Provisional Translation

Convention on Nuclear Safety
National Report of Japan
for the Third Review Meeting

August 2004

Government of Japan

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D. Safety of Installations

Annexes

Acronym and Abbreviation Used in this Report

ABWR	advanced boiling water reactor
ACNRE	Advisory Committee for Natural Resources and Energy
AEC	Atomic Energy Commission
AESJ	Atomic Energy Society of Japan
ALARA	as low as reasonably achievable
AOT	Allowed Out of Service Times
ABWR	Advanced boiling water reactor
APWR	advanced pressurized water reactor
ASCOT	Assessment of Safety Culture in Organizations Team
BSS	Basic Safety Standards
BTC	BWR Operation Training Center
BWR	boiling water reactor
Dose Limit Notification	Notification for Dose Limits on the basis of the Rules for Commercial Power Reactors
EIS	Environmental Impact Statement
Regulatory Guide for Safety Design	Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities
Regulatory Guide for Reviewing Safety Assessment	Regulatory Guide for Reviewing Safety Assessment of Light Water Nuclear Power Reactor Facilities
Regulatory Guide for Reviewing Seismic Design	Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities etc
Regulatory Guide for Reactor Siting	Regulatory Guide for Reviewing Nuclear Reactor Siting Evaluation and Application Criteria
Fugen	heavy water moderated boiling light water cooled reactor owned by JNC
FY	Fiscal Year
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
INES	International Nuclear Event Scale
INPO	Institute of Nuclear Power Operations
ISO	International Standards Organization
JAERI	Japan Atomic Energy Research Institute
JAPEIC	Japan Power Engineering and Inspection Corporation

JCO Criticality Accident	Criticality Accident at JCO Co. Uranium Fuel Fabrication Facility
JEA	Japan Electric Association
JEAC(G)	Japan Electric Association Code (Guideline)
JNC	Japan Nuclear Cycle Development Institute
JPDR	Japan Power Demonstration Reactor
JSME	Japan Society of Mechanical Engineers
LCO	Limiting Conditions for Operation
METI	Ministry of Economy, Trade and Industry
Minister of METI	Minister of Economy, Trade and Industry
MEXT	Ministry of Education, Culture, Sports, Science and Technology
Minister of MEXT	Minister of Education, Culture, Sports, Science and Technology
MITI	Ministry of International Trade and Industry (METI at present)
Mj	Japan Meteorological Agency seismic intensity scale
MLIT	Ministry of land , Infrastructure and Transportation
Monju	prototype fast breeder reactor owned by JNC
MOX	Mix Oxide
NISA	Nuclear and Industrial Safety Agency
NPS	nuclear power station
NSC	Nuclear Safety Commission
NS Network	Nuclear Safety Network
NSRR	Nuclear Safety Research Reactor
NTC	Nuclear Power Training Center
NUPEC	Nuclear Power Engineering Corporation
NUSS	Nuclear Safety Standards, IAEA
OECD/NEA	Organization of Economic Co-operation and Development/Nuclear Energy Agency
OSART	Operational Safety Assessment Review Team
PSA	probabilistic safety assessment
PSR	periodic safety review
PWR	pressurized water reactor
QA	quality assurance
Reactor Regulation Law	Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors

R & D reactor	Power reactors at the stage of research and development
RHRS	Residual Heat Removal System
RPS	Reactor Protection System
SCL	Steam Condensation Line
SSC	Structures, Systems and Components
STS	Standard Technical Specifications
Special Law for Nuclear Emergency	Special Law of Emergency Preparedness for Nuclear Disaster
TEPCO	Tokyo Electric Power Company
TNS	Thermal and Nuclear Power Engineering Society
UK	United Kingdom of Great Britain
USA	United States of America
V&V	verification and validation
WANO	World Association of Nuclear Operators

Preface

1.Preparation of the Report

This report was produced in compliance with the Article 5 of the Convention on Nuclear Safety.

This report was prepared by the Nuclear and Industrial Safety Agency (hereinafter referred to as "NISA") in consultation with the Nuclear and Industrial Safety Subcommittee of the Advisory Committee for Natural Resources and Energy for the Ministry of Economy, Trade and Industry, with the support of an incorporated administrative agency Japan Nuclear Energy Safety Organization , (hereinafter referred to as "JNES"), and the cooperation of Japan Nuclear Cycle Development Institute and the Federation of Electric Power Companies of Japan. This report was reviewed also by other relevant governmental organizations. Views of the Nuclear Safety Commission (hereinafter referred to as "the NSC") were reflected to this report.

The Summary Report of the Second Review Meeting pointed out some items for which it was recommended to provide further information in next review meeting.

In this report, we tried to respond to them and to questions and comments on our previous report raised by other Contracting Parties during the second review meetings. Description of operating experience, alteration of nuclear power installation and progress in research and development is limited to the three years since the Second Review Meeting. The special topics in this report, that are a series of falsification by Tokyo Electric Power Co. (hereinafter referred to as the "TEPCO falsification issue") and the far-reaching renovation of the legislative and regulatory framework, are summarized in sections 4. and 5. of this preface.

The report on each article of the Convention consists of a) the reference of the convention article encircled in square brackets, b) following the brackets, shown in italic letters are the introduction of the feature of each article report and major changes after the previous reporting, and c) also in the main text of each article, major changes after the previous reporting are shown in italic letters.

Under the legislative and regulatory framework of Japan, nuclear installations in the scope of this Convention (land-based civil nuclear power plants) correspond to commercial power reactors and power reactors at the stage of research and development, and the safety regulation are fundamentally the same to these two types of nuclear installations. Detailed description in this report is on commercial power reactors with plenty of experience with siting, design, construction and operation, etc.

2. Current Status of Nuclear Energy Utilization in Japan

(1) General

Since the oil crises in 1970s, Japan has actively promoted nuclear power generation in order to introduce alternative energy resources to petroleum, aiming for stable supply and price of electricity. In recent years, nuclear power generation has played an important role in order to decrease CO2 discharge to the environment, in the process of its power generation. Nuclear power generation has been promoted under the premise of safety and nuclear nonproliferation. This has resulted in 52 nuclear power installations that are currently in operation. In the fiscal year of 2002, nuclear power supply reached about 31.2 percent of total generation of electricity.

The first Energy Master Plan was decided by the Cabinet and reported to the Diet in October 2003 in accordance with the Basic Law on Energy Policy. The plan states that nuclear power generation should be promoted as a basic power supply recognizing the excellent characteristics of nuclear power generation in terms of stable supply of electricity and a measure against global warming, and that

necessary investment should be encouraged under the environment of electricity market liberalization.

In “The long-term energy supply and demand outlook” published in July 2001, the number of new nuclear power plants to be commissioned by FY 2010 was reduced to 13 units, from 16 to 20 units, reflecting a loss of public confidence on to nuclear power caused by the criticality accident in 1999 at a uranium fuel processing plant of JCO Co., Ltd (hereinafter referred to as the “JCO criticality accident”) and other troubles in nuclear facilities.

In June 2002, NISA asked the Nuclear and Industrial Safety Subcommittee of the Advisory Committee for Natural Resources and Energy to initiate a study on the future approach for an effective and efficient regulatory system on nuclear safety. Expedited by the revelation of the TEPCO falsification issue in August 2002, NISA, in compliance with the NSC recommendation, amended the Reactor Regulation Law and the Electricity Utilities Industry Law in December 2002, and renovated safety regulatory systems and related organizations in October 2003.

The Kanazawa Branch of the Nagoya High Court delivered a judgment, on January 27, 2003, and nullified the license for the breeder reactor "Monju" on an administrative litigation lawsuit. The government lost the lawsuit, and appealed to the Supreme Court on January 31. The regulatory body, on January 30, 2004, approved alteration of the design and construction method of Monju in accordance with the Reactor Regulation Law and the Electricity Utilities Industry Law.

(2) Current Status of Nuclear Installations in Japan

As of September 2004, there are 55 units of nuclear installations in Japan; 52 units are in operation, 2 units are under construction after achieving criticality and one unit ceased operation in March 2003 for the preparation of decommissioning. Total licensed capacity of nuclear power generation is about 47.4 GWe.

In FY 2002, the total capacity of 45.7 GWe of nuclear power generation accounted for about 19.6 percent of the nation’s total capacity of electricity generation, and nuclear power generated 294.9 billion kWh of electricity that was about 31.2 percent of 944.7 billion kWh electricity generated in Japan.

While average annual capacity factors of nuclear power plants had exceeded 80 percent from FY 1995 to 2001, that of FY 2003 dropped to 59.7 percent. It was because all of 17 nuclear reactors of TEPCO were shutdown in April 2003 due to the Periodic Inspections conducted earlier than scheduled and due to the prolonged outage to cope with various additional checks that were resulted from the TEPCO falsification issue revealed in August 2002. The reactors of the said company have been reviving operation one by one after verification of safety. Other nuclear power plants continued stable operation during this reporting period and the average frequency of unplanned shutdowns over FYs 2001 to 2003 was as small as 0.2 times per reactor-year.

3. International Activities for Ensuring Safety of Nuclear Installations

Recognizing that international cooperation is essential for ensuring safety of nuclear installations, Japan has actively been participating in various activities of IAEA and OECD/NEA for information exchanges and for discussions on safety related issues.

A news during this reporting period is that Japan acceded to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management in August 2003 and participated in the first review meeting held in November 2003. Japan had opportunities to receive peer-reviews of the contracting parties on the safety of radioactive waste management as well as on the safety of nuclear installations.

Japan has made a positive commitment to a cooperation program for establishing regulatory bodies

and enhancing nuclear safety regulations in Asian countries and also with offering extra-budgetary funding to the IAEA.

Japan has been exchanging of regulatory information on nuclear safety with China, France, Korea, Sweden, U.K. and U.S.A. through bilateral arrangements, and has shared its knowledge and experiences with them. Japan makes efforts to enhance the safety of nuclear power plants in Japan and in the world.

Also electric power companies are contributing to maintain high level of safety and reliability of nuclear installations in Asia, through cooperation in managing the WANO Tokyo Center.

Units 3 and 6 of the Kashiwazaki-Kariwa Nuclear Power Station of TEPCO invited the OSART of IAEA in November 2004.

4. TEPCO Falsification Issue

(1) Falsification of Self-Controlled Inspection Records by Tokyo Electric Power Co.

In July 2000, a former employee of an inspection company that contracted self-controlled inspection with TEPCO made an allegation to the Ministry of International Trade and Industry (present METI) that TEPCO falsified self-controlled inspection records. This was the first allegation under the Allegation System established in June 2000 and was transferred to NISA in January 2001. Since the alleged falsification occurred about 10 years ago and since preservation of inspection records was not sufficient, the investigation met great difficulty. In August 2002, it was made public by NISA that falsifications such as tampering with self-controlled inspection records and cover up of cracks in core shrouds were committed at three nuclear power stations of TEPCO from the latter half of 1980's to the 1990's. It took two years for NISA to make it public.

In September 2002, NISA conducted on-site inspections in all nuclear power stations of TEPCO and the headquarters of TEPCO in order to investigate what were the facts. In October 2002, NISA announced to the public that the alleged falsifications were identified, and that although cracks or indications of crack were found on the re-circulation system piping and core shrouds they do not pose any immediate risk to the reactor safety.

NISA conducted special Nuclear Safety Inspections and Periodic Inspections strictly on their nuclear installations, issued a letter of severe warning to TEPCO, and ordered the company to reconstruct its quality assurance system and renovate organizational climate fostering true safety culture. NISA requested TEPCO to report the progress of reconstruction/renovation activities by the end of FY 2002. In response to this, TEPCO submitted to NISA in March 2003 their measures including involvement of the top management with quality assurance of the nuclear power division, clarification of responsibilities and authorities in nuclear power quality assurance program, preparation of manuals, etc. associated with quality assurance, establishment of audit division under the direct control of the president and reinforcement of judicial affairs department.

(2) Instruction to other license holders to make full review on their plants record

NISA instructed other license holders than TEPCO to make full review on their plants to confirm if there were any falsifications in past self-controlled inspection records. Some license holders reported that there had been cracks or indications of crack in re-circulation piping and core shrouds.

NISA confirmed that there were no falsifications in self-controlled inspection records and that they evaluated that the cracks pose no immediate risk to plant safety. NISA judged that the license holders' evaluation on cracks was appropriate. NISA also requested these license holders to implement similar measures implemented by TEPCO such as reconstruction of their quality assurance system, etc. Those license holders submitted reports on their progress in reconstruction.

The NSC requested full reporting from NISA immediately after revelation of the above-mentioned falsification case. In October 2002, the NSC published basic policies and action plans called "The response to the falsifications in self-controlled inspection records of NPPs" in order to prevent recurrence.

Also, in October 2002, recognizing urgent needs to restore general public's confidence in nuclear safety, the NSC made a recommendation called "Recommendation on Restoration of Confidence in Nuclear Safety" to the Minister of METI through the Prime Minister. This recommendation, which was based on the provision of Article 24 of the Law for Establishment of Atomic Energy Commission and Nuclear Safety Commission, was for first time since the establishment of the NSC in 1978. The recommendation was reflected to the renovated nuclear safety regulations that were implemented after the above falsifications issue in self-controlled inspection records.

The NSC concluded according to their independent investigation and analysis that the results of the safety evaluation on cracks of re-circulation pipings and core shrouds, conducted by NISA, were adequate.

(3) Falsifications in Reactor Containment Leakage Rate Test and the Administrative Measure Taken

Apart from the case mentioned above, it was revealed in October 2002 that, at the periodic inspections in 1991 and 1992 of the Unit 1 of the Fukushima Daiichi Nuclear Power Station attended by inspectors of regulatory body, the results of reactor containment leak rate tests were falsified by Tokyo Electric Power Co. Inc., in order to show intentionally low leak rate. In that month, NISA considered that this falsification violated the law and NISA took an administrative measure of one year suspension of operation of the said unit. NISA requested to conduct inspections of leak rate test of all reactor containments of TEPCO that resulted in shutdown of all 17 units of TEPCO in April 2003.

The NSC monitored independently NISA's inspection of the reactor containment leak rate test at the Unit 1 of the Fukushima Daiichi Nuclear Power Station and concluded the leakage rate was within the limit.

(4) Explanation to the Public and Restart of Power Plants

NISA held dozens of explanatory meetings for local governments and the public on the safety assessment of nuclear power stations of TEPCO and on re-construction of regulatory system. The reactors have been restarted one by one after completing pre-start safety checks and after restoring local communities' confidence in the safety of the nuclear power stations.

The NSC also confirmed the report which showed that the reactor containment leakage rate tests had been properly conducted.

(5) Background of the TEPCO falsification issue

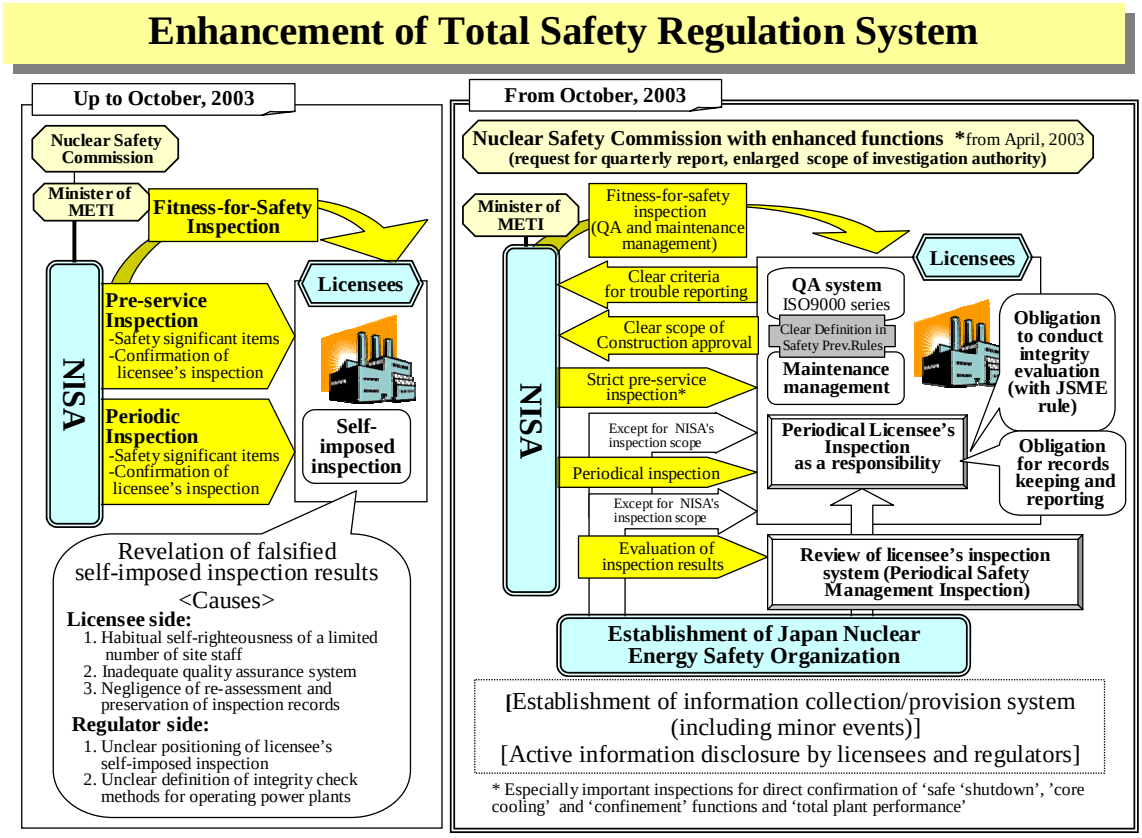
The TEPCO falsification issue has significantly eroded public confidence in nuclear safety. NISA analyzed factors that led to these falsification issues as follows.

In this problem there were three kinds of factors; factors on the license holders' side, on the regulatory side and common to the both sides. Some of the problems on the license holders' side were an accustomed and complacent decision making process by limited persons, ineffective audit by top management and divisions other than nuclear power division, and the lack of understanding on the importance of quality assurance system to ensure nuclear safety. Some of the problems on the regulatory side were ambiguity of regulatory procedure on self-controlled inspection by license holders, lack of formulated acceptance criteria of cracks, and insufficient penalty for organizational

illegal acts. One of the problems common to both sides was a lack of recognition of importance to the accountability for safety itself as well as the process to achieve safety.

5. Renovation of the Regulatory System of Nuclear Safety

NISA had promoted the study on the future approach for the effective and efficient safety regulatory system, including and not limited to inspection system, license holders' activities for safety operation, quality assurance. Expedited by the revelation of the falsification problem of Tokyo Electric Power Co., NISA renovated his safety regulation, as described below, in order to prevent recurrence of falsifications and to maintain internationally acceptable safety regulation.



(1) Renovation of Quality Assurance System and Maintenance Management System

As the license holders' quality assurance system was found to be inadequate, the Reactor Regulation Law was amended to stipulate that quality assurance should be established and should be included in the Operational Safety Program, and that the compliance with the Program should be confirmed at the Nuclear Safety Inspection.

The Reactor Regulation Law stipulates the following requirements on quality assurance:

1) Establish a quality assurance program, implement quality assurance in accordance with the program, and continually improve the program,
2) Define in the quality assurance program, an organization of quality assurance and a PDCA (Plan-Do-Check-Action) cycle of each item of the activities on safe operation,
3) Clarify responsibilities and authorities within the organization, and top management shall be involved in quality assurance activities, and
4) Clarify relations between each item of the activities on safe operation and the process of JIS-Q9000 (2000).

The Reactor Regulation Law stipulates that maintenance management should be established and should be included in the Operational Safety Program and that the compliance with the Program should be confirmed at the Nuclear Safety Inspection.

The Reactor Regulation Law stipulates following requirements on maintenance management:

1) Establish maintenance management policies and targets,
2) Develop an implementation program and implement maintenance management in accordance with the program,
3) Define, in the implementation program, frequency, time, methods to confirm and to evaluate the results, the corrective measures, if any, and matters concerning records, and
4) Periodically review and revise policies, targets and the implementation program of maintenance management.

NISA has confirmed that the "Rules of Quality Assurance for Safety of Nuclear Power Plants (JEAC 4111-2003)" and the "Rules of Maintenance Management of Nuclear Power Plants (JEAC 4209-2003)", developed by Japan Electric Association, meet the quality assurance requirements and the maintenance management requirements defined in the Reactor Regulation Law, respectively.

(2) Introduction of the Licensee's Periodic Inspection

Before the amendment of the Electricity Utilities Industry Law, the regulatory body requested inspection only for the equipment especially important to safety, leaving the other equipment to self-controlled inspection by the license holders.

The amended Electricity Utilities Industry Law stipulates that a license holder shall perform the Licensee's Periodic Inspection, which replaces the former self-controlled inspection, to the equipment designated by technical standards, at the intervals not exceeding 13 months, shall confirm the inspection results to comply with the technical standards, and shall record the results.

(3) Introduction of the Fitness-for-Service Assessment

Non-destructive examination on cracks by ultrasonic test is made mandatory, and is included in the Licensee's Periodic Inspection. The Fitness-for-Service Assessment requires an estimation of growth of crack, if found, and structural integrity assessment of the component. The Technical Standards specifies the basic requirements for the Fitness-for-Service Assessment, leaving details of assessment methods and criteria to Rules of Fitness-for-Service for Nuclear Power Plants (2000 and 2002 editions) developed by a corporate judicial person, the Japan Society of Mechanical Engineers.

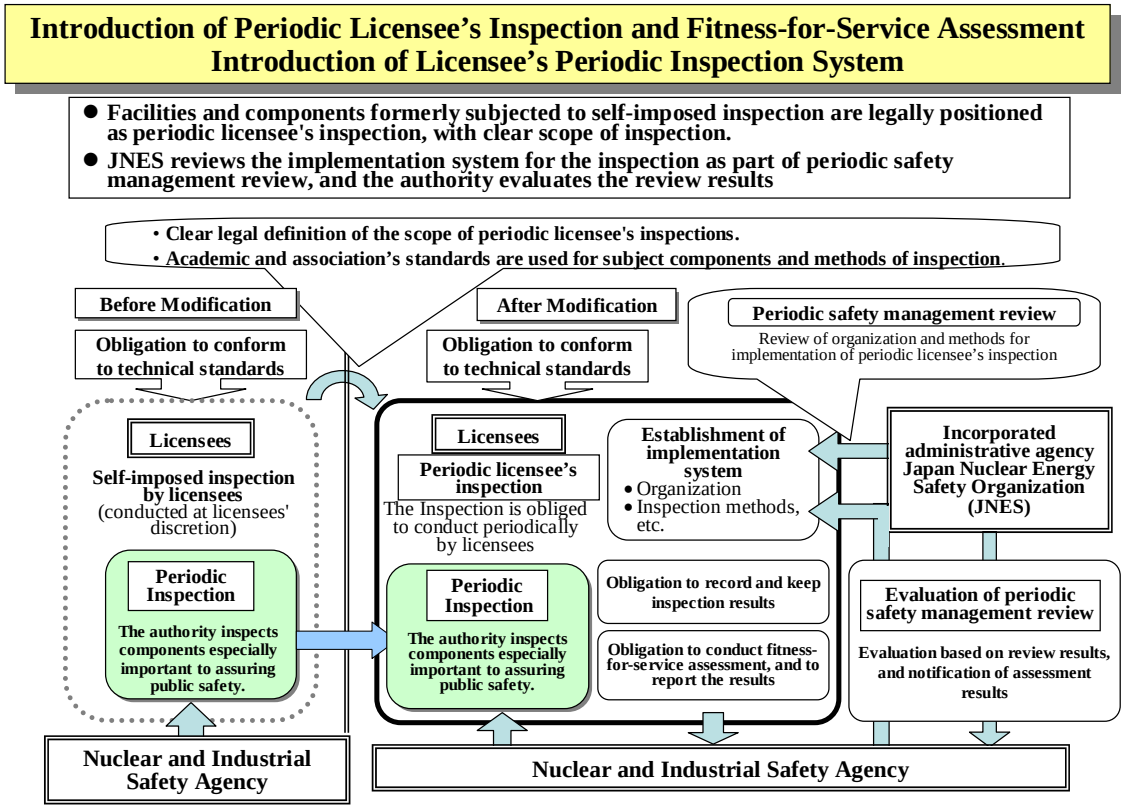
It is also stipulated that the results of the Fitness-for-Service Assessment should be recorded and kept by license holders and that license holders report the results to the regulatory body.

(4) Introduction of the Periodic Safety Management Review

The license holders shall undergo the Periodic Safety Management Review by JNES, either on documents review or on-site review, that includes review on organization for implementing the Licensee's Periodic Inspection, method of inspection, schedule control, management of contractors, if any, management of inspection records, and education and training on inspection.

To conduct an at-site review more effectively and efficiently, items to be reviewed are randomly chosen without prior notice to the license holder.

JNES reports the review results to NISA. NISA evaluates the review results and informs the evaluation results to the license holder. The numbers of inspection items for the next Licensee's Periodic Inspection is decided depending on the performance of previous review results.



(5) Clarification of Reporting Criteria for Accidents and Failures

Reporting criteria of accidents and failures are clarified by the amending the Reactor Regulation Law. The reporting criteria for minor events, which had been reported only according to an administrative notification, are now included in the law.

(6) Establishment of a System to Collect and Disseminate Information Including Minor Events

For thorough transparency, appropriate information disclosure of accidents and failures including minor events is very important. For the purpose, it is important to share information of minor trouble and usual operational events among license holders, manufacturers, universities, institutes and regulatory body and to analyze the information for the improvement of safety management activities and safety regulations.

License holders established a public information library "NUCIA" (http://www.nucia.jp) on internet to disseminate collected information on nuclear power station including information of accidents and failures.

(7) Clarification of the Periodic Safety Review (PSR)

Provisions on the PSR, which had been conducted every 10 years, are clarified by the amendment of the Reactor Regulation Law. The Periodic Safety Review is integrated into the Operational Safety Program, and the inspectors of NISA confirm that the PSR is conducted on compliance with the Operational Safety Program. Items of the PSR are as follows:

Items	Before amendment	After amendment
1) Comprehensive evaluation of operational experience	Self-controlled review	Item in the Operational Safety Program
2) Reflection of the latest technical knowledge	Self-controlled review	Item in the Operational Program
3) Probabilistic safety assessment	Self-controlled review	Self-controlled review

The implementation of probabilistic safety assessment (PSA) is asked by NISA, although it remains to be self-controlled review by license holder.

(8) Clarification of the Aging Management Review

License holders shall take following measures for aging management of a plant from the period not later than thirty years after the commissioning. Measures for aging management are integrated into the Operational Safety Program. Measures for aging management include: a) to perform technical review on aging for the safety related structures, systems and components to evaluate the effectiveness of the current maintenance activities on those structures, systems and components to prevent loss of safety functions; b) to establish a Ten-Year Maintenance Program based on above-mentioned technical review on aging; and c) to re-evaluate technical review on aging and the Ten-Year Maintenance Program at least once in ten years.

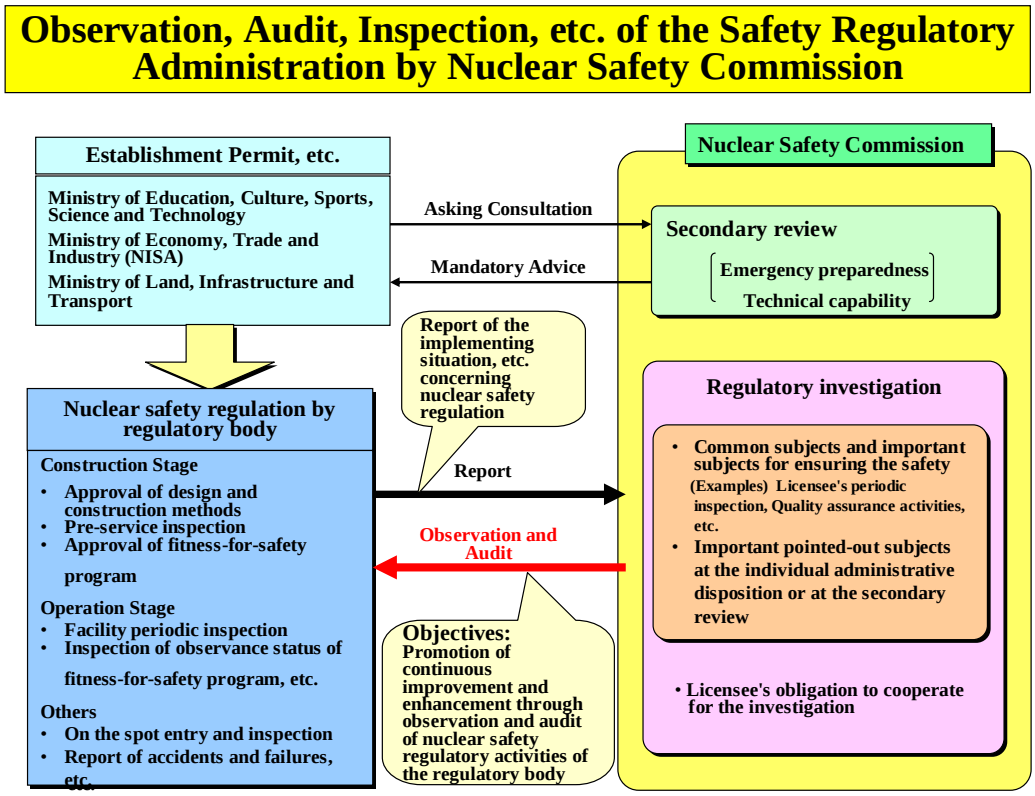
(9) Improvement of the Regulatory System on Nuclear Safety

In order to strengthen the supervision and audit functional competence of the NSC, which is independent organization from the regulatory bodies, such as NISA, MEXT, and the MLIT, regulatory bodies shall submit quarterly reports to the NSC on their regulatory activities after issuing establishment license, that are various regulatory activities in construction and operational stages.

The NSC may collect information on regulatory activities from the licence holder and contractor in order to conduct its audit function.

For these improvements, number of staffs was increased in the NSC.

Concerning the renovation of nuclear safety regulation, the NSC advised NISA on Quality Assurance System and Licensee’s Periodic Inspection System with regards to its basic requirements and items to be considered during the system operation.



(10) Establishment of Japan Nuclear Energy Safety Organization

A law for establishing an incorporated administrative agency “Japan Nuclear Energy Safety Organization (JNES)” was enacted in the extraordinary diet session of the autumn of 2002. JNES was inaugurated integrating of a part of former Nuclear Power Engineering Corporation, and former Japan Power Engineering and Inspection Corporation. JNES was established in order to enhance regulatory safety inspection together with NISA.

JNES with about 420 personnel, together with NISA with 300 personnel including 100 site resident inspectors, and five commissioners of the NSC and its secretariat with 100 personnel constitutes the regulatory system on nuclear safety, and it is making efforts ceaselessly to improve the competency of staffs.

(11) Development of Experts Engaged in the Nuclear Safety

NISA prepares training programs for personnel engaged in regulatory activities on nuclear safety. NISA provides, depending on type of jobs and experiences of personnel, a fundamental course and an advanced course for specialized knowledge and skills and highly specialized course for latest technology and expertise. With particular emphasis on quality management of nuclear facilities, “job training program on quality assurance for nuclear facilities” started in the FY 2002.

(12) Enhancement of Public Relations Activities

NISA recognizes it is an important task to play a role of the “representative of the public” in nuclear safety administration, to ensure safety of the public and to give reassurance on nuclear safety to the public, especially to the local residents in the vicinity of nuclear facilities. For this purpose, NISA considers it is necessary to actively disclose information, intensify public dialogue, and to enhance understanding of the public and the local residents.

For example, NISA held a number of dialogue meetings with local residents on the TEPCO falsification issue, collected their opinions, answered to their questions and explained measures to prevent recurrence, in order to restore their confidence.

In April 2004, taking new budgetary steps to enhance the public relations activities further, NISA established the Nuclear Safety Public Relations and Training Division as a responsible division, and decided to station the Regional Public Relations Officers at major sites.

(13) Intensified Penalties to Prevent Recurrence

In order to deter organizational illegal acts, penalties were intensified so that a corporate penalty becomes as heavy as 100 times that of personnel and imprisonment against serious violation such as noncompliance with orders to conform to technical standards, evasion of the regulatory inspection, or noncompliance with orders for license holders to submit reports including reports of contractors for maintenance.

(14) Improvement of Implementation of Allegation System

NISA established “the Committee on Investigation of Alleged Case”, and improved procedures of investigation, so that alleger’s interest should be strictly protected and so that investigation of the alleged case should be conducted and disclosed in due process. The NSC was also designated as the responsible organization to receive and to investigate allegation, based on the Reactor Regulation Law.

A. General Provisions

Article 6 Existing Nuclear Installations

Each Contracting Party shall take the appropriate steps to ensure that the safety of nuclear installations existing at the time the Convention enters into force for that Contracting Party is reviewed as soon as possible. When necessary in the context of this Convention, the Contracting Party shall ensure that all reasonably practicable improvements are made as a matter of urgency to upgrade the safety of the nuclear installation. If such upgrading cannot be achieved, plans should be implemented to shut down the nuclear installation as soon as practically possible. The timing of the shut-down may take into account the whole energy context and possible alternatives as well as the social, environmental and economic impact.

There are a total of 55 nuclear installations in Japan in the scope of the Convention as of the end of August 2004, including 52 reactors in operation, two in the commissioning stage that attained criticality, and one that terminated operation in March 2003 and is in preparation for decommissioning.

After the previous report, the Unit 5 of the Hamaoka Nuclear Power Station, Chubu Electric Power Co., Inc. attained criticality and enters the scope of the Convention. Tokai Power Station of the Japan Atomic Power Co., which was in preparation of decommissioning, entered decommissioning stage and became out of the scope of the Convention.

Since the descriptions of how the safety of existing nuclear installations has been ensured are given in the reports for other articles, the repetition is avoided. Instead, major events after the previous report for existing nuclear installations are described here according to the types of installations, which are BWR, PWR and power reactors in research and development stage.

6.1 Existing Nuclear Installations in the Scope of this Convention

There are a total of 55 nuclear installations in Japan in the scope of the Convention at the end of *August 2004*. The breakdown is shown in the followings:

Breakdown of Nuclear Installations in the scope of the Convention

Type		Status	Number of Units	Remarks
Commercial power reactor	Boiling water reactor (BWR)	in operation	*29*	
		under construction*	1	*Unit 5 of the Hamaoka Nuclear Power Station*
	Pressurized water reactor (PWR)	in operation	23	
Power reactor in research and development stage		under construction*	1	Monju
		in preparation for decommissioning	*1*	*Fugen*

* Unit under construction that attained criticality

The existing nuclear installations are listed in Annex 1, and their locations are shown in Fig. 6-1.

6.2 Major Events in the Existing Nuclear Installations after the Previous Report

Major events in the existing nuclear installations after the previous report are shown in the followings:

(1) BWR Plants

1) Falsification of Self-Controlled Inspection Records by Tokyo Electric Power Co., Inc.

In August 2002, it was revealed that Tokyo Electric Power Co., Inc. had covered up the record for the existence of cracks on core shrouds of reactors and falsified the self-controlled inspection records. For the fact finding, NISA conducted On-the-Spot Inspection of all the nuclear power stations and the head office of Tokyo Electric Power Co., Inc. After the investigation, NISA announced that the fact of falsification was identified, and that although cracks or indications of crack, were found on the re-circulation system piping and shrouds, they did not pose any immediate risk to the reactor safety. A letter of severe warning was issued to Tokyo Electric Power Co., Inc. NISA conducted special Nuclear Safety Inspection and strict Periodic Inspection on those nuclear installations.

2) Instruction to Other 15 Licence holders to Make Comprehensive Checking

NISA also instructed other 15 licence holders, including PWR and fuel cycle facility licence holders, to make comprehensive checking on their plants to confirm whether there had been no falsification in the self-controlled inspection records. Some licence holders reported that cracks were found on shroud of their plants, and that they evaluated that the cracks pose no immediate risk to plant safety. NISA confirmed that there had been no falsification on the self-controlled inspection records, and that the licence holders' evaluation on cracks was appropriate.

3) Falsification on Inspection of Reactor Containment Leak Rate and the Administrative Measure Taken

It was revealed in October 2002 that, during the Periodic Inspections of the Unit 1 of the Fukushima Daiichi Nuclear Power Station in 1991 and 1992 attended by inspectors of regulatory body, the reactor containment leak rate tests were falsified by Tokyo Electric Power Co. Inc., to show intentionally low leak rate. In that month, NISA considered this falsification violated the law and took an administrative measure of one year suspension of operation of the Unit1, and conducted inspections of leak rate of all reactor containments of the company.

4) Prevention of Hydrogen Accumulation in Piping

On November 7, 2001, a part of residual heat removal system piping of the Unit 1 (BWR) of the Hamaoka Nuclear Power Station, Chubu Electric Power Co., Inc., ruptured by rapid combustion of the non-condensable gas (i.e., hydrogen) accumulated in the piping.

NISA instructed BWR licence holders to alter steam condensation system piping of the residual heat removal system by removing a part of piping or installing a shutoff valve in it to prevent accumulation of hydrogen, and to alter, for example, the inclination of other piping systems where hydrogen may accumulate.

(2) PWR Plants

1) Enhancement of Periodic Inspection Relating to Prevention of Recurrence of Primary Coolant Leak

It was reported in our previous report that NISA instructed licence holders to intensify Periodic Inspection to prevent recurrence of the primary coolant leak from the regenerative heat exchanger connecting piping which occurred at the Unit 2 (PWR) of the Tsuruga Power Station, the Japan Atomic Power Co. Since then, licence holders have added ultrasonic inspection, etc. to the inspection items for class 3 piping (located inside at the reactor containment). Furthermore, considering damage on the regenerative heat exchanger shell-side exit piping of the Unit 2 of the Tomari Power Station, Hokkaido Electric Power Co., Inc., NISA instructed licence holders, in December 2003, to expand their inspection scope over the systems and equipment belonging Class 1 and 2 defined by the Regulatory Guide for Reviewing Classification of Importance of Safety Functions for Light Water Nuclear Power Reactor. Licence holders are conducting the inspection in the Licensee's Periodic Inspection.

2) Improvement of Quality Assurance Activities for Inspection of Imported Fuels

It was reported in our previous report that the regulatory measures were taken against the falsification of inspection data of mixed oxide fuels (hereinafter called "MOX fuels") for the Unit 3 of the Takahama Power Station, the Kansai Electric Power Co., Inc. In October 2003, the Reactor Regulation Law was revised so that the licence holders' quality assurance activities were included in the scope of regulatory inspection. On the basis of new legislation, the Kansai Electric Power Co., Inc. reported to NISA of the improvement in the quality assurance program for procurement of MOX fuels from overseas. NISA confirmed that the program was appropriate, and reported it to the NSC in February 2004.

3) Inspection Concerning Ni-base Alloy Portions in Primary Coolant Boundary

In December 2003, NISA instructed licence holders to implement, bare metal inspections and ultrasonic inspections for Ni-base Alloy 600 portion in primary coolant boundary, during the nearest Licensee's Periodic Inspections, as measures against primary water stress corrosion cracking, that occurred weld joints of nozzle stubs at pressurizer bypass lines in the Unit 2 of the Tsuruga Power Station, the Japan Atomic Power Co., in September 2003, and at nozzle stubs at reactor vessel heads in the Davis-Besse Nuclear Power Station in March 2002. Moreover, NISA requested licence holders to provide inspection programs including volumetric examinations of nozzle stubs at reactor vessel heads and bottoms.

4) Secondary Pipe Rupture Accident at Unit 3, Mihama Power Station

On August 9, 2004 at the Mihama Power Station Unit 3 (PWR, 826MWe) of the Kansai Electric Power Co., Inc.(KEPCO), the main condensate water pipe ruptured and high temperature secondary water blew out into the turbine building when the reactor was in full power operation. In the turbine building, there were many workers preparing for the Periodic Inspection which was to commence on August 14. Workers who were close to the break were seriously exposed to the flashed water that killed four and injured seven by scald.

NISA immediately took its action as establishing the Accident Investigation Committee aiming at identifying the cause and preventing recurrence of the accident. The NSC also established a review subcommittee aiming at reflecting lessons learned from the accident to the future nuclear safety policy.

The location the rupture took place was in the just downstream of the flow measurement orifice.

According to KEPCO, they had their own guideline that obliges itself to conduct residual life evaluation and the planning of the inspection to the portions where the thinning is expected. KEPCO also reported that the inspection was not implemented to the portion since the beginning of its operation. The ruptured portion was planned to be inspected in the Periodic Inspection starting from August 14, 2004.

Since this event was considered to be generic not only to PWRs but to BWRs and thermal power plants, on August 11,2004, NISA issued instructions to operators of all nuclear power plants and thermal power plants with more than 1,000kW outputs;

- *to check whether obliged inspections were implemented to all the pipes in question, and*
- *to take adequate corrective actions if such un-inspected portions are identified.*

(Note)
The descriptions above are based on the information obtained as of August 13, 2004.

(3) Power Reactors in Research and Development Stage

The Kanazawa Branch of the Nagoya High Court delivered a judgment, on January 27, 2003, and nullified the license for the breeder reactor "Monju" on an administrative litigation lawsuit. The government lost the lawsuit, and appealed to the Supreme Court on January 31.

METI, considering the opinion of the NSC, approved in January 2004, the change of design and construction method in accordance with the Reactor Regulation Law and the change of construction plan in accordance with the Electricity Utilities Industry Law.

6.3 Evaluation and Verification of Safety, and Position as to Continued Operation

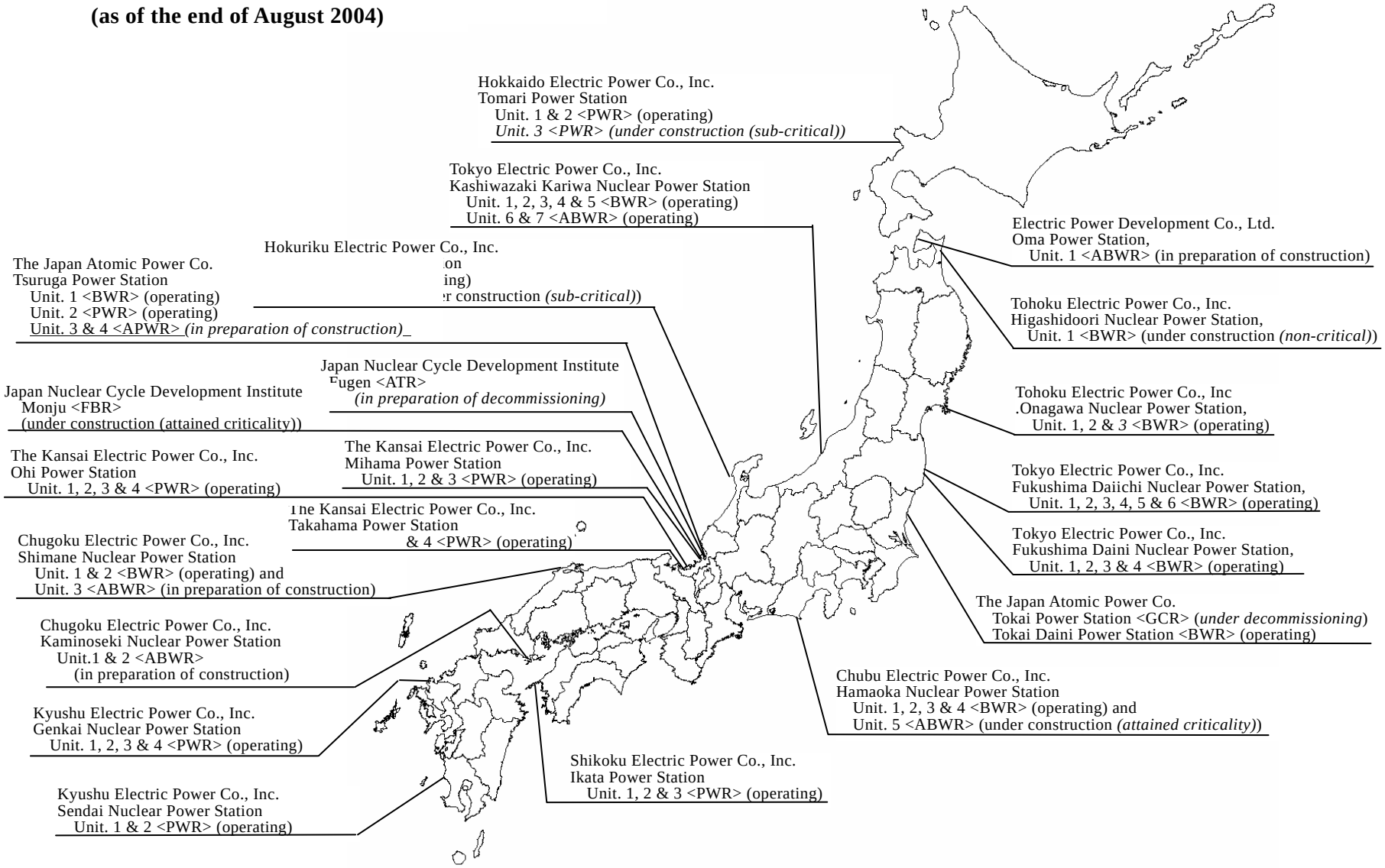
NISA had implemented the necessary safety assessment and verification for existing nuclear installations at planning, licensing, construction and operation stages. They are explained in the reports concerning Article 7 to Article 19.

Through those assessments and verification, principles of this convention have been applied to ensure the safety of existing nuclear installations for every stage from licensing to operation.

As shown in 6.2, the measures to ensure the safety has been appropriately applied to these events occurred during the period after the previous reporting. On the basis of the results of this report, The Japanese government concluded that continued operation of the nuclear installations in Japan is appropriate. The plants that are in construction stage and attained criticality are expected to be approved for commercial operation after pre-service inspection.

Fig. 6-1 Location of Nuclear Installations

(as of the end of August 2004)



B. Legislation and Regulation

Article 7 Legislative and Regulatory Framework

1. Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations.

2. The legislative and regulatory framework shall provide for:

(i) the establishment of applicable national safety requirements and regulations;

(ii) a system of licensing with regard to nuclear installations and the prohibition of the operation of a nuclear installation without a licence;

(iii) a system of regulatory inspection and assessment of nuclear installations to ascertain compliance with applicable regulations and the terms of licenses;

(iv) the enforcement of applicable regulations and of the terms of licences, including suspension, modification or revocation.

The Atomic Energy Basic Law has been established as the basic law governing the utilization of nuclear energy, and the Law on the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Reactor Regulation Law) and the Electricity Utilities Industry Law have been established as the laws to govern the safety of nuclear installations.

After the previous report, the Reactor Regulation Law has been revised to accommodate new regulatory framework, such as adoption of performance-oriented technical standards into regulatory system, clarification of reporting criteria for accidents/failures and clarification of modification or repair work that necessitate application of the construction permit, establishment of Licensee's Periodic Inspection and Periodic Safety Management Review System, provision of regulatory inspection etc. by JNES, and provision of the Periodic Assessment of Nuclear Facilities including Periodic Safety Review and Aging Management Program. The Allegation System was revised so that an alleger can allege violation of safety regulation to the NSC as well as to the regulatory body. Also, penalties to license holders have been intensified.

7.1 Basic Legislation Governing the Utilization of Nuclear Energy

Japan has enacted the Atomic Energy Basic Law as its basic law on the utilization of nuclear energy. The objectives of the Atomic Energy Basic Law are quoted as "to secure future energy resources, achieve progress in science and technology, and promote industry, by encouraging research, development, and the utilization of nuclear energy, and thereby contribute to improvement of the welfare of human society and the national living standard." The basic policy is prescribed as follows: "The research, development and utilization of nuclear energy shall be limited to peaceful purposes, on the basis of the highest priority of ensuring safety, and performed on a self-controlled basis under democratic administration, and the results obtained shall be made public and actively contribute to international cooperation."

In order to achieve these objectives and the basic policy, the law provides for the establishment of a set of laws to govern following areas:

- Establishment of the Atomic Energy Commission and the Nuclear Safety Commission, and their duties, organization, administration, and authorities.
- Regulations governing nuclear fuel materials.
- Regulations for the construction, etc. of nuclear reactors.
- Prevention of radiation hazards.

The law also provides that those who will utilize nuclear energy shall manage their facilities under the supervision of the regulatory body in accordance with these laws.

7.2 Legislations and Regulations Governing the Safety of Nuclear Installations

The major laws related to the safety regulation of nuclear installations have been established as shown in the following (1) through (5). The matters on the organization for the safety regulation of nuclear installations are provided in the Law for Establishment of the Atomic Energy Commission and the Nuclear Safety Commission, the Law for Establishment of the Ministry of Economy, Trade and Industry, etc.

The NSC reviews the quality of nuclear safety administration by observing and auditing not only regulatory activities but also regulatory system of NISA pursuant to Article 25 of Law for Establishment of the Atomic Energy Commission and the Nuclear Safety Commission.

The major laws governing safety regulation of nuclear installations are shown in Figure 7-1.

(1) The Reactor Regulation Law and the Electricity Utilities Industry Law

The Reactor Regulation Law and the Electricity Utilities Industry Law are applied to the safety regulations of commercial power reactors.

1) The Reactor Regulation Law

The Reactor Regulation Law, in order "to ensure that the utilization of nuclear source material, nuclear fuel material, and reactors are limited to peaceful purposes, and carried out in a planned manner, and to ensure safety of the public by preventing the hazards due to these utilization and providing physical protection of nuclear fuel material, in accordance with the spirit of the Atomic Energy Basic Law", provides for:

- Refining of nuclear source material and nuclear fuel material
- Fabrication and enrichment of nuclear fuel
- Establishment and operation etc. of reactors.
- Storage or reprocessing of spent nuclear fuel
- Management and disposal of radioactive wastes
- Use of nuclear source material and nuclear fuel material
- Use of internationally regulated substances, etc.

And the following are established for reactor facilities.

- Regulations for the basic design and policy nuclear facility for construction application
- *Regulations for the detailed design and construction for construction permit*
- Inspections at the time of facility construction including approval of welding method, welding inspection, pre-service inspection
- *Regulations for safe maintenance and operation (approval of Operational Safety Program, and Nuclear Safety Inspection)*
- Periodic Inspections of facility during operation
- Measures for securing safety and physical protection
- Regulations on facility transfer, and succession or merger of license holder
- Dismantling of facility.

The allegation system, established by the Reactor Regulation Law, was revised so that personnel can allege violation of safety regulation to the NSC as well as to NISA, without unfavorable treatment. The rule under the law provides that the personal data of alleger be protected. The rule also provides for adequate procedures for investigation and disclosure of alleged case.

The Minister of METI is required to report quarterly the status of regulatory activity to the NSC. When the NSC independently reviews the regulatory activities based on the quarterly report, the license holder and the contractor who engaged in the maintenance of nuclear installation, are

required to cooperate with the NSC.

2) Electricity Utilities Industry Law

The Electricity Utilities Industry Law is established to protect the interests of users of electricity and to promote sound development of electric utilities industry by appropriate and reasonable administration of electric utilities industry, and to ensure the safety of public and to prevent pollution by regulating construction, maintenance and operation of power generating equipments (herein after referred to as “electric structures”), and it provides followings for the purpose:

- Electric utilities operation
- Electric structures
- Use of land etc.
- Registered safety management review agency, designated test agency, and registered survey agency

The provisions on Construction Plan, Welding Safety Management Review, Fuel Assembly Inspection, Pre-Service Inspection, Periodic Inspection, and *Periodic Safety Management Review* of the Electric Utilities Industry Law are applied to commercial power reactors, and the corresponding provisions of the Reactor Regulation Law are exempted from application.

Some of the technical standards under the Electricity Industry Law, which has been applied to detailed design, are specification code. In order to facilitate quick response to technological innovation and coordination with international standards and to encourage license holders' activities to promote safety, NISA is replacing specification code with performance code which are supplemented by academic society and association standards established through due and transparent process.

In the process of establishing performance code, harmonization of domestic standards with international standards are promoted. Namely, the confirmation of harmonization with IAEA nuclear safety standard NS-R-1is incorporated in the review process.

In addition to technical standards mentioned above, license holders adopt other academic society and association standards. The system of the technical standards based on the Electricity Utilities Industry Law is shown in Figure 7-2 and other related standards are shown in Table 7-2.

The Minister of METI is required to report quarterly the status of regulatory activity to the NSC.

When the NSC independently reviews the regulatory activities based on the quarterly report of NISA, the license holder and the contractor who engaged in the maintenance of nuclear installation are required to cooperate with the NSC.

(2) The Basic Law for Emergency Preparedness and the Special Law for Nuclear Emergency

The nuclear emergency had been addressed within the legal framework of the Basic Law for Emergency Preparedness. Taking account of the special characteristics of a nuclear emergency, the Special Law for Nuclear Emergency was established in December 1999. The Law stipulates special measures for nuclear emergency, including license holders' obligation for preventing nuclear emergency, the Declaration of Nuclear Emergency, and establishment of the Nuclear Emergency Headquarters, as well as activation of emergency measures in nuclear emergency. It also stipulates that a Senior Specialists for Nuclear Emergency be stationed in the vicinities of nuclear installations, who guides and advises license holders in preparing preventive measures for nuclear emergency, and conducts other activities necessary to prevent the occurrence and progression of a nuclear emergency.

The chapter of nuclear emergency in the Basic Plan for Emergency Preparedness based on the Basic Law for Emergency Preparedness, clarifies the measures to be activated at each step from the

occurrence of abnormal events, progression into nuclear emergency, to the recovery from emergency.

(3) Law for Radiation Protection

The radiation protection at nuclear installations is regulated by the Reactor Regulation Law, the Electricity Utilities Industry Law and the Industrial Safety and Health Law.

The Reactor Regulation Law stipulates zone control for radiation protection, dose control of personnel engaged in radiation work, measurement and monitoring of radiation levels, etc. in order to protect personnel and the public. The Electricity Utilities Industry Law prescribes the radiation instrument devices to be installed in nuclear power stations. The Industrial Safety and Health Law define the dose limits of personnel engaged in radiation work, which are equivalent to the Reactor Regulation Law. The Law for Technical Standards of Radiation Hazards Prevention maintains consistency among technical standards for radiation hazards prevention by establishing the Radiation Review Council.

In order to prevent hazards due to the use of radioisotopes in nuclear installations the Law for Prevention of Radiation Hazards due to Radioisotopes, etc. (hereinafter, called as Radioactive Hazard Prevention Law) stipulates zone control of radiation protection, dose control of personnel engaged in radiation work and radiation measurement in controlled area etc.

The ICRP Recommendation 1990 was incorporated into relevant legislation in April 2001.

(4) The Law for Environmental Impact Assessment

The Environmental Impact Assessment Law was enacted in June 1999, replacing the departmental decision, July 1977, of the MITI. The law stipulates for the environmental impact assessment of nuclear installation other than safety assessment.

The objective of the Environmental Impact Assessment Law is for license holders to perform proper assessment of a large business plan which may pose large impact on the environment, and to prepare proper plan to preserve the environment. The law provides for a set of procedures for it. Environmental assessment on commercial power plants, including nuclear power plants, is performed in accordance with the provisions of the Environment Impact Assessment Law and the corresponding provisions of the Electricity Utilities Industry Law. Environmental impact assessment is obligatory for nuclear installation regardless of its scale.

(5) The Law on Compensation for Nuclear Damage

The Law on Compensation for Nuclear Damage establishes the basic system on compensation for nuclear damage caused by a nuclear accident.

The Law adopts the “liability without fault” principle and imposes sole liability of compensation for nuclear damage on license holders, exempting claimants from proving license holder’s fault in accordance with the general principle of the Civil Law. Also, infinite liability of compensation is imposed on the license holder. To secure the fund of and to facilitate the compensation, the license holder is required to make the Financial Arrangement for Nuclear Damage Liability. The amount of the Arrangement is sixty billion yen for a nuclear installation.

The Arrangement consists of the Nuclear Damage Liability Insurance Contract with a civil insurer and the Indemnity Agreement for Compensation with the national government. The latter supplements the former in the case of large-scale accident such as caused by earthquake or volcanic eruption. And in case the total amount arranged by the license holder is not sufficient for full compensation, the national government, on the basis of decision by the Diet, would aid to cover the license holder. In the case of enormous natural disaster or social disturbance, the national government bears the compensation, exempting license holder from liability for compensation.

7.3 Legislative and Regulatory Framework at Each Stage

The overview of the safety regulations on the basis of the Reactor Regulation Law, the Electricity Utilities Industry Law, etc. from planning stage through operation stage is shown in Figure 7-3. A summary of the safety regulations for a commercial power reactor is stated in this section.

(1) Planning Stage

When selecting a site for a nuclear installation, the electric utility, on the basis of the Environmental Impact Assessment Law and the Electricity Utilities Industry Law, performs environmental impact assessment, and submits to METI the draft Environmental Impact Statement (draft EIS) explaining current status of the environment and measures to protect it. The draft EIS is sent to the related local governments to be disclosed for public comments. The utility prepares their views addressing residents' comments. Assessments on air, water, and soil pollution due to radioactive substances are performed under the Reactor Regulation Law and exempted from application of the Environmental Impact Assessment Law. METI conducts the evaluation, soliciting experts' opinion.

METI, also, holds public hearings (primary public hearings) to obtain understanding and cooperation of local residents. The results of public hearings are taken into consideration in the safety examination.

(2) Establishment Stage

The license applicant, having completed the procedure of planning stage, submit application format for the Establishment License to NISA in accordance with the Reactor Regulation Law. Applicants attach documents to the application format including description on safety design of the nuclear installation, radiation control, and accidents and failures.

NISA conducts an examination to determine the adequacy of the site, and the basic design of structure and equipment from the points of prevention of radiological hazards, focusing on the evaluation of the safety of the reactor core and the radiation exposure due to establishment of the nuclear installation. In addition, the regulatory body confirms that the nuclear installation should be used for peaceful purpose and in line with the planned development and utilization of nuclear energy, and the applicant has sufficient technical capability to ensure safety and sufficient financial basis to execute the plan.

In this examination, the regulatory guides in Table 7-1 and other documents established by the NSC are used. In the examination, site surveys, and analysis are conducted, when necessary.

The Minister of METI consults with the AEC and the NSC on the results of its examination.

During the process of review of METI's results, the NSC holds a public hearing (secondary public hearing) focusing on safety problems characteristic to the installation, and gives its views to the Minister of METI. The Minister of METI considers these views, asks for the consent of the Minister of MEXT, and then issues the license.

(3) Construction Stage

In accordance with the Electricity Utilities Industry Law, the license holder shall submit the Construction Plan for establishment of electric structures, and obtain the approval of the Minister of METI before starting construction work. NISA examines the Construction Plan to confirm that the detailed design of electric structures is consistent with the basic design and design policies approved at the stage of establishment license, and is in conformity with the technical standards based on the Electricity Utilities Industry Law. And the license holder shall designate Chief Electrical Engineers and Chief Engineers of Boiler and Turbine and notify NISA of it.

After obtaining approval of Construction Plan, the license holder shall undergo the Pre-Service

Inspection by NISA at each process of construction and at the completion of all construction work, which confirms that construction is conducted in accordance with the construction plan and is in conformity with the technical standards. The license holder shall obtain design approval by NISA for fuel assemblies to be loaded in the reactor and undergo the Fuel Assembly Inspection conducted by NISA. The license holder shall perform Licensee's Welding Inspection for welding of pressurized parts and containment vessels *and shall undergo review by JNES on the organization conducting the inspection, the inspection method, schedule control, and other items provided by the ordinance of METI (Welding Safety Management Review).*

(4) Operation Stage

At the start of operation, the license holder shall notify NISA of the operation plan, obtain approval of the fitness-for-safety program that prescribes the procedure of operational management, limitation of operating conditions and safety education of personnel, designate the Chief Engineers of Reactors, the Chief Electrical Engineers, and the Chief Engineers of Boiler and Turbine who supervise the safety of the operation, and the Persons Responsible for Operation, and notify NISA of them. The license holder is required to notify NISA of the operation plan annually.

The 17 items prescribed in the Operational Safety Program are shown in the report of Article 19 (Table 19-1), *which includes periodic assessment, quality assurance, and maintenance management etc.*

The license holder shall control the radiation exposure of personnel engaged in radiation work so that their doses do not exceed the dose limit, and shall report the exposure dose of personnel to NISA periodically.

License holder shall discharge into the environment gaseous and liquid radioactive waste generated during operation, in compliance with the concentration values provided in the Operational Safety Program which are lower than the concentration limits stipulated in the Reactor Regulation Law. A license holder shall make effort to reduce discharge amount as small as possible so that annual public exposure in the vicinity will be kept below 50 μ Sievert in accordance with the Regulatory Guide for the Annual Dose Target for the Public in the Vicinity of Light Water Nuclear Power Reactor Facilities (hereinafter referred to, as "Dose Target Guide for Public Dose").

After starting operation, the license holder, in accordance with the Electricity Utilities Industry Law, shall perform the Licensee's Periodic Inspection to confirm that that the installations conforms with the technical standards, and shall undergo the Periodic Inspection by NISA on the major part of structures important to safety. The Periodic Inspection and the Licensee's Periodic Inspection are conducted during shutdown of operation within the interval not exceeding 13 months from the date of start of operation or the date of completion of the previous inspection. Since October 2003, JNES conducts part of the Periodic Inspection and notifies NISA of the results on the basis of the revision of the relevant laws. Also, license holder shall undergo the Periodic Safety Management Review, in which JNES reviews the license holder's organization conducting the Licensee's Periodic Inspection, inspection method, schedule control, and other items provided in the ordinance of METI, and report to NISA for the evaluation.

License holder shall undergo the Nuclear Safety Inspection by the Nuclear Safety Inspectors on the observance of the Operational Safety Program, including the organization of license holder, quality assurance, maintenance management, operation, maintenance and repair of component, surveillance, radiation control, management of radioactive wastes, discharge control of gaseous and liquid radioactive wastes, monitoring, safety education. *NISA conducts the entry inspection of nuclear facilities to confirm compliance with safety regulation, if necessary.*

If any failures occur in nuclear installation, license holders shall report failures etc. immediately to NISA in accordance with the provisions of the Reactor Regulation Law and the Electricity Utilities Industry Law, and shall report to NISA, without delay, the situation of failures and the measures taken.

In order to improve transparency of information to the public, the reporting criteria for failures etc. were more clearly defined by amending the Reactor Regulation Law, in October 2003. License holders have established the system to collect information on events, including minor events that are outside of the reporting criteria, and disclose them to the public.

Criteria for necessity of approval or notification of the Construction Plan for any modification or repair work of electric structures after startup of operation was clarified by the amendment of the Rules for the Electricity Utilities Industry Law, in October 2003. NISA established "Regulatory Guide on the Construction Plan" to identify the details of the amendment and notified license holders of it.

MITI (present METI) issued, in 1992, a departmental decision to request license holders to voluntarily perform Periodic Safety Review at a regular operating interval (approximately every ten years), including incorporation of operating experiences from commissioning to date and the latest technological knowledge, and probabilistic safety assessment. On the basis of the amendment of the Reactor Regulation Law, in October 2003, the Periodic Safety Review was incorporated into the Operational Safety Program, the observance of which the Nuclear Safety Inspector inspects at the Nuclear Safety Inspection. *The implementation of probabilistic safety assessment, however, remains to be a voluntary activity of license holder as yet.*

On the basis of the amendment of the Reactor Regulation Law, in October 2003, license holder was obliged to perform technical evaluation on ageing of nuclear installation before the continuation of operation more than thirty years and shall prepare a ten-year maintenance program based on the technical evaluation. The subsequent evaluation should follow within ten years.

7.4 The Enforcement of Applicable Regulations and the Terms of License

In accordance with the Reactor Regulation Law, the Minister of METI may revoke the Establishment License or issue a Shutdown Order of nuclear installation for up to one year, under circumstances such as operating a nuclear installation without an Establishment License, violating an order legally issued by NISA, failing to implement measures necessary for safety prescribed by NISA, or failing to obtain approval for the Fitness-for-Safety Program.

The Reactor Regulation Law also prescribes imprisonment and/or fines under circumstances such as establishing a nuclear installation without an Establishment License, violating a Shut-Down Order, or failing to take relevant emergency measures. NISA may order changes in the Fitness-for-Safety Program whenever it is deemed necessary for preventing potential radiological hazards License holders failing to abide by such orders would be punished with a fine.

In accordance with the Electricity Utilities Industry Law, if it is judged for an electric structure not to conform to the technical standards, the Minister of METI may order repair, alteration, relocation, temporary suspension of usage, or limitation of usage.

The Electricity Utilities Industry Law prescribes fines if the license holder violates a Technical Standard Conformance Order, or establishes or alters an electric structure without obtaining necessary approval for a construction plan, or uses an electric structure without undergoing or passing the Pre-Service Inspection, the Fuel Assembly Inspection, or the Welding Safety Management Review. It also prescribes to revoke the business license, if an electric utility violates the law or orders based on the law causing serious damage to the public benefits.

On the basis of the amendment of the Reactor Regulation Law, October 2003, when an employee violates a law and is punished by a fine, the legal person who legally employs him or her is also punished by a fine as heavy as 100 times of the employee's fine, to prevent organizational illegal acts.

Table 7-1 Major Safety Regulatory Guides of the NSC for Light Water Nuclear Power Reactor Facilities

Prevention of Radiological Hazards	Siting	- Regulatory Guide for Reviewing Nuclear Reactor Siting Evaluation and Application Criteria
	Design	- Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Reviewing Classification of Importance of Safety Functions for Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities - Regulatory Guide for Reviewing Fire Protection of Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Reviewing Radiation Monitoring in Accidents of Light Water Nuclear Power Reactor Facilities - Fundamental Policy to be Considered in Reviewing of Liquid Radioactive Waste Treatment Facilities
	Safety Evaluation	- Regulatory Guide for Reviewing Safety Assessment of Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Evaluating Core Thermal Design of Pressurized Water Cooled Nuclear Power Reactors - Regulatory Guide for Evaluating Emergency Core Cooling System Performance of Light Water Power Reactors - Regulatory Guide for Evaluating Reactivity Insertion Events of Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Evaluating Dynamic Loads on BWR MARK-I Containment Pressure Suppression Systems - Regulatory Guide for Dynamic Loads on BWR MARK-II Containment Pressure Suppression Systems - Regulatory Guide for Meteorological Observation for Safety Analysis of Nuclear Power Reactor Facilities
	Dose Target	- Regulatory Guide for the Annual Dose Target for the Public in the Vicinity of Light Water Nuclear Power Reactor Facilities - Regulatory Guide for Evaluating the Annual Dose Target for the Public in the Vicinity of Light Water Nuclear Power Reactor Facilities - Guide for Radiation Monitoring of Effluent Released from Light Water Nuclear Power Reactor Facilities
Technical Competence		-Regulatory Guide for Reviewing Technical Competence of Nuclear Operator

Table7-2-1 Academic Society and Association Standards etc.

(Guidelines and Rules of the Japan Electric Association)

Number	Title
JEAC 4111-2003 (*)	*Rules of Quality Assurance for Safety of Nuclear Power Plants*
JEAC 4201-2000	Method of Surveillance Tests for Structural Material of Nuclear Reactors
JEAC 4202-2004	*Drop-Test Method for Ferritic Steel*
JEAC 4203-2004	*Primary Reactor Containment Vessel Leakage Testing*
JEAC 4205-2000	In-service Inspection of Light Water Cooled Nuclear Power Plant Components
JEAC 4206-2000	Methods of Verification Tests of the Fracture Toughness for Nuclear Power Plant Components
JEAC 4206-2003	*Methods of Verification Tests of the Fracture Toughness for Nuclear Power Plant Components (supplement)*
JEAC 4209-2003 (*)	*Rules of Maintenance Management of Nuclear Power Plants*
JEAG 4602-1992	Definitions of Nuclear Reactor Coolant Pressure Boundary and Reactor Containment Boundary
JEAC 4605-1992	Definitions of Engineered Safety Features and Related Systems of Nuclear Power Plants
JEAG 4101-2000	Guide of Quality Assurance for Nuclear Power Plants
JEAG 4102-1996	*Guide of Emergency Measures for Nuclear Power Plants*
JEAG 4204-2003	*Guide for Quality Control of Nuclear Fuel for Nuclear Power Plants*
JEAG 4207-2004 (*)	*Ultrasonic Examination for In-service Inspection of Light Water Cooled Nuclear Power Plant Components*
JEAG 4208-1996	Eddy Current Test Guide for In-service Inspections of Steam Generator Heat Transfer Tubes for Light Water Type Nuclear Power Plants
JEAG 4601-1987	Technical Guidelines for A seismic Design of Nuclear Power Plants
JEAG 4601-S-1984	*Technical Guidelines for A seismic Design of Nuclear Power Plants: Classification and Allowable Stress*
JEAG 4601-1991	Technical Guidelines for A seismic Design of Nuclear Power Plants: Supplement
JEAG 4603-1992	Guide for Design of Emergency Electric Power Supply Systems for Nuclear Power Plants
JEAG 4604-1993	Guide for Design of Plant Protection Systems for Nuclear Power Plants
JEAG 4606-2003	*Guide for Radiation Monitoring for Nuclear Power Plants*
JEAG 4607-1999	Guide for Fire Protection of Nuclear Power Plants
JEAG 4608-1998	Lightning Protection Guidelines for Nuclear Power Plants
JEAG 4609-1999	Application Criteria for Programmable Digital Computer System in Safety–Related System of Nuclear Power Plants
JEAG 4610-2003	*Personal Dose Monitoring for Nuclear Power Plants*
JEAG 4611-1991	Guide for Design of Instrumentation & Control Equipment with Safety Functions
JEAG 4612-1998	Guide for Safety Grade Classification of Electrical and Mechanical Equipment with Safety Functions
JEAG 4613-1998	Technical Guide Lines for Protection Design against Postulated Piping Failures in Nuclear Power Plants
JEAG 4614-2000	Technical Guidelines on Seismic Base Isolation System for Structural Safety and Design of Nuclear Power Plants
JEAG 4615-2003	*Guide for Design of Radiation Shielding for Nuclear Power Plants*
JEAG 4616-2003	*Technical Guide for Design of Base Structures for Dry Cask Storage Buildings*
JEAG 4801-1995	Guide for Operating Manual of Nuclear Power Plants
JEAG 4802-2002	*Guide for Education and Training for Nuclear power Plant Operator*
JEAG 4803-1999	Guide for Operational Safety Preservation of Light Water Cooled Reactors

Table7-2-2 Academic Society and Association Standards etc.

(Guidelines and Rules of the Japan Society of Mechanical Engineers)

Number	Title
JSME S NA1-2002 (*)	*Standards for Nuclear Power Generation Equipment: Maintenance Standards (revised in 2002)*
JSME S NB1-2001	*Standards for Nuclear Power Generation Equipment: Welding Standards*
JSME S NC1-2001 (*)	*Standards for Nuclear Power Generation Equipment: Design an Construction Standards*
JSME S ND1-2002	*Standards for Nuclear Power Generation Equipment: Design Standards for Prevention of Piping Break*
JSME S NE1-2003	*Standards for Nuclear Power Generation Equipment: Concrete Reactor Containment Vessel*
JSME S FA1-2001	*Standards for Spent Fuel Storage Facility: Structural Standard for Metallic Cask*
JSME S016	*Guide for Prevention o f Fluid Induced Vibration of Tube and U-Tube of Steam Generator*
JSME S017	*Evaluation Guideline on High Cycle Thermal Fatigue of Piping*

Table7-2-3 Academic Society and Association Standards etc.

(Guidelines and Rules of the Atomic Energy Society of Japan)

Number	Title
AESJ-SC-P001:2002	*Procedure of Probabilistic Safety Evaluation on Shutdown Condition of Nuclear Power Station*
AESJ-SC-P002:2003	*Evaluation Criteria of Fuel Integrity after Transient Boiling Transition for BWR*
AESJ-SC-P003:2003	*Performance Criteria of Wind Tunnel Test to obtain the effective height of Discharge Source*
AESJ-SC-F001:2000	*Periodic Inspection Criteria of Cask for Spent Fuel, MOX fuel and High Level Radioactive Waste*
AESJ-SC-F003:2002	*Measurement method of Sorption Distribution Coefficient- Basic Procedure of Batch Method for Barrier Material of Near Face Disposal*

Table7-2-4 Academic Society and Association Standards etc.

(Guidelines and Rules of the Thermal and Nuclear Power Engineering Society)

Number	Title
TNS-S3121-2003	*Qualification Standards for Industry Product on Weld of Electri Structures*

*Note: * Academic Society and Association Standards etc. that NISA has reviewed for technical adequacy in order to utilize as references of specifications.*

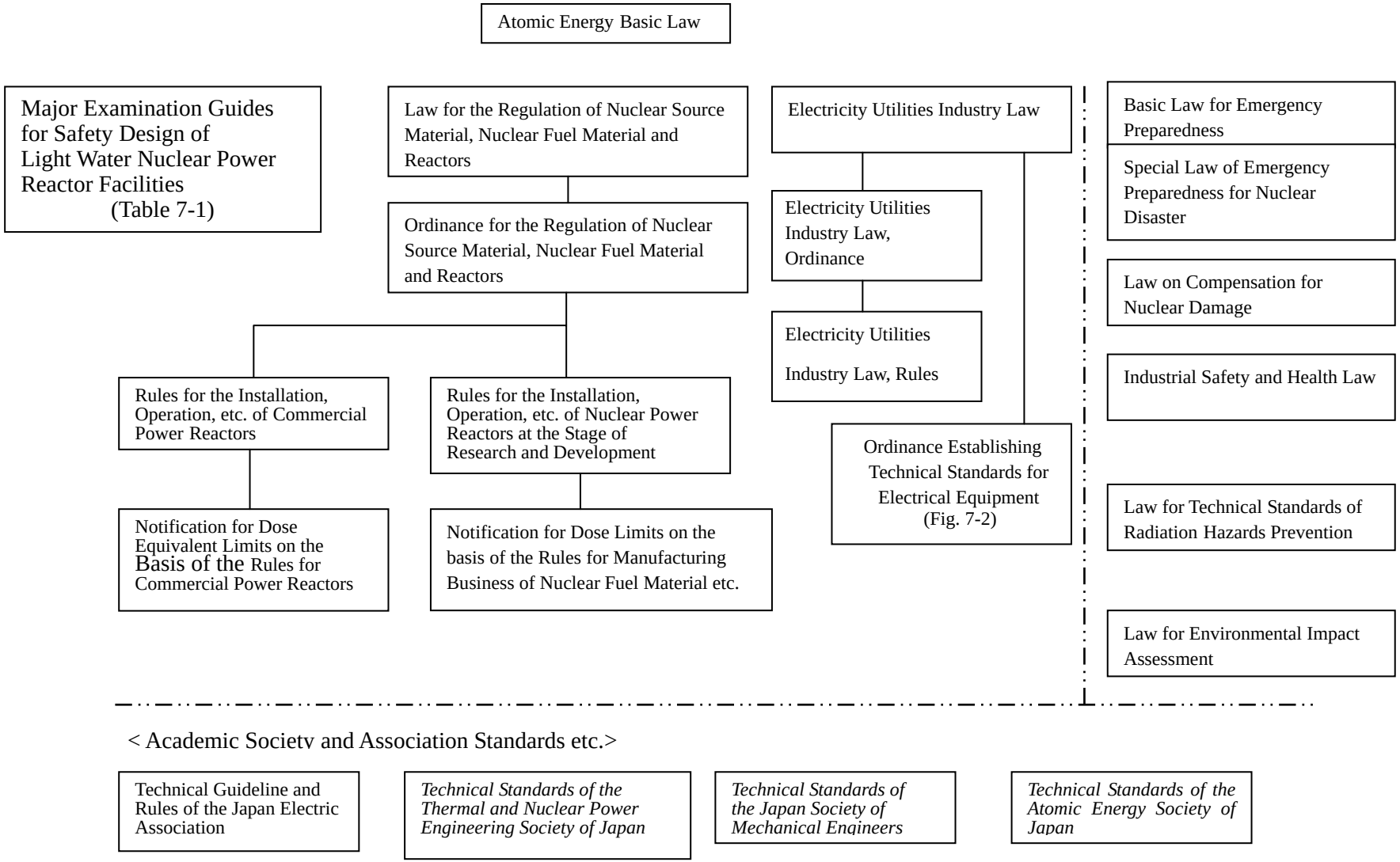


Fig. 7-1 Major Legislations Governing the Safety Regulation of Nuclear Installations

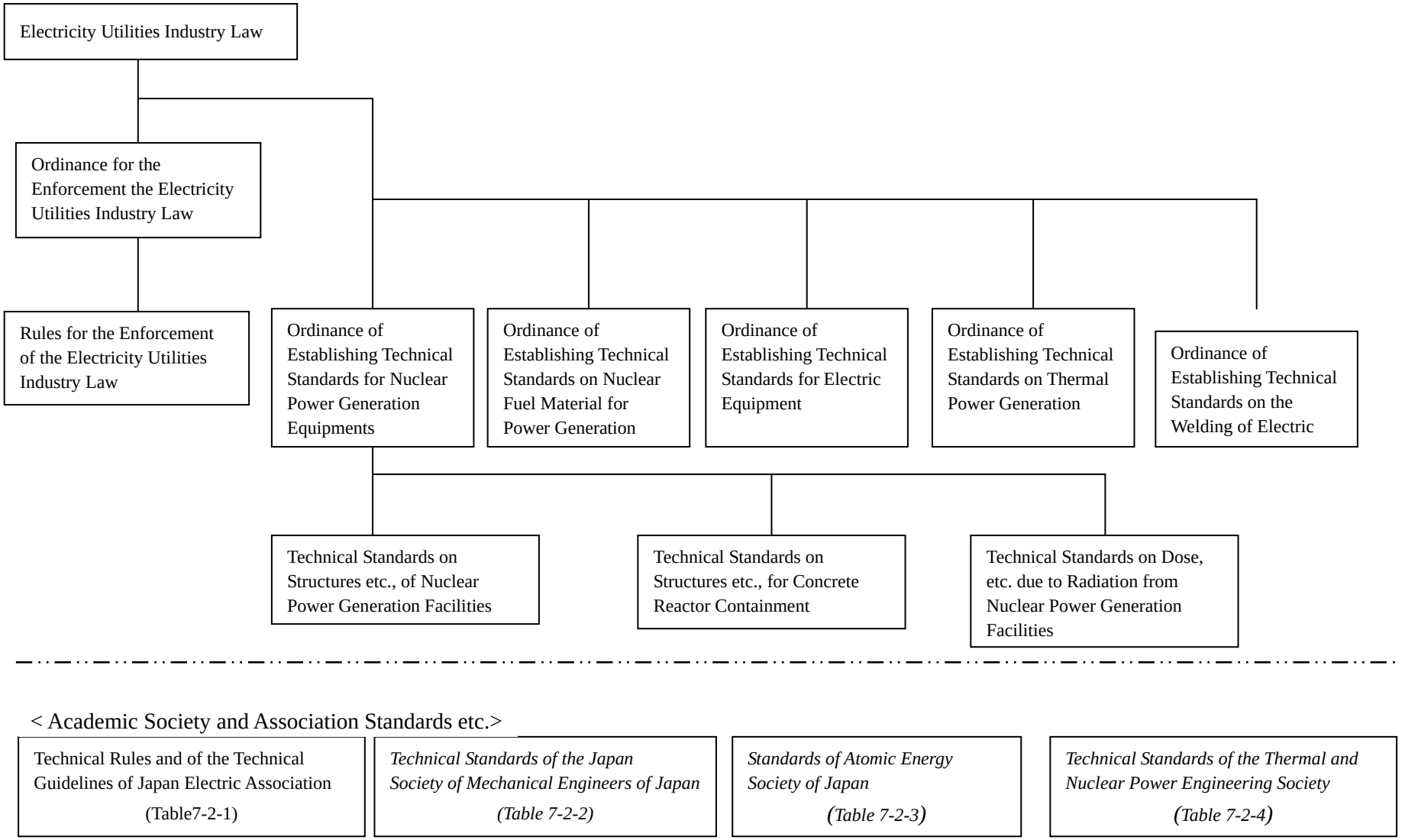


Fig. 7-2 Systems of Technical Standards

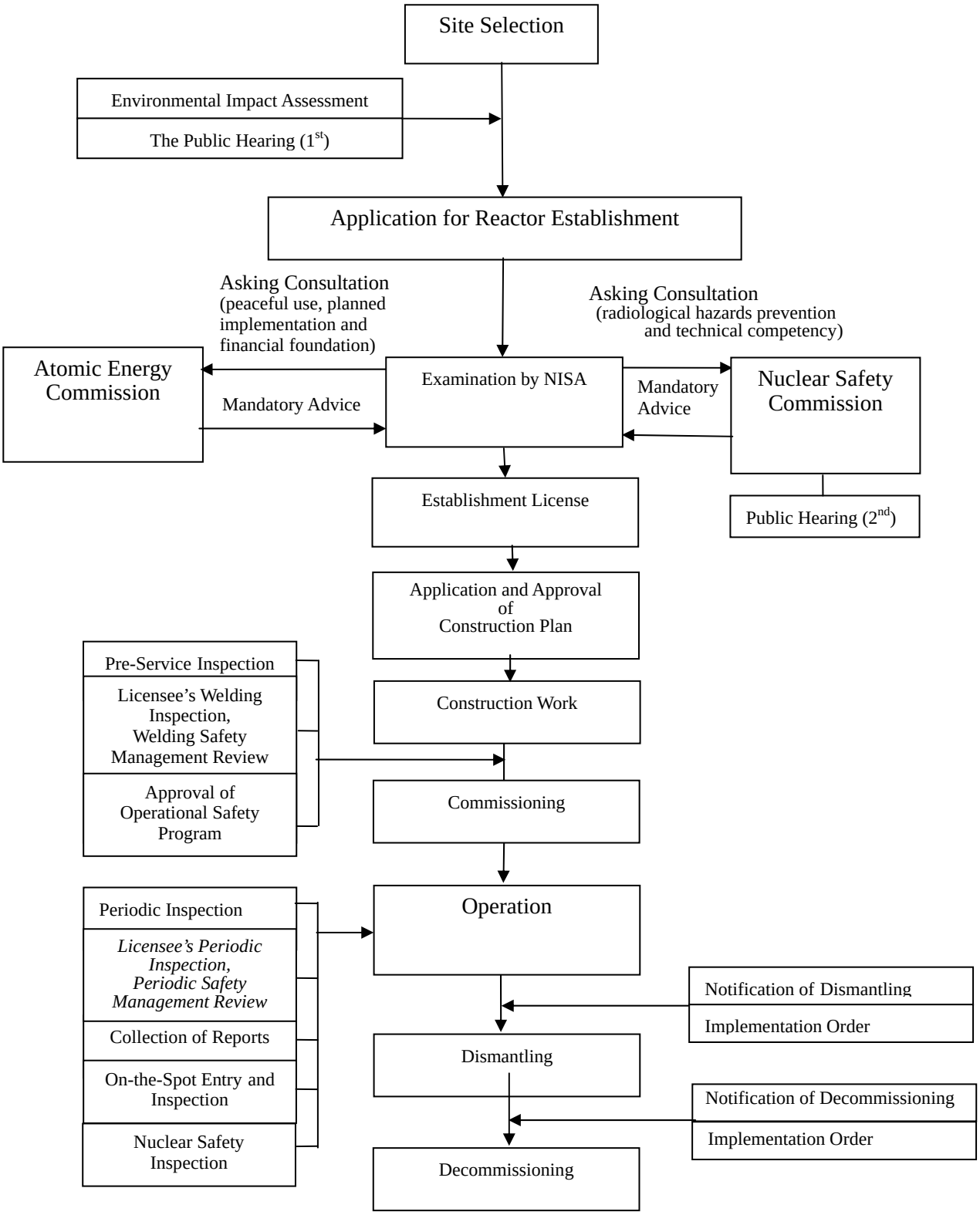


Fig. 7-3 Flow of Safety Regulations in accordance with Legislations, etc. for Nuclear Installations

Article 8 Regulatory Body

1. Each contracting Party shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 7, and provided with adequate authority, competence and financial and human resources to fulfill its assigned responsibilities.

2. Each Contracting Party shall take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.

As the regulatory body to ensure the safety of nuclear installations in Japan, Nuclear and Industrial Safety Agency (NISA) has been established as a "special organization into the METI. NISA has clear responsibilities for safety regulations pursuant to the Atomic Energy Basic Law and the Reactor Regulation Law and the functions of NISA are substantially separated, by the law, from those of other bodies or organizations concerned with the promotion or utilization of nuclear energy.

The Atomic Energy Commission (the AEC) and the Nuclear Safety Commission (the NSC) had been established. Each Commission is composed of commissioners appointed by the Prime Minister with the consent of the Diet. The AEC has duties of planning, deliberation, and making decisions concerning research and development for peaceful use of nuclear energy, and the NSC has duties of those for ensuring of nuclear safety. Both Commissions, through the Prime Minister, can recommend the heads of relevant administrative organs and can request them reports, documents, explanation, their opinions and, other necessary cooperation.

Since the second review meeting in order to implement measures for safety regulations more efficiently, the followings were newly established: the Senior Advisory Inspector System in NISA and the Incorporated Administrative Agency Japan Nuclear Energy Safety Organization (JNES) to support NISA

8.1 Mandate and Duties of Regulatory Body

The mandate of a regulatory body is to ensure safety of nuclear installations, and its duties are to enforce the legislative and regulatory framework described in the report of Article 7.

One of the important requirements for a regulatory body satisfying his responsibility is, as indicated in Article 8, Paragraph 2 of this Convention, to ensure effective separation between functions of the regulatory body and those of any other body or organization concerned with promotion or utilization of nuclear energy.

Another important function of a regulatory body is to keep communicating independently with the public of its regulatory decisions, its opinions and their basis.

On the basis of the Atomic Energy Basic Law, the regulatory body is responsible to conduct regulatory activities prescribed in the Reactor Regulation Law, the Electricity Utilities Industry Law, etc.

As for legislations and regulations etc. applied to the examination of the basic design or basic design policies of nuclear facilities and to the inspection of nuclear facilities in the construction and operational stages, the NISA and the NSC work toward improvement and enhancement of legislations and regulations based on operating experiences, trend of the latest knowledge of the technology advancement, etc., and the international consensus.

In case of a nuclear emergency, the Basic Law on Emergency Preparedness, the Special Law of Emergency Preparedness for Nuclear Disaster and other related laws are applied. Relevant administrative bodies in such a case are described in the report of article 16.

8.2 Organizations for Enforcement of Safety Regulation of Nuclear Installations

In Japan, the Minister of Economy, Trade and Industry serves as the minister in charge of safety regulation for all facilities and activities concerning utilization of nuclear energy.

Nuclear and Industrial Safety Agency (NISA) has been established in the Ministry of Economy, Trade and Industry (METI) as an independent "special organization" dedicated to the administration of safety regulations. NISA has been executing the policies independently from the Agency of Natural Resources and Energy dedicated to promote the nuclear energy.

The Incorporated Administrative Agency Japan Nuclear Energy Safety Organization (JNES) was established in October 2003.

JNES provides together with NISA infrastructure to assure safety in the use of the nuclear energy.

The NSC and the AEC had been established respectively in the Cabinet Office. The commissioners of both of these commissions are appointed by the Prime Minister with the consent of the Diet.

Each of these two commissions plans, deliberates, and decides policies concerning either the nuclear power application or ensuring the safety, from the standpoint to regulate all over the country respectively

As described in the report of Article 7, the NISA conducts a safety examination of nuclear installations, and the Minister of METI consults the NSC and the AEC on the results of the examination.

The NSC submits to the Minister of METI a specific report on the safety of the nuclear installation, after an independent examination and public hearings. The NSC establishes examination guides to be used for the examination. Fig. 8-1 presents an overview of administrative organizations that are responsible for the safety regulation of nuclear installations.

8.3 Nuclear and Industrial Safety Agency (NISA)

(1) The Role of NISA

NISA administers the safety regulations for nuclear installations. Specifically, NISA entrusted by the Minister of METI, conducts clerical works concerning the competence of the Minister of METI as follows:

- The Minister of METI, who is the competent minister stipulated in the Reactor Regulation Law, has the authority to issue a license for the establishment of a nuclear installation, after conducting examination of siting, structure, and equipment, so that radiological hazards due to the establishment of the nuclear installation are prevented. The Minister of METI has the authority to revoke the license under circumstances such as violation of the Reactor Regulation Law by the license holder.
- The Minister of METI has the authority to establish ministerial orders on the operation plans, measures on operational safety and on protection of specified nuclear fuel materials, Operational Safety Program, the Nuclear Installation Dismantling Notifications, the Chief Engineer of Reactors, emergency preparedness, etc. The Minister of METI has the authority 1) to approve Operational Safety Program, 2) to accept reports on operation plans, the Nuclear Installation Dismantling Notifications, and the appointment of Chief Engineer of Reactors, 3) to collect reports on incidents and failures from license holders, and 4) to order suspension of the operation of nuclear installations, dismissal of Chief Engineer of Reactors, measures relating to Dismantling Notifications and measures needed for emergency preparedness.
- The Minister of METI, and the Minister of MEXT, conducts examinations for Chief Engineer

of Reactors and issues the licenses. The Minister of METI has the authority also to order to return such licenses in a case of violation of the law by the Chief Engineers.

– The Minister of METI, who is the competent minister stipulated in the Electricity Utilities Industry Law, has the authority to establish ministerial ordinances relating to technical standards, Pre-Service Inspections, fuel assembly inspections, Welding Safety Management Reviews, Periodic Inspections, *and Periodic Safety Management Reviews*. The Minister of METI has the authority 1) to approve construction plans, 2) to conduct Pre-Service Inspections including confirmation of the safety performance of the power plant, Fuel Assembly Inspections, and Periodic Inspections, and 3) to issue an Order for Conformity with Technical Standards in the case of nonconformity to the technical standards. The Minister of METI has the authority also to hold examinations for Chief Electrical Engineers, to issue licenses for Chief Electrical Engineer and Chief Engineer of Boiler and Turbine, and to order the return of such licenses in case of violation of the law by the Chief Engineers.

NISA evaluates results of the Periodic Safety Management Review performed by JNES. JNES reviews the organization, inspection method, process control, and other items provided by Ministerial Order of the METI, concerning the Licensee's Periodic Inspection, and report the results to NISA.

NISA evaluates also the results of Welding Safety Management Review performed by JNES.

(2) Organization of NISA

NISA was established as a "Special Organization" in METI, *and has 11 divisions* dedicated to administration of the safety regulation of nuclear installations. Table 8-1 shows the assigned duties of the divisions.

Nuclear Safety Inspectors are assigned to the resident position at each nuclear installation. Fig.8-2 shows the locations of the Nuclear Safety Inspectors Offices.

NISA has a total of approximately 300 staff engaged in nuclear safety regulation, out of which 100 are Nuclear Safety Inspectors and the Senior Specialists for Nuclear Emergency stationed at nuclear installations.

(3) Improvement of Quality of NISA's Regulation

NISA provides a strong commitment to its mission, scientific and reasonable judgments, transparency, neutrality and fairness as the code of conduct for their activities. In this context, the Policy Planning and Coordination Division watches and assesses the performance of other NISA's divisions in discharging their duties, and take timely remedial actions after consulting with the senior managements.

NSC, independent from NISA, audits the quality of safety administration by observing and auditing NISA's activities aiming to stimulate ceaseless improvement and enhancement .

NISA makes continuous effort to maintain high quality of regulation through education and training of the personnel as stated in the report concerning Article 11, international activities and hearing to the advice from experts e.g. members of the Nuclear and Industrial Safety Subcommittee.

"The Law for Evaluation of the Policies Executed by Administrative Organizations" has been enforced since April 2002, and in accordance with this law, a framework, with which each administrative organization of the government evaluates and improves his own policies systematically, has been provided. METI has developed plans to evaluate the regulatory systems within its jurisdiction in fiscal year of 2004, and the NISA, according to these plans, evaluates the nuclear safety regulation system on the basis of the Reactor Regulation Law and the Electricity Utilities Industry Law.

(4) Further Approach to Information Disclosure

1) NISA's Activity for Communication with Public

NISA, at a web site (http://www.nisa.meti.go.jp/), has been disclosing information on incidents and accidents, radiation control, capacity factor and results of the periodic inspection of nuclear installations and activities of nuclear energy related to advisory committees, and is keeping communication with the public through questions and answers.

In order to recover the trust of the public which was lost due to the TEPCO falsification issue, NISA recognized that ensuring the transparency of the safety assurance of the nuclear plant, as well as explanation of the nuclear safety to the public and the residents in the vicinity of sites, was important.

NISA, held a numbers of explanatory meetings for the residents in the vicinity of sites to exchange opinions concerning the measures to prevent recurrence, the measures for safety assurance of the nuclear power station and the new safety regulation system enacted in October 2003. Thus, NISA has been making efforts to address the comprehensible explanation of nuclear safety, enhancement of the activities to hear from public and distribution of a periodic magazine to inform the activities of NISA, etc.

Also, the NISA opens Nuclear Energy Library in the JNES, where the public can access to license application documents of nuclear installations, reports of incidents and accidents of nuclear installations and, books and booklets on energy and nuclear power generation.

2) Public Information Law and Enhancement of NISA Public Information Organization

The Law concerning Access to Information Held by Administrative Organization enacted in April 2001, which prescribes disclosure of information on request, promotes the transparency of administration on safety regulation.

NISA developed in April 2004 a new budget to enhance activities to hear from and to speak to the public further, and has newly established the Nuclear Safety Public Relations and Training Division and assigned the Regional Public Relations Officer for Nuclear Safety.

The roles of the Nuclear Safety Public Relations and Training Division are a) to deepen communications with the public as a window to hear from and speak to public on NISA's activities, b) to conduct the activity to hear from and to speak to the public in various ways, corresponding to the various needs of the public, c) to provide the personnel of the NISA with education and training for development of risk communication skills so that the personnel may conduct activities for public hearing and public relations in a comprehensible manner, and d) to cooperate closely with Nuclear Safety Inspectors at the site area, in order to support of activities in the site area to hear from and to speak to the public, conducted by the Manager of the Nuclear Safety Inspectors Office as a leader.

The role of the Regional Public Relations Officer for Nuclear Safety is to promote communication activities with the public more actively upon request of local governments where many nuclear power facilities are located.

8.4 Organizations related to NISA

(1) Council

On the basis of the METI Establishment Law, the Advisory Committee for Natural Resources and Energy (ACNRE) was established, a subcommittee of which is the Nuclear and Industrial Safety Subcommittee (the NISS) that proposes policies on nuclear safety and safety of electric power as the terms of reference. The organization of the NISS is given in Table 8-2.

