phenomenon about which knowledge is still inadequate, the possibility of a tsunami strike exceeding expectations was judged to be low and defense in depth preparations were not carried out.
* Shortfall in accident response preparation
  Not believing that a severe accident or simultaneous disasters could occur at multiple units, TEPCO's was not fully prepared in the field for responding to such an accident.

Fukushima Nuclear Accident Summary (Part 2)

The operator bears responsibility for operating nuclear power equipment with its special risks. Based on a safety awareness that goes far beyond that seen in general industry, the operator thus occupies a position wherein it must always be looking at the operational experiences and technological progress around the world, acquire solid technological capabilities, and continue to make efforts to reduce risks every day.

Accordingly, the cause of the accident should not be treated merely as a natural disaster on the grounds that an enormous tsunami was something difficult to forecast. We believe it is necessary to seriously come to terms with the fact that TEPCO failed to avoid an accident which might have been avoided through ample preparations made in advance which fully utilized human knowledge.

<Reference: Report> 1: Overview

Issues Within TEPCO's Organization at the Time (Part 1)

To prevent severe accidents caused by a variety of initiating events not limited to tsunami, it is necessary to bring to light and solve the issues immanent within TEPCO's organization which was not fully prepared to deal with such accidents.

Based on an analysis of the accident's root causes, it was determined that issues of imperfect "safety consciousness," "technological capability" and "ability to promote dialogue" were factors underlying the accident, and that, in the Nuclear Power Division, "preparations for accidents were imperfect owing to the assumption that safety was already guaranteed and perception that capacity factors, etc. were management's most important task."

Furthermore, a "negative spiral" of structural issues furthering such a perception had taken hold in the Nuclear Power Division.

Issues Within TEPCO's Organization at the Time (Part 2)

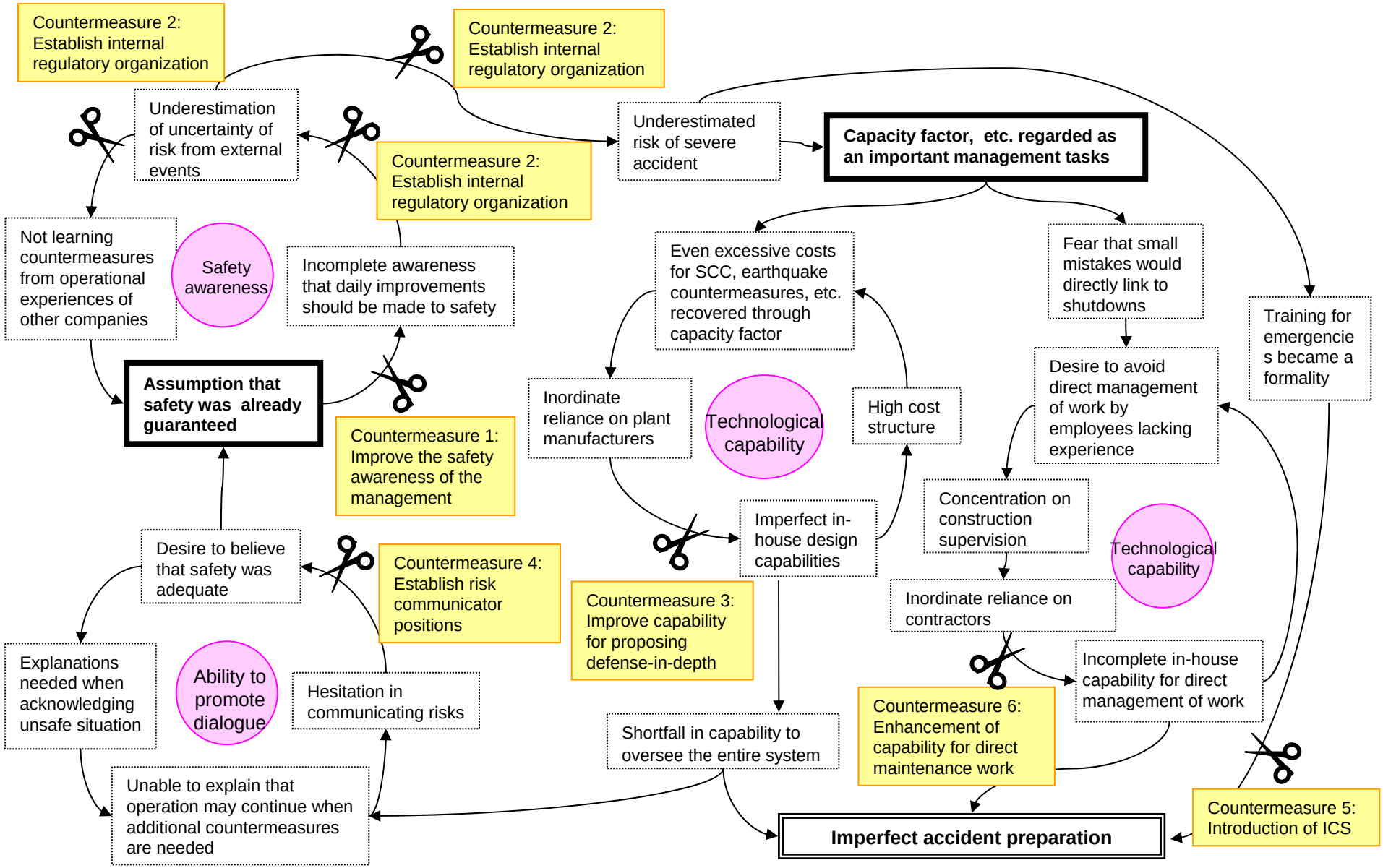
The Fukushima Nuclear Accident was not brought about solely by issues associated with a negative spiral within the Nuclear Power Division.
It is presumed that for a company handling the special risks inherent in nuclear power generation, TEPCO's entire management at the time was overly optimistic about risk management.