The Minister of METI appoints members of the ACNRE from persons of knowledge and experience, and these members select a chairperson of the ACNRE mutually. Subcommittees are established by the resolution of the ACNRE, and the chairperson designates members of the subcommittees including the NISS. The members of the subcommittees are assigned based on their expertise and experience from the fields of nuclear and thermal-hydraulic design, nuclear fuel design, system design, equipment design, seismic design, material strength, radiation control, meteorology, geology, soil etc.

Subjects to be discussed such as "How the safety assurance of nuclear power and operational safety of electric power system in the future should be under the changing social and economical circumstances" were submitted to the Nuclear and Industrial Safety Subcommittee. The NISS and other subcommittees have deliberated on what nuclear safety regulation system should be, and the results were reported to the NISA.

NISA solicits views of experts and members of the NISS.

(2) Incorporated Administrative Agency, Japan Nuclear Energy Safety Organization (JNES)

JNES, consisted of about 420 officers and staffs, was established in October 2003 as an organization that establishes the infrastructures in corporation with the NISA to ensure the safety in utilization of nuclear energy.

The mission of JNES is to implement their duties effectively and efficiently based on scientific judgments to contribute to the improvement of nuclear safety regulation and, to deliver and transmit actively the safety information to the public in order to gain the public confidence to the safety of nuclear energy.

JNES implements the following activities:

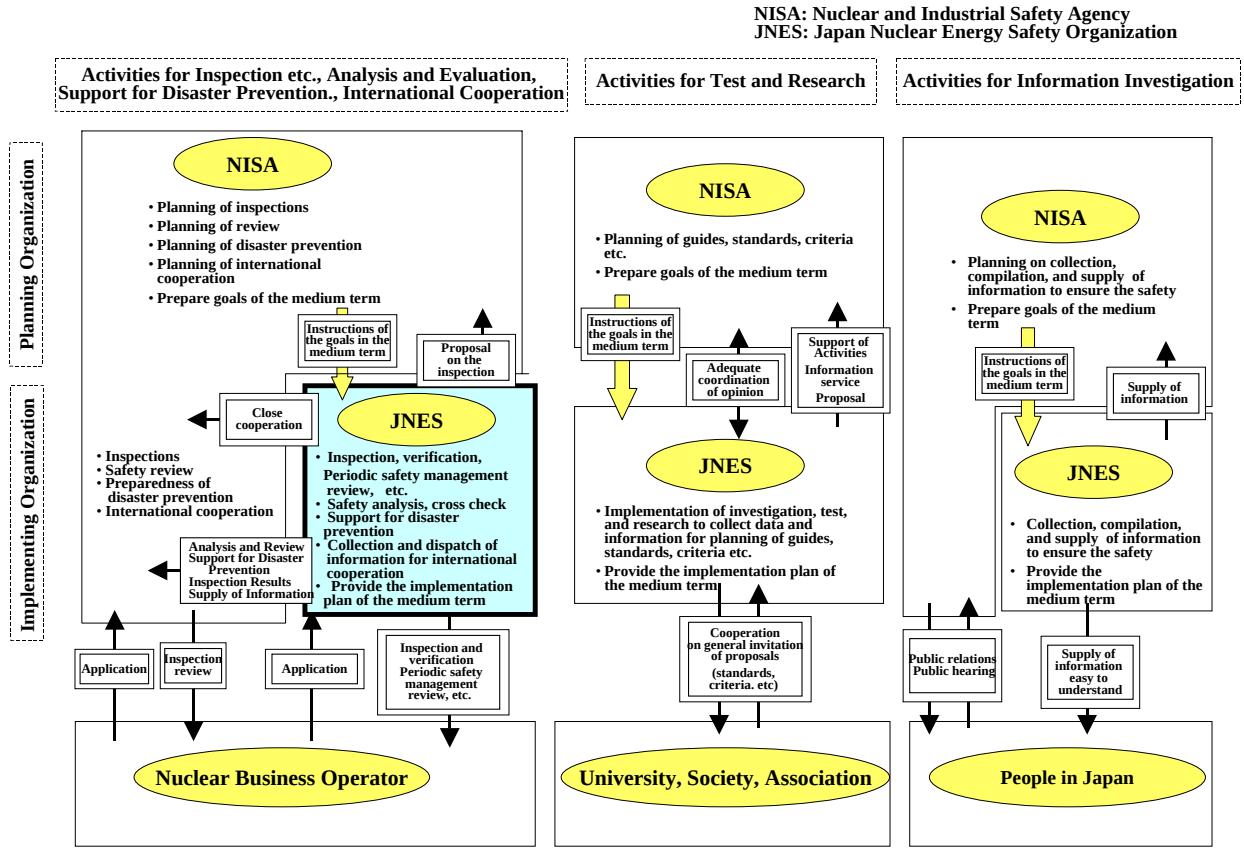
- *Inspection of nuclear fuel cycle facilities including nuclear power reactor facilities, and other inspections similar to those;*
- *Safety analysis and evaluation of designs of nuclear fuel cycle facilities including nuclear power reactor facilities;*
- *Activities to minimize probability of occurrence of nuclear emergencies, to prepare for a nuclear emergency, to prevent propagation of a nuclear emergency and, to recover from the nuclear emergency;*
- *Investigation, testing, research, and training concerning safety assurance for utilization of nuclear energy.; and*
- *Collection, analysis and transmission of information to assure nuclear safety.*

The procedure for JNES to implement activities and the relation of JNES with NISA of METI are as shown in the followings:

- *NISA develops a plan on each activity based on the regulatory needs, and defines the medium-term objective in accordance with the Law of the General Rules for Incorporated Administrative Agency, and the Minister of METI assign it to JNES.*
- *JNES prepares a scheme (medium-term scheme) to accomplish the medium-term objective, apply the scheme to the Minister of METI, and obtain the approval, then JNES prepares*

a-FY plan in accordance with the medium-term scheme, notify the plan to the said minister and implement it.

Allocation of Responsibilities Between NISA and JNES



8.5 The Nuclear Safety Commission (the NSC)

The Atomic Energy Basic Law was partially revised on October 4, 1978 to establish the NSC under the Prime Minister's Office. The NSC administers the function of safety regulation, belonged to the AEC till then, in order to strengthen the system of ensuring the nuclear safety. (The NSC was transferred from the Prime Minister's Office to the Cabinet Office due to central government reform in January 6, 2001.)

The NSC is responsible for planning, deliberation and decisions on matters that are related to ensuring safety of the research, development, and utilization of nuclear energy.

The NSC conducts its own review on the results of NISA's examination on a application, and supervises and audits the regulatory activities of the agency to check the appropriateness of his regulatory administration as the safety regulation in construction and operation stages after issuance of the license, as investigation activities to stimulate a ceaseless improvement and enhancement. Therefore, the framework that ensures the quality of safety administration is kept.

If the NSC deems it necessary as part of its assigned duties, the NSC may recommend and may request reports and cooperation concerning the submission of materials, statement of views, and explanation to the heads of relevant administrative organizations, by way of the Prime Minister.

Since April 2003 (partially, from October 2003), the above functions have legally been enacted. The

NSC receives from NISA the following reports on the quarterly bases after the approval of the license for establishment of nuclear installation: reports concerning conducts of the regulatory activities such as approval of construction plan, Pre-Service Inspection, Periodic Inspection, Periodic Safety Management Review, Welding Safety Management Review, approval of Operational Safety Program and Nuclear Safety Inspection, and reports concerning accidents and failures of nuclear installations. NSC has also the authority to inquire directly operators and contractors in order to supervise and to audit the safety regulation implemented by regulatory body.

In the case that there is violation of safety regulations in any of nuclear faciliies, one can directly allege the fact to the NSC, and the NSC has also the authority to investigate the allegation.

The Minister of METI, before issuing an establishment license for nuclear installations, shall receive views of the NSC on the following matters: (1) the applicant for the license of the nuclear installation has adequate technical capability to establish and reliably operate a nuclear reactor, and (2) the site, structures and equipment of the nuclear installation may not cause any hindrance to the prevention of radiological hazards.

The NSC is composed of five commissioners appointed by the Prime Minister with the consent of the Diet, and these commissioners elect a chairman among them. General affairs of the NSC are performed by the NSC Secretariat of Cabinet Office. The NSC Secretariat is composed of the Secretary-General, the General Affairs Division, the Regulatory Guides and Review Division, the Radiation Protection and Accident Management Division and the Subsequent Regulation Review Division and has about 100 personnel.

Under the NSC, two special safety examination committees, *eight special committees and five other*s are organized as shown in Table 8-3. The Special Committees may organize working groups under them, if necessary.

The members of the Committee on Examination of Reactor Safety and the Committee on Examination of Nuclear Fuels Safety are appointed from persons of knowledge and experiences by the Prime Minister in accordance with the Law for Establishment of the AEC and the NSC. The Emergency Technical Advisory Body is composed of the commissioners of the NSC and the Emergency Response Measures Investigators who are also appointed by the Prime Minister from persons of knowledge and experiences. The members of other Special Committees are selected from commissioners of the NSC and persons of knowledge and experiences.

The results of investigation and evaluation of each committee are reported to the NSC and are deliberated by the NSC. The results of the discussion in the Emergency Technical Advisory Body are reported to the NSC together with their advice and determined by the NSC as recommendation items.

Deliberations of all committees, including the special committees and working groups under the NSC are open to the public. The contents of the deliberations are provided for the public at a homepage (http://www.nsc.go.jp/) and the Nuclear Energy Library of the NSC.

8.6 The Atomic Energy Commission (the AEC)

The AEC was established, on January 1, 1956, under the Prime Minister's Office, on the basis of the Atomic Energy Basic Law and the Law for Establishment of the AEC and the NSC, to conduct national policy concerning research, development, and utilization of nuclear energy in a planned manner and to ensure the democratic administration of nuclear energy policy. (The AEC was transferred to the Cabinet Office in January 2001.)

The AEC has duties of planning, deliberation, and decisions concerning the research, development and utilization of nuclear energy (excluding matters relating to regulations on ensuring safety).

If the AEC deems it necessary as a part of its assigned duties, it may advise by way of the Prime Minister, and request reports and cooperation including the submission of materials, statement of views, and explanation from the heads of relevant administrative organizations.

The Minister of METI, before issuing an establishment license for nuclear installations, shall receive views of the AEC with regard to the following items: (1) the nuclear installations will not be used for any purposes other than peaceful purposes, (2) the license will cause no hindrance to the planned development or utilization of nuclear energy, and (3) the applicant has an adequate financial basis to construct and maintain the nuclear installations.

The AEC is composed of the chairman and four other commissioners appointed by the Prime Minister with the consent of the Diet.

8.7 Other Administrative Bodies

Establishment of nuclear installations necessitates the compliance with the other laws such as the Fire Protection Law and the Port Regulation Law therefore the relevant safety regulations are conducted by the relevant government offices e.g. the Fire Protection Agency and the Ministry of National Land and Transportation.

Table 8-1 Assigned Duties of the Divisions Related to Safety Regulation of Nuclear Installations (including nuclear fuel cycle facilities), NISA, METI

Policy Planning and Coordination Division	- *Planning and coordination concerning the general policy of the NISA*
Nuclear Safety Public Relations and Training Division	- *Activities for public hearing and public relations concerning the nuclear safety* - *Administration of the Nuclear Safety Inspectors and Senior Specialists for Nuclear Emergency Preparedness* - *Training and education of personnel to gain and to improve their competency*
Nuclear Safety Regulatory Standard Division	- *Planning and coordination concerning technology and system to ensure the nuclear safety* - *Regulation of nuclear power reactors in the stage of research and development, etc.*
Nuclear Safety Special Investigation Division	- *Management of allegation and litigation concerning nuclear safety*
Nuclear Power Licensing Division	- Regulation of commercial power reactors in the design and construction stage
Nuclear Power Inspection Division	- Regulation of commercial power reactors in the operation stage
Nuclear Fuel Transport and Storage Regulation Division	- *Regulation of spent nuclear fuel storage business* - *Regulation concerning transportation of nuclear fuel materials from sites*
Nuclear Fuel Cycle Regulation Division	- Regulation concerning businesses of refining, processing, fabrication, spent-fuel storage, and reprocessing.
Radioactive Waste Regulation Division	- Regulation of radioactive waste business, and dismantling and decommissioning of nuclear installations including nuclear fuel cycle facilities
Nuclear Emergency Preparedness Division	- Planning of nuclear emergency preparedness - Prevention and investigation of incidents and accidents in nuclear businesses - Administration of activities in nuclear emergency - *Matters concerning physical protection*
Electric Power Safety Division	- Regulation of turbine etc. - Environmental impact assessment

Table 8-2 Organization of the Nuclear and Industrial Safety Subcommittee, ACNRE

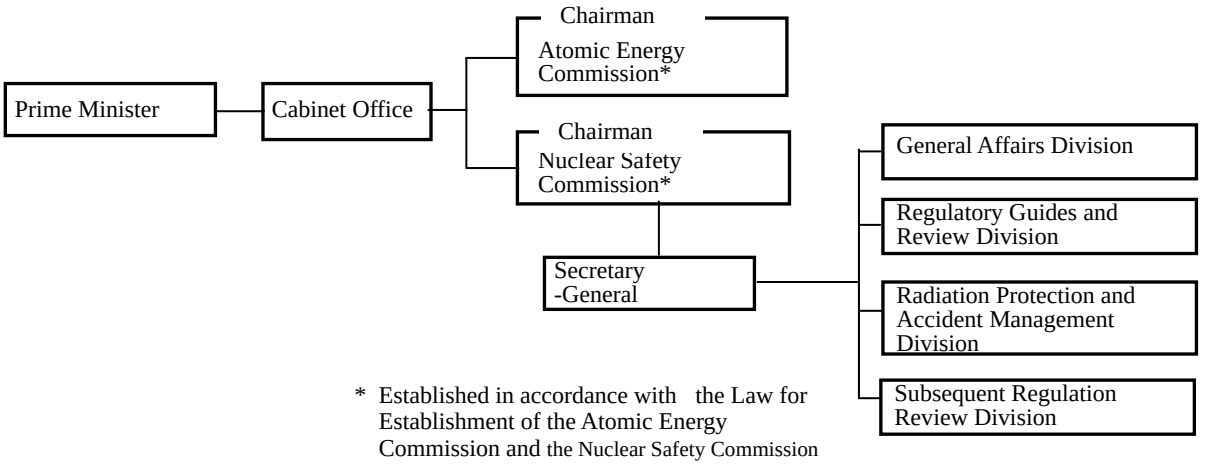
Basic Safety Policy Subcommittee	- General matters securing safety
Nuclear Reactor Safety Subcommittee	- Technical matters on commercial power reactors and power reactors at the stage of research and development
Nuclear Fuel Cycle Safety Subcommittee	- Fabrication and reprocessing of nuclear fuel, storage of spent fuel, transportation of nuclear fuel material, and the technical standards
Decommissioning Safety Subcommittee	- Decommissioning of nuclear installations*
Radioactive Wastes Safety Subcommittee	- Securing safety of disposal and storage of radioactive wastes
Seismic and Structural Design Subcommittee	- Technical matters on seismic safety and structural integrity of nuclear installations*
Nuclear Emergency Preparedness Subcommittee	- *Measures for incidents and failure, and general crisis management for emergencies of nuclear installations*and physical protection of nuclear material*
INES Evaluation Subcommittee	- INES Evaluation on incidents and accidents of nuclear installations*
Subcommittee for the Convention on Nuclear Safety	- Matters related to the Convention on Nuclear Safety and international standards on nuclear safety
Electrical Power Safety Subcommittee	- Securing safety of electrical power
Study Group on the Way of Inspection	- *Matters concerning inspection system of nuclear power generation facilities and nuclear fuel cycle facilities*
Subcommittee for the Joint Convention on Radioactive Waste and Spent Fuel Safety	- *Matters related to the Convention on Joint Convention Radioactive Waste and Spent Fuel Safety*
Subcommittee for the Institution of Nuclear Safety Regulation	- *Study of the legal system for the prevention of falsification of the self-controlled inspection record based on the investigation of the background of the falsification*
Subcommittee for fitness-for-service assessment etc. of nuclear power system	*Study of the followings, in the case where a plant has cracks in a core shroud or reactor coolant re-circulation system piping:* *(1) Verification of validity in the check methods for core shroud etc.* *(2) Technical fitness-for-service assessment· judgment method* (3) *Fitness-for-service verification etc. of individual plant based on check result specifically*

*: Including nuclear fuel cycle facilities

Table 8-3 Committees, etc. under the NSC

Committee on Examination of Reactor Safety	- Matters concerning the safety of nuclear reactor facilities
Committee on Examination of Nuclear Fuel Safety	- Matters concerning the safety of nuclear fuel material
Emergency Technical Advisory Body	- Technical advice in emergency measures in case of occurrence of an accident or a failure that meet the given standard level in nuclear installation etc.
Emergency Technical Advisory Body for Disaster Prevention of Nuclear Carriers and Submarines	- *Technical advices etc. for the emergency measures required in a case of actual or potential nuclear ship emergency*
Special Committee for Nuclear Safety Standards and *Guides*	- Matters concerning safety standards and guides of reactors, nuclear fuel facilities, and other nuclear installations
Special Committee on Radioactive Wastes and Decommissioning	- *Matters concerning the safety assurance in radioactive waste disposal* - *Matters concerning the safety assurance in decommissioning of nuclear installations*
Special Committee on Safety Goal	- *Establishment of safety goals*
Special Committee on Radiation Protection	- *Matters concerning the radiation protection considering domestic and foreign trends.*
Special Committee on Safe Transport of Radioactive Materials	- *Matters concerning the safety assurance in transportation of radioactive materials considering domestic and foreign trends.*
Special Committee on *Analysis and Evaluation of* Nuclear Accidents and Failures	- Analysis and evaluation of domestic and foreign nuclear accidents and failures
Special Committee on Nuclear Safety Research	- Planning of nuclear safety research program - Investigation of implementation status of the nuclear safety research program - Evaluation of the nuclear safety research program
Special Committee on Nuclear Disaster	- *The emergency preparedness in the vicinity of nuclear installations, etc.*
Task Force for introduction of Safety Regulations Using Risk Information	- *Review and analysis of the issue in introduction of safety regulations using risk information*
Project Team on Safety Survey of Reprocessing Facilities	- *The survey and analysis on the matters considered in the safety regulation activities during the stage of test operation of the Rokkasho reprocessing facility*
Safety Investigation on Disposal of Specified Radioactive Wastes	- *Technical matters concerning the safety assurance in the final disposal of high-level radioactive wastes*

Administrative Organization for Supervision and Auditing of Regulatory Activities



Administrative Organization for Regulatory Activities

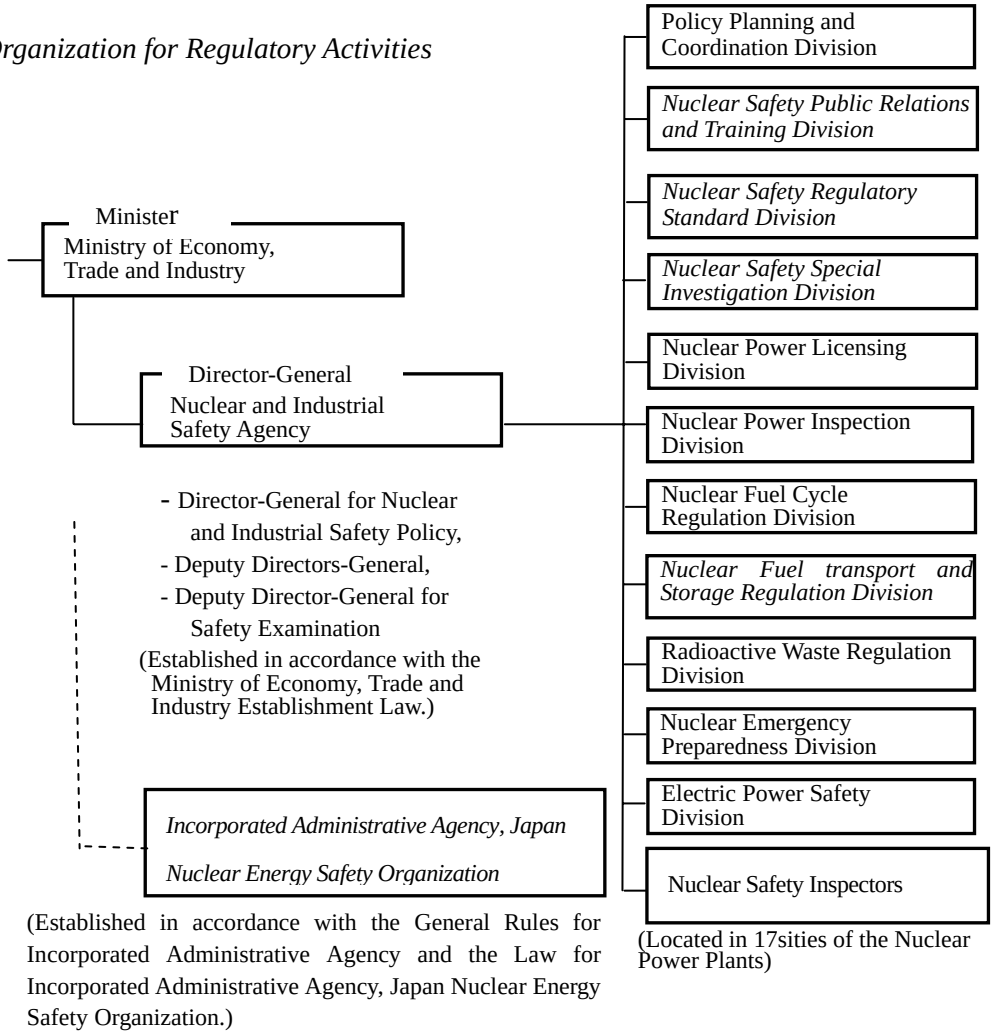


Fig. 8-1 The Outline of the Safety Administrative Organization for Nuclear Installations (including Nuclear Fuel Cycle)

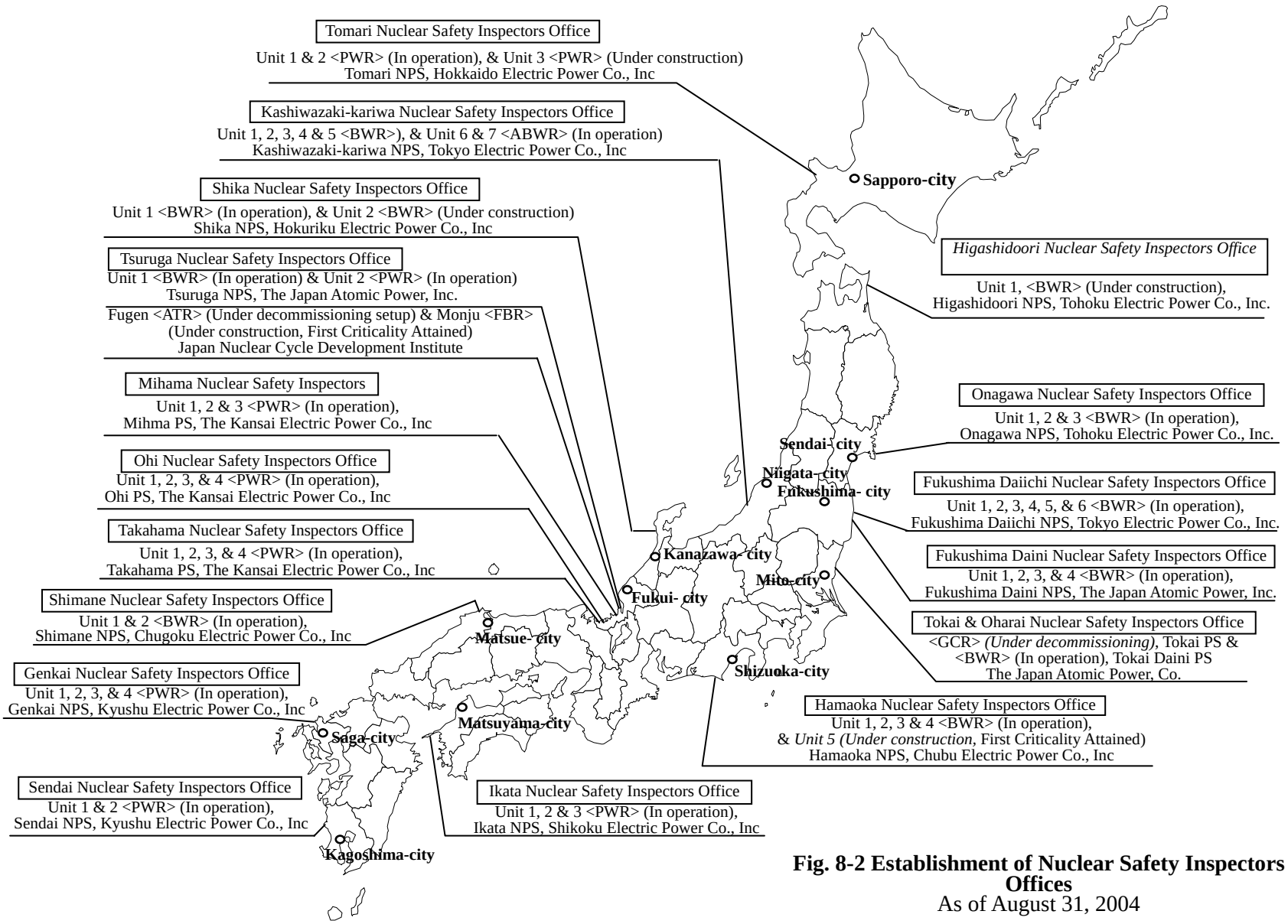


Fig. 8-2 Establishment of Nuclear Safety Inspectors Offices
As of August 31, 2004

Article 9 Responsibility of the Licensee

Each Contracting Party shall ensure that prime responsibility for the safety of a nuclear installation rests with the holder of the relevant licence and shall take the appropriate steps to ensure that each such licence holder meets its responsibility.

The prime responsibility for the safety of a nuclear installation rests with the licence holder, and the regulatory body establishes relevant regulation to ensure the public safety, and supervises that the licence holder complies with the regulation.

After the previous report, the amendment of the Rules for the Reactor Regulation Law clarified the licence holder's responsibility on quality assurance and maintenance management, and established the Licensee's Periodic Inspection and the Periodic Safety Management Review.

9.1 Regulatory measures for the licence holder to take the prime responsibility for the safety of nuclear installations.

The prime responsibility for the safety of a nuclear installation rests with the licence holder, and the licence holder shall comply with the regulatory requirements in each stage from planning through operation, which are stipulated in the Reactor Regulation Law, the Electricity Utilities Industry Law, etc. Those regulatory requirements are described in the report of Article 7.

The Licence holders activities concerning Education and Training of Operational Personnel etc. (Article 11), *Performance of quality assurance activities (Article 13), Periodic Safety Review (Article 14), Aging Management Review (Article 14),* Emergency Preparedness (Article 16), Design and Construction (Article 18), and Operation (Article 19) are described in the report of the respective article. The licence holder is continuously making efforts for improving the safety and reliability of its nuclear installations, as well as meeting with regulatory requirements, through training the personnel, preparing operation manuals, collecting, studying and sharing information on operating experiences and applying it to design, operation and maintenance, adopting the latest progress in technologies, performing the safety research, promoting quality assurance activities, and preparing accident management.

9.2 Supervision of Licence Holders by Regulatory Body

The basic mechanism to ensure the safety of nuclear installations is that NISA issues license, orders the licensee to bear the prime responsibility for safety, and supervises it within the legislative and administrative framework.

The following is an overview of the above mentioned mechanism.

(1) Licensing

The Minister of METI issues a license for the establishment of a nuclear installation after examining that the nuclear installation will not be used except for the peaceful purposes, that there is no potential obstacle for accomplishing the planned development of atomic energy, that technical capability and financial foundations of licence holders are sufficient, and that the site, the structure and the equipment of the nuclear installation may not cause any hindrance to the prevention of nuclear disaster. The regulation under the Reactor Regulation Law and the Electricity Utilities Industry Law in each stage from planning through operation is described in section 7.3.

(2) Licensee's Periodic Inspection and Periodic Safety Management Review

The Electricity Utilities Industry Law, as amended, stipulates that the licence holder shall perform the Licensee's Periodic Inspection replacing former self-controlled inspection, confirm the results to comply with the technical standards, and record the results. JNES conducts the Periodic Safety Management Review including review on the organization for implementing the Licensee's Periodic Inspection, etc., and reports the review results to NISA. NISA evaluates the review results and inform the licence holder of its conclusion.

(3) Nuclear Safety Inspection and Nuclear Safety Inspector

In accordance with the Reactor Regulation Law, NISA stations the Nuclear Safety Inspectors at each nuclear installation, who conducts the Nuclear Safety Inspection four times a year to confirm the licence holder's compliance with the Operational Safety Program, and addresses incidents if they occur.

(4) Quality Assurance Activities and Maintenance Management Activities

In accordance with the ordinance based on the Reactor Regulation Law, the licence holder shall establish quality assurance system and maintenance management system, and include them in the Operational Safety Program. NISA confirms the compliance with the Operational Safety Program through the Nuclear Safety Inspection.

(5) The Senior Specialist for Nuclear Emergency

In accordance with the Special Law for Nuclear Emergency, NISA stations Senior Specialist for Nuclear Emergency at each site of nuclear installations, who guides and advises the licence holder in preparing the Licensee's Plan for Emergency Preparedness, and conducts duties necessary to prevent nuclear emergency and mitigate the consequence should it occur.

(6) Periodic Safety Review

By the amendment of the ordinance based on the Reactor Regulation Law, the Periodic Safety Review is integrated into the Operational Safety Program.

(7) Aging Management Review

By the amendment of the ordinance based on the Reactor Regulation Law, the licence holder shall take measures for aging management, not later than thirty years after the commencement, to perform technical review on aging for the safety-related equipment and structures, and to establish the Ten-Year Maintenance Program. Measures for aging management are integrated into the Operational Safety Program, the compliance with which should be inspected by inspectors of NISA. Ten years Program must be revised every ten years.

(8) Accident Management

The licence holder prepares accident management program according to "Accident Management as a Measure for Severe Accident at Light Water Nuclear Power Reactor Facilities", a decision by the NSC, 1992, (partly revised by the NSC, 1997) and submits it to NISA for review. NISA reviews and evaluates the technical adequacy of it.

(9) Report

In accordance with the Reactor Regulation Law and the Electricity Utilities Industry Law, the licence holder shall report to NISA on their business.

(10) On-the-Spot Inspection

NISA conducts on-the-spot inspection, if necessary, at the plants, offices, etc. of licence holder or its contractor, in accordance with the Reactor Regulation Law or the Electricity Utilities Industry Law

(11) Revocation of License, etc.

Judging that the licence holder violated regulation, the Minister of METI may take measures of enforcement such as revocation of the license, suspension of operation, fine, etc., in accordance with the Reactor Regulation Law or the Electricity Utilities Industry Law

C. General Safety Considerations

Article 10 Priority to Safety

Each Contracting Party shall take the appropriate steps to ensure that all organizations engaged in activities directly related to nuclear facilities shall establish policies that give due priority to nuclear safety.

The development and utilization of the nuclear energy have been promoted giving due priority to safety in accordance with the Atomic Energy Basic Law.
The JCO criticality accident in 1999, etc. showed importance of moral and safety culture in the organization, and resulted in the introduction of the Nuclear Safety Inspection and the Allegation System.

However, the TEPCO falsification issue showed, again, that negligence of priority to safety among personnel gave rise to organizational falsification, and led to the renovation of the safety regulation by the NSC and NISA. In the renovated regulation, they clarify requirements for the license holder's quality assurance activities including organization, management, etc., urging the license holder to establish robust safety culture. The license holder is intensifying efforts to respond to it.

10.1 Basic Policy for Priority to Safety

Priority to safety is a basic policy in all nuclear energy development and utilization in Japan. The Article 2 of the Atomic Energy Basic Law states that priority should be given to ensure safety in all related activities (Annex 3.1). Also, The Article 1 of the Nuclear Regulation Law states that "this law, in accordance with the Atomic Energy Basic Law, is enacted for the purposes of providing necessary regulations on the establishment and operation of reactors, and uses of atomic energy are limited to peaceful purposes and carried out in a planned manner, and at the same time, to ensure the public safety by preventing the hazards due to these materials and reactors."

10.2 Efforts for Improvement in Safety Culture

Safety culture in organization is so vital to ensure safety of the nuclear installation, that the lack of safety culture there may result in serious consequence. Each of the regulatory body and the license holder takes various efforts to enhance safety culture.

(1) Efforts by the Regulatory Bodies

The regulatory body requests the license holder to comply strictly with the regulatory requirements for the quality assurance, urging, at the same time, license holder's top management to implement quality management and to take appropriate steps for robust safety culture to prevail among its personnel. For this purpose, NISA established the regulatory requirements on the quality assurance. Details of them are given in the report of Article 13.

Some of regulatory activities to enhance safety culture are shown below.

1) The NSC and NISA have attended, and contributed to, various international meetings or committees on safety culture of the IAEA, the OECD/NEA, etc., and collected and studied foreign examples of good practice on safety culture.

2) The NSC has promoted interdisciplinary and comprehensive study on safety culture, by collecting operating personnel's opinion on it, publishing booklets on it, analyzing mechanism to enhance it, colleting good practices on it in other industry, and analyzing characteristics of Japanese safety culture. Since July 2001, the NSC held 21 dialogue meetings on good practices and existing tasks on safety culture with operating personnel of nuclear power plants and other nuclear facilities, the report of which was published in January 2004.

3) NISA held advisory meetings on safety culture attended by experts including experts from other industries, and clarified tasks of the nuclear business operator, tasks of the regulatory body and tasks to be discussed with the public.

4) As an attempt for the regulatory body to monitor and quantify level of safety culture of license holder, JNES prepared review items on safety culture referring to ASCOT Guidelines of the IAEA, ISO9001, etc. on April 2004, and has been examining adequacy of them by applying them to foreign and domestic incidents.

(2) Efforts by Nuclear Industry

1) Efforts by Nuclear Industry

The Japan Atomic Industrial Forum Inc., consisting of about 800 business operators (electricity utilities, reactor manufacturers, etc.) who are engaged in the nuclear business, published a statement entitled "Toward Reform of Japan's Private Nuclear Industry" on October 8, 1999, being triggered by the JCO Criticality Accident. That says;

- Top management should establish policies that give due priority to safety, and make safety culture prevail over whole company.
- Top management of each division in a company should clarify scope of duty and responsibility of each staff, ensure compliance with rules and standards, and perform comprehensive review including preparedness for abnormal situation.
- Top management of each division should strengthen audit function by inviting managers of other divisions or experts out of the company.

---The rest is omitted---

In December 1999, 36 nuclear business operators such as utilities, fuel fabricators, plant manufacturers, and research organizations united and founded the "Nuclear Safety Network (NS network)" for sharing and improving the nuclear safety culture. *Activities of the Network were intensified by the revelation of the TEPCO falsification issue, and are shown in the followings.*

a. Activities to Disseminate Safety Culture

- *Holding several levels of seminars on nuclear safety for top management and senior management.*
- *Holding lecture meetings for member companies on corporate ethics by outside experts.*
- *Continuation of public relations campaigns on nuclear safety and safety culture with cooperation of other related organizations.*

b. Peer Review Activities

- *Peer review guide was revised to integrate lessons learned from the TEPCO falsification issue.*
- *Improvement of peer review process by inviting experts from outside.*

c. Collecting, Sharing and Dispatching Information

- *Information on nuclear safety and safety culture is extensively collected from member companies using questionnaire, and shared among them. Items on corporate ethics are recently added to the questionnaire reflecting the TEPCO falsification issue,*
- *Information is supplied to the public through Internet.*
- *Information is dispatched overseas positively.*

The Federation of Electric Power Companies, to restore public confidence lost by the TEPCO falsification issue, established the Confidence Recovery Committee consisting of presidents of all utility companies in October 2002, and revised the "Action Guideline of Federation of Electric Power Companies" in December 2002, stressing compliance with regulation and corporate ethics.

Recognizing importance of transparency in disclosing accidents and failures including minor events, license holders established public information library "NUCIA" on the Internet to collect and disseminate information on nuclear power station including information on accidents and failures, and started the operation in October 2003. Fig. 10-1 shows the practical use of operation and maintenance information by license holders.

2) Efforts by Each License Holder

Tokyo Electric Power Co., taking a series of falsification issue seriously, is now implementing various preventive measures against recurrence in three areas, that is, quality assurance, corporate ethics and safety culture. Measures in the area of safety culture include followings;

- *Requests personnel to comply with the corporate charter and the president's message calling for priority to safety.*
- *Establishes an organization that promotes safety culture.*
- *Establishes a forum where management of nuclear power plant discloses information on plant operation to the local residents, ensuring transparency.*

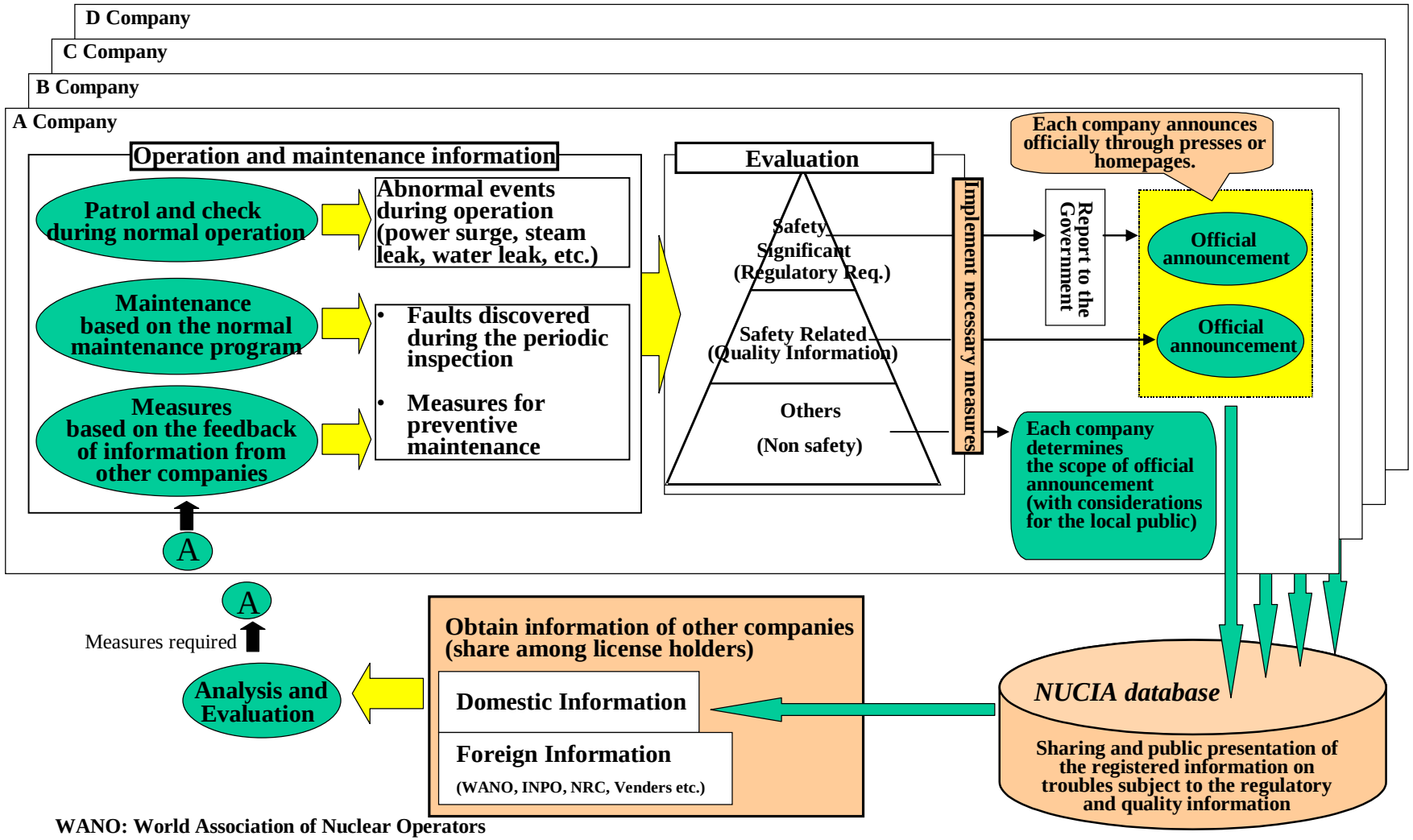
Other license holders, also, have publicly declared, in its annual management plan, a policy to give priority to safety in operation of nuclear power stations, and are implementing the similar measure to that of TEPCO.

Every license holder has established a nuclear safety planning committee at its head office reporting directly to the director of the nuclear power generation department, and a nuclear safety steering committee at each site chaired by the head of the power station. *The former reviews license application documents and alteration of the Operational Safety Program, etc., and the latter reviews the operation management procedure, educational plan on safety, etc.* In these committees, information on incidents of domestic and foreign plants are shared and transferred, and implementation plan on the periodic inspection, preventive maintenance, education and training programs for employees, and QA activities are discussed and promoted.

The Federation of Electric Power Companies provides a forum for exchange and study of information on domestic and foreign operational experiences and of measures for improvement, in addition to direct information exchange among persons in charge. Also, the electric power companies are engaged in international information exchange on operating experience through the Institute of Nuclear Power Operations (INPO), the World Association of Nuclear Operators (WANO), etc.

Nuclear manufacturers propose to utilities application of new technologies, and items for improvement on safety and work procedures, while utilities propose items for improvement based on operating experiences to manufacturers.
Some utilities have established institutes for research on safety culture and human factors. For example, the Kansai Electric Power Co., has established Institute of Nuclear Safety System, Inc. in 1992, and the research activities on the safety culture, etc. in nuclear power stations are carried on.
Central Research Institute of Electric Power Industry is carrying on research on human factors and safety culture.

Fig. 10-1 Use of Operation and Maintenance Information by License Holders



WANO: World Association of Nuclear Operators
INPO: Institute of Nuclear Power Operations
NRC: Nuclear Regulatory Commission, USA

Article 11 Financial and Human Resources

1. Each Contracting Party shall take the appropriate steps to ensure that adequate financial resources are available to support the safety of each nuclear facility throughout its life.
2. Each Contracting Party shall take the appropriate steps to ensure that sufficient numbers of qualified staff with appropriate education, training and retraining are available for all safety-related activities in or for each nuclear facility, throughout its life.

The financial basis of nuclear industry rests on the understanding and recognition that nuclear energy is the environmentally clean energy and reliable source for base load power, against the backdrop of deregulation of electricity utilities industry including that of power rates.

Although license holders have worked hard to comply with regulatory requirements on the appointment of Chief Engineers of Reactors, Persons Responsible for Operation, Chief Electrical Engineers, etc., they now face tasks of succession of technology, recruitment and training of personnel in various fields, etc.

11.1 Financial Resources of the License Holder

(1) Confirmation at Issuing License

Before issuing license of a nuclear facility, the Minister of METI, in accordance with Article 24 (Criteria for the license) of the Reactor Regulation Law, confirms that the applicant for the license possesses necessary financial basis by requiring the applicant to submit "Amount of Funds Required for Construction and Finance Procurement Plan", and also consults with the AEC. (Refer to the section 7.3(2) and Fig. 7-3)

(2) Applicant for the License of Nuclear Facilities

Applicants for license of commercial power reactors are the General Electric Utilities, that is, 9 electric power companies and 2 wholesale electric power companies. The Minister of METI issues license for electricity utility business only to those meeting certain criteria of financial basis, technical competence, etc. *The licensing system of electricity utilities business and the recognition that nuclear energy is a clean and reliable source ensures license holders sound financial basis.*

METI enacted the Ministerial Order of Reserve Fund for Dismantling Nuclear Power Facilities, in accordance with the provisions of Article 35 of the Electricity Utilities Industry Law. Electric utilities deposit reserves for decommissioning on the basis of this order. They also deposit reserves covering final disposal of vitrified wastes and other wastes resulting from reprocessing of spent fuels. The deposit is reserved in financial accounts of the Nuclear Waste Management Organization of Japan, an implementing organization for disposal, founded by the Law for Final Disposal of Specified Radioactive Waste enacted in June 2000.

The JNC, who owns R&D reactors of Monju and Fugen, is established by a law, and financial basis necessary for its business operation is provided by the national budget.

11.2 Human Resources of the License Holder

(1) Confirmation of Technical Competence

Before issuing license of a nuclear facility, the Minister of METI confirms that the applicant possesses technical competence necessary to establish a nuclear facility and operate it adequately, and consults with the NSC. The NSC had established the "Regulatory Guide for Reviewing Technical Competence of a Nuclear Operator" on May, 2004 in order to improve objectiveness and rationality of reviewing. In this regulatory guide, the follows are provided as fundamental requirements for licensing related to human resources that should be satisfied by an applicant;

-Securing engineers,
-Education and training for engineers,
-Designation and arrangement of qualified personnel.

The license holders are responsible for safety of the decommissioning and for preparing personnel for it. They implement technical development programs on decommissioning in cooperation with national research institutes, manufacturers and construction companies, and have trained and secured human resources through studying decommissioning activities abroad and participating in the project of *decommissioning the Tokai Power Station of the Japan Atomic Power Company.*

(2) Qualification, Training and Retraining of Personnel Engaged in Safety Activities

1) Staff Qualification

The license holder shall appoint a Chief Engineer of Reactors to supervise safety operation of nuclear facility, a Chief Electrical Engineer and a Chief Engineer of Boiler and Turbine to supervise safety during construction, operation and maintenance of electric structures. *The license holder assign the Persons Responsible for Operation from those who have knowledge, skills, and experience required for nuclear reactor operation, and who satisfy the standards provided by the Minister of METI. The Persons Responsible for Operation supervise operators in the control room of a power plant.*

Table 11-1 shows numbers of qualified personnel in nuclear facilities in Japan.

NISA is considering to establish a qualifying system of specialist for ultrasonic flaw detection, which is necessary for the application of the Rules on Fitness-for-Service for Nuclear Power Plant Components.

2) Staff Training and Retraining, and Resources for Training

License holders shall integrate safety education programs of personnel in charge of operation and management of a nuclear facility into the Operational Safety Program, and prepare and carry out long-term and short-term staff training programs to maintain and improve their capabilities. License holders, in addition to in-house operator training course using simulators (Table 11-2), periodically send their operators to external operation training centers for retraining. There are two centers: the BWR Operation Training Center (BTC) for BWRs and the Nuclear Power Training Center (NTC) for PWRs. A curriculum suitable for the ability/skill of each operator is prepared in these training centers.

Each license holders has established maintenance training centers (Table 11-3) for education and training of maintenance personnel. Various mock-up devices, inspection devices and training devices, etc, simulating plant facilities for training purposes, have been used to maintain and improve the knowledge, skills and work management capabilities of personnel involved in maintenance and inspection.

11.3 Efforts for Ensuring Infrastructure of Human Resources in Japan

Nuclear regulatory bodies and nuclear power industry are making efforts for ensuring nuclear experts now and in the future. Status after the previous reporting is as follows:

(1) Training of Experts in NISA

Staff members, who are in charge of nuclear regulation in NISA, are the Senior Specialist for Nuclear Emergency, the Nuclear Safety Inspector, the Nuclear Facility Inspector, the Electric Structure Inspector, and the Safety Examiner. These are called "Nuclear Regulatory Staff" as shown below.

A Senior Specialist for Nuclear Emergency is stationed at each nuclear installation, guides and advises the license holder in preparing its Plan for Emergency Preparedness, and conducts duties necessary to prevent progression of nuclear emergency should it occur.

A Nuclear Safety Inspector is stationed at each nuclear installation, conducts the Nuclear Safety Inspection to confirm license holder's compliance with the Operational Safety Program, address incidents if they occur, and supervises operation management of a nuclear installation.

A Nuclear Facility Inspector and /or an Electric Structure Inspector is dispatched from NISA head office, and conducts inspection activities, such as the Pre-Service Inspection and the Periodic Inspection of a nuclear installation, and the Fuel Assembly Inspection, on the basis of the Reactor Regulation Law or the Electricity Utilities Industry Law, respectively.

Safety Examiners conduct the Safety Examination of a nuclear installation.

A Nuclear Regulatory Staff is required to have expertise in nuclear technology. The system of long term and multistage education and training programs necessary for improvement of his/her expertise is developed, taking account of his/her experience and of the nature of the facility to which he/she is assigned. *Moreover, NISA started a Special Training Course on Quality Assurance of Nuclear Installation in 2002. Summary of training for nuclear safety regulation is shown in Fig. 11-1.*

NISA has appointed six Special Inspection Instructors in December 2003. They advise inspectors for the Nuclear Safety Inspection, the Periodic Inspection, etc. in each power station, instruct them to equalize the levels of inspections, and collect opinions and proposals from inspectors and license holders at the same time.

Furthermore, NISA maintains and develops its regulatory competence, as well as contributes to international safety regulation, through exchange of technical experts and information on safety regulation and safety technology, under bilateral arrangements with foreign regulatory bodies and in the framework of multilateral cooperation (the IAEA and the OECD/NEA).

(2) Training of Experts in JNES

JNES, as well as NISA, develops training courses for its personnel, putting emphasis on inspection activities.

JNES's inspection activities include the Electric Structure Inspection, the Nuclear Facility Inspection, the Welding Inspection, the Periodic Safety Management Review, the Welding Safety Management Review, the Safety Verification of Disposal Facility, the Safety Verification of Radioactive Waste Package, the Verification of Transportation Packaging, and the Verification of Transportation Method. The Electricity Utilities Industry Law or the Reactor Regulation Law stipulates that each of these activities be conducted by qualified personnel. JNES prepares various training courses for staff members to get appropriate qualification in their respective activities. President of JNES assigns inspectors from those qualified persons.

Moreover, JNES encourages inspectors and examiners to participate in the school of external bodies, scientific seminars, etc. to enhance their expertise.

(3) Efforts by Nuclear Industry

Confronting shrinking and aging population of Japan, the nuclear industry has grave concerns in the succession of technology, expertise and experiences, and the generational gap. The first generation experts are in the age of retirement. Each organization in the industry has made various efforts including revitalization of research and development activity, practical use of IT technology, etc. The

Japan Atomic Industrial Forum, Inc. established the "Subcommittee for Human Resources" consisting of senior managers in the industry and experts from outside, and studied on human resources in the future.

The subcommittee has made the following proposals in June 2003:

- *Training and career development of experts,*
  - *Establishment of an industry's qualification system of nuclear maintenance and repair technicians*
  - *Simplification of organizations of maintenance work*
  - *Establishment of an engineering center to share resources of maintenance and repair technicians, and to share common training facilities*
- *Recruitment of expert in the future,*
  - *Establishment of a nuclear educational system, sharing common educational infrastructure*

(4) Efforts by University and Research Institutes

Tokyo University is due to establish a graduate school, in 2005, consisting of three courses of the "Nuclear Engineering Specialist Course", the "International Engineering Course", and the "Innovation of Nuclear Energy Course".

Since 1958, JAERI has been operating training courses for engineers and technicians in radioisotope, radiation and nuclear technologies. Recently, JAERI started a course for nuclear emergency preparedness in close cooperation with national and local governments.

(5) Establishment of Professional Engineers System for Nuclear and Radiation Technologies

The Ministry of Education, Culture, Sports, Science and Technology decided to expand the existing Professional Engineers System, and established the nuclear and radiation technology department. Qualification test for the department will start in 2004 fiscal year.

The Nuclear and Industrial Safety Subcommittee of the Advisory Committee for Energy and Resources published, in July, 2001, a report titled "To Ensure Infrastructure of Nuclear Safety", which suggests directions to strengthen the institutional infrastructure, the knowledge-based infrastructure and the infrastructure of human resources.

Table 11-1 Numbers of Qualified Persons in License Holders

(As of the end of June 2004)

Type of Qualification	Numbers of Qualified Persons
Chief Engineer of Reactors	*581*
Class I Electrical Chief Engineer	*181*
Class I Boiler and Turbine Chief Engineer	*334*
Class I Supervisor of Radiation Protection	*1375*
Person Responsible for Operation *(Note)*	*372*

(Note) System of the Person Responsible for Operation was changed into the assignment by the license holders based on the standards of a Ministry of METI from the qualification by the conventional designated agency in August, 2001.

Table 11-2 Operator Training Facilities of Nuclear Facilities

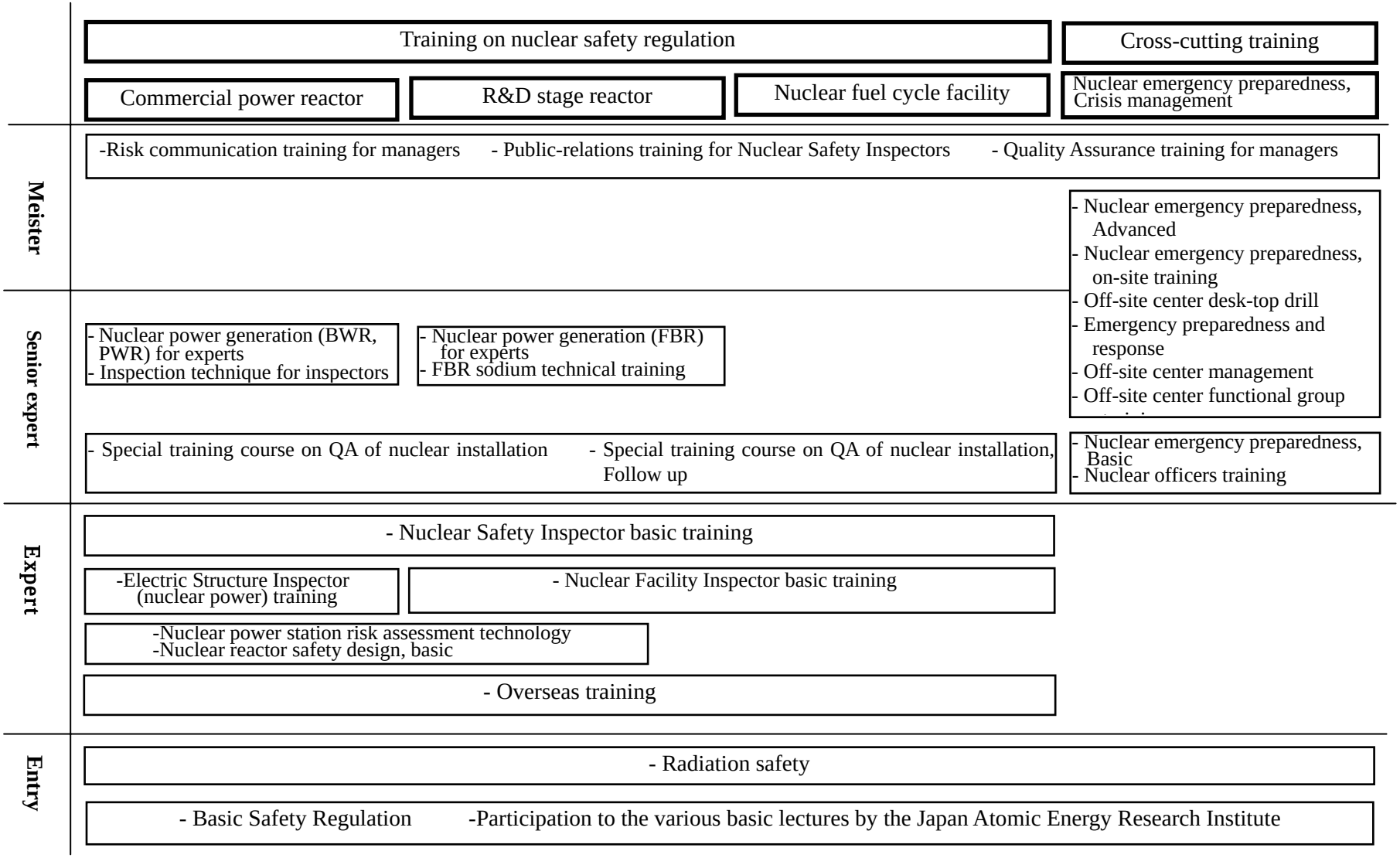
Organization	Location	Simulator
BWR Operator Training Center Corp.	Okuma-machi, Futaba-gun, Fukushima Prefecture Kariwa Village, Kariwa-gun, Niigata Prefecture	Full scale; *3units* Full scale; *2units*
Nuclear Power Training Center Ltd	Tsuruga, Fukui Prefecture	Full scale; *3units*
The Japan Atomic Power Co., Inc.	The Japan Atomic Power Company Training Center (Tokai Village) *On site of Tsuruga Power Station*	Compact; *1unit* *Compact 2units*
The Hokkaido Electric Power Co., Inc.	On site of Tomari Power Station	Full scale; *1unit*
Tohoku Electric Power Co., Inc.	Nuclear Power Engineering Training Center (on site of Onagawa Nuclear Power Station) *Nuclear Power Engineering Training Center (on site of Higashidori Nuclear Power Station)*	Full scale; *1unit* *Full scale; 1unit*
Tokyo Electric Power Co., Inc.	On site of Fukushima Daiichi Nuclear Power Station On site of Fukushima Daini Nuclear Power Station On site of Kashiwazaki Kariwa Nuclear Power Station	Full scale; *1unit* Full scale; *1unit* Full scale; *1unit*
Chubu Electric Power Co., Inc.	Nuclear Power Training Center (on site of Hamaoka Nuclear Power Station)	Full scale; *2units*
Hokuriku Electric Power Co., Inc.	Nuclear Power Engineering Training Center (on site of Shika Nuclear Power Station)	Full scale; *1unit*
The Kansai Electric Power Co., Inc.	On site of Mihama Power Station On site of Takahama Power Station On site of Ohi Power Station	Compact; *1unit* Compact; *1unit* Compact; *1unit*
The Chugoku Electric Power Co., Inc.	Ohno Training Center (Ohno-machi)	Full scale; *1unit*
Shikoku Electric Power Co., Inc.	Nuclear Engineering Training Center (Matsuyama) On site of Ikata Power Station	Full scale; *1unit*
Kyushu Electric Power Co., Inc.	Nuclear Power Training Center (*on site of Genkai Nuclear Power Station*) Nuclear Power Training Center (*on site of Sendai Nuclear Power Station*)	Full scale; *1unit* Full scale; *1unit*
Japan Nuclear Cycle Development Institute	On site of Fugen Power station On site of Monju Construction Office	Compact; *1unit* Full scale; *1unit*

(As of the end of June, 2004)

Table 11-3 Maintenance and Repair Training Centers of License Holders

Reactor Establisher	Name	Location
The Japan Atomic Power Co.	The Japan Atomic Power Company Training Center	Tokai Village, Naka-gun, Ibaraki Prefecture
Hokkaido Electric Power Co., Inc.	Nuclear Power Training Center	On site of Tomari Power Station
Tohoku Electric Power Co., Inc.	Nuclear Power Engineering Training Center	On site of Onagawa Nuclear Power Station
Tokyo Electric Power Co., Inc.	Fukushima Nuclear Power Plant Training Center	On site of Fukushima Daiichi Nuclear Power Station
	Kashiwazaki kariwa Nuclear Power plant Training Center	On site of Kashiwazaki Kariwa Nuclear Power Station
Chubu Electric Power Co., Inc.	Nuclear Power Training Center	On site of Hamaoka Nuclear Power Station
Hokuriku Electric Power Co., Inc.	Nuclear Power Engineering Training Center	On site of Shika Nuclear Power Station
The Kansai Electric Power Co., Inc.	Nuclear Power Maintenance Training Center	Takahama-cho, Ohi-gun, Fukui Prefecture
The Chugoku Electric Power Co., Inc.	Shimane Nuclear Power Station Engineering Training Center	On site of Shimane Nuclear Power Station
Shikoku Electric Power Co., Inc.	Nuclear Engineering Training Center	Matsuyama City, Ehime Prefecture
Kyushu Electric Power Co., Inc.	*Genkai Nuclear Power Station* Nuclear Power Training Center	On site of Genkai Nuclear Power Station
	Sendai Nuclear Power Station Nuclear Power Training Center	On site of Sendai Nuclear Power Station
Nuclear fuel cycle Development Organization	General Training Facility for FBR Cycle	*On site of International Engineering center*

Fig. 11-1 Training on Nuclear-Safety Regulation



Article 12 Human Factors

Each Contracting Party shall take the appropriate steps to ensure that the capabilities and limitations of human performance are taken into account throughout the life of a nuclear installation.

The license holder takes human factors into consideration at the design stage of nuclear installation, and, at the operation stage, prepares operational procedures, education and training course for its personnel and the management system for operation and maintenance. The regulatory body also takes various steps for prevention and remediation of human errors at design and operation stage.

12.1 Efforts by Regulatory Body

(1) Design Stage

1) The Regulatory Guide for Reviewing Safety Design requires that "reactor facilities be designed to reflect appropriate preventive considerations against operators' miss-operation", and its explanatory document requires that "In designing, attention should be given in consideration of ergonomics-oriented factors, to panel layout, operability of operating devices, valves, etc., instrument and alarm indication for accurate and quick recognition of reactor status and prevention of errors during maintenance and inspection." and that "In designing, measures should be taken so that necessary safety function is maintained without operator's actions for a certain length after the occurrence of an abnormal condition."

The guide also requires that "Control room be designed that the situation of operations and principal parameters of reactor and principal related facilities can be monitored and that prompt manual control can be performed, whenever required, to maintain safety." In conformity to these requirements, the Regulatory Guide for Reviewing Safety Assessment requires that "safety analysis be performed in consideration of the following: In case that operator actions are expected at the occurrence of abnormal situations, sufficient time and adequate information be available so that operator may be able to properly judge the situations and take necessary acts with a high degree of confidence."

JNES prepared a manual for evaluation of human factors in the main control room, to confirm that these requirements are reflected in the design.

2) At the Approval of Construction Plan, the Technical Standards under the Electric Utilities Industry Law request that the main equipment necessary for safe operation of nuclear installation can be monitored at a glance and necessary actions can be taken in the control room.

(2) Operation Stage

1) The Reactor Regulation Law provides that the license holder prepare the Operational Safety Program, obtain approval of NISA on it and comply with it. The program includes preparation of operation management system, education program on safety, operational procedures etc. NISA confirms and approves the Operational Safety Program, and the resident Nuclear Safety Inspectors confirm the compliance with it by the license holder in the Nuclear Safety Inspection.

2) The license holder reports failures of the installation to NISA in accordance with the laws. Especially, in the case that the failures are identified to be caused by human errors, the license holder reports to NISA measures addressing failures including improvement of equipment. NISA consults on the failure with experts when necessary and urges license holders to apply lessons learned to other installations. *JNES analyses human error-related cases in detail, and selects items to be reflected in the safety regulations. JNES prepares a summary report on lessons learned, and accumulates them in the database.*

12.2 Efforts by License Holders

(1) Considerations in Design

License holders take following considerations on human factors in designing central control room.

1) Considerations for operator actions

Central control room is designed so that operating conditions of the reactor and other important equipment and principal plant parameters can be monitored at a glance and necessary actions can be taken in the room during normal operation and abnormal transients, and in accidents.

For example, *the control panel adopted in the advanced BWR, ABWR, has fully digitalized instrument and control system and safety protection system* (see Fig. 12-1). The advanced control panel makes it easy for operator to recognize operating conditions at a glance and to share information among operators by adopting a large-size display panel. The scope of automation is expanded, reducing routine operation by operator following a reactor scram. These measures have improved the reliability of monitoring and operator actions. *The fully digitalized main control panel is also adopted for PWR (see Fig.12-2)*

Remodeling control panel in the central control room of an existing nuclear installation, extensive use of CRT improves monitoring capability and operability of control panel.

2) Considerations on the control room

Following measures are taken to prevent operator's human errors.

- Control panels allow monitoring of the whole of main systems of the installation, and the layout provides easy access for operation.
- Operating devices are easily discernible by colors, shapes, name plate, etc., and are laid out in proximity of related indicators, avoiding human errors in operation, maintenance and checks.
- The alarm labels clearly indicate content of alarm, and important alarms are discernible from others by color, layout, etc.
- Instruments are laid out so that related plant parameters may be monitored easily.
- Monitoring capacity can be improved by CRT display and clearly discernible alarm indicators.
- *Information sharing among operators is improved by adopting large display panels.*

Fig. 12-1 Main Control Panel of ABWR

Fig. 12-2 Main Control Panel of the Latest PWR -proto type-

A design guide for digitalized main control panels is in preparation as one of the academic society and association standards named "Guide for Human Machine Interface of Computerized Central Control Rooms for Nuclear Power Plants" by the Japan Electric Association.

(2) Considerations in Operation Management

License holders perform appropriate operation management during normal operation and in accidents.

1) Operational management

a. Organizations for operation

The manager of power generation division, responsible for the operation of a nuclear installation, controls operating shifts in charge of the operation and their supporting groups.
The shift supervisors have authority and responsibilities to take measures required in an accident, and *are selected from those who conform to the criterion specified by the Minister of METI.*

b. Shift of operators

Operators work in shifts. There are shifts devoted to education and training, in addition to operating shifts, to maintain and improve operator's capability. The education and training of operators is one of the important elements of human factors. Details are described in Section 11.2.
When turning over shift duties, the shift supervisor makes sure to pass on the logbook, the supervisor logbook, keys, and precise description of operations to the succeeding supervisor. Each operating staff also transfers information of plant operation to the succeeding operating staff.

2) Preparation and amendment of operation procedures

Operation procedures are prepared for normal operation, failures and accidents and are constantly amended by lessons learned from incidents and accidents or by alteration of facilities.

Symptom-based procedures for multiple failures are prepared in addition to scenario-based procedures for design basis events. The symptom-based procedures enable prevention of accident progression without identifying the cause of an accident. Also prepared are the procedures addressing severe accidents exceeding design basis events, and accident management guidelines for the staff group supporting shift operators. The effectiveness of these procedures is verified by comparison with the results of the analysis of plant transient by the analysis code used in the application for establishment license, and probabilistic safety assessment. Training course using simulator, based on a symptom-based procedure, is conducted at the operator training facility. Preparation of the procedures for emergency situation is expected to be effective for mitigation of operators' stress in an emergency.

3) Maintenance Management System

The maintenance department of a license holder controls the work of periodic inspection, modification works, etc. of a nuclear installation carried out by the plant manufacturer and many affiliated companies. A majority of human errors in the past occurred in the works associated with maintenance and repair, which means that the maintenance management by the license holder is very important.

The plant manager of a nuclear installation manages modification works, clarifying scope of work, scope of responsibility and authority. Maintenance of important equipment is carried out with a

prior mock-up test.

Chief engineers (Chief Engineer of Reactors, Chief Electrical Engineer, Chief Engineer of Boiler and Turbine) perform verification and assessment of regulatory inspections by attending the regulatory inspections or confirming inspection records. They also perform verification and assessment, as appropriate, of the plans and results of regular checks or modification works to prevent human errors in maintenance and management works.

Article 13 Quality Assurance

Each Contracting Party shall take the appropriate steps to ensure that quality assurance program are established and implemented with a view to providing confidence that specified requirements for all activities important to nuclear safety are satisfied throughout the operating life of a nuclear installation.

The regulatory body (NISA), license holders, plant manufacturers and equipment suppliers (hereinafter referred to as "manufacturers"), conduct quality assurance (hereinafter referred to as "QA") activities for nuclear installations in a coordinated way at each stage from design through operation and maintenance.

The basic concept of regulatory inspection has been continually renovated, seeking for more effective and efficient inspection activities, and in line with international trend in regulatory inspection. It has moved from a concept of system and component inspection to a concept where NISA encourages license holders to improve their QA activities and confirms the adequacy of them. A series of wrongdoings by license holders and manufacturers, such as the TEPCO falsification issue, falsification of fuel assembly inspection results, improper construction work at a spent fuel reprocessing facility, revealed the importance of transparency of license holder's QA activities and of regulatory supervision on them. In view of the circumstances, NISA accelerated its regulatory renovation and the NSC reviewed the regulation concerning QA activities for safe operation and presented its views and opinions to NISA.

After the previous reporting, NISA clarified regulatory requirement for QA. NISA encouraged establishment of academic society and association standards in conformity to international standards and reviewed their technical adequacy and license holders apply newly established academic society and association standards to their QA activities.

13.1 Regulatory Requirements for QA of Nuclear Installation

NISA conducts regulatory activities from design stage to operation stage, such as issuance of license, approval of construction plan, inspection of equipment, etc., on the basis of the Reactor Regulation Law and the Electricity Utility Industry Law.

The Reactor Regulation Law stipulates that quality assurance system should be established and be included in the Operational Safety Program, the compliance with which should be confirmed in the Nuclear Safety Inspection.

The aim of the mechanism mentioned above is for license holders to establish comprehensive and systematic QA programs, to implement them and to carry out their accountability to the public to restore confidence of the public.

The key points of QA activities are; a) to involve top management, b) to be based on international standards on QA (ISO9001:2000), c) to improve them by Plan-Do-Check-Act cycle, and d) to establish an independent audit organization.

The Reactor Regulation Law stipulates that license holder's QA program should include a) organization governing the performance of QA, b) plan of activities for safe operation, c) implementation of activities for safe operation, d) evaluation of activities for safe operation, and e) improvement of activities for safe operation.

Note) The term, activities for safe operation, means activities necessary to maintain safety, in maintenance work of facilities, operation of reactors, and transportation, storage and management of nuclear fuel materials or materials contaminated by nuclear fuel materials.

License holders prepare their QA program of the nuclear facilities and implement them, according to JEAC 4111-2003, "Rules of Quality Assurance for Safety of Nuclear Power Plants" established by JEA in autumn of 2003 based on the ISO9001:2000. NISA evaluated the rules and accepted them as

the standards to meet the regulatory requirements.

The contents of JEAC4111-2003 are shown in Table 13-1.

13.2 Confirmation of QA by Regulatory Body

NISA requires applicant for license, or license holder, of a nuclear installation to submit appropriate QA program, and confirms implementation of QA program as follows:

(1) Examination of Basic Policy for QA activities at Reactor Establishment

NISA requires the applicant to submit the "Policy for Quality Assurance" attached to the application document at safety examination for establishment license of a nuclear installation,

(2) Examination of QA Program in Construction Stage

At examining the construction plan, NISA requires the license holder to submit the "Description on QA Program" which the license holder would carry out through design, manufacturing, installation and functional tests. NISA confirms that the license holder has prepared appropriate procedure to audit subcontractor's quality control, material control, etc. as well as those of the primary contractor.

(3) Confirmation of QA of Fuel Assembly

NISA requests license holders of fuel assembly fabrication to submit application document for fuel assembly design approval, which describes performance, strength, and flow sheet of fabrication process, etc. of fuel assemblies, and to submit an explanatory document on QA attached to it. *When conducting the Fuel Assembly Inspection, the inspector of NISA confirms not only the license holder's test results but also license holder's test procedure.*

For imported fuel assembly, NISA requests the license holder of reactor to submit the description of QA program.

(4) Confirmation of QA Activities throughout Operating Life

NISA confirms QA activities of license holders throughout the operating life of nuclear installations as follows:

- *Description of QA activities in the Operational Safety Program*
- *Confirmation of compliance of the Operational Safety Program in the Nuclear Safety Inspection*

During outage of nuclear facilities, NISA and JNES, in the Periodic Safety Management Review, confirms that the Licensee's Periodic Inspection is performed appropriately.

13.3 Implementation and Assessment of QA Program by License Holders

Outline of QA activities by license holders is as follows;

(1) Establishment of QA Program

License holder prepares QA program in accordance with *JEAC4111-2003*, and implement QA activities based on it. These programs cover document control, design control, procurement control, management of inspection and testing, nonconformity management, and audit, etc. The license holder submits the "Policy for QA" and "Description on QA Program" to NISA as described in section 13.2 (1) through (4).

(2) QA Activities in Design, Construction, Commissioning, Operation and Maintenance

QA activities are carried out by many organizations. The license holder clarifies the scope and responsibility of the manufacturer in QA activities, and entrust it with QA activities in its scope. In the same way, the manufacturer entrust its subcontractors with QA activities in their scope.

(3) QA Audit

JEAC 4111-2003 defines that QA system of manufacturers undergoes prior review and *inspection* by license holder.

The license holder audits manufacturer's QA activities. The license holder performs an independent in-house QA audit by departments other than nuclear department reporting directly to top management. The independent internal QA audit started, learning lessons from the steam generator tube rupture accident at Mihama Power Station, Unit 2 in 1991.

The manufacturer audits subcontractors' QA activities in addition to its own internal audit of QA activities.

Table 13-1 Contents of JEAC4111-2003, "Rules of Quality Assurance for Safety of Nuclear Power Plants"

0. Introduction
1. Objective
2. Scope of Application
3. Definition
4. Quality Management System
5. Responsibility of Management
6. Management of Resources
7. Planning and Implementation of Job
8. Evaluation and Improvement

Article 14 Assessment and Verification of Safety

Each Contracting Party shall take the appropriate steps to ensure that:

(i) comprehensive and systematic safety assessments are carried out before the construction and commissioning of a nuclear installation and throughout its life. Such assessments shall be well documented, subsequently updated in the light of operating experience and significant new safety information, and reviewed under the authority of the regulatory body;

(ii) verification by analysis, surveillance, testing and inspection is carried out to ensure that the physical state and the operation of a nuclear installation continue to be in accordance with its design, applicable national safety requirements, and operational limits and conditions.

Regulatory body (NISA) and licence holders perform and record the assessment and verification of the safety of nuclear installations in accordance with the legislative framework, at each stage of planning, establishment, construction, and operation of nuclear facilities. Necessary regulatory guides are enacted and utilized for assessment and verification of each stage. The audit type inspection is introduced to review the implementing system for the inspection conducted by licence holders at the operation stage.

In recent years, the probabilistic safety assessment methodology has been developed as a supplement to the conventional deterministic safety evaluation, and the resulted risk information are used in regulatory activities such as the development of accident management, and the Periodic Safety Review (PSR) in Japan. Also introduction of the safety goals that define the acceptable risk levels are under development.

The legislative framework required for assessment and verification of the safety is described in the Article 7th .

14.1 Assessment and Verification of Safety prior to Construction

The applicant for a license to establish a commercial power reactor submits a license application document to NISA pursuant to the Reactor Regulation Law.

NISA examines whether the application conform to the licensing criteria prescribed in the Reactor Regulation Law.

The outlines of the safety assessment submitted for Establishment Licence and regulatory criteria are described below.

(1) Documents for Establishment License

An application for establishing a commercial power reactor consists of a main text and attached documents detailing safety design, safety analysis, siting assessment, etc. in accordance with the provisions of the Reactor Regulation Law and the related legislation. The application document describes basic design with sufficient information for examining the safety.

(2) Safety Assessment and Acceptance Criteria

1) Siting Assessment

The siting assessment of a commercial power reactor is conducted pursuant to the Regulatory Guide for Reviewing Nuclear Reactor Siting Evaluation and Application Criteria. The Guideline requires that a) there have as yet been no event (natural disaster) in the past liable to induce large accident and no such event is expected to occur in the future, b) in relation to its engineered

safety features, nuclear reactors shall be located at a sufficient distance from the public, and c) the environment of the nuclear reactor site including its immediate proximity shall be such that appropriate measures for the public can be implemented as required.

2) Safety Assessment

In the safety examination conducted by NISA, it is verified that basic design or design concept of the commercial power reactor applied conforms to Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities (hereinafter called, the Regulatory Guide for Safety Design), and the safety is discussed and evaluated as a whole in accordance with the provisions of Regulatory Guide for Reviewing Safety Assessment of Light Water Nuclear Power Reactor Facilities (hereinafter called, the Regulatory Guide for Safety Assessment.).

The Regulatory Guide for Safety Design requires that the basic policy of the safety design for commercial power reactors should be established, and structures, systems and components of nuclear reactor facilities should perform the required functions not only in the normal operation condition but also in the assumed abnormal situation to ensure the safety. Specifically, two postulated event categories of "anticipated transients during operation" and "accidents" are defined and the safety during these events is evaluated based on the Regulatory Guide for Safety Assessment. The definition of event categories is almost the same as that of the nuclear safety standards (NUSS) of the IAEA.

Applicants to install nuclear reactors perform safety analysis on these postulated events and proves the adequacy of the safety design of the plant referring the results to the acceptance criteria.

And, NISA examines the results of analysis performed by applicants to install nuclear reactors and if necessary confirms the adequacy receiving the report concerning independent analysis results performed by JNES. Selections of postulated events and their evaluations are as follows.

Single failures and erroneous operation for each system and component are identified as events to be postulated in the safety evaluation, and the representatives of events leading to similar consequences in transients but with the severest results are selected. These postulated events are classified into anticipated transients during operation or accidents through their probability and consequence as described in the Regulatory Guide for Safety Assessment, and the safety is evaluated in accordance with the defined acceptance criteria according to the classification.

a) Anticipated Transients During Operation.

Anticipated transients during operation are those events that may be caused by a single failure or malfunction of component or a single erroneous operation by the operator during the life of commercial power reactors, or events that result in abnormal conditions caused by external disturbances expected to generate in the same degree of frequency of those. Fourteen events for Pressurized Water Reactors (PWRs) and twelve events for Boiling Water Reactors (BWRs) are specified as events to be evaluated. In the analysis of these events, the adequacy of the safety design of such important safety systems as reactor protection system, reactor shutdown system, etc. are confirmed through verifying the integrity of reactor core and reactor coolant pressure boundaries based on the acceptance criteria provided in the Regulatory Guide for Safety Assessment.

b) Accidents

Accidents are events more serious and less frequent than anticipated transients during operation, which have to be postulated for the potential of releasing radioactive substances

from a commercial power reactor that should be evaluated. Ten events for PWR and nine events for BWR are selected as events to be evaluated. In the analysis of these events, the adequacy of the safety design of engineering safety features is confirmed by verifying that there would be no significant damage to the core, that reactor containment boundaries would remain sound, and that there would be no significant risk of radiation exposure to the public in the vicinity based on the acceptance criteria provided in the Regulatory Guide for Safety Assessment.

Among the accidents, loss of coolant accident is analyzed and evaluated according to the Regulatory Guide for Safety Assessment and the Regulatory Guide for Evaluating Emergency Core Cooling System Performance of Light Water Power Reactors, and reactivity insertion accident is analyzed and evaluated according to the Regulatory Guide for Safety Assessment and the Regulatory Guide for Evaluationg Reactivity Insertion Events of Light Water Nuclear Power Reactor Facilities.

The Minister of Economy Trade and Industry consults the Nuclear Safety Commission in order to hear the opinion about the results of examination, and the Nuclear Safety Commission deliberates whether there is some problems for preventing radiological hazards or not, etc., and implements the public hearing to evaluate the public opinion.

14.2 Assessment and Verification of Safety Prior to the Commissioning

The licence holder of reactor establishment shall develop a construction plan for establishment of electric structures, and shall obtain the approval of NISA before starting construction in accordance with the Electricity Utilities Industry Law. After obtaining the approval of construction plan, he shall undergo the pre-service inspection by NISA at the every process and at the completion of construction. For fuel assemblies to be loaded into the nuclear reactor, he shall obtain the design approval and undergo the fuel assembly inspection by NISA. For the welding of pressurized parts, containments, etc., the licence holder of reactor establishment shall conduct the Licensee's Welding Inspection, and shall undergo review of the implementation system concerning Licensee's Welding Inspection (Welding Safety Management Review) *performed by JNES.*

Verification of the safety for the approval of construction plan, of fuel assembly design and Welding Safety Management Review are described in the followings.

(1) Verification of Safety at Approval of Construction Plan, and Pre-service Inspection

The licence holder shall develop a construction plan for establishment of electric structures, and shall obtain the approval of NISA after obtaining the establishment license and before starting construction in accordance with the Electricity Utilities Industry Law. NISA will review to confirm that the detailed design of electric structures is not contradictory in the basic design or fundamental design policies of the establishment licensing stage, and is not nonconforming with the technical standards in accordance with the Electricity Utilities Industry Law for the approval of construction plan concerned.

Licence holders, after receiving the Approval of Construction Plan, undergoes Pre-Service Inspection by NISA at each construction stage and at the completion of all construction works, to verify that the construction is completed in accordance with the Approval of Construction Plan and is not nonconforming with the technical standards. The Pre-Service Inspections includes those inspections on structure, strength or leak-tightness of each component and these inspections on function and performance of overall system of commercial power reactor. Details are shown in Table 14-1. The inspection at the time of the criticality and the completion of construction works in the table are so-called commissioning tests. *From October 2003, JNES conduct a part of the above mentioned Pre-Service Inspection.*

(2) Verification of safety through the Approval of Fuel Assembly Design and the Fuel Assembly Inspection

A person who intends to use fuel assembly undergoes the Fuel Assembly Inspection, pursuant to the Electricity Utilities Industry Law, after receiving the Approval of Fuel Assembly Design. NISA, in issuing the approval, verifies that the proposed fuel design takes into consideration of thermal conditions, radiation conditions, corrosion resistance, corresponding to operating conditions, and that it maintains sufficient strength through the years in service. NISA confirms in inspection that fabrication of fuel assemblies is performed in accordance to the approved design and technical standards. The Fuel Assembly Inspection is also required for the replacement fuel, regardless of whether or not there have been design changes *From October 2003, JNES conduct a part of the above mentioned Fuel Assembly Inspection.*

Imported fuel assemblies are also required to undergo and pass the Fuel Assembly Inspection by NISA.

(3) Verification of Safety through Welding Safety Management Review

The licence holder performs Licensee's Welding Inspection on welded pressurized parts and welded containment, and the management system of Licensee's Welding Inspection undergoes the review by JNES.

14.3 Assessment and Verification of Safety during Operating Life Time

The licence holder obtains the approval of Operational Safety Program before commissioning, and perform the periodical safety assessment, and investigation of an accident or a failure and measures to prevent the recurrence, and undergoes the spot entry inspection conducted by NISA/JNES at any time in addition to the Nuclear Safety Inspection, the Periodic Inspection, and the Periodic Safety Management Review during the operating lifetime, so that the comprehensive confirmation of the safety of commercial power reactors is performed.

Confirmation of the safety by inspection and periodical evaluation of the safety are described in the followings:

(1) Verification of the Safety by Inspection

NISA has set-up resident Nuclear Safety Inspectors at nuclear reactor facilities and performs four inspections per year (Nuclear Safety Inspection) on the observance of Operational Safety Program in accordance with the Reactor Regulation Law to recognize the status of compliance to various regulations for the safety and the status of the activities for safe operation performed by the licence holder. In accordance with the Electricity Utilities Industry Law, NISA and JNES perform the Periodic Inspection of structures and components important to the safety in the time interval that does not exceed 13 months after the day of commissioning or the day of last Periodic Inspection ended,

The inspections which was conducted by the licence holder as self-controlled inspection previously was redefined by the amendment in the Electricity Utilities Industry Law as a Licensee's Periodic Inspection, and JNES performs the audit type inspection (Periodic Safety Management Review) to review the implementing system, planning and management of Licensee's Periodic Inspection.

(2) Periodic Safety Assessment

In accordance with the Reactor Regulation Law, NISA decided in October 2003 to request the

licence holder for the implementation of "Periodic Safety Review (PSR)" in every 10 years interval after the first review at the time not exceeding ten years after commissioning, and for the implementation of "Aging Management Review" by the day passing 30 years after commissioning.

1) Periodic Safety Review (PSR)

PSR is the effort by the licence holder to evaluate his activities for-safe operation that has been carried out since the commissioning of the plant. PSR is performed in every about ten years and for the purpose to acquire the prospect for the plant concerned be able to continue the safe operation in the next decade with maintaining the high level of performance equivalent to the newest nuclear power plant.

PSR had been carried out since 1992 by the licence holder in accordance with the request of the Ministry of International Trade and Industry (old Ministry of Economy, Trade and Industry), but NISA decided that it is necessary to clarify the position of the Periodic Safety Review as a part of renovation of nuclear safety regulations.

For this purpose, the provisions of "Periodic Assessment of Nuclear Reactor Facilities" was added in October 2003 to the Ordinance of the MITI, No. 77, 1978, the Rules for the Installation, Operation, etc. of Commercial Power Reactors (hereinafter called, the Rules for Commercial Power Reactors), and the implementation of PSR was defined as one of the requirement in the Operation Safety Program

Since compliance to Operational Safety Program is confirmed by Nuclear Safety Inspection, it is possible for NISA to confirm that the licence holder is properly implementing the activities for safe operation in every about ten years through PSR in "the Periodic Assessment of Nuclear Reactor Facilities", and to make request of improvement, if needed.

As items to be implemented at the PSR, a) evaluation of the situation of the activities for safe operation of nuclear reactor facilities (comprehensive evaluation of operating experiences), b) evaluation of the situation of reflection of the state of the art technical knowledge to activities for safe operation (reflection of the newest technical knowledge) are defined. The probabilistic safety assessment is not requested as obligation based on regulation, but required to the licence holder as a self imposed activities to be implemented as used to be.

PSR was implemented for 40 times as to 34 units out of 52 units in operation as of June, 2004 PSR was implemented for second times to six units. (Refer to Table 14-2)

2) Aging Management Review

The Ministry of International Trade and Industry (old Ministry of Economy, Trade and Industry) evaluated the Measures for Aging Management implemented by the licence holder in February 1999 for the nuclear reactors with 30 years after commissioning, and documented in the report, "Evaluation of the Measures for Aging Management for Nuclear Power Stations, and Future Activities on the Aging Management"

In October 2003, NISA added the Aging Management Review in the provisions of "Periodic Evaluation of Nuclear Reactor Facilities" to "the Rules for the Commercial Power Reactors" and provided as one of the requirement in the Operational Safety Program to implement Measures for Aging Management.

Aging Management Review to be implemented at the time within 30 years after commissioning, are:

a) analyze the impacts of technically conceivable aging phenomena on structures and components of nuclear power stations with safety functions, and technically evaluate the

possibility for prevention of the loss of function of the components and structures due to aging phenomena under the present maintenance activities provided to them,

b) extract new maintenance measures from the technical evaluation results to make a plan of ten-year maintenance program.

c) re-evaluate this ten-year maintenance program with ten-year interval

NISA requested licence holders to report the newly extracted maintenance measures in the ten-year maintenance program of "Measures for Aging Management" to reflect the results on inspections, such as the Periodic Inspection, as necessary. Licence holders should materialize methods of maintenance management, frequency and time, etc. of the maintenance measures into ten-year maintenance program. Licence holders should implement those in accordance with Operational Safety Program.

Since the "Measures for Aging Management" was defined as a requirement of the regulation, more rational and standardized Measures for Aging Management will be investigated and will be provided as academic and association standards etc. in the future based on recipe to aging in abroad and on the latest knowledge.

NISA evaluates the technical evaluation and ten-year maintenance program conducted by licence holders with the incorporation of the of specialists' opinion, as well as the lessens learned from operating experiences in and outside Japan and the latest knowledge, and experimental results.

Technical evaluation and planning of the ten-year maintenance program in relation with the aging were implemented for nine out of fifty-two units as of June 2004. (See to Table 14-3)

14.4 Probabilistic Approach in Regulation

(1) Prior to Construction

1) Acceptance Criteria in Safety Examination

- *Consideration of Fall of an Airplane*

  In the safety examination of reactor establishment licensing, the necessity to consider the fall of an airplane to the reactor facility design as "a human induced external event" should be determined. The probability of an airplane fall to the reactor facility is evaluated as the determining criteria. NISA enacted "on the Assessment Standard on the Airplane Fall Probability to a Nuclear Power Reactor Facility" as a regulatory guide in July 2002.

- *Impact Assessment of the Turbine Missile*

  In the safety examination of reactor establishment licensing, the necessity to consider the turbine missile to the reactor facility design as "a missile generated inside the reactor facility to be assumed" should be determined. The probability of damage to the reactor facility (the coolant pressure boundary in the containment and the spent fuel pool) is evaluated as the determining criteria.

(2) Prior to Commissioning

1) Assessment of the Effectiveness of Accident Management Measures

The licence holders implemented PSA for nuclear power reactors under operation or construction to evaluate the integrity of the core and the containment in a case of the severe accident, and utilized it for assessment of the effectiveness of their accident management measures. Internal events during operation were subject to their analysis, and the results were utilized to extract

accident management measures and to evaluate their effectiveness.

(3) During the Operating Lifetime

1) Safety Assessment through the Periodic Safety Review(PSR)

As one of the activities of PSR the licence holders implemented PSA for internal events during power operation using the newest data, and the results were utilized for the assessment of safety features of the nuclear reactor facilities and verification of the effectiveness of the accident management measures. *PSA for internal events during the shutdown conditions was additionally implemented through the PSR in 2001 and afterwards.*

2) Assessment of Allowed Out of Service Times (AOT) defined in Operational Safety Program

The operational restriction of the engineered safety system and the permissible time of recovery at the time of the standby exceptions (Allowed Out of Service Times (AOT)) are to be set up in the Operational Safety Program. On this matter, the Nuclear Power Engineering Corporation (predecessor of JNES) had developed and proposed standard techniques as evaluation methods on the adequacy of AOT, referring mainly to the U.S Standard Technical Specifications (STS) and taking account of the components failure rates in Japan also.

3) The Impact Assessment and Evaluation of the Measures Taken to Pipe Rupture Accident in the Unit-1 of Hamaoka NPS

In the study on the measures to prevent recurrence of the pipe rupture accident occurred in November 2001 on the steam condensing line (SCL) of the residual heat removal system (RHRS) of the Unit 1 of Hamaoka NPS, the PSA with considerations of the pipe break accident specifically to SCL of RHRS, was implemented on core integrity and it was evaluated that the pipe rupture of the accident concerned does not significantly increase the risk. It was also evaluated that several proposed measures were effective in reducing the risk.

14.5 Introduction of Safety Goals

The NSC has issued regulatory guides and standards required for the examination in administrative steps to ensure the prevention of radiation hazards and the public safety. These standards and regulatory guides provided the basis of design, construction, and operation of the facility necessary to restrict the risk on the public, to a sufficiently low level. However, except the Regulatory Guide for the Annual Dose Target for the Public in the Vicinity of Light Water Nuclear Power Reactor Facilities, there were no guidelines that define quantitative objectives for acceptable to the public.

As development on PSA methodology to quantify the risk levels of nuclear power plants has progressed, the NSC started discussions on safety goals and issued a report on Interim Safety Goals in December 2003. The report discusses the objectives, scope and draft of the interim safety goals and issues to be investigated further.

The outline of the draft safety goals are as follows.

(1) Concerned Activities for Utilization of Nuclear Energy

The safety goal should be established for all activities in the utilization of nuclear energy that may have the adverse influence of radiation exposure on the public. Application of the established safety goal should be with considerations of the maturity of risk assessment models and the characteristics of each risk in each activity area. And the established safety goal should not be uniformly applied to all

activities.

(2) Structure of Safety Goal

The safety goal consists of two fold. One is the qualitative goal, which is a acceptable level of danger (risk) of an accident that nuclear operators (licence holders) must observe under the nuclear safety regulations. The other is the quantitative goal that specifies the numerical value corresponding to the acceptable level of the risk. In this context, the risk during normal operation of nuclear power reactor facilities, for which the numerical guideline of dose limits is specified, is excluded.

Since indicators of the qualitative goal is important to show the safety level, it is desirable to be objective and common to all risks accompanied to various activities, in which the possibility of health damage is not fully excluded.

Therefore, the individual mortality of the pubic should be used as the indicator to meet these requirements. And the events to be concerned that may have effects on the quantitative goal are both internal events such as failure of components and human error, and external events such as earthquakes, tsunamis, and fall of an airplane. But, intentional and artificial events such as destructive activity against an industry are excluded.

The mean values that could be obtained by evaluating the magnitude of the uncertainty will be used as a general rule for the comparison of quantitative goal or the performance goal of nuclear installations to be developed in the future to the results of risk-assessment.

(3) Contents of the Draft of the Safety Goal

The draft of the safety goal is as follows:

1) the Qualitative Goal

The possibility of health damage to the public by emission of radiation or release of radioactive materials accompanied with activities for utilization of nuclear energy should not meaningfully increase the risk of damage to the health of the public in daily life.

2) the Quantitative Goal

The mean value of acute fatality risk by radiation exposure resulting from an accident of a nuclear installation to individuals of the public, who habit in the vicinity of the site boundary of a nuclear installation, should not exceed the probability of about $1x10^{-6}$ per year. And, the mean value of fatality risk by cancer caused by the radiation exposure resulting from an accident of a nuclear installation of individuals of the public, who habit in the area in some distance from the nuclear installation, should not exceed the probability of approximately $1x10^{-6}$ per year.

3) the Performance Goal for Each Area of Activities for Utilization of nuclear energy

It is reasonable to review and indicate the level that will be understood as the performance goal to conform with the safety goal, according to the characteristics of each accident that could occur at nuclear installations. As an example for nuclear reactor facilities, it is appropriate to review the probability of occurrence of the severe core damage and the probability of occurrence of a release event of significant amount of radioactive materials in a specific time period during normal operation of nuclear reactor facilities.

14.6 Activities for Introduction of the Safety Regulation with Utilization of Risk Information

In order to establish more effective and efficient regulatory system, utilization of risk information for safety regulations has been progressing in each country, though the extent is different.

Also in Japan, the Nuclear Safety Commission decided in November 2003, "the Basic Policy on Introduction of Nuclear Safety Regulation with Utilization of Risk Information". This policy describes that nuclear safety regulations with utilization of risk information will be as follows:

- *It is useful for enhancement of the rationality, consistency and transparency of the safety regulation and for proper allocation of resources for activities of the safety regulation.*
- *It will evolve and advance the regulation, which has been based on the conventional engineering judgment and deterministic evaluation, by utilizing risk information obtained from quantitative and probabilistic assessment, while basically maintaining the concept of defense-in-depth.*
- *At this stage, it is appropriate to focus on a study on its introduction at the operation stage, and in the future, it will be aimed at to systematically study its introduction into the whole safety assurance system that includes design and construction stage, taking into considerations of the safety goals currently under study.*
- *For its introduction, it is important to ensure the reliability and transparency of the risk assessment and to win its broad understanding of the general public.*

And the NSC expects regulatory bodies and licence holders to perform the positive study on its introduction into their concrete safety assurance and regulatory activities, and academic and industrial societies and research organizations, etc. to prepare the voluntary consensus standards for risk assessment and conduct the safety research on the risk assessment.

In response to the above-mentioned decision of the NSC, NISA announced in December 2003, "the Study of the Nuclear Safety Regulation with Utilization of Risk Information", and clarified the approach, as the administrative authority of the regulation, to show how risk information will be utilized for the safety regulation from now on. The contents are as follows:

(1) Fundamental Concept

The fundamental concept for the study of NISA on the concrete method for utilization of risk information for the safety regulation is as follows. The study will be conducted with due deference to the basic policy of the NSC and close exchange of opinions with the NSC.

- *The utilization of risk information will be studied, in principle for all stages such as siting, design, construction, operation, inspection and decommissioning, etc. of all nuclear facilities under the regulatory responsibility of NISA.*
- *By utilizing risk information, the subjects to be improved from now on will be found out from all the systems and activities responsible for the safety regulation of NISA, and more effective and efficient safety regulation will be realized.*
- *However, since the significance and urgency of utilization of the risk information and the maturity of the methodology for risk assessment vary in each area and stage of utilization of nuclear energy, the study will be initiated first from the area where the enhancement of the effectiveness of safety regulation and the efficiency improvement with the regulatory resources can be expected by utilization of risk information, as well as the area where the risk assessment methodology has matured.*
- *With these considerations, the immediate major subjects of the study will be nuclear power plants among nuclear facilities, which have the utilization experience of the risk information. The buildup of research results on PSA methodology, and operating experiences, and the area where the risk information (such as frequency of core damage, its contributing factors and the uncertainty) obtained as a result of Level 1 PSA can be used.*

- *Taking into account the fact that the importance of inspection system has been pointed out from the falsification issues of licence holders, utilization of risk information in the inspection system such as Periodic Inspection and Licensee's Periodic Inspection shall be the first and foremost immediate subject.*
- *Utilization of risk information shall be promoted conducting the adequate study and building up sufficient experiences through a trial run (for example, pilot projects) etc. to find issues and resolve them, prior to its full-scale application.*
- *It is required to normalize the standard PSA methodologies by academic and industrial societies and perform PSA with those methodologies in advance of utilization of risk information. While NISA cooperates with academic and industrial societies for review of PSA methodologies, NISA will recommend licence holders to perform PSA with such standardized methodologies.*

(2) PSA Methodology and Preparation of Database

In order to use the methodology of probabilistic safety assessment (PSA) for the safety regulation, it is required to ensure the reliability and transparency of the methodology.

The maturity of the PSA methodologies varies depending on the subjects to be assessed. In the case of nuclear power stations, the assessment of core damage frequency (level 1PSA) and the assessment of reactor containment failure frequency and source term (level 2PSA), caused by components failure due to internal events, have been almost established technically, and the standard methodology has been already developed by the Nuclear Safety Research Association (foundational juridical person). And currently the Atomic Energy Society of Japan (corporate juridical person) has been conducting its review and standardization. The assessment methodologies for risk to the public health (level 3PSA) and external events such as earthquake have been developed, but not yet standardized by academic and industrial societies. For facilities other than nuclear power stations, the methodologies of PSA have been under developmental stage in many cases. For this reason, much more efforts to develop and improve those methodologies are desirable.

From the standpoint of ensuring the reliability and the transparency of assessment methodologies, it is important that review of assessment methodologies are conducted by organizations such as academic and industrial societies, and they are standardized under fair procedures. Currently, the Atomic Energy Society of Japan has been performing the standardization of assessment methodologies under fair and neutral procedures including public review. While NISA participates in those activities of academic and industrial societies, it will further confirm the technical adequacy of the standardized methodologies as the regulatory body and then apply them for the safety regulation. While doing that, it is also necessary to clarify the applicable scope and limits of assessment methodologies, and uncertainties of analytical results, etc. and make the conditions clear to use those methodologies properly.

Also for data of components failure rates to be used for PSA, it is necessary to ensure their adequacy and reliability. Licence holders have been preparing database in the Central Research Institute of Electric Power Industry, but the adequacy and reinforcement of domestic actual data concerning common cause failures and human factors, etc. are required, while the reliability of data is to be reviewed in fair and neutral channels such as academic and industrial societies.

In the study on utilization of risk information for the safety regulation, it is necessary to take into consideration the preparation status of PSA methodologies and data.

(3) How to Proceed with the Study

From now on, NISA is going to steadily perform the study on the concrete methods for utilization of risk information for the safety regulation, and the study on the concrete methods for utilization of risk information for inspections at nuclear power stations, which is the immediate top-priority subject, is to

be conducted by "Study Group on the Way of Inspection" set up under the Nuclear and Industrial Safety Subcommittee.

It is necessary in conducting the study on utilization of risk information for safety regulation to make efforts to get understanding of the general public at all levels, asking for public comments at the appropriate study stage and reflecting their opinions on the study, along with ensuring the transparency of study process.

Table 14 - 1 Outline of Pre-Service Inspections

Time of Inspection	Contents of Inspection
(1) At the time of installation of each structures and components	Test of structure, strength and/or leak tightness of reactor, reactor cooling system, instrumentation and control system, fuel handling system, radiation management system, waste processing system or reactor containment structure is performed, when each item has been installed and be ready to such testing. Specifically, material inspection, structure inspection, pressurized leak test, inspection on foundation and inspection on support structure are performed
(2) At the time of installation of steam turbine and auxiliary boilers	Test of structures of steam turbine is performed when installation of bottom half part of turbine casing is completed. Test of structure, strength and/or leakage on auxiliary boiler is performed when its main part completed to assembly.
(3) At the time of fuel loading	When the reactor is ready for fuels to be loaded, inspections of systems around reactor, items required ensuring safety before fuel loading, and items for which inspection would be difficult after fuel loading are performed. In the case of BWR, inspection of main steam bypass valves, inspection of function and performance of those systems as control rod drive system, core spray system, residual heat removal system, etc. and functional inspections of safety protection system, etc. are performed.
(4) At the time of criticality	When the reactor reaches criticality, inspections are performed on nuclear characteristics of reactor core, and function and performance of overall commercial power reactor which can be performed only after fuel loading In the case of BWR, an inspection to confirm shutdown margin at full fuel loading, inspections of control rod full stroke test, effective multiplication factor at first criticality and moderator temperature coefficient tests are performed.
(5) At the time of completion of construction	When all construction work under the Construction Plan has been completed, inspections are performed on performance of systems around reactor, functions and performances of overall commercial power reactor that can be confirmed after fuel loading, and functions and performance of systems other than those around reactor. In the case of BWR, inspections are performed on one control rod scram test, loss of external power-supply test, generator load interception inspection, plant trip inspections, load inspections.

Table 14-2 Periodic Safety Reviews Performed During the Reporting Period

The 8th Review (announced in August 2002)

Unit 3 of the Fukushima Daini NPS (Tokyo Electric Power Co., Inc.: BWR)
Unit 4 of the Fukushima Daini NPS (Tokyo Electric Power Co., Inc.: BWR)
Unit 1 of the Kashiwazaki-kariwa NPS (Tokyo Electric Power Co., Inc.: BWR)
Unit 3 of the Hamaoka NPS (The Chubu Electric Power Co., Inc.: BWR)
Unit 2 of the Shimane NPS (The Chugoku Electric Power Co., Inc.: BWR)
Unit 1 of the Sendai NPS (Kyushu Electric Power Co., Inc.: PWR)
Unit 2 of the Sendai NPS (Kyushu Electric Power Co., Inc.: PWR)

The 9th Review (announced in December 2003)

Unit 1 of the Takahama PS (The Kansai Electric Power Co., Inc.: PWR) (the second time)
Unit 2 of the Takahama PS (The Kansai Electric Power Co., Inc.: PWR) (the second time)
Unit 1 of the Shimane NPS (The Chugoku Electric Power Co., Inc.: BWR) (the second time)
Unit 1 of the Genkai NPS (Kyushu Electric Power Co., Inc.: PWR) (the second time)

Table 14-3 Implementation Status of Measures for Aging Management

The 1st Time (announced in February 1999)

Unit 1 of the Tsuruga PS (The Japan Atomic Power Co., Inc.: BWR)
Unit 1 of the Fukushima Daiichi NPS (Tokyo Electric Power Co., Inc.: BWR)
Unit 1 of the Mihama PS (The Kansai Electric Power Co., Inc.: PWR)

The 2nd Time (announced in June 2001)

Unit 2 of the Fukushima Daiichi NPS (Tokyo Electric Power Co., Inc.: BWR)
Unit 2 of the Mihama PS (The Kansai Electric Power Co., Inc.: PWR)

The 3rd Time (announced in March 2004)

Unit 1 of the Takahama PS (The Kansai Electric Power Co., Inc.: PWR)
Unit 2 of the Takahama PS (The Kansai Electric Power Co., Inc.: PWR)
Unit 1 of the Shimne NPS (The Chugoku Electric Power Co., Inc.: BWR)
Unit 1 of the Genkai NPS (Kyushu Electric Power Co., Inc.: PWR)

Article 15 Radiation Protection

Each Contracting Party shall take the appropriate steps to ensure that in all operational states the radiation exposure to the workers and the public caused by a nuclear installation shall be kept as low as reasonably achievable and that no individual shall be exposed to radiation doses which exceed prescribed national dose limits.

The standards of radiation protection for the general public and personnel engaged in radiation work in Japan are prescribed in the laws and legislations, such as the Reactor Regulation Law, the Electricity Utilities Industry Law and the Industrial Safety and Health Law, etc. The recommendations of the ICRP 1990 are incorporated into their provisions of radiation protection with due considerations. Consequently, licence holders have kept the radiation exposure doses of personnel engaged in radiation work below the dose limit, as a matter of course, and have attempted to reduce the exposure based on the ALARA policy.

15.1 Summary of Laws and Requirements on Radiation Protection

The national standards of radiation protection for a nuclear installation are provided in the Reactor Regulation Law, the Electricity Utilities Industry Law and the Industrial Safety and Health Law, etc. and related government ordinances, ministerial orders and notifications based on these laws, and guidelines. The recommendations of the ICRP 1990 are given due consideration and are incorporated into legislation and regulation. Japan will consider the incorporation of future recommendations if necessary.

A ministerial ordinance, the Rules for Commercial Power Reactors, established close on radiation protection, on the basis of the Reactor Regulation Law, prescribes area control for radiation protection, radiation control of personnel engaged in the radiation controlled areas, measurement and surveillance of radiation levels, monitoring of discharged radioactive materials, and maintenance of radiation control equipment. The Dose Limit Notification are enacted, which prescribes dose limits and concentration limits of radioactive materials both inside controlled area and outside peripheral monitoring area, and dose limits and concentration limits of radioactive materials for personnel engaged in radiation work, and dose limits for personnel engaged in emergency activities.

In order to ensure those rules are complied with, each licence holder, it is required to prescribe in the fitness-for-safety program, 1) radiation control area, access controlled areas, and peripheral monitoring area and access control to these areas, 2) monitoring equipment at air ventilation and water discharge, 3) monitoring of the dose, the dose equivalent, the concentration of radioactive materials and the density of the surface radioactive materials of objects contaminated by radioactive materials, and the decontamination, 4) maintenance of radiation monitoring equipment.

Ministerial order “Ordinance of Establishing Technical Standards for Nuclear Power Generation Equipment” based on the Electricity Utilities Industry Law, provides the technical standards for radiation control equipment (biological shielding walls, ventilation facilities, instrumentation devices, alarm devices, and waste processing equipment, etc.) at nuclear installations. NISA confirms that such radiation control equipment conforms to the ministerial order at issuing approval of the construction plan and conducting inspection of the equipment.

The Industrial Safety and Health Law provides that licensees (employers of laborers) take measures to prevent damage to health of personnel engaged in radiation works, including radiation exposure, throughout the period of employment, and requires them to take actions for safety and health education, work environment monitoring and medical examination of workers. On the basis of the law, the Ministry of Health, Welfare and Labor has enacted a ministerial order, the Rules for Prevention of Damage from Ionizing Radiation, which prescribes controlled areas, dose limits and measurement, protection from external radiation, and prevention of radioactive contamination.

Radioisotopes etc. used in commercial power reactors are also regulated in accordance with the Law for Prevention of Radiation Hazards due to Radioisotopes, etc. in the same manner as regulated by the Reactor Regulation Law.

In examining the license to establish a nuclear installation, it is confirmed that the application conforms to the Regulatory Guides established by the NSC as well as the legislation and technical standards. Regulatory Guide for the Annual Dose Target for the Public in the Vicinity of Light Water Nuclear Power Reactor Facilities, one of these Regulatory Guides, gives dose target guide to reduce the discharge of radioactive materials from a nuclear installation into environment and the dose rate of the public as low as reasonably achievable (ALARA).

Each licence holder has defined the release control target of liquid wastes and gaseous wastes in the fitness-for-safety program based on this Regulatory Guide for the Annual Dose Target for the Public in the Vicinity of LWR.

The ICRP 1990 Recommendation (Publication 60) was, after examination by the Radiation Review Council, incorporated into national legislations and regulations on radiation protection, by revision of related ministerial orders and notifications in April 2001 with following additional considerations. First, radiation controlled area is defined where dose may exceed 1.3 mSv/ 3months, corresponding to 5 mSv/year which is the special allowable dose limit to the public. Second, the occupational dose limit for female personnel is set at 5mSv/3months, allocated value for the shorter period, reducing possible dose for a potential embryo. The allowable dose limits in emergency remain twice of the annual dose limits as before, considering the IAEA BSS.

The Radiation Review Council is an organization established under MEXT for the purpose of coordinating technical standards on prevention of radiation hazards. It submits reports to inquiries from related administrative organizations, or gives its views to them if necessary.

15.2 Laws and Requirements and Response of Licence Holders

(1) Allowable Dose Limits

1) Allowable Dose Limits for Controlled Areas

The Rules for Commercial Power Reactors and the Dose Limits Notification requires licence holders to establish radiation controlled area including reactor room, and spent fuel storage facilities and radioactive waste disposal facilities, where the dose of external radiation may exceed 1.3mSv for three months, or where the concentration of radioactive materials in the air or the surface density of radioactive materials may exceed the values specified in the Notification, respectively, and to establish necessary measures to be taken in these areas.

2) Allowable Dose Limits for Occupational Exposure

The allowable dose limits for personnel engaged in radiation works are specified in the Dose Limits Notification as listed in Table 15-1

Table 15-1 Dose limits for personnel engaged in radiation work

Items	Limit
1. Effective dose limits	
a) Personnel engaged in radiation works	100 mSv / 5 year, but do not exceed 50 mSv for any year
b) Female personnel	100 mSv / 5 year, but do not exceed 5 mSv for any 3 months
c) Pregnant Female personnel	100 mSv / 5 year, but do not exceed 1 mSv from internal exposure during pregnancy
2. Equivalent dose limits	
a) Eye lens	150 mSv/ year
b) Skin	500 mSv/ year
c) Female abdominal region	2 mSv from notification of pregnancy to delivery
3. Dose limits for the personnel engaged in emergency radiation works	
a) Effective dose	100 mSv/ incident
b) Equivalent dose for eye lens	300mSv/ incident
c) Equivalent dose for skin	1Sv/ incident

Licence holders have paid much effort not only to comply with the allowable dose limits but also to reduce doses in line with ALARA concept by taking following activities:

- reducing radiation source in systems and components of a nuclear installation,
- keeping distances from or setting shields against radiation sources,
- reducing working time in radiation environment.

Consequently, the exposure doses of personnel engaged in radiation work, etc. have been successfully reduced to the level as shown in Annex 2.

Exposure doses of personnel engaged in radiation work in commercial NPPs during the reporting period are summarized as below;

a. Dose per Persons at Commercial NPPs

Average of dose per persons at commercial NPPs for the reporting period were1.2 to 1.4 mSv/year, and it shows slight increase for recent several years. However, the doses are well within the dose limit prescribed in the notification.

In fiscal 2003, average personnel dose was 1.4mSv/year, maximum personnel dose experienced at a NPP was 19.8mSv, this number was within the dose limit of the notification, still they were slightly higher than these numbers of 1.3mSv/year and 19.7mSv for the previous year. One worker who had worked in plural NPPs exceeded 20mSv, but it was well below the dose limits. The number of workers who had been exposed of 15 to 20 mSv/year was 577, and this number showed slight increase of 559 for the previous year.

Table Collective Dose ,Average Dose per Persons and Numbers of Workers at Commercial NPPs

	2000 Fy	*2001 Fy*	*2002 Fy*	*2003 Fy*
Collective Dose (man-Sv)	*78.83*	*78.05*	*84.03*	*96.41*
Average dose per person (mSv/year)	*1.2*	*1.2*	*1.3*	*1.4*
Total number of Workers	*65,900*	*67,800*	*63,800*	*66,600*

b. *Performance of Collective Dose at Commercial NPPs*

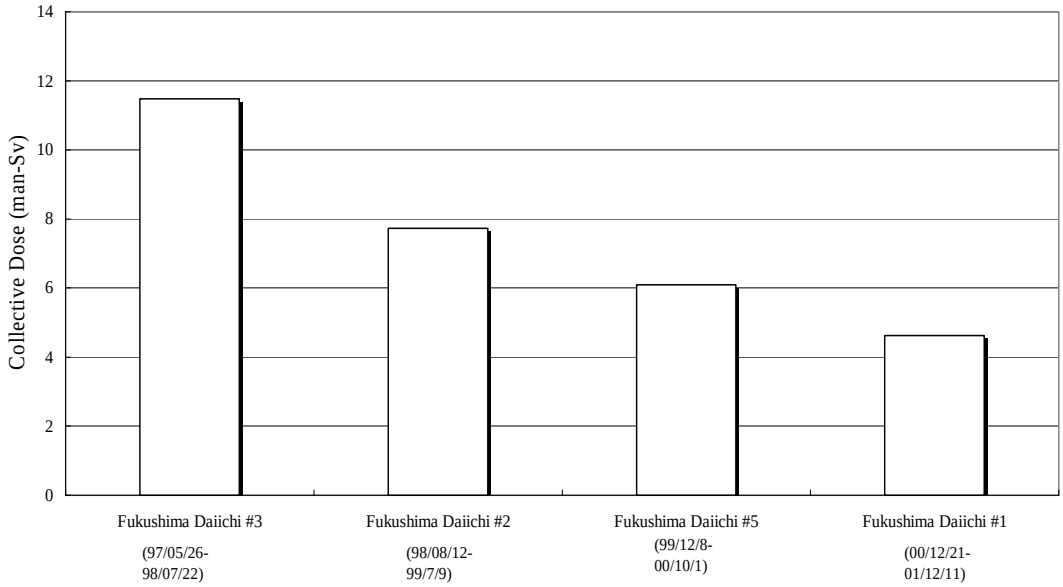
In Japan at the end of March, 2004, total of 53 units, namely 30 BWRs and 23 PWRs were operating.

The average collective dose per reactor year was slightly increasing for recent several years. The data for operating BWRs were 2.10 man-Sv for 2002 Fy and 2.20 man-Sv for 2003 Fy respectively. The reasons for these increase were due to many modernization works in primary loop recirculation pipings and CRDMs and many inspections/repairs works in core shroud and primary loop recirculation pipings under the high radiation environments.

Table Collective Dose per Unit/Reactor-Year

	2000 Fy	*2001 Fy*	*2002 Fy*	*2003 Fy*
BWR Plants(man-Sv/Ry)	*1.96*	*1.68*	*2.10*	*2.40*
PWR Plants(man-Sv/Ry)	*1.03*	*1.27*	*1.00*	*1.07*

Licence holders has been making efforts to reduce collective dose associated with large scale modernization like replacement of core shroud and primary loop recirculation pipings, and the collective doses are reducing year by year as shown in the case of reactor units of Fukushima Daiichi NPPs as shown below



Reduction of Man-Sv in the Core Shroud Replacement at Fukushima Daiichi NPPs

3) Dose Limits for the Public

The dose limits for the public are also given in the Dose Limit Notification as listed in Table 15-2.

Table 15-2 Dose limits for the public

Items	Limit
Dose limits outside the peripheral monitoring area	
Effective dose	1 mSv/ year
Equivalent dose for eye lens	15 mSv/year
Equivalent dose for skin	50 mSv/ year

(2) Conditions for Discharge of Radioactive Materials

1) Dose Target Guide to Reduce Dose of the Public in Vicinity and Discharge Control (ALARA)

In the Dose Target Guide for the Public in the Site Vicinity, the NSC has prescribed the numerical guide of 0.05 mSv, one twentieth of the dose limit to the public, in order to reduce dose for the public due to discharge of radioactive material to the environment during normal operation of a nuclear installation as low as reasonably achievable.

The licence holder establishes an annual numerical discharge control guide, which corresponds to the dose target guide at the site vicinity, and makes efforts to keep the discharges of radioactive effluents below the numerical discharge control guide. NISA acknowledges the numerical discharge control guide and receives report on it from the licence holder.

2) The Discharge Data and the Measures Taken to Reduce the Amount of the Discharge

The discharge records of radioactive gaseous and liquid waste from the nuclear installations (BWR and PWR) over the past seven years are shown in Tables 15-3 to 15-5. The tables clearly

show that the discharge quantities are substantially below the numerical discharge control guide, gas discharge from the PWR being only one thousandth of the dose target. This is due to the fact that the licence holders have carried out the radiation management of the nuclear installation in line with the ALARA principle, including following measures.

Gaseous waste is discharged from ventilation port, while being measured and monitored, after particles are removed by high efficiency filter, and noble gas and iodine are decayed in a holdup tank or charcoal bed noble gas holdup equipment.

All liquid waste are collected in a disposal facility, and equipment drain is recovered after being processed in a filter equipment or demineralizer. Floor drain is recovered after being processed in a concentrator and demineralizer. Floor drain is reused in general, though a part of it may be discharged through the discharge outlet after the concentration is measured. Recovered liquid waste from resin is reused after treated in a concentrator and demineralizer. Concentrated liquid waste generated in this process is treated as a solid waste. Low-level laundry wastewater, etc. are usually drained to the environment after being treated through filter and monitored.

Substantive reduction of fuel leak by improvement of fuels, (consequently, only three cases with four fuel assemblies) of fuel leak arose during the period of reporting), filtering ventilation during periodic inspections through local high efficiency filter, and other efforts to minimize generation of liquid waste resulted in very low level of discharge of gaseous and liquid radioactive wastes.

(3) Environmental Radiation Monitoring

The licence holder is required to install environmental radiation monitoring equipment during normal operation of a nuclear installation. These equipments include monitoring devices of the dose inside the radiation control area and outside the peripheral monitoring area and automatic devices to alarm any abnormal increase of concentration of radioactive materials or dose rates.

The licence holder conducts radiation monitoring at the site vicinity during normal operation, assesses the impact upon the environment of the discharge of radioactive materials from the nuclear installation, and feedbacks the results in improving discharge control and facility management. Local governments (prefectures where nuclear installations are located) also monitor radiation level independently at the site vicinity to protect public health and safety.

The NSC decided fundamentals of planning and implementation of monitoring and the evaluation of radiation dose in the Guide for Environmental Radiation Monitoring, in order to improve and to standardize monitoring technology. Local governments and licence holders implement monitoring in accordance with this guide.

15.3 Regulatory Control Activities

(1) Discharge Control of Radioactive Materials

By the Rules for Commercial Power Reactors, the licence holder is required to report immediately to the NISA when concentration of radioactive materials in the air outside the peripheral monitoring area exceeds the allowable limit in discharging gaseous radioactive waste, or when the concentration of radioactive materials in the water at the outer boundary of the peripheral monitoring area exceeds the allowable limit in discharging liquid radioactive waste, and report the status of the event and measures taken against it within ten days.

(2) Control of Personal Exposure

The Rules for Prevention of Damage from Ionizing Radiation require licence holder to measure dose due to external and internal exposure of workers who are engaged in radiation work or in emergency work, or enter temporal access into radiation control area. The rules require that the licence holder monitor and check daily dose due to external exposure, if it is expected to exceed the specified value of 1mSv at 1cm dose equivalent, and calculate, without delay, the dose of the personnel engaged in radiation works using the method prescribed by the Minister of Health and Labor, and keeps those records for a period of thirty years.

The Radiation Workers' Registration Center of the Association of Radiation Impact was established in November 1977, to address the difficulty of controlling the personal dose of workers who work in more than one radiation environment. The Center unitarily collects and controls such personal radiation control data of the workers who work under the Reactor Regulation Law, as personal identification control, personal radiation control booklet, periodical dose registration and transfer and custody of personal radiation dose record.

(3) Control of Collective Dose

Collective dose per rector unit is increasing in recent years as described in 15.2 (1) b. As one of the approach to scientific and rational regulation, feasibility of optimizing the collective dose by effective and efficient inspection/repair work introducing Rules on Fitness-for-Service for Nuclear Power Plants.

It is necessary to analyze the factors in detail that leads to the increase in collective dose, fact finding survey is planned in 2004Fy, and it is planned to abstract the items to be studied for optimization. It is planned to derive practical measures for optimization in future, based on the survey.

Table 15-3 Annual discharge of radioactive noble gas in gaseous waste

(unit: Bq / year)

Year / Station	1997	1998	1999	2000	*2001*	*2002*	*2003*	Dose Target Guides
Station - A	N.D.*	N.D.	N.D.	N.D.	*N.D.*	*N.D.*	*N.D.*	6.7×10^{15}
Station - B	4.3×10^{11}	6.1×10^{11}	1.2×10^{11}	5.7×10^{10}	*1.5×10^{10}*	*2.8×10^{10}*	*1.8×10^{10}*	3.7×10^{15}

*: N.D. indicates a value below the detection limit concentration of 2×10^{-2} Bq/cm^3.

Table 15-4 Annual discharge of radioactive iodine (I-131) in gaseous waste

(unit: Bq / year)

Year / Station	1997	1998	1999	2000	*2001*	*2002*	*2003*	Dose Target Guides
Station - A	N.D.*	N.D.	N.D.	N.D.	*N.D.*	*N.D.*	*N.D.*	2.3×10^{11}
Station - B	8.6×10^{5}	1.2×10^{5}	1.6×10^{5}	1.1×10^{6}	*2.7×10^{5}*	*N.D.*	*N.D.*	1.0×10^{11}

*: N.D. indicates a value below the detection limit concentration of 7×10^{-9} Bq/cm^3.

Table 15-5 Annual discharge of radioactive materials (excluding ^{3}H) in liquid waste

(unit: Bq / year)

Year / Station	1997	1998	1999	2000	*2001*	*2002*	*2003*	Dose Target Guides
Station - A	N.D.*	N.D.	N.D.	N.D.	*N.D.*	*N.D.*	*N.D.*	2.5×10^{11}
Station - B	N.D.	N.D.	N.D	N.D.	*N.D.*	*N.D.*	*N.D.*	1.4×10^{11}

*: N.D. indicates a value below the detection limit concentration of 2×10^{-2} Bq/cm^3. (Represented by ^{60}Co.)

(Note) Station - A : Kashiwazaki-Kariwa NPS (BWR)

Station - B : Ohi NPS (PWR)

Article 16 Emergency Preparedness

1. Each Contracting Party shall take the appropriate steps to ensure that there are on-site and off-site emergency plans that are routinely tested for nuclear installations and cover the activities to be carried out in the event of an emergency. For any new nuclear installation, such plans shall be prepared and tested before it commences operation above a low power level agreed by the regulatory body.

2. Each Contracting Party shall take the appropriate steps to ensure that, insofar as they are likely to be affected by a radiological emergency, its own population and the competent authorities of the States in the vicinity of the nuclear installation are provided with appropriate information for emergency planning and response.

3. Contracting Parties which do not have a nuclear installation on their territory, insofar as they are likely to be affected in the event of a radiological emergency at a nuclear installation in the vicinity, shall take the appropriate steps for the preparation and testing of emergency plans for their territory that cover the activities to be carried out in the event of such an emergency.

On emergency preparedness, the Special Law of Emergency Preparedness for Nuclear Disaster (hereinafter called as "Special Law for Nuclear Emergency") was enacted in December 1999, taking the lessons learned from the JCO criticality accident.

Considering the special characteristics of nuclear emergency, measures for nuclear emergency preparedness have been defined to cope with the existing legal framework established by the Basic Law on Emergency Preparedness, which had defined preparedness for disasters such as earthquakes, typhoons, and conflagrations.

After the previous reporting, the NSC reviewed "Emergency Measures for Nuclear Installations Guideline" (hereinafter called as "Emergency Preparedness Guidelines"), which decides technical aspects of nuclear emergency measures, harmonizing with the Special Law for Nuclear Emergency and including the lessons learned from the JCO criticality accident, and revised the guidelines concerning the preventive intake of stable iodine tablets, measures for mental health at a nuclear emergency, the designation of regional medical treatment system for exposed patients in emergency, etc.

16.1. Development of Laws and Rules for Nuclear Emergency Preparedness

For Japan who was promoting the utilization of nuclear energy under the basic premise of securing safety, the JCO criticality accident occurred in September 1999 was for the first time, and such a very serious accident as local residents were instructed for sheltering or evacuation.

Lessons learned from the accident clarified the special characteristics of nuclear emergency, which would require quick initial responses, close coordinated cooperation between national government and local governments, strengthening of the national emergency preparedness and the clarification of licence holder's responsibilities. The Special Law for Nuclear Emergency was enacted in December 1999 and enforced in June 2000, addressing the special characteristics of nuclear emergency mentioned above. The Special Law for Nuclear Emergency was enacted so as to harmonize with existing legal framework established by the Basic Law on Emergency Preparedness, which had defined roles of the national government, local governments, etc. in emergencies such as earthquakes, typhoons, and conflagrations.

The "Nuclear Emergency Preparedness" in the Basic Plan for Emergency Preparedness based on the Basic Law on Emergency Preparedness, was extensively revised in accordance with the Special Law for Nuclear Emergency, clarifying roles and responsibilities of the national government, local governments, and licence holders etc.

The NSC, in May 2000, also taking into consideration of the Special Law for Nuclear Emergency and the lessons learned from the JCO criticality accident, revised the "Emergency Preparedness Guidelines" on technical and special matters of a nuclear emergency measures, to include:

- Research reactors and nuclear fuel cycle facilities in addition to commercial power reactors, and,
- Accidental release of nuclear fuel material etc. in addition to release of rare gas and iodine from NPS etc.

After that, the Emergency Preparedness Guidelines have been enhanced through the following several revisions by the NSC:

- In March 2001, the dose coefficient (Sv/Bq) for internal exposure was changed along with the term, in response to amendment of the relevant legislations such as the Reactor Regulation Law etc. based on adoption of the 1990 Recommendation of ICRP;
- In June 2001, provisions of the medical treatment for exposed patients in emergency was revised to be more effective and responsibilities of the national and local governments and nuclear licence holders were clarified based on the experience of the criticality accident;
- *In April 2002, protective measures concerning preventive taking of stable iodine tablets were established based on the scientific knowledge acquired from the long-term follow-up survey to atomic bomb sufferers and the investigation results of the Chernobyl Power Station accident, etc;*
- *In November 2002, measures for mental health care in a nuclear emergency were established based on the experience of JCO criticality accident, experiences of natural disasters such as seismic disasters, etc; and,*
- *In July 2003, the designation of regional medical treatment system for exposed patients in emergency was established.*

16.2. Nuclear Emergency Preparedness and the Measures

The Special Law for Nuclear Emergency has prescribed measures in nuclear emergency at power reactors, research reactors, nuclear fuel cycle facilities, etc. Emergency preparedness of a commercial power reactor is given below.

(1) Nuclear Emergency Preparedness concerning Nuclear Installations (Fig. 16-1)

Quick response and closely coordinated cooperation among relevant organizations are important in a nuclear emergency.

- The Special Law for Nuclear Emergency defines specific initial events in NPS (see Table 16-1), the occurrence of which the licence holder shall immediately notify the Minister of METI and the heads of related local governments.
- The Minister of METI, receiving the notification, triggers activities according to the procedure stipulated by the law. Staff with expertise in emergency measures will be sent to local governments on request. The Senior Specialist for Nuclear Emergency collects information and coordinates activities preventing expansion of the events.
- When the Minister of METI recognizes that the specific initial event exceeds the predetermined level and has developed into an emergency, the Minister immediately reports it to the Prime Minister.
- The Prime Minister have powerful authority to declare “Nuclear Emergency”, and to advise or direct relevant local governments on necessary measures such as sheltering or evacuation to be taken by them, as well as to request for dispatch of the Self-Defense Forces concerning implementation of emergency measures.
- The Prime Minister establishes the "Nuclear Emergency Response Headquarters" in Tokyo, which he will head, and the "Local Nuclear Emergency Response

Headquarters" at the site.

- *In a nuclear emergency, the NSC establishes "Technical Advisory Organization in an Emergency" that is composed of commissioners and the Advisors for Emergency Response. The Organization gives technical advises to the Prime Minister.*.
- Local governments establish their own emergency response headquarters.
- In order to share information between the national government and related organizations such as local governments, nuclear licence holders, etc., and, if necessary, to coordinate emergency measures to be implemented by the respective organizations, the "Joint Council for Nuclear Emergency Response" is to be established at the Off-Site Center mentioned later.

(2) Measures for On-site and Off-site Nuclear Emergency Preparedness of Nuclear Installations

In order to prepare the "Nuclear Emergency Preparedness" described in paragraph (1), organizations relevant to nuclear emergency preparedness keep themselves ready to collect and send information and start quick response against an emergency, and conduct emergency drills, disseminate knowledge and promote research on emergency preparedness. Outline of roles and responsibilities of related organization are as follows.

1) On-Site Emergency Preparedness of Nuclear Installations

When the licence holder detects abnormal release of radioactive material or abnormal level of radiation at a nuclear installation, it takes necessary measures to prevent progression of the event into an emergency.

The licence holder, to cope with emergency properly, prepares a licence holder's emergency action plan after consulting with related local governments, which provides for prevention of, emergency measures against, and post-emergency restoration of a nuclear emergency, including on-site and off-site cooperation with other organizations. Especially, quick and accurate notification of occurrence of specific initial events to related organizations is a very important obligation of the licence holder.

The licence holder is required to take part in comprehensive drills with related organizations, and keep close contact with them.

2) Emergency Preparedness in the Vicinity of Nuclear Installations

Roles and responsibilities of the national government and local governments in emergency preparedness in the vicinity of nuclear installations are defined in the Special Law for Nuclear Emergency and the Basic Plan for Emergency Preparedness. Each local government develops its own regional emergency prevention plan. They carry out emergency environmental radiation monitoring, and implement evacuation or sheltering of residents receiving advice or direction from the Prime Minister based on the report of the Minister of METI. Taking of stable iodine tablets, as well as sheltering or evacuation, is defined as one of the protective measures.

(3) Responsibilities of Related Organizations Concerning Nuclear Emergency Preparedness

1) Responsibility of the National Government

The national government establishes following preparation to prevent occurrence of nuclear emergency and to take measures in emergency.

- METI stations a Senior Specialist for Nuclear Emergency in the vicinity of each nuclear installation, who guides and advises a licence holder in preparing his emergency action plan and, in emergency, takes necessary measures preventing expansion of the emergency.

- *The NSC organizes "Technical Advisory Organization in an Emergency" that composed of the commissioners and Advisors for Emergency Response. The mandates of the organization is to give technical advices to the Prime Minister on a) dissolution of nuclear emergency, b) the designation or alteration of the regional area that necessitates emergency measures to be taken, and c) technical matters on implementation of emergency response measures.*
- The Minister of METI designates a facility in the vicinity of a nuclear installation as Off-Site Center to be used in an emergency. In the case of an emergency, the national government, the local governments and the licence holder establish at the Off-Site Center the "Joint Council for Nuclear Emergency Response", in order to share information and to coordinate their activities. Off-Site Centers are built on the point shown in Fig. 16-2, and have necessary facilities and equipments capable to communicate with the Prime Minister's Official Residence, the Cabinet Office, the Emergency Response Center of NISA, the Emergency and Disaster Countermeasures Center of MEXT and related local governments.
- Each Off-Site Center is equipped with means by which the relevant organizations monitor environmental radiation levels and the plant status. The environmental radiation levels, other than temporary data measured in an emergency, can be monitored every moment since the monitoring equipments are connected on line with the monitoring posts located in the vicinity of a NPS. The on-line status of NPP that are sent from a licence holder in an emergency can be displayed on the monitors. The results of estimation are also displayed by means of Emergency Response Support System (ERSS), which forecasts progress of an abnormal NPS condition using plant information.
- The national government establishes arrangements to secure quick and coordinated activities in an emergency.
- The national government conducts the comprehensive emergency drill based on the program established by the competent minister.

2) Responsibilities of local governments

Each local government shall develop and revise the regional disaster prevention plan in accordance with Article 40 of the Basic Law on Emergency Preparedness, and shall consult beforehand with the Prime Minister for its development or revision.

3) Responsibilities of licence holders

- Each licence holder shall develop his emergency action plan after consulting with relevant local governments, and submit it to the Minister of METI before commissioning of the reactor.
- Each licence holder shall establish an on-site organization for nuclear emergency preparedness, and designate a Manager for Nuclear Emergency Preparedness who administers the organization.
- The Manager for Nuclear Emergency Preparedness shall notify specific initial events to the competent authorities.

16.3. Implementation of Nuclear Emergency Drill

The emergency preparedness action plan in accordance with the Basic Law on Emergency Preparedness, and the Off-Site Center in the vicinity on the nuclear installation provided in the previous section has been established for nuclear installation, and nuclear emergency drill is implemented to confirm the effectiveness of these measures. The purpose of the nuclear emergency drill is 1) to enhance understanding of, and adequate actions for, the nuclear emergency preparedness by responsible personnel of the national government, local governments and the licence holder, and

residents, and 2) to verify whether emergency measures function in predetermined way, and whether information sharing and cooperation among related organizations are adequate. The national government, local governments, designated public organizations and the licence holder cooperate and participate in the drill, which cover communication, monitoring, decision on emergency measures to be taken, sheltering or evacuation etc., ranging from large scale national drill to licence holder's on-site drill. Drills implemented in the past years are shown below.

(1) Drills Planned by the National Government (Table 16-2 (1))

Nuclear emergency drills used to be planned and conducted by local governments with support and coordination of the national government before the JCO criticality accident. The Special Law for Nuclear Emergency, stipulated the drills to be planned and conducted by the national government.

Drills including accident management activities assuming a scenario results to the core damage have been implemented in the national emergency drills.

The drill planned by the national government has been conducted once a year as the comprehensive nuclear emergency drill in collaboration with the national government, local governments, licence holders, etc.

Drills implemented in and after year 2001 are as follows:

- *On October 27, 2001, a drill for the Unit 1 of the Tomari Power Station, (located in Tomari Village, Furuu County, Hokkaido Prefecture) was conducted in collaboration with the national government, the local governments of Hokkaido Prefecture, and relevant towns and villages, Hokkaido Electric Power Co., Inc., and organizations related to the emergency preparedness. About 2,700 persons including local residents etc. participated in the drill. This was the first operation of "Hokkaido Nuclear Emergency Preparedness Center," which has been designated as the Off-Site Center as a base for implementing emergency measures.*
- *On November 7, 2002, a drill for the Unit 3 of the Ohi Power Station, (located in Ohi Town, Ohi County, Fukui Prefecture) was conducted in collaboration with the national government, the local governments of Fukui Prefecture and related cities and towns, the Kansai Electric Power Co., Inc., and organizations relevant to the emergency preparedness. About 4,000 persons including local residents etc. participated in the drill. Vulnerable groups in emergency such as children etc. participated for the first time as a national drill. Moreover, evacuation to the sea was implemented in consideration of the nature of the region.*
- *On November 26, 2003, a drill for the Unit 2 of the Genkai Nuclear Power Station, (located in Genkai Town, Higashi Matsuura County, Saga Prefecture) was conducted in collaboration with the national government, the local governments of Saga Prefecture, Nagasaki Prefecture and related cities and towns, Kyushu Electric Power Co., Inc., and organizations relevant to the emergency preparedness. About 9,400 persons including local residents etc. participated in the drill. This drill was implemented over two prefectures for the first time. Furthermore, the NSC performed training of advice activities by tele-conference from the Tokyo headquarter to the local response headquarter for the first time.*

Results of the drills held every year are assessed and reflected to the items and methods of drills to be implemented in and after the following fiscal year. Three kinds of method, participant's questionnaire, check by an independent assessment agency, and observation by external experts, are adopted for the assessment.

(2) Drills Planned by the NSC

The NSC is conducting communication drills those aim enhancing the emergency communication system and keeping up and/or improving its functions. The NSC also is conducting call and set up drills of Emergency Technical Advisory Body those aim to confirm and improve the capability to respond properly and effectively in emergency.

(3)Drills Planned by Local Government (Table 16-2 (2) –(5))

The regional emergency prevention plan prescribes the local drills to be planned and conducted by each local government, which METI and the NSC support by dispatching expert staffs..

(4) Drills Planned by Licence Holders

Each licence holder has implemented an on-site drill once a year including establishment of an emergency response headquarter, notification and communication, emergency environmental monitoring, etc. based on the licence holder's emergency action plan for each site.

When the said site is a subject of the drill conducted by the local government, the on-site drill has been implemented at the same time with the local drill implemented by the local government etc.

Each licence holder also has implemented a drill taking into consideration of accident management activities, if necessary, in order to comprehensively confirm effectiveness of the organization implementing the accident management.

(5) Participation in International Nuclear Emergency Exercise

Japan participated in the Joint International Nuclear Emergency Exercise (JINEX1) held in May 2001 sponsored mainly by the IAEA, learning lessons on cross border radiological emergency, and will participate future international exercises.

16.4 International Framework and Relationship with Neighboring Countries

Japan is a contracting party to the Convention on Early Notification of a Nuclear Accident, and to the Conventions on Assistance in the Case of a Nuclear Accident or Radiological Emergency. The following system has been established for the notification of a nuclear accident to neighboring countries:

- For nuclear installations, the Ministry of Foreign Affairs has been designated as the authority for notification and as the competent authority for foreign accidents, and the Ministry of METI has been designated as the competent authority for domestic accidents.
- METI receives a report immediately on an accident in a nuclear installation on the basis of legal obligation of the licence holder.
- When occurrence of an accident is confirmed and it is predicted that release of radioactive materials may affect neighboring countries, the IAEA and the countries that may be affected by the accident are notified of the accident.

In accordance with an arrangement aiming at enhancement of the safety level of commercial power reactors concluded with the People's Republic of China, on the basis of the bilateral agreement for peaceful use of nuclear energy, the governments should mutually notify without delay of serious events of nuclear installations. Bilateral inter-governmental agreement with the Republic of Korea calls for cooperation in the establishment and operation of an early notification network for nuclear safety.

If an accident should occur at a foreign nuclear installation and a request for assistance is made, Japan will dispatch, on the basis of the Conventions on Assistance in the Case of a Nuclear Accident or Radiological Emergency, specialists in emergency monitoring and emergency medical treatment, and provides materials and equipment such as radiation monitoring equipment and radiation protection equipment.

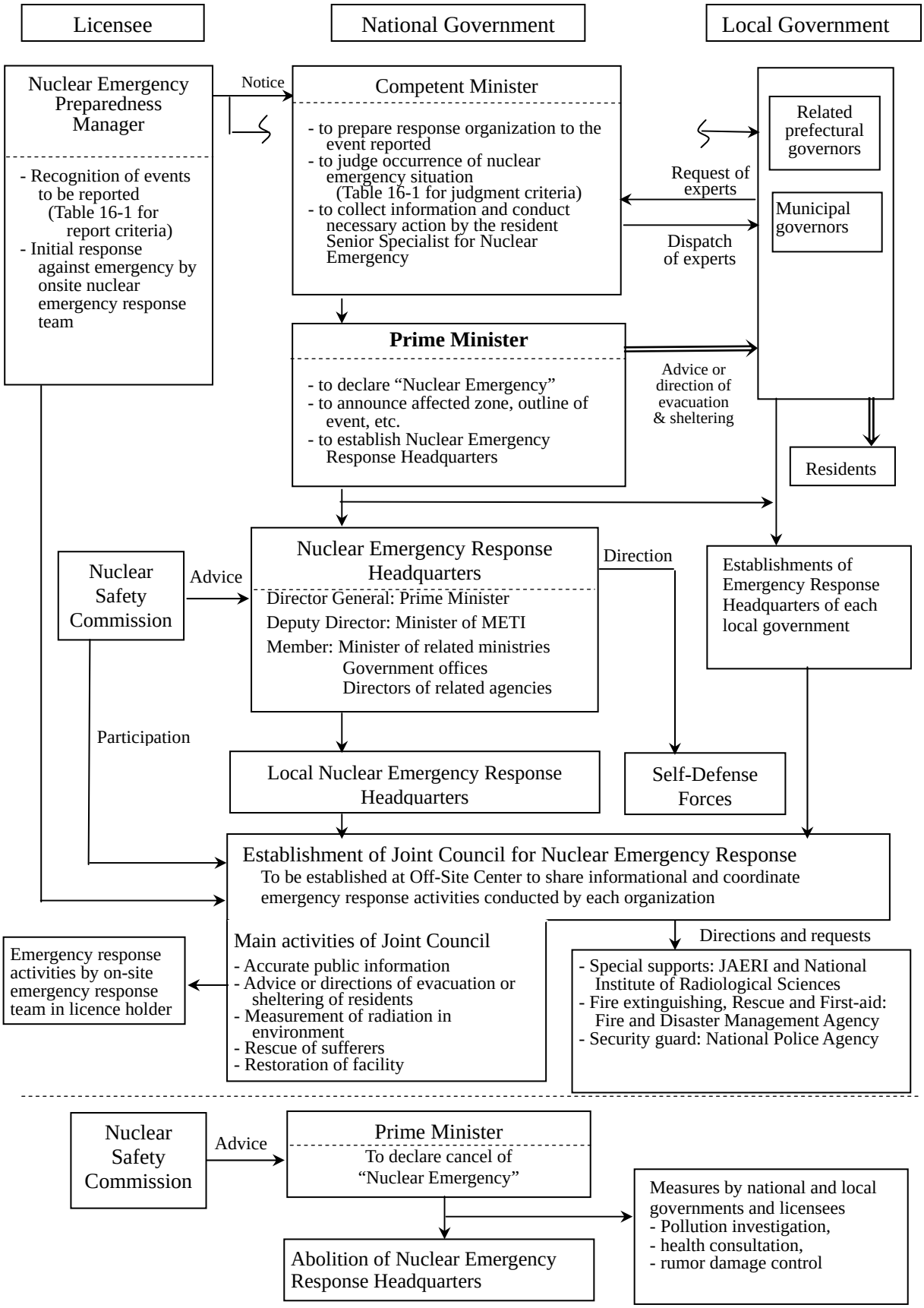


Fig.16-1 Nuclear Emergency Preparedness based on the Special Law for Nuclear Emergency

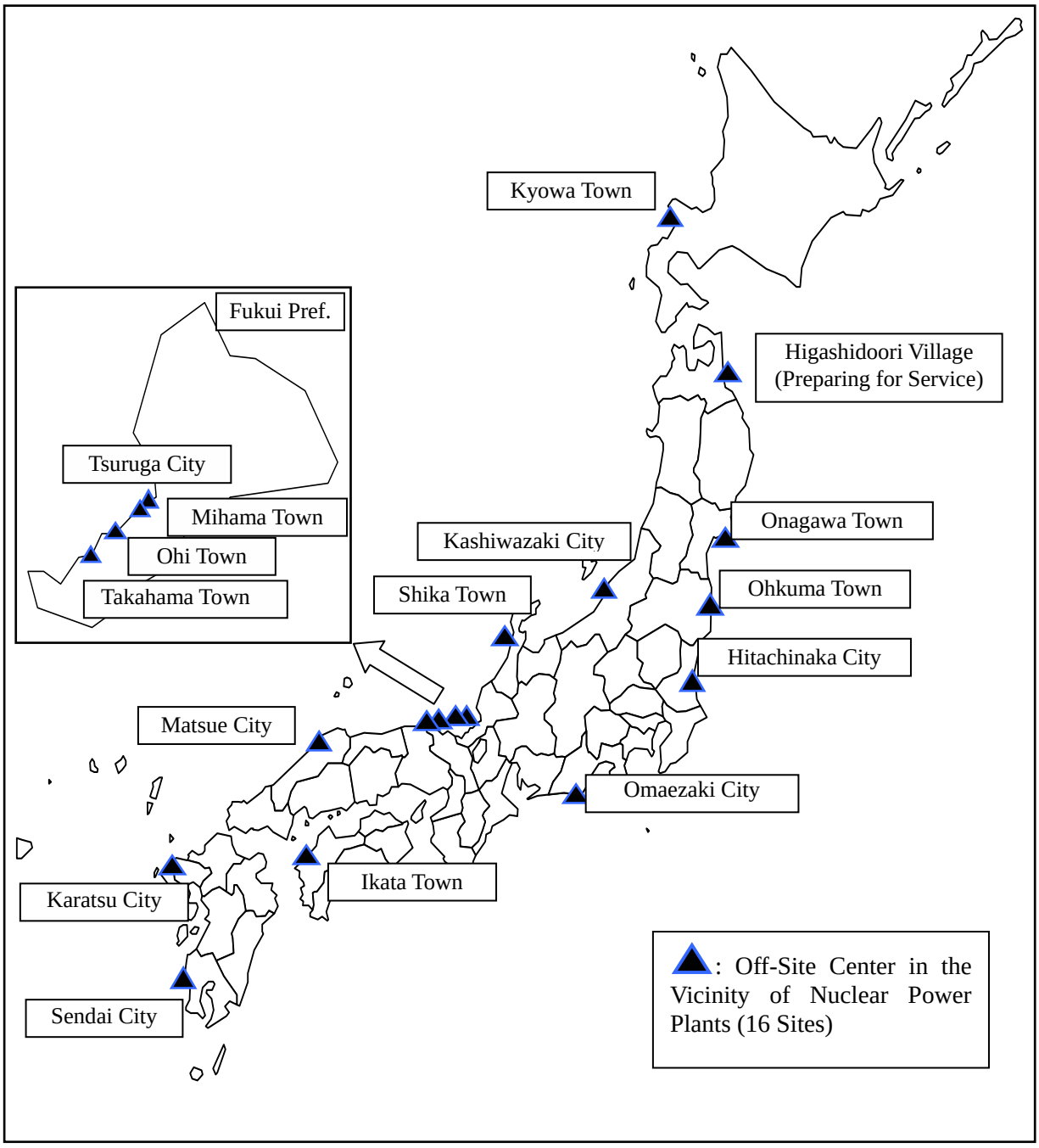


Fig. 16.2 Location of Off-Site Centers

Table 16 – 1 Main Specific Events and the Nuclear Emergency specified in the Special Law for Nuclear Emergency

	Events	Criteria for reporting by licensees and "Nuclear Emergency" declaration by national government ↓ conditions of declaration of "Nuclear Emergency"	
Events that licensees should report.	a) Dose of radiation near the site boundary detected dose	5 micro Sv/h at one point for more than 10 min 5 micro Sv/h at more than 2 points at the same time	500 micro Sv/h at one point for more than 10 min, 500 micro Sv/h at more than 2points at the same time
	b) Detection of the radioactive materials in usual release points, such as exhaust pipes	Radioactive materials worth to more than 5 micro Sv/h	Radioactive materials worth to more than 500 micro Sv/h
	c) Radiation by fire, explosion, etc. or detection of radioactive materials (outside the management zone)	Radiation dose of more than 50 micro Sv/h Release of radioactive materials worth to more than 5 micro Sv/h	Radiation dose of more than 5 mSv/h Release of radioactive materials worth to more than 500 micro Sv/h
	d) Individual events of each nuclear installations (Example for reactor)		
	- Failure of scram	When the nuclear reactor shutdown cannot be performed by usual neutron absorbers	When all of reactor shutdown functions are lost
	- Loss of reactor coolant	Occurrence of leakage of nuclear reactor coolant which needs operation of the emergency core coolant system (ECCS)	When water cannot be poured to the nuclear reactor by all ECCSs
	- Loss of all AC power supplies	When all AC power supplies stops power supply for more than 5 minutes	When all measures for cooling reactor core are lost with loss of all AC power supplies.
Response of the national government		- The Minister of METI sends staff with expertise on request of local governments. - The resident Specialist on Nuclear Emergency Preparedness carries out necessary works.	- The Minister of METI reports the nuclear emergency to the Prime Minister immediately after confirming the situation. - The Prime Minister declares "Nuclear Emergency" and takes following responses; - to advice or direct related local governments on necessary measures such as sheltering or evacuation. - to establish the Nuclear Emergency Response Headquarters in Tokyo and Local Nuclear Emergency Response Headquarters at Off-Site Center. - to establish the Joint Council for Nuclear Emergency Response for information exchange among the national government and local governments.
		Following responses are carried out based on the agreement of related ministries, not specified in the Special Law for Nuclear Emergency. - Related ministries and agencies organize joint task group for the incidents in Tokyo. - Related local organizations organize joint local task group in the Off- Site Center.	

Table 16-2. Nuclear Emergency Drills

Conductor	Date	Nuclear Power Station
(1) Drills conducted by National Government		
METI	03/23/2000 (Thurs.)	Tsuruga Power Station (The Japan Atomic Power, Inc.)
METI	10/28 /2000 (Sat.)	Shimane Nuclear Power Station (Chugoku Electric Power Co., Inc.)
METI	*10/27/2001 (Sat.)*	*Tomari Power Station (Hokkaido Electric Power Co., Inc.)*
METI	*11/07/2002 (Thurs.)*	*Ohi Power Station (The Kansai Electric Power Co., Inc.)*
METI	*11/26/2003 (Wed.)*	*Genkai Nuclear Power Station (Kyushu Electric Power Co., Inc.)*
(2) Drills conducted by Local Governments (April 2000 - March 2001)		
Tokai-mura (Ibaraki Pref.)	09/30/2000 (Sat.)	Tokai Daini Power Station (The Japan Atomic Power, Inc.)
Niigata Pref.	10/27/2000 (Fri.)	Kashiwazaki Kariwa Nuclear Power Station (Tokyo Electric Power Co., Inc.)
Ehime Pref.	10/31/2000 (Tue.)	Ikata Power Station (Shikoku Electric Power Co., Inc.)
Ishikawa Pref.	11/17/2000 (Fri.)	Shika Nuclear Power Station (Hokuriku Electric Power Co.)
Saga Pref.	11/27/2000 (Mon.)	Genkai Nuclear Power Station (Kyushu Electric Power Co., Inc.)
Fukushima Pref.	11/28/2000 (Tue.)	Fukushima Daiichi Nuclear Power Station (Tokyo Electric Power Co., Inc.)
Kagoshima Pref.	02/06/2001 (Tue.)	Sendai Nuclear Power Station (Kyushu Electric Power Co., Inc.)
Hokkaido	02/08/2001 (Thurs.)	Tomari Power Station (Hokkaido Electric Power Co., Inc.)
Fukui Pref.	03/22/2001 (Thurs.)	Takahama Power Station (The Kansai Electric Power Co., Inc.)
Shizuoka Pref.	03/23/2001 (Fri.)	Hamaoka Nuclear Power Station (Chubu Electric Power Co., Inc.)
(3) Drills conducted by Local Governments (April 2001 - March 2002)		
Miyagi Pref.	*07/11/2001 (Wed.)*	*Onagawa Nuclear Power Station (Tohoku Electric Power Co., Inc.)*
Ehime Pref.	*11/01/2001 (Thurs.)*	*Ikata Power Station (Shikoku Electric Power Co., Inc.)*
Shimane Pref.	*11/07/2001 (Wed.)*	*Shimane Nuclear Power Station (Chugoku Electric Power Co., Inc.)*
Saga Pref.	*11/26/2001 (Mon.)*	*Genkai Nuclear Power Station (Kyushu Electric Power Co., Inc.)*
Fukushima Pref.	*11/28/2001 (Wed.)*	*Fukushima Daini Nuclear Power Station (Tokyo Electric Power Co., Inc.)*
Ishikawa Pref.	*01/10/2002 (Thurs.)*	*Shika Nuclear Power Station (Hokuriku Electric Power Co.)*
Kagoshima Pref.	*01/31/2002 (Thurs.)*	*Sendai Nuclear Power Station (Kyushu Electric Power Co., Inc.)*
Shizuoka Pref.	*02/21/2002 (Thurs.)*	*Hamaoka Nuclear Power Station (Chubu Electric Power Co., Inc.)*
Fukui Pref.	*03/30/2002 (Sat.)*	*Mihama Power Station (The Kansai Electric Power Co., Inc.)*
(4) Drills conducted by Local Governments (April 2002 - March 2003)		
Miyagi Pref.	*09/03/2002 (Tue.)*	*Onagawa Nuclear Power Station (Tohoku Electric Power Co., Inc.)*
Hokkaido	*10/25/2002 (Fri.)*	*Tomari Power Station (Hokkaido Electric Power Co., Inc.)*
Ehime Pref.	*10/25/2002 (Fri.)*	*Ikata Power Station (Shikoku Electric Power Co., Inc.)*

Kagoshima Pref.	*10/29/2002 (Tue.)*	*Sendai Nuclear Power Station (Kyushu Electric Power Co., Inc.)*
Fukui Pref.	*11/07/2002 (Thurs.)*	*Ohi Power Station (The Kansai Electric Power Co., Inc.)*
Fukushima Pref.	*11/08/2002 (Fri.)*	*Fukushima Daiichi Nuclear Power Station (Tokyo Electric Power Co., Inc.)*
Shimane Pref.	*11/08/2002 (Fri.)*	*Shimane Nuclear Power Station (The Chugoku Electric Power Co., Inc.)*
Niigata Pref.	*11/09/2002 (Sat.)*	*Kashiwazaki Kariwa Nuclear Power Station (Tokyo Electric Power Co., Inc.)*
Ishikawa Pref.	*11/11/2002 (Mon.)*	*Shika Nuclear Power Station (Hokuriku Electric Power Co.)*
Saga Pref.	*11/25/2002 (Mon.)*	*Genkai Nuclear Power Station (Kyushu Electric Power Co., Inc.)*
Nagasaki Pref.	*01/30/2003 (Thus.)*	*Genkai Nuclear Power Station (Kyushu Electric Power Co., Inc.)*
Shizuoka Pref.	*02/04/2003 (Tue.)*	*Hamaoka Nuclear Power Station (Chubu Electric Power Co., Inc.)*
(5) Drills conducted by Local Governments (April 2003 - March 2004)		
Ibaraki Pref.	*09/30/2003 (Tue.)*	*Tokai Daini Power Station (The Japan Atomic Power, Inc.)*
Hokkaido	*10/24/2003 (Fri.)*	*Tomari Power Station (Hokkaido Electric Power Co., Inc.)*
Ehime Pref.	*10/27/2003 (Mon.)*	*Ikata Power Station (Shikoku Electric Power Co., Inc.)*
Niigata Pref.	*10/27/2000 (Fri.)*	*Kashiwazaki Kariwa Nuclear Power Station (Tokyo Electric Power Co., Inc.)*
Miyagi Pref.	*10/29/2003 (Wed.)*	*Onagawa Nuclear Power Station (Tohoku Electric Power Co., Inc.)*
Fukui Pref.	*11/15/2003 (Sat.)*	*Tsuruga Power Station (The Japan Atomic Power, Inc.)*
Fukushima Pref.	*11/28/2003 (Fri.)*	*Fukushima Daini Nuclear Power Station (Tokyo Electric Power Co., Inc.)*
Shimane Pref.	*01/23/2004 (Fri.)*	*Shimane Nuclear Power Station (Chugoku Electric Power Co., Inc.)*
Kagoshima Pref.	*01/28/2004 (Wed.)*	*Sendai Nuclear Power Station (Kyushu Electric Power Co., Inc.)*
Ishikawa Pref.	*03/23/2004 (Tue.)*	*Shika Nuclear Power Station (Hokuriku Electric Power Co.)*

D. Safety of Installations

Article 17 Siting

Each Contracting Party shall take the appropriate steps to ensure that appropriate procedures are established and implemented:

(i) for evaluating all relevant site-related factors likely to affect the safety of a nuclear installation for its projected lifetime;

(ii) for evaluating the likely safety impact of a proposed nuclear installation on individuals, society and the environment;

(iii) for re-evaluating as necessary all relevant factors referred to in sub-paragraphs (i) and (ii) so as to ensure the continued safety acceptability of the nuclear installation;

(iv) for consulting Contracting Parties in the vicinity of a proposed nuclear installation, insofar as they are likely to be affected by that installation and, upon request providing the necessary information to such Contracting Parties, in order to enable them to evaluate and make their own assessment of the likely safety impact on their own territory of the nuclear installation.

In Japan, in order to judge the appropriateness of the site for a nuclear installation, it is deemed necessary to conduct the safety impact assessment on natural phenomena and human induced external events to the nuclear installation, the safety impact assessment on the postulated accident of the nuclear installation to the general public in the vicinity, and the impact assessments on the siting of the nuclear installation to the environment other than the safety, therefore, required legislations and regulations for implementing relevant assessments has been provided, and the assessments are being conducted.

The probabilistic assessment had been performed to judge whether considerations on the fall of an airplane would be necessary to be included in the design as a human induced external event, and the regulatory guide was provided and set forth as a standard assessment method, since the previous report.

17.1 Basic Concept on the Siting of Nuclear Facilities

The following assessments must be taken into consideration when deciding upon the siting of nuclear facilities, and are incorporated in the relevant legislation, etc.

- Safety impact assessment on a nuclear installation by natural phenomena and postulated human induced external events
- Safety impact assessment on the radioactive impact to the environment by a nuclear installation should reactor accidents occur
- Environmental impact assessment other than radioactive impact due to the siting of a nuclear installation

17.2 Principal Assessment System Concerning the Siting of Commercial Power Reactors

The Reactor Regulation Law requires that location of a commercial power reactor must be selected and its structures and components must be designed so that the radiological hazards can be prevented. The adequacy of siting is examined in accordance with the Regulatory Guide for Reviewing Nuclear Reactor Siting Evaluation and Application Criteria (hereinafter called, the Regulatory Guide for Reactor Siting) etc. as part of safety examination of establishment license.

The Regulatory Guide for Reactor Siting requires that no such event that might induce serious accidents has occurred in the past or could be expected to occur in the future at the proposed site and furthermore, there should not be events that may aggravate accidents, and that reactors are isolated at a sufficient distance from the public in consideration of engineered safety features.

When deciding a site, an adequate attention in design shall be paid to the postulated external initiating event specific to the site, in addition to the site conditions stipulated by the Regulatory Guide for Reactor Siting.

In this respect, the Regulatory Guide for Safety Design prescribes that structures, systems and components with safety functions shall be designed to sufficiently withstand appropriate design basis seismic forces. As well, they shall be so designed that the safety of the commercial power reactor will not be impaired by other possible natural phenomena than earthquake and also by postulated external human initiated events.

The Regulatory Guide for Reactor Siting also prescribes that the dose to the public shall meet with the application criteria in consideration of the engineered safety features by establishing an exclusion area and low population zone and ensuring sufficient distance from high population zones, when assessing radiation impact to the public in the vicinity imposed by the postulated accidents in commercial power reactor. Meanwhile, the Regulatory Guide for Safety Assessment provides events to be evaluated in siting, acceptance criteria and specific conditions, etc. to be used in the analysis.

Environmental impact assessment of all of the power stations including nuclear power stations is performed in accordance with the Environmental Impact Assessment Law enforced in June 1999, before when the departmental council decision of MITI (present METI) dated in July 1977 was applied. This subject is described in Section 17.5.

17.3 Evaluation to Events Caused by External Factor

The Regulatory Guide for Safety Design prescribes that the earthquakes, natural phenomena other than earthquake and external human initiated events shall be addressed in the design, being in accordance with the prescription in the Regulatory Guide for Reactor Siting, stating “no such event that might cause serious accidents has occurred in the past nor could be expected to occur in the future at the proposed site and furthermore, there should not be events that may aggravate accidents”.

On the seismic design, it is required that the structures, systems and components (SSCs)with safety functions shall be designed in accordance with seismic classification, and shall be designed to withstand fully against the appropriate force of design basis earthquake.

It has been verified that the earthquake ground motions 'S1' that was derived with considerations of the "design basis maximum earthquake" assumed from the recorded earthquakes and active faults and the earthquake ground motions 'S2' that was derived with considerations of the "design basis extreme earthquake" that exceeds the "design basis maximum earthquake" are appropriate as the force of design basis earthquake in accordance with the Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities.

As classification on seismic design, SSCs are classified into three classes of A, B, and C from a view point of radioactive impact to the environment which could be induced by an earthquake based on this guidelines. And the basic policy with which the seismic design is performed is confirmed, so that the class A SSCs can withstand the earthquake ground motions S1 and the class As SSCs that are specifically important facilities among the class A SSCs can retain the safety function against the earthquake ground motions S2.

It is also required to confirm that the design is appropriate based on the technical standards provided in the Electric Utility Law.

The NSC established the Task Group on Seismic Design Guideline under the Special Committee on Safety Standards in July 2001, and started studies to develop more appropriate guidelines reflecting the latest knowledge etc. to the Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities etc.

First, the Task Group on Seismic Design Guideline arranged and classified items that should be studied concretely based on the latest knowledge and technology related to the seismic design, and established a working group which consists of specialists of many fields in order to make efforts in collecting, arranging, etc. of new knowledge.

Hereafter, deliberation and investigation at the Task Group will be effectively performed based on the outcome of the working group.

For the assumed natural phenomena other than earthquake (floods, tsunami, breeze, freezing, snowfall, landslides, etc.), the SSCs with safety functions are required to be designed so that the safety of the nuclear reactor facility will not be failed by any of these natural phenomena. Those SSCs with safety functions of particularly high importance shall be designed to withstand against the most severe conditions of natural phenomena or to withstand against combination of such natural forces and loads induced by an accident.

Moreover, the SSCs with safety functions are required to be so designed that the commercial power reactor should not be impaired by postulated human induced external event (airplane crashes, dam collapse, explosions etc.).

On the consideration on then airplane fall, the standard evaluation method is shown with a guide to judge whether design consideration as "an assumed human induced external event" is required or not, in "Evaluation Standards of the Probability of Airplane Falling to a Commercial Power Reactor Facility (Regulatory Guide)", which NISA enacted as a Regulatory Guide in July 2002. Besides, for airplanes, flight over nuclear facilities is limited in principle.

Commercial power reactors are required to be provided with appropriate measures to prevent illegal access to the reactor by third persons in Japan.

17.4 Evaluation for the Impacts to the Public of Accidents

In order to ensure safety of the public even from a worst accident, the Regulatory Guide for Reactor Siting prescribes, as a fundamental siting condition, that a commercial power reactor be located with a sufficient distance from the public taking into account the engineered safety features. The conditions for fulfilling this requirement are as follows:

A) The area within a specified distance from a commercial power reactor shall be the exclusion area, and no radiation hazard is imposed on the public in the vicinity outside the exclusion area, even postulating the occurrence of a major accident.

   A major accident is defined in the above Guideline to be an accident, occurrence of which is conceivable as a worst scenario from a technical point of view with considering such factors as the conditions at the site vicinity, the characteristics of the reactor and the engineered safety features.

B) The area within a specified distance beyond the exclusion area shall be the low population zone, and no substantial radiation damage is imposed on the public in the vicinity of the low population

zone, even postulating the occurrence of a hypothetical accident.

A hypothetical accident is defined in the above Guideline to be an accident, which exceeds a major accident, and the occurrence of that is not conceivable from a technical point of view. The Guideline for example, hypothesizes that some of engineered safety features in the reactor, which are assumed to be effective in postulating a major accident do not function and corresponding release of radioactive materials occurs.

C) A site of a nuclear reactor shall be located at a specified distance from high population zones.

The specified distance means a distance where cumulative value of whole-body dose in case of a hypothetical accident shall be small enough to be deemed acceptable based on the collective dose of view.

The application criteria on dose rate are specified in the attachments of the Regulatory Guide for Reactor Siting. The meteorological observation methods, the statistical processing methods of the observed data and the methods for the analysis of the atmospheric diffusion of the released radioactive materials, to be used in the dose assessments, are prescribed in the Regulatory Guide for Meteorological Observation for Safety Analysis of Nuclear Power Reactor Facilities.

17.5 Environmental Impact Assessment

The Environmental Impact Assessment Law was established to ensure business operators, that are undertaking large-scale projects that could have a serious impact on the environment, to conduct an environmental impact assessment properly and reflect the results of the assessment in implementing the project in term of protecting the environment, and also set forth the procedures in conducting the environmental impact assessment. The assessment for commercial power stations including nuclear power station must be performed in accordance with the provisions of the Environmental Impact Assessment Law and the Electricity Utility Industry Law. All of nuclear power reactors are subject to assessment regardless of their scale. The procedure is summarized in Figure 17-1.

Business operator, prior to application for reactor establishment, must prepare a Scoping Document presenting information concerning the contents of the project, items to be considered in an environmental impact assessment, method of survey, prediction, and assessment method to be utilized, and must submit it to NISA, as well as to the local governments having jurisdiction over the area deemed likely to be environmentally impacted by the project. NISA examines the Scoping Document taking into consideration the comments submitted by the related prefectural governor(s), as well as the comments of the residents and the views of the business operators regarding such comments, and gives recommendations on the contents of Scoping Document to the business operator, if needed.

Then business operator shall prepare a draft environmental impact statement (draft EIS) after conducting survey, prediction and assessment in consideration with the recommendation received from NISA and establishing the measures for protecting the environment. The draft EIS must be submitted to NISA, as well as to the related local governments. NISA, after examining the draft EIS, taking into account the opinion of the Minister of Environment and the related Governors as well as the comments of the residents and the views of the business operators regarding such comments, and receiving the view of advisers on the environment protection, gives recommendations on the environmental assessment to the business operator if needed. Meanwhile, concerning the items with large environmental impact, business operators shall check and provide the necessary measures for protecting the environment so that the environmental impact by the project would be reduced as low as practical, considering the project plan and the state of the area environmentally impacted by the project.

Finally, business operator shall prepare the environmental impact statement (EIS), taking into account the recommendation on the draft EIS, and submit it to NISA. NISA, after examining the EIS, orders alteration of the EIS if needed, otherwise notices acceptance of the EIS to business operator. The accepted EIS is distributed to the Ministry of Environment and related local governments.

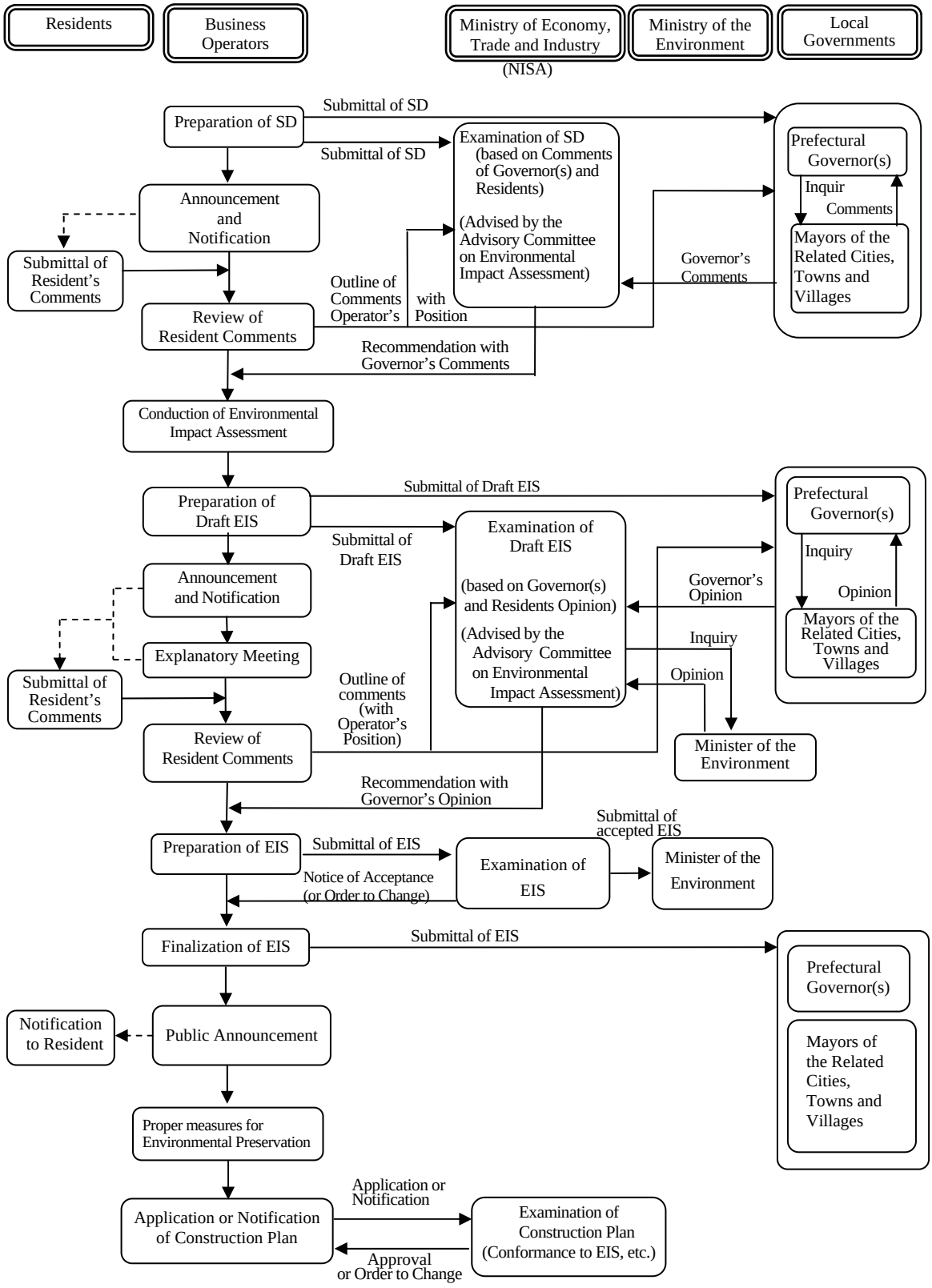
At the stage of examining construction plan, NISA does not approve it in case that the plan does not conform to the accepted EIS.

17.6 Re-evaluation of Site Related Factors

All the factors related to site selection must be re-evaluated at the time of alteration of an establishment license, such as new plant construction at the existing site, so as to review and assure the continuous safe operation of commercial power reactors. Adequacy of the safety design is re-evaluated referring to new findings and new experiences having impact on the design.

17.7 Arrangements with Neighboring Countries on Safety Impact of Nuclear Facilities

Commercial power reactor in Japan is so located at the place where there are no events liable to induce serious accidents and so designed to secure the safety against postulated initiating events including natural phenomena. It also implements the measures for the accident management. Furthermore, because of the fact that Japan is an archipelago country and separated from neighboring countries by a considerable distance, adverse impact of Japanese commercial power reactor over neighboring countries is deemed to be extremely small. Accordingly, no consultation has been made so far with neighboring countries on the siting of commercial power reactors.



NOTE : EIS: Environment Impact Statement SD: Scoping Document

Fig.17-1 Outline of the Environmental Impact Assessment on Nuclear Power Plant

Article 18 Design and Construction

Each Contracting Party shall take the appropriate steps to ensure that:
(i) the design and construction of a nuclear installation provides for several reliable levels and methods of protection (defense in depth) against the release of radioactive materials, with a view to preventing the occurrence of accidents and to mitigating their radiological consequences should they occur;
(ii) the technologies incorporated in the design and construction of a nuclear installation are proven by experience or qualified by testing or analysis;
(iii) the design of a nuclear installation allows for reliable, stable and easily manageable operation, with specific consideration of human factors and the man-machine interface.

Nuclear facilities in Japan (light water reactors and fast breeder reactors) were designed, constructed and operated based on the safety design concept, which are common to most Western countries, adopting almost the same defense in depth system as prescribed in the Nuclear Safety Standards "NUSS" of the IAEA. Moreover, the knowledge obtained from operating experiences and various kinds of examination, analyses, research and development are utilized to realize of safer and easier facilities to carry out the maintenance management. Furthermore, this new knowledge is reflected appropriately and successively on planning and revising of guidelines etc. in order to improve the safety and reliability of nuclear reactors.

18.1 Licensing Process at the Design and Construction Stages of Nuclear Facilities

Licensing process at the design and construction stage for commercial power reactor in Japan are described in the report of Article 7 with relevant laws and regulatory requirements applied. Confirming safety and safety assessment at the design and construction stage for commercial power reactor are described in the report of Article 14 with relevant laws and evaluation guidelines applied.

When design alteration of licensed commercial power reactor is required, the licence holder must undergo verification of the safety affected by the alteration and inspection of the altered segment including the safety analysis influenced by the design alteration, in the same procedure as the licensing process as licensing a new installation.

18.2 Realization of Defense with Multiple Steps and Methods (Defense in Depth) and Confinement of Radioactive Materials at Design and Construction Stage

Commercial power rectors (light water reactors (BWRs and PWRs)) in Japan are designed, constructed and operated based on the safety design principals, which are common among most Western countries and almost the same concept of "defense in depth" as prescribed in the Nuclear Safety Standards (NUSS) of the IAEA.

In this section the first 3 levels of defense in depth concepts which are closely related to design and construction of nuclear installations are discussed, forth and fifth levels of defense in depth concept which are severe accident management and emergency preparedness are discussed in sections 18.4 and report on Article 16.

Original design of light water reactors in Japan was introduced from the United States. But, the later design of reactors has been improved the facilities to be safer and easier in maintenance management through series of Improvement and Standardization Program led by METI (then MITI), reflecting the operating experiences of those who have obtained license for reactor establishment (hereinafter called as the “licence holders”) and knowledge obtained in research and development program of nuclear power industries.

(1) Implementation of the Defense in Depth Concept

The principle of "defense in depth" is as follows:

- Prevention of deviating from normal operation restraint with conservative design, manufacturing and construction of the nuclear plant in accordance with the relevant quality level and engineering practices.
- Detection of the occurrence of an abnormal event at an early stage and taking preventive measures against its progression into an accident. And
- Control of the progression of accident and mitigation of its consequences by assuming that progression to an accident is not prevented at the preceding stage.

In order to apply these fundamentals to design of nuclear facilities, the Regulatory Guide for Safety Design (see Table 18-1) that was established by the NSC, stipulates the following items; The first defense is to prevent the occurrence of an abnormal event. More specifically, as stated in the requirements in guidelines 1 to 10 (overall nuclear reactor facility) of the Regulatory Guide for Safety Design, the first defense implies such measures of designing with a safety margin, implementing strict quality control in fabrication, inspecting the facilities and component to be fabricated as required by the design and preventing degradation of performance through monitoring, check and maintenance during the operation. Each component, equipment and system of nuclear reactor facility is to be designed considering the importance of its safety function. The Regulatory Guide for Classification of the Importance of Safety Functions for Light Water Nuclear Power Reactor Facilities requires that the quality control during design and manufacturing be conducted corresponding to the importance of safety function.

The second defense is to prevent the progression of the abnormal event. More specifically, as stated in the requirements in guidelines 15 to 18 (Reactor Shutdown System), and 34 to 40 (Safety Protection System) of the Regulatory Guide for Safety Design, the second defense implies the early detection of the abnormal condition, its correction or taking measures in advance to prevent the progression into an accident.

The third defense is to mitigate the consequence of an accident. More specifically, as stated in the requirements in guidelines 25 (Emergency Core Cooling System) and 28 to 33 (Reactor Containment) of the Regulatory Guide for Safety Design, the third defense implies taking measures to secure the safety of the public in the vicinity by controlling the progression of the accident and mitigating its consequence.

The safety of nuclear facilities is ensured through rigorous safety ensuring measures on the basis of the defense in depth concept, which includes 1) preventing the occurrence of an abnormal event, 2) detection of the abnormal event and the preventing progression into an accident, and 3) mitigating an accident consequence. Consequently, through these measures, it is possible to reduce the potential for the occurrence of a severe accident to the extent that its actual occurrence would be technologically inconceivable, and to maintain the risk of the nuclear facility at a sufficiently low level. Based on such a status, preparation of the accident management is positioned as a measure to reduce the low risk further beyond these protection levels. In addition, preparation of the accident management and the emergency measures, which has been carried on in Japan, are described in section 18.4, and in Article 16, respectively.

(2) Confinement of Radioactive Materials (or Three Barriers of Radiation Protection Walls)

Nuclear facilities shall be designed, constructed and operated, in such a way as to confine radioactive materials within a series of physical barriers. These physical barriers are the fuel pellet, the fuel cladding, the reactor coolant pressure boundary and the reactor containment. The requirements for these physical barriers in the Regulatory Guide for Safety Design etc. and the outcome of the design improvements in them are as follows:

1) Fuel (Including Claddings)

The fuel assembly shall be so designed that a) the integrity will be retained under the various conditions that could occur in the nuclear reactor in service; b) the safety protection system will actuate the reactor shutdown system, etc. so that the allowable design limit of the fuel shall not be exceeded at an abnormal transient during operation; c) the reactor core cooling will not be impaired by a reactivity insertion accident and, more specifically, the maximum fuel enthalpy by analysis will not exceed the specified value; and the emergency core cooling system will be capable of preventing major damage to the fuel in a loss of coolant accident, and the fuel cladding metal water reaction will be limited to sufficiently small amount.

Regarding item a), the design requirements are stipulated in guidelines 11 and 12 of the Regulatory Guide for Safety Design. Regarding item b), the design requirements are stipulated in guidelines 34 to 40 (Safety Protection System). Regarding item c), the design requirements are stipulated in guidelines 12, 14 and 25. The requirements for safety evaluation are also stipulated in the Regulatory Guide for Evaluating Reactivity Insertion Events of Light Water Nuclear Power Reactor Facilities and the Regulatory Guide for Evaluating Emergency Core Cooling System Performance of Light Water Nuclear Power Reactors.

2) Reactor Coolant Pressure Boundary

The reactor coolant pressure boundary shall be so designed that the integrity will be maintained during normal and abnormal operating conditions; that the boundary will not exhibit brittle behavior or develop rapid brittle fracture during normal operation, maintenance, testing, or abnormal conditions; that the leakage will be detected immediately and surely; that tests and inspections will verify its integrity throughout the service life of the nuclear reactor, which are required in guidelines 19 to 22 of the Regulatory Guide for Safety Design. Pressure on reactor coolant pressure boundary will not exceed the specified value during reactivity insertion events, which is required in guideline 14 of the Regulatory Guide for Safety Design.

3) Reactor Containment

The reactor containment shall be so designed that it will withstand the loads of design basis accident and the appropriate design basis earthquake; that it will prevent leakage exceeding the predetermined leakage rate; that it will allow periodic testing on the leakage rate; that its boundary will not exhibit brittle behavior or develop rapid brittle fracture during normal operation, maintenance, testing and in abnormal conditions; and that isolation valves should be placed in the pipelines that penetrate its walls, which are required in guidelines 28 and 29 of the Regulatory Guide for Safety Design.

18.3 Prevention of Accidents and their Mitigation Systems (Regulatory Guide for Reviewing Classification of Importance of Safety Functions for Light Water Nuclear Power Reactor Facilities)

In Japan, the Regulatory Guide for Reviewing Classification of Importance of Safety Functions for Light Water Nuclear Power Reactor Facilities (hereinafter called as " Regulatory Guide for Classification of Importance") prescribe the system for preventing the occurrence of abnormalities and the system for mitigating the impact of abnormalities. That is, since the Regulatory Guide for Safety Design used at the safety examination must be appropriately applied according to the safety importance of the subject structures, systems and components, safety functions and the classification of importance of the structures, systems and components are defined in this " Regulatory Guide for Classification of Importance".

(1) The Concept of the Classification of Importance for the Safety Design

The importance of the safety function of the structures, systems and components are classified into the following two classes and shown in the Regulatory Guide for Classification of Importance.

A) Those of which loss of the function could result to cause an abnormality of the nuclear reactor facility, which causes excessive radiation exposure on general public or the working personnel (the system for preventing the occurrence of abnormalities, hereinafter called as "PS"). B) Those that have the function to prevent the propagation of abnormality or terminate it quickly in an abnormal situation of a nuclear reactor facility, and to protect general public or the working personnel from possible excessive radiation exposure (the system for mitigating the impact of abnormalities, hereinafter called as "MS"). The structures, systems and components, which belong to these PS and MS respectively, are classified into three classes in accordance with the importance of their safety function. It stipulates, from the standpoint to ensure the safety function, that the basic objective for each class shall meet the following requirements according to the technologies of design, construction and tests, and operation management.

Class 1: Secure and maintain as high as reasonably achievable level of reliability.
Class 2: Secure and maintain a high level of reliability.
Class 3: Secure and maintain a level of reliability equal to or higher than that for general industry.

The classifications of the structures, systems and components and their safety functions are listed in Table 18-2.

(2) Installation of the PS and MS

The PS and MS installed in the light water reactors in Japan are as follows.

After grouping all light water reactors, currently installed in Japan, based on the reactor type and the containment type, the essential system for PS and MS which are installed in each nuclear reactor facilities are shown in Table 18-3 and Table 18-4 for BWR and PWR respectively. These tables summarize the system configuration and their classification of reactor shutdown system, emergency core cooling system and heat removal system, the number of diesel generators and the containment shape, as essential systems for preventing the occurrence of abnormalities and system for mitigating the impact of abnormalities.

18.4 Preparation of Accident Management Policy

Since the TMI-2 accident, the researches on phenomena of severe accidents and PSA have been conducted extensively worldwide. The NSC decided "Accident Management as a Measure for Severe Accident at Light Water Nuclear Power Reactor Facilities" in 1992, and revised it in 1997. Licence holders in Japan also have voluntarily implemented their own measures for preventing severe accidents and for mitigating their consequences at the request of the MITI (then) based on the the NSC's decision.

As embodiment of the accident management measures for operating commercial power reactors, licence holders have been developed the accident management in orderly manner, substantiate the equipment during the outage of the periodic inspection and establishing operational measures such as implementing system, procedures, education of personnel, etc. *And the accident management related to the internal events for 52 units of commercial power reactors under operation has already completed the preparation.*

The accident management measures that were prepared by licence holders were reported to NISA in May, 2002, together with the PSA results of internal events for representative reactor types for the purpose of quantitatively verifying the effectiveness of enhancement of the safety.

While licence holders were developing accident management measures, NISA requested NUPEC (then) to evaluate the effectiveness of the accident management measures, and established the "Accident Management Workgroup" under the Nuclear and Industrial Safety Subcommittee to obtain the opinion of specialists, and evaluation report was compiled and issued in October 2002. The report was submitted to the NSC by NISA in the same month.

The PSA results of the internal events for all commercial power reactor facilities under operation (excluding representative reactor types) were reported to NISA by the licence holders in March 2004.

The development programs of the accident management for the commercial power reactors under construction (three units) were reported to NISA by the licence holders in July 2003, and the evaluation results etc. were reported to the NSC by NISA in September 2003. The NSC evaluated the report and concluded it was reasonable in December 2003. In addition, the accident management measures for the reactor facilities concerned are being prepared by the licence holders.

18.5 Measures to Ensure the Technical Reliability by Experience, Test and Analysis

In Japan, in order to enhance the safety and reliability of commercial power reactors, those activities such as feedback of the operating experience and utilization of the technical knowledge obtained through testing and analysis have been conducted, as describe below.

Those insights newly obtained through these activities have been timely incorporated in existing guidelines and used to develop new guidelines.

(1) Feedback of Operating Experiences of Commercial Power Reactors

- The good practices and in-compliances identified through periodic inspections, as well as the experience in design, construction and operation of domestic and foreign commercial power reactors, were analyzed, and the results are incorporated in design modification, improvement of construction methods, etc., if recognized to be effective, through the establishment license, approval of construction plans and pre-service inspections, if necessary.
- For an accident or a failure occurred in a commercial power reactor, including foreign reactors, the corrective measures are implemented after identifying the cause of failure.
- From the standpoint of the comprehensive preventive maintenance of nuclear reactor facilities, periodic safety review is performed for each commercial power reactor with the interval of approximately ten years. And its safety and reliability are confirmed, reflecting the results of comprehensive evaluation on operating experiences and the latest technical knowledge. The situation of periodic safety review is described in Article 14.

(2) Feedback of the Knowledge Obtained Through Test and Analysis

Recognizing the importance of assuring the safety in development and utilization of nuclear energy, preparatory researches of safety standards, guidelines, reference materials for acceptance decision in safety examination etc., as well as improvement of the safety itself, are promoted in Japan.

1) Implementation of Safety Research, Verification Test and Analysis

Since the 1976 fiscal year, the NSC has decided the safety research annual program upon three fields of nuclear facilities etc., environmental radioactivity and radioactive wastes as a five-year plan, and conducted the safety researches at JAERI etc., periodically looking over the contents. The 6th five-year research program is going on now.

On the other hand, METI has also entrusted and implemented various kinds of tests, analysis, etc. to NUPEC, JAPEIC, etc. in order to demonstrate and verify the safety of nuclear facilities.

These verification tests and researches include safety researches on refinement of fuels, safety researches on aging plants, various kinds of researches on the severe accident, researches on the probabilistic safety assessment, researches on human and organization factors, researches on decommissioning, researches on the nuclear emergency preparedness, seismic verification tests, and vibration tests of steam generator tubes, etc.

The NSC has developed a new safety research plan (important safety research programs). In the plan, the NSC clarified the important research programs that should be implemented in the five years starting from 2005 in order to improve nuclear safety regulations. In the plan, the safety verification tests are deliberated as to be included as important safety research programs.

Regarding the analysis, the safety analysis codes necessary for the evaluation performed by persons other than the applicant for a reactor establishment license are prepared and improved by NUPEC *(then , now JNES)*, and safety analysis for the newly applied commercial power reactor and regulatory evaluation of the measures of accident management policy of operating nuclear power reactors, etc. are performed using those codes.

2) Reliability Enhancement Activity by Licence Holders

Licence holders and manufacturers, etc. are also playing an active role in developing the technology through the Improvement and Standardizing Program and introducing new technology. CRIEPI is also conducting the research such as human factor.

The remarkable results of the Improvement and Standardization Program are reflected to the design of Advanced BWR (ABWR) and Advanced PWR (APWR).

For ABWR, two units are already in operation, two units are under construction, and four units are in preparation for construction at this time. Features of ABWR design includes elimination of the large diameter re-circulation piping connected to the reactor vessel by adoption of reactor internal pumps, alteration of the control rod drive mechanism during normal operation from hydraulic to motor driven mechanism that is possible to make fine control of the position, and so on.

On the other hand, For APWR, two units are in preparation of construction at this time. The basic design of APWR was developed based on the outcome of the Improvement and Standardization Program, and also reflecting latest new technologies and operation and maintenance experience. APWR has the features such as simplification of the in-core structure by adoption of neutron reflectors which replaces with the baffle and former structure, upgrading of the emergency core cooling system, and so on.

For BWRs, up to now, as for improvements of component reliability, improvement of structural materials, removal of residual stresses, improvement of water chemistry, etc. have been carried out, in order to prevent the stress corrosion cracking of the component which consists of reactor core internals or the reactor coolant pressure boundary.

For PWRs, modifications such as improvements of heat transfer tube materials and improvements of water quality of the secondary loop, etc. have been carried out to prevent damages of steam generator heat transfer tubes.

Overall digitization has been carried out for instrumentation and control facilities including the safety protection system of the new plants for both of BWRs and PWRs.

18.6 Consideration of Human Factors and the Man-Machine Interface

It is the safety requirements regarding operating management to make commercial power reactor more reliable, more stable and more easily manageable taking into human factors and man-machine interface. These requirements are implemented in design and operation of the commercial power reactors in Japan.

Considerations of the design to an operator behavior, requirements on the design of a control room and concrete design to approach these requirements are described in the report of Article 12.

Table 18-1 Individual guidelines established in the NSC Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities (1/2)

(General requirements for nuclear reactor facilities)
Guideline 1. Applied standard and standards
Guideline 2. Design considerations against natural phenomena
Guideline 3. Design considerations against external human initiated events
Guideline 4. Design considerations against internal missile
Guideline 5. Design considerations against fire
Guideline 6. Design considerations environmental conditions
Guideline 7. Design considerations for share use
Guideline 8. Design considerations against operator actions
Guideline 9. Design considerations for reliability
Guideline 10. Design considerations for testability

(Nuclear reactor and reactor shutdown system)
Guideline 11. Core design
Guideline 12. Fuel design
Guideline 13. Reactor characteristics
Guideline 14. Reactivity control system
Guideline 15. Independence and testability of reactor shutdown system
Guideline 16. Reactor shutdown margin by control rods
Guideline 17. Shutdown capability of reactor shutdown system
Guideline 18. Reactor shutdown system capability at the accident

(Reactor cooling system)
Guideline 19. Integrity of reactor coolant pressure boundary
Guideline 20. Prevention of reactor coolant pressure boundary failure
Guideline 21. Detection of the reactor coolant pressure boundary leaks
Guideline 22. In-service test and inspection of reactor coolant pressure boundary
Guideline 23. Reactor coolant make-up system
Guideline 24. Systems for removing residual heat
Guideline 25. Emergency core cooling system
Guideline 26. System for transporting heat to ultimate heat sink
Guideline 27. Design considerations against loss of power

(Reactor containment)
Guideline 28. Function of reactor containment
Guideline 29. Prevention of reactor containment boundary failure
Guideline 30. Isolation function of reactor containment
Guideline 31. Reactor containment isolation valves
Guideline 32. Reactor containment heat removal system
Guideline 33. System for controlling containment atmosphere

(Safety protection system)
Guideline 34. Redundancy of safety protection system
Guideline 35. Independence of safety protection system
Guideline 36. Function of safety protection system during transients
Guideline 37. Function of safety protection system during the accident
Guideline 38. Function of safety protection system at time of failure
Guideline 39. Separation of safety protection system from instrument and control system
Guideline 40. Testability of safety protection system

Table 18-1 Individual guidelines established in the NSC Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities (2/2)

(Control room and emergency facility)
Guideline 41. Control room
Guideline 42. Reactor shutdown function from outside of control room
Guideline 43. Design considerations for control room habitability
Guideline 44. On-site emergency station
Guideline 45. Design considerations for communications equipment
Guideline 46. Design considerations for evacuation route
(Instrumentation and control system and electrical system)
Guideline 47. Instrumentation and control system
Guideline 48. Electrical system
(Fuel handling system)
Guideline 49. Fuel storage and handling system
Guideline 50. Prevention of fuel criticality
Guideline 51. Monitoring of fuel handling area
(Radioactive waste processing facility)
Guideline 52. Radioactive gaseous waste processing facility
Guideline 53. Radioactive liquid waste processing facility
Guideline 54. Radioactive solid waste processing facility
Guideline 55. Radioactive solid waste storage facility
(Radiation management)
Guideline 56. Environmental radiation protection
Guideline 57. Radiation protection for personnel engaged in radiation work
Guideline 58. Radiation management for personnel engaged in radiation work
Guideline 59. Radiation monitoring

Table 18-2 Definitions and functions with respect to classifications of importance of safety function (1/2)

Classification		Definition	Function
Class 1	PS-1	Structures, systems and components where there is concern that (a) a conspicuous damage to the core, or (b) significant damaging the core may occur, due to an event caused by such damage or malfunction.	(1) Reactor coolant pressure boundary function (2) Excessive reactivity insertion prevention function (3) Core shape maintenance function
	MS-1	(1) Structures, systems and components that implement an emergency shutdown of the nuclear reactor, remove the residual heat, prevent excess pressure in the reactor coolant pressure boundary and prevent an impact of excessive radiation on the public in the site vicinity, at the occurrence of an abnormal condition.	(1) Reactor emergency shutdown function (2) Sub-criticality maintenance function (3) Function to prevent over-pressurization of reactor coolant pressure boundary (4) Cooling function after reactor shutdown (5) Core cooling function (6) Radioactive material confinement function, shielding of radiation and release reduction functions
		(2) Other essential safety related structures, systems and components	(1) Generation function of an actuation signal for the engineered safety features and to the reactor shutdown system (2) Specially important safety related functions
Class 2	PS-2	(1) Structures, systems and components for which there is no concern of the immediate causing of conspicuous reactor damage or significant fuel damage due to an event that occurs due to such a damage or malfunction, however, for which there is a concern of excessive release of radioactive materials outside the site vicinity.	(1) Function the builds in reactor coolant (However, this excludes small diameter piping, such as instrumentation, etc., excluded from the reactor coolant pressure boundary and those that are not connected directly to the boundary.) (2) Components not directly connected to the reactor coolant pressure boundary, which have the radioactive materials storage function (3) Function for the safe handling of fuel
		(2) Structures, systems and components which must be actuated during normal operation and upon an abnormal transient during operation for which there is a high potential that core cooling will be lost due to the concerned malfunction.	(1) Safety valve and relief valve reclosing function

Reference : “Examination Guideline for Classification of Importance of Safety Functions for Light Water Reactor Facilities”, decision by the NSC in August 30, 1990.