By making effective use of expertise and findings from third parties independent of the Nuclear Power Division, TEPCO's entire management will improve and strengthen functions for monitoring and overseeing how the Nuclear Power Division manages nuclear safety risks (nuclear disasters, etc.).

<Reference: Report> 2.5: Negative Spiral of Shortfall in Accident Preparation

Ref: Severing the Negative Spiral of Shortfall in Accident Preparation

Preparations for accidents were imperfect owing to the assumption that safety was already guaranteed and the perception that capacity factor, etc. were management's most important task



Countermeasure 1: Reform Starting from Management

[Main Points]

*The management must be strongly conscious of the special risks inherent in nuclear power, be aware that nuclear power operators bear responsibility for safety, and demonstrate leadership in order to raise safety awareness throughout the organization.

* Nuclear leaders (executive officers, site superintendents, corporate general managers) must personify appropriate behavior, be evaluated, and work to improve their own abilities.

* Management needs to take the initiative to imbue a safety culture throughout the organization.

[Countermeasures]

* Increase knowledge about the safety required for nuclear power, and implement our own nuclear safety reforms to disseminate a safety culture throughout the organization.

* Conduct quarterly 360-degree evaluation (comprising evaluations from superiors, peers, subordinates, as well as the opinions of contractors and people in siting communities) of nuclear power leaders and provide feedback to the leaders evaluated.

[**Management** (all executive officers)]
* Study examples of management reform successes and failures at other companies
* Basic principles of nuclear safety design and safety culture
* Causes of Fukushima nuclear accident and countermeasures
* Other topics

[**Nuclear Leaders** (executive officers, site superintendents, corporate general managers)]
In addition to the items listed on the left,
* Refresh plant operational knowledge through upper level courses at operation training center, etc.
* Acquire the latest knowledge, conduct plant walkdowns, etc.