Table 18-2 Definitions and functions with respect to classifications of importance of safety function (2/2)

Classification		Definition	Function
	MS-2	(1) Structures, systems and components for adequately reducing the impact of radiation on the general public in the vicinity of the site, due to damage or malfunction in the structures, systems and components of the PS-2.	(1) Fuel pool water supply function (2) Function to prevent the discharge of radioactive materials
		(2) Structures, systems and component with a specially important function in the response of abnormal situations.	(1) Function for determining the situation of the plant at the time of an accident (2) Function for mitigation of abnormal situations (3) Function for safe shutdown from outside the control room
Class 3	PS-3	(1) Structures, systems and components where initiating events of abnormal situations take place, and which are other than PS-1 and PS-2 components.	(1) Reactor coolant preserving function (components other than PS-1 and PS-2) (2) Reactor coolant circulation function (3) Radioactive material storage function (4) Power supply (excluding emergencies) (5) Plant instrumentation and control function (excluding safety protection function) (6) Plant operation supporting functions
		(2) Structures, systems and components which hold the concentration of the radioactive materials in the reactor coolant to a level low enough not to impair normal operation	(1) Function for preventing the diffusion of fission products into the reactor coolant (2) Reactor coolant purification function
	MS-3	(1) Structures, systems and components which mitigate events in conjunction with the MS-1 and MS-2, even when there is an abnormality during operation	(1) Function for mitigation of reactor pressure increase (2) Function to control the power increases (3) Reactor coolant make-up function
		(2) Structures, systems and components required for the response of abnormal situations	(1) Important for emergency response and function for recognizing abnormal situations

Table 18-3 Establishment situation of prevention and mitigation system (BWR nuclear installation) (1/2)

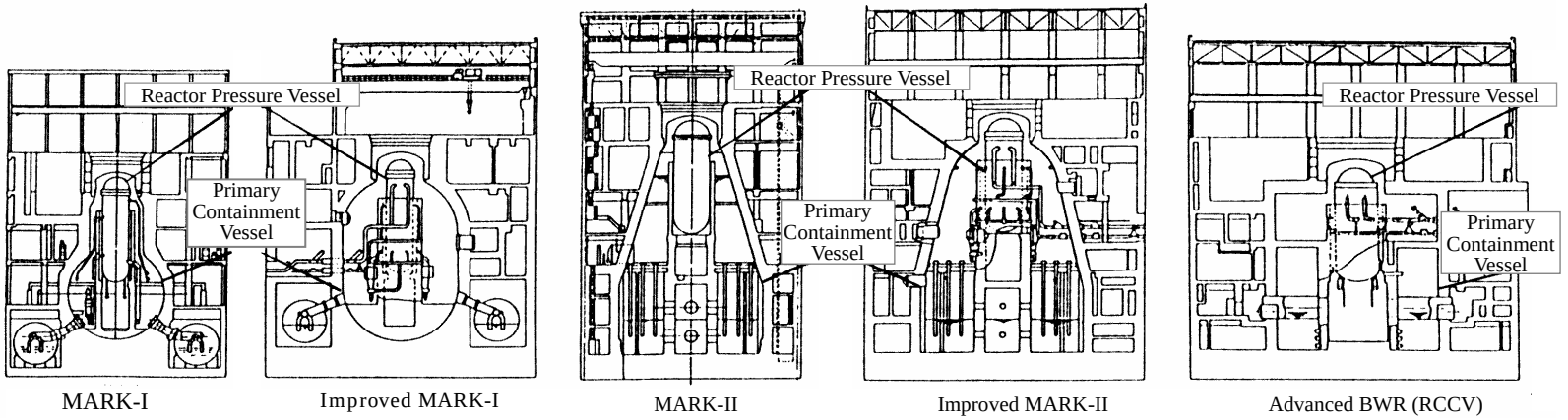
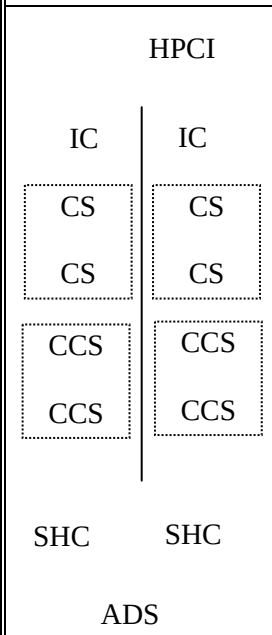
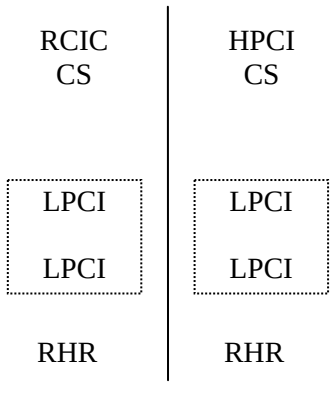
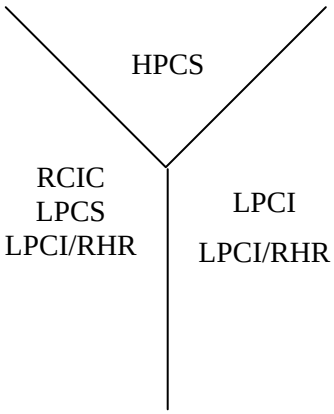
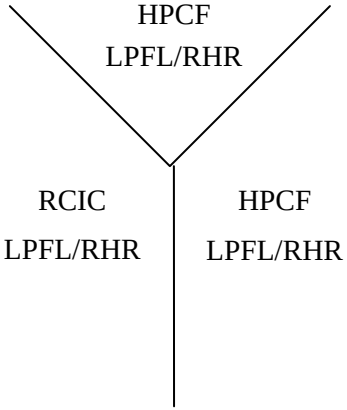
Plant type	BWR 2 & 3	BWR 4	BWR 5	ABWR
Containment type	MARK-I	MARK-I	Improved MARK-I , MARK-II and Improved MK-II	RCCV
Name of power station	Unit 1 of Tsuruga PS (BWR2) Unit.1 Fukushima Daiichi, (BWR 3)	Unit 1of Hamaoka NPS Unit 1of Onagawa NPS Unit 1 of Shimane NPS Unit 2 of Fukushima Daiichi NPS Unit 3 of Fukushima Daiichi NPS Unit 4 of Fukushima Daiichi NPS Unit 5 of Fukushima Daiichi NPS Unit 2 of Hamaoka NPS	Unit 1 of Shika NPS (Improved MK-I) Unit 2 of Shimane NPS (-ditto-) Unit 2 of Onagawa NPS (-ditto-) Unit 3 of Onagawa NPS (-ditto-) Unit 3 of Hamaoka NPS (-ditto-) Unit 4 of Hamaoka NPS (-ditto-) Tokai Daini (MK-II) Unit 6 of Fukushima Daiichi NPS, (-ditto-) Unit 1 of Fukushima Daini NPS (-ditto-) Unit 1 of Kashiwazaki Kariwa NPS (-ditto-) Unit 2 of Fukushima Daini NPS (Improved MK-II) Unit 3 of Fukushima Daini NPS (-ditto-) Unit 4 of Fukushima Daini NPS (-ditto-) Unit 2 of Kashiwazaki Kariwa NPS (-ditto-) Unit 3 of Kashiwazaki Kariwa NPS (-ditto-) Unit 4 of Kashiwazaki Kariwa NPS (-ditto-) Unit 5 of Kashiwazaki Kariwa NPS (-ditto-)	Unit 6 of Kashiwazaki Kariwa NPS Unit 7 of Kashiwazaki Kariwa NPS
Reactor shutdown system	SCRAM system Stand-by Liquid Control System	SCRAM system Stand-by Liquid Control System	SCRAM system Stand-by Liquid Control System	SCRAM system Stand-by Liquid Control System
Containment shape				

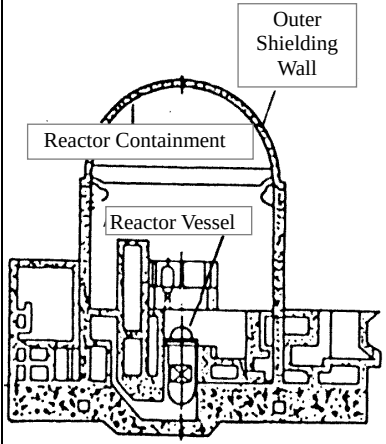
Table 18-3 Establishment situation of prevention and mitigation system (BWR nuclear installation) (2/2)

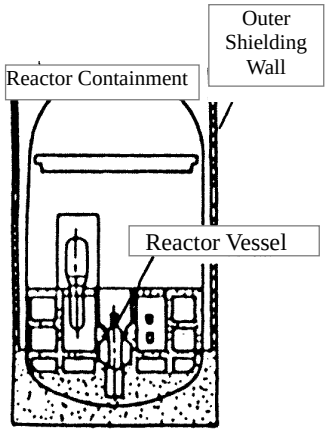
Plant type	BWR 2 & 3	BWR 4	BWR 5	ABWR
Containment type	MARK-I type	MARK-I type	Improved MARK-I type, MARK-II type and Improved MARK-II types	RCCV type
System configuration of ECCS and heat removal system				
Divisions of system configuration	2 partitions	2 partitions	3 partitions	3 partitions
Number of D/G	2	2	3	3

IC: Isolation Condenser.
CS: Core Spray Sys.
CCS: Containment Cooling Sys.
RHR: Residual Heat Removal Sys.
SHC: Shutdown Cooling Sys.
HPCI: High Pressure Core Injection Sys.
LPCI: Low Pressure Coolant Injection Sys.
HPCF: High Pressure Core Flooder
RCIC: Reactor Core Isolation Cooling Sys.
ADS: Automatic Depressurization Sys.
HPCS: High Pressure Core Spray Sys.
LPFL: Low Pressure Core Flooder

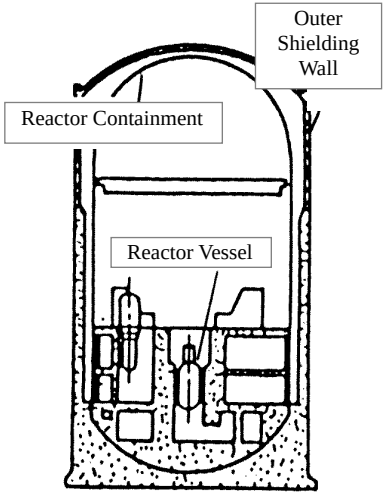
Table 18-4 Establishment situation of prevention and mitigation systems (PWR nuclear installation) (1/2)

Plant Type	4 Loop	2 Loop	3 Loop	4 Loop
Containment type	PCCV type	Dry type	Dry type	Ice condenser type
Name of power station	Unit 3 of Ohi PS Unit 4 of Ohi PS Unit 2 of Tsuruga PS Unit 3 of Genkai NPS Unit 4 of Genkai NPS	Unit 1 of Ikata PS Unit 2 of Ikata PS Unit 1 of Mihama PS Unit 2 of Mihama PS Unit 1 of Genkai NPS Unit 2 of Genkai NPS Unit 1 of Tomari PS Unit 2 of Tomari PS	Unit 1 of Takahama PS Unit 2 of Takahama PS Unit 3 of Takahama PS Unit 4 of Takahama PS Unit 3 of Mihama PS Unit 1 of Sendai NPS Unit 2 of Sendai NPS Unit 3 of Ikata PS	Unit 1 of Ohi PS Unit 2 of Ohi PS
Reactor shutdown system	Scram system Boric acid injection system	Scram system Boric acid injection system	Scram system Boric acid injection system	Scram system Boric acid injection system
Containment shape	PCCV type	Dry type		Ice condenser type





Freestanding steel type (no top dome)



Freestanding steel type (with top dome)

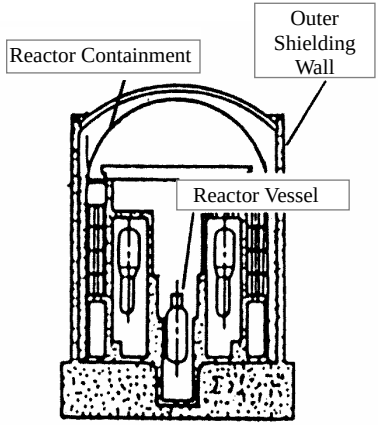


Table 18-4 Establishment situation of prevention and mitigation systems (PWR nuclear installation) (2/2)

Plant Type	4 Loop	2 Loop	3 Loop	4 Loop
Containment type	PCCV type	Dry type	Dry type	Ice condenser type
System configuration of ECCS and heat removal system	ACC 4 units HPIS LPIS (/RHR) AFWS (motor driven) HPIS LPIS (/RHR) AFWS (motor driven) AFWS (turbine driven)	ACC 2 units HPIS LPIS (/RHR) AFWS (motor driven) HPIS LPIS (/RHR) AFWS (motor driven) AFWS (turbine driven)	ACC 3 units HPIS (/CHP) HPIS (/CHP) LPIS (/RHR) AFWS (motor driven) HPIS (/CHP) LPIS (/RHR) AFWS (motor driven) AFWS (turbine driven)	ACC 4 units HPIS HPIS (/CHP) LPIS (/RHR) AFWS (motor driven) HPIS HPIS (/CHP) LPIS (/RHR) AFWS (motor driven) AFWS (turbine driven)
Divisions of system configuration	2 systems	2 systems	2 systems	2 systems
	HPIS boosting unnecessary	HPIS boosting necessary	HPIS boosting necessary	HPIS boosting necessary
Number of D/Gs	2	2	2	2

ACC: Accumulator, AFWS: Auxiliary Feed Water Sys, LPIS: Low Pressure Coolant Injection ., HPIS: High Pressure Injection Sys.
RHR: Residual Heat Removal Sys., CHP: Charging Pump

Article 19 Operation

Each Contracting Party shall take the appropriate steps to ensure that:

(i) **the initial authorization to operate a nuclear installation is based upon an appropriate safety analysis and a commissioning programme demonstrating that the installation, as constructed, is consistent with design and safety requirements;**

(ii) **operational limits and conditions derived from the safety analysis, tests and operational experience are defined and revised as necessary for identifying safe boundaries for operation;**

(iii) **operation, maintenance, inspection and testing of a nuclear installation are conducted in accordance with approved procedures;**

(iv) **procedures are established for responding to anticipated operational occurrences and to accidents;**

(v) **necessary engineering and technical support in all safety-related fields is available throughout the lifetime of a nuclear installation;**

(vi) **incidents significant to safety are reported in a timely manner by the holder of the relevant licence to the regulatory body;**

(vii) **programmes to collect and analyse operating experience are established, the results obtained and the conclusions drawn are acted upon and that existing mechanisms are used to share important experience with international bodies and with other operating organizations and regulatory bodies;**

(viii) **the generation of radioactive waste resulting from the operation of a nuclear installation is kept to the minimum practicable for the process concerned, both in activity and in volume, and any necessary treatment and storage of spent fuel and waste directly related to the operation and on the same site as that of the nuclear installation take into consideration conditioning and disposal.**

Licence holder is allowed to commence operation after the license conditions specified by the Reactor Regulation Law etc. are complied in the stage from licensing for establishment to the construction of commercial power reactors.

As legal regulations for licence holders to operate reactors safely, it is obliged to provide the Operational Safety Programs approved by the Minister of METI before commencement, and to observe necessary measures for operation and maintenance of commercial power reactors like Periodic Inspection etc., all through operating life time.

After the last reporting, demarcation of the Periodic Inspection and the Licensee's Periodic Inspection were clarified, and the scheme of the Periodic Safety Management Review is newly established.

Moreover, quality assurance activities, maintenance management activities, Periodic Safety Review, etc. are decided to be included into the Operational Safety Program.

As an inspection to verify the integrity of equipment, licence holders conduct Licensee's Periodic Inspections of facilities that are designated by the ordinance of the METI, and NISA (or JNES) perform his Periodic Inspection attending the Licensee's Periodic Inspection of important facilities for the public safety, or confirming the record of the Licensee's Periodic Inspection for verification of the safety. As for the Licensee's Periodic Inspection, it is obliged for licence holders to inspect periodically and to record and keep the results.

Furthermore, JNES examines the implementation system of the Licensee's Periodic Inspection (Periodic Safety Management Review), and notifies these results to NISA. NISA makes comprehensive evaluation on the implementation system of the Licensee's Periodic Inspection based on the notification by JNES.

As for the inspection to verify the licensee's observance of activities for safe operation, the Nuclear Safety Inspection is conducted by NISA, and NISA verifies whether processes such as implementing systems of licensee's activities for safe operation are appropriate in the light of quality assurance.

In addition, NISA has initiated the reexamination of the inspection system to evaluate the possibility to utilize

risk assessments and/or performance evaluations.

19.1 Initial License

Licence holders in Japan are required by the Reactor Regulation Law to take the necessary measures for safe operation of reactor facility and protection of specified nuclear fuel materials. Pursuant to this principle, basic design (items in the main text of establishment license application document) approved by the Minister of METI must be observed throughout each stage of detailed design, construction and operation. In addition to the conditions in the application main text, major items in the attachments are to be observed as well.

Licence holders are also required to observe the conditions of establishment license in the application of construction plan (or design approval for fuel assembly), in which detailed design for each facility of a commercial power reactor is reviewed. Before the commissioning of a commercial power reactor, NISA conducts pre-service inspections to ensure the compliance with the licensing conditions.

After fulfilling regulatory procedures up to the construction stage shown in Fig. 7-3 of Article 7, licence holder is allowed to commence the operation of commercial power reactor.

The regulatory requirements for safe operation are prescribed in the Reactor Regulation Law. Thus, licence holders must develop safety measures necessary for operation and maintenance of the reactor, transportation and disposal of radioactive waste, prepare the Operational Safety Program and obtain approval of them from the Minister of METI and comply with them, assign Chief Engineers of Reactors and designate a Person Responsible for Operation who is responsible to the specified activities for safe operation and to make and keep operational records.

Moreover, in accordance with the Electricity Utilities Industry Law, it is specified that a Chief Electrical Engineer and a Boiler and Turbine Chief Engineer shall be assigned and submitted notice to the authority and also obliged that Licensee’s Periodic Inspection, Periodic Inspection and Periodic Safety Management Review shall be undergone within the interval not exceeding 13 months.

19.2 Limiting Conditions for Operation

Operation and maintenance of commercial power reactors are carried out in accordance with the Operational Safety Program approved by the Minister of METI in Japan.

Shown in Table 19-1 are the items included in Operational Safety Program. In item 3 of the program, the Limiting Conditions for Operation such as shutdown margin and reactor thermal limits, etc. are included. Table19-2 shows the items of the Limiting Conditions for Operation for commercial power reactors in Japan. If the LCO should not be complied, the Minister of METI could order the licence holder to suspend the operation of the nuclear facility and so forth by the Reactor Regulation Law.

In Japan, commercial power reactor facilities were allowed to be operated only within the rated electrical power. In December 2001, NISA reexamined the regulatory requirements, etc. and allowed the plant operation at the rated thermal power to those plants, where the Operational Safety Program is revised, where the safety is verified, where the operation manual is prepared, and where the operator training is implemented.

19.3 Regulations for Operation, Maintenance, Inspection and Testing

NISA posts a resident nuclear safety inspector at each commercial power reactor by the Reactor Regulation Law to supervise the licence holder's observance on the Operational Safety Program, etc.

and conducts the Nuclear Safety Inspections four times a year.

Moreover, NISA is authorized to access to the nuclear facility and examine the records, documents and other necessary matters at any time when the Minister of METI recognized it is necessary.

Licence holders are obliged to include matters concerning quality assurance in the Operational Safety Program in accordance with rules under the Reactor Regulation Law. Licence holders must establish the organization to implement the quality assurance, and also must plan, implement, evaluate and improve the activities for safe operation.

Licence holders are obliged to define maintenance management in the Operational Safety Program, and must define and implement policies, objectives, implementation plan, evaluation of the results, corrective actions, and the record of maintenance management.

NISA confirms the implementing of quality assurance and maintenance management through the Nuclear Safety Inspection.

Licence holders prepare various kinds of operation and test manuals in accordance with the Operational Safety Program to define actual detailed operating procedures.

Licence holders set up a committee to discuss important matters related to safe operation such as the modification of the Operational Safety Program and of documented procedures beforehand.

Chief Engineers of Reactors qualified by governmental examination is assigned to each reactor by the licence holder, and any appointment or dismissal is to be notified to NISA. The Chief Engineer of Reactor is authorized to express his view on safe operation to the site superintendent if he thinks it is necessary, to gives advice or recommendation to site staff and to participate in planning the safe operation.

Persons responsible for operation are appointed by the licence holder and assigned to every nuclear reactor. His essential task includes patrolling through the premises regularly and recognizing the operational conditions and safe operation etc. of the commercial power reactor under his responsibility.

Operational records about the inspection of fuel assemblies and nuclear reactor, reactor operation, radiation management, maintenance, incidents or failures and meteorology should be prepared and kept by the licence holder, by the Reactor Regulation Law.

Moreover, the Electricity Utilities Industry Law provides that the subject, method, result, etc. of the inspection are also required to be recorded and kept concerning the Licensee's Periodic Inspection result.

Licence holders must conduct a Licensee's Periodic Inspection in order to verify that facilities conform to the technical standard. When a crack/(s) in important components is(are) discovered by the inspection, the licence holder shall evaluate the impact of the crack(s) on the fitness for services of facility, and the result shall be recorded, kept and also reported to NISA at the same time. Moreover, the safety related critical component must undergo and pass the Periodic Inspection conducted by NISA and JNES.

The Periodic Inspection and the Licensee's Periodic Inspection are conducted in shutdown condition at the interval not exceeding 13 months from the date of commissioning or completion of the last inspection.

Furthermore, licence holders must apply for the Periodic Safety Management Review on the implementation system of his Licensee's Periodic Inspection to JNES, in accordance with the

Electricity Utilities Industry Law. JNES report the result of the Periodic Safety Management Review to NISA, and NISA evaluates the result. The scope of the succeeding safety management review may be varied by JNES, with reflecting the NISA's evaluation for licence holder's performance.

Licence holders perform checks based on the Operational Safety Program in order to verify the compliance to limiting conditions to operation.

Licence holders conduct a Periodic Safety Review of each reactor every 10 years, *based on the Reactor Regulation Law,* as described in Article 14.

Before 30 years operation after commissioning, technical evaluation on aging is performed and the next ten-year maintenance program should be planned, the ten-year maintenance program must be re-evaluated every ten years thereafter.

For more effective and efficient inspection system, harmonizing to the basic policy of the NSC, NISA intends to study on introduction of techniques of risk assessment or performance evaluation which are already introduced in Europe and US into the Periodic Inspection and the maintenance management for commercial reactors.

For this purpose, as the first step, the regulatory fields and the items in which the risk assessment and performance evaluation should be utilized, are to be clarified, as the second step, the basic framework and/or the roadmap of system introduction for short- and mid-terms, will be studied, then, as the third step, the concrete design of institutional arrangement will be discussed later.

19.4 Response to Accidents and Anticipated Operational Occurrences

Licence holders are required to include “operation of nuclear reactor facility” in the Operational Safety Program, in which the operational procedures for accidents and anticipated operational occurrences (abnormal events) as well as normal operation are described to cope with any incidents or abnormal events smoothly.

In the procedures of "measures for any abnormal events", such procedures on recognition of the situation, remedy to the cause, emergency measures, and a measure after reactor automatic scram and manual startup of an emergency AC power supply and a gas processing system are included.

Moreover, licence holders are required to prepare "emergency measures " in " operation of nuclear reactor facility ".

As "emergency measures", the licence holder defines, establishment of the nuclear emergency preparedness organization, preparation of resources necessary to nuclear emergency preparedness, maintenance of the communication system among the related parties, implementation of nuclear emergency exercises, official announcement of the emergency system, and the clearance of the emergency preparedness organization, etc. in accordance with the requirements of the Special Law of Emergency Preparedness for Nuclear Disaster.

The details of an emergency preparedness are described in Article 16.

19.5 Engineering and Technical Support: Application of the Results of Research and Development

METI has been promoting reliability verification test and research programs on major components and systems to enhance the safety of commercial power reactors. For example, NUPEC (then) had completed the demonstration test on the replacement method of BWR core shroud in 1997 and the

results have been utilized to confirm the reliability of the installation method and the welding method for actual replacement. And the demonstration test on the replacement method of PWR reactor core internals was performed, and the outcome is to be utilized for actual replacement of the PWR internals 2004.

MEXT has been conducting safety research program as a part of nuclear science research. For example, the research on deterioration and damage of the major components important to safety, such as reactor pressure vessel under condition of the neutron irradiation is under way in JAERI, accumulating the basic data for decision-making on the safety of long-term operation of power reactors.

Safety assurance as prerequisite, and in order the nuclear power to play the role of a basic load electric power, the licence holders are making efforts in technology developments for further improvement in economical efficiency and for the long life operation of light water reactors. For example, measures for aging management covering the whole plant life, for major plant equipment of commercial power reactors are systematically developed aiming for efficient operation and maintenance. Specifically, the study on material property data, development of monitoring technologies for degradation diagnosis, development of life evaluation method, technology development for inspection, repair and replacement of core internals etc. has been performed.

Various private sectors also have been conducting complementary activities. For example, JSME has been developing and refining standards of industry associations for power generating components based on the principle of neutrality, fairness and transparency. The rule to evaluate the structural integrity of the nuclear equipment with flaws or cracks is provided in the "Rules on Fitness-for-Service for Nuclear Power Plants" which was established in 2000 (partially revised in 2002) by JSME.

As the fitness-for-service assessment system was introduced in October 2003, the Rules on Fitness-for-Service for Nuclear Power Plants has been adopted as the evaluation standard, and NISA has confirmed it is technically acceptable.

In addition to the standard of JSME, many efforts to decide various kinds of industrial standards have been made by Atomic Energy Society of Japan and Japan Electric Association. In order to use industrial guidelines practically, rules for quality assurance and maintenance management, which Japan Electric Association has developed, was verified by the regulatory body that they meet requirements of quality assurance for commercial power reactors in December 2003.

19.6 Reporting of Incidents

Reactor Regulation Law and the Electricity Utilities Industry Law require licence holders to report the situation and measures taken to the incidents or failures occurred in commercial power reactors to NISA. The reporting criteria prescribed in these laws are shown in Table 19-3.

Licence holders are making efforts to perform feedback of the lesson learned from the situation and measures taken to these incidents, the corrective actions which were derived by root cause analysis to other commercial power reactors.

The frequency of unplanned reactor shutdowns per year of commercial power reactors in Japan is around 0.2 times per reactor-year in recent years and well below the average of the world.

The International Nuclear Event Scale (INES) was introduced in August 1992 to assess events occurred in commercial power reactors. Since then, no incident or accident of level 2 or above has occurred in nuclear power plants and the most of events occurred are rated as level 0. INES results in Japan are shown in Appendix 2.5.

19.7 Collection, Utilization and Sharing of Operating Experience Information

NISA makes public of the incidents or failures immediately upon receiving the report and announces the causes and recurrence-preventive measures when finalized. NISA assesses each incident or failure in detail to abstract the lessons learned with respect to the safety, being advised by subcommittee members of the Advisory Committee on Nuclear and Industrial Safety, who are experts on operation management, inspection and radiation control. *For example, the pipe rupture accident of the Unit 1 of Hamaoka NPS occurred on November 7, 2001 was evaluated to be caused by the excessive pressure force caused by rapid combustion of the non condensable gas (hydrogen) collected in the piping, and the pipe resulted in ductility fracture. And the lesson learned was feed-backed, such as removal of the piping etc., so that hydrogen gas might not be accumulated in the safety related piping of BWR plants in Japan.*

JNES has the system to collect and analyze safety information in and outside of the country. JNES provides collected safety information and results of analysis quickly to NISA and share them with NISA. JNES and NISA jointly established "Safety Information Review Meeting" to evaluate them and to take adequate regulatory measure. Safety Information Review Meeting is held periodically.

In regard to international information exchange, the mechanism has been established to share the information on nuclear incidents and failures with the IAEA and OECD/NEA as well as in the bilateral corporations with China, France, Korea, Sweden and the United States.

Meanwhile, licence holders collect and analyze information on domestic and foreign operating experiences by themselves and through CRIEPI. Concerning to the safety information of domestic plants, they developed a tool, "NUCIA" that is a nuclear information disclosure library, with which information including minor events can be shared by all over Japan, and it is on the Internet since October 2003. Moreover, overseas information exchange is performed through the institute of nuclear power operation (INPO) and the World Association of Nuclear Operators (WANO) Tokyo Center. Furthermore, each licence holder utilizes individual agreements on information exchange with utilities and manufacturers in France, Germany and the United States. As a lessons learned form JCO Criticality Accident, recognizing the importance to share safety information and foster safety culture in all nuclear industries, all of the relevant nuclear industries established a private organization "Nuclear Safety Network" in December 1999, as described in Article 10.

There are many feedback of operating experience by licence holders, which are reflected in preventive maintenance and planned repair and replacement of parts. Examples for BWR are replacements of the core shroud and the in-core monitoring housing etc.. An example for PWR is replacement of upper head of reactor vessel.

19.8 Management of Spent Fuel and Radioactive Waste

Details are described in the National Report of Japan (September 2003) for the "Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management".

Table 19-1 Items to be Included in the Operational Safety Program

1) The duties of personnel engaged in the operation and management of the nuclear reactor facility, and the organization
2) The following items with respect to safe operation education for personnel engaged in the operation and management of the nuclear reactor facility
   a. Policy for the safe operation education (including preparation of education program)
   b. The contents of safe operation education as follows
      i) Relevant laws and the Operational Safety Program
      ii) Structure, performance and operation of the nuclear reactor facility
      iii) Radiation management
      iv) Handling of nuclear fuel materials and objects contaminated by them
      v) Measures to be taken in emergencies
   c. Other necessary items for safe operation education of the nuclear reactor facility
3) Operation of the nuclear reactor facility
4) Safety reviews on the operation of the nuclear reactor facility
5) Designation of radiation controlled areas, access controlled areas and environment monitoring areas, and restriction of access to these areas
6) Ventilation and drainage monitoring equipment
7) Monitoring of the dose, the dose equivalent, the concentration of radioactive materials and the surface contamination density of radioactive materials of objects contaminated by radioactive materials, and the decontamination
8) Management of radiation measuring instruments
9) Patrols and checks of the nuclear reactor facility and their associated measures
10) Receipt, delivery, transport, storage and other handling of nuclear fuel materials
11) Disposal of radioactive waste
12) Measures to be taken in an emergency
13) Records on safe operation of the nuclear reactor facility (including compliance of the Operational Safety Program)
14) *Maintenance management of the nuclear reactor facility (except those contained in the next item)*
15) Periodic assessment of the nuclear reactor facility
16) Quality assurance of the nuclear reactor facility
17) Other necessary items for safe operation of the nuclear reactor facility

Table 19-2 (Part 1) Items of Limiting Conditions for Operation (BWR)

System	Item
Reactivity control system	Shutdown margin, Reactivity monitoring, Control rod motion monitoring, Control rod scram time, Control rod operation, Boron water injection system
Power distribution	Reactor thermal limit, Reactor thermal power and core flow
Control & Instrumentation	Instrument and control equipment
Reactor coolant system	Reactor re-circulation pump, Jet pump, Main steam relief and safety valve, Reactor coolant leak rate, System pressure monitoring of the emergency core cooling system and reactor isolation cooling system, Concentration of Iodine 131 in reactor coolant, Reactor shutdown cooling system, Limit of temperature & temperature change rate limit of primary coolant, Reactor pressure
Emergency core cooling system	Emergency core cooling system, Reactor core isolation cooling system
Reactor containment vessel system	Main steam isolation valve, Reactor containment vessel & Isolation valve, Vacuum break valve from suppression chamber to drywell, Average temperature of suppression pool, Flammability control system, Oxygen concentration in containment vessel, Reactor building, Reactor building H&V isolation valve, Standby gas treatment system
Plant system	Cooling system and cooling sea water system for residual heat removal system, Emergency diesel generator cooling system, Cooling system and cooling sea water system for Diesel generator of High pressure core spray system, Water level & temperature of spent fuel pool, Central control room H&V system
Emergency power supply system	Offsite power supply system, Emergency diesel generator, Emergency diesel fuel, DC power supply, Station power system
Others	Withdrawal of single control rod during reactor shutdown Removal of single control rod drive mechanism, Inspection with withdrawal of multiple control rods, In-service leak-rate or hydrostatic test, Inspection with switching of reactor mode

Table 19-2 (Part 2) Items of Limiting Conditions for Operation (PWR)

System	Item
Reactivity control system	Shutdown margin, Critical boron concentration, Moderator temperature coefficient, Control rod motion function, Control rod insertion limits, Control rod position indication, Physics tests, Chemical and volume control system (function of boron concentration)
Power distribution	Reactor thermal power limit, Heat flux hot channel factor, Nuclear enthalpy rise hot channel factor, Axial neutron flux difference, Quadrant power tilt ratio
Control & Instrumentation	Instrument and control equipment
Primary coolant system	DNB ratio, Temperature & pressure and temperature change rate of primary coolant, Primary coolant system, Pressurizer, Pressurizer safety valve, Pressurizer relief valve, Low temperature over-pressurization protection, Primary coolant leak rate, Steam generator tube leak monitoring, Leak monitoring to residual heat removal system, Iodine 131 concentration in primary coolant
Emergency core cooling system	Accumulator tank, Emergency core cooling system, Refueling water storage tank, Boron injection tank
Reactor containment	Reactor containment vessel, Reactor containment vessel vacuum relief valve, Reactor containment vessel spray system, Annulus air cleanup system, Annulus
Plant system	Main steam safety valve, Main steam isolation valve, Main feedwater isolation valve, Main feedwater control valve, Main feedwater bypass control valve, Main steam relief valve, Auxiliary feedwater system, Condensate water tank, Component cooling water system, Sea water system for component cooling water system, Emergency circulation system of control room, Air cleanup system of safety auxiliary equipment room, Air cleanup system of fuel handling building
Emergency power supply system	Offsite power supply, Diesel generator, Emergency diesel fuel & lubricating oil and starting air for emergency diesel generator, Emergency DC power supply, Station bus bar for emergency
Others	Boron concentration in primary coolant, Water level of reactor cavity, Reactor containment penetrations, Water level & temperature of spent fuel pit

Table 19-3 Reporting Criteria of Incidents and Failures Provided in Legislations

Provision of the Reactor Regulation Law
1. When nuclear fuel material was stolen or lost**.** 2. When a reactor was shut down by failure of a reactor facility or when it became necessary to shut down a reactor during operation, *or when reactor power output changes more than 5%, or when reactor power output change of more than 5% was required. Except when it was one of the following and the licence holder announced officially about the situation of the concerned failure.* *i) When it occurs in the term of the Periodic Inspection provided in Article 54-1 of the Electricity Utilities Industry Law (Law No. 170, 1964) i.e. the failure in the equipments that the functional and operational conditions of the failed equipment cannot be checked under the reactor shutdown condition.* *ii) When the failure did not cause any deviation from the limit of operation (it is a requirement defined in the Operational Safety Program for operation of the nuclear reactor facility, and when it cause any deviation from the concerned conditions the measure that the licence holder should take is also defined in the Operational Safety Program, the same in this paragraph), and there is no change observed related with the concerned failure, and when the licence holder performs inspection of the failed equipment concerned.* *iii) When the reactor output change is required to follow the limit of operation.* *3. When a licence holder checked the equipment and structure important to the safety of the nuclear reactor facility provided by the Minister of METI (hereinafter called as "equipment etc. important to safety" in this paragraph as), and when concerned equipment etc. important to safety was considered that it does not satisfy the standard described in Article 9 or in Article 9-2 of the Ministerial Ordinance of Establishing Technical Standards for Nuclear Power Generation Equipment (Ordinace No. 62 of MITI, 1965), or when it was considered that it does not have function to ensure safety of the nuclear reactor facility.* *4. When there was a failure of equipment etc. important to safety by the fire. Except the concerned failure was associated to the measure of fire extinguishing or prevention of the spread of fire.* *5. Except for the preceding three items, when deviation from the limit of operation by the failure of a the nuclear reactor facility (except those minor troubles whose impact on operation of nuclear reactor is insignificant) was caused, or when the measure for the concerned deviation defined in the Operational Safety Program was not implemented at the time of deviation from the limit of operation.* *6. When the failure of a reactor facility or occurrence of other undetermined situation had caused any trouble to discharge gaseous radioactive wastes through the ventilation facility or to discharge liquid radioactive wastes through the drainage facility.* 7. When the concentration of radioactive materials in the air outside the environment monitoring area exceeds the allowable limit in the case of discharge of gaseous radioactive wastes through the ventilation facility. 8. When the concentration of radioactive materials in the water outside the environment monitoring area exceeds the allowable limit in the case of the discharge of liquid radioactive wastes through the drainage facility. *9. When nuclear fuel materials or materials contaminated with nuclear fuel materials (hereinafter referred to as "nuclear fuel materials etc.") leaked out of the controlled area.*

10. *When nuclear fuel materials etc. leaked within the controlled area associated to failure of a nuclear reactor facility or occurrence of other undetermined situation. Exceptions are the followings (except the case when new measures such as access control into the leakage-related place and key control have been taken or when the leaked substances have spread outside the controlled area):*
    - *i) When revealed liquid nuclear fuel materials etc. did not spread out of the floodgate that is installed in the circumference of the equipment of the concerned leakage for prevention of leakage spread.*
    - *ii) When the ventilation facility of the concerned area of the leakage was working properly at the time when gaseous nuclear fuel materials etc. leaked.*
    - *iii) When the amount of radioactivity of the leaked nuclear fuel materials etc. is very little and when the degree of the leakage is minor.*
11. *When the person who enters into the controlled area suffered radiation exposure due to the failure of a nuclear reactor facility or occurrence of other undetermined situation, and when the effective dosage of concerned exposure exceeds or could exceeds five mSv for a personnel engaged in radiation work or 0.5 mSv for a person other than the personnel engaged in radiation work.*
12. *When the dosage of personnel engaged in radiation work exceeds or could exceed the allowable dose limit.*
13. *Other than those above items,* when persons are injured or could be injured in the the nuclear reactor facility (except when the injury was other than radiation hazard *and was not necessary for hospitalization*).

Provision of the Electricity Utilities Industry Law

1. *Fatal and injury accidents associated to electric shock, or breakdown of the electric structure of a nuclear power generation, or miss-operation, or omission of the necessary operation of the electric structure of a nuclear power generation (limited to the case of death or being hospitalized at hospital or clinic for treatment).*
2. *Electric fire accident (limited to the case of more than the partial destruction by fire. Except matters referred to in the previous item and the next to the fifth item).*
3. *Causing damage to public property due to failure of the electric structure of a nuclear power generation, or miss-operation, or omission of necessary operation of the electric structure, accident by which usage of road, park, school and other institution or structure were made impossible or accident which did influence socially (except referred to previous two items).*
4. *Breakdown accident of main electric structures (except referred to previous three items and the next item).*
5. *Incident that influenced other electric utility to force suspension of electric power supply of than 7,000 kW and less than 70,000 kW for more than one hour, or suspension of electric power supply more than 70,000 kW for more than ten minutes, associated to the breakdown of the electric structure of a nuclear power generation, or miss-operation, or omission of operation necessary for the electric structure of a nuclear power generation.*

ANNEXES

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Annex 1 List of Nuclear Installations

(As of August, 2004)

(1) Commercial Power Reactors

	License Holder	Power Station & Unit	Reactor Type	Power [MWe]	Commis-si oning
In Operation	The Japan Atomic Power Co.	Tokai II Power Station	BWR	1,100	11/28/78
		Tsuruga Power Station,			
		Unit 1	BWR	357	03/14/70
		Unit 2	PWR	1,160	02/17/87
	Hokkaido Electric Power Co., Inc.	Tomari Power Station,			
		Unit 1	PWR	579	06/22/89
		Unit 2	PWR	579	04/12/91
	Tohoku Electric Power Co., Inc.	Onagawa NPS,			
		Unit 1	BWR	524	06/01/84
		Unit 2	BWR	825	07/28/95
		Unit 3	BWR	825	01/30/02
	Tokyo Electric Power Co., Inc.	Fukushima Daiichi NPS,			
		Unit 1	BWR	460	03/26/71
		Unit 2	BWR	784	07/18/74
		Unit 3	BWR	784	03/27/76
		Unit 4	BWR	784	10/12/78
		Unit 5	BWR	784	04/18/78
		Unit 6	BWR	1,100	10/24/79
		Fukushima Daini NPS,			
		Unit 1	BWR	1,100	04/20/82
		Unit 2	BWR	1,100	02/03/84
		Unit 3	BWR	1,100	06/21/85
		Unit 4	BWR	1,100	08/25/87
		Kashiwazaki Kariwa NPS,			
		Unit 1	BWR	1,100	09/18/85
		Unit 2	BWR	1,100	09/28/90
		Unit 3	BWR	1,100	08/11/93
		Unit 4	BWR	1,100	08/11/94
		Unit 5	BWR	1,100	04/10/90
		Unit 6	ABWR	1,356	11/07/96
		Unit 7	ABWR	1,356	07/02/97
	Chubu Electric Power Co., Inc.	Hamaoka NPS,			
		Unit 1	BWR	540	03/17/76
		Unit 2	BWR	840	11/29/78
		Unit 3	BWR	1,100	08/28/87
		Unit 4	BWR	1,137	09/03/93
	Hokuriku Electric Power Co.	Shika NPS,			
		Unit 1	BWR	540	07/30/93

In Operation	The Kansai Electric Power Co., Inc.	Mihama Power Station,			
		Unit 1	PWR	340	11/28/70
		Unit 2	PWR	500	07/25/72
		Unit 3	PWR	826	12/01/76
		Takahama Power Station,			
		Unit 1	PWR	826	11/14/74
		Unit 2	PWR	826	11/14/75
		Unit 3	PWR	870	01/17/85
		Unit 4	PWR	870	06/05/85
		Ohi Power Station,			
		Unit 1	PWR	1,175	03/27/79
		Unit 2	PWR	1,175	12/05/79
		Unit 3	PWR	1,180	12/18/91
		Unit 4	PWR	1,180	02/02/93
	The Chugoku Electric Power Co., Inc.	Shimane NPS,			
		Unit 1	BWR	460	03/29/74
		Unit 2	BWR	820	02/10/89
	Shikoku Electric Power Co., Inc.	Ikata Power Station,			
		Unit 1	PWR	566	09/30/77
		Unit 2	PWR	566	03/19/82
		Unit 3	PWR	890	12/15/94
	Kyushu Electric Power Co., Inc.	Genkai NPS,			
		Unit 1	PWR	559	10/15/75
		Unit 2	PWR	559	03/30/81
		Unit 3	PWR	1,180	03/18/94
		Unit 4	PWR	1,180	07/25/97
		Sendai NPS,			
		Unit 1	PWR	890	07/04/84
		Unit 2	PWR	890	11/28/85
	Subtotal		(52 units)	45,742	
Under Construct-ion	Hokkaido Electric Power Co., Inc.	Tomari Power Station Unit3	PWR	912	2009/12 (Planned)
	Tohoku Electric Power Co., Inc.	Higashidori NPS, Unit 1	BWR	1,100	2005/10 (Planned)
	Hokuriku Electric Power Co.	Shika NPS, Unit 2	ABWR	1,358	2006/03 (Planned)
	Chubu Electric Power Co., Inc.	Hamaoka NPS, Unit 5**	ABWR	1,380	2005/01 (Planned)
	Subtotal		(4 units)	4,750	
In Planning	The Japan Atomic Power Co.	Tsuruga Power Station			
		Unit3	PWR	1538	FY2013
		Unit4	PWR	1538	FY2014
	Electric Power Development Co. LTD	Ohma NPS, Unit 1	ABWR	1,383	2012/03
	The Chugoku Electric Power Co., Inc.	Shimane NPS, Unit 3	ABWR	1,373	2011/03
		Kaminoseki NPS,			
		Unit 1	ABWR	1,373	FY2013
		Unit 2	ABWR	1,373	FY2016
	Subtotal		(6 units)	8,578	

Under Decommissioning	The Japan Atomic Power Co.	Tokai Power Station	GCR	166	07/25/66 Commercial Operation discontinued on 03/31/1998 Notification of Dismantling on 10/04/2001

(2) Reactors at the stage of research and development

	License Holder	Power Station & Unit	Reactor Type	Power [MWe]	Commis-sioning
In Preparation of Decommissioning	Japan Nuclear Cycle Development Institute	Fugen*	ATR	165	03/20/79 Commercial Operation discontinued on 03/29/2003
Under Construction		Monju **	FBR	280	Criticality on 04/05/94

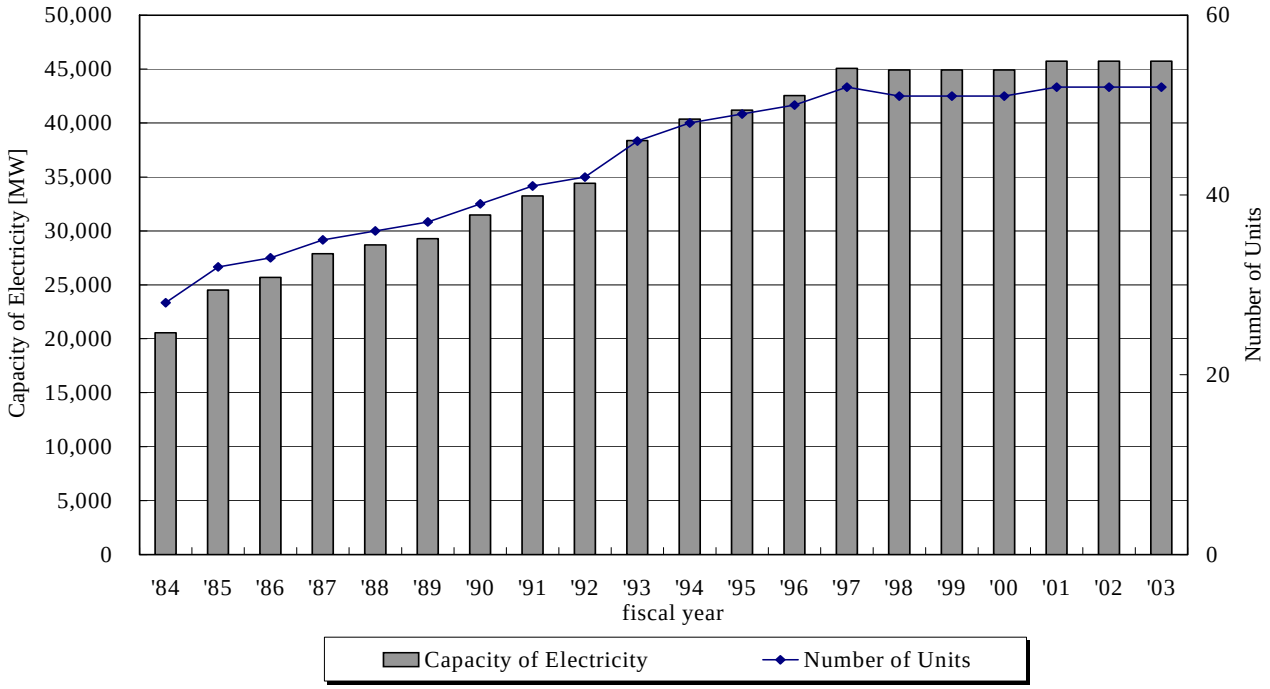
Note: In planning: Projects that were approved in the subcommittee of the Advisory Committee for Natural Resources and Energy, and which are before obtaining construction plan approval

* : This plant discontinued commercial operation on March 29, 2003. But this plant corresponds to the category “reactor in operation” of the Convention on Nuclear Safety, because it is in preparation of decommissioning.

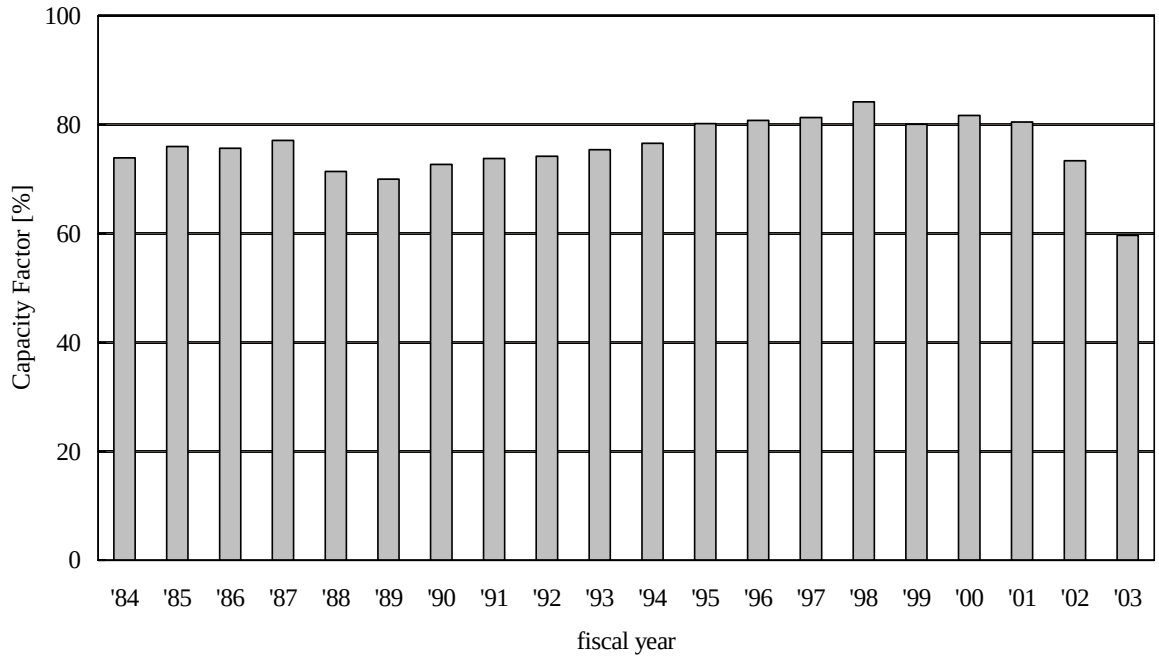
**: These plants reached criticality and correspond to the category “reactor in operation” of the Convention on Nuclear Safety

Annex 2 Data on Nuclear Installations

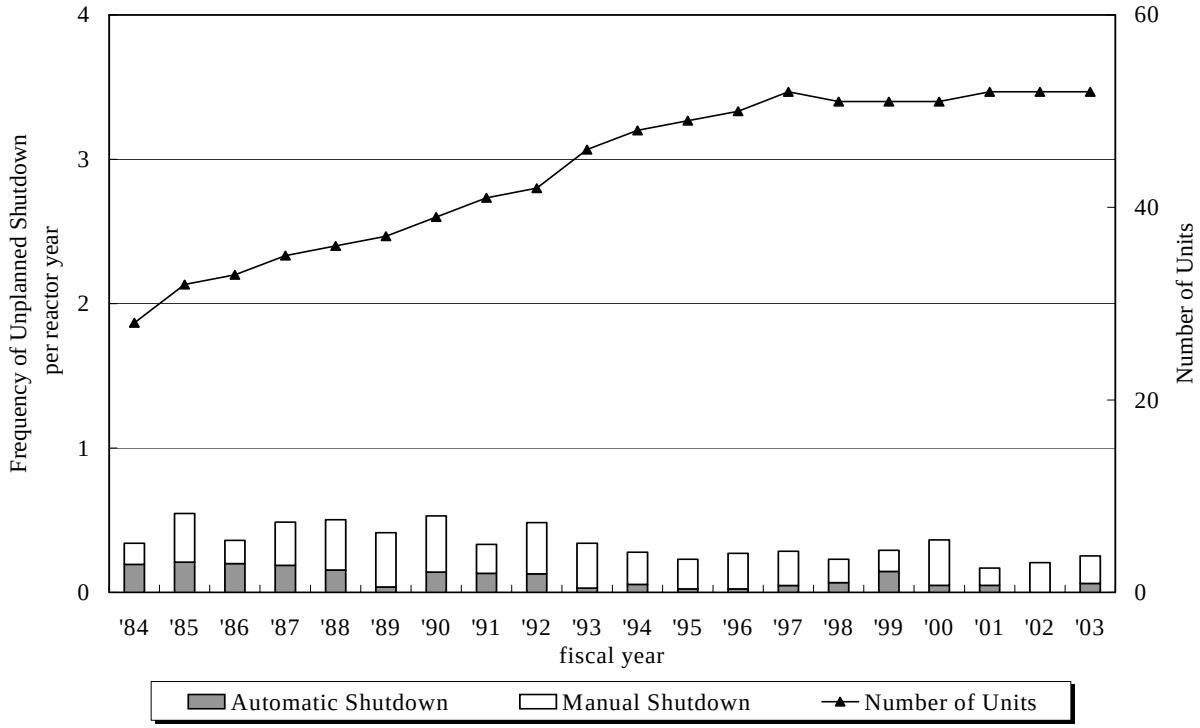
2.1 Capacity of Electricity of Commercial Nuclear Power Reactors



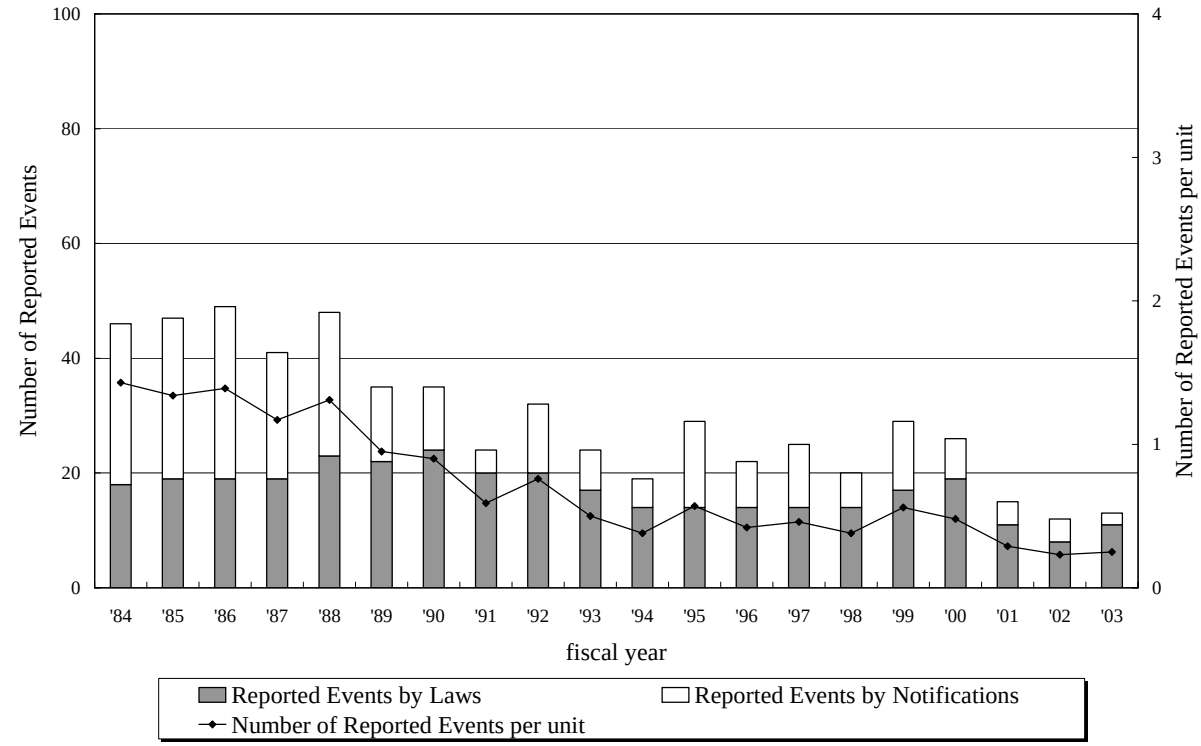
2.2 Capacity Factor of Commercial Nuclear Power Reactors



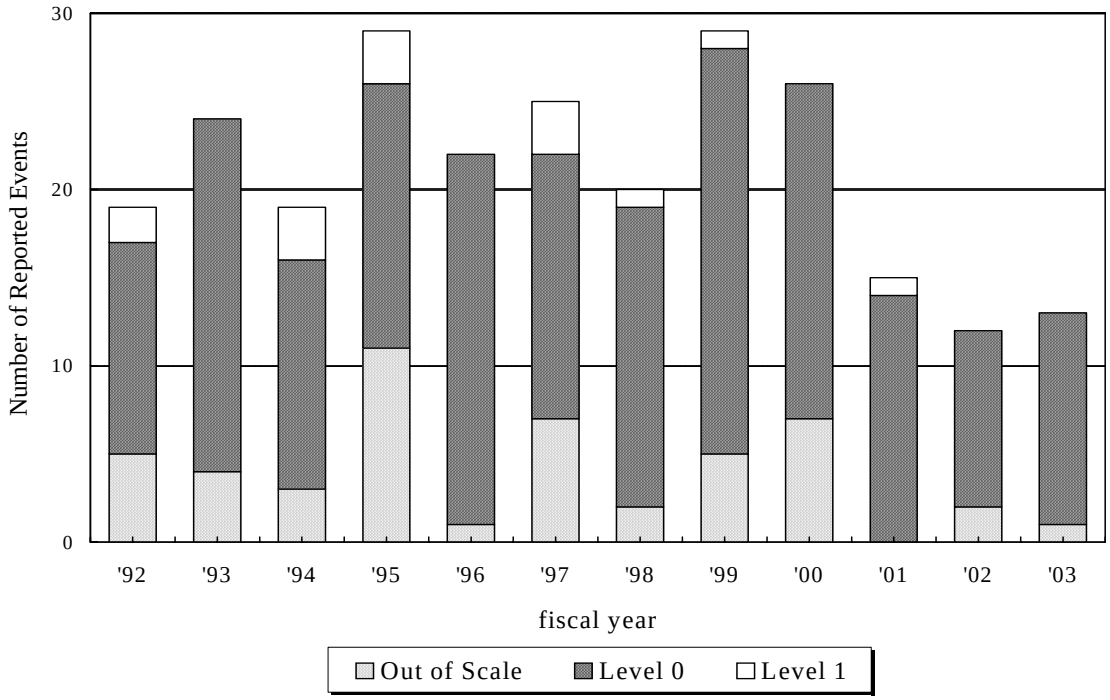
2.3 Frequency of Unplanned Shutdown at Commercial Nuclear Power Reactors (except during commissioning)



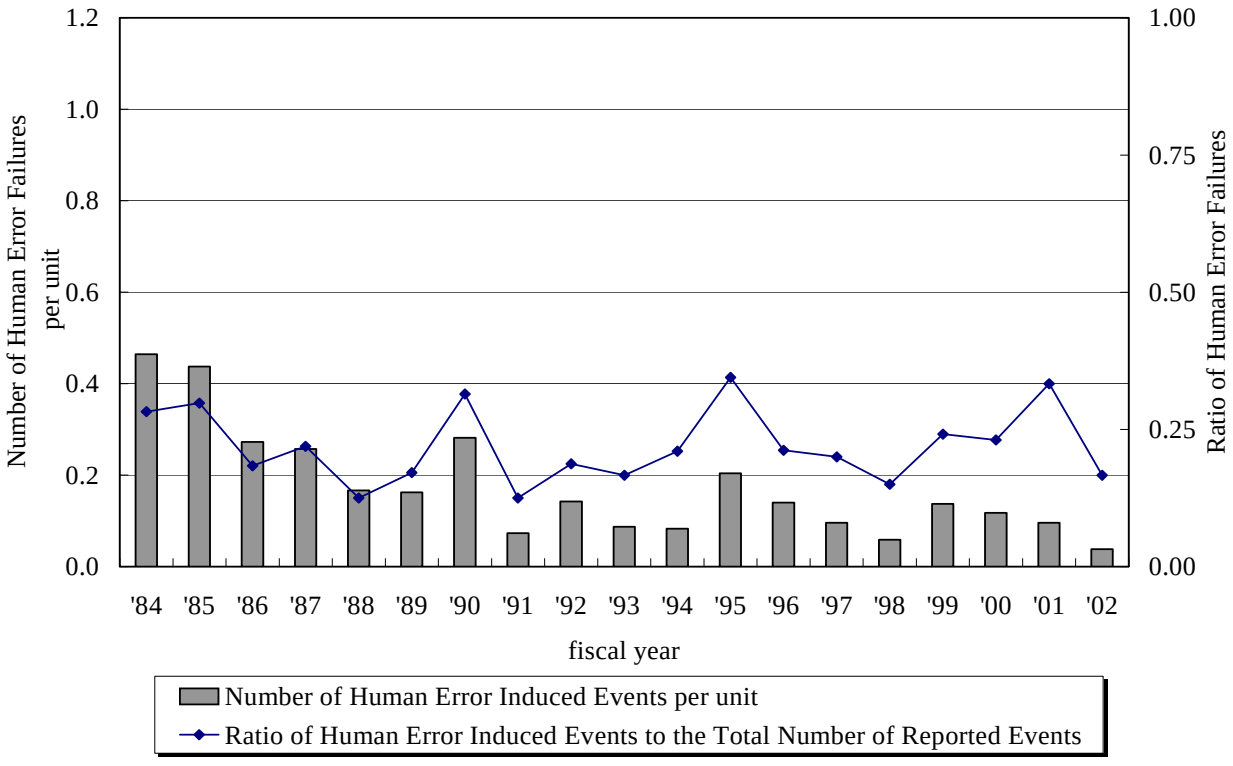
2.4 Reported Events (by Laws & Notifications) of Commercial Nuclear Power Reactors



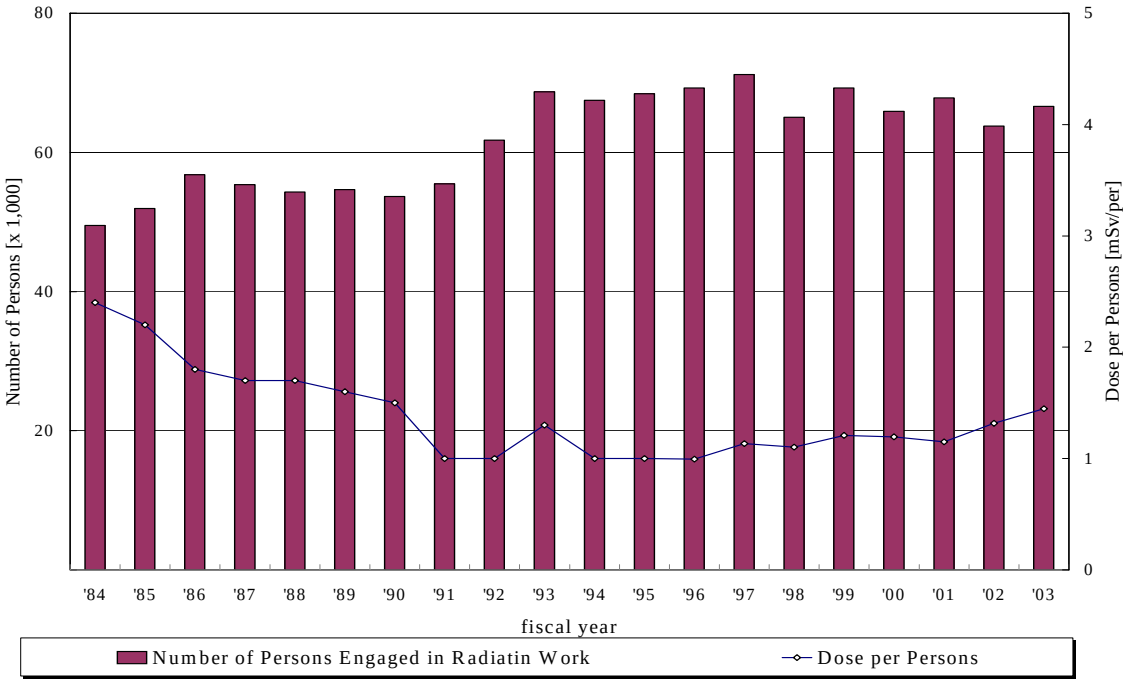
2.5 Assessment of Events by INES for Commercial Nuclear Power Reactors



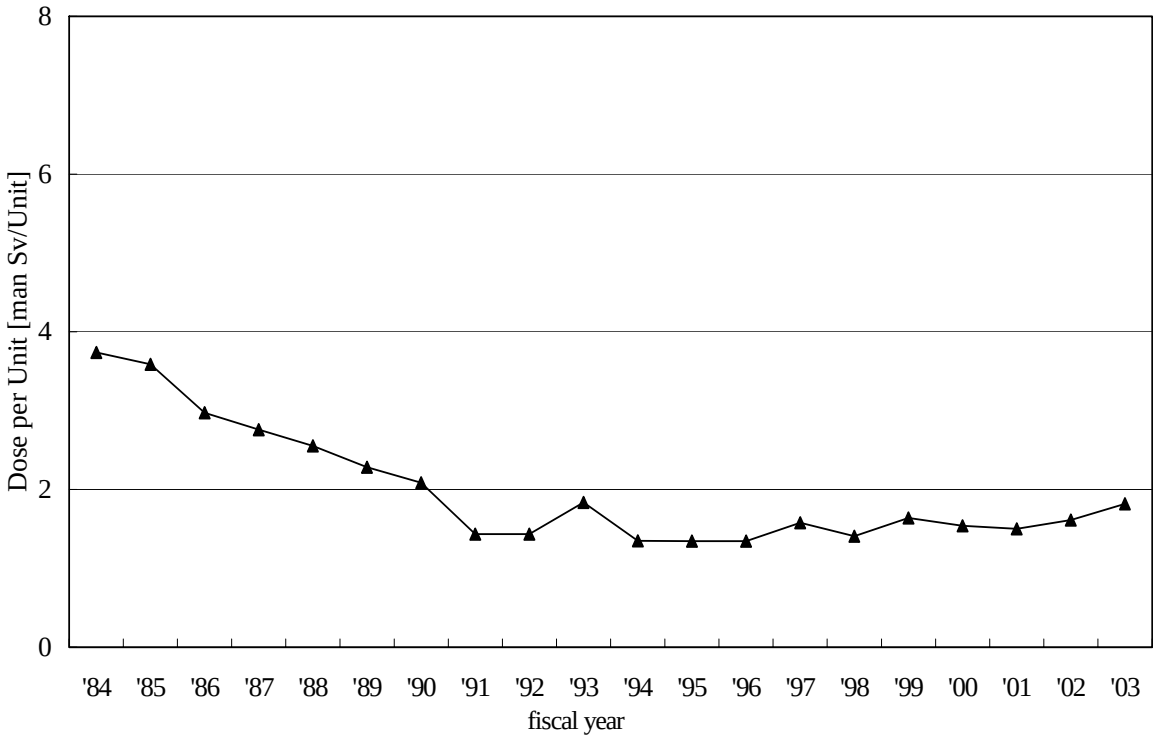
2.6 Human Error Induced Events Reported



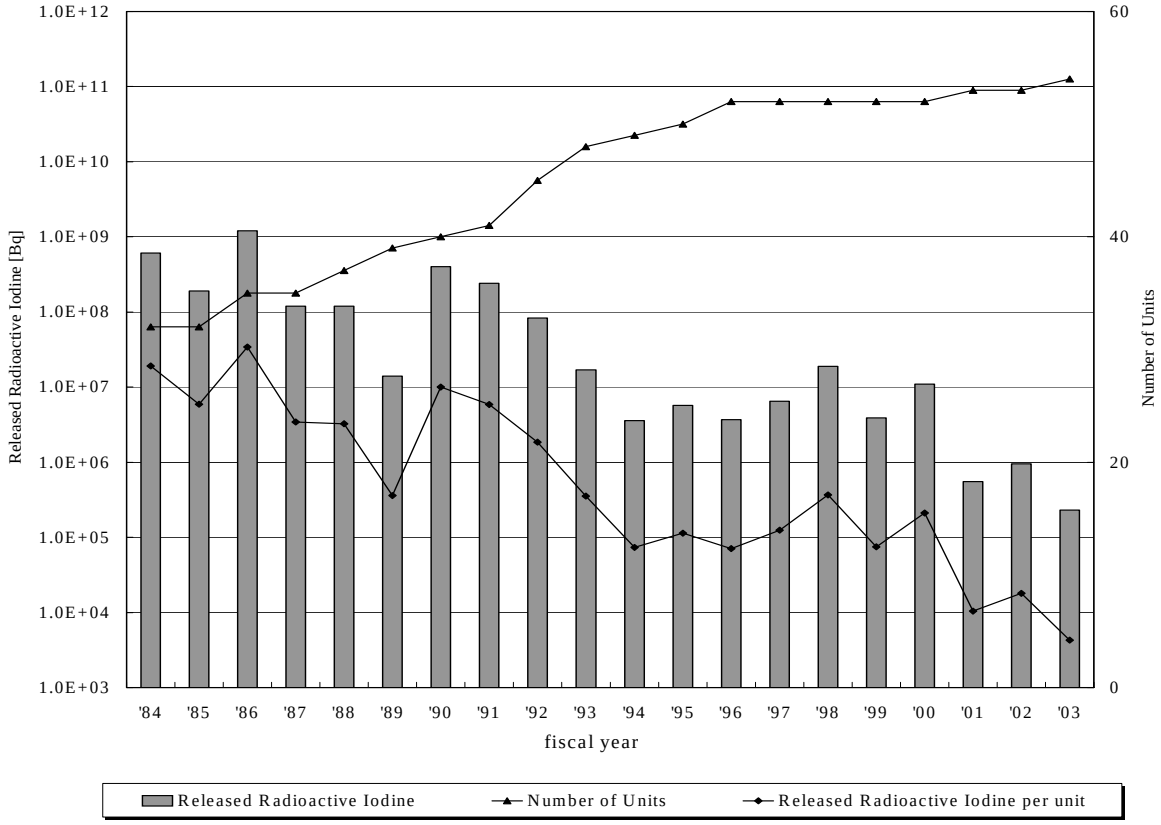
2.7 Dose per Persons at Commercial Nuclear Power Reactors



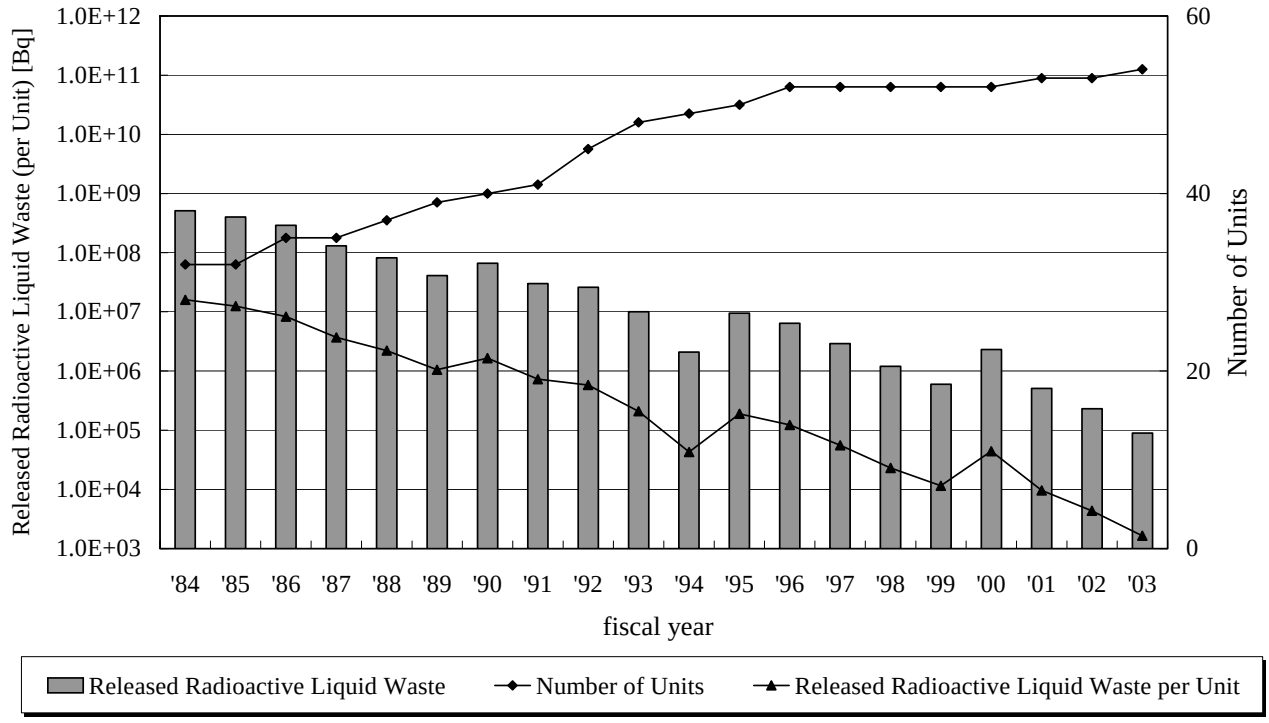
2.8 Averaged Dose at Commercial Nucear Power Reactors



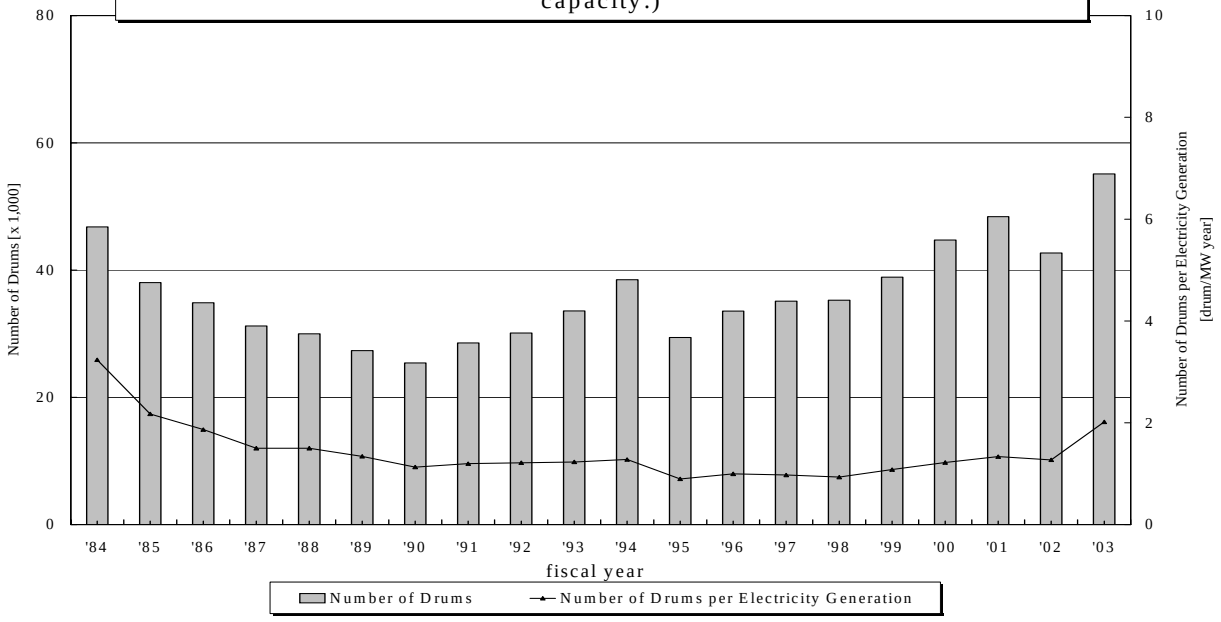
2.9 Radioactive Gaseous Waste (I-131) Released from Commercial Nucear Power Reactors (Number of units is summed from their initial criticality.)



2.10 Radioactive Liquid Waste (except H-3) Released from Commercial Nuclear Power Reactors



2.11 Radioactive Solid Waste Generation per Electricity Generation of Commercial Nucear Power Reactors
(Total quantity of radioactive solid waste is converted to the drum of 200-liter capacity.)



Annex 3 Legislation and Guidelines

3.1. Atomic Energy Basic Law (Excerpt)

(Law No.186, December 19, 1955)
Latest Revision: Law No. 102, July 16, 1999

(Objectives)
Article 1. The Objectives of this Law shall be to secure energy resources in the future, to achieve the progress of science and technology and the promotion of industries by encouraging the research, development and utilization of nuclear power and thereby to contribute to the improvement of the welfare of the human society and of the national living standard.
(Basic Policy)
Article 2. The research, development and utilization of nuclear power shall be limited to peaceful purposes, shall aim at ensuring safety, giving priority, and shall be performed independently under democratic administration, and the results obtained shall be made public and shall actively contribute to international cooperation.
(Establishment)
Article 4. In the Cabinet Office, there shall be established the Atomic Energy Commission and the Nuclear Safety Commission for the purposes of carrying out the planned national policies on the research, development and utilization of nuclear power and of realizing the democratic operation of nuclear power administration.
(Functions)
Article 5. The Atomic Energy Commission shall plan, consider and determine the matters (excluding those related to implementing regulation for ensuring safety) related to the research, development and utilization of nuclear power.
2. The Nuclear Safety Commission shall plan, consider and determine the matters related to ensuring safety in the research, development and utilization of nuclear power.
(Organization, Operation and Authority)
Article 6. The matters concerning the organizations, operations and authorities of the Atomic Energy Commission and the Nuclear Safety Commission shall be provided by other laws.
(Control over Nuclear Source Materials)
Article 10. The import, export, transfer, receipt and purification of nuclear source materials shall be entrusted, as provided by other law, only to those designated by the Government.
(Regulation concerning Nuclear Fuel Materials)
Article 12. Those who attempt to produce, import, export, possess, hold, transfer, receive, use or transport nuclear fuel materials shall be subject to the regulations to be enforced by the Government as provided by other Law.
(Regulation over Construction Etc. of Reactors)
Article 14. Those who attempt to construct reactors shall be subject to the regulations to be enforced by the Government as provided by other law. The same shall apply also to those who attempt to reconstruct or remove them.
Article 15. Those who attempt to transfer or receive reactors shall be subject to the regulations to be enforced by the Government as provided by other Law.
Article 16. Those who have constructed, reconstructed, removed received reactors in compliance with the regulations referred to in the preceding two Articles shall, as provided by other law, obtain the approval of the Government for the operation plan prior to their operation.
(Measures for Prevention of Radiation Hazards)
Article 20. The regulations on the manufacture, sale, use, measurement, etc. and any other safety and hygienic measures relating to radioactive materials and radiation generating devices in order to prevent radiation hazards and to ensure the public safety shall be provided by other Laws.

3.2. Law for Establishment of the Atomic Energy Commission and the Nuclear Safety Commission

(1) Law for Establishment of the Atomic Energy Commission and the Nuclear Safety Commission (Excerpt)

(Law No. 188, December 19, 1955)
Latest Revision: Law No. 178, December 18, 2002

(Objectives and Establishment)
Article 1. In order to ensure the democratic administration of the research, development and utilization of nuclear energy (hereinafter referred to as "utilization of nuclear power"), there shall be established the Atomic Energy Commission and the Nuclear Safety Commission in the Cabinet Office.
(3) Atomic Energy Commission
(Assigned Duties)
Article 2. The Atomic Energy Commission (hereinafter referred to as "the Commission" in this chapter) shall plan, deliberate and determine the matters referred to in the following subparagraphs:
(i) Matters concerning polices on the utilization of nuclear energy;
(ii) Matters concerning the comprehensive adjustment of affairs relating to the utilization of nuclear energy of related administrative agencies;
(iii) Matters concerning the estimation and the allocation of the expenses for the utilization of nuclear energy of related

administrative agencies;
(iv) Matters concerning the regulations on nuclear fuel materials and nuclear reactors (excluding matters that is under the assigned duties of the Nuclear Safety Commission);
(v) Matters concerning the encouragement of testing and research relating to the utilization of nuclear energy;
(vi) Matters concerning the education and training (excluding matters concerning the teaching and research at universities) of researchers and engineers engaged in the utilization of nuclear energy;
(vii) Matters concerning the collection of data, the preparation of statistics and the investigation relating to the utilization of nuclear energy; and
(viii) Matters important relating to the utilization of nuclear energy, other than those referred to in the preceding items (excluding matters that is under the assigned duties of the Nuclear Safety Commission).

(Organization)

Article 3. The commission shall be organized of one chairman and four commissioners.

2. Two commissioners may be as part-time service.

(Chairman)

Article 4. The chairman acts as a manager for the Commission matters, and represents the Commission.

2. The chairman shall designate the person from the full-time commissioners beforehand, who acts for the chairman when the chairman fails to act.

(Appointment of the Chairman and the Commissioners)

Article 5. The Prime Minister appoints the chairman and the commissioners after the approval of both Parliaments.

2. When the official term of the chairman or the commissioner expires or when a vacant is produced, the Prime Minister can appoint the chairman or the commissioners irrespective of the provision of the foregoing paragraph when the approval of both Parliaments cannot be acquired due to the closing of the diet, or the disbandment of the house of representatives.

3. In the case of the foregoing paragraph, approval of both Parliaments shall be acquired at the first diet after the appointment. In this case, the Prime Minister must dismiss the chairman or the commissioner right away when the subsequent approval of both Parliaments cannot be acquired.

(Official Term of the Chairman and the Commissioners)

Article 6. The official term of the chairman and the commissioners shall be three years. However, a supplementary chairman or the supplementary commissioners shall work for the predecessor's remaining length of the official term.

2. The chairman and commissioners may be reappointed.

3. Irrespective of the provision of the first paragraph, the chairman and the commissioners shall work for the post consecutively until the successor is appointed even when the official term expires.

(Dismissal of the Chairman and the Commissioners)

Article 7. When the chairman or the commissioners are recognized that execution of the task cannot be performed for the failure of the mind and the body or when they are recognized that the wrongdoing unsuitable as the chairman or as the commissioner as well as the violation of obligations on a task to the chairman or the commissioners, the Prime Minister may dismiss them after obtaining the approval of both Parliaments.

Chapter 3 Nuclear Safety Commission

(Assigned Duties)

Article 13. The Nuclear Safety Commission (hereinafter referred to as “the Commission” in this chapter) shall plan, deliberate and determine the matters referred to in the following subparagraphs:
(i) Matters concerning policies on the regulations to ensure nuclear safety among the policies on utilization of nuclear energy;
(ii) Matters concerning the regulations to ensure nuclear safety among the regulations of the nuclear fuel material and nuclear reactors;
(iii) Matters concerning the fundamentals of preventing hazards due to the utilization of nuclear energy;
(iv) Matters concerning the fundamentals of measures for preventing hazards due to the fallout of radioactive materials; and
(v) Matters concerning the regulations to ensure nuclear safety among important matters in utilization of nuclear energy besides the matters referred to in the preceding Subparagraph (i) through Subparagraph (iii).

(Organization)

Article 14. The commission shall be organized of five commissioners.

2. Two commissioners may be as part-time service.

(Chairman)

Article 15. One chairman is assigned in the Commission mutually elected from full-time commissioners.

2. The provisions of Article 4 shall be applied correspondingly for the chairman.

(Committee on Examination of Reactor Safety)

Article 16. There shall be established the Committee on Examination of Reactor Safety in the Commission which shall consist of the Examiners, the largest number of which is provided for in the Government Ordinance.

2. The Committee on Examination of Reactor Safety shall investigate and consider the matters concerning safety of nuclear reactors by the direction of the Chairman.

(Committee on Examination of Nuclear Fuel Safety)

Article 19. There shall be established the Committee on Examination of Nuclear Fuel Safety in the Commission, which shall consist of the Examiners, the largest number of which is provided for in the Government Ordinance.

2. The Committee on Examination of Nuclear Fuel Safety shall investigate and review the matters concerning safety of nuclear fuel materials by the direction of the Chairman.

(Investigator for Emergency Preparedness and Response)

Article 20.

2. Several Investigators for Emergency Preparedness and Response (hereinafter referred to as " the Investigator"), the

largest number of which is provided for in the Government Ordinance, shall be assigned to carry out the investigation and review of the matters authorized in the provisions of Article 15, Paragraph 4, and Article 20, Paragraph 5 and 6 of the Special Law of Emergency Preparedness for Nuclear Disaster (Law No. 156, 1999).
(Recommendation)
Article 24. The Atomic Energy Commission or the Nuclear Safety Commission may make recommendation to the heads of the related administrative agencies through the Prime Minister about the assigned duties specified in the each Paragraphs of Article 2 and Article 13, when necessary.
(Report etc.)
Article 25. The Atomic Energy Commission or the Nuclear Safety Commission may require the report and other necessary cooperation such as submittal of references, presentation of opinions, and explanation to the heads of the related administrative agencies to perform the assigned duties, when necessary.

(2) Rules of Nuclear Safety Commission Secretariat Organization (Excerpt)
(Order No. 2 of Cabinet Office, January 6, 2001)

(Divisions of the Secretariat)
Article 1. There shall be established four divisions in the Nuclear Safety Commission secretariat:
General Affairs Division
Regulatory Guides and Review Division
Radiation Protection and Accident Management Division
Subsequent Regulation Review Division
(Assigned duties of the General Affairs Division)
Article 2. The General Affairs Division manages the following subparagraphs:
(Abbreviated)
(x) The matters concerning policies on the regulations to ensure nuclear safety among the policies on the utilization of nuclear energy (excluding matters that is under the assigned duties of other divisions); and
(xi) The matters concerning regulations to ensure nuclear safety among the regulations of the nuclear fuel material and reactors (excluding matters that is under the assigned duties of other sections).
(Assigned Duties of the Regulatory Guides and Review Division)
Article 3. The Regulatory Guides and Review Division shall manage the matters of the secretariat works referred to in the following subparagraphs:
(i) Matters concerning to the establishment of standards and guidelines to ensure nuclear safety; and
(ii) Matters concerning the consultation based on provisions of the Law on the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors (Law No. 166, 1957, hereinafter referred to as "Reactor Regulation Law").
(Assigned Duties of the Radiation Protection and Accident Management Division)
Article 4. The Radiation Protection and Accident Management Division shall manage the matters of the secretariat works referred to in the following subparagraphs:
(i) Matters concerning to ensure nuclear safety of nuclear installations in service (excluding matters that is under the assigned duties of the Subsequent Regulation Review Division);
(ii) Matters concerning to ensure safety of the transportation of the nuclear source material, the nuclear fuel material, and the radioisotope;
(iii) Matters concerning the fundamentals of preventing hazards due to utilization of nuclear energy;
(iv) Matters concerning the implementation of nuclear emergency response and other necessary measures; and
(v) Matters concerning the fundamentals of measures preventing hazards due to fallout of radioactive materials (excluding matters that is under the assigned duties of the Regulatory Guides and Review Division) besides the matters referred to in the preceding subparagraph, such as.
(Assigned Duties of the Subsequent Regulation Review Division)
Article 5. The Subsequent Regulation Review Division shall manage the matters concerning regulation investigation (investigation of regulation after the designation, licensing, or approval of business, / licensing or approval of the establishment, / licensing or approval of usage based on Reactor Regulation Law are meant here; the same meaning for the next article) among the secretariat responsibilities.
(Safety Investigation Officer and Regulation Investigation Officer)
Article 6. Two Safety Investigation Officers and one Regulation Investigation Officer are assigned in the Nuclear Safety Commission secretariat.
2. The Safety Investigation Officer shall take part of the secretariat works by receiving order concerning the important item of investigation other than regulation investigation.
3. The Regulation Investigation Officer shall take part of the secretariat works by receiving order concerning the important items of regulation investigation.

3.3 Law for Establishment of the Ministry of Economy, Trade and Industry

(1) Law for Establishment of the Ministry of Economy, Trade and Industry (Excerpt)
(Law No. 99, July 16, 1999)
Latest Revision: Law No. 92, June 18, 2003

(Assigned Duties)
Article 3. Ministry of Economy, Trade and Industry shall engage in enhancement of economical vitality of private sector and the growth of economy and industries with emphasis on the harmonized development in international economical relation and shall engage in ensuring stable and efficient supply of mineral resources and energy.
(Assigned Affairs)
Article 4. In order to achieve assigned duties as described in the preceding article, the Ministry of Economy, Trade and Industry shall administer the following affairs.
53. Matters relating to ensuring stable and efficient supplies of electricity, gas and thermal power.
54. Matters relating to planning, projecting and promotion of the fundamental policy concerning to the electricity development;
55. Matters relating to the nuclear power policy as for utilization of energy;
56. Matters relating to the technology development of nuclear power as for utilization of energy;
57. Matters relating to the regulations for the refining, fabrication, storage, reprocessing and waste disposal business in nuclear fuel cycle and the nuclear power installations and matters relating to ensure the safety of these business and installations; and
58. Matters relating to ensuring the safety of nuclear power as for utilization of energy.
(omitted)
Chapter 4. External Agencies
Section 1. Establishment
Article 14. According to the definitions described in Article 3, Paragraph 3 of the National Government Organization Law, the following external agency shall be established in the Ministry of Economy, Trade and Industry:
Agency of Natural Resources and Energy
Section 2. Agency of Natural Resources and Energy
Subsection 1. Duties and Assigned Affairs
(Director-General)
Article 15. The head of the Agency of Natural Resources and Energy shall be named as the Director-General of the Agency of Natural Resources and Energy.
(Assigned Duties)
Article 16. The Agency of Natural Resources and Energy shall engage in ensuring stable and efficient supply and the promotion of appropriate utilization of mineral resources and energy and engage in ensuring industrial safety.
(Assigned Affairs)
Article 17. In order to achieve assigned duties as described in the preceding article, the Agency of Natural Resources and Energy shall administer the affairs referred in No. 48 to No.59 of Article 4.
Subsection 2. Councils etc.
(Establishment)
Article 18. The Advisory Committee for Resources and Energy is established in Agency of Natural Resources and Energy.
(Advisory Committee for Resources and Energy)
Article 19. The Advisory Committee for Natural Resources and Energy shall administer the following affairs:
(i) Concerning the energy master plan provided in Article 12, Paragraph 1 of the Fundamental Law for Energy Policy (Law No. 71, 2002), matters provided in the Paragraph 3 of the said article shall be processed; and
(i-2) Investigate and examine the important matters concerning the comprehensive policies relating to security of stable and efficient supply for mineral resources and energy, and an adequate utilization of energy, in response to an inquiry issued from Minister of the Ministry of Economy, Trade and Industry.
Subsection 3. Special Agency
(Nuclear and Industrial Safety Agency)
Article 20. Nuclear and Industrial Safety Agency shall be established in the Agency of Natural Resources and Energy.
2. The Nuclear and Industrial Safety Agency shall be an organization for ensuring the safety of nuclear and other energy, and industrial safety.
3. The Nuclear and Industrial Safety Agency shall manage the assigned duties defined in Article 4, Paragraph 1, No. 57 to No. 59.
4. The head of the Nuclear and Industrial Safety Agency shall be named as the Director-General of the Nuclear and Industrial Safety Agency. .
5. The Director-General shall appoint or dismiss the staff and personnel of the Nuclear and Industrial Safety Agency.
6. The place and internal organization of the Nuclear and Industrial Safety Agency shall be determined by the government ordinance.

(2) Ordinance for Organization of Ministry of Economy, Trade and Industry (Excerpt)
(Government Ordinance No. 254, June 7, 2000)
Latest Revision: Ordinance No.131, April 1, 2004

Chapter 2. External Agencies
Section 1. Agency of Natural Resources and Energy
Subsection 3. Special Agency
(The Location of Nuclear and Industrial Safety Agency)
Article 132. The Nuclear and Industrial Safety Agency shall be placed in Tokyo.
(The Organization of the Nuclear and Industrial Safety Agency)

Article 133. One General for Nuclear and Industrial Safety shall be assigned in the Nuclear and Industrial Safety Agency.
2. The Director-General for Nuclear and Industrial Safety shall assist the Director-General of the agency, and shall manage the affairs of the agency.
3. The remaining internal organization of the agency shall be provided by the Ministerial Order of Ministry of Economy, Trade and Industry.