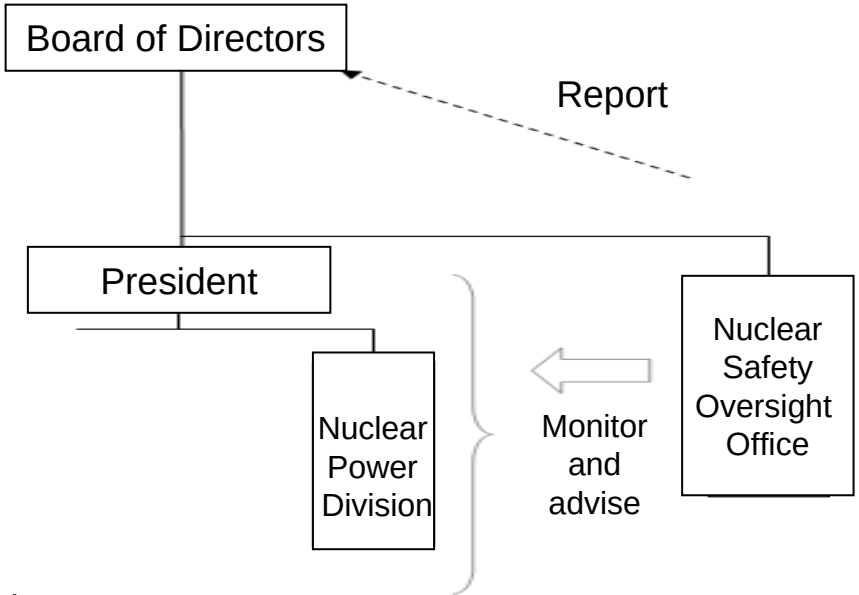
Countermeasure 2: Enhancement of Oversight and Support for Management

[Main Points]

* The Board of Directors of a nuclear operator is obliged to oversee nuclear safety. For that purpose, the required support organizations will be established, which will report the necessary information to the Board of Directors.

[Countermeasures]

* Establish a "Nuclear Safety Oversight Office" to assist the TEPCO directors in decision making.
* The Nuclear Safety Oversight Office will invite its personnel in charge from outside the company to evaluate activities related to nuclear safety from a position independent of those implementing such activities, and to both monitor and advise those doing the implementation while also reporting to the TEPCO Board of Directors.
* Additionally, efforts will be made to enhance the roles of middle management and Nuclear Safety Senior Engineers.



<Reference: Report> 4.2: Enhancement of Oversight and Support for Management

Countermeasure 3: Enhancement of Ability to Propose Defense in Depth

[Main Points]

In order to decrease residual risks to a socially permissible level, it is necessary to continuously make an effort to enhance safety improvement measures. For this reason, we will construct a system for developing the technological capability for promptly proposing the enhancement of highly cost-effective measures to improve safety in accordance with defense in depth. Also, we will organize our working environment in keeping with enhanced technological capability.

[Countermeasures]

* From a standpoint of accumulating defense in depth, we will reassess operational processes.
  - Promote cross-organizational proposals so that planning and implementation of safety measures will take root as routine work, and we will accumulate a series of successes which realize outstanding proposals for improvement (safety improvement competition)
  - From a standpoint of building a defense-in-depth structure, draw lessons from operational experiences information from both Japan and other countries
  - Conduct hazard analyses of external events causing rare though severe situations
  - Frequently conduct reviews of activities related to nuclear safety (safety review activities)
* We will improve our working environment in order to effectively promote improvement of the processes described above.
  - Improve performance evaluation related to nuclear safety
  - Reassess operations focused heavily on evidence
  - Improve cross-organizational capability for solving problems
  - Reassess personnel exchanges between divisions

<Reference: Report> 4.3 Enhancement of Ability to Propose Defense in Depth

Countermeasure 4: Enhancement of Risk Communication Activities (1) Establishment of Risk Communicator Positions

[Main Points]

* We need to extricate ourselves from "thought-stopping patterns" which are based on the assumption that, if risks are announced, requests for excessive countermeasures will be demanded by regulators and siting communities, necessitating a reactor shutdown.

* TEPCO, as a company that caused a severe accident, has the duty to make risks known and convey countermeasures broadly to the general public.

Given the above challenges, we will **establish the specialist position of "risk communicator"** for handling risk-related communications from a position close to management and nuclear power leaders.

[Countermeasures]

* Risk communicators will make proposals to management and nuclear power leaders, from society's perspective, regarding strategies for explaining risk awareness, formulation of countermeasures in keeping with public announcements, and the limits thereof. They will also undertake risk communications based on the policies developed.

* Risk Communicators will regularly engage in dialogue with others and solicit advice and suggestions from outside experts while developing skills for carrying out fruitful dialogues with site communities as well as the public more generally.

<Reference: Report> 4.4: Enhancement of Risk Communication Activities

Countermeasure 4: Enhancement of Risk Communication Activities (2) Establishment of Social Communication Office

[Main points]

We did not have an accurate understanding of the present situation around us, and our sensitivity to the feelings of people in siting communities and the general public was obtuse, which inflamed public anxiety (response to loss of power supply accident at Fukushima Daiichi Nuclear Power Station, etc.).

Also, we received severe comments from the Third-Party Investigation Committee on TEPCO's Response to the National Diet of Japan Nuclear Accident Independent Investigation Commission (NAIIC), which indicated that our company has communication problems.

Based on such facts, we must urgently make improvements by delving into corporate culture problems with the Nuclear Power Division playing a central role in order to appropriately communicate with society.

Reflecting on the fact that previous improvement activities could not delve into deep-rooted corporate culture problems, we will invite people outside the company, thereby bridging the gap between our way of thinking and judgment and the standards accepted by society at large, and, at the same time, we will put a framework in place to prevent aggravation of risk.

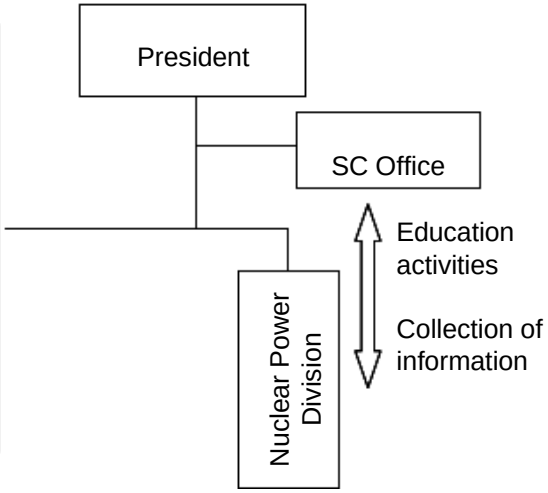
[Countermeasures]

・Invite a person from outside the company to become the "SC General Manager", establish the organization (SC Office) which is directly responsible to the President, and implement the following;

<Internal educational activities>
- By utilizing a nuclear power risk communicator, we will collect information on risks beforehand by being involved in the substance of operations, and will simultaneously conduct education activities about the importance of sensitivity to the perspective of people in society.

<Collection of information on the status of activities, instructions for improvement>
- Analyze collected risk information and give instructions on necessary improvement measures for each obvious or latent risk in keeping with the standards of society at large.

<Internal sharing of examples of instructions for improvement>
- Extensively share instruction specifics internally to provide risk management and internal reform throughout the company



<Ref.> Regarding Comments [*1] by the Third-Party Investigation Committee on TEPCO's Response to NAIIC

* As for misleading explanations given to the National Diet Nuclear Accident Independent Investigation Commission (NAIIC), TEPCO received the following three improvement requests from the Third-Party Investigation Committee:

- Enhance employee education in regard to negotiations with external organizations
- Organize a cooperative framework and a support framework among employees
- In regard to the need for showing the attitude of TEPCO as a whole to the external organizations, build an organizational structure in which the directives from the top management spread down among all employees, and the employees are able to consult top management at an early stage.

We think implementation of Countermeasure "Establishment of Social Communication Office," in addition to the aforementioned Countermeasure 1 "Reform Starting from Management" and Countermeasure 4 (1) "Establishment of Risk Communicator Positions," will prompt a revamping of the organization through educational activities for the company, which will result in solution to the request by the Third-Party Investigation Committee.

*1: Third Party Investigation Committee on TEPCO's Response to NAIIC's "Report of Verified Results (March 13, 2013)"

<Ref.> Roles of the SC Office and Nuclear Power Risk Communicators

* The SC Office will utilize nuclear power risk communicators (“RC”) as the pivotal points for risk management in responding to external organizations on behalf of the entire Nuclear Power Division.

Input from RCs to SC Office

* Demonstrate the faculty to pick up information about nuclear power risks
  - Make proposals about risks to be administered by management in regard to risks considered to have a significant influence on management as based on information provided by the Nuclear Power Division and in responding to external organizations on a daily basis.
  - RC will engage in the management of cases on a daily basis (time limit control) about the risks faced by the Nuclear Power Division and the matters of concern when responding to external organizations, thereby sharing information on a timely basis.