(3) The Rules for Organization of the Ministry of Economy, Trade and Industry (Excerpt)
(Ministerial Order No. 1 of Ministry of Economy, Trade and Industry, January 6, 2001)
Latest Revision: Ministerial Order No. 59 of Ministry of Economy, Trade and Industry, April 1, 2004

Chapter 2. External Agencies
Section 1. Agency of Natural Resources and Energy
Subsection 2. Specific Agency
Title 1. Establishment of Specific Assignments etc.
(Deputy Director-General and Director-General for Safety Examination)
Article 261. Three Deputy Director-General and one Deputy Director-General for Safety Examination shall be assigned in the Nuclear and Industrial Safety Agency.
2. Upon official orders, the Deputy Director-Generals shall participate in activities for planning and projecting of the matters important to the assigned affairs of the Nuclear and Industrial Safety Agency and shall manage the related affairs.
3. The Director-General for Safety Examination shall manage the assigned duties and affairs concerning to the examination on the important items regarding to regulations for the nuclear related business of refining, processing, storing and disposing of wastes and commercial nuclear power reactors (hereinafter referred to as "nuclear business, etc.), upon official orders.
Title 2. Establishment of Divisions etc.
(Divisions Established in the Nuclear and Industrial Safety Agency)
Article 262. The following fifteen Divisions shall be established in the Nuclear and Industrial Safety Agency:
Policy Planning and Coordination Division;
Nuclear Safety Public Relations and Training Division;
Nuclear Safety Regulatory Standard Division;
Nuclear Safety Special Investigation Division;
Nuclear Power Licensing Division;
Nuclear Power Inspection Division;
Nuclear Fuel Cycle Regulation Division;
Nuclear Fuel Transport and Storage Regulation Division;
Radioactive Waste Regulation Division;
Nuclear Emergency Preparedness Division; and
Electric Power Safety Division.
(Other divisions, omitted)
(Assigned Affairs of the Policy Planning and Coordination Division)
Article 263. The Policy Planning and Coordination Division shall manage the assigned affairs as shown in the followings:
1. Matters relating to the secrecy;
2. Matters relating to the positions, appointment and dismissal, salary, punishment, service and other personnel affairs, and education and training of personnel (excluding the affairs assigned to Nuclear Safety Administration Division) in the Nuclear and Industrial Safety Agency;
5. Matters relating to the deliberation and transmission of proposal of laws, ordinances and orders, and other official documents, etc.;
6. Matters relating to disclosure to the public of such information possessed at the Nuclear and Industrial Safety Agency;
7. Matters relating to the general coordination concerning to the assigned duties of the Nuclear and Industrial Safety Agency;
8. Matters relating to examination of administration performed by the Nuclear and Industrial Safety Agency;
9. Matters relating to public relation (excluding matters assigned to Nuclear Safety Public Relations and Training Division);
10. Matters relating to the organization and members of the Nuclear and Industrial Safety Agency;
---------- omission ----------
19. Matters relating to projecting and planning, and promoting of the fundamental policy for ensuring nuclear safety and industry safety of nuclear energy and other energy utilization (excluding matters assigned to Nuclear Safety Regulatory Standard Division);
20. Matters relating to overall coordination of matters concerning to the law-suits on the assigned affairs of the Nuclear and Industrial Safety Agency (excluding matters assigned to Nuclear Safety Special Investigation Division);
21. Matters relating to the organization and general management of an incorporated administrative agency, Japan Nuclear Energy Safety Organization;
22. Matters relating to international cooperation concerning to regulating and ensuring the safety of nuclear business, etc.;
23. Matters relating to the international cooperation concerning to ensuring the safety in nuclear energy utilizations;
24. Matters relating to overall coordination of international cooperation concerning the assigned affairs of the Nuclear and Industrial Safety Agency; and
25. Matters relating to the general affairs of the Advisory Committee for Energy and Resources assigned to Nuclear and Industrial Safety Agency.

(Assigned Affairs of Nuclear Safety Public Relations and Training Division)

Article 264. *The Nuclear Safety Public Relations and Training Division shall manage the affairs as shown in the followings:

(i) Matters relating to the public relations to ensure the nuclear safety;

(ii) Matters relating to communication and coordination of the affairs on the Nuclear Safety Inspectors and Senior Specialists for Nuclear Emergency;

(iii) Matters relating to the budgets and numbers of Nuclear Safety Inspectors and Senior Specialists for Nuclear Emergency;

(iv) Matters relating to the training and education necessary to occupational works of Nuclear Safety Inspectors, Senior Specialists for Nuclear Emergency and other personnel who engage in the affairs for ensuring nuclear safety; and

(v) Matters relating to the examination and license certificate for the Chief Engineer of Reactors and Chief of Nuclear Fuel Management.

(Assigned Affairs of Nuclear Safety Regulatory Standard Division)

Article 265. Nuclear Safety Regulatory Standard Division shall manage the affairs as shown in the followings:

(i) Matters relating to planning, projecting and promotion of the fundamental policy concerning technical matters to ensure the nuclear safety;

(ii) Matters relating to collection, analysis, and supply of information on securing safety concerning nuclear business etc.;

(iii) Matters relating to the overall coordination of affairs concerning enforcement of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Law No. 166, 1957, hereinafter referred to as "Reactor Regulation Law");

(iv) Matters relating to overall coordination of affairs concerning reporting to Nuclear Safety Commission provided in Article 72-3 of the Reactor Regulation Law, and making communication with Nuclear Safety Commission; and

(v) Matters relating to the Rules for Nuclear Power Generation Facilities Concerning Nuclear Power Reactors at the Stage of Research and Development (except matters concerning affairs provided in Article 270, Subparagraph (ii) and (iii), Article 271, Subparagraph (ii) and (iii), and Article 273, Subparagraph (i) and (ix)), and others for ensuring safety (excluding matters relating to international cooperation) of these facilities (excluding matters assigned to Nuclear Safety Public Relations and Training Division, Nuclear Safety Special Investigation Division, and Nuclear Emergency Preparedness Division)

Assigned Affairs of Nuclear Safety Special Investigation Division)

Article 266. Nuclear Safety Special Investigation Division shall manage the affairs as shown in the followings:

(i) Matters relating to declarations provided in Article 66-4, Paragraph 1 of of the Reactor Regulation Law;

(ii) Matters relating to the overall coordination of affairs concerning notification provided in Article 67, Paragraph 1 and 2 of the Reactor Regulation Law; and

(iii) Matters relating to overall coordination of affairs concerning to the law suits for ensuring nuclear safety.

(Assigned Affairs of the Nuclear Power Licensing Division)

Article 267. The Nuclear Power Licensing Division shall manage the affairs as shown in the followings:

1. Matters relating to the licensing for establishment and transfer of the commercial nuclear power reactors;
2. Matters relating to the succession of the title of commercial nuclear power reactor establishers;
3. Matters relating to the licensing of construction plan of nuclear power generating facilities (except turbine and auxiliary boiler, same as in Paragraph 5) in the commercial nuclear power reactors;
4. Matters relating to the licensing for design of nuclear fuel materials in the commercial nuclear power reactors; and
5. In addition to the above defined items, the items related to the Rules for Nuclear Power Generation Facilities of Commercial Power Reactors (except the items related to the affair provided in the each subparagraph of the following articles: Article 270, Subparagraph (ii) and (iii), Article 271, Subparagraph (ii) and (iii), and Article 273, Subparagraph (ix)), and others for ensuring safety (except matters relating to international cooperation) of these facilities (except the assigned affairs of Nuclear Safety Public Relations and Training Division and Nuclear Emergency Preparedness Division).

(Assigned Affairs of Nuclear Power Inspection Division)

Article 268. The Nuclear Power Inspection Division shall manage the affairs as shown in the followings:

1. Matters relating to the inspections of the nuclear power installations of commercial nuclear power reactors based on the Electric Utilities Industry Law and the regulation by orders based on the law (except affairs assigned to the Electric Power Safety Division);
2. Matters relating to the inspections for the nuclear fuel materials of the commercial nuclear power reactors;
3. Matters relating to the operation plan of commercial nuclear power reactors;
4. Matters relating to the approval of the safety preservation rules concerning to the commercial nuclear power reactors;
5. Matters relating to the inspection of the compliance with safety preservation rules concerning to the commercial nuclear power reactors;
6. Matters relating to the Chief Engineer for Reactors concerning to the commercial nuclear power reactors; and
7. Matters relating to the reporting that defined Article 67, Paragraph 1 and Paragraph 2 of the Regulation of Commercial Nuclear Power Reactors (except the assigned affairs of the Nuclear Emergency Prepared.

(Assigned Affairs of Nuclear Fuel Cycle Regulation Division)

Article 269. Nuclear Fuel Cycle Regulation Division shall manage the affairs as shown in the followings:

--- omitted ---

(Assigned Affairs of Nuclear Fuel Transport and Storage Regulation Division)

Article 270. Nuclear Fuel Transport and Storage Regulation Division shall manage the affairs as shown in the followings:

--- omitted ---

(Assigned Affairs of Radioactive Waste Regulation Division)

Article 271. Radioactive Waste Regulation Division shall manage the affairs as shown in the followings:
--- omitted ---
(Assigned Affairs of the Nuclear Emergency Preparedness Division)
Article 272. The Nuclear Emergency Preparedness Division shall manage the affairs as shown in the ;s:
1. Matters relating to projecting and planning, and promoting of the policy concerning to the nuclear emergency;
2. Matters relating to the investigation and prevention of the nuclear accidents and incidents.
3. Matters relating to the physical protection;
4. Matters relating to overall coordination of the assigned affairs concerning to ensuring nuclear safety in response to nuclear emergency (as provided in Article 2, Paragraph 2 of the Special Law of Emergency Preparedness for Nuclear Disaster, Law No. 156, 1999) and other incidents; and
5. Matters relating to enforcement of the Special Law of Emergency. Preparedness for Nuclear Disaster.

(Assigned Affairs of the Electric Power Safety Division)
Article 273. The Electric Power Safety Division shall manage the affairs as shown in the followings:
1. Matters relating to construction, maintenance and operation of the electric equipment (limited to turbines and auxiliary boilers for the nuclear power reactors);
--- omitted ---
8. Matters relating to the investigation on the environmental preservation of the area influenced by establishment of the hydraulic generating power installation, the fossil generating power installation and the nuclear power installation; and
9. Matters relating to the welding safety management inspection for the machinery and equipment of the fossil generating power installation and the nuclear power installation.

3.4. The Law of the General Rules for Incorporated Administrative Agency and the Law for Japan Nuclear Energy Safety Organization

(1) The Law of the General Rules for Incorporated Administrative Agency (Excerpt)
(Law No. 103, July 16, 1999)
Latest Revision: Law No. 98, July 31, 2002

Chapter I. General Provisions

Section 1. General Rules

(Purpose etc.)
Article 1. This law is enacted for the purposes of providing the common matters, which are basis for operation and others of the system for the Incorporated Administrative Agency and for ensuring establishment of the system for Incorporated Administrative Agency and implementation of affaires and businesses, which are implemented by the Incorporated Administrative Agency from the public viewpoint, in conjunction with the law that provides the name, purpose and the scope of businesses of individual Incorporated Administrative Agency (hereinafter referred to as "the Individual Law"), to contribute to people's peaceful lives and sound development of social economy.
2. The organization, operation, and management of individual Incorporated Administrative Agency shall be governed by this law, except as otherwise provided in the Individual Law.

(Definition)
Article 2. In this law, "Incorporated Administrative Agency" means a juridical person established in accordance with this law and the Individual Law, for the purpose to implement the following matters efficiently and effectively. The matters are affaires and businesses that are necessary to be enforced from the public viewpoints to secure the stability of people's lives, social economies, etc. that need not be implemented directly by the government with his initiative, but that might be not necessarily implemented by private organizations, or that are required to be implemented by an organization exclusively.

(Publicity, Transparency and Independency of Businesses)
Article 3. The Incorporated Administrative Agency shall make efforts to manage the affaires and businesses properly and efficiently, in the light of necessities to implement those that are necessary to be enforced from the public viewpoints to secure the stability of people's lives, social economies, etc.
2 The Incorporated Administrative Agency shall make efforts to keep transparency of the situation of the organization and management to the public thorough the official announcement and others on the details of activities as provided by this law.
3 In application of this law and the Individual Law, the independency of the Incorporated Administrative Agency in managing the businesses shall be taken into account as necessary.

(Name)

Section 2. Committee for Evaluation of the Incorporated Administrative Agency

(Committee for Evaluation of the Incorporated Administrative Agency)
Article 12. The competent ministry for the Incorporated Administrative Agency (referred to the Cabinet Office or the individual ministry that has control over the individual Incorporated Administrative Agency concerned, the same in the followings) shall establish a Committee for Evaluation of Incorporated Administrative Agency (hereinafter referred to as "Committee for Evaluation") under them to entrust the management of the affairs in relation to the Incorporated Administrative Agency, which falls under his control.
2. The Committee for Evaluation shall manage the affairs listed in the following subparagraphs:
(i) Evaluation on the actual performance concerning the activities of the Incorporated Administrative Agency; and

(ii) Management of others that fall under the jurisdictions as provided by this law or Individual Laws.

Chapter III. Management of Businesses

Section 1. Businesses

Section 2. Medium-term Target and Others

(Medium-term Target)
Article 29. The competent minister shall decide a medium-term target that the Incorporated Administrative Agency should achieve for a period of two years or more but not more than five years (hereinafter referred to as "medium-term target"), and shall instruct the concerned Incorporated Administrative Agency, and make it public. The same shall also be applied in the case of its alteration.
2. Matters listed in the following subparagraphs shall be provided in the medium-term target:
(i) Period of the medium-term target (referred to the period that the competent minister defines within the range of the period as provided in the preceding paragraph, the same hereinafter);
(ii) Matters concerning efficiency improvement of the business management;
(iii) Matters concerning quality improvement of services supplied to the public and other activities;
(iv) Matters concerning improvement of the financial situation; and
(v) Other important matters concerning business management.

(Medium-term Plan)
Article 30. When the Incorporated Administrative Agency is instructed as provided in Paragraph 1 of the preceding article, he shall prepare a plan to achieve the medium-term target concerned (hereafter, referred to as "medium-term plan"), based on the medium-term target, in accordance with the order of the competent ministry, and shall obtain the authorization by the competent minister. The same shall also be applied in the case of its alteration.

(Fiscal-year Plan)
Article 31. The Incorporated Administrative Agency, before the beginning of every business fiscal year, shall prepare a plan concerning the business management for the business fiscal year concerned (in the following paragraph, referred to as "fiscal year plan"), based on the medium-term plan of which authorization has been obtained as provided in Paragraph 1 of the preceding article, in accordance with the order of the competent ministry, and shall submit the notification about it to the competent minister and make it public. The same shall also be applied in the case of its alteration.

(Evaluation on the Actual Performance of Activities in Each Business Fiscal Year)
Article 32. The Incorporated Administrative Agency shall undertake the evaluation of the Committee on Evaluation on his actual performance of activities in each business fiscal year, in accordance with the order of the competent ministry.
2. The evaluation provided in the preceding paragraph shall be conducted by investigating and analyzing the implementing situation of the medium-term plan of the business fiscal year concerned, and by evaluating the entire actual performance of businesses of the business fiscal year concerned comprehensively with consideration of the results of these investigations and analyses.
3. When the Committee on Evaluation conducted the evaluation provided in Paragraph 1, he shall make notification of the results to the Incorporated Administrative Agency concerned and the council provided by the government ordinance (hereinafter referred to as "Council") without delay. In this case, the Committee on Evaluation may make recommendations concerning improvement of the business management and others to the Incorporated Administrative Agency concerned, when the Committee on Evaluation deems it necessary.
4. When the Committee on Evaluation notify pursuant to the provision in the preceding paragraph, he shall make public the contents concerning the notification (in the case of the recommendation pursuant to the provision in latter part of the said paragraph, the contents concerning the notification and the details of recommendation) without delay.
5. The Council may give its view regarding the results of evaluation notified as provided in Paragraph 3 to the Committee on Evaluation concerned, when the Council deems it necessary.

(Business Report Concerning the Medium-term Target)
Article 33. The Incorporated Administrative Agency shall submit the business report concerning the medium-term target concerned to the competent minister and make it public, within three months after termination of the period of the medium-term target, in accordance with the order of the competent ministry.

(Evaluation on the Actual Performance of Businesses Concerning the Medium-term Target)
Article 34. The Incorporated Administrative Agency shall undertake the evaluation by the Committee on Evaluation on the actual performance of businesses of the period of medium-term target, in accordance with the order of the competent ministry.
2. The evaluation provided in the preceding paragraph shall be conducted by investigating and analyzing the achievement situation of medium-term target in the period of medium-term target concerned, and by evaluating the entire actual performance of businesses in the period of the medium-term target concerned comprehensively with consideration of the results of these investigations and analyses.

(Examination at Termination of Period of Medium-term Target)
Article 35. The competent minister, at the termination of period of medium-term target, shall examine necessity for continuing the businesses of the Incorporated Administrative Agency concerned, appropriateness of his organization, and other matters concerning the whole of organization and business, and shall take necessary measures based on the findings derived from the examination.

2. The competent minister, in conducting the examination provided in the preceding paragraph, shall ask for the view of the Committee on Evaluation.
3. The Council, at the termination of period of medium-term target, may make recommendation to the competent minister with respect to alteration and abolition of main affaires and businesses of the Incorporated Administrative Agency concerned.

(2) The Law for the Incorporated Administrative Agency, Japan Nuclear Energy Safety Organization (Law No. 179, December 18, 2002)

(Purpose)
Article 1. This law is enacted for the purposes of providing such items as the name, the objectives of the Japan Nuclear Energy Safety Organization (hereinafter referred to as “the Organization”) and the scope of duties provided by the Organization.

(Definition)
Article 2. "Nuclear facilities" in this law means the refining facilities defined in Article 3, Paragraph 2 Subparagraph (ii) of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Law No. 166, 1957, hereinafter referred to as "the Reactor Regulation Law"), the fabrication facilities defined in Article 13, Paragraph 2, Subparagraph (ii) of the Reactor Regulation Law, the spent fuel storage facilities defined in Article 43-4, Paragraph 2, Subparagraph (ii) of the Reactor Regulation Law, the reprocessing facilities defined in Article 44, Paragraph 2, Subparagraph (ii) of the Reactor Regulation Law, and the waste disposal facility and the waste interim storage facilities defined in Article 51-2, Paragraph 2, Subparagraph (ii) of the Reactor Regulation Law.
2. "Reactor facilities" in this law means the reactors defined in Article 23, Paragraph 1, Subparagraph (i) and (iv) of the Reactor Regulation Law and their related facilities (in Paragraph 4, referred to as "reactor").
3. "Nuclear business" in this law means the refining business defined in Article 3, Paragraph 1 of the Reactor Regulation Law, the fabrication business defined in Article 13, Paragraph 1 of the Reactor Regulation Law, the spent fuel storage business defined in Article 43-4, Paragraph 1 of the Reactor Regulation Law, the reprocessing business defined in Article 44, Paragraph 1 of the Reactor Regulation Law, and the disposal business defined in Article 51-2, Paragraph 1 of the Reactor Regulation Law.
4. "Nuclear disaster" in this law means those ones that would be caused by the operation of nuclear business or by the operation of reactors among the nuclear disasters defined in Article 2, Subparagraph (i) of the Special Law of Emergency Preparedness for Nuclear Disaster (Law No. 156, 1999).

(Name)
Article 3. The name of the Incorporated Administrative Agency established in accordance with this law and the Law of the General Rules for Incorporated Administrative Agency (Law No. 103, 1999, hereinafter referred to as "the Law of the General Rules"), as provided in Article 2, Paragraph 1 of the Law of the General Rules, shall be the Japan Nuclear Energy Safety Organization.

(Purpose of the Organization)
Article 4. The purpose of the Japan Nuclear Energy Safety Organization (hereinafter referred to as "Organization") is to maintain the bases for ensuring the safety for utilization of energy produced by the nuclear power through performing the inspections of nuclear facilities and reactor facilities, the analysis and evaluation of the safety concerning the design of nuclear facilities and reactor facilities and other safety-related services.

(Scope of Duties)
Article 13. The Organization shall perform the following duties to achieve the purposes provided in Article 4:
(i) Inspection of nuclear facilities and reactor facilities and others similar to those;
(ii) Analysis and evaluation of the safety concerning design of nuclear facilities and reactor facilities;
(iii) Duties on prevention of nuclear disasters, prevention of possible expansion of the nuclear disaster and the restoration from the nuclear disaster;
(iv) Investigation, testing, research, and training for ensuring the safety of utilizing energy of the nuclear power (referred to as "ensuring safety" in the following subparagraph);
(v) Collecting, classifying and providing of information for ensuring safety; and
(vi) Duties that are accompanied with the ones described in each of the preceding subparagraphs.
2. The Organization, in addition to the duties described in the preceding paragraph, shall perform the following duties:
(i) Entry and inspection, questioning and taking samples pursuant to the provisions of Article 68, Paragraph 1 through Paragraph 3 of the Reactor Regulation Law; and
(ii) Entry and inspection pursuant to the provisions of Article 107, Paragraph 1 through Paragraph 3 of the Electricity Utilities Industry Law (Law No. 170, 1964).
3. The Organization, in addition to the duties provided in the preceding two paragraphs, may perform tasks for ensuring safety of the nuclear energy, so far as no obstacle takes place in performing any duties provided in the preceding two paragraphs, in response to the request of national administrative agencies.

3.5. The Law on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors

(1) The Law on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors (Excerpt)
(Law No. 166, June 10, 1957)
(Latest Revision: Law No. 179, December 18, 2002)

(Objectives)
Article 1. This Law, in accordance with the spirits of the Atomic Energy Basic Law (Law No. 186, 1955), is enacted for the purposes of providing the necessary regulations on the refining business, the fabricating business, the storage business, the reprocessing business and the waste disposal business, as well as on the establishment and operation of reactors, and also for the purpose of providing necessary regulations on the uses of internationally regulated substances to execute the agreements or other international arrangements concerning the research, development and use of atomic energy, in order to ensure that the uses of nuclear source material, nuclear fuel material and reactors are limited to peaceful ones and carried out in a planned manner, and at the same time, to ensure the public safety by preventing the hazards due to these materials and reactors and protecting nuclear fuel material.

(3) Regulations concerning nuclear fuel fabrication business
(Licensing for business)
Article 13. Any person who wishes to operate a nuclear fuel fabrication business shall obtain the license of the Minister of Economy Trade and Industry as provided for in the government ordinance. (Omitted)
(Pre-service Inspection)
Article 16-3.
3. The Minister of Economy, Trade and Industry (hereinafter referred to as “the Minister of METI”) shall, as provided by the Ordinance of Ministry of Economy, Trade and Industry (hereinafter referred to as “Ministry of Economy, Trade and Industry”), make the Japan Nuclear Energy Safety Organization (hereinafter referred to as “the Organization”) to perform a part of affairs concerning inspections described in Paragraph 1.
4. When the Organization performed a part of affairs concerning the inspection under the provisions of the preceding paragraph, the Organization shall promptly, as provided by the Ordinance of Ministry of Economy, Trade and Industry, notify the Minister of Economy, Trade and Industry of the results of inspection.
Chapter 4 Regulations Concerning Establishment, Operation, etc. of Nuclear Reactors
(Peridic Inspection of Facility)
Article 16-5.
3. The Minister of METI shall, as provided by the Ordinance of Ministry of Economy, Trade and Industry (hereinafter referred to as “Ministry of Economy, Trade and Industry”), make the Organization to perform a part of affairs concerning inspections described in Paragraph 1.
4. When the Organization performed a part of affairs concerning the inspection under the provisions of the preceding paragraph, the Organization shall promptly, as provided by the Ordinance of Ministry of Economy, Trade and Industry, notify the Minister of Economy, Trade and Industry of the results of inspection.
Chapter 4 Regulations Concerning Establishment, Operation, etc. of Nuclear Reactors
(Licensing for Establishment)
Article 23. Any person who wishes to establish a nuclear reactor shall obtain the license of the Minister as provided for in the government ordinance in accordance with the classification of nuclear reactors set out in the following subparagraphs:
(i) Nuclear reactors for the purpose of electrical generation (to the exclusion of those coming under any of the following three subparagraphs; hereinafter referred to as "commercial power reactors"): Minister of Economy, Trade and Industry;
(iv) Nuclear reactors for the purpose of electrical generation as specified by government ordinance as reactors in the stage of research and development: Minister of Economy, Trade and Industry;
2. Any person who wishes to obtain the license under the preceding paragraph shall present to the competent minister (minister specified in the government ordinance in accordance with the classification of nuclear reactors in the preceding paragraph) an application containing the following items:
(i) The name and the address and, in case of a juridical person, the name of its representative;
(ii) The purpose for which reactors are to be used;
(iii) The type, the thermal power and the number of reactors;
(iv) The name and the address of the factory or the place of business where reactors are to be established;
(v) The location, structure and equipment of reactors and their attached facilities (hereinafter referred to as "reactor facilities");
(vi) The construction plan of reactor facilities;
(vii) The type of nuclear fuel material to be used in reactors and the annual amount scheduled for use; and
(viii) The method of disposal of spent fuel.
3. The Minister of Economy, Trade and Industry plans to enact, amend or repeal the Government ordinance relating to subparagraph (iv) of paragraph 1, they must hear and pay due respect, in advance, to the opinions of the Atomic Energy Commission and the Nuclear Safety Commission.
Article 24. When an application for the license under Paragraph 1 of the Article 23 is rendered, the competent minister shall not give the license unless he recognizes that the application comes under each of the following subparagraphs:
(ix) That reactors will not be used for non-peaceful purposes;
(x) That the license will cause no hindrance to the planned development and utilization of atomic energy;
(xi) That the applicant (including the shipbuilding business operator, if the reactor is to be installed in a ship) has technical

ability and financial position sound enough to establish reactors, and has such technical ability as to operate them competently; and

(xii) That the location, structure and equipment of reactor facilities are such that they will cause no hindrance to the prevention of the hazard by nuclear fuel material (including spent fuel, and so in the following), by materials contaminated by unclear fuel material (including fission products, and so in the following) and by reactors.

2. In giving license under Paragraph 1 of the preceding Article, the competent minister shall hear and respect, in advance, the opinion of the Atomic Energy Commission with respect to the application of standards specified in Subparagraph (i), Subparagraph (ii) and Subparagraph (iii) (regarding the portion related to the financial position only) of the preceding paragraph, and the opinion of the Nuclear Safety Commission with respect to the application of standards specified in Subparagraph (iii) (regarding the portion related to the technical ability only) and Subparagraph (iv) of the said paragraph.

(Ineligibility for the License)

Article 25. No person who comes under one of the following subparagraphs shall be given the license under Article 23, Paragraph 1:

(i) A person whose license under Article 23, Paragraph 1 has been cancelled as provided in the rule of Article 33, Paragraph 2 and whom two years have not yet elapsed from the day of the cancellation;

(ii) A person who has been condemned to the penalty heavier than the fine for violation of the rules of this Law or the Orders based on this Law, and for whom two years have not yet elapsed after having executed or suspended to execute the penalty;

(iii) A legally incompetent person; and

(iv) A juridical person any of whose executive officers comes under one of the preceding subparagraphs.

(License and Report of the Change, Etc.)

Article 26. When a reactor establisher wishes to change any matter provided in Article 23, Paragraph 2, Subparagraph (ii), Subparagraph (iii), Subparagraph (iv), Subparagraph (v) or Subparagraph (viii), he shall obtain the permission of the competent minister, as provided by the government ordinance provided that this is not applicable to the case provided in Subparagraph (iv) of the said paragraph, where only the name of a factory or a place of business is to be changed.

2. When a reactor establisher has changed any matter provided for in Article 23, Paragraph 2, Subparagraph (i), Subparagraph (vi) or Subparagraph (vii), except case provided for in Article 32, Paragraph 1, he shall report the change to the competent minister within thirty days of the day of the change. This shall also apply to the matters provided for in Subparagraph (iv) of the said paragraph, where only the name of a factory or a place of business has been changed.

4.The provisions of Article 24 shall apply mutatis mutandis to the permission under Paragraph 1.

(Approval of Design and Construction Methods)

Article 27. Any reactor establisher shall, as provided by the order of competent ministry, (the order issued by competent minister: same as in this chapter) obtain the permission of the competent minister, with respect to the design and method of construction of the reactor facilities (except for welding in the reactor facilities defined in Article 28-2, Paragraph 1 in which welding is performed, same in the following paragraph and Paragraph 3) before starting of the construction. This shall also apply to the alteration of the reactor facilities.

2. When any reactor establisher wishes to change the design and method of construction of the reactor facilities for which the approval provided on the preceding paragraph has been obtained, they shall obtain the approval of the competent minister, as provided by the order of the competent ministry; this shall not apply to any of the minor changes provided by the order of the competent ministry.

3. The competent minister shall give the approval provided for in the preceding two paragraphs, if he recognizes that the design and method of construction relevant to the application for approval provided for in the preceding two paragraphs satisfy each of the following subparagraphs:

(i) The design and method of construction have been given approval based on Article 23, Paragraph 1 or Article 26, Paragraph 1 or have been reported according to the provisions of Paragraph 2 of the said article; and

(ii) The design and method of construction are in conformity with the technical standards defined by the order of the competent ministry.

(Pre-service Inspection)

Article 28. Any reactor establisher shall not use reactor facilities until they have been put successfully through the inspection of the competent minister as to the construction work (except for welding in the reactor facilities defined in Article 28-2, Paragraph 1 in which welding is performed - same in the following paragraph) and performance of the reactor facilities, as provided by the order of the competent ministry. The same apply to the reactor facilities when they are altered.

2. The performance inspection is considered as passed when the reactor facilities conform to each of the following subparagraphs:

(i) That the construction work has been done in accordance with the design and methods of construction provided for in the preceding Article; and

(ii) That the performance is, in accordance with the technical standards provided by the order of the competent ministry.

(Method of Welding and Inspection)

Article 28-2. A reactor vessel and other reactor facility in which welding is performed shall be inspected by the competent minister specified by the order of the competent ministry, and the reactor establisher may not use the reactor facility until it passes the inspection. However, this shall not be applied to the cases specified in Paragraph 4 and the cases specified by the order of the competent ministry.

2. A person who wishes to receive the inspection mentioned in the above paragraph, he must obtain the approval of the competent minister concerning the method of welding according to the order of the competent ministry.

3. The inspection mentioned in paragraph 1 shall be considered as passed if the welding satisfies each of the following

subparagraphs:
(i) That the welding has been carried out according to the method approved as provided for in the previous paragraph; and
(ii) That the welding is in conformity with the technical standards defined by the order of the competent ministry.
4. The rector facility involving welding defined in Paragraph 1, which has been imported, shall be inspected by the competent minister concerning welding specified by the order of the competent ministry, and the establisher may not use the reactor facility until it passes the inspection.
5. The inspection mentioned in the preceding paragraph shall be considered as passed if the welding is in conformity with the technical standards mentioned in item 2 of Paragraph 3.
(Periodic Inspection of Installation)
Article 29. Any reactor establisher shall, according to the order of the competent ministry, submit those reactor facilities designated by government ordinance to the annual inspection of the competent minister that is made regularly once a year.
2. The Periodic inspection provided for in the preceding paragraph shall be made as to whether or not the performance of the reactor facilities is up to the technical standards provided by the order of the competent ministry.
3. The provisions described in Article 16-5, Paragraphs 3 and Paragraph 4 shall be applied with necessary modifications to the inspection described in Paragraph 1 (limited to those relevant to commercial power reactors or reactors described in Article 23, Paragraph 1, Subparagraph (iv)).
(Operation Plan)
Article 30. As provided by the order of the competent ministry (ministry of education, culture, sport, science and technology for the nuclear reactor as defined by Article 23, paragraph 1, item 3 with the purpose of electrical generation and ministry of economy, trade and industry), any reactor establisher is required to draw up a plan for the operation of the nuclear reactor which he establishes, and submit it to the competent minister (Minister of education, culture, sport, science and technology for the nuclear reactor as defined by Article 23, Paragraph 1, item 3 with the purpose of electrical generation and Minister of economy, trade and industry). The same applies to the case when the plan is modified.
(Merger)
Article 31. In case of a merger of juridical persons who are reactor establishers (except in case of a merging a juridical person who is a reactor establisher with a juridical person who is not a reactor establisher, with where the juridical person who is a reactor establisher continues to exist), when the approval of the competent minister has been obtained for the merger, the juridical person who is to continue to exist after the merger, or the juridical person who has been establisher by the merger shall succeed to the status of the reactor establish.
2. The provisions of Article 24, Paragraph 1, Subparagraph (i), Subparagraph (ii) and Subparagraph (iii) and Paragraph 2, and Article 25 shall apply mutatis mutandis to the permission as provided in the preceding paragraph.
(Inheritance)
Article 32. In case of an inheritance with regard to a reactor establisher, the inheritor shall succeed to the status of the reactor establisher.
2. The inheritor who has succeed to the status of the reactor establisher described in the preceding paragraph, shall report the inheritance to the competent minister with the documents to prove the inheritance within thirty days of the day of the inheritance.
(Cancellation of the License, Etc.)
Article 33. When a reactor establisher does not begin reactor operation without justifiable reason within the period as provided in the order of competent ministry, or continuously suspended reactor operation of one year or more, the competent minister may cancel the license as provided in Article 23, Paragraph 1.
2. When a reactor establisher comes under one of the subparagraphs, the competent minister may cancel the license under Article 23, Paragraph 1 or order the suspension of operation for a period not exceeding one year:
(i) When a reactor establisher comes under one of the Subparagraph (ii), Subparagraph (iii), and Subparagraph (iv) of Article 25;
(ii) When he has changed the items for which he should have obtained the license specified in the provisions of Article 26, Paragraph 1 without the license;
(iii) When he violated the order based on the rules of Article 36;
(iv) When he has violated the rules of Article 37, Paragraph 1 or Paragraph 4, or the order based on the provisions of Paragraph 3 of the said Article;
(v) When he has violated the order based on the rules of Article 43;
(vi) When he has violated the provisions as provided in Article 43-2, Paragraph 1;
(vii) When he has violated the order provided in Article 12-2, Paragraph 3 that is applied mutatis mutandis to Article 43-2, Paragraph 2; or
(viii) When he has violated the provisions of Article 12-2, Paragraph 4 that is applied mutatis mutandis to Article 43-2, Paragraph 2.
(ix) When he has violated the provisions of Article 43-3, Paragraph 1.
(x) When he has violated the order provided in Article 12-5 that is applied mutatis mutandis to Article 43-3, Paragraph 2.
(xi) When he has violated the provisions of Article 58-2, Paragraph 2, or the order provided in Paragraph 3 of the said article.
(xii) When he has violated the provisions of Article 59-2, Paragraph 2, or the order provided in Paragraph 4 of the said Article.
(xiii) When he has violated the provisions of Article 59-3, Paragraph 2.
(xiv) When he has violated the provisions of Article 61-8, Paragraph 1 or Paragraph 4, or the order provided in

Paragraph 3 of the said article.
(xv) When he has violated the condition as provided in Article 62, Paragraph 1 or Paragraph 2.
(xvi) When he has violated the provisions of Article 6 of the Law on Compensation for Nuclear Damage.
(xvi-2) When he has violated the order provided in Article 7, Paragraph 4, Article 8, Paragraph 5, Article 9, Paragraph 7 or Article 11, Paragraph 6 of the Special Law for Nuclear Emergency.
(Records)
Article 34. Any reactor establisher shall, as provided by the order of the competent ministry, record items provided by the order of the competent ministry concerning the operation of the reactor and other uses of the reactor facilities, and keep this record at the factory or the place of business.
(Measures for Safety Preservation and the Protection of Specified Nuclear Fuel Material)
Article 35. Any reactor establisher or foreign nuclear ship operator shall, as provided by the order of the competent ministry, take necessary safety preservation measures concerning the following items:
(i) Maintenance of reactor facilities;
(ii) Operation of reactors; and
(iii) Transportation, storage or disposition of nuclear fuel material or material contaminated by nuclear fuel material. (Transportation and disposition shall be restricted to transportation and disposition to be carried out in the factory or the place of business where reactor facilities are installed. The same applies to Paragraph 1 of the following Article).
2. Any reactor establisher, when disposing of nuclear fuel material or material contaminated by nuclear fuel material outside the factory or the place of business where reactor facilities are installed, shall take the necessary measures for safety preservation, as provided by the order of the competent ministry.
(Suspension of the Use of Facilities, Etc.)
Article 36. When the competent minister recognizes that the performance of reactor facilities is not in conformity with the technical basis provided for in Article 29, Paragraph 2, or the measures for the maintenance of reactor facilities, or the operation of reactors, or the transportation, storage or disposal of nuclear fuel material or material contaminated by nuclear fuel material, are in violation of the provisions of the order of the competent ministry or ministry of land and transportation based on the rules of Paragraph 1 of the preceding Article, he may order any reactor establisher to suspend use, to remodel, to repair or to change the location of reactor facilities, or to take necessary safety preservation measures such as the designation of the method of operation of reactors.
2. When the competent minister recognizes that measures for the physical protection are in violation of the order of the competent minister based on Paragraph 2 of the preceding Article, he may order the reactor establisher to take remedial measures.
(Operational Safety Program)
Article 37. Any reactor establisher shall, as provided by the order of the competent ministry, lay down the Operational Safety Program (including the rules on the safety education on operation of the reactor, the same as in this article)and obtain the approval of the competent minister before starting the operation of reactors. This shall also apply to the alteration of it.
2. The competent minister shall not give the approval under the preceding paragraph, when he deems that the safety regulations is not sound enough to prevent accidents by nuclear fuel material, material contaminated by nuclear fuel material or reactors.
3. When the competent minister deems it necessary to prevent accidents by nuclear fuel material, material contaminated by nuclear fuel material, or reactors, he may order any reactor establisher to alter their Operational Safety Program.
4. Any reactor establisher and employees of them shall observe the Operational Safety Program.
5. Any reactor establisher shall, according to the order of the competent ministry, be inspected regularly by the competent minister of the compliance to the requirement of the preceding paragraph
(Decommissioning of Reactors)
Article 38. When any reactor establisher (including person who is provided for in Article 66 Paragraph 1 and so in the next paragraph) wishes to dismantle reactors, they shall, as provided by the order of the competent ministry, report to the competent minister in advance.
2. When the report described in the preceding paragraph is made, the competent minister may, if he deems it necessary, designate the method of dismantling reactors or order any reactor establisher to eliminate the contamination by nuclear fuel material or to take other necessary measure to prevent accidents by nuclear fuel material, material contaminated by nuclear fuel material or reactors.
(Transfer of Reactors)
Article 39. Any person who wishes to receive reactors or whole facilities including reactors from any reactor establisher shall obtain the permission of the competent minister, as provided by government ordinance.
3. The rules of Article 24 and Article 25 shall apply mutatis mutandis to the permissions under the two preceding paragraphs.
4. A person who, with the permission under Paragraph 1, has received reactors or whole facilities including reactors from a reactor establisher shall succeed to the status of the reactor establisher with respect to the reactors.
(Chief Engineer of Reactors)
Article 40. Any reactor establisher shall, as provided by the order of the competent ministry, appoint the chief engineer of reactors among the persons who have a certificate of the chief engineer of reactors described in Paragraph 1 of the following article, to make him supervise safety preservation concerning the operation of reactors.
2. Any reactor establisher have assignment the chief engineer of reactors described in the provisions of the preceding paragraph, they shall report the notification to the competent minister within thirty days of the day of the notification. This shall also apply to the dismissal of him.
(Certificate for the Chief Engineer of Reactors)

Article 41. The Minister of Education, Culture, Sports, Science and Technology and the Minister of Economy, Trade and Industry shall grant a certificate of the chief engineer of reactors to a person who comes under one of the following subparagraphs:

(i) A person who has passed the qualification test of the chief engineer of reactors executed by the Minister of Education, Culture, Sports, Science and Technology and the Minister of Economy, Trade and Industry; or

(ii) A person whom Minister of Education, Culture, Sports, Science and Technology and the Minister of Economy, Trade and Industry recognize as provided by the government ordinance, to have knowledge and experience equal to or more than those person provided for in the preceding paragraph.

2. The Minister of Education, Culture, Sports, Science and Technology and the Minister of Economy, Trade and Industry may not to grant a certificate for the chief engineer of reactors to a person who comes under one of the following subparagraphs.

(i) A person who has been ordered to return his certificate of the chief engineer of reactors provided for in the provisions of the following paragraph, and for whom one year has not yet elapsed from the day ordered to return; or

(ii) A person who has been condemned to the penalty heavier than the fine for violation of the rules of this Law or the order based on this Law, or has been executed the penalty or suspended the execution of it, and for whom two years have not yet elapsed after having executed or suspended to execute the penalty.

3. When a person who has been granted a certificate of the chief engineer of reactors has violated the rule of this Law or the order on this Law, The Minister of Education, Culture, Sports, Science and Technology and the Minister of Economy, Trade and Industry may order him to return his certificate.

4. The subjects, the procedures or other details of the qualification test for the chief engineer of reactors provided for in Paragraph 1, Subparagraph (i), and the procedure for granting and returning certificate of the chief engineer of reactors shall be provided by the order of Ministry of Education, Culture, Sports, Science and Technology and Ministry of Economy, Trade and Industry.

(Duties of the Chief Engineer of Reactors, Etc.)

Article 42. The chief engineer of reactors shall be faithful in the discharge of his duties.

2. Any person who is engaged in the operation of reactor shall obey the instructions for the safety preservation given by the chief engineer of reactors.

(Order to Dismiss the Chief Engineer of Reactors)

Article 43. When the chief engineer of reactors has violated the rules of this Law or the order based on this Law, the competent minister may order any reactor establisher to dismiss him.

(Welding Inspection Performed by the Organization)

Article 61-24. The Minister of Economy, Trade and Industry shall make the Organization to perform the inspection described in Article 16-4, Paragraph 1 and Paragraphs 4, Article 28-2, Paragraph 1 and Paragraph 4 (limited to the portion related to commercial power reactors and reactors described in Article 23, Paragraph 1, Subparagraph (iv) and the associated facilities).

(Conditions of the Authorization or the License)

Article 62. Except as established in the following paragraphs, the conditions may be attached to the authorization or the license provided by this Law.

2. In the licensing of Paragraph 1, Article 23, necessary condition to observe international commitment in relation to the limitation of utilization and transfer of international restricted material may be attached.

3. The conditions of the preceding two paragraphs shall be confined to the minimum necessary to ensure the enforcement of the items concerning the authorization or the license, and shall not be such that they may obligate unreasonably the persons who wish to obtain the authorization or license.

(Emergency Measures)

Article 64. With respect to the nuclear fuel material, the material contaminated with nuclear fuel material or the reactor which is possessed by a reactor establisher, a business operator, etc., (hereinafter referred to as "business operators" in this Article), and any person who has been entrusted with transportation or storage by those persons, when there is a possibility of accident by nuclear fuel material, material contaminated with nuclear fuel material or a reactor through earthquake, fire or any other disaster, or when such accident has actually occurred, they shall take the emergency measures at once, as provided by the order of the competent ministry.

2. Any person who has discovered the situation provided for in the preceding paragraph shall inform it to a police officer or a maritime safety official.

3. When the Minister of Economy, Trade and Industry considers it urgently necessary for the purpose of preventing hazards due to nuclear fuel material, the material contaminated with nuclear fuel material or reactors, in the case stated in Paragraph 1, he may order such persons as mentioned in the said paragraph, in accordance with the division of business operators mentioned in the following items, to suspend the use of reactor facilities; to change the place where nuclear fuel material or the material contaminated with nuclear fuel material is located; or to take other measures necessary to prevent hazards from nuclear fuel material, the material contaminated with nuclear fuel material or reactors.

(Cancellation of the Authorization or the License, Measures Taken in Consequent of the Discontinuance of Business, Etc.)

Article 66. A reactor establisher whose authorization has been cancelled, in accordance with the provisions of Article 33 shall, as provided by the order of the competent ministry, take measures to transfer nuclear fuel material to eliminate contamination with nuclear fuel material or to dispose of nuclear fuel material or the material contaminated with nuclear fuel material, or to transfer internationally regulated substances (except nuclear fuel material).

4. When the competent minister recognizes that the measures taken by the persons defined in Article 4, Paragraph 1 shall not be appropriate, he may order the persons defined in said paragraph to take the following measures:

(i) Measures necessary for the prevention of hazards due to nuclear fuel material, the material contaminated with nuclear fuel material or reactors.

(Notification of Termination of Business)

Article 65. When a reactor establisher discontinues operation of reactors relevant to the concerned license, he shall notify the discontinuance to the competent minister as provided in the Ordinance of the competent ministry.

(Cancellation of the Authorization or the License, Measures Taken in Consequent of the Termination of Business, Etc.)

Article 66. A reactor establisher whose authorization has been cancelled, in accordance with the provisions of Article 33 shall, as provided by the order of the competent ministry, take measures to transfer nuclear fuel material to eliminate contamination with nuclear fuel material or to dispose of nuclear fuel material or the material contaminated with nuclear fuel material, or to transfer internationally regulated substances (except nuclear fuel material).

4. When the competent minister recognizes that the measures taken by the persons defined in of Article 4, Paragraph 1 shall not be appropriate, he may order the persons defined in said paragraph to take the following measures:

(i) Measures necessary for the prevention of hazards due to nuclear fuel material, the material contaminated with nuclear fuel material or reactors.

(Rule for Affairs)

Article 66-2. The Organization shall define rules for implementation of affairs (hereinafter referred to as "rules of affairs") of inspection etc. (which means inspections and verifications, as well as a part of affairs concerning inspections and verifications, described in the following subparagraphs, the same shall be applied, hereinafter.) before starting business concerning affairs of inspection etc., and shall notify this to the minister as provided in the subparagraph concerned (hereinafter referred to as "the competent minister" in this Article and Article 68-2). The same shall be applied when the Organization intends to modify them.

(i) A part of affairs concerning inspections provided in Article 16-3, Paragraph 3 (including the case where the said paragraph is applied with necessary modifications to Article 28, Paragraph 3) and Article 16-5, Paragraph 3 (including the case where the said paragraph is applied with necessary modifications to Article 29, Paragraph 3); The Minister of Economy, Trade and Industry

(ii) Inspections provided in Article 61-24, Paragraph 1; The Minister of Economy, Trade and Industry

2. The competent minister may order to modify the rules of affairs concerning notification provided in the preceding paragraph where the minister deems the said rules of affairs is not in conformity to perform the affairs of inspection etc. appropriately and assuredly.

3. Items to be defined in the rules of affairs shall be provided by the order of competent ministry (which means the order by the competent minister, the same shall be applied to the following article).

(Persons to Perform the Affairs of Inspection etc.)

Article 66-3. When the Organization performs the affairs of inspection etc., the Organization shall make the qualified person provided by the order of competent ministry to perform the said affairs

(Allegation to Competent Minister etc.)

Article 66-4. The employee of reactor establisher or radioactive disposal business operator may allege the fact of violation when any reactor establisher violates the law or the order based on the law to competent minister or nuclear safety commission.

2. The reactor establisher or radioactive disposal business operator shall not dismiss or act against him for his allegation.

(Collection of Reports)

Article 67. The Minister of Economy, Trade and Industry or public safety commissions of prefectures may request reactor establisher or radioactive disposal business operator, as far as necessary for the enforcement of this Law, to produce reports on his operations, as provided by the government ordinance, in accordance with the division of business operators listed in the items of Article 64, Paragraph 3.

2. Other than the request of the report as provided in the previous paragraph, Minister of Economy, Trade and Industry may request reactor establisher or radioactive disposal business operator, as far as necessary for the enforcement of this Law, to produce reports on his maintenance and inspection activity done to his facility, as recognized as necessary to prevent the hazards due to reactor, nuclear fuel material and material contaminated with nuclear fuel.

3. The Minister of Economy, Trade and Industry may, as far as necessary for the enforcement of this Law, make the Organization to submit reports concerning their business in accordance with divisions of affairs of inspection etc. described in subparagraphs of Article 66-2, Paragraph 1.

(Nuclear Facility Inspector and Nuclear Safety Inspector)

Article 67-2. Nuclear Facility Inspectors and Nuclear Safety Inspectors are assigned the Ministry of Economy, Trade and Industry.

2. Nuclear Facility Inspectors assigned in the Ministry of Economy, Trade and Industry shall engage in the affairs concerning inspection provided in Article 28 through Article 29.

3. Nuclear Safety Inspectors assigned in the Ministry of Economy, Trade and Industry shall engage in the affairs concerning inspection provided in Articles 37, Paragraph 5.

4. The necessary matters concerning the number and qualification of Nuclear Facility Inspectors and Nuclear Safety Inspectors defined by the Government Ordinance.

(Entry and Inspection, Etc.)

Article 68. The Minister of Education, Culture, Sports, Science and Technology, Minister of Economy, Trade and Industry, minister of MLT or public safety commissions of prefectures may cause their officials, as far as necessary for the enforcement of this Law (for the enforcement of this Law according to the division of business operators listed in the items of Article 64, Paragraph 3 to enter the offices, factories or places of business so as to examine their books, documents and other necessary matters, ask questions of persons concerned, and take samples of nuclear source material, nuclear fuel material and other necessary materials in the minimum of amount required for test).

2. The Minister of Education, Culture, Sports, Science and Technology, Minister of Economy, Trade and Industry or minister of MLT may cause their officials, as far as necessary for the enforcement of this law (for the enforcement of the provisions of Article 28-2, Paragraph 1 related to commercial power reactors and their related facilities: the Minister of

Economy, Trade and Industry), to enter the offices factories, or the places of business of the persons who conduct welding of the facilities specified in Article 28-2, Paragraph 1 so as to examine their books, documents and other necessary matters and ask questions of persons concerned.

5. When officials make entrance in accordance with the provisions of the preceding three paragraphs, they shall carry their identification cards with them and show them when requested by persons concerned.

6. The authority provided for in the provisions from Paragraph 1 through Paragraph 4 shall not be construed as having been granted for the purpose of criminal investigation.

(Order to the Organization)

Article 68-2. Competent minister may order the work to the Organization, when he recognize it is necessary to implement the work concerning the inspection and the work provided in paragraph 7 of previous Article appropriately.

(Administrative Protest Etc.)

Article 70. Any person dissatisfied with the disposition or the omission of inspection or verification to be implemented by the Organization in accordance with this law may file an administrative protest to the minister defined in the following subparagraphs in accordance with the classification of inspection and verification specified in the following subparagraphs in accordance with Administrative Review Law (Law No. 160, 1962):

(i) Inspection as provided in Article 61-24, Paragraph 1; the Minister of Economy, Trade and Industry.

2. An appeal of annulment for the disposition in accordance with this law shall not be filed till a decision (the decision for the administrative protest for the protest-able disposition as provided in the preceding paragraph) for the administrative protest is made.

3. The provisions provided in Article 27, Paragraph 2 of the Administrative Procedure Law shall not be applied to the action in accordance with this Law.

(Approval Etc. for Action Etc.)

Article 71. When the Minister of Education, Culture, Sports, Science and Technology, the Minister of Economy, Trade and Industry or the Minister of Land, Infrastructure, and Transport makes disposition as provided in Paragraph 1 of Article 23, Paragraph 1 of Article 23-2, Paragraph 1 of Article 26, Paragraph 1 of Article 26-2, Paragraph 1 of Article 31, Article 33 or Paragraph 1 or Paragraph 2 of Article 39, or adds the condition as provided in Article 62, Paragraph 2 (hereinafter referred to as "takes action etc." in this paragraph), the Minister of Education, Culture, Sports, Science and Technology, the Minister of Economy, Trade and Industry or the Minister of Land, Infrastructure, and Transport shall have approval of the Minister of Education, Culture, Sports, Science and Technology, the Minister of Economy, Trade and Industry or the Minister of Land, Infrastructure, and Transport in advance in accordance with the classification specified in the following subparagraphs:

(i) When the Minister of Education, Culture, Sports, Science and Technology takes disposition etc. involving a power generating reactor as provided in Subparagraph (iii) of Article 23, Paragraph 1; the Minister of Economy, Trade and Industry; and

(ii) When the Minister of Economy, Trade and Industry makes disposition etc. involving a commercial power reactor or a reactor provided in Article 23, Paragraph 1, Subparagraph (iv); the Minister of Education, Culture, Sports, Science and Technology.

2. When the Minister of Education, Culture, Sports, Science and Technology, the Minister of Economy, Trade and Industry or the Minister of Land, Infrastructure, and Transport recognizes it necessary to especially examine the particulars concerning the approval asked as provided in the preceding paragraph, the Minister of Education, Culture, Sports, Science and Technology, the Minister of Economy, Trade and Industry or the Minister of Land, Infrastructure, and Transport may demand necessary reports of the relevant reactor establisher or the foreign nuclear ship operator, or may cause their officials to enter the offices, factories or places of business of the reactor establisher or the foreign nuclear ship operator so as to examine their books, documents and other necessary matters, ask questions to persons concerned.

3. The provisions of Articles 68, Paragraph 6 and 11 shall apply mutatis mutandis to entry and inspection provided in the preceding paragraph.

15. When the Organization has implemented the inspection specified in Article 28-2, Paragraph 1 or Paragraph 4, the organization shall promptly notify the Minister of Economy, Trade and Industry of the results of inspection.

16. In the case of preceding paragraph, the Minister of Economy, Trade and Industry shall promptly notify the Minister of Education, Culture, Sports, Science and Technology of the results of inspection concerning the reactor provided in Article 23, Paragraph 1, Subparagraph (iv).

(Report to Nuclear Safety Commission)

Article 72-3. The Minister of Economy, Trade and Industry shall report to Nuclear Safety Commission quarterly of the licensing and inspection activity done concerning to the matters shown in the followings, in previous quarter, if necessary, he may ask the opinion of NSC, he will take necessary measures to prevent hazard due to reactor, nuclear fuel material and material contaminated with nuclear fuel material:

(i) Approval of the fitness-for-safety program and its alteration provided in Article37, Paragraph 1;

(ii) Approval of Design and Construction Methods provided in Article27, Paragraph 1 and Paragraph 2;

(iii) Pre-service Inspection provided in Article 16-3, Paragraph 1 and Article 28, Paragraph 1.

(iv) Welding inspection provided in Article 16-4, Paragraph 1 and Article 28-2, Paragraph 1; and

(v) Periodic facility inspection provided for in Article 16-5, Paragraph 1 and Article 29, Paragraph 1.

2. Other than reports provided in the preceding paragraph, the Minister of Economy, Trade and Industry shall report to Nuclear Safety Commission of the enforcement status of this law concerning to prevent hazard due to nuclear fuel materials and materials contaminated with nuclear fuel materials or reactors in accordance with the provisions provided in the Ordinance of the Ministry of Economy, Trade and Industry.

(Co-operation to the investigation by Nuclear Safety Commission)

Article 72-4. The reactor establisher or contractors on maintenance of reactor facilities must cooperate Nuclear Safety Commission, when it conducts investigation concerning matters relating the report which is filed in

accordance with provisions of Paragraph 1 of previous article.
(Exception from Application)
Article 73. The provisions of Article 27, Article 28 and Article 29 shall not apply to the commercial power reactors that are the reactor facilities to be inspected in accordance with the provisions of the Electricity Utilities Industry Law (Law No. 170, 1964) and the order based on the said law.
(Exception for Affairs)
Article 74-2. The Inspection concerning the safeguard shall be submitted to the officer of Ministry of Economy, Trade and Industry in accordance with the provision of Ordinance.
2. The officer of Ministry of Economy, Trade and Industry in accordance with the provision of the Ordinance may manage the affairs that can be managed by the officer of Ministry of Education, Culture, Sports, Science and Technology in accordance with the provision of Article 68, Paragraph 1, Paragraph 4, Paragraph 10 and Paragraph 11.
3. The requirement of Article 68, Paragraph 5 and Paragraph 6 shall apply mutatis mutandis to such on-the-spot inspection as prescribed in the preceding paragraph
Chapter 8 Penal Provisions
Article 77. Any person who comes under one of the following subparagraphs shall be condemned to penal servitude of not more than 3 years and/or the fine of not more than three million yen;
(iv) A person who has established reactors without the permission under Article 23,Paragraph 1;
(v) A person who has violated the order of suspension of operation of reactors provided for in Article 33, Paragraph 2; and
(vi) A person who has received a reactor or whole facilities (including a nuclear ship) including a reactor without obtaining the permission provided for in Article 39, Paragraph 1, or a nuclear ship without obtaining permission provided in Paragraph 2 of the said Article.
Article 78. Any person who comes under one of the following items shall be condemned to penal servitude of not more than 1 year and/or to the fine of not more than one million yen:
(iii) A person who, with regard to the matters for which the permission must be obtained specified in the provisions of Article 26, Paragraph 1, has changed matters provided in Article 23, Paragraph 2, Subparagraph (ii), Subparagraph (iii), Subparagraph (iv), Subparagraph (v) or Subparagraph (viii), without the permission provided for in the said paragraph;
(iv) A person who has used reactor facilities in violation of the provisions of Article 28, Paragraph 1 or Article 28-2, Paragraph 1 or Paragraph 4;
(v) A person who has violated the provisions of Article 40, Paragraph 1;
(x) A person who has violated the provisions of Article 64, Paragraph 1 or of the order based on the provisions of Paragraph 3 of the said article.
Article 78-3. When the orders for the suspension of inspection work, as provided by Article 61-37 are violated, the executives or personnel of the designated inspection organization, etc. that has committed the violation shall be punished with penal servitude for a term not exceeding 1 year or a fine not exceeding five hundred thousand yen.
Article 79. Any person who comes under one the following items shall be condemned to the fine of not more than five hundred thousand yen:
(i) A person who has violated orders based on the provisions of Article 36, Paragraph 1 or Paragraph 2;
(ii) A person who has violated the provisions of Article 37, Paragraph 1;
(iii) A person who has violated the orders based on the provisions of Article 37, Paragraph 3;
(iv) Article 12-2, Paragraph 1, Article 22-6, Paragraph 1, Article 43, Paragraph 1, and Article 43-2
(v) A person who has dismantled reactors without making a report provided for in Article 38, Paragraph 1, or who has violated the order based on the provisions of Paragraph 2 of the said article;
(vi) A person who has violated the conditions of Article 62, Paragraph 1; or
(vii) A person who has violated the provisions of Article 66, Paragraph 1, or who has violated the order based on the provisions of Paragraph 4 of the said article.
Article 80. Any person who comes under one of the following items shall be condemned to the fine of not more than three hundred thousand yen:
(i) A person who has failed to record, recorded falsely or failed to keep records, in violation of the provisions of Articles 34;
(v) A person who has failed to mail a report provided for in Article 67, Paragraph 1, or who has reported falsely; or
(vi) A person who has refused, obstructed, or evaded the entry inspection or collection of samples provided for in Article 68, Paragraph 1 or Paragraph 2, or who has made no statement or made a false statement in response to relevant questions.
Article 80-4. When any of the following violations has been committed, the executives or personnel of the designated inspection organization, etc. that has committed the violation shall be punished with a fine not exceeding two hundred thousand yen:
(i) The organization has abolished all of its inspection work, disposal confirmation work, the work of confirming the items transported in approved containers or the work of confirming the method of transportation without obtaining the permission mentioned in Article 61-36;
(ii) The organization does not have account books, does not enter records in the books or made false entry into account books in violation of the provisions of Article 61-38, Paragraph 1;
(iii) The organization has not stored account books in violation of the provisions of Article 61-38, Paragraph 2;
(iv) The organization has not made the report mentioned in Article 67, Paragraph 2 or has made false report; or
(v) The organization has refused, obstructed or evaded the entry and inspection mentioned in Article 68-2, or it has made no statement or has made false statement in response to relevant questions.
Article 81. When a representative of a juridical person, or an agent or any other employee of a juridical person or of a person has violated the provisions in the following subparagraphs with respect to the business of the juridical

person or the person, the juridical person shall be punished with such fines provided in the respective subparagraph or the person shall be punished with such fine described in the respective items, in addition to the punishment of the actual offender:

(i) Article 77, Subparagraph (iv), Subparagraph (v) or Subparagraph (vi) through Subparagraph (vii-4); fine not more than three hundred million yen; or

(ii) Article 78, Subparagraph (ii), Subparagraph (iii), Subparagraph (iv), Subparagraph (viii) (excluding provisions concerning to reactor establishers of testing and research reactors), Subparagraph (x) (excluding provisions concerning to reactor establishers of testing and research reactors), Subparagraph (xi), Subparagraph (xii), Subparagraph (xxviii), Subparagraph (xxix) or Subparagraph (xxx); fine not more than one hundred million yen.

Article 82. Any person who comes under one of the following items shall be condemned to the administrative fine of not more than one hundred thousand yen:

(v) A person who has failed to report as describe in Article 30, or reported falsely;

(vi) A person who has failed to report as described in Article 40, Paragraph 2; or

(vii) A person who has failed, without any justified reason, or return the certificate for the chief engineer of reactors, in violation of the order based on the provisions of Article 41, Paragraph 3.

Article 83. A person who has failed to report as described in Article 26, Paragraphs 2 or Article 32, Paragraph 2, shall be condemned to the fine of not more than fifty thousand yen

(2) Ordinance for the Enforcement of the Law on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors (Excerpt)

(Government Ordinance No.324, November 21, 1957)

Latest Revision: Ordinance No. 57, March 24, 2004

Chapter 2 Rules for Establishment, Operation etc. of Reactors

(Application for License for the Establishment of Reactors)

Article 6. Such license as provided in Article 23, Paragraph 1 of the Law shall be obtained for every factory or place of business (in the case of a nuclear reactor being installed in a ship, every ship) in which a nuclear reactor is to be installed.

2. Persons proposing to obtain such permission as mentioned in the preceding paragraph shall make an application together with their plan for raising the funds necessary for the construction of a reactor and other papers specified by the order of the competent ministry.

(Reactor at the Stage of Research and Development)

Article 6-2. Such reactors as determined by government ordinance as provided in Article 23, Paragraph 1, Subparagraph (iv) of the Law shall for the time being be listed among the reactors of a type identical with that of those which had by January 3, 1979, been given such license as provided in Article 23, Paragraph 1 of the Law before its revision under the Law for Partial Revision of the Atomic Energy Basic Law and Others (Law No. 86, 1978) or with that of those (referred to as "special reactors" in the following paragraph) which had by that time been scheduled for construction under the basic program for the development of power reactors specified in Article 25, Paragraph 1 of the Power Reactor and Nuclear Fuel Development Corporation Law (Law No.73, 1967) for purposes as reactors designed for electric power generation, provided that those designed for electric power generation shall come under any of the following Subparagraph (i) and Subparagraph (ii).

(i) Fast breeder reactors (the fast breeder reactor as referred to in Article 2, Paragraph 1 of the Power Reactor and Nuclear Fuel Development Corporation Law (Law No. 73, 1967)).

(ii) Heavy water moderated, boiling light water cooled reactors (reactors using heavy water for moderator and boiling light water for coolant). (Application for Permission for Alterations affecting the Establishment of Reactors)

Article 8. Reactor establisher, when proposing to obtain such license for alterations provided in Article 26, Paragraph 1 of the Law, shall, as specified by the order of the competent ministry, submit to the competent minister an application in which the following particulars are entered:

(i) Their names or titles, domiciles and if they are juridical persons, the name of their representative;

(ii) The name and address of the factory or place of business dependent on the alteration;

(iii) Details of the alteration;

(iv) Reason for the alteration; and

(v) If the alteration involves construction work, the plan for the work.

(Reactor Facilities Subject to Periodic Inspection of Installation)

Article 10. Those determined by government ordinance of such reactor facilities provided in Article 29, Paragraph 1 of the Law shall be reactors, nuclear fuel material handling facilities, storage facilities, reactor cooling system facilities, instrumentation and control system facilities, disposal facilities, radiation management facilities, reactor containment facilities, emergency power supply facilities and other facilities attached to reactors determined by order of the competent ministry.

(Application for Permission of Transfer of Reactors)

Article 12. Persons proposing, in accordance with the provisions of Article 39, Paragraph 1 of the Law, to obtain license for a reactor or facilities as a whole including a reactor, shall, as specified in the order of the competent ministry, submit to the competent minister an application in which the following particulars are entered:

(i) Their names or titles, domiciles and if they are juridical persons, the name of their representative;

(ii) The names or titles and domiciles of their opponents, and if they are juridical persons, the name of their representative;

(vi) Purpose of use;

(vii) Type, thermal power and number of reactors;
(vi) The name and address of the factory or place of business where the reactor is installed;
(vii) Location, structure and equipment of reactor facilities;
(vii) The type of nuclear fuel material for use as fuel in the reactor and its annual amount scheduled for use; and
(viii) Method of the disposal of spent fuel.
(Reporting)
Article 22. The Minister of Economy, Trade and Industry, in accordance with the provisions of Article 67, Paragraph 1 of the Law, may cause refining business operators, fabrication business operator, commercial nuclear reactor operator (reactor establishers specified in either item 1 or 4 of Article 23, Paragraph 1 of the Law, the same to the following paragraph) spent fuel storage business operator, reprocessing business operator and disposal business operator etc. to report on, in addition to the particulars mentioned in the preceding paragraph, such particulars as listed in the left column of the following Table with respect to such persons as listed correspondingly in the lower column of the Table.

Establishers of commercial power reactors, etc.	(i) Status of inventory or the change in quantity of nuclear fuel materials. (ii) The quantity of nuclear fuel materials inserted as fuel and its takeout. (iii) The burn-up of nuclear fuel material. (iv) The operating time and thermal power of the reactor. (v) Status of radiation management. (vi) Status of accidents damaging to persons in the reactor facilities. (vii) Status of failures (with the exception of such failure may cause little trouble to the operation of reactor) in the reactor facilities. (viii) Status of disposal or transport of nuclear fuel material, etc. outside of the facilities or place of business in which reactor facilities are established. (ix) Status of accidents damaging to persons in the course of disposal or transport of nuclear fuel material, etc. outside of the factories or place of business in which reactor facilities are established.

6. The Minister of Education, Culture, Sports, Science and Technology, the Minister of Economy, Trade and Industry or the Minister of MNLT may, under the provisions of Article 67, Paragraph 2 of the Law, cause designed inspection organization, etc. to report on the matters concerning the operation of their business.
(The Number and Qualification of Nuclear Facility Inspector and Nuclear Safety Inspector)
Article 23.
2. The number of Nuclear Facility Inspector of Ministry of Economy, Trade and Industry shall be one hundred and sixty-three.
3. The Nuclear Facility Inspector of Ministry of Economy, Trade and Industry shall have enough knowledge and experience on structure, performance and fitness for safety of nuclear facilities.
4. The Nuclear Safety Inspector of Ministry of Economy, Trade and Industry shall have enough knowledge and experience on the measures to be taken by the reactor establisher and spent fuel storage business operator in order to ensure the fitness for safety, structure and performance of nuclear facilities.

(3) Rules Concerning Report to Nuclear Safety Commission Provided in Article 72-3, Paragraph 2 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Ordinance No. 2 of the Ministry of Education, Culture, Sports, Science and Technology, Ministry of Economy, Trade and Industry and Ministry of Land, Infrastructure, and Transportation, March 31, 2003)

Rules Concerning Report to Nuclear Safety Commission Provided in Article 72-3, Paragraph 2 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Law 166, 1957) are provided as followings in accordance with Article 72-3, Paragraph 2 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors.

Article 1. In accordance with the provision of Article 72-3, Paragraph 2 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (hereinafter referred to as "the Law"), the Minister of Education, Culture, Sports, Science and Technology, the Minister of Economy, Trade and Industry or the Minister of Land, Infrastructure, and Transport shall make quarterly reports to Nuclear Safety Commission of the implemented inspection, verification and licensing activities in the previous quarter concerning to the items described in the followings:
(i) Inspections provided in Article 12, Paragraph 5, Article 22, Paragraph 5, Article 37, Paragraph 5, Article 43-20, Paragraph 5, Article 50, Paragraph 5, Article 51-18, Paragraph 6 and Article 56-3, Paragraph 5 of the Law;
(ii) Verification provided in Article 51-6, Paragraph 1 of the Law; and
(iii) Permission provided in Article 52, Paragraph 1 of the Law and Article 55, Paragraph 1 of the Law.
Article 2. Other than particulars specified in the preceding article, in accordance with the provision of Article 72-3, Paragraph 2 of the Law, the Minister of Education, Culture, Sports, Science and Technology, the Minister of Economy, Trade and Industry or the Minister of Land, Infrastructure or Transport shall report to Nuclear Safety Commission of the enforcement status concerning the request of report and entry and inspection described in the following subparagraphs promptly after the enforcement:
(i) Request of the report provided in Article 67, Paragraph 1 of the Law (limited to those relevant to radiation control, accident resulting in injury or death or failure conditions of facilities for preventing hazards due to nuclear fuel materials, materials contaminated with nuclear fuel materials or reactors); and

(ii) Entry and inspection provided in Article 68, Paragraph 1 and Paragraph 2 of the Law (limited to those relevant to preventing hazards due to nuclear fuel materials, materials contaminated with nuclear fuel materials or reactors).

(4) Ordinance for Implementation of Inspection Etc. by Japan Nuclear Energy Safety Organization in Accordance with the Provision of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors
(Ordinance No. 112 of Ministry of Economy, Trade and Industry, September 24, 2003)

In accordance with provisions provided in Article 66-2, Paragraph 3 and Article 66-3 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Law 166, 1957), and for the purpose of enforcement of the Law, Ordinance for Implementation of Inspection Etc. by Japan Nuclear Energy Safety Organization in accordance with the provision of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors is as provided for in the followings.

(Definition)
Article 1. The meaning of terms used in this ordinance follows that of terms used in the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (hereinafter referred to as "the Law").
(Person who Implements Inspection Affairs and Welding Inspection)
Article 2. The person who implements a part of affairs concerning inspection provided in Article 16-3, Paragraph 3 of the Law, Article 28, Paragraph 3 of the Law and Article 16-5, Paragraph 3 of the Law (including the case to apply mutatis mutandis to Article 29, Paragraph 3 of the Law) (hereinafter referred to as "Inspection Affairs") and the inspection provided in Article 61-24, Paragraph 1 of the Law (hereinafter referred to as "Inspection") that shall be performed by Japan Nuclear Energy Safety Organization (hereinafter referred to as "the Organization") shall be a personnel of the Organization and qualified by one of the following subparagraphs specified in the order of competent ministry provided in Article 66-3 of the Law, and shall be appointed by the president of the Organization (hereinafter referred to as "Nuclear Facility Examiner"):
(i) A person who majored in a subject concerning science or engineering at the college (excluding junior college, same as in Subparagraph (i) and Subparagraph (ii) of the following article and Article 5, Subparagraph (i)) as provided in the School Education Law (Law No. 26, 1947) and graduated from it or a person who is recognized to have knowledge and experience equal to or more than the former and have total of 2 years or more experience in the fitness-for-safety affairs and other administrative affairs concerning fitness for safety (hereinafter referred to as "fitness-for-safety administrative affairs") at a processing facility, a reactor facility, a reprocessing facility, a waste disposal facility, a specific waste management facility, a use facility, etc. (hereinafter referred to as "Nuclear Facility") or have total of 3 years or more experience in affairs concerning design, construction, maintenance, inspection, quality assurance or operation of the Nuclear Facility (hereinafter referred to as "fitness-for-safety affairs"), and finished training as provided by the Minister of Economy, Trade and Industry;
(ii) A person who majored in a subject concerning science or engineering at the junior college or the tertiary college provided in the School Education Law and completed the course concerning the subject described above or a person who is recognized to have knowledge and experience equal to or more than the former and have total of 4 years or more experience in fitness-for-safety administrative affairs or have total of 5 years or more experience in fitness-for-safety affairs, and finished training as provided by the Minister of Economy, Trade and Industry;
(iii) A person who has total of 6 years or more experience in fitness-for-safety administrative affairs or have total of 7 years or more experience in fitness-for-safety affairs, and finished training as provided by the Minister of Economy, Trade and Industry;
(iv) A person who has a career as a Nuclear Facility Inspector;
(v) A person who has a career as a Electric Structure Inspector provided in Article 104, Paragraph 2 of Electricity Utilities Industry Law (Law 170, 1964) or a career as Electric Structure Inspection Personnel (a person specified in Article 3 of Ordinance for Implementation of Inspection etc. by Japan Nuclear Energy safety Organization in accordance with the provision of Electric Utilities Industry Law (the Ordinance No. 111 of Ministry of Economy, Trade and Industry, 2003, hereinafter referred to as "Ministry Ordinance for Inspection"), and the same shall be applied, hereinafter), and finished training as provided by the Minister of Economy, Trade and Industry; or
(vi) A person who the Minister of Economy, Trade and Industry recognized to have knowledge and experience equal to or more than the persons described in the preceding subparagraphs.
(Person who Implements Welding Inspection)
Article 3. The person who implements welding inspection that shall be performed by the Organization shall be a personnel of the Organization, and qualified by one of the following subparagraphs specified in the order of competent ministry provided in Article 66-3 of the Law, and shall be appointed by the president of the Organization (hereinafter referred to as "Welding Inspector"):
(i) A person who majored in a subject concerning welding engineering, nuclear engineering, naval architecture, mechanical engineering, metal engineering, electric engineering and chemical engineering at the college provided in the School Education Law and graduated from it, and has total of 2 years or more experience in practice of construction or inspection of Nuclear Facilities, and finished training as provided by the Minister of Economy, Trade and Industry;
(ii) A person who majored in a subject concerning science or engineering (excluding particulars described in the preceding subparagraph) at the college provided in the School Education Law and graduated from it, and has total of 4 years or more experience in practice of construction or inspection of Nuclear Facilities, and finished training as

provided by the Minister of Economy, Trade and Industry;

(iii) A person who majored in a subject concerning welding engineering, nuclear engineering, naval architecture, mechanical engineering, metal engineering, electric engineering or chemical engineering at the junior college or the tertiary college provided in the School Education Law and completed the course concerning subject described above, and has total of 4 years or more experience in practice of construction or inspection of Nuclear Facilities, and finished training as provided by the Minister of Economy, Trade and Industry;

(iv) A person who has total of 6 years or more experience in practice of construction or inspection of Nuclear Facilities, and finished training as provided by the Minister of Economy, Trade and Industry;

(v) A person who has a career as a Nuclear Facility Inspector;

(vi) A person who has a career as Electric Structure Inspector provided in Article 104, Paragraph 2 of the Electricity Utilities Industry Law or a career as Electric Structure Inspection Personnel;

(vii) A person who has experience in implementation for welding inspection, inspection provided in Article 61-24, Paragraph 2 of the Law, inspection provided in subparagraphs of Article 61-24, Paragraph 2 of the Law before amendment (hereinafter referred to as "the Old Law") provided in Article 8 of supplementary provision of the Law for Japan Nuclear Energy Safety Organization (Law No. 179, 2002) or old welding inspection (inspection provided in Article 52, Paragraph 1 of Electricity Utilities Industry law before amendment provided in Article 9 of the Law on Consolidation and Rationalization for Standard, Licensing System Etc. concerning Ministry of International Trade and Industry (Law No.121, 1999), the same shall be applied, hereinafter);

(viii) A person who has experience in practice of the review provided in Article 52, Paragraph 3 of the Electricity Utilities Industry Law; or

(ix) A person who the Minister of Economy, Trade and Industry recognized to have knowledge and experience equal to or more than the persons described in the preceding subparagraphs.

(Person who Implement Verification Affairs for Waste Disposal Facilities)

(Particulars Stipulated in Rules for Affairs)

Article 7. Particulars that shall be stipulated in rules for affairs concerning Inspection Affairs specified in the order of competent ministry provided in Article 66-2, Paragraph 3 of the Law shall be particulars shown in the followings:

(i) The name of the place of business and the area where the place of business implements Inspection Affairs;

(ii) Particulars for office hours that Inspection Affairs are implemented and day off;

(iii) Particulars for duties of a Nuclear Facility Examiner;

(iv) Particulars for appointment and dismissal and assignment of a Nuclear Facility Examiner.

(v) Particulars for implementation method for Inspection Affairs;

(vi) Particulars for preservation of books and documents for Inspection Affairs;

(vii) Particulars for notifying the competent minister of the results of Inspection Affairs; and

(viii) Other particulars necessary to implement Inspection Affairs.

2. Particulars that shall be stipulated in rules for affairs concerning welding inspection specified in the order of competent ministry provided in Article 66-2, Paragraph 3 of the Law shall be particulars shown in the followings:

(i) The name of the place of business and the area where the place of business implements welding inspection work;

(ii) Particulars for office hours that welding inspection is implemented and day off;

(iii) Particulars for method of collecting charge;

(iv) Particulars for duties of nuclear Welding Inspector;

(v) Particulars for appointment and dismissal and assignment of nuclear Welding Inspector;

(vi) Particulars for implementation method for welding inspection;

(vii) Particulars for method of certification that the results of welding inspection are acceptable;

(viii) Particulars for preservation of books and documents for welding inspection; or

(ix) Other particulars necessary to implement welding inspection.

3. The provisions of subparagraphs of Paragraph 1 shall apply mutatis mutandis to particulars that shall be stipulated in rules concerning verification affairs for waste disposal facilities in accordance with the order of competent ministry provided in Article 66-2, Paragraph 3 of the Law. In the case, "Inspection Affairs" shall be translated into "verification affairs for waste disposal facility", and "Nuclear Facility Examiner" shall be translated into "waste disposal facility verification personnel" in these provisions.

4. The provisions of subparagraphs of Paragraph 2 shall apply mutatis mutandis to particulars that shall be stipulated in rules for affairs concerning disposal verification in accordance with the order of competent ministry provided in Article 66-2, Paragraph 3 of the Law. In the case, "welding inspection" shall be translated into "disposal verification", "Welding Inspector" shall be translated into "disposal verification personnel", and "the results of welding inspection are acceptable" shall be translated into "disposal was verified" in these provisions.

5. The provisions of subparagraphs of Paragraph 2 shall apply mutatis mutandis to particulars that shall be stipulated in rules for affairs concerning transporting material verification in accordance with the order of competent ministry provided in Article 66-2, Paragraph 3 of the Law. In the case, "welding inspection" shall be translated into "verification for transporting material", "Welding Inspector" shall be translated into "transporting material verification personnel", and "the results of welding inspection are acceptable" shall be translated into "transporting material was verified" in these provisions.

(Reporting)

Article 8. When the Organization implemented welding inspection, disposal verification and verification for transporting material, the Organization shall promptly reports to the Minister of Economy, Trade and Industry of the results with inspection result report in Form No.1 for welding inspection, disposal verification result etc. report in Form No. 2 for disposal verification and transporting material verification result report in Form No. 3 for transporting material verification.

However, if the results were notified in accordance with the provision provided in Article 71, Paragraph 15 of the Law, the provisions in this article are not applicable.
Article 9. Notification provided in Article 71, Paragraph 15 of the Law shall be notified with inspection result notification in Form No.1.
(Identification Card for Entry and Inspection, Etc. Implemented by the Organization)
Article 10. Identification card carried by the Organization personnel making entry and inspection, etc. provided in Article 68, Paragraph 7 of the Law shall be in Form No. 4.

(5) The Rule for the Installation, Operation, etc. of Commercial Nuclear Power Reactors (Excerpt)
(Ordinance No.77 of the Ministry of International Trade and Industry, December 28, 1978)
Latest Revision: Ordinance No.113 of the Ministry of Economy, Trade and Industry, September 24, 2003

(Definitions)
Article 1. The meaning of the terms used in this ministerial order are after tat of the terms used in the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (herein after called Law)
2. In this ministerial order, the meaning of the following terms shall be as defined in the following respective items:
(iv) "Control zones" means the reactor chamber, the spent fuel storage facility, the radioactive waste disposal facility, etc. where there is a hazard that the dose equivalent may exceed the limit specified by the Minister of Economy, Trade and Industry, and that the concentration of radioactive material in the air may exceed the level specified by Ministry of Economy, Trade and Industry or that the density of radioactive material on the surface of objects contaminated by radioactive material may exceed the level specified by the Minister of Economy, Trade and Industry;
(vi) "Environmental monitoring area" means that area surrounding control zones, the outside of which there is no possibility of the dose equivalent at any location exceeding the limit of the dose equivalent specified by the Minister of Economy, Trade and Industry.
(Application of License for Establishment of Nuclear Reactor)
Article 2. Pursuant to Article 23, Paragraph 2 of the Law, the entries in the application for the license for the installation of nuclear reactors shall be made in accordance with the following subparagraphs:
(i) For the thermal power of a nuclear reactor under Article 23, Paragraph 2, Subparagraph (iii) of the Law, the continuous maximum thermal power shall be entered;
(ii) For the location, structure and equipment of a nuclear reactor facility under Article 23, Paragraph 2, Subparagraph (iv) of the Law, the entry shall be made under the following divisions;
A. Nuclear reactor facility locations,
(a) Site area and shape
(b) Locations of main nuclear reactor facilities within the site
B. Nuclear reactor facility general structure,
(a) The aseismatic structure
(b) Other main structures
C. Reactor core structure and equipment,
(a) Reactor core
(1) Structure
(2) Maximum amount of fuel assemblies to load into the core
(3) Main nuclear limitation values
(4) Main thermal limitation values
(b) Fuel assembly
(1) Fuel material type
(2) Cladding type
(3) Fuel element structure
(4) Fuel assembly structure
(5) Maximum burn-up
(c) Moderator and reflector types
(d) Reactor vessel
(1) Structure
(2) Maximum operating pressure and temperature
(e) Radiation shield structure
(f) Other main items
D. Nuclear fuel material handling and storage facility structure and equipment,
(a) Nuclear fuel material handling equipment structure
(b) Nuclear fuel material storage equipment structure and storage capacity
E. Reactor cooling system facility structure and equipment,
(a) Primary cooling equipment
(1) Coolant type
(2) Number and structure of main components and piping units
(3) Coolant temperature and pressure
(b) Secondary cooling equipment
(1) Coolant type
(2) Number and structure of main components

(c) Emergency cooling equipment
(1) Coolant type
(2) Number and equipment of main components and piping units
(d) Other main items
F. Instrumentation and control facility structure and equipment,
(a) Instrumentation
(1) Nuclear instrumentation types
(2) Other main instrumentation types
(b) Safety protection circuits
(1) Reactor shutdown circuit type
(2) Other main safety protection circuit types
(c) Control equipment
(1) Number and structure of control material units
(2) Number and structure of control material units drive equipment
(3) Reactivity control capability
(d) Emergency control equipment
(1) Number and structure of control material units
(2) Number and structure of main components
(3) Reactivity control capability
(e) Other main items
G. Radioactive waste disposal facility structure and equipment,
(a) Gaseous waste disposal facility
(1) Structure
(2) Waste disposal capacity
(3) Exhaust vent location
(b) Liquid waste disposal equipment
(1) Structure
(2) Waste disposal capacity
(3) Discharge port location
(c) Solid waste disposal equipment
(1) Structure
(2) Waste disposal capacity
H. Radiation management facility structure and equipment,
(a) Indoor management main equipment types
(b) Outdoor management main equipment types
I. Reactor containment facility structure and equipment, and
(a) Structure
(b) Design pressure, temperature and leakage rate
(c) Other main items
J. Structure and equipment of other facilities attached to the reactor.
(a) Structure of emergency power supply
(b) Other main items

(iii) For the construction plan provided in Article 23, Paragraph 2, Subparagraph (iv) of the Law, the construction sequence and schedule shall be entered;

(iv) For the nuclear fuel material type and the yearly projected consumption amount of the nuclear fuel material which is to be used as the fuel of the reactor provided in Article 23, Paragraph 2, Subparagraph (vii) of the Law, their yearly projected loading amount and burn-up shall be entered for the respective material types; and

(v) For the spent fuel disposal method provided in Article 23, Paragraph 2, Subparagraph (viii) of the Law, the parties to whom it is to be sold, loaned or returned, and the method thereof, or its disposal method shall be entered.

2. The documents specified by the order of the competent ministry as provided in Article 6, Paragraph 2 of the Ordinance for the Enforcement of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (hereinafter referred to as "the Ordinance") shall be as specified in the following subparagraphs:

(i) Expository documents related to the purpose of use of the reactor;

(ii) Expository documents related to the thermal power of the reactor;

(iii) Documents describing the fund amount required for and the procuring plan for the construction;

(iv) Documents describing the procurement plan for the nuclear fuel material required for the operation of the reactor.

(v) The expository documents related to the technical capability for the installation and operation of the reactor facility;

(vi) Expository documents on the meteorological, ground, hydraulic, seismic, social environment and other conditions of the location where the reactor facility is to be installed;

(vii) A 1:200,000 map for the area covering the distance of 20 km from the location of the planned reactor or its main related facilities, and a 1:50,000 map for the area covering the distance of 5 km from the said location;

(viii) Expository documents related to the safety design of the reactor facility;

(ix) Expository documents related to the management of the radiation exposure to be caused by the nuclear fuel material and by the objects contaminated by the nuclear fuel material, and on the disposal of the radioactive waste;

(x) Expository documents related to the types, levels, impacts, etc. of reactor accidents to be assumed to occur in the event of operational error of the reactor, of the faults of the machinery or devices, of earthquakes, of fire, etc.; and

(xi) In the case of a juridical person, the articles of association or the endowment, the abridged copies of the register and the

recent inventory, balance sheet and profit and loss statement

3. The number of copies for the application as specified under Paragraph1 shall be one original and two duplicates.

(Pre-service Inspection Performed by the Organization)

Article 3-6-2. The part of affairs concerning inspections that the Minister of Economy, Trade and Industry shall make Japan Nuclear Energy Safety Organization (hereinafter referred to as "the Organization") perform in accordance with provisions of Article 16-3, Paragraph 3 of the Law, which is applied mutatis mutandis to Article28, Paragraph 3 of the Law, shall be particulars provided in the following subparagraphs:

(i) The inspection concerning particulars provided in Article 3-5, Subparagraph (i) and Subparagraph (ii); and

(ii) The inspection concerning particulars provided in Article 3-5, Subparagraph (iii) and Subparagraph (iv) (excluding inspection for the ventilation equipment to see if the performance is in conformity with the technical standard provided in Subparagraph (iii) and Subparagraph (iv) of the preceding article).

(Notification for Pre-service Inspection Performed by the Organization)

Article 3-6-3. When the Minister of Economy, Trade and Industry received the application provided in Article 3-4, Paragraph 1 or the notification provided in the said article, Paragraph 2, the Minister of Economy, Trade and Industry shall notify the Organization of the notification described following particulars provided in the following subparagraphs for the part of affairs concerning inspections that the Organization shall perform in accordance with Article 16-3, Paragraph 3 of the Law that is applied mutatis mutandis to the application provided in Article28, Paragraph 3 of the Law:

(i) Names or titles, address, and if they are juridical persons, the name of their representative who undergo the inspection;

(ii) The name and address of the factory or place of business to undergo the inspection;

(iii) The date when the inspection is undergone;

(iv) The place where the inspection is undergone;

(v) Objects of the inspection; and

(vi) Inspection methods,

2. The notification provided in the preceding paragraph shall be attached with copies of documents shown in the following subparagraphs:

(i) The application provided in Article 3-2, Paragraph 1 and the annex provided in the said article, Paragraph 2 or the application provided in Article 3-3, Paragraph 1 and the annex provided in the said article, Paragraph 2; or

(ii) The application provided in Article 3-4, Paragraph 1 and the documents concerning the notification provided in the said article, Paragraph 2.

3. When any of the particulars described in the notification provided in Paragraph 1 has been altered, the Minister of Economy, Trade and Industry shall promptly notify the Organization of the alteration.

(Notification on Results of Pre-service Inspection)

Article 3-6-4. The notification, provided in Article 16-3, Paragraph 4 of the Law that is applied mutatis mutandis to Article28, Paragraph 3 of the Law, shall describe particulars of the following items:

(i) Names or titles, address, and if they are juridical persons, the name of their representative who undergone the inspection;

(ii) The name and address of the factory or place of business to be undergone the inspection;

(iii) The date when the inspection is undergone;

(iv) The place where the inspection is undergone;

(v) Objects of the inspection;

(vi) Inspection methods; and

(vii) Inspection Results.

(Certificate of Compliance for Pre-service Inspection)

Article 3-7. If the results of the inspection provided in Article 28, Paragraph 1 of the Law are decided to be acceptable, the Minister of Economy, Trade and Industry shall issue a certificate of compliance of the Pre-service Inspection to the application concerned.

(Nuclear Facilities that Undergo Welding Inspection)

Article 3-8. The Nuclear Facilities that is defined in the Ordinance of the Ministry of Economy, Trade and Industry provided in Article 28-2, Paragraph 1 of of the Law shall be as shown in the following subparagraphs:

(i) Vessels that belong to the radiation management facility or adjunct facilities to reactors provided in Article 2, Paragraph 1, Subparagraph (ii), J of (excluding emergency power supply facilities, hereinafter referred to as "Adjunct Facilities" in this article), and are used as equipment important to safety in an emergency;

(ii) Vessels that belong to the reactor containment facility;

(iii) Piping units that belong to the radiation management facility or attached facilities, and are used as equipment important to safety in an emergency (excluding piping units provided in the following subparagraphs);

(iv) Piping units that are installed in a reactor containment, and the part of the piping units that lead to the stop valve installed most close to the containment;

(v) Vessels that belong to the radioactive waste disposal facility, radiation management facility or adjunct facility (excluding vessels provided in Subparagraph (i)) or piping units belong to those facilities of which outer diameters exceed 61mm (100mm for piping units used below 98kPa of the maximum operating pressure), and the contained radioactive material concentration in the piping units is 37mBq per cubic centimeters or more (37kBq per cubic centimeters for the contained radioactive material in liquid); and

(vi) Vessels that belong to the radioactive waste disposal facility, radiation management facility or adjunct facilities (excluding vessels provided in Subparagraph (i)) or piping units belong to those facilities of which outer diameters exceed 150 millimeters (excluding piping units provided in Subparagraph (iii) and Subparagraph (iv), and the contained radioactive material concentration in the piping units is below 37mBq per cubic centimeters (37kBq per

cubic centimeters for the contained radioactive material in liquid), and welded to the part subjecting to the pressure exceeding the pressure (hereinafter referred to as “pressure resistant part”) provided for in the followings;

A. The maximum operating pressure is1960kPa for vessels or piping units used for water, and the maximum operating temperature of the vessels or piping units is below 100 degrees,
B. The maximum operating pressure is 98kPa for vessels with exception of the vessels provided in A, or
C. The maximum operating pressure is 980kPa for piping units with exception of the piping units provided in A (490kPa for the part of longitudinal joint).

(Application for Welding Inspection)

Article 3-9. A person, who wishes to undergo welding inspection for Nuclear Facilities provided in the preceding article in accordance with Article 28, Paragraph 1 of the Law, shall submit the application to the Organization in accordance with rules for affairs provided by the Organization in accordance with the provision of Article 66-2, Paragraph 1 of the Law.

(Implementation of Welding Inspection)

Article 3-10. Welding inspection, provided in Article 28-2, Paragraph 1 of the Law, shall be implemented for the process provided in following subparagraphs:

(i) When welding works are carried out (excluding the case that the work concerning seal welding for vessels or piping units provided in Article 3-8, Subparagraph (vi) of and the Minister of Economy, Trade and Industry approved to use vessels or piping units without welding inspection because there is no problem from a view point of standardization of welding works, standardization of materials used for welding, etc.);
(ii) When the condition is ready to implement the nondestructive inspection for weld where nondestructive inspection is required by the technical standard (hereinafter referred to as “Technical Standard for Welding”) provided in Article 28-2, Paragraph 3, Subparagraph (ii) of the Law;
(iii) When the condition is ready to implement the mechanical examination for the butt weld in accordance with the Technical Standard for Welding; or
(iv) When the condition is ready to implement the pressure test (excluding the case involving the seal welding for vessels or piping units provided in Article 3-8, Subparagraph (vi)).

(The Case Welding Inspection is not Necessary)

Article 3-11. The case defined by the Ordinance of the Ministry of Economy, Trade and Industry, provided in the proviso of Article 28-2, Paragraph 1 of the Law, shall be the case to use vessels or piping units provided in Article 3-8, Subparagraph (vi) with only seal welding (including the case that only the new welding is implemented for pressure resistant part).

Article 3-12. A person who wishes to obtain approval provided in Article 28-2, Paragraph 2 of the Law shall submit the application describing particulars provided for in the followings to the Minister of Economy, Trade and Industry for every factory where welding is implemented:

(i) The name or title and the address, and in the case of a juridical person, the name of its representative;
(ii) The name of the factory where welding is to be implemented;
(iii) The type and capacity of welding equipment;
(iv) The kind of implementing methods of the welding; and
(v) The name of the person who implement the welding and the scope of implementation of welding methods that the person adopts.

2. Documents that clarify particulars provided for in the followings shall be attached to the application provided in the preceding paragraph:

(i) Welding equipment;
(ii) Implementing welding methods; and
(iii) The knowledge and skill of the person who implements the welding.

3. When the Minister of Economy, Trade and Industry recognizes that the welding methods concerning the application for approval provided in Paragraph 1 falls under the following subparagraphs, the Minister of Economy, Trade and Industry shall permit the welding provided in the said paragraph:

(i) The type and capacity of welding equipment using welding methods concerning the application are appropriate to implement the welding;
(ii) The welding methods to be implemented are appropriate to ensure the weld strength; and
(iii) The person who implements the welding has adequate knowledge and skill for the welding using welding methods that the person adopts.

4. The number of copies for the application provided in Paragraph 1 shall be one original.

(Welding Inspection for Imports)

Article 3-13. A person who wishes to undergo welding inspection for the weld of imported Nuclear Facilities provided in Article 3-8 with welds in accordance with provisions of Article 28-2, Paragraph 4 of the Law shall submit the application to the Organization in accordance with rules for affairs provided by the Organization in accordance with the provision of Article 66-2, Paragraph 1 of the Law.

(Certificate of Compliance for Welding Inspection)

Article 3-14. If the results of welding inspection implemented in accordance with Article 28-2, Paragraph 1 or Paragraph 4 of the Law are decided to be acceptable, the Organization shall issue a certificate of compliance for welding inspection and indicate it on the welded vessels or piping units with engraved marks or the alternative.