Output by RCs (Implementation of risk communication)

* Implement external communication activities concerning nuclear power risks
  - In response to SC Office’s proposal of the policy to publically announce important cases, RCs will create talking points and implement risk communication personally at each site.
  - RCs will acquire the perspective of society through daily communication about nuclear power, and, at the same time, will play some role in educational activities for the Nuclear Power Division.

Countermeasure 5: Reform of Emergency Response Organizations at the Power Stations and Head Office

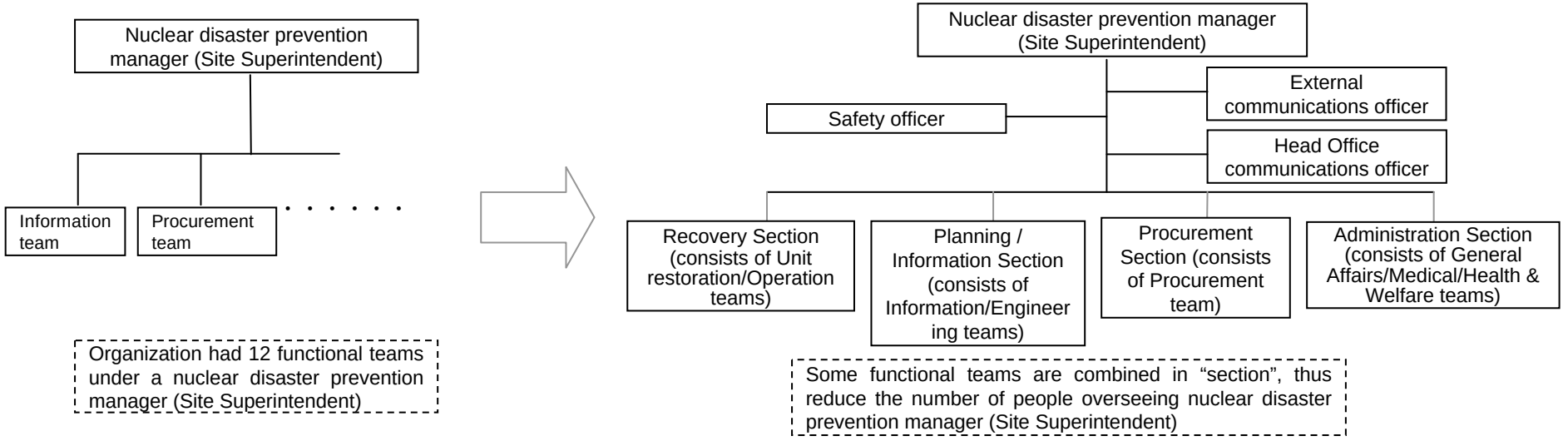
[Main Points]

* After the disaster, the activities at the site was in disarray because “the chain of command system was unclear” and “information was not fully shared” as well as other factors.

[Countermeasures]

In emulation of the Incident Command System (ICS) as characterized below that serves as a standardized emergency response structure in the U.S. , reorganize the emergency response organizations at TEPCO power stations and the Head Office.

- Limit the number of people a single manager oversees to 7 at most
- Clarify division of responsibilities chain of command system (follow only the instructions of direct superiors)
- Clarify the division of roles (decision-making authority should be given to the commander in the field)
- Flexible organizational structure that can expand or contract depending on the scale of a disaster
- Prepare and put into use modalities and tools for sharing information efficiently throughout the organization
- Clarify skills and requisites, and provide thorough and going education and training



<Reference: Report> 4.5: Reform of Emergency Response Organization at the Power Station and Head Office