(Application for the Periodic Inspection of Facilities)

Article 3-15. A person who wishes to undergo the inspection of performance of the Nuclear Facilities in accordance with the provision provided in Article 29, Paragraph 1 of the Law shall submit the application describing particulars provided for in the followings to the Minister of Economy, Trade and Industry:

(i) Names or titles, address, and if they are juridical persons, the name of their representative;
(ii) The name and address of the factory or place of business where the reactor is installed;

(iii) The name of Nuclear Facilities to be undergone the inspection; and
(iv) The items of the inspection and the date to be implemented.
2. When the particulars described in the application provided in the preceding paragraph has been altered, the alteration shall be notified promptly to the Minister of Economy, Trade and Industry.
3. The number of submission of the application described in Paragraph 1and the notification described in the preceding paragraph shall be one original and one duplicate.
(Periodic Inspection of Facility Implemented by the Organization)
Article 3-15-2. The part of affairs concerning inspection, which the Minister of Economy, Trade and Industry shall make the Organization perform in accordance with Article 16-5, Paragraph 3 of the Law that is applied mutatis mutandis to Article 29, Paragraph 3 of the Law, shall be the inspection to see if the performance is in conformity with the technical standard provided in subparagraphs of Article 3-17 (excluding the inspection for ventilation equipment).
(Notification for Periodic Inspection of Facility Performed by the Organization)
Article 3-15-3. When the Minister of Economy, Trade and Industry receives the application provided in Article 3-15, Paragraph 1 or the notification provided in the said article, Paragraph 2, the Minister of Economy, Trade and Industry shall notify the Organization of notification describing the following particulars provided in the followings for the part of affairs concerning the inspection that the Organization shall perform in accordance with Article 16-5, Paragraph 3 of the Law, which is applied mutatis mutandis to Article 29, Paragraph 3 of the Law:
(i) Names or titles, address, and if they are juridical persons, the name of their representative who undergo the inspection;
(ii) The name and address of the factory or place of business where the inspection is to be implemented;
(iii) The date when the inspection is to be implemented;
(iv) The place where the inspection is to be implemented;
(v) Objects of the inspection; and
(vi) Inspection methods.
6. The notification provided in the preceding paragraph shall be attached with copies of documents provided in the followings:
(i) In the case that the adjunct facility of the reactor that has obtained approval in accordance with Article 27, Paragraph 1 of the Law is installed after decommissioning in accordance with the provision of Article 38, Paragraph 1 of the Law; the application etc. and their annexes; or
(ii) The application provided in Article 3-15, Paragraph 1 and the documents concerning the notification provided in Paragraph 2 of the said article.
3. When any of the particulars described in the notification provided in Paragraph 1 has been altered, the Minister of Economy, Trade and Industry shall promptly notify the Organization of the alteration.
(Applying Mutatis Mutandis)
Article 3-15-4. The provision provided in Article 3-6-4 is applied mutatis mutandis to the periodic inspection of facilities provided in Article 29, Paragraph 1 of the Law. In the case, “Article 16-3, Paragraph 4 of the Law that is applied mutatis mutandis to Article28, Paragraph 3 of the Law” shall be translated into “Article 16-5, Paragraph 4 of the Law that is applied mutatis mutandis to Article 29, Paragraph 3 of the Law”.
(Certificate of Compliance for the Periodic Inspection of Facilities)
Article 3-16. If the results of the periodic inspection of facilities provided in Article 29, Paragraph 1 of the Law are decided to be acceptable, the Minister of Economy, Trade and Industry shall issue certificate of compliance concerning the periodic inspection of the facility.
(Technical Standards for the Periodic Inspection of Facilities)
Article 3-17. Technical standards for the performance provided in Article 29, Paragraph 2 of the Law shall be particulars provided in the followings:
(i) The adjunct facilities of the reactor that have obtained approval in accordance with Article 27, Paragraph 1 of the Law after decommissioning in accordance with Article 38, Paragraph 1 of the Law;
  A. The performance is in conformity with the technical standards provided in subparagraphs of Article 3-6; and
  B. Capability for protecting leakage from the adjunct facilities of the reactor and other performances shall be maintained in the condition that the Minister of Economy, Trade and Industry decided the results for the Pre-service Inspection provided in Article 28 of the Law to be acceptable, or
(ii) Nuclear Facilities other than the facilities provided in the preceding subparagraphs; Capability for protecting leakage from the Nuclear Facilities and other performances necessary to maintain after decommissioning shall be in conformity with the technical standards provided in Ordinance of Establishing Technical Standards for Nuclear Power Generation Equipment (Ordinance No. 62 of Ministry of International Trade and Industry, 1965).
(Operation Plan)
Article 4. The operation plan of the reactor as specified in Article 30 of the Law shall be prepared for each reactor, using Form 1, and the operation plan for three years starting from April 1 of the relevant year shall be submitted by January 31 of the year preceding the relevant year, every year after the year (each year from April 1 to March 31 of the following year, the same applying hereinafter) in which the scheduled day of operation commencement belongs.
2. The operation plan for the case where a reactor installation license, or a license for alteration under Article 26, Paragraph 1 of the Law is received between Feb.1 and March 31, and the operation is to be started within this time shall be submitted forthwith after the receipt of said license, notwithstanding the provision of the preceding paragraph.
3. When the operation plan under the preceding two paragraphs is changed, the changed operation plan shall be prepared using Form 1, and shall be submitted for each reactor, within 30 days from the day of the change.
4. The number of copies of the operation plan of the preceding paragraphs 3 shall be one original.
(Record)

Article 7.
(3) The record specified in Article 34 of the Law must be recorded for each reactor, regarding the subjects listed in the left column of the following table, in the manners specified in the middle column of the table, and shall be retained for the period specified in the right column of the table.

Contents to be recorded	Occasion of recording	Retention
(i)Reactor facility inspection record Result of periodical self inspection under Article 11	Each inspection	Until next inspection for the same subject
(ii) Operation record		
A. Thermal power, and the neutron flux density and temperature in the core	Continuous	10 years
B. Temperature, pressure and flow rate of coolant at reactor core inlet and outlet	Every 1 hour during operation	10 years
C. Position of control element	Every 1 hour during operation	1 year
D. Temperature within re-combiner	Every 1 hour during operation	1 year
E. Purity and daily makeup volume of coolant and moderator (liquid only) used in reactor	Once a day	1 year
F. Fuel assembly arrangement within reactor	Each arrangement or re-arrangement	10 years after removal
G. Reactor facility checking before and after start-up and shutdown	Each startup and shutdown	1 year
H. Day and hour of operation start, criticality attainment, operation change, emergency shutdown and operation shutdown	Each of these events	1 year
I. Names of operation supervisor and operator, their shift day and hour, and transferred message	Each operation start and shift	1 year
(iii) Record of fuel assembly		
A. Amount of received and shipped fuel assembly (except for spent fuel), by type	Each receiving and shipping	10 years
B. Amount of fuel assemblies loaded to the reactor, by type	Each loading	10 years after removal
C. Amount of spent fuel assemblies discharged, by type	Each removal	10 years
D. Burn-up of discharged spent fuel	Each discharge or once every month	10 years
E. Arrangement of fuel assemblies in spent fuel storage facility	Each arranging or rearranging	5 years
F. Amount of spent fuel shipped, by type, the period from discharge to shipping and their radioactivity.	Each shipping	10 years
G. Inspection result of fuel assembly shape or property	Before loading and after discharge	10 years after discharge
(iv) Radiation management record		
A. Dose equivalent rate at the radiation shield side wall of reactor core, spent fuel storage facility, radioactive waste disposal facility, etc.	Once a day during operation	10 years
B. Mean concentration of radioactive substance for one day and 3 months, at radioactive waste vent port or exhaust monitor equipment and drain port or drain monitoring equipment	Once a day for daily mean concentration, and once in 3 months for 3-month mean concentration	10 years
C. One-week dose equivalent of the external radiation in the control zone, mean 1-week concentration of radioactive substance in the air, and radioactive substance concentration on the surface of radioactive contaminated matter	Once a week	10 years

D. One-year dose of personnel engaged in radiation work starting from April 1. For female personnel engaged in radiation work (except those who diagnosed as sterility and those who notified will for no pregnancy to the reactor establisher with document the same applying hereinafter) for 3 months starting from April 1, July1, October 1 and January 1. And one month dose of female personnel engaged in radiation work whose pregnancy is known by the reactor establisher through the notification of the pregnant female herself starting from the first day of the every month until the delivery.	Once a year for 1-year dose, once in 3 months for 3-month dose and 1 month for 1-month dose.	The period specified under Paragraph 5
E Dose for the five years (including the year of the over exposure exceeding 20mSv starting April 1) specified by the Minister of Economy, Trade and Industry of the personnel engaged in radiation work.	Once a year for 5-years that the Minister of Economy, Trade and Industry specified (during the period after the year listed in the left column).	The period specified under Paragraph 5
F Radiation exposure history of personnel engaged in radiation work prior to the day of starting the radiation management work, during the year in which said day belongs	At the time of the worker's starting said work	The period specified under Paragraph 5
G. Quantity, by type, of nuclear fuel material or objects contaminated by nuclear fuel material which is transported outside the plant or business place, the type of container used for their transport, and the day, time and route of the transport	Each transporting occasion	1 year
H. Type of radioactive waste delivered to waste facility or dumped into the sea, the quantity of radioactive substances contained in said radioactive waste. In case of radioactive waste contained in container, or solidified integrally with the container, quantity of said containers, specific gravity, damping day, time location and method.	Each occasion of disposal or dumping	Until the reactor dismantling
I In case radioactive waste is sealed in or solidified together with containers, the method for them	Each sealing or solidifying	Reactor dismantling
J. In case of taking measures for prevention of spreading and decontamination for radioactive substance, their conditions and the name of the person responsible for them	Each spreading prevention and decontamination	1 year
(v) Maintenance record		
A. Patrolling and checking conditions of reactor facility, and the name of person in charge	Once a day	1 year
B. Repairing condition of reactor facility, and the name of person in charge	Each repairing	1 year
(vi) Accident record of reactor facility, etc.		
A. Day and hour of accident occurrence and restoration	Each event	Until the dismantling of reactor
B. Conditions of and measures taken for accident	Each event	Until the dismantling of reactor
C. Causes of accident	Each event	Until the dismantling of reactor
D. Measure taken after accident	Each event	Until the reactor dismantling

(vii) Meteorological records		
A. Wind direction and velocity	Continuous	10 years
B. Precipitation	Continuous	10 years
C. Atmospheric temperature	Continuous	10 years
(viii) Record of Safety Education		
A. Implementation Plan of Safety Education	Every time planned	3 years
B. Date and Item of Education implemented	Every time implemented	3 years
C. The name of educated	Every time implemented	3 years

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2. When direct measuring is difficult for the items to be recorded in accordance with the specifications in the preceding paragraph, those records that allow the measuring results to be estimated may be used instead of the record of these items.

3. The dose equivalent rate under A, Subparagraph (iv) in the table of Paragraph 1 and the dose equivalent under C and dose D and E of the same subparagraph shall be respectively recorded in accordance with the conditions specified by the Minister of Economy, Trade and Industry

4. In recording the dose for Subparagraph (iv), in the table of Paragraph 1, the condition of exposure and the method of measurement shall also be recorded, when, as a part of the radiation exposure records, the value exclusively related to the exposure caused by the respiration of the air contaminated by radioactive substances is recorded.

5. The retention period for the records under D to E, Subparagraph (iv) in the table of Paragraph 1 shall be the record retention period exceeded 5 years and the reactor establisher has submit the record to the organization specified by the Minister of Economy, Trade and Industry, or in case the person related to the retention of the record lost the status of a personnel engaged in radiation work.

6. The reactor establisher shall issue the copy of the record to the personnel engaged in radiation management work under D, Subparagraph (iv) in the table of Paragraph 1, when said worker leaves his duty assignment.

(Quality Assurance)

Article 7-3. In case of taking necessary actions for fitness for safety as provided in Article 35, Paragraph 1 of the Law (hereinafter referred to as "fitness-for-safety activity"), quality assurance plan shall be established, and fitness-for-safety activities shall be planed, implemented, evaluated and improved in accordance with the quality assurance plan, and the quality assurance plan shall be improved continuously.

(Quality Assurance Plan)

Article 7-3-2. Particulars provided for in the followings shall be stipulated in the quality assurance plan:

(i) Particulars for organization to implement the quality assurance;
(ii) Particulars for the plan of fitness-for-safety activities;
(iii) Particulars for implementing fitness-for-safety activities;
(iv) Particulars for evaluation of fitness-for-safety activities; and
(v) Particulars for improvement of fitness-for-safety activities.

(Organization to Implement the Quality Assurance)

Article 7-3-3. The organization to implement the quality assurance shall fall under the followings:

(i) Operated by the reactor establisher (in case of a juridical person, the representative);
(ii) Responsibility and authority concerning quality assurance are defined; and
(iii) The framework with which the quality assurance plan is developed, implemented, evaluated and improved continuously is established.

(Plan for Fitness-for-safety Activities)

Article 7-3-4. Particulars for fitness-for-safety activity plan in the quality assurance plan shall be particulars provided for in the followings:

(i) Matters to clarify the processes of Japanese Industrial Standard Q9000 (2000) in accordance with Industrial Standardization Law (Law No. 185, 1949) and their mutual relation in fitness-for-safety activities;
(ii) Matters to establish the framework with which fitness-for-safety activities are implemented taking in to consideration each process of planning, implementation, evaluation and improvement, and improved continuously;
(iii) In case of materials or services are procured from outside, matters to establish measures for its management;
(iv) Matters to determine contents to be implemented depending on their importance for fitness for safety;
(v) Matters to develop procedures for appropriate management of documents and records concerning fitness-for-safety activities; and
(vi) Matters to establish the education and training system necessary for persons who implement fitness-for-safety activities.

(Implementation of Fitness-for-safety Activity)

Article 7-3-5. Particulars for implementation of fitness-for-safety activities in quality assurance plan shall be particulars provided for in the followings:

(i) Each individual work that consists of fitness-for-safety activities (hereinafter referred to as "individual work") shall be carried out in accordance with the followings;
   A. The implementing plan for individual work (hereinafter referred to as "implementing plan" in this article) shall be developed with clearly defined objectives for individual work and requirements for individual work,

B. Individual work shall be implemented in accordance with the implementing plan. In the case, it shall be confirmed in appropriate stages that the plan meets the requirements, and

C. If the implementing plan is altered, contents of alteration shall be managed properly.

(ii) In case when materials or services are procured from outside, particulars necessary for appropriate procurement and managing measures for compliance to the said particulars shall be specified;

(iii) In order to confirm that the individual work meets requirements specified in the implementing plan, necessary inspections and examinations shall be established and implemented;

(iv) Persons who implement the inspections and examinations depending on the importance for the fitness for safety provided for in the preceding subparagraph shall be specified; and

(v) Appropriate measures to manage the condition not conformity with the requirements (hereinafter referred to as "nonconformity") shall be established.

(Evaluation for Fitness-for-safety Activity)

Article 7-3-6. Particulars for evaluation of fitness-for-safety activities in the quality assurance plan shall be particulars provided for in the followings:

(i) Necessary monitoring and measurement of condition of fitness-for-safety activities shall be implemented in accordance with the plan;

(ii) In order to make it clear that the fitness-for-safety activities are implemented properly, audit shall be implemented in accordance with the plan; and

(iii) The evaluation described in the preceding subparagraph shall be implemented by the person other than the persons implemented the subject individual work.

(Improvement of Fitness-for-safety Activity)

Article 7-3-7. Particulars for improvement of fitness-for-safety activities in the quality assurance plan shall be particulars provided for in the followings:

(i) Measures for corrective actions to prevent recurrence of nonconformity and measures for preventive actions to prevent potential nonconformity shall be established and implemented respectively;

(ii) Information from other facilities shall be reflected on the preventive actions as well as information obtained implementing fitness-for-safety activities for establisher's reactor facilities; and

(iii) Results of the evaluation provided for in the preceding article shall be reflected properly.

(Prevention from Entering into Control Zones, Etc.)

Article 8. Pursuant to the provision of Article 35, Paragraph 1 of the Law, the reactor establisher shall set up control zones, the maintenance and repair areas and the environmental monitoring areas, and shall execute the measures specified under the following respective subparagraphs:

(i) The following measures shall be taken for the control zones;

A. In addition to demarcating the area with walls, fences and other demarcation structures, the establisher shall distinguish the area clearly from other areas with the provision of signs, and shall take such measures as personal entry restriction and lock control, etc. in proportion to the level of hazard by radiation,

B. The installer shall prohibit eating, drinking and smoking where there is a danger of the oral ingestion of radioactive substances,

C. The establisher shall take measures to ensure that the radioactive substance concentration on the surface of the floor, wall and other objects which are liable to come in contact with persons and which are contaminated by radioactive substances does not exceed the surface concentration limit specified by the Minister of Economy, Trade and Industry, and

D. For a person leaving or carrying objects out of the control zones, the installer shall take measures to assure that the concentration of radioactive substances on the surfaces of body of that person, of the cloths, footwear and other articles worn on the body, and of the articles to be carried (when the articles are contained in containers or packaged, the containers or the package) does not exceed one tenth of the surface concentration limit specified under C.

(ii) For the maintenance and repair area, the establisher shall clearly distinguish the area from other areas through such methods as the installation of signs, and shall take such measures as the restriction of personal entry, the control of the locks and the restriction on the out-transport of articles, according to the control requirements; and

(iii) For the environmental monitoring area, the installer shall take the following measures;

A. The prohibition of the habitation of persons, and

B. The restriction of the entry of persons other than those who have duty assignments in the area, through such means as the installation of fences of signs, etc. However, this provision does not apply when it is obvious that there is no possibility of personal entry into the said area.

(Measures Related to Dose, Etc.)

Article 9. Pursuant to the provision of Article 35, Paragraph 1 of the Law, the reactor installer shall, with respect to the dose, etc., for the personnel engaged in radiation management work, take the measures listed under the following subparagraphs:

(i) Measures for preventing the personnel engaged in radiation management work from exceeding the dose limit specified by Ministry of Economy, Trade and Industry; and

(ii) Measures for preventing the concentration of radioactive substance in the air breathed by the personnel engaged in radiation work from exceeding the concentration limit specified by Ministry of Economy, Trade and Industry.

2. Notwithstanding the provision of the preceding paragraph, in the case of emergency without alternative recourse, such as the occurrence or potential occurrence of hazard in the reactor facility, and the occurrence of damage in the reactor facility which may seriously obstruct the operation of the reactor, the personnel engaged in radiation management work (for female workers only to those who diagnosed as sterility and those who notified will for no pregnancy to the reactor establisher with document) may be made to perform emergency operations of which the dose equivalent does not exceed the dose equivalent

limit specified by Ministry of Economy, Trade and Industry.

(The Patrol and Checking of Reactor Facility)

Article 10. Pursuant to the provision of Article 35, Paragraph 1 of the Law, the reactor establisher shall make personnel engaged in radiation management work who are normally attendant in the control zone works patrol on the reactor facility, at least once a day, and perform checking on the facilities and equipment items listed in the following items:

(i) The reactor cooling system facilities;

(ii) The control element drive equipment; and

(iii) The power supply, water supply and drain, and ventilation facilities.

(Maintenance Management of Nuclear Facility)

Article 11. In accordance with Article 35, Paragraph 1 of the Law, reactor establisher shall take actions provided for in the followings concerning such measures as checkup, test, inspection, replacement, modification, repair and other necessary actions that are implemented for maintenance management of nuclear facility (hereinafter referred to as "maintenance management"):

(i) Establishment of policies for maintenance management of nuclear facilities to maintain the performance of nuclear facilities described in the application for approval provided in Article 23, Paragraph 1 of the Law or application for approval of alteration provided in Article 26, Paragraph 1 of the Law and documents and their annexes that describe conditions for the approval in accordance with Article 62, Paragraph 1 of the Law;

(ii) Establishment of objectives for maintenance that shall be achieved in accordance with the policy described in the preceding subparagraph;

(iii) Development of the maintenance management implementation plan specifying particulars provided for in the following and implementation of them in accordance with the plan;

A. Particulars concerning the method, frequency and time for implementation of checkup, test, inspection, repair, modification, replacement, etc. of nuclear facilities,

B. Particulars concerning the method for confirmation and evaluation of the results of checkup, test, inspection, repair, modification, replacement, etc. of the nuclear facilities,

C. Particulars concerning corrective actions for the method, frequency and time for checkup, test, inspection, repair, modification, replacement, etc. of the nuclear facilities based on the results of confirmation and evaluation described in Item B, and

D. Particulars concerning records of the maintenance management of the nuclear facilities.

(iv) The plan concerning policies, objectives and implementation of the maintenance management of nuclear facilities shall be periodically evaluated; and

(v) The results of the evaluation provided for in the preceding subparagraph shall be reflected on the plan concerning policies, objectives and implementation of the maintenance management of nuclear facilities.

(The Operation of the Reactor)

Article 12. Pursuant to the provision of Article 35, Paragraph 1 of the Law, the reactor establisher shall take the measures related to the operation of the reactor as listed under the following subparagraphs:

(i) Entrusting the operation of the reactor to persons who have necessary knowledge in the operation of reactors;

(ii) Not allowing the operation of the reactor to start, unless all the constituent persons required for the operation of the reactor are present;

(iii) Ensuring that the person responsible for operation among the constituent persons as mentioned under the preceding subparagraph is a receiver of a license from a party designated by the notice of Ministry of Economy, Trade and Industry;

(iv) Specifying the matters to be confirmed before starting operation, the matters required for the procedure of operation and the matters to be confirmed after the interruption of operation, and making the operators observe them;

(v) When an emergency shutdown occurs, investigating the cause of the shutdown and the possible presence of damage, and restarting operation shall be made after verifying the absence of conditions preventing the restarting of operation;

(vi) Specifying the measures to be taken in an emergency, and making the operators observe them;

(vii) When conducting a trial operation, allowing it to be conducted upon confirming its purpose and method, and the measures to be taken in an emergency; and

(viii) When operating the reactor for the purpose of training trainees, specifying the matters to be observed by the trainees, and making the matters observed under the supervision of the operator.

(Storage)

Article 14. The reactor installer shall, pursuant to the provisions of Article 35, Paragraph 1 of the Law, take the measures related to the storage of nuclear fuel material, as listed under the following subparagraphs:

(i) Nuclear fuel material shall be stored in storage facilities;

(ii) At easily visible locations of the storage facilities, the cautions on storage shall be displayed;

(iii) When persons other than those engaged in the storage of nuclear fuel material enter the storage facilities, they shall be made to obey the instructions of the persons engaged in the storage;

(iv) Necessary measures of cooling shall be taken on spent fuel; and

(v) Nuclear fuel material shall be stored in such a manner that under no circumstance, the nuclear fuel material reaches the criticality.

(Disposal Made at the Plant or Place of Business)

Article 15. The reactor establisher shall, pursuant to the provisions of Article 35, Paragraph 1 of the Law, in disposing the radioactive waste in the plant or place of business where reactor facility is installed, take the measures listed under the following subparagraphs:

(iii) The disposal of radioactive waste shall be executed under the supervision of persons who possess the necessary knowledge in disposal and radiation protection related to disposal, and during the disposal process,

the persons engaged in the said disposal process shall wear working cloths;

(iv) When persons other than the persons engaged in the disposal of radioactive waste enter the disposal facility, they shall be made to obey the instructions of the persons engaged in the disposal;

(v) Gaseous radioactive waste shall be disposed by any one of the following listed methods:
A. Discharging through a gas exhausting facility;
B. Storage-disposing in a disposal tank that is provided with an effect of hazard prevention;

(vi) When disposing by the method A in the preceding paragraph, the concentration of the radioactive materiel in the exhaust gas shall be reduced as low as possible in the exhausting facility through such methods as filtration, the attenuation of radioactivity through the lapse of time and the dilution with large volume of air. In this case, the radioactive material concentration in the air outside the environmental monitoring area shall be maintained within the concentration limit specified by the Minister of Economy, Trade and Industry, through the monitoring of the concentration of radioactive material in the exhaust gas at the exhausting port or in the exhaust gas monitoring equipment;

(vii) When disposing by the method B of Paragraph 3, if there is a possibility of excessive overheating by the decay heat, etc. of the said storage-disposed radioactive waste, necessary cooling measures shall be taken;

(viii) Liquid radioactive waste shall be disposed by any of the following listed methods;
A. Discharging through an effluent facility,
B. Storage-disposing in a disposal tank that is provided with a hazard prevention effect,
C. Sealing in a container, or solidifying with a container into an integral mass, and storage disposing in a storage-disposal facility having a hazard prevention effect,
D. Incinerating in the incineration equipment possessing a hazard prevention effect, and
E. Solidifying in the solidifying equipment possessing a hazard prevention effect.

(ix) When disposing by the method A in the preceding paragraph, the concentration of the radioactive material in the effluent shall be reduced as low as possible through such methods in the effluent facility as filtration, evaporation, adsorption by ion exchange resin, the attenuation of radioactivity through the lapse of time and the dilution with large volume of water. In this case, the radioactive material concentration in the water at the outside boundary of the environmental monitoring area shall be maintained within the concentration limit specified by the Minister of Economy, Trade and Industry, through the monitoring of the concentration of radioactive material in the effluent at the effluent discharge port or in the effluent monitoring equipment;

(x) When disposing by the method B of Subparagraph (vi), if there is a possibility of excessive overheating by the decay heat, etc. of the said storage-disposed radioactive waste, necessary cooling measures shall be taken;

(xi) When disposing by method C of Subparagraph (vi), in case the radioactive waste is to be sealed in a container, the said container shall meet the following listed criteria;
A. The structure shall be impermeable to water, resistant to corrosion, and highly leak-proof against radioactive waste,
B. Freedom from the possibility of cracking or breaking, and
C. The lid of the container shall be hard to be removed.

(xii) When disposing by method C of Subparagraph (vi), in case the radioactive waste and the container are solidified integrally, the container integrally solidified with the radioactive waste shall be capable of preventing the scattering or leaking of the radioactive waste;

(xiii) When disposing by method C of Subparagraph (vi), in case the radioactive waste is storage-disposed of in a storage-disposal facility provided with a hazard prevention effect, the following shall be observed;
A. When storage-disposing radioactive waste by sealing it in a container, necessary measures for preventing the diffusion of contamination through an eventual occurrence of cracking or breaking in the said container such as the enveloping of the said container in material that can absorb all the sealed radioactive waste, or the provision of a receiving saucer that can contain all the sealed radioactive waste shall be taken,
B. When there is a possibility of excessive overheating by the decay heat, etc. of the said storage-disposed radioactive waste, necessary cooling measures shall be taken,
C. On the container in which radioactive waste is sealed, or integrally solidified with solidified radioactive waste, a sign indicating radioactive waste shall be affixed, and a control number that allows the collation against the contents recorded on the basis of the provision of Article 7 with respect to the said radioactive waste shall be displayed, and
D. On the said storage-disposal facility, control cautions shall be displayed in the easily visible area.

(xii) Solid radioactive waste shall be disposed by any of the following listed methods;
A. Incinerating in incineration equipment provided with a hazard prevention effect,
B. Sealing in a container, or solidifying integrally with the container, and storage-disposing in a storage-disposal facility provided with a hazard prevention effect,
C. Those radioactive wastes such as large machines that are very difficult to dispose by the method of B, or other radioactive waste that requires decay over long time shall be storage-disposed in a storage-disposal facility provided with a hazard prevention effect;

(xiii) In the disposal method specified under B of Subparagraph (xii), when the radioactive waste is sealed in a container for disposal, the examples described under Subparagraph (ix) and Subparagraph (xi) (excluding A) shall be adopted;

(xiv) In the disposal method specified under B of Subparagraph (xii), when the radioactive waste is solidified integrally with the container, the examples described under Subparagraph (x) and (xi) (excluding A) shall be adopted; and

(xv) In the disposal method specified under C of Subparagraph (xii), the examples described under B and D of Subparagraph (xi) shall be adopted.

(Periodic Evaluation of Nuclear Facility)

Article 15-2. The reactor establisher shall take actions provided for in the followings for every reactor (excluding the reactor notified in accordance with Article 38, Paragraph 1 of the Law) and every period not exceeding 10 years in accordance with Article 35, Paragraph 1 of the Law:

(i) Evaluation of the implementing situation of fitness-for-safety activities at the nuclear facilities; and

(ii) Evaluation of the situation of reflection of state of the art technical information on fitness-for-safety activities at the nuclear facilities.

2. The reactor establisher shall take actions provided for in the followings by the day elapsed 30 years from the date of initiation of reactor operation:

(i) Technical evaluation for aging; and

(ii) Development of 10 years plan concerning actions taken for maintenance of the nuclear facilities based on the technical evaluation provided in the preceding subparagraph.

3. The evaluation and the plan provided for in the preceding subparagraph shall be reevaluated within a period not exceed 10 years.

(Operational Safety Program)

Article 16. Persons intending to have their Operational Safety Program approved under the provisions of Article 37, Paragraph 1 of the Law shall specify the Operational Safety Program for the particulars listed in the following subparagraphs, for each plant or business place, and shall submit an application describing them:

(i) Matters pertaining to the duty assignment and organization of persons engaged in the operation and management of the nuclear reactor facility;

(ii) Matters pertaining to the safety preservation education of persons engaged in the operation and management the nuclear reactor facility as described below;

A. Matters on implementation policy of the safety preservation education (including procedure of planning), and

B. Matters on the contents of the safety preservation education and as follows,

(1) Matters on related regulations and the safety preservation rule

(2) Matters on the structure, performances and the operation of the nuclear installation

(3) Matters on radiation management

(4) Matters on the handling of nuclear fuel materials and materials contaminated by nuclear fuel material

(5) Matters on measures to be take at an emergency

(iii) Matters pertaining to the operation of the nuclear reactor facility;

(iv) Matters pertaining to the safety review of the operation of the nuclear reactor facility;

(v) Matters pertaining to the establishment of the control zone, the preservation area and the environmental monitoring area, and to the entry restrictions, etc. into these areas;

(vi) Matters pertaining to the ventilation monitoring equipment and drain monitoring equipment;

(vii) Matters pertaining to the monitoring of the dose and dose equivalent, the radioactive material concentration and the surface radioactive material concentration on objects contaminated by radioactive material, and to the decontamination;

(viii) Matters pertaining to the management of the radiation measuring instruments;

(ix) Matters pertaining to the patrolling and checking of the nuclear reactor facility, and their related measures;

(x) Matters pertaining to the receiving and shipping, transport, storage and other handling of nuclear fuel material;

(xi) Matters pertaining to the disposal of radioactive waste;

(xii) Matters pertaining to the measures to be taken in the case of emergency;

(xiii) Matters pertaining to the recording of matters related to the safety preservation (including compliance to fitness-for-safety rules of nuclear facilities) of the nuclear reactor facility;

(xiv) Matters pertaining to the maintenance management of nuclear facilities (excluding matters provided for in the followings);

(xv) Matters pertaining to the periodic evaluation of nuclear facilities;

(xvi) Matters pertaining to the quality assurance of nuclear facilities; and

(xvii) Other necessary matters related to the safety preservation of the nuclear reactor facility.

2. The number of copies of the application under the preceding paragraph shall be one original.

(Inspection of compliance to the Operational Safety Program)

Article 16-2. Inspection based on the provision of Article 37, Paragraph 5 shall be implemented quarterly.

2. Matters provided in Article 37, Paragraph 5 apply mutatis mutandis to such as of Article 12, Paragraph 6 that is provided by the order of Ministry of Economy, Trade and Industry are as follows:

(i) Access to Office, the Factory or business place;

(ii) Inspection of books, documents, facilities, components and other necessary items;

(iii) Inquiry to employees and or related personnel; and

(iv) Submission of nuclear source material, nuclear fuel material and the material contaminated by nuclear fuel material and other necessary sample (limited to the least necessary amount for testing).

(Assignment, Etc. of Chief Engineer of Reactors)

Article 19. Pursuant to the provisions of Article 40, Paragraph 1 of the Law, the appointment of a chief engineer of reactors shall be made for each reactor. However, for reactors of the same type in the same plant or business place, the appointment of one chief engineer of reactors to two or more reactors is acceptable.

2. The number of copies of the notification document to be submitted under the provision of Article 40, Paragraph 2 of the Law shall be one original.

(Measures in Emergency)

Article 20. Pursuant to the provisions of Article 64, Paragraph 1 of the Law, a reactor establisher shall take the emergency measures as provided in the following.

(i) Wherein fire breaks out in the reactor facility, or wherein there is a possibility of fire reaching the reactor facility, to make every effort to extinguish the said fire or to prevent its expansion and, at the same time, to report the situation to the fire authorities.
(ii) Wherein there is a possibility of transferring the nuclear fuel material to other locations, to transfer it to a safe location as necessary, and to prohibit the entry of persons other than those related by demarcating the periphery of the location with a rope, by installing signs, etc., and by stationing guards.
(iii) Wherein there is a need to prevent the occurrence of radiation hazard, to warn persons present both within the reactor facility and its vicinity to evacuate.
(iv) Wherein contamination by the nuclear fuel material has taken place, to prevent its expansion and to remove it speedily.
(v) Wherein there are persons suffering or who may possibly suffer from radiation hazard, to take emergency measures such as their speedy rescue and evacuation.
(vi) To take other necessary measures for the prevention of radiation hazards.

(Measures Accompanying Revocation of License)

Article 23. The reactor installer who has had their permission revoked in accordance with the provisions of Article 33 of the Law, the reactor establisher who has discontinued all the operation of the reactor, or in the case of dissolution or death of reactor establisher the liquidator or trustee in bankruptcy, or the person who is to take charge of the inheritance in the place of the inheritor of dead establisher in the case of the absence of succession pursuant to the provision of Article 31, Paragraph 1, or Article 32, Paragraph 1 of the Law, shall assign the nuclear fuel material, eliminate contamination, dispose the nuclear fuel material pursuant to the provisions of Article 66, Paragraph 1 of the Law, and shall deliver the radiation management record as specified under Article 7, Paragraph 1 to the organization specified by the Minister of Economy, Trade and Industry pursuant to Paragraph 4 of the said article.

2. The measures specified under the preceding paragraph shall be executed within 30 days from the day of the cancellation of the permission, the day of discontinuing all operation, or the day of dissolution or death.

(Collection of Reports)

Article 24. The reactor installer shall prepare a report in Form 2 for each plant or business place, covering the period as from April 1st of every year to March 31st of the subsequent year, in the case of the report on the dose equivalent on the radiation workers during one year, and the period as from April 1st of each year to September 30th, and as from October 1st to March 31st of the subsequent year, in the case of other reports, and shall submit them to the Minister of Economy, Trade and Industry, within one month after the lapse of the applicable period.

2. The reactor installer shall, in the case of coming under any of the following subparagraphs, report the case immediately, and report the situation and measures taken within 10 days:

(i) When nuclear fuel material is stolen or its whereabouts is unknown;
(ii) When a reactor is shut down by failure of a reactor facility or when it become necessary to shut down a reactor during operation, or when reactor power output changes more than 5%, or when reactor power output change of more than 5% is required. Except when it is one of the following and the establisher announced officially about the situation of the concerned failure;
  A. When it occurs in the term of the periodic inspection provided in Article 54-1 of the Electricity Utilities Industry Law (Law No. 170, 1964) (limited to those equipment concerned to the failure, which functional and operational situation cannot be checked under the reactor shutdown condition),
  B. When the failure does not cause deviation from the limit of operation (it is a requirement defined in the fitness-for-safety program for operation of the reactor facility, and when it cause any deviation from the concerned conditions the measure that the establisher should take is also defined in the fitness-for-safety program, the same in this paragraph), and there is no change observed related with the concerned failure, and when the establisher performs inspection of the failed equipment concerned, or
  C. When the reactor output is required to follow the limit of operation.
(iii) When a reactor establisher has checked the equipment and structure important to the safety of the nuclear reactor facility provided by the Minister of Economy, Trade and Industry (hereinafter called as "equipment etc. important to safety" in this paragraph as), and when concerned equipment etc. important to safety is considered that it does not satisfy the standard described in Article 9 or in Article 9-2 of the Ordinance of Establishing Technical Standards for Nuclear Power Generation Equipment (Ordinance No. 62 of Ministry of International Trade and Industry, 1965), or when it is considered that it does not have function to secure safety of the nuclear reactor facility;
(iv) When there is a failure of equipment etc. important to safety by the fire. Excluding the concerned failure is due to the measure of fire extinguishing or prevention of the spread of fire;
(v) Except for the preceding three subparagraphs, when deviation from the limit of operation by the failure of a the nuclear reactor facility (except those minor troubles which impact on operation of nuclear reactor is insignificant) is caused, or when the measure for the concerned deviation defined in the fitness-for-safety program is not implemented at the time of deviation from the limit of operation;
(vi) When the failure of a reactor facility or occurrence of other unexpected situation is considered to have caused any trouble in the situation of discharge of gaseous radioactive wastes through the ventilation facility or in the situation of discharge of liquid radioactive wastes through the drainage facility;
(vii) When the concentration of radioactive materials in the air outside the environment monitoring area exceeds the allowable limit in the case of discharge of gaseous radioactive wastes through the ventilation facility;
(viii) When the concentration of radioactive materials in the water outside the environment monitoring area exceeds the allowable limit in the case of the discharge of liquid radioactive wastes through the drainage facility;
(ix) When nuclear fuel materials or materials contaminated with nuclear fuel materials (hereinafter referred to as "nuclear fuel materials etc.") leak out of the control zone;

(x) When nuclear fuel materials etc. leak within the control zone due to failure of a nuclear reactor facility or occurrence of other unexpected situation. However, this is not the case in any of the followings (except the case when new measures such as human entry restriction into the leakage-related place and key control have been taken or when the leaked substances have spread outside the control zone);

A. When revealed liquid nuclear fuel materials etc. do not spread out of the floodgate that is installed in the circumference of the equipment of the concerned leakage for prevention of leakage enlargement,

B. When the function of ventilation facility of the concerned area of the leakage is maintained properly at the time when gaseous nuclear fuel materials etc. leak, or

C. When the amount of radioactivity of the leaked nuclear fuel materials etc. is very little and when the degree of the leakage is minor.

(xi) When the person who enters into the control zone suffered radiation exposure due to the failure of a nuclear reactor facility or occurrence of other unexpected situation, and when the effective dosage of concerned exposure exceeds or could exceeds five mSv for a personnel engaged in radiation work or 0.5 mSv for a person other than the personnel engaged in radiation work;

(xii) When the dosage of personnel engaged in radiation work exceeds or could exceed the allowable dose limit; or

(xiii) Other than those above subparagraphs, when persons are injured or could be injured in the nuclear reactor facility (except for what hospitalization medical treatment is not needed for other than radiation hazard).

3. The number of copies for the application described in Paragraph 1 shall be one original.

(6) Notification for Radiation Dose Rate Limits, etc. Based on the Provisions of the Rules for Installation, Operation, etc. of Commercial Power Reactors (Excerpt)
(Notification No. 187 issued by the Ministry of Economy, Trade and Industry, March 21, 2001)

(Dose as Specified Item 4 of Paragraph 2 of Article 1of Rules for Installation, Operation, etc. of Commercial Power Reactors)

Article 2. The dose, concentration, and density to be determined by the Minister of Economy, Trade and Industry, pursuant to Article 1, Paragraph 2, Item 4 of the Rules for Installation, Operation, etc. of Commercial Nuclear Power Reactors (hereafter referred as "the Rules"), shall be as follows.

(i) For dose, 1.3mSvs per 3 months.

(iii) For concentration, the average concentration in 3 months is one-tenth of the concentration limit determined in Article 7, Paragraph 1 through Paragraph 4.

(iv) For density, one-tenth of the surface density limit determined in Article 5.

2. For the limit stipulated in the preceding paragraph, when both external radiation and radioactive materials must be considered, the limit is given by converting the 3-month average dose and concentration to their fractions to the values provided in Subparagraph 1 and Subparagraph 2 respectively. In this case, the dose and concentration shall be such that the sum of their fractions is less or equal to 1.

(Dose Limit provided in Article 1, Paragraph 2, Subparagraph 6 of the Rules)

Article 3. The dose limit to be determined by the Minister of Economy, Trade and Industry, pursuant to Article 1, Paragraph 2, Subparagraph 6 of the Rules, shall be as follows.

(i) For effective dose equivalent, 1mSvs per year (one year start from April 1st).

(ii) For skin and eye lens tissue dose equivalent, 50mSvs each per year.

(iii) For eye lens tissue dose, 15mSvs each per year

2. In spite of provision of the Subparagraph 1 of the preceding paragraph, effective dose limit may be determined as 5mSvs when the Minister of Economy, Trade and Industry has so approved.

(Surface Density Limit)

Article 5. The surface density limits to be determined by the Minister of Economy, Trade and Industry, pursuant to Article 8, Paragraph 1, Subparagraph C of the Rules, shall be as indicated in annexed Table 1.

(Dose Limit for Personnel Engaged in Radiation Works)

Article 6. For the dose limits to be determined by the Minister of Economy, Trade and Industry, pursuant to Article 9, Paragraph 1, Subparagraph 1 of the Rules, the effective dose shall be as follows.

(i) Five years determined in Article 4, Paragraph 3, 500mSvs.

(ii) 50mSvs per year.

(iii) For female (except for those who diagnosed as sterility and those who notified will for no pregnancy to the reactor establisher with document and those who are specified in next Paragraph), 5mSvs per three-month starting April 1, July 1, October 1and January 1, except for determined in two preceding subparagraphs

(iv) For the pregnant female, 1mSvs for internal exposure during the time of the reactor establisher noticed the pregnancy by the notification of the worker herself to the delivery, in addition to the provision of Subparagraph 1 and Subparagraph 2.

2. For the dose limits to be determined by the Minister of Economy, Trade and Industry, pursuant to Article 9, Paragraph 1, Subparagraph 1 of the Rules, the effective dose equivalent shall be as follows.

(i) For eye lens, 150mSvs per year.

(iv)For skins, 500mSvs per year.

(v) For abdominal region of pregnant female worker specified in Subparagraph (iv) of the preceding Paragraph, 2mSvs during the time in the preceding Paragraph.

(Concentration Limit for Personnel Engaged in Radiation Works)

Article 7. For the concentration limits to be determined by the Minister of Economy, Trade and Industry, pursuant to Article 9, Paragraph 1, Subparagraph (ii) of the Rules, the average concentration for three-month shall be as follows.

(i) When the type of radioactive materials (Shown in annex Table 2. The same applies in next and the third Paragraphs) is known, and that is only one type, the concentration given in the fourth column of annexed Table 2, for the type of radioactive materials listed in the first column of that table.
(ii) When the type of radioactive materials is known, and there are more than two types, the concentration whose sum of the ratios of the concentration of each radioactive material to the concentration of radioactive material given in the preceding paragraph become unity is the concentration of each radioactive material.
(iii) When the type of radioactive material is not known, the least concentration given in the fourth column of annexed Table 2 (except those type of radioactive materials whose non existence in air is clear.).
(iv) When the type of radioactive material is known, and the type of the radioactive material is not included in annexed Table 2, the concentration of the second column in accordance with the division shown in the first column of the annexed Table 3.
(v) When there are risks of both external radiation exposure and inhalation of airborne radioactivity, the concentration of radioactive materials shall be such that the sum of its fraction of the effective dose equivalent for a year by exposure from external radiation (hereinafter referred to as "external exposure") to 50mSvs, and the fraction of airborne radioactive materials concentration to that provided in the preceding paragraphs, is less or equal to 1.

(Dose Equivalent Limit in Emergency Work)
Article 8. Dose limits to be determined by the Minister of Economy, Trade and Industry, pursuant to Article 9, Paragraph 2 of the Rules, is 100mSvs in effective dose equivalent.
(Concentration Limit at Outside of Environmental Monitoring Area)
Article 9. The concentration limit to be determined by the Minister of Economy, Trade and Industry, pursuant to Article 15, Paragraph 4 and Paragraph 7 of the Rules, shall be as follows in average of three-month:
(i) When the type of radioactive materials (that given in annexed Table 2, the same applying in the following paragraphs and the third paragraphs and next Item paragraph 1 to 3) is known and that is only one type, concentration in air given in the column 5 of annexed Table 2, and that in water given in the column 6, for respective type of radioactivity;
(ii) When the types of radioactive materials are known and there are more than 2 different types of radioactive materials in water or in air, the concentrations of radioactive materials shall be such that the sum of their fractions to the respective concentrations provided in the preceding paragraphs, is less or equal to 1;
(iii) When the type of radioactive materials is unknown, the minimum concentration given in the column 5 of annexed Table 2 (except those type of radioactive materials whose non existence in air is clear.) for air and in the column 6 for water, respectively;
(iv) When the type of radioactive material is known, and the type of the radioactive material is not included in annexed Table 2, the concentration of the third column for in air and the fourth column for in water, in accordance with the division shown in the first column of the annexed Table 3;
(v) When radioactive materials exist in water and in air and there are risks of both inhalation and oral intake, concentrations of radioactive materials in water and in air shall be such that the sum of their fractions to the respective concentrations provided in the 1st, 3rd and precedent paragraphs, is less or equal to 1; and
(vi) When there are risks of both external radiation exposure and inhalation of radioactive materials in air or in water, the concentration of radioactive materials shall be such that the sum of its fraction of the effective dose equivalent for a year by external exposure to 1mSv, and the fraction of concentration for radioactive materials in air or in water to that provided in the preceding paragraphs, is less or equal to 1.

3. The provision of the preceding Paragraph 2 shall not be applied, if the Minister of Economy, Trade and Industry approved in accordance with Article 3, Paragraph 2.

Annexed Table 1 (in relation to Article 5)

Division	Limit on Density (Bq/cm2)
Radioactive material that emits alpha particles	4
Radioactive material that does not emit alpha particles	40

3.6. Law for Technical Standards of Radiation Hazards Prevention (Excerpt)

(Law No.162, May 21, 1958)
Latest Revision: Law No.160, December 22, 1999

(Objectives)
Article 1. The objectives of this law are to clarify the basic policy of enacting technical standards for radiation hazards prevention and to arrange technical standards of radiation hazards prevention in an orderly manner through the establishment of the Radiation Review Council within Ministry of Education, Culture, Sports, Science and Technology.
(Basic Policy)
Article 3. In enacting technical standards of radiation hazards prevention, the basic policy shall be to keep the radiation dose of personnel engaged in radiation management work to handle materials which generate radiation, etc. and of general public, at the radiation dose equal or less than what causes no danger of hazards.
(Establishment of Radiation Review Council)
Article 4. The Radiation Review Council (hereinafter referred to as the "Council") shall be established within Ministry of Education, Culture, Sports, Science and Technology.

(Assigned Duties of the Council)
Article 5. The Council shall investigate and review the matters prescribed in this law.
2. Concerning the matters of the preceding paragraph, the Council may state its opinions to the heads of related governmental organizations as necessary.
(Consults to the Council)
Article 6. When heads of related governmental organizations intend to establish technical standards of radiation hazards prevention, they shall consult with the Council.

3.7. Law on Compensation for Nuclear Damage (Excerpt)

(Law No.147, June 17, 1961)
Latest Revision: Law No. 54, May 30, 2003

(Objectives)
Article 1. It is the objectives of this Law to protect persons suffered from nuclear damage and also to contribute to the sound development of nuclear industry by means of establishing the basic system concerning the compensation in the case of occurrence of nuclear damage through operation of reactors, etc.
(Liability without Fault, Channeling of Liability, Etc.)
Article 3. When a nuclear damage is occurred owing to the operation of the reactor, etc. during the operation of the reactor, etc. a nuclear business operator who is engaged in the operation of the reactor on the occasion, shall be liable for the damage, except for the case that the damage is caused by a extraordinary great natural disaster or by a serious social disturbance.
(Duty of Providing Financial Security)
Article 6 A nuclear business operator is prohibited from the operation of the reactor, etc. unless the financial security for compensation of the nuclear damage (hereinafter referred to as "financial security") has been provided.
(The Content of the Damage Compensation Measure)
Article 7. The damage compensation measure shall be, except when the following article is applied, contract of liability insurance for nuclear damage or conclusion or deposit of the indemnity agreement for compensation of nuclear damage, 60 billion yen per one factory or one business place by the measure (for operation of the nuclear reactor, etc. defined by the government ordinance, the amount of money shall be as defined in the government ordinance not exceeding 60 billion yen. Hereinafter referred to as "insured amount" below.), as the amount payable for compensation for nuclear damage that obtained the approval of the Minister of Education, Culture, Sports, Science and Technology, or equivalent by the measure that obtained the approval of the Minister of Education, Culture, Sports, Science and Technology.
2. When the Minister of Education, Culture, Sports, Science and Technology admits that it is necessity to ensure implementation of the compensation for nuclear damage, in the case where the amount of money which should be appropriated for compensation for nuclear damage is under the insured amount as the concerned nuclear business operator has compensated the nuclear damage in accordance with the provisions of Article 3, the said minister may order the nuclear business operator concerned to make that amount equivalent to the insured amount with specified due date.
3. In the case provided in the preceding paragraph, the provision mentioned in the preceding article shall not be applied until the order in accordance with the provision of the same paragraph is given (when the order in accordance with the provision of the same paragraph is given, up to the due date specified by the order concerned).
(Contract of Liability Insurance for Nuclear Damage)
Article 8. The contract of liability insurance for the nuclear damage (hereinafter referred to as "liability insurance contract") shall be the contract under which an insurer (a liability insurance company provided in Article 2, Paragraph 4 of the Insurance Business Law (Law No.105, 1995) or a foreign liability insurance company, etc. provided in Article 2, Paragraph 9 of the same Law, that undertakes liability insurance; hereinafter an insurer is limited to this meaning) undertakes to indemnify a nuclear business operator for his loss arising from compensation for the nuclear damage of certain causes in case the nuclear business operator becomes liable for the compensation of a nuclear damage and under which the insurant undertakes to pay a premium to the insurer.
(Indemnity Agreement for Compensation of Nuclear Damage)
Article 10. The indemnity agreement for compensation of the nuclear damage (hereinafter referred to as "indemnity agreement") shall be the contract under which the National Government undertakes to indemnify a nuclear business operator for his loss arising from compensating for the nuclear damage not covered by the liability insurance contract and other financial security for compensation for the nuclear damage in case the nuclear business operator becomes liable for the compensation of a nuclear damage and under which the nuclear business operator undertakes to pay the indemnity fee to the National Government.
(Measures Taken by the National Government)
Article 16. In case the nuclear damage occurs, the National Government shall give to a nuclear business operator undertaker (except nuclear business operator related to foreign nuclear ship) such aids as required for him to compensate the nuclear damage, when the amount which he should compensate for the nuclear damage in accordance with Article 3 exceeds the financial security amount concerned and when the National Government deems necessary in order to fulfill the objectives of this Law.

3.8. Industrial Safety and Health Law

(1) Industrial Safety and Health Law (Excerpt)
(Law No.57, June 8, 1972)
Latest Revision: Law No. 102, July 2, 2003

(Objectives)
Article 1. The objectives of this Law is to secure, in conjunction with the Labor Standards Law (Law No. 49, 1947), the safety and health of workers in workplaces as well as to facilitate the establishment of comfortable working environment by promoting comprehensive, and systematic countermeasures concerning the prevention of industrial accidents, such as taking measures for the establishment of standards for the prevention of danger and injury, the classification of responsibility, and the promotion of voluntary activities with a view to preventing industrial accidents.
Article 22. Employers shall take necessary measures for preventing health impairment as follows:
(iii) Health impairment due to radiation, high temperature, low temperature, ultrasonic waves, noises, vibration, or abnormal atmospheric pressure and others.
(Safety and Health Education)
Article 59. Employers shall, when they have employed new workers, give the said workers' education for the safety and/or health concerning works in which they are engaged, as specified in the ordinance of the Ministry of Health and Labor.
(Medical Checks)
Article 66. Employers shall, as specified in the ordinance of the Ministry of Health and Labor, execute medical checks of workers conducted by physicians.

(2) Rules for Prevention of Damage from Ionizing Radiation (Excerpt)
(Ordinance No. 41of the Ministry of Labor, September 30, 1972)
Latest Revision: Ordinance No. 175 of the Ministry of Health and Labor, December 12, 2003

(Basic Principle of Prevention of Radiation Hazards)
Article 1. Employers shall endeavor to minimize the exposure of workers to the ionizing radiation as far as possible.
(Illustration of a Control Zones, etc.)
Article 3. Employers performing radiation management work shall express clearly by marks the area defined as follows (hereinafter referred to as "control zones"):
(i) Area where three months total of the effective dose from the external radiation and the effective dose from the radioactive materials in the air may exceed 1.3mSvs; or
(ii) Area where surface contamination may exceed the limits defined by the attached table.
2. The effective dose from the external radiation in Subparagraph (i) of the preceding paragraph shall be measured as to the 1 cm dose equivalent.
3. The effective dose from the radioactive materials in air in Paragraph 1, Subparagraph (i) shall be determined by multiplying 1.3mSvs by the ratio of a tenth of the limit of the three months average concentration of the weekly average of radioactive materials in air during the working hours in a week (where the working hours in a week exceeds 48 hours or less than 48 hours, use instead the figure obtained by multiplying the average concentration of the radioactive materials in air during the working hours in a week by the result of dividing the working hours by 48 hours; in Article 25 this is referred to as the "weekly average concentration") provided for by the Minister of Health and Labor.
4. Employers shall not allow anyone other than the necessary persons to enter control zones.
5. Employers shall post, in a location easily seen by workers in the control zones, notices for attention related to the attachment of measuring devices of exposure dose provided for in Article 8, Paragraph 3, notices for attention concerning the handling of radioactive materials and other necessary notices for prevention of damages to health of workers due to radiation, such as emergency measures in case of an accident.
(Limits of Exposure for Personnel Engaged in Radiation Management Works)
Article 4. Employers shall ensure that the effective dose of personnel engaged in radiation management works in control zones (hereinafter referred to as "personnel engaged in radiation management works") does not exceed 50mSvs annually, and 100mSvs in 5 years.
2. Regardless of the provision of the preceding paragraph, employers shall ensure that the effective dose of female personnel engaged in radiation management works (excluding those who are infertile and those defined in Article 6) does not exceed 5mSvs in 3 months.
Article 5. Employers shall ensure that the equivalent dose of personnel engaged in radiation management works does not exceed 150mSvs annually for the eye lens, and 500mSvs annually for skin.
Article 6. Employers shall ensure that the effective dose from internal radiation, and equivalent dose in the abdominal region of female personnel engaged in radiation management works who have been diagnosed as pregnant does not exceed 1, and 2mSvs, respectively, from the time that pregnancy is diagnosed until birth.
(Limits of Exposure During Emergency Work)
Article 7. In the case of the accident which falls under any one of the subparagraphs in Article 42, Paragraph 1, and in which a zone provided for in that paragraph has occurred, when the employer performs emergency work to prevent damages to health of workers due to radiation (hereinafter referred to as "emergency work"), regardless of the provisions of Article 4, Paragraph 1 and Article 5, male and infertile female personnel engaged in radiation management works who perform such emergency work may be exposed the dose in excess of the limits provided for in that article.
2. In the preceding paragraph, the effective dose, the equivalent dose for eye lens and the equivalent dose for skin, which they expose during such emergency work shall not exceed 100, 300 and 1000mSvs, respectively.

3. The preceding paragraph shall also apply when emergency work is performed by a male or infertile female workers other than personnel engaged in radiation management works.

3. 9. Electricity Utilities Industry Law

(1) Electricity Utilities Industry Law (Excerpt)
(Law No. 170, July 11, 1964)
(Latest Revision: Law No. 92, June 18, 2003)

(Objectives)
Article 1. The objectives of this Law are to protect the benefits of consumers of electricity and to contrive to promote the sound development of electric utilities industry, by ensuring the proper and reasonable operation of electric utilities industry and to secure public safety and protect environment by regulating construction, maintenance and operation of electric structures.
(Business Licensing)
Article 3. Any person (excluding specific-scale electric utility) who intends to carry on an electric utility shall obtain license from the Minister of Economy Trade and Industry.
2. The License in the preceding paragraph shall be granted according to the category of a general electric utility, a wholesale electric utility, and a specific electric utility.
(License Application)
Article 4. Any person who intends to obtain the license referred to in Paragraph 1 of the preceding article shall submit an application containing the information listed below to the Minister of Economy Trade and Industry.
(i) Name and address, or name and address of representative in the case of a corporation
(ii) Service area, a general electric utility to which electricity will be supplied, or supply location.
(iii) Following information on electric structures to be used for the applied electric utility:
  (a) Location of installations, type of motive power, frequency and output for electric power generation business;
  (b) Location of installations, frequency and output for electric power transformation business;
  (c) Location of installations, electricity mode, method of establishment, number of lines, frequency and voltage for electric power transmission business; and
  (d) Electricity mode, frequency and voltage for electric power distribution business.

2. The application in the preceding paragraph must contain the business plan, statement of estimated business income and expenditures, and other documents required by the ordinance of Ministry of Economy Trade and Industry.
(Criteria for Licensing)
Article 5. The license referred to in Paragraph 1 of Article 3 shall not be granted unless the Minister of Economy Trade and Industry recognizes that the application for the license meets the following conditions:
(i) The commencement of the applied electric utility meets properly general electricity demand, demand of general electric utilities industry or demand at the service location;
(ii) There exists a sufficient financial basis and sufficient technical ability for the proper operation of the applied electric utility;
(iii) The plan of the applied electric utility is sound;
(iv) The capacity of the electric structures to be used for the applied electric utility corresponds to the electricity demand in the service area or the service location in case that the applied electric utility is a general electric utility or a specific electric utility;
(v) The commencement of the applied electric utility is not supposed to cause remarkable excess in electric structures for the used of general electric utilities industry in all or part of the service area in case that the applied electric utility is a general electric utility;
(vi) The commencement of the applied electric utility is not supposed to be in danger of obstructing the interests of users of electricity within the service area of a general electric utilities industry in case that an application is for a specific electric utility with a service location where is within the service area of that general electric utilities industry; and
(vii) In addition to the conditions listed above, in case that an application is for a general electric utility or wholesale electric utility, the commencement of the applied electric utility is necessary and appropriate for the promotion of comprehensive and reasonable development of electric utilities industry and for the public interest, and in case that an application is for a specific electric utility, the commencement of the applied electric utility is appropriate in the light of the public interest.

(License)
Article 6.
2. The license shall contain the following information:
(i) Date and number of the permission;
(ii) Name and address;
(iii) Supply area, general electric utilities to which electricity will be supplied, or supply location.
(iv) Following information on electric structures to be used for electric utility; and
  (a) Location of installations, type of motive power, frequency and output for electric power generation business.

(Obligations at Beginning the Business)
Article 7. An electric utility (excluding specific-scale electric utility) shall begin the licensed business within the time, not more than ten years from the date when the permission is granted, designated by the Minister of Economy Trade and Industry.
2. The Minister of Economy Trade and Industry, when it is deemed particularly necessary, may specify the time in accordance with the preceding paragraph, classifying service area, a general electric utility to which electricity will be

supplied, or supply location.
3. The Minister of Economy Trade and Industry may, if deemed that there exist due reasons, extend the time designated in Paragraph 1 in case that such extension is applied from an electric utility.
4. An electric utility shall notify the Minister of Economy Trade and Industry without delay when it begins the business.
(Alterations in Electric Structures, etc.)
Article 9. When an electric utility intends to alter the items referred to in Article 6, Paragraph 2, Subparagraph (iv), this shall be notified to the Minister of Economy Trade and Industry, unless the alteration is so minor as specified in the ordinance of Ministry of Economy Trade and Industry.
(Revocation of Licensing, etc.)
Article 15. The Minister of Economy Trade and Industry may revoke the license issued in accordance with Article 3, Paragraph 1, when an electric utility does not begin the licensed business within the time specified in Article 7, Paragraph 1 (or within the extended period specified in Paragraph 3 of the said article, the same, hereinafter).
2. Except as provided in preceding paragraph, the Minister of Economy Trade and Industry may revoke the license issued in accordance with Article 3, Paragraph 1, when an electric utility has violated the provisions of this Law or an order based on this Law and the violation is deemed to threaten the public interest.
(Duty of Electricity Supply, etc.)
Article 18. A general electric utility shall not refuse to supply electricity to correspond general electric demand within its supply area (excluding demand at the supply locations where a specific electric utility has begun its business based on the license in accordance with Article 3, Paragraph 1 (hereinafter referred to as "area of business commencement") and specific-scale electric demand).
(Supply Stipulations, etc. by General Electric Utility)
Article 19. A general electric utility shall set supply stipulations concerning power rates or other conditions for supply of electricity to correspond general electric demand (excluding specific-scale demand), and shall obtain the approval of the Minister of Economy Trade and Industry in accordance with the ordinance of Ministry of Economy Trade and Industry. The same is applied to modifications of the stipulations.
2. The Minister of Economy Trade and Industry shall approve the supply stipulations referred to in the preceding paragraph when it recognizes that the application for the approval meets the following conditions:
(i) The rates correspond to an appropriate rate of profit added to an appropriate cost under efficient management;
(ii) The rates are set clearly as a fixed rate or fixed amount according to the type of supply;
(iii) Appropriate and clear determination has been made of matters related to the responsibilities of the general electric utility and the users of electricity, and of methods for allocating expenses related to electrical instruments, other equipment, wiring work, and other construction work; and
(iv) There exists no unjust, discriminatory treatment of specific parties.
3. Notwithstanding latter part of Paragraph 1 of this article, a general electric utility may changes the power rates or other conditions for supply of electricity defined in the supply stipulations (when the alteration has been notified in accordance with the following paragraph, the modified supply stipulations, the same in this article) approved in accordance with Paragraph 1 of this article, if the change meets the case described in the ordinance of Ministry of Economy Trade and Industry; such that the change is reduction of the power rates or the change is not deemed to threaten the public interest..
4. A general electric utility shall notify the modified supply stipulations to the Minister of Economy Trade and Industry, as specified in the ordinance of Ministry of Economy Trade and Industry, when it changes the power rates and other conditions in accordance with the preceding paragraph
5. In the case that the Minister of Economy Trade and Industry deems that the modified supply stipulations submitted in accordance with the preceding paragraph do not meet any of the following subparagraphs, he may order the general electric utility to reconsider the supply stipulations indicating a suitable deadline:
(i) The rates are set clearly as a fixed rate or fixed amount according to the type of supply;
(ii) Appropriate and clear determination has been made of matters related to the responsibilities of the general electric utility and the users of electricity, and of methods for allocating expenses related to electrical instruments, other equipment, wiring work, and other construction work; and
(iii) There exists no unjust, discriminatory treatment of specific parties.
6. Concerning to the rates of power and other supply conditions to apply the rates, a general electric utility may set the stipulations established in the supply conditions which is different from those established by the supply stipulations received the approval of Paragraph 1, so that the users of electricity may chose it replaces with the supply stipulations, when it is expected that it contributes to efficient use of the equipment which is used for general electric utility and/or other efficient enterprise management of the concerned general electric utility.
7. When the general electric utility set the stipulations in accordance with the preceding paragraph, the stipulations (hereinafter referred to as "option stipulations") shall be notified to the Minister of Economy Trade and Industry in accordance with the ordinance of Ministry of Economy Trade and Industry. The same shall be applied when the option stipulations are altered.
8. In the case that the Minister of Economy Trade and Industry deems that the option stipulations submitted in accordance with the preceding paragraph do not meet any of the following subparagraphs, he may order the general electric utility to reconsider the option stipulations indicating a suitable deadline:
(i) It contributes to the efficient use of the equipment, which is used for general electric utility, and/or other efficient enterprise management of the concerned general electric utility;
(ii) It is not deemed to threaten the profits of those who receive electric supply in the supply stipulations approved in accordance with Paragraph 1 of this article;
(iii) The rates are set clearly as fixed rate or fixed amount; or
(iv) There exists no unjust, discriminatory treatment of specific parties.

(Depreciation, etc.)
Article 35. The Minister of Economy Trade and Industry may order a electric utility to establish and implement a method or fixed amount on suitable depreciation for fixed assets used for its electric utility (excluding specific-scale electric utility) or to build up reserve funds or allocations in a specified method or amount, when deemed particularly necessary for the proper management of an electric utility (excluding specific-scale electric utility),
(Maintenance of Electric Structure for Business Use)
Article 39. A person who established electric structure for business use shall maintain it so that it is to be in conformity with the technical standards specified in the ordinance of Ministry of Economy Trade and Industry.
2. The ordinance of the Minister of Economy Trade and Industry referred to in the preceding paragraph shall be based on the followings:
(i) To prevent electric structure for business use from causing harm to persons or to objects;
(ii) To prevent the electric structure for business use from causing electrical or magnetic interference on the function of other electric equipment or other objects;
(iii) To prevent damage of the electric structure for business use from causing remarkable interference to the supply of electricity by an electric utility; and
(iv) To prevent damage of the electric structure for business use from causing remarkable interference to the supply of electricity by a general electric utility, in case that these electric structures for business use are used for a general electric utility.
(Orders for Conformity with Technical Standards)
Article 40. The Minister of Economy Trade and Industry may order the person who established electric structure for business use to repair, alter, or move the structure so that it conforms with the technical standards specified in the ordinance of the Minister of Economy Trade and Industry described in Paragraph 1 of the preceding article, or to halt temporarily its use, or place restrictions on the use of it, when deemed that the electrical structure for business use is not in conformity with the technical standards.
(Fitness-for-Safety Program)
Article 42. A person who established an electric structure for business use shall establish an fitness-for-safety program for each responsible organization on the electric structure for business use, needed to be preserved as a unitarily, required by the ordinance of Ministry of Economy Trade and Industry to ensure fitness for safety of the construction, maintenance and operation of the electric structure for business use, and shall notify it to the Minister of Economy Trade and Industry prior to beginning usage (or construction work if it is accompanied with licensee's welding inspection specified in Article 52, Paragraph 1) of the electric structure for business use by the concerned organization.
2. A person who established an electric structure for business use shall notify the Minister of Economy Trade and Industry without delay when he has altered his fitness-for-safety program.
3. The Minister of Economy Trade and Industry may order a person who established the electric structure for business use to make changes its fitness-for-safety program, when deemed necessary to ensure fitness for safety of construction, maintenance, and operation of a concerned electric structure for business use.
4. A person who established an electric structure for business use and his employee shall comply with the fitness-for-safety program.
(Chief Engineers)
Article 43. A person who established an electric structure for business use shall assign a person who had received license of chief engineer as a chief engineer in order to supervise ensuring fitness for safety of construction, maintenance and operation of electric structure for business use, as specified in the ordinance of the Minister of Economy Trade and Industry.
3. A person who established an electric structure for business use shall notify a fact to the Minister of Economy Trade and Industry without delay when he assigned a chief engineer (excluding the appointment with the permission referred to in the preceding paragraph). The same is applied when the chief engineer is dismissed.
4. The chief engineer shall perform faithfully his duty on supervision of ensuring fitness for safety concerning construction, maintenance and operation of electric structure for business use.
5. A person who engaged in construction, maintenance and operation of an electric structure for business use shall follow the chief engineer's instructions for fitness for safety.
(Chief Engineer's License)
Article 44. Types of chief engineer’s license for are as follows.
(i) Class I Chief Electrical Engineer’s License
(ii) Class II Chief Electrical Engineer’s License
(iii) Class III Chief Electrical Engineer’s License.
(iv) Class I Chief Boiler and Turbine Engineer’s License
(v) Class II Chief Boiler and Turbine Engineer’s License
2. The Minister of Economy Trade and Industry grant the Licenses License of Chief Engineer to those persons who meet any of the followings:
(i) Persons with an academic career or qualifications who have practical experience provided for in the ordinance of the Minister of Economy Trade and Industry for each type of chief engineer’s licenses; and
(ii) Persons who have passed the qualification test for chief electrical engineer in case of a chief engineer’s license of Subparagraph (i) through Subparagraph (iii) of the preceding paragraph.
3. The Minister of Economy Trade and Industry may refrain from issuing a chief engineer’s license to a person to whom any of the following applies:
(i) A person who was ordered to return his chief engineer’s license, according to the following paragraph, within one year after issuing the order; or
(ii) A person who was ordered to pay a fine or undergo more severe punishment due to the violation of the provisions of

this Law or orders based on this Law, within two years after the punishment was completed or ended.
4. The Minister of Economy Trade and Industry may order the return of the chief engineer's license if a person who has received a chief engineer's license has violated the provisions of this Law or orders based on this Law,.
5. The scope of construction, maintenance and operation of electric structure for business use which a person who has received a chief engineer's license may supervise on fitness for safety and procedural matters related to the issuance of chief engineer's licenses shall be provided in the ordinance of the Minister of Economy Trade and Industry.
(Qualification test for Chief Electrical Engineers)
Article 45. The qualification test for chief electrical engineers shall be conducted by the Minister of Economy Trade and Industry for each type of chief engineer's licenses, concerning knowledge and skills necessary for fitness for safety of construction, maintenance and operation of an electric structure for business use.
2. The Minister of Economy Trade and Industry may entrust a designated party (hereinafter referred to as "designated organization for qualification test") to conduct the duties on execution of the qualification test for chief electrical engineers.
3. Details of the execution of qualification test for chief electrical engineers, including test subjects and test-taking procedures, shall be provided in the ordinance of the Minister of Economy Trade and Industry.
(Environmental Impact Assessment concerning Electric Structure for Business Use)
Article 46-2. Environmental impact assessment and its procedures specified in Article 2, Paragraph 1 of the Environmental Impact Assessment Law (Law No. 81 of 1997), with respect to construction work to establish or alter electric structure for business use of the Class-1 Project specified in Article 2, Paragraph 2 or the Class-2 Project specified in Article 2, Paragraph 3 of the said law, are provided for in the said law and the concerned stipulations in this Law.
(Environmental Impact Assessment by Simplified Method)
Article 46-3. Any person who intends to perform construction work to establish or alter electric structure for business use of the Class-2 Project specified in Article 2, Paragraph 3 of the Environmental Impact Assessment Law shall describe the result of the environmental impact assessment for the construction work that has been performed by simplified method pursuant to the ordinance of Ministry of Economy Trade and Industry, on a written report specified in the first half of Article 4, Paragraph 1 of the said law, as well as the items specified in the same paragraph of the said law.
(Preparation of Planning Document)
Article 46-4. Any person (hereinafter referred to as a "specific business operator") who intends to perform construction work which establishes or alters electric structure for business use and conforms to the project (hereinafter referred to as a "specific project") specified in Paragraph 4 of Article 2 of the Environmental Impact Assessment Law shall describe items to be considered in an environmental impact assessment of the specific project and the methods of survey, prediction and assessment, irrespective of the provision of the fourth subparagraph of the same paragraph, in a planning document on environmental impact assessment (hereinafter referred to as a "planning document") specified in Paragraph 1 of Article 5 of the said law.
(Submittal of Planning Document)
Article 46-5. A specific business operator shall submit the planning document to the Minister of Economy Trade and Industry at the same time when it is submitted pursuant to Paragraph 1 of Article 6 of the Environmental Impact Assessment Law.
(Submittal of an Outline of Comments Regarding the Planning Document)
Article 46-6. A specific business operator shall describe his view for the comments, presented pursuant to Paragraph 1 of Article 8 of the Environmental Impact Assessment Law, in the document specified in Article 9 of the said law, in addition to the items specified in the same article.
2. A specific business operator shall submit the document pursuant to Article 9 of the Environmental Impact Assessment Law to the Minister of Economy Trade and Industry at the same time when he submits the document pursuant to the same article.
(Comments of Governor of Prefectures regarding Planning Document)
Article 46-7. Comments of the governor of prefecture(s) pursuant to Paragraph 1 of Article 10 of the Environmental Impact Assessment Law on the specific project shall be presented to the Minister of Economy Trade and Industry as a substitute for the business operator, irrespective of the provision of the same paragraph.
2. In making the comments on specific project, pursuant to Paragraph 1 of Article 10 of the Environmental Impact Assessment Law, the governor of prefecture(s) shall take into consideration the view of the business operator described in the documents, specified in Article 9 of the said law, pursuant to Paragraph 1 of the preceding article as well as the provision of Paragraph 3 of Article 10 of the said law.
(Recommendation on Planning Document)
Article 46-8. In case that planning document is submitted pursuant to Article 46-5, the Minister of Economy Trade and Industry reviews scooping document, considering the comments of the governor of prefecture(s) made pursuant to Paragraph 1 of Article 10 of the Environmental Impact Assessment Law and paying due consideration to an outline of the comments made pursuant to Paragraph 1 of Article 8 of the said law and the view of the business operator on the outline of comments, submitted pursuant to Paragraph 2 of Article 46-6. The Minister may issue necessary recommendation to the specific business operator on the items to be considered in an environmental impact assessment of the specific project and the methods of survey, prediction and assessment, within a time to be established by the ordinance of Ministry of Economy Trade and Industry from the date when the document was submitted pursuant to Article 46-5, when deemed it to be the necessary to assure proper measures to protect the environment.
2. The Minister of Economy Trade and Industry shall notify the purport to the specific business operator without delay when he admits it unnecessary to issue the recommendation pursuant to the provisions of the preceding paragraph.
3. The Minister of Economy Trade and Industry shall provide a copy of the written report submitted pursuant to Paragraph 1 of Article 10 of the Environmental Impact Assessment Law to the specific business operator at the same time when he issues recommendation pursuant to Paragraph 1 or notifies pursuant to Paragraph 2 of this article.
(Selection of Items to be Considered in Environmental Impact Assessment)

Article 46-9. A specific business operator, upon receiving the recommendation pursuant to Paragraph 1 of the preceding article, shall conduct further study, based on the recommendation, considering the comments made pursuant to Paragraph 1 of Article 10 of the Environmental Impact Assessment Law and paying due consideration to the comments made pursuant to Article 8, Paragraph 1 of the said law, in the review pursuant to Article 11, Paragraph 1 of the said law.

(Preparation of Draft Environmental Assessment Statement)

Article 46-10. A specific business operator shall describe contents of the recommendation issued pursuant to Paragraph 1 of Article 46-8, as well as the items specified in each subparagraph of Article 14, Paragraph 1 of the Environmental Impact Assessment Law, in the draft of Environmental Assessment Statement (hereinafter referred to as a "draft EIS") defined in the same paragraph of the said law.

(Submittal of Draft EIS)

Article 46-11. A specific business operator, when submitting a draft EIS and its summary pursuant to the provisions of Article 15 of the Environmental Impact Assessment Law, shall submit them to the Minister of Economy Trade and Industry at the same time.

(Submittal of Outline of Comments Regarding Draft EIS)

Article 46-12. A specific business operator, when submitting the document pursuant to Article 19 of the Environmental Impact Assessment Law, shall submit it to the Minister of Economy Trade and Industry at the same time.

(Opinions of Related Governor(s) Regarding Draft EIS)

Article 46-13. Opinions of the related governors of prefectures pursuant to Article 20, Paragraph 1 of the Environmental Impact Assessment Law on the specific project shall be presented to the Minister of Economy Trade and Industry as a substitute for the business operator, irrespective of the provision of the same paragraph.

(Recommendation on Draft EIS)

Article 46-14. In case that draft EIS is submitted pursuant to Article 46-11, the Minister of Economy Trade and Industry reviews draft EIS, considering the comments of the related governors of prefectures made pursuant to Article 20, Paragraph 1 of the Environmental Impact Assessment Law and paying due consideration to an outline of the comments made pursuant to Article 18, Paragraph 1 of the said law and the view of a business operator on the outline of comments, submitted pursuant to Article 46-12. The Minister may issue necessary recommendation to the specific business operator on the environmental impact assessment of the specific project, within a time to be established by the ordinance of Ministry of Economy Trade and Industry from the date when the document was submitted pursuant to Article 46-12, when deemed it to be the necessary to assure proper measures to protect the environment.

2. The Minister of Economy Trade and Industry shall obtain an opinion from a viewpoint of protecting an environment from The Minister of Environment at the review conducted pursuant to preceding paragraph.

3. The Minister of Economy Trade and Industry shall notify the purport to a specific business operator without delay when he admits it unnecessary to issue the recommendation pursuant to Paragraph 1 of this article.

4. The Minister of Economy Trade and Industry shall provide a copy of the submittal pursuant to Article 20, Paragraph 1 of the Environmental Impact Assessment Law to a specific business operator at the same time when he issues recommendation pursuant to Paragraph 1 or notifies pursuant to Paragraph 2 of this article.

(Preparation of Environmental Impact Statement)

Article 46-15. A specific business operator, upon receiving the recommendation pursuant to Paragraph 1 of preceding article, shall conduct further study, based on the recommendation, considering the comments made pursuant to Article 20, Paragraph 1 of the Environmental Impact Assessment Law and paying due consideration to the comments made pursuant to Article 18, Paragraph of the said law, in the review pursuant to Article 21, Paragraph 1 of the said law.

2. A specific business operator shall describe contents of the recommendation issued pursuant to Article 46-8, Paragraph 1 and Paragraph 1 of the preceding article, as well as the items specified in each paragraph of to Article 21, Paragraph 1 of the Environmental Impact Assessment Law, in the Environmental Assessment Statement (hereinafter referred to as a "EIS") defined in the same paragraph of the said law.

(Submittal of EIS)

Article 46-16. A specific business operator, after preparing the EIS pursuant to Article 21, Paragraph 2 of the Environmental Impact Assessment Law, shall submit it to the Minister of Economy Trade and Industry. The same shall be done when a specific business operator alters the EIS in response to the order issued pursuant to Paragraph 1 of the following article.

(Order of Alteration)

Article 46-17. Regarding a specific project on which the EIS was submitted pursuant to preceding article, the Minister of Economy Trade and Industry, may order the specific business operator to alter the EIS with setting the appropriate deadline but within a time to be established by the ordinance of Ministry of Economy Trade and Industry from the day received the EIS pursuant to the same article, when deemed it to be especially necessary and appropriate to assure proper measurement to protect the environment.

2. The Minister of Economy Trade and Industry shall notify the purport to the specific business operator without delay when he admits it unnecessary to order pursuant to preceding paragraph.

(Submittal of EIS)

Article 46-18. The Minister of Economy Trade and Industry, when issuing the notification pursuant to Paragraph 2 of the preceding article, shall submit the copy of the concerned EIS to the Minister of the Environment issued.

2. A specific business operator, upon receiving the notification pursuant to Paragraph 2 of the preceding article, shall promptly submit the concerned EIS, its summary and the document describing the content of the order pursuant to Paragraph 1 of the preceding article to the related governors of prefectures and related mayors of cities, towns and villages, specified in Article 15 of the Environmental Impact Assessment Law.

(Announcement and Exhibition to Public)

Article 46-19. Concerning the application of Article 27 of the Environmental Impact Assessment Law to a specific business operator, "making a submission or notice pursuant to the provisions of Article 25, Paragraph 3" in that article shall be

construed to "receiving the notice pursuant to the provisions of Article 46-17, Paragraph 2 of the Electricity Utilities Industry Law", "EIS" shall be construed to "concerned EIS", and "EIS, the summary, and the papers specified in Article 24" shall be construed to "the concerned EIS, its summary and the document describing the content of the order pursuant to Paragraph 1 of the same article".

(Consideration for Protection of Environment)

Article 46-20. A specific business operator shall implement the specific project paying proper consideration in protecting the environment pursuant to Article 38, Paragraph 1 of the Environmental Impact Assessment Law, and maintain and operate the electric structure for business use concerning the specific project paying proper consideration in protecting the environment pursuant to the contents of the EIS concerning the notification issued pursuant to Article 46-17, Paragraph 2.

(Technical Reinterpretation for Application of Environmental Impact Assessment Law)

Article 46-21. Technical reinterpretation for application of the provisions of the Environmental Impact Assessment Law over the specific business operator and items required for application of the provisions of the said law to the specific business operator other than those specified in this stipulation, shall be provided for in the government ordinance.

(Exemptions for Application of the Environmental Impact Assessment Law)

Article 46-22. Provisions of Article 22 through Article 26 and Article 33 through Article 37 of the Environmental Impact Assessment Law shall not be applied to the specific project of the specific business operator.

(Construction Plans)

Article 47. Any person who intend to conduct construction work to establish or alter an electric structure for business use, defined as extremely important to assure public safety in the ordinance of Ministry of Economy Trade and Industry, shall obtain an approval of the construction plans from the Minister of Economy Trade and Industry, unless the work is unavoidably temporary one in case of an emergency such as destruction or damage of an electric structure for business use, or a disaster.

2. A person who has received the approval pursuant to the preceding paragraph shall obtain the approval of the Minister of Economy Trade and Industry if he intends to alter the construction plan for which the approval was granted, unless the alteration is minor one specified in the ordinance of the Minister of Economy Trade and Industry.

3. The Minister of Economy Trade and Industry shall grant the approval of each of two preceding paragraphs when the construction plan applying for approval pursuant to each of two preceding paragraphs meets all of the requirements set forth below.

(i) The electric structure for business use conforms to the technical standards specified in the ordinance of Ministry of Economy Trade and Industry referred to in Article 39, Paragraph 1.

(ii) The electric structure for business use shall be technically appropriate one in ensuring smooth supply of electricity when in case that an electric structures for business use is devoted to a general electric utility.

(iii) Regarding a specific project, it shall conform to the EIS concerning the notification issued pursuant to Article 46-17, Paragraph 2.

4. A person who establishes an electric structure for business use, in case of latter part of Paragraph 1, shall notify the fact to Ministry of Economy Trade and Industry without delay after beginning concerned work.

5. A person who received the approval pursuant to Paragraph 1, in case of latter part of Paragraph 2, shall notify the altered construction plan to Ministry of Economy Trade and Industry without delay after altering it, unless the case is specified in the ordinance of Ministry of Economy Trade and Industry.

Article 48. Any person who intends to conduct construction work to establish or alter an electric structure for business use (excluding the work defined in the ordinance of Ministry of Economy Trade and Industry, described in Paragraph 1 of the preceding article) shall notify the Minister of Economy Trade and Industry of the construction plan. The same shall be applied to alterations of concerned construction plan (excluding minor alterations specified in the ordinance of Ministry of Economy Trade and Industry).

2. A person who has made the notification pursuant to the preceding paragraph may not begin the construction work concerning the notification within thirty days from the day on which the notification was accepted.

3. The Minister of Economy Trade and Industry may reduce the time required by the preceding paragraph when the construction plan notified pursuant to Paragraph 1 of this article meets all of the requirements set forth below;

(i) The requirements specified in each item of Paragraph 3 of the preceding article.

4. The Minister of Economy Trade and Industry may order the person who notified pursuant to Paragraph 1 of this article to alter or abolish the notified construction plan within thirty days (or extended period in case that the period defined in Paragraph 2 of this article is extended pursuant to the following paragraph) from the accepted date of the notification, unless the construction plan notified pursuant to Paragraph 1 of this article is deemed to conform to any of the requirements in Paragraph 3 of the preceding article.

5. The Minister of Economy Trade and Industry may appropriately extend the period specified in Paragraph 2 of this article, when the review on assurance of conformability of the construction plan notified pursuant to Paragraph 1 of this article to each requirements specified in Paragraph 3 of this article requires considerable period, and there exists reasonable reason for the concerned review not to be completed within the period specified in Paragraph 2 of this article. In this case, the Minister of Economy Trade and Industry, without delay, shall notify the extended period and the reason for the extension to the person who notified.

(Pre-service Inspection)

Article 49. Regarding an electric structure for business use, defined as extremely important to assure public safety in the ordinance of Ministry of Economy Trade and Industry, which is constructed or altered with the approval pursuant to Article 47, Paragraph 1 or Paragraph 2, or which is constructed or altered with the notification pursuant to Paragraph 1 of the preceding article (excluding structure for which no notification has been made pursuant to Article 47, Paragraph 1, in case that an order was issued concerning the construction plan referred to in Paragraph 4 of the said article), the structure shall be subject to inspection on its work conducted by of the Minister of Economy Trade and Industry or an person designated by the

Minister of Economy Trade and Industry, in accordance with the ordinance of Ministry of Economy Trade and Industry, and shall not be used before the structure has passed such inspection, except a case provided in the ordinance of Ministry of Economy Trade and Industry.

2. The electric structure for business use shall pass the inspection specified in preceding paragraph if it meets all of the following requirements:

(i) The construction work was performed in accordance with the construction plan approved pursuant to Article 47, Paragraph 1 or Paragraph 2 (including minor alterations, defined in the ordinance of Ministry of Economy Trade and Industry, pursuant to latter part of Article 47, Paragraph 2), or the construction plan notified pursuant to Paragraph 1 of the preceding article (including minor alterations, defined in the ordinance of Ministry of Economy Trade and Industry, pursuant to the latter part of that paragraph); and

(ii) It conforms to the technical standards specified in the ordinance of Ministry of Economy Trade and Industry referred to in Article 39, Paragraph 1.

3. In accordance with the ordinance of Ministry of Economy Trade and Industry, the Minister of Economy Trade and Industry make the independent administrative agency, Japan Nuclear Energy Safety Organization (hereinafter referred to as the "Organization") to carry out a part of affairs concerning the inspection provided in Paragraph 1, to examine whether the specific electric structures for business use using nuclear power as motive force for electric power generation, which are specified in the ordinance of Ministry of Economy Trade and Industry, meet all of the requirements provided in the preceding paragraph.

4. When the Organization has carried out a part of affairs concerning the inspection pursuant to the preceding paragraph, the results shall be notified without delay to the Minister of Economy Trade and Industry in accordance with the ordinance of Ministry of Economy Trade and Industry.

(Pre-service Inspection on Safety Management)

Article 50-2. Any person who intends to establish an electric structure for business use, which are specified in the ordinance of Ministry of Economy Trade and Industry submitting a notification to conduct construction work to establish or alter pursuant to Article 48, Paragraph 1 (excluding structures for which no notification has been made pursuant to Paragraph 1 of the same article, in the case that an order was issued concerning the construction plan pursuant to Paragraph 4 of the same article, and those which are specified in the ordinance of Ministry of Economy Trade and Industry of Article 49, Paragraph 1), shall implement the self controlled inspection before use of the concerned electric structure for business use, and the results of the inspection shall be recorded and maintained in accordance with the ordinance of Ministry of Economy Trade and Industry.

2. The electric structure for business use shall be confirmed that all of the following requirements are Ministry of Economy, Trade and Industry in the inspection specified in the preceding paragraph (hereinafter referred to as "pre-service self controlled inspection"):

(i) The construction work shall be conducted in accordance with the construction plan notified pursuant to Article 48, Paragraph 1 (including minor alterations specified in the ordinance of Ministry of Economy Trade and Industry of the latter part of the same paragraph); and

(ii) It shall be in conformity with the technical standards specified in the ordinance of Ministry of Economy Trade and Industry of Article 39, Paragraph 1.

3. A person who establishes the electric structure for business use, performing the pre-service self controlled inspection, shall undergo the examination on the organization for implementation of the pre-service self controlled inspection at the time specified in the ordinance of Ministry of Economy Trade and Industry (in the case of receiving the notification pursuant to Paragraph 7, at the time specified in the ordinance of Ministry of Economy Trade and Industry reflecting the past evaluation results of the pre-service self controlled inspection of the concerned notice), for a person who establishes the electric structure for business use specified in the ordinance of Ministry of Economy Trade and Industry, by the party enrolled by the Minister of Economy Trade and Industry, and for other persons, by the Minister of Economy Trade and Industry.

4. The examination of the preceding paragraph, as a purport of safety management of electric structures for business use, shall be conducted concerning the pre-service self-controlled inspection on the implementing organization, inspection methods, schedule control, and other items specified in the ordinance of Ministry of Economy Trade and Industry.

5. When the party enrolled by the Minister of Economy Trade and Industry in accordance with Paragraph 3 has carried out the examination provided in the same paragraph, the results of the concerned examination shall be notified without delay to the Minister of Economy Trade and Industry in accordance with the ordinance of Ministry of Economy Trade and Industry.

6. Based on the results of examination pursuant to Paragraph 3 (including the results of the examination notified pursuant to the preceding paragraph), the Minister of Economy Trade and Industry shall comprehensively evaluate the implementing organization of the pre-service self controlled inspection of the person who establishes the concerned electric structure for business use.

7. The Minister of Economy Trade and Industry shall notify the results of the examination pursuant to Paragraph 3 and the evaluation of the preceding paragraph to the person who undergo the concerned examination.

(Inspection on Fuel Assembly)

Article 51. Nuclear fuel material to be used as fuel for nuclear power reactors (hereinafter referred to as "fuel material") shall be subject to inspection by the Minister of Economy Trade and Industry at each of the fabrication processes, specified in the ordinance of Ministry of Economy Trade and Industry, and shall not be used before it has passed the inspection, except a case specified in Paragraph 3 and cases specified in the ordinance of Ministry of Economy Trade and Industry.

2. Fuel material shall pass the inspection specified in the preceding paragraph if it meets both of the following requirements:

(i) Its fabrication is performed in accordance with the design approved by the Minister of Economy Trade and Industry in advance; and

(ii) It conforms to the technical standards specified in the ordinance of Ministry of Economy Trade and Industry.

3. Imported fuel material shall not be used unless it has passed the inspection of the Minister of Economy Trade and Industry.

4. Imported fuel material shall pass the inspection described in the preceding paragraph if it conforms to the technical standards specified in the ordinance of Ministry of Economy Trade and Industry described in Paragraph 2, Subparagraph 2 of this article.
5. In accordance with the ordinance of Ministry of Economy Trade and Industry, the Minister of Economy Trade and Industry makes the organization to carry out a part of affairs concerning the inspection specified in Paragraph 1 and Paragraph 3.
6. When the Organization has carried out a part of affairs concerning the inspection pursuant to the preceding paragraph, the results shall be notified without delay to the Minister of Economy Trade and Industry in accordance with the ordinance of Ministry of Economy Trade and Industry.
(Inspection on Welding Safety Management)
Article 52. Any person who intends to establish electric structures specified below shall perform licensee's inspection on weld of them before use pursuant to the ordinance of the Ministry of Economy Trade and Industry and the results of the inspection shall be recorded and maintained, except the case defined in the ordinance of Ministry of Economy Trade and Industry; those electric structures (hereinafter referred to as "boilers, etc.") for power generation, which are boiler, turbine, or other mechanics or instrument specified in the ordinance of Ministry of Economy Trade and Industry, whose pressure parts (hereinafter referred to as "pressure part") are applied more than the pressure specified in the ordinance of Ministry of Economy Trade and Industry are welded (hereinafter referred to as "specific boiler, etc." in Paragraph 3); those electric structures (hereinafter referred to as "containment, etc.") for nuclear power reactor, which are containment vessel, or other mechanics and instruments specified in the ordinance of Ministry of Economy Trade and Industry, which are welded (hereinafter referred to as "specific containment, etc." in Paragraph 3); or those imported boilers, etc. whose pressure parts are welded (hereinafter referred to as "imported specific boiler, etc." in Paragraph 3), or those welded containment, etc. which are imported (hereinafter referred to as "imported specific containment, etc." in Paragraph 3).
2. In the inspection of the preceding paragraph (hereinafter referred to as "licensee's welding inspection"), it shall be confirmed that the welding conforms to the technical standards specified in the ordinance of Ministry of Economy Trade and Industry, referred to in Article 39, Paragraph 1.
3. A person who establishes the electric structures with performing the licensee's welding inspection shall undergo the examination on the implementing organization for of the licensee's welding inspection by the Minister of Economy Trade and Industry at the time specified in the ordinance of Ministry of Economy Trade and Industry (in the case of receiving the notification pursuant to Article 50-2, Paragraph 7 applied with necessary modification to the Paragraph 5, at the time specified in the ordinance of Ministry of Economy Trade and Industry reflecting the past evaluation result of the licensee's welding inspection of the concerned notice), for a person who establishes the specific boiler, etc. applying nuclear power as motive force for electric power generation or imported specific boiler, etc., which is specified in the ordinance of Ministry of Economy Trade and Industry, or specific containment, etc. or imported specified containment, etc., which is specified in the ordinance of Ministry of Economy Trade and Industry, by the Organization, and other persons, by the party designated by the Minister of Economy Trade and Industry.
4. The examination of the preceding paragraph, as a purport of safety management of electric structures, shall be conducted about the organization for implementation of the licensee's welding inspection, the inspection method, schedule control, and other items specified in the ordinance of Ministry of Economy Trade and Industry.
5.The provisions of Article 50-2, Paragraph 5 through Paragraph 7 shall be applied to the review provided in Paragraph 3 with necessary modification. In this case, the wording "the party designated by the Minister of Economy Trade and Industry pursuant to Paragraph 3" in Paragraph 5 of the said article shall be construed to mean "the Organization or the party designated by the Minister of Economy Trade and Industry pursuant to Paragraph 3", and the wording "concerned electric structure for business use" in Paragraph 6 of the said article to mean "concerned electric structure".
(Periodic Inspection)
Article 54. Any person who establishes a specific important electric structure (boiler, turbine or other electric structures for power generation, which is defined in the ordinance of Ministry of Economy Trade and Industry as a extremely important items for ensuring public safety and includes the parts being applied pressure more than the specified pressure in the ordinance of Ministry of Economy Trade and Industry, or nuclear power reactor or related components specified in the ordinance of Ministry of Economy Trade and Industry, the same in the following paragraph)
shall undergo the inspection by the Minister of Economy Trade and Industry in accordance with the ordinance of Ministry of Economy Trade and Industry at the interval specified in the ordinance of Ministry of Economy Trade and Industry. But this is not the case when specified in the ordinance of Ministry of Economy Trade and Industry.
2. In accordance with the ordinance of Ministry of Economy Trade and Industry, the Minister of Economy Trade and Industry makes the Organization to carry out a part of affairs concerning the inspection pursuant to the ordinance of Ministry of Economy Trade and Industry described in the preceding paragraph, which examine the specific important electric structure using nuclear power as motive force for electric power generation.
3. When the Organization has carried out a part of affairs concerning the inspection pursuant to the preceding paragraph, the results shall be notified without delay to the Minister of Economy Trade and Industry in accordance with the ordinance of Ministry of Economy Trade and Industry.
(Periodic Safety Management Inspection)
Article 55. Any person who establishes the specific electric structure (boiler, turbine, or other electric structure for power generation, which is specified in the ordinance of Ministry of Economy Trade and Industry and includes the parts being applied pressure more than the pressure specified in Paragraph 1 of the previous article, or nuclear power reactor or related components specified in the ordinance of Ministry of Economy Trade and Industry, the same, hereinafter) shall implement licensee's periodic inspection of the concerned specific electric structure and the results of the inspection shall be recorded and maintained, in accordance with the ordinance of Ministry of Economy Trade and Industry.
2. In the inspection of the preceding paragraph (hereinafter referred to as "licensee's periodic inspection"), it shall be

confirmed that the specific electric structure conforms to the technical standards specified in the ordinance of Ministry of Economy Trade and Industry as referred to Article 39, Paragraph 1.
3. A person who establishes the specific electric structure with performing the licensee's periodic inspection, at the concerned licensee's periodic inspection on the specific electric structure using nuclear power as motive force for electric power generation which is specified in the ordinance of Ministry of Economy Trade and Industry, when he deems that there is a portion with a possibility of deviation from the technical standard specified in the ordinance of Ministry of Economy Trade and Industry as referred to Article 39, Paragraph 1 after the designated period of time, shall evaluate the time forecasted to be that the portion concerned comes not meeting the technical standard specified in the said paragraph and other items specified in the ordinance of Ministry of Economy Trade and Industry, and the results shall be recorded and maintained as specified in the Ordinance of Ministry of Economy Trade and Industry, and moreover, he shall report the items specified in the ordinance of Ministry of Economy Trade and Industry to the Minister of Economy Trade and Industry.
4. A person who establishes the specific electric structure with performing the licensee's periodic inspection shall undergo the review on the implementing organization of the licensee's periodic inspection at the time specified in the ordinance of Ministry of Economy Trade and Industry (in the case of receiving the notification pursuant to Article 50, Paragraph 7, at the time specified in the ordinance of Ministry of Economy Trade and Industry reflecting the past evaluation results of the licensee's periodic inspection of the concerned notification), for a person who establishes the specific electric structure applying nuclear power as motive force for electric power generation, which is specified in the ordinance of Ministry of Economy Trade and Industry, by the Organization, a person who establishes the specified electric structure other than the specific electric structure applying nuclear power as motive force for electric power generation, which is specified in the ordinance of Ministry of Economy Trade and Industry, by the party enrolled by the Minister of Economy Trade and Industry, and for other persons, by the Minister of Economy Trade and Industry.
5. The review pursuant to the preceding paragraph, as a purport of safety management of specific electric structure, shall be conducted on the implementing organization of the licensee's periodic inspection, inspection methods, schedule control, and other items specified in the ordinance of Ministry of Economy Trade and Industry.
6. Provisions of Article 50-2, Paragraph 5 through Paragraph 7 shall be applied with necessary modification to the review provided in Paragraph 4. In this case, the wording "the party enrolled by the Minister of Economy Trade and Industry pursuant to Paragraph 3" in Paragraph 5 of the said article shall be construed to mean "the Organization or the party enrolled by the Minister of Economy Trade and Industry pursuant to Paragraph 4", and the wording "concerned electric structure for business use" in Paragraph 6 of the said article to mean "concerned specific electric structure".
(Enrollment)
Article 67. Enrollment of Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55 shall be enrolled upon application by persons who intend to perform the review (hereinafter referred to as "safety management review") pursuant to those provisions for each division (hereinafter referred to as "division of review ") as shown in the followings, in accordance with the ordinance of Ministry of Economy Trade and Industry:
(i) Review of Article 50-2, Paragraph 3;
(ii) Review of Article 52, Paragraph 3; and
(iii) Review of Article 55, Paragraph 4.
(Ineligibility Clause)
Article 68. Persons falling under any one of the followings cannot be enrolled for the enrollment specified in Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55:
(i) A person who has been condemned to the fine or heavier penalty for violation of the provisions of this law or the orders based on this law, and for whom two years have not yet elapsed after the execution of or after the relief from the execution of the penalty;
(ii) A person whose license in accordance with Article 78 has been cancelled and two years have not yet elapsed from the day of the cancellation; or
(iii) A juridical person who has a person who comes under one of the preceding two subparagraphs in his officials executing business.
(Criteria of Enrollment)
Article 69. The Minister of Economy Trade and Industry shall make the enrollment in accordance with Article 67 when a person who applies an enrollment (hereinafter referred to as "applicant for enrollment" in this paragraph) conforms to all the requisites described in the following subparagraphs (in this case, a necessary procedure for the enrollment is specified in the ordinance of Ministry of Economy Trade and Industry):
(i) Any person who falls under any of the following items shall perform the safety management review, and the number of such persons shall be two or more per each division of review;
  (a) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering, management engineering or equal to these and graduated from the university (except for a junior college) based on the School Education Law (1947, Law No. 26) or the old university based on the old University Order (1918, Imperial Decree No. 388), and have practical experience engaged in such as construction, maintenance, practical use of electric structures or the practice of safety management review for two years or more in total,
  (b) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering, management engineering or equal to these and graduated from the junior college or the technical college based on the School Education Law or the old technical school based on the old Technical School Order (1903, Imperial Decree No. 61), and have practical experience engaged in such as construction, maintenance, practical use of electric structures or the practice of safety management review for four years or more in total,
  (c) Any person who has practical experience engaged in such as construction, maintenance, practical use of electric structures or the practice of safety management review for six years or more in total, or
  (d) The applicant for enrollment shall not meet any of the following items which governed by those (hereinafter

referred to as "establisher of the electric structure for safety management review" in this subparagraph) who establishes the electric structure which shall undergo the safety management review in accordance with Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55:

a. In the case of the applicant for enrollment is a business corporation or a corporation, the establisher of the electric structure for safety management review is the parent company (which means “parent company” as provided in Article 211-2, Paragraph 1 of the Commercial Code (1899, Law No. 48)),
b. The rate of number of the officer and the office staff of the establisher of the electric structure for safety management review (including persons who were the officer or the office staff of the concerned establisher of the electric structure for safety management review in the past two years) to that of the officers of the applicant for enrollment (in the case of a copartner ship or a joint stock company, personnel who has executive power) is over the half, and
c. The applicant for enrollment (in the case of a corporation, the officer who has the right of representation) is the officer or the office staff of the concerned establisher of the electric structure for safety management review (including persons who were the officer or the office staff of the concerned establisher of the electric structure for safety management review in the past two years).

2. The enrollment of Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55 should state the following items in the register book of safety management review agencies:

(i) Date of the enrollment and enrollment number;
(ii) Name or business name and address of the person who obtained the enrollment, and name and address of the representative in the case of a corporation; and
(iii) Division of review.

(Renewal of Enrollment)

Article 70. When the enrollment pursuant to Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55 is not authorized the renewal for every time period that is defined as three years or more in the government ordinance, it loses the effect by passage of the time period.

2. The preceding three articles shall be applied with necessary modification to the renewal of enrollment of the preceding paragraph.

(Duties at the Safety Management Review)

Article 71. Any person who is enrolled pursuant to Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55 (hereinafter referred to as "safety management review agency") shall perform the safety management review without delay at any time when the safety management review is required, unless there is a lawful reason to refuse.

2. The enrolled safety management review agency shall perform the safety management review with justice and also in the way specified in the ordinance of Ministry of Economy Trade and Industry.

3. The enrolled safety management review agency, when performing the safety management review, shall make those who are specified in Article 69, Paragraph 1, Subparagraph 1 perform the safety management review.

(Change of Place of Business)

Article 72. The enrolled safety management review agency, when he is going to change the place of business performing the safety management review, shall submit a notification to the Minister of Economy Trade and Industry two weeks before the day of change.

(Review rules)

Article 73. The enrolled safety management review agency shall define rules in relation to the activities of the safety management review (hereinafter referred to as "review rules" in this section), and shall submit a notification to the Minister of Economy Trade and Industry before the initiation of activities of the safety management review. The same shall be applied to the modification of the review rules.

2. The implementing method of the safety management review, calculation formula of the charge for the safety management review, and other items specified in the ordinance of Ministry of Economy Trade and Industry should be defined in the review rules.

(Suspension or Discontinuance of Business)

Article 74. The enrolled safety management review agency, when he intends to suspend or discontinue all or part of his activities of the safety management review, shall submit a notification on it beforehand to the Minister of Economy Trade and Industry in accordance with the ordinance of Ministry of Economy Trade and Industry,.

(Providing and Inspection of Financial Statements, etc.)

Article 75. The enrolled safety management review agency shall prepare the assets inventory of the accounting year, balance sheets and profit and loss statements or income and expenditure account statements, and accounts of business or business reports (including electromagnetic records when these materials are prepared in the concerned electromagnetic records (records which are developed in an electronic method, a magnetic method, or other methods which cannot be recognized by human consciousness and used for information handling by an electronic computer, the same in this article.), or when the electromagnetic records are prepared instead of these material, and it is referred to as "financial statements, etc." in the following paragraph and Article 122-2) within three months after the end of the fiscal year and keep them for five years at the place of business.

2. The person interested, etc. of the establisher of the electric structure, who conducts the licensee's welding inspection, the periodic safety management review, and others may make following requests in at any time of the working hours of the enrolled safety management review agency. However, for the request of Subparagraph (ii) or Subparagraph (iv), he shall pay the expenses defined by the enrolled safety management review agency.

(i) When the financial statements, etc. have been prepared in the document, request of inspection or making a copy of the document concerned;
(ii) Request of the certified copy or the abridged copy of the document of the preceding subparagraph;

(iii) When the financial statements, etc. have been prepared in electromagnetic records, request of inspection or making a copy of what are displayed of the statements recorded on the electromagnetic record concerned by the method in accordance with the ordinance of Ministry of Economy Trade and Industry; or
(iv) Request of supply of the statement recorded on the electromagnetic record of the preceding subparagraph in the electromagnetic method, which is specified in the ordinance of Ministry of Economy Trade and Industry, or supply of the document which describes the statement concerned.

(Orders for Conformity)

Article 76. If an enrolled safety management review agency is deemed not to conform to any of the subparagraphs of Article 69, Paragraph 1, the Minister of Economy Trade and Industry may order the enrolled safety management review agency to take necessary measures to conform to those provisions.

(Orders for Improvement)

Article 77. If an enrolled safety management review agency is deemed not to conform to any of the provisions of Article 71, the Minister of Economy Trade and Industry may order the enrolled safety management review agency to perform the safety management review or to take necessary measures to improve the method of the safety management review or other activities.

(Revocation of Enrollment, etc.)

Article 78. The Minister of Economy Trade and Industry may order an enrolled safety management review agency to revoke the enrollment pursuant to Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55, or order suspension of all or part of its activities of safety management review for a period of time, unless the enrolled safety management review agency is deemed to conform to any of the followings:
(i) When he has violated the provisions of Article 50-2, Paragraph 5 (including the case applied with necessary modification to Paragraph 5, Article 52 or Paragraph 6, Article 55), Article 71, Article 72, Paragraph 1 of Article 73, Article 74, Paragraph 1 of Article 75, or the following article;
(ii) When he has come under one of Article 68, Subparagraph 1 or Subparagraph 3;
(iii) When he has rejected the request provided in subparagraphs of Article 75, Paragraph 2 without any lawful reason;
(iv) When he has violated the order provided in the previous two articles; or
(v) When he has obtained the enrollment specified in Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55 by means not justified.

(Accounting Books)

Article 79. An enrolled safety management review agency shall keep the accounting book and record the items specified in the ordinance of Ministry of Economy Trade and Industry concerning the activities of the safety management review.
2. The accounting book described in the preceding paragraph must be kept in accordance with the ordinance of Ministry of Economy Trade and Industry.

(Implementation of Safety Management Review Activities by the Minister of Economy Trade and Industry)

Article 80. The Minister of Economy Trade and Industry may implement all or part of the concerned activities of the safety management review by himself, when nobody is enrolled for Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55, when he has received the notification to suspend or discontinue all or part of the activities of the safety management review in accordance with Article 74, when he has revoked the enrollment of Paragraph 3 of Article 50-2, Paragraph 3 of Article 52, or Paragraph 4 of Article 55 in accordance with Article 78 or ordered an enrolled safety management review agency to suspend all or part of the activities of the safety management review, when he become difficult to make an enrolled safety management review agency perform all or part of its activities of the safety management review because of natural disaster or other reason, or when he deems it is necessary to implement the review.
2. In the case that the Minister of Economy Trade and Industry performs all or part of the activities of the safety management review as provided in the preceding paragraph, the taking over of activities of the safety management review and other necessary matters shall be specified in the ordinance of Ministry of Economy Trade and Industry.

(Designation of the Designated Organization for Safety Management Review)

Article 81. The designation specified in of Article 52, Paragraph 3 shall be conducted, pursuant to the ordinance of Ministry of Economy Trade and Industry, through the application of a party who intends to perform the review (hereinafter, referred generically as "safety management review") specified in Article 52, Paragraph 3, for each division defined in the ordinance of Ministry of Economy Trade and Industry.

(Duties of Safety Management Review)

Article 81-2. The organization designated in accordance with Article 52, Paragraph 3 (hereinafter referred to as "designated organization for safety management review") shall perform the safety management review without delay at any time when the safety management review is demanded, unless there exist due reason to refuse.
2. The designated organization for safety management review, when he performs the safety management review, shall make those specified in Article 69, Paragraph 1 applied with necessary modification to the following article (hereinafter referred to as "safety management review examiner") to performs the safety management review.

(Application with Modification)

Article 81-3. The following articles shall be applied to designated organizations for audit on safety management with appropriate modification; Article 68, Article 69, Article 72, Article 73, and Article 76 through Article 80. In this case, the wording "inspector" in Article76 shall be construed to mean "safety management review examiner".

(Electric Structure Inspector)

Article 104. The Electric Structure Inspector is assigned in Ministry of Economy Trade and Industry.
2. Electric Structure Inspectors engage in the office work for inspections specified in Paragraph 1 of Article 49, Paragraph 1 or Paragraph 3 of Article 51, or Paragraph 1 of Article 54, or for reviews specified in Article 50-2, Paragraph 3 or Article 55, Paragraph 4.
3. Required matters concerning qualification of an Electric Structure Inspector are defined in the government ordinance.

(Rules for Office Work)
Article 104-2. The Organization shall define the rules (hereinafter referred to as "rules of office work") for conducting the office work of inspection, etc. (including a part of the office work for inspections specified in Paragraph 1 of Article 49, Paragraph 1 or Paragraph 3 of Article 51, or Paragraph 1 of Article 54, and for reviews specified in Article 52, Paragraph 3 and Article 55, Paragraph 4, the same, hereinafter) before the initiation of the activities concerning the office work of inspection, etc., and shall make notification of the rules to the Minister of Economy Trade and Industry. The same shall be applied to its alteration.
2. The Minister of Economy Trade and Industry may order to modify the rules of office work concerning notification specified in the preceding paragraph, unless the Minister of Economy Trade and Industry deems that the said rules of office work are appropriate to perform the office work of inspection, etc. properly and assuredly.
3. Items to be defined in the rules of office work are specified in the ordinance of Ministry of Economy Trade and Industry.
(Persons to Perform the Office Work of Inspection, etc.)
Article 104-3. When the Organization performs the office work of inspection, etc., the Organization shall make the person with qualification provided in the ordinance of Ministry of Economy Trade and Industry perform the office work.
(Collection of Reports)
Article 106. The Minister of Economy Trade and Industry may request the establisher of an electric structure using nuclear power as motive force for electric power generation (hereinafter referred to as "nuclear electric structure"), to the extent necessary for enforcement of provisions of Article 39, Article 40, Article 47, Article 49 through Article 52, Article 54 and Article 55, report or submit materials on the situation of activities for its fitness for safety of the nuclear electric structure in accordance with the government ordinance.
2. Other than the matters provided in the previous paragraph, when the Minister of Economy Trade and Industry has requested the establisher of a nuclear electric structure to report or submit materials and when he deems especially necessary for ensuring the fitness for safety of the nuclear electric structure, the Minister of Economy Trade and Industry may request the contractors on maintenance of the concerned nuclear electric structure to report required matters or present materials, to the extent necessary for enforcement of provisions of Article 39, Article 40, Article 47, Article 49 through Article 52, Article 54 and Article 55.
3. Other than the matters provided in Paragraph 1, the Minister of Economy Trade and Industry may request a electric utility, to the extent necessary for enforcement of this law, to report or submit materials on the situation of his business or accounting in accordance with the government ordinance.
5. The Minister of Economy Trade and Industry may request the Organization to report or submit materials on the situation of his business, to the extent necessary for enforcement of this law.
(On-the-Spot Entry and Inspection)
Article 107. The Minister of Economy Trade and Industry may make his officials, to the extent necessary for enforcement of provisions of Article 39, Article 40, Article 47, Article 49 through Article 52, Article 54 and Article 55 enter factories or business places, offices and other places of business of those who establish nuclear electric structures, fabricate fuel materials, or weld boilers, etc. or containments, etc. (limited to those concerning nuclear electric structures) to examine their nuclear electric structures, books, documents and other necessary matters.
2. Other than the on-the-spot entry and inspection provided in the previous paragraph, the Minister of Economy Trade and Industry may make his officials, to the extent necessary for enforcement of this law, enter the business places, offices and other places of business of electric utilities to examine the situation of their business or accounting, or their nuclear electric structures, books, documents and other necessary materials.
3. Other than the on-the-spot entry and inspection provided in Paragraph 1, the Minister of Economy Trade and Industry may make his officials, to the extent necessary for enforcement of this law, to enter factories or business places, offices and other places of business of those who establish electric structures for in-house use, or weld boilers, etc. or containments, etc. to examine their electric structures, books, documents and other necessary matters.
4. The Minister of Economy Trade and Industry may make his officials, to the extent necessary for the enforcement of this law, enter the places (excluding places used as residence) where electric structures for general use are installed to examine the electric structures for general use.
6. The Minister of Economy Trade and Industry may make his officials, to the extent necessary for enforcement of this law, enter the offices or other places of business of the Organization to examine the situation of his business, or books, documents or other necessary materials.
9. The Minister of Economy Trade and Industry may make the Organization to conduct on-the-spot entry and inspection specified in Paragraph 1 through Paragraph 3, when he deems it as necessary.
10. When the Minister of Economy Trade and Industry makes the Organization to conduct on-the-spot entry and inspection in accordance with the previous paragraph, the Minister of Economy Trade and Industry shall direct the Organization indicating the concerned place for on-the-spot entry and inspection and other necessary matters.
11. When the on-the-spot entry and inspection specified in Paragraph 9 has been carried out in accordance with the direction of the previous paragraph, the Organization shall report the results to the Minister of Economy Trade and Industry.
12. The officials of the Organization, who carry out the on-the-spot entry and inspection specified in Paragraph 9, shall carry their identification cards with them and must show the cards when requested by persons concerned.
13. The authority specified in the provisions of Paragraph 1 through Paragraph 7 shall not be construed as having been granted for the purpose of criminal investigation.
(Order to Organization)
Article 107-2. When the Minister of Economy Trade and Industry deems it is necessary to make an order for implementing appropriate activities concerning the office work of inspection and the on-the-spot entry and inspection specified in Paragraph 9 of the preceding article, he may make an order required for the activities to the Organization.
(Report to the Nuclear Safety Commission, etc.)

Article 107-3. The Minister of Economy Trade and Industry shall make the quarterly report on the situation of licensing, inspection and examination activities concerning the nuclear electric structure, provided in Paragraph 1 and Paragraph 2 of Article 47, Paragraph 1 of Article 49, Paragraph 3 of Article 50-2, Paragraph 1 and Paragraph 3 of Article 51, Paragraph 3 of Article 52, Paragraph 1 of Article 54, and Paragraph 4 of Article 55, for the previous quarter of the concerned quarter term to the Nuclear Safety Commission, and shall take necessary measures to ensure the fitness for safety of the nuclear structure with due consideration of the opinion of Nuclear Safety Commission, when it deems necessary.
2. Other than the reports provided in the preceding paragraph, the Minister of Economy Trade and Industry shall report the matters to ensure the fitness for safety of the nuclear structure on the situation of the enforcement of this law to the Nuclear Safety Commission in accordance with the ordinance of Ministry of Economy Trade and Industry.
(Cooperation with Nuclear Safety Commission for Investigation)
Article 107-4. The establisher of the nuclear electric structure or the contractor on maintenance of the nuclear electric structure shall cooperate with Nuclear Safety Commission, when the Commission conducts investigation concerning items relating the report specified in the provisions of Paragraph 1 or Paragraph 2 of the preceding article.
(Penal Provisions)
Article 115. A person, who damages the electric structure used for electric utility or interfered power generation, power transformation, power transmission or power distribution by causing a failure to the function of the electric structure used for electric utility, shall be condemned to penal servitude for a term not exceeding five years or a fine of one million yen or less.
2. A person, who interferes power generation, power transformation, power transmission or power distribution by operating the electric structure used for electric utility without permission, shall be condemned to penal servitude for a term not exceeding two years or a fine of a half million yen or less.
3. A person who engages in an electric utilities industry interfered power generation, power transformation, power transmission or power distribution by not dealing with the job of maintenance or operation of the electric structure used for electric utility without a justifiable reason, the same of the preceding paragraph shall be applied.
4. The attempted crime of Paragraph 1 and Paragraph 2 shall be penalized.
Article 116. A person, who comes under any of the following subparagraphs, shall be condemned to penal servitude of not more than three years and/or a fine of three million yen or less:
(i) A person who operates the electric utility in violation of the provision of Article 3, Paragraph 1;
(ii) A person who violates the order or the disposition specified in the provision of Article 40 (limited to those concerning nuclear electric structure); or
(iii) A person who conducts construction work to establish or alter an electric structure in violation of the provision of Article 47, Paragraph 1 (limited to those concerning nuclear electric structure).
Article 117. A person, who comes under any of the following subparagraphs, shall be condemned to penal servitude of not more than two years and/or a fine of three million yen or less:
(ii) A person who rejects to supply electric power in violation of the provisions of Paragraph 1, Paragraph 3 or Paragraph 4 of Article 18; or
(iii) A person who supplies electric power in violation of the provisions of Paragraph 5 through Paragraph 7 of Article 18.
Article 117-2. A person, who comes under any of the following subparagraphs, shall be condemned to penal servitude of not more than one year and/or a fine of one million yen or less:
(i) A person who has used the electric structure in violation of the provision of Article 49, Paragraph 1 (limited to those concerning nuclear electric structure), or Paragraph 1 or Paragraph 3 of Article 51;
(ii) A person who fails to make entries in the book, makes false entries in the books, fails to preserve the book, or make a false report in violation of the provisions of Article 50-2, Paragraph 1, Article 52, Paragraph 1, Article 55, Paragraph 1 (limited to those concerning nuclear electric structure), or Paragraph 3 of the same article;
(iii) A person who refuses, obstructs or evades the examination or inspection provided in Article 50-2, Paragraph 3, Article 52, Paragraph 3, Article 54, Paragraph 1, or Article 55, Paragraph 4 (limited to those concerning nuclear electric structure);
(iv) A person who violates an order for suspension of business of the safety management review specified in Article 78; or
(v) A person who fails to submit a report or material, or make a false report or material specified in Article 106, Paragraph 1.
Article 118. A person who comes under any of the following subparagraphs shall be condemned to a fine of three million yen or less:
(i) A person who rejects to supply electric power in violation of the provision of Article 18, Paragraph 2;
(ii) A person who violates the order specified in Paragraph 5 or Paragraph 8 of Article 19 or Paragraph 2 of Article 19-2;
(viii) A person who fails to assign a Chief Engineer in violation of the provision of Article 43, Paragraph 1.
Article 119. A person who comes under any of the following subparagraphs shall be condemned to a fine of one million yen or less:
(iii) A person who conducts construction work to establish or alter an electric structure in violation of the order specified in Article 48, Paragraph 4;
(iv) A person who uses the electric structure in violation of the provision of Article 49, Paragraph 1 (excluding those concerning the nuclear electric structure).
Article 119-2. A person, who is a executive officer or office staff of a designated organization for qualification test or a support agency and commits a violating act which comes under any of the following subparagraphs, shall be condemned to a fine of three hundred thousand yen or less:
(iv) When he fails to make a report or material, or makes a false report or material specified in Article 106, Paragraph 7; or
(v) When he refuses, obstructs or evades the inspection specified in Article 107, Paragraph 7.
Article 120. A person, who comes under any of the following subparagraphs, shall be condemned to a fine of three hundred thousand yen or less:

(i) A person who fails to make a notification or make a false notification provided in Article 7, Paragraph 4 (including the case when applied with necessary modification to Article 8, Paragraph 3), Article 9, Paragraph 1, Article 19-2, Paragraph 1, Paragraph 1 or Paragraph 2 of Article 42, Article 43, Paragraph 3, Paragraph 4 or Paragraph 5 of Article 47, or Article 74;
(vi) A person who violates the order specified in Article 42, Paragraph 3;
(vii) A person who conducts construction work to establish or alter an electric structure in violation of the order specified in Paragraph 1 or Paragraph 2 of Article 48;
(viii) A person who refuses, obstructs or evades the examination or inspection provided in Article 50-2, Paragraph 3, Article 52, Paragraph 3, Article 54, Paragraph 1 or Article 55, Paragraph 4 (excluding those concerning nuclear electric structure), or Article 107, Paragraph 2 through Paragraph 5;
(x) A person who fails to describe or make a false description of the items specified in Article 79, Paragraph 1 to be applied with necessary modification to Article 57, Paragraph 4, Article 79, Paragraph 1, or Article 92-5, in violation of Article 79, Paragraph 1 to be applied with necessary modification to Article 79, Paragraph 1, or Article 92-5;
(xi) A person who fails to keep books in violation of Article 79, Paragraph 2 to be applied with necessary modification to Article 57, Paragraph 4, Article 79, Paragraph 2 or Article 92-5; or
(xii) A person who fails to submit a report or material, or makes a false report or material provided in Article 102, Paragraph 2 through Paragraph 4 or Article 106, Paragraph 6.

Article 120-2. A person, who is executive officer or office staff of the Organization and commits a violating act that comes under any of the following subparagraphs, shall be condemned to a fine of not more than two hundred thousand yen:
(i) When he fails to make a report, or makes a false report specified in Article 106, Paragraph 5; or
(ii) When he refuses, obstructs or evades the inspection specified in Article 107, Paragraph 6.

Article 121. When a representative of a legal person, or a legal person or an agent, an employee or other employees of a person commits such violating act described in the following subparagraphs, with respect to the business of the legal person or the person, the legal person or the person shall be punished with such a fine as specified in the respective subparagraph, in addition to the punishment of the actual offender:
(i) Article 112, Paragraph 2 or Paragraph 3; monetary penalty of three hundred million yen or less;
(ii) Article 112-2 (excluding Paragraph 4 concerned); monetary penalty of one hundred million yen or less; or
(iii) Article 117, Article 117-2 (limited to Paragraph 4 concerned), Article 118, Article 119 or Article 120; monetary penalty as specified in the respective article.

Article 122. A person, who comes under one of the following subparagraphs, shall be punished with an administrative fine of one million yen or less:
(iii) A person who has violated the order specified in Article 13, Paragraph 4, Article 35 or Article 46-17, Paragraph 1.

Article 122-2. In violation of the provision of Article 75, Paragraph 1 (including the case applied with necessary modification to Article 92, Paragraph 5), a person who fails to prepare a financial statements, etc., fails to make entries in the financial statements, etc., or make false entries, or rejects without lawful reason the request specified in any subparagraphs in Article 75, Paragraph 2 (including the case applied with necessary modification to Article 92, Paragraph 5), shall be punished with an administrative fine of two hundred thousand yen or less:

Article 122-3. A person, who is executive officer of the Organization and commits a violating act that comes under any of the following subparagraphs, shall be punished with an administrative fine of two hundred thousand yen or less:
(i) When he fails to make a notification or make a false notification specified in Article 104, Paragraph 1; or
(ii) When he violates the order specified in Article 104, Paragraph 2 or Article 107-2.

Article 123. A person who falls under any of the followings shall be punished with an administrative fine of one hundred thousand yen or less:
(ii) A person who has not returned chief engineer's license without due reason in violation of an order issued pursuant to Article 44, Paragraph 4.

(2) Ministerial Order for Performing Inspections etc. by the Incorporated Administrative Agency, Japan Nuclear Energy Safety Organization in Accordance with the Provisions of the Electricity Utilities Industry Law

(Ordinance of Ministry of Economy, Trade and Industry, No. 111, September 24, 2003)

In accordance with the provisions of Article 104-2, Paragraph 3 and Article 104-3 of the Electricity Utilities Industry Law (Law No. 170, 1964) and to enforce the said law, the Ministerial Order for Performing Inspections etc. by the Incorporated administrative agency, Japan Nuclear Energy Safety Organization in Accordance with the Provisions of the Electricity Utilities Industry Law is provided as follows.

(Definitions)

Article 1. The meaning of the terms used in this ministerial order are after that of the terms used in the Electricity Utilities Industry Law (hereinafter referred to as “the Law”) and the Rules for the Enforcement of the Electricity Utilities Industry Law (Ordinance of Ministry of International Trade and Industry No. 77, 1995)

(Person Who Performs Inspection Affairs)

Article 2. Any person who performs a part of affairs concerning the inspections defined in Article 49, Paragraph 3, Article 51, Paragraph 5 and Article 54, Paragraph 2 of the Law (hereinafter referred to as “inspection affairs”) to be conducted by the incorporated administrative agency, Japan Nuclear Energy Safety Organization (hereinafter referred to as “the Organization”) shall be a personnel of the Organization who comes under one of the following certificates provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 104-3 of the Law and designated by the head of the Organization (hereinafter referred to as “Electric Structure Examiner”):

(i) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering or administrative engineering in and graduated from the university provided in the School Education Law (Law No. 26, 1947) (excluding the junior college, the same shall be applied in the following subparagraph, Article 3, Subparagraph 1 and Article 4, Subparagraph 1) or is recognized to have academic ability equal or more than that of the said person, and has engaged for two years or more in the aggregate in the administrative affairs concerning construction, maintenance and operation of an electric structure;

(ii) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering or administrative engineering in and graduated from the university provided in the School Education Law or is recognized to have academic ability equal or more than that of the said person, and has engaged for three years or more in the aggregate in the practical business concerning construction, maintenance and operation of an electric structure;

(iii) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering or administrative engineering in and graduated from the junior college or the technical college provided in the School Education Law or is recognized to have academic ability equal or more than that of the said person, and has engaged for four years or more in the aggregate in the administrative affairs concerning construction, maintenance and operation of an electric structure;

(iv) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering or administrative engineering in and graduated from the junior college or the technical college provided in the School Education Law or is recognized to have academic ability equal or more than that of the said person, and has engaged for five years or more in the aggregate in the practical business concerning construction, maintenance and operation of an electric structure;

(v) Any person who has engaged for six years or more in the aggregate in the administrative affairs concerning construction, maintenance and operation of an electric structure and is recognized by the Minister of Economy, Trade and Industry to have considerable knowledge concerning construction, maintenance and operation of an electric structure;

(vi) Any person who has engaged for seven years or more in the aggregate in the practical business concerning construction, maintenance and operation of an electric structure and is recognized by the Minister of Economy, Trade and Industry to have considerable knowledge concerning construction, maintenance and operation of an electric structure;

(vii) Any person who was Nuclear Facility Inspector specified in Article 67-2, Paragraph 2 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Law No. 166, 1957, hereinafter referred to as "Reactor Regulation Law") or any person who has experience of a Nuclear Facility Examiner (which means a person specified in Article 3 of the Ministerial Order for Performing Inspections etc. to be conducted by the incorporated administrative agency, Japan Nuclear Energy Safety Organization (Ordinance of Ministry of Economy, Trade and Industry No. 112, 1995, hereinafter referred to as "Ministerial Order for Inspection"), in accordance with the Reactor Regulation Law, the same shall be applied hereinafter);

(viii) Any person who was an Electric Structure Inspector; or

(ix) Any person who is recognized by the Minister of Economy, Trade and Industry to have knowledge and experience equal or more than that of the person provided in the preceding subparagraphs.

(Person Who Performs Welding Safety Management Review)

Article 3. Any person who performs the welding safety management review to be conducted by the Organization shall be a personnel of the Organization who are certified under one of the followings as provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 104-3 of the Law and designated by the head of the Organization (hereinafter referred to as "Welding Safety Management Reviewer"):

(i) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering or administrative engineering in and graduated from the university provided in the School Education Law or is recognized to have academic ability equal or more than that of the said person, and has engaged for two years or more in the aggregate in the practical business concerning welding safety management review etc. (which means the inspection described in Article 52, Paragraph 1 of the Electricity Utilities Industry Law before amendment as provided in Article 9 of the Law for Consolidation and Rationalization of Standards, Certification Systems, Etc. Related to the Ministry of International Trade and Industry (Law No. 121, 1999) (hereinafter referred to as "former welding inspection"), or pre-service inspection, periodic inspection, pre-service safety management review, welding safety management review or periodic safety management review, the same shall be applied, hereinafter) or the practical business concerning construction, maintenance and operation of an electric structure, and finished the training provided by the Minister of Economy, Trade and Industry;

(ii) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering or administrative engineering in and graduated from the junior college or the technical college defined in the School Education Law or is recognized to have academic ability equal or more than that of the said person, and has engaged for four years or more in the aggregate in the practical business concerning welding safety management review etc. or the practical business concerning construction, maintenance and operation of an electric structure, and finished the training provided by the Minister of Economy, Trade and Industry;

(iii) Any person who was a Nuclear Facility Inspector described in Article 67-2, Paragraph 2 of the Reactor Regulation Law or has experience of a Nuclear Facility Examiner, and finished the training provided by the Minister of Economy, Trade and Industry;

(iv) Any person who was an Electric Structure Inspector or has experience of an Electric Structure Examiner, and finished the training provided by the Minister of Economy, Trade and Industry;

(v) Any person who has engaged for six years or more in the aggregate in the practical business concerning welding safety management review etc. or the practical business concerning construction, maintenance and operation of an

electric structure, and finished the training provided by the Minister of Economy, Trade and Industry;

(vi) Any person who has experience of performing the inspection defined in subparagraphs of Article 61-24 of the Reactor Regulation Law, the inspection described in subparagraphs of Article 61-24 of the Reactor Regulation Law before amendment provided in Article 8 of the supplementary provisions in accordance with the Law for Japan Nuclear Energy Safety Organization (Law No. 179, 2002) or the former welding inspection, and finished the training provided by the Minister of Economy, Trade and Industry;

(vii) Any person who has experience of performing a pre-service safety management review or periodic safety management review, and finished the training provided by the Minister of Economy, Trade and Industry;

(viii) Any person who has experience of performing welding safety management review; or

(ix) Any person who is recognized by the Minister of Economy, Trade and Industry to have knowledge and experience equal or more than that of the person provided in the preceding subparagraphs.

(Person Who Performs Periodic Safety Management Review)

Article 4. Any person who performs a periodic safety management review to be conducted by the Organization shall be a personnel of the Organization who are certified under one of the followings as provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 104-3 of the Law and designated by the head of the Organization (hereinafter referred to as "Periodic Safety Management Reviewer"):

(i) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering or administrative engineering in and graduated from the university defined in the School Education Law or is recognized to have academic ability equal or more than that of the said person, and has engaged for two years or more in the aggregate in the practical business concerning welding safety management review etc. or the practical business concerning construction, maintenance and operation of an electric structure, and finished the training provided by the Minister of Economy, Trade and Industry;

(ii) Any person who studied the course of electrical engineering, civil engineering, mechanical engineering or administrative engineering in and graduated from the junior college or the technical college defined in the School Education Law or is recognized to have academic ability equal or more than that of the said person, and has engaged for four years or more in the aggregate in the practical business concerning welding safety management review etc. or the practical business concerning construction, maintenance and operation of an electric structure, and finished the training provided by the Minister of Economy, Trade and Industry;

(iii) Any person who was a Nuclear Facility Inspector described in Article 67-2, Paragraph 2 of the Reactor Regulation Law or has experience of a Nuclear Facility Examiner, and finished the training provided by the Minister of Economy, Trade and Industry;

(iv) Any person who was an Electric Structure Inspector or has experience of an Electric Structure Examiner, and finished the training provided by the Minister of Economy, Trade and Industry;

(v) Any person who engaged for six years or more in the aggregate in the practical business concerning welding safety management review etc. or the practical business concerning construction, maintenance and operation of an electric structure, and finished the training provided by the Minister of Economy, Trade and Industry;

(vi) Any person who has experience of pre-service safety management review or periodic safety management review, and finished the training provided by the Minister of Economy, Trade and Industry;

(vii) Any person who has experience of welding safety management review, and finished the training provided by the Minister of Economy, Trade and Industry; or

(viii) Any person who is recognized by the Minister of Economy, Trade and Industry to have knowledge and experience equal or more than that of the person provided in the preceding subparagraphs.

(Particulars to Specify in the Rules for Office Work)

Article 5. Particulars to be specified in the rules for office work concerning the inspection affairs provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 104-2, Paragraph 3 of the Law, and the notification of results provided in Article 49, Paragraph 4, Article 51, Paragraph 6 and Article 54, Paragraph 3 of the Law, shall be those defined in the followings:

(i) Name of the place of business and area where the place of business carries out the inspection affairs;

(ii) Particulars concerning working hours and holiday on the inspection affairs;

(iii) Particulars concerning duties of the Electric Structure Examiner;

(iv) Particulars concerning appointment and removal of the Electric Structure Examiner and its allocation;

(v) Particulars concerning methods to perform the inspection affairs;

(vi) Particulars concerning preservation of books and documents relating to the inspection affairs;

(vii) Particulars concerning notification of results of the inspection affairs to the Minister of Economy, Trade and Industry; and

(viii) Other particulars necessary to perform the inspection affairs.

2. Particulars to be provided in the rules for office work concerning the welding safety management review provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 104-2, Paragraph 3 of the Law, and the notification of results defined in Article 50-2, Paragraph 5 of the Law, which is applied correspondingly to Article 52, Paragraph 5 of the Law, shall be those defined in the followings:

(i) Name of the place of business and area where the place of business carries out business of the welding safety management review;

(ii) Particulars concerning working hours and holiday on the business of the welding safety management review;

(iii) Particulars concerning methods to receive the fee;

(iv) Particulars concerning duties of the Welding Safety Management Reviewer;

(v) Particulars concerning appointment and removal of the Welding Safety Management Reviewer and its allocation;

(vi) Particulars concerning methods to perform the welding safety management review;

(vii) Particulars concerning preservation of books and documents relating to the welding safety management review;
(viii) Particulars concerning notification of results of the welding safety management review to the Minister of Economy, Trade and Industry; and
(ix) Other particulars necessary to perform business of the welding safety management review.
3. The provisions described in subparagraphs of Paragraph 2 shall be applied with necessary modification to the particulars to be provided in the rules for office work provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 104-2, Paragraph 3 of the Law. In this case, the terms “Welding Safety Management Reviewer” and “Article 52, Paragraph 5” referred to in these provisions shall be construed to mean “Periodic Safety Management Reviewer” and “Article 55, Paragraph 6”, respectively.
(Identification Card for Entry and Inspection Conducted by the Organization)
Article 6. The identification card to be carried on by each personnel of the Organization who performs the entry and inspection provided in the provision of Article 107, Paragraph 9 of the Law shall be in accordance with the corresponding form.

(3) Rules for the Enforcement of the Electricity Utilities Industry Law (Excerpt)
(Ordinance of Ministry of International Trade and Industry No. 77, October 18, 1995)
(Latest Revision: Ordinance of Ministry of Economy, Trade and Industry No. 31, March 16, 2004)

(Approval, Etc. of Construction Plans)
Article 62. The construction work to establish or alter an electric structure for business use provided for in the ordinance of Ministry of Economy, Trade and Industry referred to in Article 47, Paragraph 1 of the Law, (hereinafter referred to as "restricted construction work"), shall be as indicated in the middle row of annexed Table 2 according to the types of construction work indicated in the left row of that table; or other work, constituting actions indicated in subparagraphs of Article 7, Paragraph 1 of the Law Concerning Prevention of Disasters due to Collapse of Steep Slope (Law No. 57, 1969) which are performed within steep slope collapse risk areas referred to in Article 3, Paragraph 1 of the said law (hereinafter referred to as "steep slope collapse risk areas"), excluding the case that the work had already begun at the time of designation of that steeply inclined land collapse risk area and the cases of Article 2, Subparagraph 1 through Subparagraph 8 of the Enforcement Ordinance of the Law Concerning Prevention of Disasters due to Collapse of Steep Slope (Government Ordinance No. 206, 1966).
2. The minor alterations provided for in the ordinance of Ministry of Economy, Trade and Industry described in the proviso of Article 47, Paragraph 2 of the Law shall be those alteration that do not involve the work indicated in the middle or right row of annexed Table 2 or the bottom row of annexed Table 4 or restricted construction work performed in steeply inclined land collapse risk areas.
3. The cases provided for in the ordinance of Ministry of Economy, Trade and Industry described in the proviso of Article 47, Paragraph 5 of the Law shall be cases which do not involve alters in the particulars indicated in the construction plan referred to in Paragraph 1(i) of the following article.
Article 63. Any person who intends to obtain the approval of Article 47, Paragraph 1 or Paragraph 2 of the Law shall submit an application for approval for a construction plan (or alteration), using Form 47 with the following documents attached. However, if the application concerns construction work for alterations, it shall not be necessary to include the documents (ii) in the case of replacement or repair work, and it shall not be necessary to include the documents (ii) and (iii) in the case of abolishment work.
(i) The construction plan;
(ii) The documents, indicated in the lower row of annexed Table 3 according to the category indicated in the upper row of that column to which the concerned electric structure for business use belongs;
(iii) The construction process table; and
(iv) In the case of construction work for alterations or altercations in the construction plan, a statement of the reasons making the alterations necessary.
2. The construction plan of (i) of the preceding paragraph shall include the particulars indicated in the middle column of annexed Table 3 (or the repair methods in the case that the application is for repair work) corresponding to the type of an electric structure for business use for which the application was submitted. In this case, if the application is for construction work for alteration (excluding work for replacement, repair, and abolition) or alterations in the construction plan, these particulars must be presented in a manner that facilitates comparison between the situation before the alterations and the situation after the alterations.
3. In the case of divided application for approval, referred to in Article 47, Paragraph 1 of the Law, on the construction plan indicated in the middle row of annexed Table 2, in addition to the documents of each items in Paragraph 1, a statement must be attached to the application, giving an overview of the construction plan of other portion than the portion concerned in the application.
Article 69. In the inspection described in Article 49, Paragraph 1 of the Law (hereinafter referred to as “pre-service inspection”), the Electric Structure Inspector (in the case that the incorporated administrative agency, Japan Nuclear Energy Safety Organization (hereinafter referred to as “the Organization”) implements a part of affairs concerning the pre-service inspection on the basis of the provisions of Article 49, Paragraph 3 of the Law, the examiner of the Organization (which means any person who has the certificate described in Article 104-3 of the Law, the same shall be applied hereinafter) shall perform the inspection items indicated in the right row of the following tables according to the construction process indicated in the left row of the said tables.

(i) Construction of nuclear power station

Construction Step	Inspection Items
A. When nuclear reactors, reactor cooling system equipment, measuring and control system equipment, fuel equipment, radiation management equipment, disposal equipment or reactor containment facilities becomes ready for inspection on its structure, strength or leakage	The following items of inspections to verify the structure, functions or performances of nuclear reactors, reactor cooling system equipment, measuring and control system equipment, fuel equipment, radiation management equipment, disposal equipment or reactor containment facilities: (i) Material inspection; (ii) Dimensional inspection; (iii) Visual inspection: (iv) Inspection to verify conditions of assembling and installation, Pressure inspection, and Leak test; (vii) Inspection to verify conditions of the base on which the reactor containment facility is installed directly.
B. When installation of the lower half of turbine compartment has been completed, and when assembling of main body of the auxiliary boiler is completed	(i) The following items of inspections to verify the structure, function or performance of the steam turbine; A. Material inspection, B. Dimensional inspection, C. Visual inspection, and D. Inspection to verify conditions of assembling and installation. (ii) The following items of inspections to verify the structure, function or performance of the auxiliary boiler; A. Material inspection, B. Dimensional inspection, C. Visual inspection, D. Inspection to verify conditions of assembling and installation, E. Pressure inspection, and F. Leak test.
C. When the nuclear reactors becomes ready for loading of fuel assemblies	Inspections to verify necessary functions or performances on the condition to load fuel assemblies in the reactor relating to the reactor cooling system equipment, measuring and control system equipment, fuel equipment, radiation management equipment, disposal equipment, reactor containment facilities, ventilation stack, steam turbines, generators, transformers, voltage regulators or voltage phase regulators, condensers, frequency converters or rectifiers, breakers, batteries, control equipment to control operation of the power station, and emergency standby power generation devices
D. When nuclear reactors becomes ready for starting operation of the criticality reaction	Inspections to verify necessary functions or performances when the reactor attains criticality relating to nuclear reactors, reactor cooling system equipment, measuring and control system equipment, steam turbines and generators
E. When all of the construction related to the construction plan are completed	Inspections to verify overall performance of the nuclear power station at power operation of the reactor, and other necessary inspections to verify that the construction has been completed

(ii) Construction other than that defined in the preceding subparagraph

Construction Step	Inspection Items
When all of the construction related to the construction plan are completed	Inspections to verify performance of the specific electric structures for business use at normal operation, and other necessary inspections to verify that the construction has been completed

Article 70. The cases provided for in the ordinance of Ministry of Economy, Trade and Industry described in the proviso of Article 49, Paragraph 1 of the Law shall be as follows.

(i) The case that a nuclear reactor is to be used in a testing, and the approval of the Minister of Economy, Trade and Industry has been obtained concerning the time period and method of usage, and the reactor is used during the time period and by the method for which that approval was obtained.

(ii) The case that electric structures for business use other than the electric structures for business use referred to in the preceding number are connected with power grids and used for testing within a time period notified in advance to the Minister of Economy, Trade and Industry.

(iii) The case that electric structures for business use other than those referred to in Subparagraph (i) are used for testing within a time period notified in advance to the Minister of Economy, Trade and Industry without being connected with power grids.

(iv) The case that a portion of an electric structure for business use has been completed, and there are special circumstances such that the completed portion must be used at a time other than their use for testing, and the approval

of the Minister of Economy, Trade and Industry has been obtained concerning the time period and method of usage, and the concerned portion is used during the time period and by the method for which that approval was obtained.

(v) The case that the Minister of Economy, Trade and Industry has indicated that an electric structure for business use may be used without inspection, having deemed that there is no obstacle to such use based on the situation of its location or the content of construction.

Article 73-2. The specific electric structures for business use provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 49, Paragraph 3 of the Law shall be any nuclear reactors, reactor cooling system equipment, measuring and control system equipment, fuel equipment, radiation management equipment, disposal equipment, reactor containment facility, ventilation stack, steam turbine, auxiliary boiler, generator, transformer, voltage regulator or voltage phase regulator, condenser, frequency converter or rectifier, breaker, battery, or emergency standby power generation device.

2. A part of office works concerning inspections that the Organization conducts as provided in the provisions of Article 49, Paragraph 3 of the Law shall be those described in the followings:

(i) Inspection items indicated in the right row of the table shown in Article 69, Subparagraph 1 at the step of Item A and Items B in the left row of the said table;

(ii) The following inspection items of those indicated in the right row of the table shown in Article 69, Subparagraph 1 at the step of Item C in the left row of the said table;

A. The following items of inspections to verify functions or performances of the reactor cooling system equipment,

(1) In the case of a boiling water reactor type power generation installation, those relating to reactor coolant recirculation equipment, circulation equipment of reactor coolant, reactor coolant make-up equipment, component cooling equipment, reactor coolant cleanup equipment and devices to monitor leakage of reactor coolant in the reactor containment facility,

(2) In the case of a pressurized water reactor type power generation installation, those relating to circulation equipment of primary coolant, main steam and feed water equipment, residual heat removal equipment, chemical and volume control equipment, component cooling water equipment, sea water equipment and devices to monitor leakage of primary coolant in the reactor containment facility, or

(3) In the case of a sodium-cooled reactor type power generation installation, those relating to circulation equipment of primary coolant, circulation equipment of secondary coolant, primary sodium auxiliary equipment, secondary sodium auxiliary equipment, primary argon gas system equipment, maintenance cooling system equipment, component cooling water equipment, sea water equipment and component cooling system equipment.

B. The following items of inspections to verify functions or performances of the measuring and control system equipment,

(1) In the case of the boiling water reactor type power generation installation, those relating to the control equipment of reactor, control rod drive systems, instrumentation devices, safety protection equipment (which means measuring and control system equipment necessary for emergency reactor shut-down and actuating engineered safety features, the same shall be applied hereinafter in this paragraph), instrument air systems and power units for reactor coolant recirculation pumps,

(2) In the case of the pressurized water reactor type power generation installation, those relating to the control equipment of reactor, equipment with boric acid injection function, boron thermal regeneration equipment, instrumentation devices, safety protection equipment and instrument air systems, or

(3) In the case of the sodium-cooled reactor type power generation installation, those relating to the control rod drive systems, instrumentation devices, sodium leak detection devices, burst cartridge detection system, safety protection equipment and instrument air systems.

C. The following items of inspections to verify function or performance of the reactor containment facility,

(1) In the case of the boiling water reactor type power generation installation, those relating to the vacuum relief systems, reactor containment spray equipment, flammability control equipment and reactor containment atmosphere dilution equipment,

(2) In the case of the pressurized water reactor type power generation installation, those relating to the containment spray equipment, ice condenser equipment, vacuum relief equipment and pressure relief equipment, or

(3) In the case of the sodium-cooled reactor type power generation installation, those relating to the vacuum relief equipment.

D. Inspections to verify functions or performances of fuel equipment, radiation management equipment, disposal equipment, ventilation stacks, steam turbines, generators, transformers, voltage regulators or voltage phase regulators, condensers, frequency converters or rectifiers, breakers and control equipment to control operation of the power station.

(iii) The following inspection items of those indicated in the right row of the table shown in Article 69, Subparagraph 1 at the step of Item D in the left row of the said table;

A. Inspections to determine fuel configuration and critical state in the reactor core to verify function or performance of the reactor,

B. Inspections to verify functions or performances of the reactor cooling system equipment, or

C. Inspections to verify interlocks between the reactor, steam turbines and generators relating to shut-down to verify functions or performances of the measuring and control system equipment, steam turbines or generators.

(iv) The following inspection items of those indicated in the right row of the table shown in Article 69, Subparagraph 1 at the construction step E indicated in the left row of the said table;

A. The following items of inspections performed when the reactor is shut-down,

(1) The following items of inspections to verify functions or performances of the reactor cooling system equipment,

a) In the case of the boiling water reactor type power generation installation, those relating to the reactor coolant recirculation equipment, circulation equipment of reactor coolant, reactor coolant make-up equipment, component cooling equipment, reactor coolant cleanup equipment and devices to monitor leakage of reactor coolant in the reactor containment facility,

b) In the case of the pressurized water reactor type power generation installation, those relating to the circulation equipment of primary coolant, main steam and feed water equipment, residual heat removal equipment, chemical and volume control equipment, component cooling water equipment, sea water equipment and devicess to monitor leakage of primary coolant in the reactor containment facility, or

c) In the case of the sodium-cooled reactor type power generation installation, those relating to the circulation equipment of primary coolant, circulation equipment of secondary coolant, primary sodium auxiliary equipment, secondary sodium auxiliary equipment, primary argon gas system equipment, maintenance cooling system equipment, component cooling water equipment, sea water equipment and component cooling system equipment.

(2) The following items of inspections to verify functions or performances of the measuring and control system equipment,

a) In the case of a boiling water reactor type power generation installation, those relating to control equipment of reactor, control rod drive systems, instrumentation devices, safety protection equipment, instrument air systems and power units for reactor coolant recirculation pumps,

b) In the case of the pressurized water reactor type power generation installation, those relating to the control equipment of reactor, equipment with boric acid injection function, boron thermal regeneration equipment, instrumentation devices, safety protection equipment and instrument air systems,

c) In the case of the sodium-cooled reactor type power generation installation, those relating to the control rod drive systems, instrumentation devices, sodium leak detection devices, burst cartridge detection systems, safety protection equipment and instrument air systems.

(3) The following items of inspections to verify function or performance of the reactor containment facility,

a) In the case of the boiling water reactor type power generation installation, those relating to the vacuum relief systems, reactor containment spray equipment, flammability control equipment and reactor containment atmosphere dilution equipment,

b) In the case of the pressurized water reactor type power generation installation, those relating to the containment spray equipment, ice condenser equipment, vacuum relief equipment and pressure relief equipment, or

c) In the case of the sodium-cooled reactor type power generation installation, those relating to the vacuum relief equipment.

(4) Inspections to verify functions or performances of the fuel equipment, radiation management equipment, disposal equipment, ventilation stacks, steam turbines, generators, transformers, voltage regulators or voltage phase regulators, condensers, frequency converters or rectifiers, breakers and control equipment to control operation of the power station.

B. Inspections (excluding those relating to the reactor core isolation cooling system in the case of a boiling water reactor type power generation installation) performed when the reactor is in power operation (excluding the case in operation at rated power).

3. Irrespective of provisions of the preceding paragraph, when the Minister of Economy, Trade and Industry deems that it is necessary to conduct inspections by himself in relation to structure, material, etc. of the specific electric structures for business use, the Minister of Economy, Trade and Industry shall conduct by himself the inspections relating to the electric structure concerned for specific business use.

4. When the Minister of Economy, Trade and Industry deems that it is necessary to conduct the inspections described in the preceding paragraph, the Minister shall notify the Organization of it.

5. The Organization shall prepare an inspection instruction manual that provides for methods of the inspections described in Paragraph 2 and other necessary particulars in accordance with the notification described in Article 71-2, Paragraph 2.

6. The notification described in Article 49, Paragraph 4 of the Law shall be made by letter specifying the following particulars:

(i) Name and address of the person, and in the case of a juridical person, the name of its representative who underwent the inspection;

(ii) Name and location of the place of business related to the specific electric structures for business use subjected to the inspection;

(iii) Date of the inspection;

(iv) Place where the inspection was performed;

(v) Object of the inspection;

(vi) Methods of the inspection; and

(vii) Results of the inspection.

(Inspection of Fuel Assembly)

Article 77. Any person, who intends to obtain the approval of Article 51, Paragraph 2, Subparagraph (i) of the Law, shall submit an application for design approval of fuel assemblies using Form 54, with the following documents attached:

(i) Description on heat resistance, radiation resistance, corrosion resistance and other performance of the fuel assembly;

(ii) Calculation of mechanical strength of a fuel assembly (or a fuel element for fuel assembly composed of fuel elements);

(iii) Structural drawings of the fuel assembly;
(iv) Flow sheet of fabrication; and
(v) Description on Quality Assurance.

Article 78. Any person who intends to receive the inspection provided for in Article 51, Paragraph 3 of the Law shall submit an application for inspection for imported fuel assemblies using Form 55, with the following documents attached, unless the Minister of Economy, Trade and Industry indicates that it is not necessary to attach the documents judged from type and design, etc. of fuel assembly concerning the application:

(i) Description on heat resistance, radiation resistance, corrosion resistance and other performance of the fuel assembly;
(ii) Calculation of mechanical strength of the fuel assembly (or a fuel element for fuel assembly composed of fuel elements);
(iii) Structural drawings of the fuel assembly;
(iv) Flow sheet of fabrication;
(v) Data of the test result, including composition, structure and strength, etc. of the fuel material, the fuel cladding and other parts; and
(vi) Description on Quality Assurance.

(Inspection of Welding Safety Management)

Article 80. The pressures provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 52, Paragraph 1 of the Law shall be as follows.

(i) Regarding vessel and pipe for water whose maximum working temperature is less than 100 degrees, a maximum working pressure of 1,960 kilopascals.
(ii) Regarding vessel and pipe for liquefied gas, a maximum working pressure of 0 kilopascals.
(iii) Regarding vessel other than the containers referred to (i) and (ii) above, a maximum working pressure of 98 kilopascals.
(iv) Regarding pipe other than the pipe referred to in (i) and (ii) above, a maximum working pressure of 980 kilopascals (or 490 kilopascals in the case of longitudinal seam portion of pipe which do not belong to fuel cell facilities).

(Periodic Inspections)

Article 89. The specific pressure structures provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 54 of the Law shall be steam turbines belonging to nuclear power stations.

Article 90. The nuclear power reactor and attached equipment provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 54, Paragraph 1 of the Law shall be reactor, the reactor cooling system, instrumentation and control system, fuel equipment, radiation management equipment, disposal equipment, reactor containment facility, and auxiliary boiler, and emergency power generation devices.

Article 90-2. The inspection described in Article 54, Paragraph 1 of the Law (hereinafter referred to as "periodic inspection") shall be conducted for the matters provided in the following subparagraphs by witnessing the licensee's periodic inspection conducted by the person who undergo the periodic inspection by the Electric Structure Inspector (or the Electric Structure Examiner of the Organization in the case that the Organization conducts a part of affairs concerning the periodic inspection in accordance with the provisions of Article 54, Paragraph 2 of the Law), or verifying the record of the licensee's periodic inspection:

(i) In the case of steam turbines that belongs to the nuclear power station (referred to as "the steam turbine", in this article), the following matters related to licensee's periodic inspection;
   A. Nondestructive inspection of main body of the turbine, major valves, condensers, heat exchangers and major piping, and
   B. Inspections to check condition of assembling and installation of the main body of the turbine and the major valves, and actuation inspection of fitness-for-safety devices.
(ii) In the case of power reactors (limited to boiling water reactors) and associated facilities, matters indicated in the right row of the following table related to the licensee's periodic inspection according to the type of electric structure indicated in the left row of the said table;

Type of Electric Structure	Matters related to Licensee's Periodic Inspection
(i) Nuclear reactors	1. Nondestructive inspection of main bodies of reactor pressure vessels, reactor pressure vessel support structures and associated structures of reactor pressure vessels, and leak test of main bodies of reactor pressure vessels and reactor pressure vessel support structures 2. Visual inspection of fuel assemblies for reuse 3. Inspection to determine fuel configuration in the reactor core 4. Inspection to determine shutdown margin of the reactor
(ii) Reactor cooling system equipment	1. Nondestructive inspection of Class I equipment (limited to the reactor cooling system equipment, the same shall be applied in this subparagraph) and Class III equipment (limited to reactor cooling system equipment, the same shall be applied in this subparagraph) defined in Article 2 of the Technical Standards on Structure, etc. of Nuclear Power Generation Equipment (Notification of Ministry of International Trade and Industry No. 501, 1980) and support structures thereof, and leak test of Class I and Class III equipment 2. Nondestructive inspection, leak test and actuation inspection of main steam safety valves and main steam relief valves 3. Leak test and actuation inspection of main steam isolation valves 4. Nondestructive inspection of emergency core cooling system pumps and

	major valves, and actuation inspection of emergency core cooling systems 5. Actuation inspection of emergency condenser systems 6. Nondestructive inspection of reactor core isolation cooling system pumps and major valves (limited to those relating to the advanced boiling water reactor), and actuation inspection of reactor core isolation cooling systems 7. Actuation inspection of component cooling systems
(iii) Measuring and control system equipment	1. Nondestructive inspection of Class I equipment (limited to measuring and control system equipment, the same shall be applied hereinafter in this subparagraph) and Class III equipment (limited to measuring and control system equipment, the same shall be applied hereinafter in this subparagraph) defined in Article 2 of the Technical Standards on Structure, etc. of Nuclear Power Generation Equipment and support structures thereof, and leak test of Class I and Class III equipment 2. Nondestructive inspection of the control rod drive mechanism and control rod drive hydraulic control system scram valves, and emergency control rod insertion test of control rod drive hydraulic control systems 3. Actuation inspection of boric acid injection systems 4. Actuation inspection of safety preservation systems and reactor coolant recirculation pump trip systems
(iv) Fuel equipment	Inspection of fuel holding function when power for fuel handling equipment is lost
(v) Radiation management equipment	1. Calibration and actuation inspection of the process monitoring equipment 2. Actuation inspection of standby gas treatment systems and performance test of its filters 3. Actuation inspection of main control room standby circulation systems and performance test of its filters
(vi) Disposal equipment	Actuation inspection of gaseous waste processing systems
(vii) Reactor containment facility	1. Nondestructive inspection of Class III equipment (limited to the reactor containment facility, the same shall be applied hereinafter in this subparagraph) defined in Article 2 of the Technical Standards on Structure, etc. of Nuclear Power Generation Equipment and support structures thereof, and leak test of Class III equipment 2. Leak rate test of the reactor containment facility 3. Leak test of the reactor building 4. Nondestructive inspection of major reactor containment isolation valves and actuation inspection of reactor containment isolation valves 5. Actuation inspection of reactor containment vacuum relief valves 6. Nondestructive inspection of reactor containment spray system pumps and major valves, and actuation inspection of the reactor containment spray system 7. Nondestructive inspection of major valves of the flammability control system and actuation inspection of the flammability control system
(vii) Emergency standby power generation device	1. Nondestructive inspection of the diesel engine, and actuation inspection and inspection to determine rated capacity of the diesel power generator 2. Inspection to identify charging condition of the direct current power supply system

(iii) In the case of power reactors (limited to pressurized water reactors) and associated facilities, matters indicated in the right row of the following table related to the licensee's periodic inspection according to the type of electric structure indicated in the left row of the said table;

(The rest is omitted since the case of PWR is the same as that of BWR.)

(iv) In the case of steam turbines and power reactors (limited to boiling water reactors and pressurized water reactors) and associated facilities (excluding emergency standby power generation devices), other matters related to licensee's periodic inspection that the Minister of Economy, Trade and Industry deems that it is necessary, in addition to those described in the preceding three subparagraphs; or

(v) In the case of steam turbines and power reactors (limited to boiling water reactors and pressurized water reactors) and associated facilities (excluding emergency standby power generation devices), matters related to licensee's periodic inspection concerning overall performance at normal operation, in addition to those described in the preceding subparagraphs.

Article 91. The time periods provided for in the ordinance of Ministry of Economy, Trade and Industry described in Article 54 of the Law shall be as follows.

(i) For steam turbine belonging to nuclear power station, the time not earlier than one year but within 13 month after the date when operation began or the date when the Periodic Inspection (defined in Article 54 of the Law) was completed.

(ii) For items specified in the preceding article, the time not earlier than one year but within 13 month after the date when operation began or the date when the Periodic Inspection was completed.

Article 92. The cases defined in the ordinance of Ministry of Economy, Trade and Industry described in the proviso of Article

54 of the Law shall be as follows.

(i) The case that the Minister of Economy, Trade and Industry (or in the case of an electric structure for business use related to the authority of No. 12 of the table in Article 8 of the ordinance, the director of the International Trade and Industry bureau exercising such authority; the same applies in the next item) deems it unnecessary, based on the usage situation, to perform an inspection at the time referred to in the preceding article, and has given approval, instructing the time when the inspection should be performed.

(ii) In the case that the Minister of Economy, Trade and Industry deems that, due to a disaster or other emergency, it would be significantly difficult to perform an inspection at the time referred to in the preceding article, and has given approval, instructing the time when the inspection should be performed.

Article 93. A person who intends to undergo the inspection referred to in Article 54, Paragraph 1 of the Law shall submit an application for the Periodic Inspection, using Form 61.

2. A person who undergoes the inspection referred to in Article 54, Paragraph 1 of the Law performed by a designated organization for inspection shall submit an application for the Periodic Inspection to the designated organization for inspection as required by that organization.

Article 93-4. The specific important electric structure provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 54, Paragraph 2 of the Law shall be any of steam turbines, nuclear reactors, reactor cooling system equipment, measuring and control system equipment, fuel equipment, radiation management equipment, disposal equipment, reactor containment facilities or emergency standby power generation devices.

2.The part of affairs, concerning the inspection conducted by the Organization in accordance with the provisions of Article 54, Paragraph 2 of the Law, shall be those shown in the followings:

(i) Matters provided in Article 90-2, Subparagraph 1;

(ii) Matters provided in Article 90-2, Paragraph 2 excluding those provided in the followings;

A. Actuation inspection of the emergency core cooling system related to the reactor cooling system equipment,

B. Emergency control rod insertion test of the control rod drive hydraulic control system related to the measuring and control system equipment,

C. Leak rate test of the reactor containment related to the reactor containment facility, and

D. Actuation inspection of the diesel power generator related to the emergency standby power generation device.

(iii) Matters provided in Article 90-2, Subparagraph 3 excluding for those provided in the followings;

A. Actuation inspection of the emergency core cooling system related to the reactor cooling system equipment,

B. Emergency control rod insertion test of the control rod drive system related to the measuring and control system equipment,

C. Leak rate test of the reactor containment related to the reactor containment facility, and

D. Actuation inspection of the diesel power generator related to the emergency standby power generation device.

3. Irrespective of provisions of the preceding paragraph, when the Minister of Economy, Trade and Industry deems that it is necessary to conduct inspections by himself, in relation to structure, material, etc. of the specific important electric structure, the Minister of Economy, Trade and Industry shall conduct by himself the inspections relating to the specific important electric structure concerned.

4. When the Minister of Economy, Trade and Industry recognize necessary to conduct the inspections described in the preceding paragraph, the Minister shall notify the Organization of it.

5. The Organization shall prepare an inspection instruction manual that defines methods of the inspections described in Paragraph 2 and other necessary matters in accordance with the notification described in Article 93-2, Paragraph 2.

6. The notification, described in Article 54, Paragraph 3 of the Law, shall be made by letter specifying the following particulars:

(i) Name and address of the person who underwent inspections and, in the case of a juridical person, the name of its representative;

(ii) Name of the power station to be installed with the specific important electric structure that underwent inspections;

(iii) Date of inspections;

(iv) Place where the inspections were performed;

(v) Object of the inspections;

(vi) Methods of the inspections; and

(vii) Results of the inspections.

Article 94. The electric structure provided in the ordinance of Ministry of Economy, Trade and Industry described in Article 55, Paragraph 1 of the Law shall be any of those shown in the followings. However those belonging to the emergency standby power generation devices shall be excluded:

(i) Steam turbine (limited to that belonging to a nuclear power station or that related to a power generation equipment of which power is equal or more than 1,000kW).

2. The power reactor and associated facilities, specified in the ordinance of Ministry of Economy, Trade and Industry described in Article 55, Paragraph 1 of the Law, shall be any of nuclear reactors, reactor cooling system equipment, measuring and control system equipment, fuel equipment, radiation management equipment, disposal equipment, reactor containment facilities, auxiliary boiler and emergency standby power generation devices.

Article 94-4-2. The specific electric structure for power generation by nuclear power as prime mover, which is defined in the ordinance of Ministry of Economy, Trade and Industry described in Article 55, Paragraph 3 of the Law, shall be any of vessels and pipes belonging to Class I equipment defined in Article 2 of the Technical Standards on Structure, etc. of Nuclear Power Generation Equipment (excluding a joint and sealing portion such as a flange etc., the steam generator heat transfer tube and pipe made of austenitic low carbon stainless steel for nuclear industry (limited to the material in which carbon

content is not more than 0.02% and of which breaking strength is not less than 520 N/mm^2)) and core support structures (limited to core shrouds or shroud support rings).

2. As provided in the provisions of Article 55, Paragraph 3 of the Law, the evaluation shall be performed through the methods indicated in the right row of the following table according to the matter indicated in the left row of the said table, respectively.

Matters for Evaluation	Methods for Evaluation
(i) When the electric structure will possibly become not in conformity with the provisions of Article 9-2 of the Ordinance of Establishing Technical Standards for Nuclear Power Generating Equipment (Ordinance of Ministry of International Trade and Industry No. 62, 1965, referred to as "the Ordinance", in this subparagraph)	Evaluations shall be performed for each electric structure concerned in accordance with the following subparagraphs: 1. Estimate the cause of any damage such as cracks, holes and others (hereinafter referred to as "crack etc.") identified at the licensee's periodic inspection. In addition, identify the shape and dimension of the crack etc.; 2. Predict the development of the crack etc. during the predetermined time period, which shall be determined on the basis of the identified shape and dimension of the crack etc. described in the preceding subparagraph; and 3. Determine when the electric structure will possibly become not in conformity with the Ordinance indicated in the left row, when the crack etc. is assumed to develop as predicted.
(ii) Details of actions to be taken such as repair	In the case that any action such as repair is requested as a result of the evaluation performed through the methods for evaluation indicated in the right row of the preceding subparagraph, the time, scopes and methods for the action should be appropriate.

3. Descriptions of the record of the evaluation results described in Article 55, Paragraph 3 of the Law shall include the following particulars:

(i) Date of the evaluation;
(ii) Object of the evaluation;
(iii) Method of the evaluation;
(iv) The evaluation results;
(v) Name of persons who performed the evaluation;
(vi) In the case that any action such as repair has been taken on the basis of the evaluation, details of the action;
(vii) Organizations who implemented the evaluation;
(viii) Process control for implementation of the evaluation;
(ix) In the case that any licensee collaborated in the evaluation, particulars concerning management of the licensee concerned;
(x) Particulars concerning management of the evaluation records; and
(xi) Particulars concerning education and training relating to the evaluation;

4. The record of the evaluation results described in Article 55, Paragraph 3 of the Law shall be retained until five years elapse after the evaluated specific electric structure is disposed of.

5. The report of the evaluation results described in Article 55, Paragraph 3 of the Law shall be made on the particulars shown in Paragraph 3, Subparagraphs 1 through Subparagraphs 6 immediately after the evaluation for the said matters is completed.

(Rules for Office Work)

Article 104-2. The Organization shall define rules for conducting affairs of inspection etc. (which means a part of affairs concerning inspections defined in Article 49, Paragraph 3, Article 51, Paragraph 5 and Article 54, Paragraph 2, and reviews defined in Article 52, Paragraph 3 and Article 55, Paragraph 4, the same shall be applied, hereinafter) (hereinafter referred to as "rules for office work"), and shall submit it to the Minister of Economy, Trade and Industry before starting the activities relating to the affairs of inspection etc. This shall be applied to its alteration also.

2. In the case that the Minister of Economy, Trade and Industry deems that the rules for office work submitted in accordance with the preceding paragraph is not appropriate for conducting the affairs of inspections etc. properly and certainly, the Minister may order the Organization to alter the rules for office work.

3. Affairs to be specified in the rules for office work are provided in the ordinance of Ministry of Economy, Trade and Industry.

(Person Who Performs the Affairs of Inspection etc.)

Article 104-3. The Organization, when conducting the affairs of inspection etc., shall make the person who has the certificate specified in the ordinance of Ministry of Economy, Trade and Industry perform the affairs of inspection etc.

(Audit)

Article 105. The Minister of Economy, Trade and Industry shall audit the business and accountings of general electricity utilities and wholesale electric utilities every year.

(Collection of Reports)

Article 106. The Minister of Economy, Trade and Industry may request any person who establishes an electric structure for power generation by nuclear power as prime mover (hereinafter referred to as a "electric structure for nuclear power generation"), to the extent as necessary for the enforcement of the provisions of Article 39, Article 40, Article 47, Articles 49 through 52, Article 54 and Article 55, to make report or submit documents on the status of his business concerning fitness for safety of the electric structure for nuclear power generation as specified in the government ordinance.

2. In addition to those specified in provisions of the preceding paragraph, in the case that the person who establishes the

electric structure for nuclear power generation has produced reports or submitted documents upon request as specified in the provisions of the said paragraph, the Minister of Economy, Trade and Industry may request the contractors on maintenance of the electric structure for nuclear power generation concerned, to the extent as necessary for enforcement of the provisions of Article 39, Article 40, Article 47, Articles 49 through 52, Article 54 and Article 55, to make report or submit documents on necessary matters if he deems that it is necessary to ensure fitness for safety of the electric structure for nuclear power generation.

3. In addition to those specified in provisions of the Paragraph 1, the Minister of Economy, Trade and Industry may request any electric utility, to the extent as necessary for the enforcement of the Law, to make report or submit documents on the status of his business or accountings, as specified in the government ordinance.

4. In addition to those specified in provisions of the Paragraph 1, the Minister of Economy, Trade and Industry may request any person who establishes an electric structure for personal use or the designated investigation agency, to the extent as necessary for the enforcement of the Law, to make report or submit documents on the status of his business or accountings, as provided in the government ordinance.

5. The Minister of Economy, Trade and Industry may request the Organization, to the extent as necessary for the enforcement of the Law, to make report or submit documents on status of its business.

6. The Minister of Economy, Trade and Industry may request the designated safety management review agency or the designated inspection agency, to the extent as necessary for the enforcement of the Law, to make report or submit documents on the status of his business or accountings.

(Entry and Inspection)

Article 107. The Minister of Economy, Trade and Industry may make their officials, to the extent as necessary for the enforcement of the provisions of Article 39, Article 40, Article 47, Articles 49 through 52, Article 54 and Article 55, enter a factory or a place of business such as sales offices, business offices or others of any person who establishes electric structures for nuclear power generation, fabricates fuel assemblies or performs welding of boilers or containments etc. (limited to those related to electric structures for nuclear power generation), and inspect equipment such as electric structures for nuclear power generation, books, documents and others.

2. In addition to the entry and inspection as provided in the preceding paragraph, the Minister of Economy, Trade and Industry may make their officials, to the extent as necessary for the enforcement of the Law, enter a place of business such as sales offices, business offices or others of any electric utility, and inspect status of his business or accountings, or equipment such as electric structures, books, documents and others.

3. In addition to the entry and inspection specified in the preceding paragraph, the Minister of Economy, Trade and Industry may make their officials, to the extent as necessary for the enforcement of the Law, enter a factory or a place of business such as sales offices, business offices or others of any person who establishes electric structures for personal use or performs welding of boilers or containments etc., and inspect equipment such as electric structures, books, documents and others.

4. The Minister of Economy, Trade and Industry may make their officials, to the extent as necessary for the enforcement of the Law, enter any place where an electric structure for general use is established (excluding any place used as a residence), and inspect the electric structure for general use.

5. The Minister of Economy, Trade and Industry may make their officials, to the extent as necessary for the enforcement of the Law, enter any business office or place of business of the designated investigation agency, and inspect status of his business, books, documents and others.

6. The Minister of Economy, Trade and Industry may make their officials, to the extent as necessary for the enforcement of the Law, enter any business office or place of business of the Organization, and inspect status of his business, books, documents and others.

7. The Minister of Economy, Trade and Industry may make their officials, to the extent as necessary for the enforcement of the Law, enter any business office or place of business of the designated safety management review agency or any business office of the designated inspection agency, and inspect status of its business, books, documents and others.

8. When officials make entrance in accordance with the provisions of the preceding paragraphs, they shall carry their identification cards with them and show them when requested by persons concerned.

9. The Minister of Economy, Trade and Industry may make the Organization conduct an entry and inspection as specified in Paragraph 1 through Paragraph 3, when the Minister deems that it is necessary.

10. When the Minister of Economy, Trade and Industry makes the Organization conduct an entry and inspection in accordance with the provisions of the preceding paragraph, the Minister shall make the order indicating the place of the entry and inspection concerned and other necessary matters.

11. When the Organization conducted the entry and inspection as provided in the Paragraph 9 in accordance with the order described in the preceding paragraph, the Organization shall report to the Minister of Economy, Trade and Industry of its results.

12. When personnel of the Organization make entrance in accordance with the provisions of Paragraph 9, they shall carry their identification cards with them and show them when requested by persons concerned.

13. The authority specified in the provisions of Paragraph 1 through Paragraph 7 shall not be construed as having been granted for the purpose of criminal investigation.

(Order to the Organization)

Article 107-2. The Minister of Economy, Trade and Industry may make orders ad necessary to the Organization concerning his business relating to affairs of inspection etc. or business of an entry and inspection specified in Paragraph 9 of the preceding article, when the Minister recognize that it is necessary to ensure those business to be conducted appropriately.

(Report etc. to Nuclear Safety Commission)

Article 107-3. The Minister of Economy, Trade and Industry shall report to Nuclear Safety Commission quarterly of the licensing, inspection and review activities performed in the preceding quarter relating to electric structures for nuclear power generation provided in Article 47, Paragraph 1 and Paragraph 2, Article 49, Paragraph 1, Article 50-2, Paragraph 3, Article 51,

Paragraphs 1 and Paragraph 3, Article 52, Paragraph 3, Article 54, Paragraph 1 and Article 55, Paragraph 4, and shall take necessary measures to ensure fitness for safety related to the electric structures for nuclear power generation, to obtain opinions of Nuclear Safety Commission if the Minister deems that it is necessary.

2. In addition to the report in accordance with the preceding paragraph, the Minister of Economy, Trade and Industry shall report to Nuclear Safety Commission of the status of enforcement of the Law for ensuring fitness for safety related to the electric structures for nuclear power generation, as specified in the ordinance of Ministry of Economy, Trade and Industry.

(Collaboration with Nuclear Safety Commission for Investigation)

Article 107-4. Any person who establishes an electric structure for nuclear power generation or any contractors on maintenance of an electric structure for nuclear power generation shall collaborate with Nuclear Safety Commission, when the Commission conducts an investigation on matters related to the report in accordance with the provisions of Paragraph 1 or Paragraph 2 of the preceding article.

Annexed Table 2 (related to Articles 62 and 65)

Type of Construction		Matters that Need Licensing	Matters that Need Prior Notification
Power Station	(i) Construction for establishment	1. Establishment of a power station excluding the followings: (1) Establishment of a hydraulic power station; (2) Establishment of a thermal power station; (3) Establishment of a fuel cell power station; (4) Establishment of a solar cell power station; and (5) Establishment of a wind power station.	
	(ii) Construction for alteration (1) Establishment of power generation equipment	Establishment of a power generation equipment excluding the followings: (1) Establishment of a power generation equipment of hydraulic power station; (2) Establishment of a power generation equipment of thermal a power station; (3) Establishment of a power generation equipment of fuel cell power station; (4) Establishment of a power generation equipment of solar cell power station; and (5) Establishment of a power generation equipment of wind power station.	

	(iii) Nuclear equipment A. Nuclear reactors	1. Modifications of those related to a boiling water reactor type power generation installation specified in the followings: (1) Those accompanied by alteration of reactor type, rated thermal power, excess reactivity, reactivity coefficient or moderator; (2) Those relating to the reactor core; (3) Reactor reflector systems; (4) The main body of reactor pressure vessels (excluding the surveillance test specimen); (5) Those relating to reactor pressure vessel support structures; (6) Those relating to reactor pressure vessel associated structures; and (7) Those relating to reactor pressure vessel internal structures (limited to spargers, internal piping or in-core guide tubes). 2. Modifications of those related to a pressurized water reactor type power generation installation or a sodium-cooled reactor type power generation installation specified in the followings: **(A list of equipment concerned is to be followed hereinafter as is the case with the boiling water reactor type power generation installation, but it is omitted and represented by that of the boiling water reactor type power generation installation.)**	1. Modifications of those related to a boiling water reactor type power generation installation (excluding those indicated in the middle row) related to reactor pressure vessel internal structures. 2. Repair of those related to a boiling water reactor type power generation installation specified in the followings: (1) Replacement of those related to main body of reactor pressure vessel (excluding the surveillance test specimen) or reactor pressure vessel associated structures (limited to those related to the reactor coolant pressure boundary); and (2) Those that affect performances or strength of those related to the reactor core (limited to core support structures), the main body of reactor pressure vessel (excluding the surveillance test specimen), reactor pressure vessel support structures, reactor pressure vessel associated structures or reactor pressure vessel internal structures (limited to spargers, internal piping, in-core guide tubes). 3. Repair of those related to a pressurized water reactor type power generation installation or a sodium-cooled reactor type power generation installation specified in the followings: **(A list of equipment concerned followed hereinafter as is the case for the boiling water reactor type power generation installation, but it is omitted and represented by that of the boiling water reactor type power generation installation.)**
	B. Reactor cooling system equipment	Omitted.	Omitted.
	C. Measuring and control system equipment	Omitted.	Omitted.
	D. Fuel equipment	Omitted.	Omitted.
	E. Radiation management equipment	Omitted.	Omitted.

	F. Disposal equipment	Omitted.	Omitted.
	G. Reactor containment facility	Omitted.	Omitted.
	H. Ventilation stack	Omitted.	Omitted.
	I. Steam turbine	Omitted.	Omitted.
	J. Auxiliary boiler	Omitted.	Omitted.
	K. Fuel equipment that belongs to the auxiliary boiler	Omitted.	Omitted.
	L. Smoke processing facilities that belongs to the auxiliary boiler	Omitted.	Omitted.
	(2) Transformer	Omitted.	Omitted.
	(3) Voltage regulator or voltage phase regulator	Omitted.	Omitted.
	(4) Condenser	Omitted.	Omitted.
	(5) Electric power condenser	Omitted.	Omitted.
	(6) Shunt reactor or current-limiting reactor	Omitted.	Omitted.
	(7) Frequency converter or rectifiers	Omitted.	Omitted.
	(8) Breaker	Omitted.	Omitted.
	(9) Battery (limiting to those to be or has been installed at a nuclear power station)	Omitted.	Omitted.
	(10) Electronic power inverter	Omitted.	Omitted.
	2. Associated equipment (1) Control equipment to control operation of a power station	Omitted.	Omitted.
	(2) Emergency standby power generation device (limiting to that to be or has been installed at a nuclear power station)	Omitted.	Omitted.

Annexed Table 3 (related to Articles 63 and 66)

Type of Electric	Particulars to be Described	Appended documents (limited to

Structure	General descriptions	Descriptions according to equipment (limited to those concerning details of construction related to license application or notification)	those concerning details of construction related to license application or notification)
(i) Power station	1. Name and location of the power station (perfect name of municipality shall be described) 2. Power of the power station 5. In the case that the power station is related to the Class II project provided in Article 2, Paragraph 3 of the Environmental Impact Assessment Law (excluding specific project), descriptions indicating that the action described in Article 4, Paragraph 2 of the said law (including the case where the said subparagraph is applied with necessary modifications to Paragraph 4 of the said article and Article 29, Paragraph 2 of the said law) has been taken		Overview diagram for electric power transmission Descriptions indicating that the electric structure for business use is technically appropriate one in ensuring smooth supply of electricity (limited to the electric structure for business use related to power grid of equal or more than 170kV that is devoted to a general electric utility) In the case that the power station related to Class II project provided in Article 2, Paragraph 3 of the Environmental Impact Assessment Law (excluding specific project), descriptions concerning the action described in Article 4, Paragraph 3, Subparagraph 2 of the said law (including the case where the said subparagraph is applied with necessary modifications to Paragraph 4 of the said article and Article 29, Paragraph 2 of the said law) In the case that an smoke generating facility described in Article 2, Paragraph 2 of the Air Pollution Control Law is established, descriptions concerning its smoke In the case that an specific facility described in Article 2, Paragraph 1 of the Noise Control Law is established in the area designated as provided in Article 3, Paragraph 1 of the said law, descriptions concerning its noise In the case that an specific facility described in Article 2, Paragraph 1 of the Vibration Control Law is established in the area designated as provided in Article 3, Paragraph 1 of the said law, descriptions concerning its vibration In the case that an specific facility described in Article 2, Paragraph 2 of the Law Concerning Special Measures against Dioxins is established, descriptions concerning dioxins In the case relating to a restricted construction work carried out in a steep slope collapse risk area, descriptions concerning preventive actions against collapse of the steep slope (which means one provided in Article 2, Paragraph 1 of the Law concerning Prevention of Disasters due to Collapse of Steep Slope, the same shall be applied hereinafter) in the area concerned Contour map specifying outline of the

			power station Floor plans and cross sectional drawings specifying configuration of major equipment Single-line diagrams (descriptions of ground wires (excluding instrument transformer) shall include type of wire, size and class of grounding) Document that fully describes details of new technology
1. Nuclear reactors	Omitted.	Omitted.	Omitted.
2. Reactor cooling system equipment	Omitted.	Omitted.	Omitted.
3. Measuring and control system equipment	Omitted.	Omitted.	Omitted.
4. Fuel equipment	Omitted.	Omitted.	Omitted.
5. Radiation management equipment	Omitted.	Omitted.	Omitted.
6. Disposal equipment	Omitted.	Omitted.	Omitted.
7. Reactor containment facility	Omitted.	Omitted.	Omitted.
8. Ventilation stack	Omitted.	Omitted.	Omitted.
9. Steam turbine	Omitted.	Omitted.	Omitted.
10. Auxiliary boiler	Omitted.	Omitted.	Omitted.
11. Fuel equipment that belongs to a auxiliary boiler	Omitted.	Omitted.	Omitted.
12. Smoke processing facilities that belongs to auxiliary boiler	Omitted.	Omitted.	Omitted.

(4) Ordinance of Establishing Technical Standards for Nuclear Power Generation Equipment (Excerpt)
(Ordinance of Ministry of International Trade and Industry No. 62, June 15, 1965)
Latest Revision: Ordinance of Ministry of Economy, Trade and Industry No. 102, September 22, 2003

(Definitions)
Article 2. Terminology used in this Ministerial Order is defined in the following respectively:
(vii) "Control zones" means the areas within a nuclear power station where there is a hazard that the dose from external radiation may exceed the limit specified separately by the ministerial notification, and that the concentration of radioactive material in the air (excluding those included in the air or water naturally, the same shall be applied hereinafter) may exceed the level specified separately by the ministerial notification or that the density of radioactive material on the surface of objects contaminated by radioactive material may exceed the level specified separately by the ministerial notification; and
(viii) "Environmental monitoring area" means those areas surrounding control zones, the outside of which there is no possibility of the dose exceeding the limit of the dose specified separately by the ministerial notification.
(Instrumentation Devices)
Article 20. Nuclear power station shall be equipped with the devices directly to measure the followings. In this case, when it is difficult to measure directly, the said devices may be replaced with devices indirectly to measure the followings;
(vii) The concentration of radioactive materials in ventilation gases at the outlets of ventilation tubes or at locations near those outlets;
(viii) The concentration of radioactive materials in discharge at the outlets of draining points or at locations near those

outlets; and

(x) The dose equivalent rates in control zones and zones adjacent to monitoring areas.

(Alarm Devices, Etc.)

Article 21. Nuclear power station shall be equipped with automatic alarming devices through reliably detecting those following events; a danger of remarkable obstacles in operation of reactor caused by loss of function of its components or mis-operation, a remarkable increase in the concentration of radioactive materials referred to in Subparagraph (vii) of the preceding article or in the dose equivalent rate referred to in Subparagraph (x) of the said article, a danger of remarkable leak of radioactive liquid waste form facilities for processing or storing radioactive waste in liquid form (excluding that in gaseous form, the same shall be applied, hereinafter).

(Biological Shields)

Article 27. Biological shields shall be installed at places inside nuclear power station where it is necessary to prevent radiation hazards due to external radiation.

(Ventilation Facilities)

Article 28. Ventilation facilities shall be installed at places inside a nuclear power station where it is necessary to prevent radiation hazards due to air polluted with radioactive materials.

(Prevention of Contamination by Radioactive Materials)

Article 29. In buildings of nuclear power stations that are frequently accessed by people, the surfaces of walls, floors, and other portions that could become contaminated with radioactive materials, and the portions which could be touched by people, shall be such as to allow easy removal of contamination by radioactive materials.

(Waste Processing Equipment, Etc.)

Article 30. In nuclear power stations, equipment must be installed for the processing of radioactive waste.

(5) Technical Standards on Dose Equivalent, etc. due to Radiation Relating to Nuclear Power Generation Equipment (Excerpt)

(Notification No. 188 Issued by Ministry of Economy, Trade and Industry, March 21, 2001)

(Dose, Etc. Related to **Control** Zones)

Article 1. Article 2 and Article 11 of the Notification, issued by Ministry of Economy, Trade and Industry No.187, 2001 (Notification for Dose Equivalent Limits on the Basis of the Rules for Commercial Power Reactor, hereinafter referred to as “the Notification”), shall apply to dose from external radiation, concentrations of radioactive materials in air, or concentrations of radioactive materials on the surfaces of objects contaminated with radioactive materials specified in the provisions of Article 2, Subparagraph (vii) of the Ordinance of Establishing Technical Standards for Nuclear Power Generation Equipment (hereinafter referred to as the "Ministerial Order"),.

(Dose Limits Related to Environmental Monitoring Areas)

Article 2. The provisions of Articles 3 and 11 of the Notification shall also apply to dose limits specified in the provisions of Article 2, Subparagraph (viii) of the Ministerial Order.

(Concentrations of Radioactive Materials Outside Environmental Monitoring Areas)

Article 3. The provisions of Article 9 of the Notification shall also apply to the concentrations of radioactive materials in the air outside environmental monitoring areas and in the water at the boundaries with environmental monitoring areas, specified in the provisions of Article 30, Paragraph 1, Subparagraph (i) of the Ministerial Order.

3.10. Basic Law on Emergency Preparedness

(1) Basic Law on Emergency Preparedness (Excerpt)

(Law No. 223, November 15, 1961)

Latest Revision: Law No. 99, May 31, 2000

(Objectives)

Article 1. This law is a provision for the establishment of necessary disaster countermeasures systems through the National Government, local governments and other public agencies to protect the national land, and the lives, health, and assets of the citizens from disaster, and clarifies the parties responsible for the same. It also specifies the principles regarding preparation of disaster countermeasures plans, disaster prevention, disaster emergency countermeasures, financial measures for disaster recovery and disaster countermeasures, and fundamentals of other necessary disaster countermeasures, thereby contributing to the development And promotion of comprehensive and systematic disaster countermeasures administration to maintain social order and ensure public welfare.

(Definition)

Article 2. The terminology used in this law is defined in the following respectively:

(i) Disaster: Disaster means damage due to wind-storm, heavy rainfall, heavy snowfall, flood, high tide, earthquake, tsunami, volcanic eruption and other abnormal natural phenomena, or large fire and/or explosion, and other causes specified in government ordinances according to the disaster level.

(Responsibility of the National Government)

Article 3. The National Government shall be responsible for taking all possible steps with respect to disaster countermeasures by mobilizing all of its organizations and functions, in view of its mission to protect the national land, and lives, health, and assets of citizens from disaster.

2. In order to perform the responsibility referred to in the preceding paragraph, the National Government is to prepare a

plan that should be the bases of disaster prevention, disaster emergency countermeasures, and disaster recovery, execute the said plan in accordance with the legislation, make promotion and overall coordination of the affairs or activities handled by the local governments, designated public agencies, and designated local public agencies etc., and rationalize the bearing of expenses in connection with disasters.

3. In performing the assigned duties, the designated administrative agencies and designated local administrative agencies have to cooperate each other to ensure the full performance of the responsibility of the National Government referred to in the Paragraph 1.

4. The chiefs of the designated administrative agencies and designated local administrative agencies shall recommend, instruct, advise, and take other adequate measures for the relevant prefectures or municipalities with regard to their duties so that the preparation and execution of the local disaster countermeasures plans in accordance with the provisions of this Law should be performed smoothly by the relevant prefectures and municipalities.

(Responsibility of Prefectures)

Article 4. In order to protect the region of the prefectures, and the lives, health, and assets of the residents of the relevant prefectures from disaster, the governments of prefectures shall have a responsibility, by the cooperation of the related agencies and other local governments, to prepare disaster countermeasures plans with regard to the regions of the relevant prefectures, execute the same in accordance with the regulations, assist the municipalities and designated local public agencies within the region in the performance of their duties and activities for disaster countermeasures, and make an overall coordination.

2. **A**gencies of prefectures shall cooperate each other in the performance of their assigned duties so that the responsibility of the governments of prefectures referred to in the preceding paragraph should be fully accomplished.

(Responsibility of Municipalities)

Article 5. Being bases of local governments, the municipal governments shall, prepare plans for disaster countermeasures in regard to the regions of the relevant municipalities with cooperation of the related agencies and other local governments, and shall execute the same in accordance with the legislation on their own responsibility, in order to protect the regions of the relevant municipalities, and the lives, health, and assets of the residents of the relevant municipalities from disaster.

2. The mayors of municipalities shall make efforts to develop such organizations as fire fighting agencies and flood control squadrons, and enrich the organizations established in public organizations aiming for disaster countermeasures within the administrative territory of the relevant municipalities and voluntary organizations of residents for disaster countermeasures established by the spirit of neighbors cooperation (referred to as “voluntary disaster countermeasures organizations” in Article 8, Paragraph 2), and make full use of the functions of municipalities, in order to accomplish the responsibility referred to in the preceding paragraph.

3. In performing the assigned duties, municipal agencies such as fire fighting agencies and flood control squadrons shall cooperate each other so that the responsibility of municipalities provided for in the paragraph 1 should be fully accomplished.

(Responsibility of Designated Public Agencies and Designated Local Public Agencies)

Article 6. The designated public agencies and designated local public agencies shall prepare plans for disaster countermeasures with regard to their respective duties, execute the same in accordance with the legislation, and shall be responsible for cooperating the relevant prefectures and municipalities in relation to their duties, so that the preparation and execution of disaster countermeasures plans in accordance with the provisions of this Law should be conducted smoothly by the National Government as well as governments of prefectures and municipals.

2. In view of the public nature of their duties or the public interest, the designated public agencies and designated local public agencies have to contribute to disaster countermeasures through their respective duties.

(Establishment of Central Disaster Prevention Council and Assigned Duties)

Article 11. The Central Disaster Prevention Council shall be established in the Cabinet's Office.

2. The Central Disaster Council shall be responsible for the following matters:

(i) To prepare the basic plan of disaster countermeasures and promote the execution of the same;

(ii) To prepare plans regarding emergency measures and promote the execution of the same on the occasion of emergency disasters;

(iii) To deliberate important issues regarding disaster countermeasures in response to an inquiry from the Prime Minister; and

(iv) The affairs placed under its authority in accordance with the provisions of the legislation, aside from the above items.

4. The Prime Minister shall submit the following matters to the Central Disaster Prevention Council for deliberation:

(i) Basic policies on disaster countermeasures;

(ii) Important items regarding overall coordination of disaster countermeasures;

(iii) General principles on emergency measures needed temporarily on the occasion of emergency disasters;

(iv) Proclamation of emergency situation of disaster; and

(v) Other important matters relating to disaster countermeasures to be deemed necessary by the Prime Minister.

(Organization of the Central Disaster Prevention Council)

Article 12. The Central Disaster Prevention Council shall consist of a chairman and council members.

2. The chairman shall be the Prime Minister.

(Disaster Countermeasure Headquarters)

Article 23. Governors of prefectures or mayors of municipals may establish a disaster countermeasure headquarters in accordance with the disaster countermeasures plans of prefectures or municipals when the above is deemed necessary to enhance disaster countermeasures when a disaster has occurred or is likely to occur in the jurisdiction of the said prefectures or municipalities.

2. The head of the disaster countermeasures headquarters shall be the general manager of the disaster countermeasures headquarters, who shall be the governor of prefecture or the municipal mayor.

(Establishment of Emergency Disaster Countermeasures Headquarters)

Article 24. When an emergency disaster occurs, in view of the scale and other circumstances whereof a special necessity is recognized in order to enhance disaster emergency countermeasures, the Prime Minister may establish the Emergency and Disaster Countermeasures Headquarters in the Prime Minister's Office on a temporary basis regardless of the provisions of National Government Organization Law, Article 40, Item 2.

(Organization of Emergency and Disaster Countermeasures Headquarters)

Article 25. The head of the Emergency and Disaster Countermeasures Headquarters shall be the General Manager of the Headquarters and shall be a state minister.

(Establishment of Urgency and Disaster Countermeasures Headquarter)

Article 28-2. When an extraordinary and intense emergency disaster occurs, and a special necessity is recognized in order to enhance temporary damage restoration measures, the Prime Minister may, subject to the approval of the Cabinet Council, establish the Urgency and Disaster Countermeasures Headquarters in the Prime Minister's Office on a temporary basis regardless of the provisions of National Government Organization Law, Article 8, Item 3.