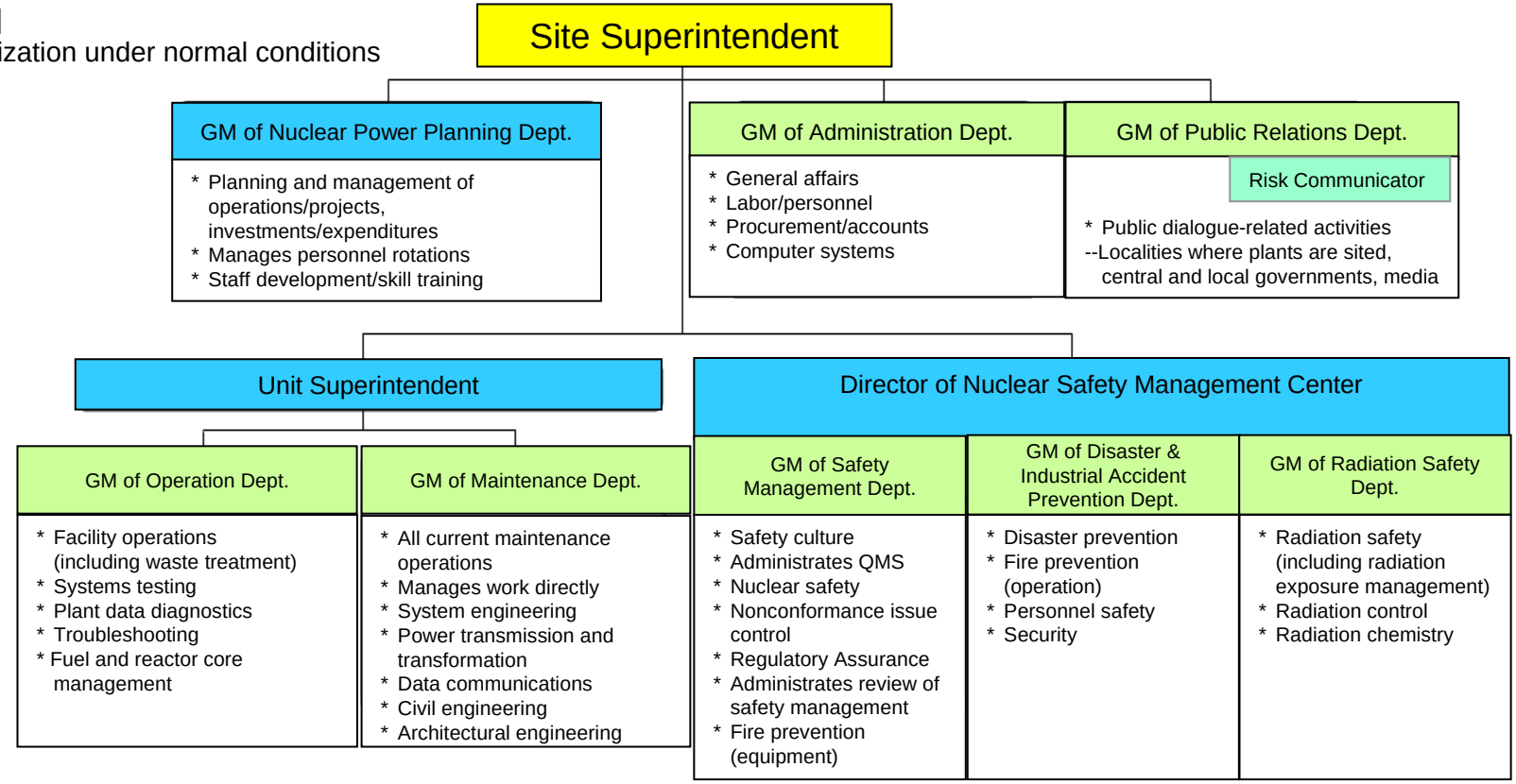
Countermeasure 6: Reassessment of Non-Emergency Power Station Organization and Enhancement of Capability for Direct Maintenance Work

[Main Points]

Reassess power plant organization under normal conditions with the goal of bolstering capability to take a comprehensive view of nuclear safety. Also, strengthen operator's ability and reform the organization to enable maintenance work to be directly performed by maintenance sections so that TEPCO employees can carry out the first response after an accident, and also foster the applied skills for dealing with unanticipated situations.

[Countermeasures]

* Reassess organization under normal conditions



* Bolster Abilities to perform direct works
  - Operators: Train in how to connect power-supply vehicles that the recovery units undertake and conduct regular maintenance work and equipment diagnostics (data collection, simple diagnoses, etc.)
  -Maintenance personnel: Develop applied skills by direct maintenance work so as to be able to, when necessary, inject water into a reactor and install or replace temporary equipment.

<Reference: Report> 4.6: Reassessment of Non-Emergency Power Station Organization and Enhancement of Capability for Direct Maintenance Work