(Organization of Urgency and Disaster Countermeasures Headquarters)

Article 28-3. The head of the Urgency and Disaster Countermeasures Headquarter shall be the General Manager of the Headquarters and shall be the Prime Minister. (or the state minister designated by it in advance in the case that there are unavoidable circumstances under which the Prime Minister can not assume the position.)

(Preparation and Official Announcement of the Basic Plan of Disaster Countermeasures)

Article 34. The Central Disaster Prevention Council shall prepare the Basic Plan of Disaster Countermeasures; examine the same, taking the result of scientific research on disaster and disaster prevention and the situations of previous disaster as well as the effect of the disaster emergency countermeasures applied thereto into consideration on an annual basis; and shall revise the same when it is deemed necessary to do so.

Article 35. The Basic Plan of Disaster Countermeasures shall cover the followings;

(i) Comprehensive, long-term planning regarding disaster countermeasures;
(ii) Matters requiring stress in the plan of disaster countermeasures and the local disaster countermeasures plan; and
(iii) Matters that shall be the standards for the preparation of the plan of disaster countermeasures and local disaster countermeasures and shall be recognized as necessary by the Central Disaster Prevention Council, aside from those referred to in the preceding items.

(Plan of Disaster Countermeasures of the Designated Administrative Agencies)

Article 36. The chiefs of the designated administrative agencies shall prepare the plan of disaster countermeasures in conjunction with the assigned duties in accordance with the Basic Plan of Disaster Countermeasures, shall examine the same on an annual basis, and shall revise the same when it is deemed necessary to do so.

(Local Disaster Countermeasures Plans of Prefectures)

Article 40. Disaster countermeasures councils of prefectures shall prepare disaster countermeasures plans of their prefectures in conjunction with the jurisdiction of the relevant prefectures in accordance with the Basic Plan of Disaster Countermeasures, shall examine the same on an annual basis, and shall revise the same when deemed necessary. In this instance, the relevant local disaster countermeasures plans of prefectures shall not be contrary to the plan of disaster countermeasures.

(Municipal Local Disaster Countermeasures)

Article 42. Municipal disaster countermeasures councils (or mayors of municipals of the relevant municipalities where a municipal disaster countermeasures council is not established; the same would apply hereunder in this article) shall prepare municipal local disaster countermeasures plans in conjunction with the jurisdiction of the said municipalities in accordance with the Basic Plan of Disaster Countermeasures, examine the same on an annual basis, and shall revise the same when deemed necessary. In this case, the relevant municipal local disaster countermeasures plans shall not be contrary to plans of disaster countermeasures or local disaster countermeasures plans of prefectures of the prefectures containing the relevant municipalities within their jurisdiction.

(2) Ordinance for the Enforcement of the Basic Law on Emergency Preparedness (Excerpt)
(Government Ordinance No. 288, July 9, 1962)
Latest Revision: Ordinance No.553, December 27, 2000

(Causes Specified by the Government Ordinance)

Article 1. The causes specified under Item 1, Article 2 of the Basic Law on Disaster Countermeasures (hereinafter referred to as "the Law") shall be those large-scale accidents involving the release of a large amount of radioactive materials, the sinking of a vessel resulting in heavy casualties, and the like.

(3) Basic Plan for Emergency Preparedness (Summary)
Volume 10. “Nuclear Emergency Response”
(Central Emergency Prevention Council: May 2000)

1. Preface

- Each body decides that countermeasures are taken so that it can respond to all the situations assumed, and establishes systems, which can cope with them even when an unexpected situation occurs.
- The emergency preparedness guideline " Emergency Preparedness of Nuclear Installations", defined by the Nuclear Safety Commission in special and technical items should be respected.

2. Emergency Prevention

(1) Collection of information, Establishment of communication systems

- The National Government, local governments, nuclear business operators, etc. collect information even in nights and

holidays in order to expect the perfect in nuclear emergency prevention and establish communication systems.
- The National Government and local governments establish and maintain a leased communication line network.

(2) Establishment of emergency response systems
- The National Government (Cabinet Office) establishes and maintains the operation center equipped with required machinery and materials.
- Regulatory ministries and offices establish and maintain the operation center equipped with required machinery and materials such as an emergency speedy radioactivity influence prediction system (hereinafter referred to as "SPEEDI network system"), an emergency response support system (hereinafter referred to as "ERSS").
- The National Government, local governments, nuclear business operators, etc. establish emergency personnel gathering systems.
- The National Government establishes the Nuclear Emergency Response Headquarter and the Local Nuclear Emergency Response Headquarter immediately after the declaration of a nuclear emergency situation. Moreover, the National Government specifies a countermeasure facility beforehand where related staff of the National Government, local governments, and nuclear business operators, etc. meet, share information and carry out emergency situation countermeasures.
- The Nuclear Safety Commission establishes emergency gathering systems such as an emergency technical advice system, etc.
- The National Government, public institutions, nuclear business operators, etc. establish an emergency monitoring system.
- The National Government establishes a specialist dispatch system.
- The National Government defines beforehand the transfer measures of necessary personnel to the Local Nuclear Emergency Response Headquarters, etc.
- The local governments make a plan concerning evacuation and guidance beforehand, and make known widely to residents in everyday life about evacuation places, the evacuation methods, etc.
- The National Government and local governments establish the emergency medical dispatch system for emergency medical activities.

(3) Emergency preparedness drills, training and spread of knowledge of emergency preparedness
- The National Government, local governments, nuclear business operators, etc. carry out practical training.
- The National Government, local governments and nuclear licensees complete and reinforce trainings of emergency prevention personnel.
- The National Government and local governments make efforts in the spread and education of knowledge of emergency preparedness to residents.

(4) Promotion of the research about emergency prevention, etc.
- The National Government makes efforts in promotion of the technology and research of nuclear emergency prevention.

3. Emergency Response

(1) Notifications of specific event occurrence information
- A nuclear business operator notifies the Official Residence (Cabinet Office), the Ministry of Economy, Trade and Industry, the local government and the Senior Specialist for Nuclear Emergency etc. within 15 minutes after a specific event discovery or receipt of a report of discovery.
- A local government notifies the Senior Specialist for Nuclear Emergency, when the numerical detection value, which should be notified as a specific event occurrence, is discovered in a monitoring post. The Senior Specialist for Nuclear Emergency directs to check the situation of the installation to the nuclear business operator and reports the result to the Ministry of Economy, Trade and Industry and the local government.

(2) Reports of the emergency operator activity information, damage information, etc. after a specific event occurrence
- A nuclear business operator reports periodically situation of the installation, situation of emergency response activities of the nuclear business operator and the situation of the Emergency Response Headquarters, situation of damage, etc. to the Official Residence (Cabinet Office), the Ministry of Economy, Trade and Industry, the local government, the Senior Specialist for Nuclear Emergency, etc.
- The National Government holds related ministries and government offices emergency response connection meeting and a local emergency response connection meeting consisting of related bodies.
- The Ministry of Economy, Trade and Industry directs to the Senior Specialist for Nuclear Emergency to collect information at the spot and to perform connection, adjustment, etc. among the nuclear business operator, the local government, the local emergency response connection meeting, etc.

(3) Connection of the emergency response activity information and emergency information after a declaration of nuclear emergency situation.
- Local Nuclear Emergency Response Headquarter, specific public institutions, local governments of the emergency response enforcement zone, specific district public institutions, the nuclear business operator and other related organizations share continuously required information. Moreover, each organization performs adjustment required about the emergency response.

(4) Activity for the early grasp of radioactivity influence
- A local government strengthens monitoring at ordinary times, when a report of specific event occurrence is received from a nuclear business operator.
- While the National Government predicts the state of nuclear reactor installation etc. by ERSS, it carries out radioactivity influence prediction by SPEEDI network system, and connects information required for enforcement of emergency response to the local government, etc.

(5) Response after the declaration of nuclear emergency situation
- The Prime Minister establishes the Nuclear Emergency Response Headquarter, which makes himself the director general.

(The deputy director-general is the Minister Specializing in Safety Regulation.)
- The Nuclear Emergency Response Headquarter Director establishes the Local Nuclear Emergency Response Headquarter.
- The Local Nuclear Emergency Response Headquarter succeeds quickly office works of the local emergency response connection meeting.
- The director of the Local Nuclear Emergency Response Headquarter is the vice minister of the ministries and government offices specializing in safety regulation.
- The Local Nuclear Emergency Response Headquarter organizes the Joint Council for Nuclear Emergency Response in local emergency response facility with the emergency response headquarters (or local response headquarter) of prefectures and municipal governments that have jurisdiction of enforcement zone of emergency response. The Council is constituted with director of the Local Nuclear Emergency Response Headquarter, each emergency response headquarters of prefectures and municipal governments, specification public institutions and the nuclear business operator, etc..
- Roles and assignments of the Joint Council for Nuclear Emergency Response are discussed and fixed by related organizations beforehand. In the Joint Council for Nuclear Emergency Response, the work group of a small number of people is selected beforehand, which defines the response policies in the spot in an emergency.
- The Nuclear Safety Commission calls an emergency technical advice organization immediately, sends a member of the Nuclear Safety Commission and a member of the emergency response investigation committee specified beforehand to the spot when a report of specific event occurrence is received from ministries and government offices for safety regulation.
- The Nuclear Safety Commission performs technical advice about emergency response to the Nuclear Emergency Response Headquarter director.

(6) Emergency response activity
- The Self-Defense Forces dispatches a corps for emergency.
- The local governments carry out response activities of evacuation guidance of residents etc., shipment regulation of contaminated food, ingestion restriction of food and drink, stable iodine-tablet recipe directions, etc. if needed.
- The local governments, the Self-Defense Forces, etc. carry out rescue and first aid activities. The National Police Agency and the Fire Protection Agency carry out measures for wide area aids, such as sending of a wide area rescue team and an emergency fire protection rescue team respectively, if needed.
- The emergency exposure medical treatment team consisting of the medical personnel of the National Institute of Radiological Sciences, National Hospitals, and attached hospitals of National Universities etc. carries out medical activities at the spot.
- The Nuclear Emergency Response Headquarter, the Local Nuclear Emergency Response Headquarter, specific governmental agencies, specific public institutions, local governments, and nuclear business operators offer exact and fine information.

4. Emergency Restoration
- When recognizing that it becomes unnecessary to carry out emergency response, the Prime Minister hears opinions of the Nuclear Safety Commission, and declares release of a nuclear emergency situation.
- Local governments cancel various restriction measures based on investigation of the area by environmental monitoring etc. and judgments of specialists sent by the National Government and emergency response investigation committee of the Nuclear Safety Commission, etc.

3.11. Special Law of Emergency Preparedness for Nuclear Disaster

(1) Special Law of Emergency Preparedness for Nuclear Disaster (Excerpt) (Law No. 156, December 17, 1999)

(Purpose)
Article 1. In view of the particularity of nuclear disaster this Law stipulates the responsibilities of nuclear business operators for nuclear disaster prevention and special measures such as the issue of the Notification of Activating Nuclear Emergency Organization, the establishment of a Nuclear Disaster Countermeasures Headquarters, the implementation of immediate emergency countermeasures, and other issues related to nuclear disasters; and tightens countermeasures against nuclear disasters in conjunction with the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Law 57-166, hereinafter referred to as "LRNR"), the Basic Law on Disaster Countermeasures (Law 61-223), and other laws on the prevention of nuclear disasters, with the ultimate goal of protecting the life, body and property of national from hazard in the event of nuclear disasters.
(Duties of nuclear business operators)
Article 3. In accordance with the provisions of this Law and related laws, nuclear business operators are obliged to take the safest measures to prevent the occurrence of nuclear disasters (including the probability of a nuclear disaster), measures to prevent the propagation of nuclear disasters and measures for restoration there from.
(Duties of the National Government)
Article 4. In accordance with the provisions of this Law and related laws, the National Government shall take measures necessary for the implementation of immediate emergency countermeasures including the establishment of a Nuclear Disaster Countermeasures Headquarters, provision of necessary instructions to local authorities, and for the implementation of nuclear disaster prevention countermeasures and ex-post-facto countermeasures of nuclear disasters, in order to fulfill its obligations as prescribed in Article 3, Paragraph 1 of the Basic Law on Disaster Countermeasures.
2. The chiefs of designated administrative agencies (or the designated administrative agency itself, if a committee or council system agency; also applies to the succeeding provisions; the same shall apply hereinafter except for Article 17, Paragraph 6, Clause 3 and Article 20, Paragraph 3) and of designated local administrative agencies shall provide

recommendations and advice to local authorities and take appropriate measures with respect to assigned duties in their charge, in order to allow smooth execution of nuclear disaster prevention countermeasures, immediate emergency countermeasures, and ex-post-facto countermeasures of nuclear disasters by local authorities, as stipulated in this Law.

3. The competent Minister shall properly exert competencies stipulated in this Law, instruct and advise nuclear business operators, and take appropriate measures, in order to allow smooth implementation of nuclear disaster prevention countermeasures, immediate emergency countermeasures, and ex-post-facto countermeasures of nuclear disasters by nuclear undertakes in accordance with the provisions in this Law.

(Duties of local authorities)

Article 5. In accordance with the provisions of this Law and related laws, local authorities shall fulfill their duties concerning nuclear disasters as prescribed in Article 4, Paragraph 1 and Article 5, Paragraph 1of the Basic Law on Disaster Countermeasures, by taking measures necessary for the implementation of nuclear disaster prevention countermeasures, immediate emergency countermeasures, and ex-post-facto countermeasures of nuclear disasters.

(Disaster prevention work plan of nuclear business operators)

Article 7. In accordance with the provisions of the order of the competent Ministry, at each establishment of nuclear enterprise, nuclear business operators shall prepare a disaster prevention work plan of nuclear business operators with respect to nuclear disaster prevention countermeasures, immediate emergency countermeasures, ex-post-facto countermeasures of nuclear disasters, and other measures necessary to prevent the occurrence and propagation of nuclear disasters and to restore there-from. Once prepared, these plans shall be reviewed annually and revised as necessary, and shall not infringe upon the regional disaster prevention plan as prescribed in Article 2 Clause 10 of the Basic Law on Disaster Countermeasures and the petroleum-industry-complex disaster prevention plan as prescribed in Article 31 Paragraph 1 of the Law on Disaster Prevention Plans at Petroleum Industry Complexes.(Both disaster prevention plans are referred to together as “the regional and other disaster prevention plans” in the succeeding Paragraph.)

3. When a nuclear business operator has prepared or modified a disaster prevention work plan in accordance with the provisions of Paragraph 1, it shall immediately report this fact to the competent Minister and release essential details of the preparation or the modification to the public.

4. When a nuclear business operator is deemed to be in violation of the provisions of Paragraph 1, or its disaster prevention work plan of nuclear business operators is not deemed sufficient to prevent the occurrence or propagation of nuclear disasters involving the establishment of nuclear enterprise, the competent Minister may order the nuclear business operator to modify the plan or prepare the alternative to it.

(Nuclear disaster prevention organization)

Article 8. Nuclear business operators shall organize a nuclear disaster prevention organization at each of their establishments.

(Management personnel for nuclear disaster prevention)

Article 9. Nuclear business operators shall appoint management personnel for nuclear disaster prevention at each of their establishments to manage the nuclear disaster prevention organization.

(Notification duty of management personnel for nuclear disaster prevention)

Article 10. When the management personnel for nuclear disaster prevention detect or are notified of the detection, by means of the methods designated by government ordinance, of radiation doses exceeding the level designated by government ordinance, or of other events designated by government ordinance near the boundary of the area of the establishment of nuclear enterprise, they shall immediately report the finding to the competent Minister, competent governor of prefecture, competent mayor of the municipality, and governors of the related neighboring local governments (or if the event occurs during transportation outside an establishment, to the competent Minister and to the governor of prefecture and mayor of the municipality who have jurisdiction over the area in which the event occurred, as stipulated by the order of the competent Ministry and the disaster prevention plan of nuclear business operators. Upon being so notified, the competent governor of prefecture and governors of the related neighboring local governments shall report the event to the mayors of the related surrounding municipalities.

2. The governor of prefecture or the mayor of the municipality, who has been notified in accordance with the prescription in the former part of the preceding Paragraph, may request the competent Minister to dispatch personnel who have special knowledge to assess the situation in accordance with the provision of the government ordinance, at which time the competent Minister shall dispatch personnel who are deemed appropriate.

(Designation of the Off-site Centers)

Article 12. For each establishment of nuclear enterprise, the competent Minister shall designate facilities as bases for immediate emergency countermeasures taken by the persons as prescribed in Article 26 Paragraph 2. These facilities (hereinafter referred to as the "Off-site Center") shall be located in an area of the prefecture where the relevant establishment is located, and meet other requirements as prescribed by the order of the competent Ministry.

(Disaster prevention exercise plan by the National Government)

Article 13. A disaster prevention exercise prescribed in Article 48, Paragraph 1 of the Basic Law on Disaster Countermeasures, as applicable after amended as per the provisions of Article 28, Paragraph 1, (excluding those executed by responsible personnel for disaster prevention as designated in the relevant Paragraph in accordance with the provisions of a disaster prevention plan or a disaster prevention work plan of nuclear business operators), shall be executed according to plan prepared by the competent Minister in accordance with the order of the competent Ministry.

(Notification of Activating Nuclear Emergency Organization)

Article 15. When a nuclear emergency situation as prescribed in the succeeding paragraphs is deemed to have occurred, the competent Minister shall immediately submit to the Prime Minister both drafts of notification as prescribed in the succeeding Paragraph and instructions as per the provisions of Paragraph 3, in addition to provide necessary information on the situation.

(i) The radiation dose reported to the competent Minister in accordance with the former part of the provisions of Article 10, Paragraph 1 or the radiation dose detected by the methods and radiation-measuring devices designated in the government ordinance exceeds the threshold for radiation doses in abnormal level designated in the government

ordinance.

(ii) An event designated in the government ordinance as indicating the occurrence of a nuclear emergency situation, in addition to the events prescribed in the preceding Clause.

2. Upon receipt of the report and drafts prescribed in the preceding Paragraph, the Prime Minister shall immediately issue an official announcement (hereinafter referred to as "Notification of Activating Nuclear Emergency Organization") concerning a notification of a nuclear emergency situation and the items outlined in the succeeding clauses.

(i) Areas where immediate emergency countermeasures should be taken

(ii) Summary of the nuclear emergency situation.

(iii) Issues exhaustively notified to residents, visitors, and public and private groups in the areas designated in Clause (a) (hereinafter referred to as "residents"), in addition to the information in the preceding Clause (1) and Clause (2).

3. Upon receipt of the information and drafts prescribed in Paragraph 1, the Prime Minister shall immediately provide instructions and/or recommendations of refuge by evacuation or sheltering to the mayors of municipalities and governors of prefectures who have jurisdiction over the areas designated in Clause (1) of the preceding Paragraph, in accordance with the provisions of Article 60 Paragraphs 1 and 5 of the Basic Law on Disaster Countermeasures, as applicable after being amended as per the provisions of Article 28, Paragraph 2, and provide instructions of other measures related to immediate emergency countermeasures.

4. Once immediate countermeasures to prevent the propagation of a nuclear disaster are deemed no longer necessary, the Prime Minister shall immediately consult the Nuclear Safety Commission and issue an official announcement to cancel the nuclear emergency situation (hereinafter referred to as "a Notification of Deactivating Nuclear Emergency Organization").

(Establishment of Nuclear Disaster Countermeasures Headquarters)

Article 16. After issuing Notification of Active Nuclear Emergency Organization, the Prime Minister shall establish Nuclear Disaster Countermeasures Headquarters temporarily at the Prime Minister's Office after holding a Cabinet council, for executing immediate emergency countermeasures concerning relevant nuclear emergency situation, irrespective of the provisions of Article 83 of the National Government Organization Law (Law 48-120).

(Organization of the Nuclear Disaster Countermeasures Headquarters)

Article 17. The Prime Minister (or a Minister of State appointed in advance should the Prime Minister be deemed under unavoidable circumstances) shall act as the Superintendent General of the Nuclear Disaster Countermeasures Headquarters, a chief of the Headquarters.

(Competency of the Superintendent General of the Nuclear Disaster Countermeasures Headquarters)

Article 20. 4. When deemed necessary to request support from the Defense Agency for swift and efficient implementation of the immediate emergency countermeasures in its implementation zone notified by the relevant Nuclear Disaster Countermeasures Headquarters, the Superintendent General of the Nuclear Disaster Countermeasures Headquarters may direct the Director-General of the Defense Agency to dispatch the troops in accordance with the provisions of Article 8 of the Self-Defense Forces Law (Law 54-165).

(Joint Council of Nuclear Disaster Countermeasures)

Article 23. Once a Notification of Activating Nuclear Emergency Organization has been issued, the On-Site Nuclear Disaster Countermeasures Headquarters and the Disaster Countermeasure Headquarters of the prefecture and municipalities which have jurisdiction over the implementation zone of the immediate emergency countermeasures, in which the Notification has been issued, shall establish a Joint Council of Nuclear Disaster Countermeasures in order to exchange the information on the relevant nuclear disaster and to aid cooperation in implementing their immediate emergency countermeasures.

(Technical Experts for Nuclear Disaster Prevention)

Article 30. Technical Experts for Nuclear Disaster Prevention shall be appointed in the Ministry of Education, Culture, Sports and Technology and the Ministry of Economy, Trade and Industry.

2. Technical Experts for Nuclear Disaster Prevention shall provide guidance and advice to the establishments of nuclear enterprise designated, by the Director-General of the Minister of Education, Culture, Sports and Technology or the Minister of Economy, Trade and Industry, as those for which they are responsible. Relevant guidance and advice shall be given to the preparation of nuclear disaster prevention work plans of nuclear business operators in accordance with the provisions of Article 7, Paragraph 1, the establishment of nuclear disaster prevention organizations in accordance with Article 8, Paragraph 1, and the nuclear disaster prevention countermeasures implemented by nuclear business operators. Technical Experts shall further collect necessary information to recognize the situation upon receipt of reports in accordance with the provisions of the former part of Article 10, Paragraph 1, provide advice for the collection of information and emergency measures implemented by local public agencies, and handle any additional affairs necessary to smoothly prevent the occurrence and propagation of nuclear disasters.

(2) Ordinance for the Enforcement of the Special Law of Emergency Preparedness for Nuclear Disaster (Excerpt)
(Government Ordinance No. 195, April 5, 2000)

(Events to be reported)

Article 4. The reference value specified in the government ordinance in Article 10, Paragraph 1 of the Law is a radiation dose of 5mSvs per hour.

2. The detection of radiation dose in accordance with the government ordinance of Article 10, Paragraph 1 of the Law shall be performed by measuring the gamma ray radiation dose per unit of time (which shall be two minutes or less) by one or more of the radiation-measuring devices installed in accordance with the provisions of Article 11, Paragraph 1 of the Law, converting it into a value per hour, and determining whether this value is higher than the radiation dose specified in the preceding paragraph. No radiation dose shall be deemed detected if the measured value falls within the purview of one of the

succeeding Clauses.

(i) The radiation dose is detected at only one point (with the restriction that the detection time is less than 10 minutes).

(ii) The radiation dose is detected during a thunderstorm

3. When the radiation doses, detected as per the provisions of the proceeding Paragraph, at all radiation-measuring devices installed in accordance with the provisions of Article 11, Paragraph 1 of the Law are less than that in Paragraph 1, and the value measured by one or more of the relevant radiation-measuring devices is 1mSv or more per hour, the detection of radiation dose in accordance with the provisions of Article 10, Paragraph 1 of the Law shall be performed by totaling the radiation dose detected by the relevant radiation-measuring devices in accordance with the relevant paragraph and the neutron radiation dose measured in accordance with the provisions of the order of the competent Ministry in the vicinity of the facilities for the operation of reactors, irrespective of the provisions of the preceding paragraph.

4. The event to be specified by the government ordinance in Article 10, Paragraph 1 of the Law is one of those specified in the succeeding clauses.

(i) A radiation dose over the reference value specified in Paragraph 1 is detected in accordance with the provisions of Paragraph 2 or the preceding paragraph.

(ii) Radioactive materials whose radiation level is higher than the reference value specified as equivalent to the radiation dose as specified in Paragraph 1 by the order of the competent Ministry at the boundary of the relevant establishment of nuclear enterprise, are detected at the ventilation tubes, wastewater draining points, or similar points in the facility for the operation of reactors of the relevant establishment.

(iii) The radiation dose or radioactive materials specified in the succeeding items are detected at locations (excluding those specified in the preceding clause) other than in specified control zones (i.e., the zone specified by the order of the competent Ministry where radiation exposure dose for personnel shall be controlled) inside the facility for the operation of reactors within the site of the relevant establishment.

(a) Radiation dose of 50mSvs or more per hour.

(b) Radioactive materials that exceed the reference quantity specified in the order of the competent Ministry as equivalent to a dose of 5mSvs per hour at the relevant locations.

(iv) A radiation dose of 100mSvs or more is detected in accordance with the provisions of the competent Ministry at a point 1m distant from a vessel used for transportation outside an establishment.

(v) Inability to shut down a reactor as specified in Article 23, Paragraph 1, Clause 1 of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material, and Reactors (Law 57-166) by inserting normal neutron absorbents, where a reactor being referred to as "an operational power reactor" in Article 6, Paragraph 4, Clause 4 of the relevant law, and other events specified, for each characteristic of the facility for the operation of reactors and of the vessels used for the transport outside an establishment, by the order of the competent Ministry as potentially leading to a nuclear emergency, in addition to those specified in the preceding clauses.

(Nuclear emergency situation)

Article 6. The radiation-measuring devices specified in the government ordinance in Article 15, Paragraph 1, Clause 1 of the Law shall be installed in the prefecture of the competent governor of prefecture or governors of the related neighboring local governments and have performance equivalent to that of the radiation-measuring devices specified in Article 11, Paragraph 1 of the Law.

2. The measuring method specified in the government ordinance in Article 15, Paragraph 1, Clause 1 of the Law shall be performed by repeating measurement of gamma ray radiation doses per unit of time (which shall be 10 minutes or less) and converting them into values per hour, wherein the relevant value is deemed as not detected if detection occurs during a thunderstorm.

3. The reference values, specified in the government ordinance in Article 15, Paragraph 1, Clause 1 of the Law, shall be those in the succeeding clauses for the detected radiation doses specified therein.

(i) 500mSvs per hour: for the detected radiation doses as specified in Article 4, Paragraph 4, Clause 1 (i.e., the doses obtained by totaling the neutron radiation dose specified in Paragraph 4, Clause 3 and the doses measured by the relevant radiation-measuring devices when the values measured by one or more of the radiation-measuring devices installed in accordance with the provisions of Article 11, Paragraph 1 of the Law, are 5mSvs or more), or the radiation dose detected by the method in the preceding paragraph and by using the radiation-measuring devices in Paragraph 1.

(ii) 5mSv per hour: for the detected radiation doses specified in the item (a) in Article 4, Paragraph 4, Clause 3.

(iii) 10mSv per hour: for the detected radiation doses specified in Article 4, Paragraph 4, Clause 4.

4. The event specified as indicating the occurrence of a nuclear emergency situation in Article 15, Paragraph 1, Clause 2 of the Law is one of those specified in the succeeding clauses.

(i) Radioactive materials whose radiation levels at the boundary of the relevant establishment are equal to or exceed the reference value specified by the competent Ministry as equivalent to the dose specified in Clause 1 of the preceding paragraph are detected at the locations specified in Article 4, Paragraph 4, Clause 2 in accordance with the provisions of the competent Ministry.

(ii) Radioactive materials whose radiation levels at the locations specified in Article 4, Paragraph 4, Clause 3 are equal to or exceed the reference value specified by the competent Ministry as equal to 500mSvs per hour are detected at relevant locations in accordance with the provisions of the competent Ministry.

(iii) Nuclear fuel materials are at a stage of criticality (i.e., a state where a fission chain reaction is continuing) within the facilities for the operation of reactors (excluding the interior of reactor main bodies).

(iv) Inability to shut down an operational power reactor by inserting emergency neutron absorbents, and other events specified, for each characteristic of the facility for the operation of reactors and the vessels used for the transportation outside an establishment, by order of the competent Ministry as indicating the occurrence of a nuclear emergency, in addition to those specified in the preceding three clauses.

3.12 Environmental Impact Assessment Law (Excerpt)

(Law No. 81, June 13, 1997)
Latest Revision: Law No. 73, May 19, 2000

(Purpose)
Article 1. Because it is extremely important, in terms of protecting the environment, for a corporation that is undertaking a project that changes the shape of the terrain or that involves the construction of a new structure, or that is engaging in other similar activities, to conduct an environmental impact assessment in advance of such a project, the purposes of this law are to ensure that proper consideration is given to environmental protection issues relating to such a project and, ultimately, to ensure that present and future generations of this nations people enjoy healthy and culturally rewarding lives. In order to achieve these purposes, this law sets forth procedures and contains other provisions designed to clearly define the responsibilities of the government regarding environmental impact assessments and to ensure that such assessments are conducted properly and smoothly with respect to large-scale projects that could have a serious impact on the environment, and prescribes measures to reflect the results of such environmental impact assessments in implementing such projects and in determining the content of such projects.

(Definitions)
Article 2. In this law, "Class-1 Project" shall mean a large-scale project (in this and the following paragraph, scale shall mean the measurable aspects of a project, such as the land area to be altered and the size of any structure(s) to be built) that is designated by government ordinance as likely to have a serious impact on the environment and that is one of the following:
(i) A project in any of the following categories;
(e) A project to construct or modify a power generating structure to supply electricity to corporate entities, as prescribed in Article 38 of the Electricity Utilities Industry Law (Law No. 170 of 1964).

(Responsibilities of the National Government and Other Parties)
Article 3. Fully recognizing that it is important for an environmental impact assessment to be conducted before a project is implemented, the National Government, local governments, proponents, and citizens shall endeavor from their respective positions to ensure that such an environmental impact assessment is conducted properly and smoothly, and that other procedures stipulated in this law are properly and smoothly followed, in order to avoid or to reduce as much as possible the environmental burdens resulting from the project, and in order to assist in giving proper consideration to the protection of the environment in regard to the implementation of the project.

(Preparation of a Planning Document)
Article 5. The proponent shall prepare a planning document concerning the environmental impact assessment (hereinafter referred to as a "planning document"). Said planning document shall present information concerning the items listed below regarding the scope of the environmental impact assessment (limited to those items relating to survey, prediction, and assessment activities) relating to the relevant project, pursuant to ministerial regulations regarding the various types of projects referred to in Article 2, Paragraph 2, Subparagraphs (i) (a) through (m);
(i) The name and address of the;
(ii) The purpose and content of the relevant project;
(iii) The general conditions of the area in which the relevant project will be implemented (hereinafter referred to as the "relevant project implementation area") and its vicinity; and
(iv) The items to be considered in an environmental impact assessment of the relevant project, and the survey, prediction, and assessment methods to be utilized (if such methods have not yet been determined, then the items to be considered in the environmental impact assessment of the relevant project).

(Submission of Planning Document; Other Procedures relating to a Planning Document)
Article 6. After preparing a planning document, the proponent, pursuant to the ministerial regulations applicable to the various types of projects referred to in Article 2, Paragraph 2, Subparagraph (i) (a) through (m), shall submit the planning document to the governor of prefecture(s) and to the mayors of the cities, towns, and villages having jurisdiction over the area deemed likely to be environmentally impacted by the relevant project.
2. In order to ensure that the area referred to in the preceding paragraph is appropriate in scope for seeking opinions, from the standpoint of protecting the environment, regarding the environmental impact assessment of the relevant project, the competent cabinet minister shall consult with the Minister of the Environment and shall prepare ministerial regulations setting forth standards to ensure that such scope is appropriate.

(Making a Planning Document Public and Available for Public Inspection)
Article 7. For the purpose of inviting comments, from the standpoint of protecting the environment, regarding both the items to be considered in an environmental impact assessment and the survey, prediction, and assessment methods to be utilized, the proponent, upon preparing the planning document, shall make public, pursuant to a regulation to be adopted by the Ministry of Environment, the fact that a planning document has been prepared, and shall make the planning document available for public review in the area referred to in Paragraph 1 of Article 6 for one month from the date on which the planning document is made known to the public.

(Submission of Comments regarding a Planning Document)
Article 8. A person who has comments, from the standpoint of protecting the environment, regarding a planning document may submit such comments to the proponent during a period that shall commence on the date that the document becomes known to the public and that shall end two weeks after the day following the termination of the period during which the statement is to be available for public review.

(Submission of an Outline of Comments regarding a Planning Document)
Article 9. After termination of the period referred to in the preceding Article 8, the proponent shall submit to the governor of prefecture(s) having jurisdiction over the area stipulated in Article 6, Paragraph 1 and to the mayors of the cities, towns and

villages having jurisdiction over said area, a document outlining the comments submitted pursuant to the provisions of the preceding Article 8.

(Comments of Governors of prefectures and Other Officials with regard to a Planning Document)

Article 10. Upon receiving the document referred to in Article 9, the governor of prefecture(s) referred to in that same article shall send to the proponent written comments, from the standpoint of protecting the environment, regarding the planning document, within a time period to be established by government ordinance.

2. While abiding by the provisions of Paragraph 1, the governor of prefecture(s) shall seek comments, from the standpoint of protecting the environment, from the mayors of the cities, towns, and villages referred to in Article 9, regarding the planning document and shall set a deadline by which time such comments must be received by the governor of prefecture(s).

3. While abiding by the provisions of Paragraph 1, the governor of prefecture(s) shall take into consideration the comments submitted by the aforementioned mayors of the cities, towns, and villages pursuant to the preceding Paragraph 2, as well as the comments outlined in the documents referred to in the preceding Article 9.

(Selection of Items Considered in the Environmental Impact Assessment)

Article 11. The proponent shall give due consideration to comments expressed pursuant to Paragraph 1 of the preceding Article 10, shall take into consideration comments expressed pursuant to Article 8, Paragraph 1 in reviewing matters listed in Article 5, Paragraph 1, Item (4), and shall select both the items to be considered in an environmental impact assessment relating to the relevant project and the survey, prediction, and assessment methods to be utilized, pursuant to ministerial regulations applicable to the various types of projects referred to in Article 2, Paragraph 2, Subparagraph (i) (a) through (m).

2. When deemed necessary for making selections pursuant to the provisions of the preceding Paragraph 1, the proponent may submit a document to the competent cabinet minister expressing the proponents desire to receive documents that provide technical advice.

3. With a view to ensuring the matters set forth in the Items under Article 14 of the Environment Basic Law, the ministerial regulations referred to in Paragraph 1 shall be adopted by the competent cabinet minister in consultation with the Minister of the Environment, in order to establish guidelines for selecting, on the basis of already acquired scientific knowledge, both the items that are regarded as necessary to be considered in an environmental impact assessment in order to properly conduct an environmental impact assessment relating to the relevant project, and the methods for reasonably conducting survey, prediction, and assessment activities.

(Conducting an Environmental Impact Assessment)

Article 12. On the basis of the items and methods selected pursuant to the provisions of Paragraph 1 of the preceding Article 11, the proponent shall conduct an environmental impact assessment relating to the relevant project in accordance with the ministerial regulations applicable to the various types of projects referred to in Article 2, Paragraph 2, Subparagraph (i), (a) through (m).

2. The provisions of Paragraph 3 of the preceding Article 11 shall apply mutatis mutandis to the ministerial regulations referred to in the preceding Paragraph 1. In such a case, the wording "guidelines for selecting, on the basis of already acquired scientific knowledge, both the items that are regarded as necessary to be considered in an environmental impact assessment in order to properly conduct an environmental impact assessment relating to the relevant project, and the methods for reasonably conducting survey, prediction, and assessment activities shall be construed to mean "guidelines concerning measures to protect the environment."

(Publication of Basic Guidelines)

Article 13. In consultation with the heads of relevant administrative organizations, the Minister of the Environment shall adopt and publish basic guidelines relating to the guidelines that are to be established by the competent cabinet minister pursuant to the provisions of Article 11, Paragraph 3.

(Preparation of a Draft Environmental Impact Statement)

Article 14. After conducting an environmental impact assessment relating to the relevant project pursuant to the provisions of Article 12, Paragraph 1, the proponent, in preparation for hearing comments, from the standpoint of protecting the environment, regarding the results of the environmental impact assessment, shall prepare a draft environmental impact statement (hereinafter referred to as a "draft EIS") that shall deal with the following matters, in accordance with the ministerial regulations applicable to the various types of projects referred to in Article 2, Paragraph 2, Subparagraph (i), (a) through (m):

(i) Matters listed in Article 5, Paragraph 1, Subparagraph (1) through Subparagraph (3);
(ii) An outline of the comments referred to in Article 8, Paragraph 1;
(iii) Comments of the governor of prefecture(s), as referred to in Article 10, Paragraph 1;
(iv) Views of the proponent regarding the comments referred to in Subparagraph (2) and Subparagraph (3);
(v) Items to be considered in an environmental impact assessment and the survey, prediction, and assessment methods to be utilized;
(vi) Contents of the technical advice received, if any, referred to in Article 11, Paragraph 2;
(vii) The following results of the environmental impact assessment:
    (a) An outline of the results of surveys, predictions, and assessments as classified according to the items to be included in the environmental impact assessment (including those items regarding which the nature and extent of the environmental impact did not become clear even though an environmental impact assessment was conducted);
    (b) Measures for protecting the environment (including details regarding how such measures were developed);
    (c) Measures for determining the current conditions of the environment, if the measures referred to in (b) are meant to cope with environmental conditions that become known in the future;
    (d) An overall assessment of the likely environmental impact of the relevant project; and
(viii) If the environmental impact assessment has been consigned in whole or in part to another person, the name and address of that person.

2. The provisions of Article 5, Paragraph 2 shall apply mutatis mutandis to the preparation of the draft EIS.

(Submission of a Draft EIS)
Article 15. After preparing a draft EIS, the proponent shall submit the draft EIS and a document summarizing it (referred to as "summary in the following Articles 16 and 17) to: (1) the governor of prefecture(s) having jurisdiction over the area recognized as likely to be environmentally impacted by the relevant project, as determined by the ministerial regulations referred to in Article 6, Paragraph 1 (such governor of prefecture(s) hereinafter referred to as "related governor(s)"; such area, hereinafter referred to as "related area," includes such area as is recognized to be added to the area on the basis of comments submitted pursuant to Article 8, Paragraph 1 and Article 10, Paragraph 1, and also on the basis of the results of the environmental impact assessment conducted pursuant to Article 12, Paragraph 1); and to (2) the mayors of the cities, towns, and villages having jurisdiction over the related area (hereinafter referred to as "related mayors").
(Making a Draft EIS Public and Available for Public Inspection)
Article 16. After submitting the materials pursuant to the preceding Article 16, the proponent, for the purpose of acquiring comments, from the standpoint of protecting the environment, regarding the results of the environmental impact assessment relating to the draft EIS in accordance with the provisions of a regulation to be adopted by the Ministry of Environment, shall publicly announce that the draft EIS and other items have been prepared in accordance with said regulation of the Ministry of Environment, and shall make the draft EIS and the summary available for public review in the related area for one month from the date of the aforementioned public announcement.
(Explanatory Meetings, etc.)
Article 17. In accordance with the provisions of a regulation to be adopted by the Ministry of Environment, the proponent shall hold explanatory meetings to make the public aware of the contents of the draft EIS (hereinafter referred to as "explanatory meetings") in the related area during the period of public review. If within the related area there is no appropriate place at which to hold such explanatory meetings, the meetings may be held outside the related area.
2. The proponent shall determine the date, time, and place of the explanatory meetings and shall publicly announce them at least one week before the date on which a meeting is scheduled to be held, in accordance with the provisions of a regulation to be adopted by the Ministry of Environment.
3. In determining the date, time, and place of an explanatory meeting, the proponent may seek the opinion(s) of the related governor(s).
4. If the proponent cannot hold an explanatory meeting that has been publicly announced pursuant to Paragraph 2, for reasons that are not attributable to the proponent and are provided for in a regulation to be adopted by the Ministry of Environment, the proponent shall not be obligated to hold that explanatory meeting. In such a case, however, the proponent, pursuant to provisions of a regulation to be adopted by the Ministry of Environment, shall endeavor to make the public aware of the contents of the draft EIS, through such means as publicly presenting a summary during the period of public review.
5. The content of and procedures to be followed in holding an explanatory meeting, other than those stipulated in the preceding Paragraphs, shall be determined by a regulation to be adopted by the Ministry of Environment.
(Submission of Comments regarding a Draft EIS)
Article 18. Anyone who has comments, from the standpoint of protecting the environment, regarding a draft EIS may express such comments by submitting a document to the proponent during a period that shall commence on the date of the public announcement referred to in Article 16 and that shall end two weeks after the day following the expiration of the period of public review referred to in that same Article 16.
2. The content of and procedures to be followed in submitting comments as referred to in the preceding Paragraph shall be determined by a regulation to be adopted by the Ministry of Environment.
(Submission of an Outline of Comments, etc. regarding a Draft EIS)
Article 19. After the end of the period referred to in Paragraph 1 of the preceding Article 18, the proponent shall submit to the related governor(s) and related mayors a document containing both an outline of the comments received pursuant to the same Paragraph 1 and the proponent's views regarding such comments.
(Opinions of Related Governor(s) and Others Regarding a Draft EIS)
Article 20. After receiving a document referred to in the preceding Article 19, the related governor(s) shall express in writing their opinions, from the standpoint of protecting the environment, regarding the draft EIS within a period to be determined by government ordinance.
2. The provisions of Article 10, Paragraphs 2 and Paragraphs 3 shall apply mutatis mutandis to the expression of opinions by the related governor(s) regarding the draft EIS. In such a case, the wording "the mayors of the cities, towns and villages referred to in the preceding Article 9" in Paragraph 2 of the same Article 10 shall be construed to mean "the related mayors"; the wording "the preceding Paragraph" in Paragraph 3 shall be construed to mean "the preceding Paragraph as applied mutatis mutandis to Article 10, Paragraph 2"; and the wording "documents referred to in the preceding Article 9" in Paragraph 3 shall be construed to mean "both the comments presented in the document referred to in Article 19 and the proponents views regarding such comments."
(Preparation of an Environmental Impact Statement)
Article 21. In reviewing the items dealt with in a draft EIS, the proponent shall consider any opinions that are expressed pursuant to Paragraph 1 of the preceding Article 20, and shall pay attention to comments referred to in Article 18, Paragraph 1. If the proponent considers it necessary to amend the aforementioned items (only insofar as the project after such amendment will be classified as a relevant project), the proponent shall take measures to amend each of the items in accordance with the classifications listed below:

(i) Amending matters referred to in Article 5, Paragraph 1, Subparagraph (ii) (except amendments stipulated by government ordinance, including reduction of the scale of the project, minor amendments as defined by government ordinance, and other amendments as defined by government ordinance): To conduct an environmental impact assessment and to follow other procedures specified in Articles 5 through Article 27.

(ii) Amending matters referred to in Article 5, Paragraph 1, Subparagraph (i), or in Article 14, Paragraph 1, Subparagraph (ii) through Subparagraph (iv) and Item (6), or in Article 8 (except those covered by the preceding Item): To conduct

the environmental impact assessment and to follow other procedures specified in the following Paragraph 2 and in Articles 22 through Article 27.

(iii) Other than those specified in the two preceding Subparagraph (i) and Subparagraph (ii): To conduct an environmental impact assessment with regard the aforementioned amended portions of the relevant project, pursuant to the provisions of ministerial regulations referred to in Article 11, Paragraph 1 and in Article 12, Paragraph 1.

2. Except in a case covered by Subparagraph (i) of the preceding Paragraph 1, the proponent shall prepare the environmental impact statement (hereinafter referred to as "EIS") in accordance with the ministerial regulations applicable to the various types of projects referred to in Article 2, Paragraph 2, Subparagraph (i), (a) through (m); the EIS shall incorporate following matters relating to: (a) if an environmental impact assessment was conducted pursuant to the provisions of Subparagraph (3) of the same Paragraph 2, the results thereof and the results of environmental impact assessment conducted for preparing the draft EIS; or (b) if an environmental impact assessment was not conducted pursuant to the provisions of the same subparagraph, the results of environmental impact assessment conducted for preparing the draft EIS.

(i) Matters referred to in Subparagraph (1) through Subparagraph (8) in Article 14 Paragraph 1.

(ii) An outline of comments referred to in Article 18, Paragraph 1.

(iii) Opinions of the related governor(s), as referred to in Article 20, Paragraph 1.

(iv) The proponent's views regarding the comments and opinions referred to in the two preceding Subparagraph (2) and Subparagraph (3).

(Making the EIS Public and Available for Public Review)

Article 27. When making a submission or notice pursuant to the provisions of Article 25, Paragraph 3, the proponent, pursuant to a regulation to be adopted by the Ministry of Environment, shall make public the fact that an EIS and other items stipulated in the regulation to be adopted by the Ministry of Environment have been prepared, and, for a period of one month from the date of such publication, shall make available for public review in the related area the EIS, the summary, and the papers specified in Article 24.

(Restrictions on the Implementation of a Relevant Project)

Article 31. A proponent may not implement a relevant project (if amended pursuant to the provisions of Article 21, Paragraph 1, and if the project is a relevant project after said amendment, then the project after said amendment) prior to a public announcement as required by Article 27.

2. If a proponent seeks to amend information referred to in Article 5, Paragraph 1, Subparagraph (ii) after a public announcement has been made as required by Article 27, the proponent need not conduct an environmental impact assessment or follow other procedures pursuant to the provisions of this Law if: (a) the purpose of said amendment is to reduce the scale of the project; or (b) the amendment is minor, as defined by government ordinance; or (c) the amendment is of another type specified by government ordinance.

(Additional Environmental Impact Assessment and Other Procedures after Public Announcement of an EIS)

Article 32. If, after a public announcement has been made as required by Article 27, the proponent decides that, due to special factors such as changes in the environmental conditions in and around the relevant project implementation area, it is necessary to amend matters referred to in Article 14, Paragraph 1, Subparagraph (v) or Subparagraph (vii) in order to give proper consideration to the protection of the environment in implementing the relevant project, the proponent may conduct an additional environmental impact assessment and may implement other procedures relating to the relevant project pursuant to the provisions of Articles 5 through Articles 27 or Articles 11 through Articles 27.

2. If a proponent seeks to conduct an environmental impact assessment or to implement other procedures pursuant to the preceding Paragraph 1, the proponent shall without delay make that known to the public in accordance with the provisions of a regulation to be adopted by the Ministry of Environment.

(Proponents Consideration for Protection of the Environment)

Article 38. In implementing a relevant project, the proponent thereof shall give proper consideration to the protection of the environment pursuant to the contents of the EIS relating to the project.

(Communication with Local Governments)

Article 49. The proponent and others shall maintain close communication with, and may seek cooperation from, related local governments concerning public announcements, public reviews, and the holding of explanatory meetings as provided for in this Law.

(Technological Development)

Article 51. In order to improve technologies necessary for conducting environmental impact assessments, the National Government shall endeavor to promote research and development of such technologies and to disseminate the results thereof.

(Exemptions, etc.)

Article 52. The provisions of this Law shall not apply to air pollution, water pollution (including deterioration of water conditions other than water quality and soil at the bottom), or soil pollution caused by radioactive substances.

(Competent Cabinet Minister)

Article 58. A competent cabinet minister in this Law shall be as indicated by the following Subparagraphs according to the type of project referred to in each Subparagraph:

(v) A project of the type referred to in Article 2, Paragraph 2, Subparagraph (ii), (e) of this Law: the minister responsible for clerical work relating to implementation of the project and the minister responsible for clerical work relating to any license, special permit, permission, authorization, approval or report relating to a project of the type referred to in (e) of the same Subparagraph (ii).

(Relation to other Laws)

Article 60. An environmental impact assessment and other procedures relating to a Class-1 or Class-2 Project of the type of project referred to in Article 2, Paragraph 2, Subparagraph (i) (e) shall be subject to this Law and the Electricity Utilities Industrial Law.

3.13. Guidelines

(1) Regulatory Guide for Reviewing Nuclear Reactor Siting Evaluation and Application Criteria

(Decision of the Atomic Energy Commission, May 27, 1964, Partially Revised by the NSC, March 27, 1989)

In April 1958, the Atomic Energy Commission established the Specialty Subcommittee on Reactor Safety Standards to enact scientific and technical standards for the safety of reactor facilities. On November 2, 1963, the Committee submitted a report regarding the Regulatory Guide for Nuclear Reactor Siting Evaluation and Application Criteria as a preliminary stage before establishing the standards for nuclear reactors to be placed on land.

The Atomic Energy Commission studied the Report and specified the Regulatory Guide for Nuclear Reactor Siting Evaluation and Application Criteria, as in the Separate Sheet 1. The Commission also specified tentative criteria regarding the radiation dosage, etc., as in the Separate Sheet 2, which are required in application of this Guideline.

[Separate Sheet 1]

Regulatory Guide for Nuclear Reactor Siting Evaluation and Application Criteria

A safety review is conducted prior to the establishment of a nuclear reactor to be placed on land. This Guide is used in this safety review by the Council on Reactor safety Examination to examine the adequacy of the nuclear reactor siting conditions in relation to accident.

1. Basic Concept

1.1 Fundamental Siting Conditions

Regardless of the establishment location, nuclear reactors are required to be designed, constructed, operated and maintained to prevent accidents. The following site conditions are, however, required in principle to ensure public safety in case of accident:

(1) There have as yet been no event liable to induce large accident and no such event is expected to occur in the future. There have also been very few events deemed liable to expand disaster;
(2) In relation to their safety guarding facilities, nuclear reactors shall be located at a sufficient distance from the public; and
(3) The environment of the nuclear reactor site including its immediate proximity shall be such that appropriate measures for the public can be implemented as required.

1.2 Basic Goal

Based on a policy of ensuring public safety even in case of accident and promoting an sound nuclear development, this Guideline provides the following three basic goals:

a) Not to incur radiation damage to the neighboring public, even when assuming a serious accident that is deemed to have a possibility of occurrence under the worst scenario from technical point of view, by considering the events in the site vicinity, the characteristics of the nuclear reactor and related safety guarding facilities (hereinafter termed major accident);
b) To prevent any significant radiation hazard to the neighboring public when an accident, which exceeds the major accident level and which is not expected to occur from technical point of view, is hypothesized (hereinafter termed hypothetical accident), for example, by hypothesizing that safety guarding facilities which are assumed to be effective in postulating a major accident do not function, and corresponding release of radioactive materials occurs; and
c) Effect on the collective dose of a hypothetical accident shall be sufficiently small.

2. Guideline for Site Review

When examining the adequacy of the site conditions, it is necessary to ensure that the following three conditions are satisfied at least in order to achieve the previously described basic goals.

2.1 Regarding the area surrounding a nuclear reactor, an area of a specified distance from the nuclear reactor shall be the non-residential area.

Here, the specified distance means a distance where person may be exposed to radiation damage if they remain within that distance under a major accident. non-residential area means the area where the public does not reside in principle.

2.2 The area within the specified distance from the nuclear reactor and outside the non-residential area shall be the low population zone.

Here, the specified distance means the range wherein the public may be exposed to significant radiation hazard due to a hypothetical accident unless certain countermeasures are provided.

The low population zone means, for instance, a low population density zone where appropriate countermeasures can be provided to prevent significant radiation hazard.

2.3 The nuclear reactor site shall be located at the specified distance from the dense population zone.

Here, the specified distance means the distance where the cumulative value of whole-body dose in case of a hypothetical accident shall be small enough to be deemed acceptable based on the viewpoint of collective dose.

3. Application

This Guideline shall be applied for the siting review of nuclear reactors having 10,000KW or larger thermal output. In case of nuclear reactors under 10,000KW thermal output, this Guideline shall be used as a reference in their siting review.

[Separate Sheet 2]

Tentative Criteria to apply Regulatory Guide for Nuclear Reactor Site Evaluation and Application Criteria

The criteria shall be used when the Guideline on the Separate Sheet 1 is applied by the Council on Reactor Safety Examination to review the safety of nuclear reactors to be placed on land.

1. The following dosage values shall be applied as the criteria for the specified distance in Guideline 2.1.
   - Thyroid (child): 1.5Sv
   - Whole body: 0.25Sv
2. The following dosage values shall be considered as the tentative criteria for the specified distance in Guideline 2.2.

- Thyroid (adult): 3Sv
- Whole body: 0.25Sv

3. The tentative criteria for the specified distance in Guideline 2.3 shall be referred to overseas examples, for instance, for 20,000man-Sv.

Supplement:

(i) The tentative criteria above are provided from the administrative aspect and are based on the currently available information regarding the radiation effect and comparison studies with overseas examples regarding the type and content of the diffusion of radioactive materials from nuclear reactors due to accidents. Since the biological effect of radiation and collective dose remains somewhat unclear at this time, research in this field shall be promoted further in Japan. Considering international trend as well, these criteria shall be reviewed accordingly.

(ii) The tentative criteria above are provided based on a concept different from that for the emergency criteria in response to an actual nuclear reactor accident (dose in relation to food & drink intake and evacuation, etc.)

(iii) The tentative criteria above are used for the safety review prior to nuclear reactor establishment to examine the adequacy of the siting conditions in relation to an accident. The criteria to prevent public radiation damage due to normal reactor operation are specified in the Law for the Regulation of Nuclear Source Materials, Nuclear Fuel Material and Nuclear Reactors (No. 166, 1957), and the Prime Ministers Ordinance and the Notification of the Science and Technology Agency based on the previously mentioned law.

(iv) Tentative Criteria 1 and 2 above are provided for nuclear reactors which use ordinary uranium fuel. It is necessary to consider separate criteria when the criteria in addition to those for thyroid and whole body are considered important from the damage aspect.

(2) Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities (Excerpt)

(Decision of the Nuclear Safety Commission, July 20, 1981)

1. Introduction

This guide was provided in September 1978 by the Atomic Energy Commission of those days, based on the engineering knowledge of seismological, geological and other studies with experiences of the safety examinations, in order to evaluate the adequacy of the design policy in the safety examination process of the seismic design of nuclear power reactor facilities.

The revision of this guide performed this time is on determination methods of static seismic force, etc. because it is considered as appropriate to utilize the new findings.

Incidentally, this guide shall be revised reflecting the newly accumulated findings and experiences, when necessary.

2. Scope of Application

This guide shall be applied for the land-based nuclear power reactor facilities.

(Partially Omitted)

3. Basic Policy

Nuclear power reactor facility shall maintain its structural integrity against any postulated seismic force likely to occur at the site so that no earthquake leads to a major accident. Moreover, buildings and structures shall be, in principle, of rigid construction and the important buildings and structures shall be supported on bedrock.

4. Classification of Importance in Seismic Design

Each nuclear power reactor facility shall be classified into the following categories corresponding to importance in seismic design from the standpoint of the impact on environment by the possible radiation resulted from earthquake.

(1) Classification by Function

Class A ---- Facilities containing radioactive material or related directly to equipment containing radioactive material and whose loss of function might lead to the release of radioactive material to atmosphere, facilities required to prevent the occurrence of such accidents, and facilities required to mitigate the consequences resulting from the spread of radioactive material in the event of an accident and whose influence and effect in mitigating such consequences is significant.

Class B ---- Facilities of the same categories as the above Class A, but whose influences and effects are small.

Class C ---- Facilities except for class A and B, and ones only required to maintain the same safety as required for general industrial facilities.

(2) Facilities by Classes

(a) Class A facilities are as follows:

(i) Equipment/piping systems composing of the reactor coolant pressure boundary
(ii) Spent fuel storage pool
(iii) Facilities to add the negative reactivity rapidly to shutdown the reactor and to maintain the shutdown mode of the reactor
(iv) Facilities to remove the decay heat from the reactor core after reactor shutdown
(v) Facilities necessary to remove the decay heat from the reactor core after the failure of reactor coolant pressure boundary
(vi) Facilities to prevent the propagation of radioactive material directly as a pressure barrier at the failure of reactor coolant pressure boundary
(vii) Facilities except those in the category vi) above, and ones to mitigate the release of radioactive

material to the atmosphere at the accident which involves the release of radioactive material

In addition, Class A facilities belonging to i), ii), iii), iv), and v) are especially designated as Class As.

(Omitted)

5. Evaluation Method for Seismic Design

(1) Policy

The nuclear power reactor facilities shall be designed in accordance with the following basic policies of the seismic design for each category of classification.

(a) The integrity of each facility of Class A shall be maintained against the larger seismic force either the seismic force due to the maximum design earthquake or the static seismic force shown below. In addition, safety function of each facility of Class As shall be preserved against the seismic force by the extreme design earthquake shown below.

(b) The integrity of each facility of Class B shall be maintained against the static seismic force shown below. And, as for the facility that is probable to resonate with earthquake, the influences shall be evaluated.

(c) The integrity of each facility of Class C shall be maintained against the static seismic force shown below.

(d) In each items shown above, the integrity of the upper class facility shall not be impaired corresponding to the damage of the lower class facility.

(2) Determination Method of Seismic Force

The seismic forces due to the maximum design earthquake and the extreme design earthquake and the static seismic force, mentioned in Section 5. (1), shall be determined by the following methods.

(a) Seismic forces due to the maximum design earthquake and the extreme design earthquake

The horizontal seismic forces due to the maximum design earthquake and the extreme design earthquake shall be determined by the basic earthquake ground motions, specified in Section 5.(3).

And, horizontal seismic forces shall be combined with the vertical seismic force concurrently and in the most adverse fashion, which is determined by using the vertical seismic coefficient obtained by multiplying the maximum acceleration amplitude of the basic earthquake ground motion by a half (1/2). However, the vertical seismic coefficient shall be assumed to be constant in the height direction.

(b) Static earthquake force

(i) Buildings and structures

Horizontal seismic forces shall be determined by multiplying the weight at the height and above by the following story shear coefficient corresponding to the importance of the facility.

Class A	story shear coefficient	$3.0C_I$
Class B	story shear coefficient	$1.5C_I$
Class C	story shear coefficient	$1.0C_I$

Here, C_I of the story shear coefficient shall be 0.2 in the standard case, and shall be fixed considering the vibration characteristics of buildings and structures, the category of the ground, and so on.

For the facilities of Class A, the vertical seismic force shall also be considered, and both horizontal and vertical seismic forces shall be combined concurrently and in the most adverse fashion. The vertical seismic force shall be determined by using the vertical seismic coefficient, which shall be 0.3 in standard case and shall be fixed considering the vibration characteristics of buildings and structures, the category of the ground, and so on. However, the vertical seismic coefficient shall be assumed to be constant in the height direction.

(ii) Equipment and piping systems

The seismic forces of each class shall be determined in the similar manner as the above (i), using the value of 20% more than each corresponding value of horizontal and vertical seismic coefficient, where the horizontal seismic coefficient takes place of the story shear coefficient for building and structures.

Both horizontal and vertical seismic forces shall be combined concurrently and in the most adverse fashion. However, the vertical seismic coefficient shall be assumed to be constant in the height direction.

(3) Evaluation Methods for the Basic Earthquake Ground Motions

The design earthquake ground motions for seismic design of reactor facilities shall be derived from the earthquake motions at the free surface of the base stratum in the proposed site.

The design earthquake ground motions at the free surface of the base stratum (hereafter referred to as “the design basis earthquake ground motions”) at the proposed site shall be determined in accordance with the fundamental concepts indicated in the following items:

(a) The basic design earthquake ground motions are classified into S_1 and S_2 depending upon their intensities;

(i) For the earthquakes causing the above mentioned basic design earthquake ground motions S_1 (hereafter referred to as “ maximum design earthquakes”), reference is made to the earthquake among the recorded earthquakes that would have the greatest effect on the proposed site and surrounding region and which may occur again in the same fashion, or among those earthquakes that might be induced by highly active faults in the near future.

(ii) For earthquakes causing the above-mentioned basic design earthquake ground motions S_2 (hereafter referred to as “extreme design earthquakes”), reference is made to the earthquake among those earthquakes exceeding the maximum design earthquake that would have the greatest effect on the proposed site based on engineering judge following a seismological review of past earthquakes, the nature of any active faults and the seismo-tectonic structure underlying the site and the surrounding region.

(b) For earthquakes generating the design basis earthquake ground motions S_1 and S_2, both distant and nearfield epicentral distances shall be considered. In addition, the shallow focus earthquake shall be considered for the design basis earthquake ground motions S_2; and

(c) In determining the design basis earthquake ground motions, full consideration shall be given to the following items;

(i) The magnitude, epicenter, hypocenter, aftershock area and maximum intensity of earthquake ground motion (or

estimated value), and resultant damage (including destruction rate of structures, overturning of tombstones, etc.) in earthquakes that have affected the site and the surrounding region in the past,

(ii) The statistical expectation of the intensity of the past destructive earthquake ground motions,

(iii) The magnitude of the earthquake and the distance between the site and its center of energy release, and

(iv) Past observation records for the general region as well as those for the site, including any results of bedrock property investigations.

(d) Pursuant to the above items, the design basis earthquake motions shall be such that each of the following parameters can be evaluated as appropriate;

(i) The maximum amplitude of the earthquake ground motion,

(ii) The frequency characteristics of the earthquake ground motion, and

(iii) The duration of earthquake ground motion and the time dependent change of the amplitude envelope curves.

6. Load Combinations and Allowable Limits (Omitted)

COMMENTARY

In relation to dynamic analysis, an explanation is given of "evaluation of the design basis earthquake ground motions", "evaluation of active faults", "static seismic force" and "combinations of seismic forces with other loads and allowable limits".

I. Evaluation of the Design Basis Earthquake Ground Motions

1. The meaning and interpretation of the terminology concerning the design basis earthquake ground motions are given as follows:

(1) The "free surface of the base stratum" is a nearly flat surface of the base stratum extending over a considerable area, and above which neither surface layers nor structures are assumed to be present. The base stratum is firm bedrock which was formed in general in the Tertiary or earlier era and which is not significantly weathered.

(2) An "active fault" is a fault that has moved during the Quaternary period (i.e. within the last 1.8 million years) and thus is capable of causing earthquakes in the future. Judge as to the activity of a fault shall be based on a topographical and geological investigation, and on instrumental observations taken during past earthquakes, etc.

(3) A "seismo-tectonic structure" is a region of the geologic structure, which extends over a given area, and which has a common earthquake occurrence pattern in terms of intensity, hypo-central depth, generating mechanism, frequency, etc.

2. It was decided to classify the design basis earthquake ground motions according to their intensities into the two categories, S_1, and S_2, which correspond to the importance of the buildings, structures, equipment and piping of the reactor facilities.

(1) The earthquakes to be taken into account in determining the design basis earthquake ground motions S_1 are those earthquakes that are considered likely to occur. Namely, it is deemed appropriate to consider that, according to the historical evidence, the earthquakes which affected the site and the surrounding region in the past are likely to occur again in the near future and can be expected to have the same effect on the site and the surrounding region. The occurrence of earthquakes in the near future at highly active faults that would affect the site must also be considered. From these earthquakes, the earthquake which is referred to as the design basis maximum earthquake ground motions would give the largest ground motion to the base stratum of the site. Further, it is assumed that such earthquakes would actually occur and it is for this reason that buildings, structures, the equipment and the piping are subject to the design basis earthquake ground motions S_1.

(2) The earthquakes to be taken into account in determining the design basis earthquake ground motions S_2 are assumed to recur because, in some cases, it is not possible from a seismological standpoint to disregard the possibility of an earthquake whose intensity is higher than that of the maximum design earthquake. Therefore in those cases where there is some evidence indicating that the earthquakes stronger than the maximum design earthquake have occurred in relatively recent era, an engineering review should be done. However, from our knowledge of the seismo-tectonic structure and from the data of past earthquakes, it can be concluded that there will be an upper limit to the intensity of earthquakes in each region of earthquake occurrence. Therefore it is possible to estimate the intensity of the earthquakes and to define the region of earthquake occurrence, based on the nearby active faults and the seismo-tectonic structure underlying the site. From these earthquakes, the earthquake that would produce the largest ground motions in the base stratum of the site shall be referred to as the extreme design earthquake. Further it is assumed that such an earthquake would actually occur and it is for this reason that, the buildings, structures, the equipment and the piping are subject to the design basis earthquake ground motions S_2.

In addition, it was decided that the earthquakes with both distant and nearfield epicentral distances will be considered in determining the maximum and extreme design earthquakes because some characteristics of earthquake ground motions at the free surface of the base stratum will be different depending on the epicentral distance.

(Omitted)

(3) Regulatory Guide for Reviewing Safety Design of Light Water Nuclear Power Reactor Facilities (Excerpt) (Decision of the Nuclear Safety Commission August 30, 1990)

IV. General Requirements for Reactor Facilities

1. Applied Codes and Standards

Design, selection of materials, fabrication and inspection of structures, systems and components with safety functions shall conform to those codes and standards which are recognized appropriate in the light of the importance of their safety functions.

2. Design Considerations against Natural Phenomena

(1) Structures, systems and components with safety functions shall be assigned to appropriate seismic categories, with the importance of their safety functions and possible safety impacts of earthquake-induced functional loss taken into consideration, and be designed to sufficiently withstand appropriate design seismic forces.

(2) Structures, systems and components with safety functions shall be so designed that the safety of the reactor facilities will not be impaired by other postulated natural phenomena than earthquake. Structures, systems and components with safety function of especially high importance shall be of the design that reflects appropriate safety considerations against the severest conditions of anticipated natural phenomena or appropriate combinations of natural forces and accident loads.

3. Design Considerations against External Human-Initiated Events

(1) Structures, systems and components with safety functions shall be so designed that the safety of the reactor facilities will not be impaired by postulated external human-initiated events.

(2) Reactor facilities shall be so designed that structure, systems and components with safety functions are protected by appropriate means against any unjustifiable access by third persons.

4. Design Considerations against Internal Missiles

Structures, systems and components with safety functions shall be so designed that the safety of the reactor facilities will not be impaired by postulated missiles that may take place within the reactor facilities.

5. Design Considerations against Fire

Reactor facilities shall be so designed that their safety will be protected against fire by appropriate combination of three measures of fire prevention, fire detection and extinguishment and mitigation of fire effects.

6.Design Considerations against Environmental Conditions

Structures, systems and components with safety functions shall be designed to withstand all environmental conditions under which their safety functions are expected.

7. Design Considerations for Share Use

Structures, systems and components with safety functions shall be so designed that in case they are shared by two or more reactor facilities, the safety of the reactors will not be impaired by the shared use.

8. Design Considerations against Operator Actions

Reactor facilities shall be designed to reflect appropriate preventive considerations against operators' mis-operation.

9. Design Considerations for Reliability

(1) Structures, systems and components with safety functions shall be so designed that their adequately high reliability will be ensured and maintained as required according to the importance of their safety functions.

(2) Systems with safety functions of especially high importance shall be designed with multiplex or diversity and independence considering their physical makeup, working principles, assigned safety functions, etc.

(3) The systems referred to in item (2) above shall be designed to be capable of fulfilling their safety functions even in case of loss of external power supply in addition to an assumption of a single failure of any of the components that comprise the systems.

10. Design Considerations for Testability

Structures systems and components with safety functions shall be designed to be capable of being tested or inspected to verify their integrity and capability by adequate methods consistent with the importance of their safety functions during reactor operation and shutdown.

V. Nuclear Reactor and Reactor Shutdown System

11. Core Design

(1) Core shall be designed to assure, with the aid of the functions of associated reactor cooling system, reactor shutdown system, instrumentation and control system, and safety protection system, that the acceptable fuel design limits are not exceeded during normal operation and abnormal transients.

(2) Components, other than fuel rods, that make up the core or are located in proximity to it within the reactor pressure vessel shall be designed to be capable of ensuring safe reactor shutdown and proper core cooling during normal operation and abnormal situation.

12. Fuel Design

(1) Fuel assemblies shall be designed not to lose their integrity despite various unfavorable factors that may take place during their use in the nuclear reactor.

(2) Fuel assemblies shall be designed not to be excessively deformed during transport or handling.

13. Reactor Characteristics

Core and associated systems shall be designed to have inherent characteristics to suppress the reactor power rise and to be well capable of controlling reactor power oscillation if it occurs.

14. Reactivity Control System

(1) Reactivity control system shall be designed to be capable of regulating reactivity changes expected to occur during normal operation, thereby maintaining necessary situation of operations.

(2) The maximum reactivity worth of control rods and reactivity insertion rate shall be such that postulated reactivity-initialed events will not results in a damage of the reactor coolant pressure boundary nor destruction of the core, core support structures and reactor pressure vessel internals that may impair core cooling.

15. Independence and Testability of Reactor Shutdown System

Reactor shutdown system shall be designed to have at least two independent systems capable of making the core sub-critical from hot standby or hot operational conditions and maintaining the core sub-critical under hot conditions. They shall also be designed to allow testing with respect to their functional capability.

16. Reactor Shutdown Margin by Control Rods

Control rod-dependent system in the reactor shutdown systems shall be designed to be capable of making the core sub-critical under hot and cold conditions even when one control rod with the maximum reactivity worth is withdrawn out of

the core and cannot be inserted.

17. Shutdown Capability of Reactor Shutdown System

(1) At least one independent system out of the reactor shutdown systems shall be designed to be capable of making the core sub-critical under hot conditions during normal operation and abnormal transients without leading to the acceptable fuel design limits being exceeded and capable of maintaining the core sub-critical under hot conditions.

(2) At least one independent system out of the reactor shutdown systems shall be designed to be capable of making the core sub-critical under cold conditions and of maintaining the core sub-critical under cold conditions.

18. Reactor Shutdown System Capability at the Accident

At least one independent system included in the reactor shutdown systems shall be designed to be capable of making the core sub-critical at the accident, and at least one independent system included in the reactor shutdown systems shall be designed to be capable of maintaining the core sub-critical at the accident.

VI. Reactor Cooling System

19. Integrity of Reactor Coolant Pressure Boundary

(1) Reactor coolant pressure boundary shall be so designed that its integrity will be ensured during normal operation and abnormal situation.

(2) Pipelines connected to the reactor coolant system shall be in general fitted with isolation valves.

20. Prevention of Reactor Coolant Pressure Boundary Failure

Reactor coolant pressure boundary shall be designed not to exhibit brittle behavior and develop any rapid propagating failure during normal operation, maintenance, testing and abnormal situation.

21. Detection of Reactor Coolant Pressure Boundary Leaks

Means shall be provided for quick and proper detection of the leakage of the reactor coolant, if any, from the reactor coolant pressure boundary.

22. In-Service Test and Inspection of Reactor Coolant Pressure Boundary

Reactor coolant pressure boundary shall be designed to be capable of being tested and inspected to verify its integrity throughout the service life of the nuclear reactor.

23. Reactor Coolant Make-up System

Reactor coolant make-up system shall be designed to be capable of supplying as much coolant as required at a proper flow rate to restore the necessary inventory of the reactor coolant in case of a limited leakage.

24. Systems for Removing Residual Heat

(1) Systems for removing residual heat shall be designed to be capable of removing fission product decay heat and other residual heat from the core during reactor shutdown , thereby preventing the acceptable fuel design limits and design conditions for the reactor coolant pressure boundary from being exceeded.

(3) Systems for removing residual heat shall be properly provided with multiplexity or diversity and independence so that they can fulfill their safety functions even in case of loss of external power supply in addition to the assumption of a single failure of any of the components that comprise the systems. They shall also be designed to allow testing with respect to their functional capability.

25. Emergency Core Cooling System

(1) Emergency core cooling system shall be designed to be capable of preventing serious damage of fuel and of limiting the reaction between fuel cladding metal and water to a sufficiently small amount in case of a postulated loss of reactor coolant resulting from a break in piping, etc.

(2) Emergency core cooling system shall be designed with multiplex or diversity and independence so that the system can fulfill its safety functions even in case of loss of external power supply in addition to an assumption of a single failure of any of the components that comprise the system.

(3) Emergency core cooling system shall be designed to be capable of being tested and inspected on a periodical basis. The emergency core cooling system shall also be designed to allow testing and inspection of each constituent system independently so that the integrity and redundancy of the emergency core cooling system can be verified.

26. System for Transporting Heat to Ultimate Heat Sink

(1) System for transporting heat to an ultimate heat sink shall be designed to be capable of transferring heat generated or accumulated in structures, system and components with safety functions of especially high importance to an ultimate heat sink.

(2) Systems for transporting heat to an ultimate heat sink shall be properly provided with multiplex diversity and independence so that they can fulfill their safety functions even in case of loss of external power supply in addition to an assumption of a single failure of any of the components that comprise the systems. They shall also be designed to allow testing with respect to their functional capability.

27. Design Consideration against Loss of Power

Reactor facilities shall be so designed that safe shutdown and proper cooling of the nuclear reactor after shutting down can be ensured in case of a short-term loss of total AC power.

VII. Reactor Containment

28. Functions of Reactor Containment

(1) Reactor containment shall be designed to withstand the load (pressure, temperature, dynamic load) resulting from the postulated events for reactor containment design and an appropriate seismic load and prevent the specified leakage rate from being exceeded with the aid of properly operating isolation functions.

(2) Reactor containment shall be so designed that the leakage rate of the entire containment can be measure under a specified pressure on a periodical basis.

(3) Reactor containment shall be designed to allow leakage tests at such important portions as penetrations for electric cables, pipelines, etc. and access openings.

29. Prevention of Reactor Containment Boundary Failure

Reactor containment boundary shall be designed not to exhibit brittle behavior and develop any quickly propagating failure during normal operation, maintenance, testing and abnormal situation.

30. Isolation Function of Reactor Containment

(1) The pipelines that penetrate the reactor containment walls shall in general be fitted with containment isolation valves.

(3) The containment isolation valves to be fitted in principal piping shall in general be designed to be automatically and properly closed in case of an accident that necessitates the retention of isolation function.

31. Reactor Containment Isolation Valves

(1) Containment isolation valves shall be located as close to the reactor containment as practicable.

(2) Installation of the containment isolation valves shall be subject to the followings:

(i) Of the piping that open inside the reactor containment or connect with the reactor coolant pressure boundary, which are not closed outside the reactor containment, shall in general be provided with one containment isolation valve inside the reactor containment and one outside;

(ii) Of other piping than (i) above, which are closed inside or outside the reactor containment, shall in general be provided with one containment isolation valve outside the reactor containment;

(iii) Containment isolation valves shall not lose their isolation function due to loss of driving power after they are closed; and

(iv) The containment isolation valves shall allow performance tests to be conducted on a periodical basis, of which important ones shall be testable for leakage.

32. Reactor Containment Heat Removal System

(1) Reactor containment heat removal system shall be designed to sufficiently reduce the containment pressure and temperature resulting from the release of energy in case of the postulated events for reactor containment design.

(2) Reactor containment heat removal system shall be designed with multiplex or diversity and independence so that the system can fulfill its safety functions even in case of loss of external power supply in addition to an assumption of a single failure of any of the components that comprise the system. The system shall also be designed to provide testability.

33. System for Controlling Containment Facility Atmosphere

(1) Containment facility atmosphere cleanup system shall be designed to be capable of reducing the concentration of radioactive materials release to the environment at the postulated events for reactor containment design.

(2) Flammable gas concentration control system shall be designed to be capable of controlling the concentration of hydrogen or oxygen present in the reactor containment in case of the postulated events for reactor containment design, thereby maintaining the integrity of the containment facility.

(3) The systems for controlling containment atmosphere shall be designed with multiplex or diversity and independence so that they can fulfill their safety functions even in case of loss of external power supply in addition to an assumption of a single failure of any of the components that comprise the systems. They shall also be designed to allow testing with respect to their function capability.

VIII. Safety Protection System

34. Redundancy of Safety Protection System

Safety protection system shall be designed with redundancy so that a single failure of any of the components or channels that comprise the system or removal from service of any component or channel does not result in loss of safety function of the system.

35. Independence of Safety Protection System

Safety protection system shall be designed such that the channels comprising the system are separated from each other taking into account the independence between them as much as practicable, thereby preventing loss of its safety function during normal operation, maintenance, testing and abnormal situation.

36. Function of Safety Protection System during Transients

Safety protection system shall be designed to detect the abnormal state during anticipated operational occurrences and initiate automatically the operation of appropriate systems including the reactor shutdown system in order to ensure that the acceptable fuel design limits are not exceeded.

37. Function of Safety Protection System at the accident

Safety protection system shall be designed to detect the abnormal situation in an accident and initiate automatically the operation of the reactor shutdown system and necessary engineered safety features.

38. Function of Safety Protection System at time of failure

Safety protection system shall be designed to allow the reactor facilities to be settled in a state of safety eventually in case of driving power loss, system cut-off or any other unfavorable situation.

39. Separation of Safety Protection System from Instrumentation and Control System

Safety protection system shall be designed to be functionally separated from instrumentation and control systems so that the system does not lose its safety functions by the influence from instrumentation and control systems in case that the both systems share common elements.

40. Testability of Safety Protection System

Safety protection system shall be designed to be capable of being tested in general during reactor operation on a periodical basis and allow testing of each constituent channel independently so that the integrity and multiplex of the system can be verified.

IX. Control Room and Emergency Facilities

41. Control Room

Control room shall be so designed that the situation of operations and principal parameters of reactor and principal related facilities can be monitored and that prompt manual control can be performed, whenever required, to maintain safety.

42. Reactor Shutdown Function from Outside of Control Room

Reactor facilities shall be designed to have the following functions that allow reactor to be shut down from an

appropriate location outside the control room:
1) Quick hot shutdown of the nuclear reactor together with necessary instrumentation and control in order to maintain the reactor facilities in a safe state; and
2) Maintenance of cold shutdown state of the nuclear reactor with appropriate control procedure.

43. Design Considerations for Control Room Habitability

Control room shall be designed to be protected against fire, properly shielded so as to allow personnel to have access to or stay in the control room for necessary operations at the accidents, and protection against toxic gases and gaseous radioactive materials likely to be released due to fire or accident by means of proper ventilation system.

44. On-site Emergency Station

Reactor facilities shall be designed to allow establishment, in the nuclear power station, of an on-site emergency station from which necessary instruction will be furnished at the accidents.

45. Design Considerations for Communications Equipment

Reactor facilities shall be provided with adequate alarm systems and communications equipment that allow necessary instructions and messages to be given properly to all the people present in the nuclear power plant at the accidents. The communications equipment between nuclear power plant and necessary outside places shall be provided with multiplex or diversity.

46. Design Considerations for Evacuation Route

Reactor facilities shall be provided with emergency lights that function even in case or ordinary light power loss and have safe evacuation routes provided with concise and permanent guide mark.

X. Instrumentation and Control System and Electrical System

47. Instrumentation and Control System

(1) Instrumentation and control system shall be designed with adequate considerations for the following requirements during normal operations and abnormal transients:

(i) The parameters necessary to ensure the integrity of the core, reactor coolant pressure boundary, reactor containment vessel boundary and associated systems shall be controlled and maintained within appropriate predicted range; and

(ii) Monitoring of the aforementioned parameters within predicted variation limits shall be possible so as to allow necessary countermeasures to be taken as required.

(2) Instrumentation and control system shall be designed to enable monitoring, and recording as required, of the parameters necessary to recognize the status of accident and take countermeasures by adequate method over sufficient range at the accidents. The system shall also be designed to enable monitoring or estimation of the status of reactor shutdown and core cooling in particular by use of two or more kinds of parameters.

48. Electrical System

(1) Electrical system shall be designed to allow the structures, systems and components with safety functions of especially high importance to be fed by either external power or emergency auxiliary power system when they need electric power to fulfill their safety functions.

(2) External power system shall be connected to the power grid with two or more power transmission lines.

(3) Emergency auxiliary power system shall incorporate multiplexity or diversity and independence and have enough capacity and capability to accomplish the following properly even with an assumption of a single failure of its components:

(i) Shutting down and cooling the nuclear reactor without the acceptable fuel design limits and design conditions for the reactor coolant pressure boundary being exceeded in case of abnormal transients; and

(ii) Cooling the core and ensuring the integrity of the reactor containment and safety functions of other necessary systems and components at the accidents, such as loss of reactor coolant.

(4) The electrical system associated with safety functions of high importance shall be designed such that their important portions can be tested and inspected on appropriate and periodic basis.

XI. Fuel Handling Systems

49. Fuel Storage and Handling System

(1) Storage and handling systems for fresh and spent fuels shall be designed so as to meet the following requirements:

(i) Appropriate periodical testing and inspection of structures, systems and components with safety functions shall be possible;

(ii) Storage system shall have appropriate containment and air purification system;

(iii) Storage system shall have appropriate storage capacity; and

(iv) Handling system shall have capability to prevent the dropping of fuel assemblies during transfer.

(2) Storage and handling systems for spent fuels shall be designed so as to meet the following requirements, in addition to the aforementioned.

(i) Proper shielding for radiation protection shall be available.

(ii) Storage system shall have the system capable of fully removing decay heat and transporting it to an ultimate heat sink with associated purification system.

(iii) Prevention of excessive decrease of cooling water inventory in the storage systems and proper leakage detection shall be possible.

(iv) Storage systems shall not lose their safety functions even in case of postulated dropping of fuel assemblies during handling.

50. Prevention of Fuel Criticality

Fuel storage and handling systems shall be so designed that criticality can be prevented in any postulated case by use of geometrical safety layout or other appropriate means.

51. Monitoring of Fuel Handling Area

Fuel handling area shall be so designed that the situation leading to the loss of decay heat removal capability and excessive radiation levels can be detected and that such situation can be properly communicated to the personnel or

corrective measures can be automatically taken against such situation.

XII. Radioactive Waste Processing Facility

52. Radioactive Gaseous Waste Processing Facility

Processing facility for radioactive gaseous wastes generated through the nuclear reactor operation shall be so designed that the quantity and concentration of radioactive materials released to the environment can be reduced as low as reasonably achievable through proper filtration, retention, decay, management, etc.

53. Radioactive Liquid Waste Processing Facility

(1) Processing facility for radioactive liquid wastes generated through the nuclear operation shall be so designed that the quantity and concentration of radioactive materials released to the environment can be reduced as low as reasonably achievable through proper filtration, evaporation process, ion exchange, retention, decay, management, etc.

(2) Radioactive liquid waste processing facility and associated facilities shall be designed to reflect preventive considerations against the leakage of liquid radioactive materials from the systems and uncontrolled release of those materials to out site.

54. Radioactive Solid Waste Processing Facility

Processing facility for radioactive solid wastes generated from the reactor facilities shall be designed to reflect preventive considerations against the dispersion of radioactive materials in the process of crushing, compression, burning, solidification, etc. of the radioactive wastes.

55. Radioactive Solid Waste Storage Facility

Radioactive solid waste storage facility shall have enough capacity to store radioactive solid wastes generated from the reactor facilities and be designed to reflect preventive considerations against the spread of contamination by the wastes.

XIII. Radiation Management

56. Environmental Radiation Management

Reactor facilities shall be so designed that the dose rate by direct and skyshine gamma rays generated during normal operation around the site can be reduced as low as reasonably achievable.

57. Radiation Protection for Personnel Engaged in Radiation Work

(1) Reactor facilities shall be so designed as to reflect necessary considerations for radiation protection in order to reduce the dose equivalent rate in the areas accessible to radiation workers as low as reasonably achievable by means of shielding, component layout, remote handling, prevention of the leakage of radioactive materials, ventilation, etc., taking work efficiency of radiation workers into account.

(2) Reactor facilities shall incorporate radiation protection measures that will allow radiation workers to perform necessary operations during abnormal situation.

58. Radiation Management for Personnel Engaged in Radiation Work

Reactor facilities shall be provided with radiation management facility that adequately monitor and control radiation exposure in order to protect workers from radiation. Radiation management facility shall be so designed that necessary information can be displayed in the control room or in other appropriate places.

59. Radiation Monitoring

Reactor facilities shall be designed to enable proper radiation monitoring over at least reactor containment atmosphere, monitoring area surrounding the reactor facility and release paths of radioactive materials at the normal operation and abnormal situation and to allow necessary information to be displayed in the control room or in other appropriate places.

(4) The Emergency Preparedness Guidelines, “Emergency Preparedness of Nuclear Installations”

(Excerpt)

(Decision of the Nuclear Safety Commission, June 1980)

Latest Revision: June 2001

Chapter 1 Preface

Chapter 2 Emergency Preparedness-General

Chapter 3 Zone to be Performed Substantial Emergency Preparedness

3-2 Selection of Zone

Standards of "Zone to be Performed Substantial Emergency Preparedness" (hereinafter referred to as EPZ (Emergency Planning Zone)) are defined with sufficient margin in a distance from a nuclear facility even assuming situations, which cannot dare happen technically in nuclear installations making sufficient safety countermeasures. (Abbreviation) The standards of EPZ are shown in Table 1 depending on types of nuclear installations.

Table 1 Standard of EPZ depending on types of nuclear installations

Types of installations	Distance (radius) of standard of EPZ
Nuclear power stations, nuclear reactors in a research and development stage, and nuclear reactors of more than 50MW in experimental research stage	About 8-10km

Chapter 4 Emergency Environmental Radiation Monitoring

4-1 Objective, etc.

In a nuclear installation, when there is an unusual release of radioactive materials or radiations or its fear, an environmental monitoring planned particularly in order to obtain the information about radioactive materials or radiations of circumference environment, is called "emergency monitoring" and it consists of the 1st phase monitoring performed quickly

at the time of occurrence of a nuclear emergency situation and the 2nd phase monitoring carried out to assess the general influence to the circumference environment. (Followings are abbreviated)

Chapter 5 Guideline for Enforcement of Emergency Response

5-1 Notification Criteria and Emergency Situation Judgment Criterion in the Abnormal Situation Occurrence

In the Special Law for Nuclear Emergency, considering the characteristic of nuclear installations, relations with countermeasure activities, etc., criteria about preparation and start of nuclear emergency preparedness activities are defined so that it can apply to all nuclear installations.

(1) Notification criteria to related persons and response to applicable events

1) Contents of notification criteria

(a) At the vicinity of boundary of a nuclear installation, dose rate of space radiations at one point of 5microSv/h or more for more than 10min. or at more than two points simultaneously 5microSv/h or more (when gamma rays are 1microSv/h or more, the total doses of 5microSv/h or more by measuring neutrons, excluding case due to thunders.)

(b) Release of the radioactive materials with which a radioactivity level after spreading corresponds 5microSv/h or more near the boundary of a nuclear installation at normal release portions, such as a stack, etc. (release which corresponds 50microSv or more by an event when it is managed by accumulated release).

(c) A space radiation dose rate of 50microSv/h or more, or release of radioactive materials corresponding to 5microSv/h or more in the place outside a management zone etc. when a fire, explosion, etc. arises.

(d) A space radiation dose rate of 100microSv/h or more, or radioactive materials etc. in the point 1m from a transportation container when an accident occurred during conveyance outside nuclear installations.

(e) Occurrence of a criticality accident or a state of its fear.

(f) Individual events based on the characteristic of nuclear installations in light water reactors and shut down of the nuclear reactor by insertion of control rods cannot be performed.

2) Responses when an event applicable to notification criteria occurs

(a) Responses of nuclear operator

While a nuclear operator should notify to the National Government, governors of prefectures, and municipal governors quickly, he carries out emergency response required for the grasp of the information about the influence on residents in the vicinity, etc. and prevention of occurrence or expansion of a nuclear emergency and also needs to report the development of the incident to these organizations precisely.

(b) Responses of the National Government

While the National Government collects quickly the incident information, etc. in the nuclear installation through the Senior Specialist for Nuclear Emergency, it needs to send personnel and specialists of Japan Atomic Energy Research Institute etc. to the spot. Moreover, response to alert conditions such as attaining share of the information between the related persons and discussing countermeasures should be prepared according to the expansion situation of the incident by holding the emergency response connection meeting between related ministries and government offices, etc.

(c) Responses of local governments

Governments of prefectures and municipals need to collect information, obtaining cooperation of the Senior Specialist for Nuclear Emergency and to prepare an alert condition according to the expansion situation of the incident. Moreover, from the viewpoint of the grasp of the influence to the circumference, while the monitoring at usual times is strengthened, preparation of emergency monitoring is started.

Besides, this stage is strictly a stage of preparation required for prevention of occurrence or expansion of a nuclear emergency and responding pertinently is important so as not to give unnecessary anxiety and confusion to residents in the related organizations. In addition, as response at the spot in an initial stage, the role of the Senior Specialist for Nuclear Emergency is important, and contents of performances, etc. need to be defined beforehand.

(2) A nuclear emergency situation and its response

1) The contents of the judgment criteria of nuclear emergency situations

(a) At vicinity of the boundary of a nuclear installation, dose rate of space radiation in a point of 500microSv/h or more for more than 10 minute or 500microSv/h or more at more than two points simultaneously. (Total dose of 500microSv/h or more by measuring dose of neutrons also, when dose of gamma rays is 5microSv/h or more, but excluding dose due to thunder.)

(b) A release of the radioactive materials with which a radioactivity level after spreading corresponds 500microSv/h or more near the boundary of a nuclear installation at normal release portions, such as a stack, etc. (a release which corresponds 5mSv or more by an event when it is managed by accumulated release).

(c) A space radiation dose rate of 5mSv/h or more, or a release of radioactive materials corresponding to 500microSv/h or more in the place outside a management zone etc. when a fire, explosion, etc. arises.

(d) A space radiation dose rate of 10mSv/h or more, or radioactive materials etc. in the point 1m from the transportation container when an accident occurred during conveyance outside nuclear installations.

(e) Occurrence of a criticality accident

(f) A nuclear reactor cannot be shut down by operations such as pouring of borate in a light water reactor in individual events based on the characteristics of the nuclear installation.

2) Response to nuclear emergency situations

(a) Responses of nuclear operators

Nuclear operators need to carry out emergency response for prevention of occurrence, or expansion of a nuclear emergency.

(b) Responses of the National Government and local governments

The National Government declares a nuclear emergency situation and at the same time it establishes the Nuclear

Emergency Response Headquarter. Local governments establish Emergency Response Headquarters and carry out emergency response. The Joint Council for Nuclear Emergency Response which consists of the local response headquarter of the National Government, response headquarters of governments of prefecture and municipal, etc. is organized in the off site center, in order to share information, to perform cooperated emergency response and it is important to take proper measures to reduce influence of radiation and not to give unnecessary anxiety and confusion to residents in the vicinity.

5-2 (Omission)

5-3 Indices for protective measures

Indices for taking protective measures are expressed as the dose (prediction dose) expected to receive for individuals if certain measures are not taken, or measured values as concentration of radioactive materials in food and drink.

Although a predicted dose will be presumed from the mode of an abnormal situation, the release situation of radioactive materials or radiations, weather information, SPEEDI network system, etc., information from emergency monitoring etc. are not necessarily obtained at early times of presumption. Therefore, when the measured values by emergency monitoring are obtained, it is effective to correct the calculated values by SPEEDI network system etc. one by one based on these values.

(1) Indices of sheltering and evacuation, etc.

Based on "The Radiation Level of Emergency Response on the Extensive Release Incident of Radioactive Materials" (reply of Radiation Council 1967), the indices of sheltering, evacuation, etc. taking into account the efficiency of protective countermeasures are shown in Table 2.

Table 2 Indices about sheltering and evacuation etc.

Anticipated radiation dose (unit: mSv)		Contents of protective countermeasures
Effective dose by external exposure	– Equivalent dose of the thyroid gland by radioactive iodine – Equivalent dose of the bone surface or the lung by uranium – Equivalent dose of the bone surface or the lung by plutonium	
10 to 50	100 to 500	Residents need to do indoor sheltering in own houses, etc. In that case, air tightness should be attended by shutting windows, etc. In the case that the neutrons or gamma rays are directly released from nuclear installations, residents need to shelter in concrete building or evacuation when the Local Nuclear Emergency Response Headquarter indicates it.
50 or more	500 or more	Residents need to take indoor sheltering to concrete building or to be evacuated according to directions.

We decided that a certain width is given to the index of sheltering, evacuations, etc. The reason is that a protective measures should not be determined by only the dose, but it should be determined in considering the possibility of realization of countermeasures, a risk of being generated by performing, the influencing population scale and the dose to be reduced, and for that flexibility is needed for enforcement of protective countermeasures. Moreover, advices or directions about actions of circumference residents, etc. performed by emergency response headquarters are expected to be given to unit of certain area and prediction doses change with places in the area. That is the reason why index has a width.

In addition, it is required to define a certain area and to carry out step by step after considering the scale of an unusual situation and weather conditions according to the above mentioned index, when a protective countermeasures of indoor sheltering or sheltering in concrete buildings or evacuation are actually applied.

(2) The indices about ingestion restrictions of food and drink

In addition to iodine, uranium and plutonium in radioactive plumes as radioactive elements related to ingestion restriction of food and drink, cesium was selected based on the experience of the Chernobyl accident of former USSR.

Indices about ingestion restrictions of food and drink are shown as measured concentration of the radioactive materials in Table 3 determined from the viewpoint that exposures of these nuclides for residents in the vicinity are reduced.

These Indices further show standard when emergency response headquarters etc. start considerations about the ingestion restriction measure of food and drink to be appropriate or not.

Table 3 Indices of ingestion restriction of food and drink

Objects	Radioactive iodine (representative nuclide of mixed nuclides: ^{131}I)
Drink water	$3x10^2$Bq/kg or more
Milk and dairy products	
Vegetables (excluding root crop and potato)	$2x10^3$Bq/kg or more

Objects	Radioactive cesium
Drink water	$2x10^2$Bq/kg or more
Milk and dairy products	
Vegetables	$5x10^2$Bq/kg or more
Grain	
Meat, egg, fish, etc.	

Objects	Uranium
Drink water	20Bq/kg or more
Milk and dairy products	
Vegetables	$1x10^2$Bq/kg or more
Grain	
Meat, egg, fish, etc.	

Objects	Alpha nuclides of plutonium and trans-uranium (sum of radioactivity concentration of ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{241}Am, ^{242}Cm, ^{243}Cm, ^{244}Cm)
Drink water	1Bq/kg or more
Milk and dairy products	
Vegetables	10Bq/kg or more
Grain	
Meat, egg, fish, etc.	

Chapter 6 Emergency Medical Treatment

6-3 Emergency medical treatment for radiation exposure

(1) Initial medical treatment system for radiation exposure

1) Initial medical treatment for patients exposed to radiation at nuclear installation

The initial treatment includes first aid for patients, surveillance, screening and measurement of dosage, followed by decontamination or prevention of further spread of contamination, and transfer of patients to the medical institutions.

2) Initial response for residents taking refuge in shelters etc.

The initial response includes surveillance, screening and measurement of dosage, and collection and filing of information on evacuation paths and duration of evacuation.

3) Initial medical treatment at medical institutions

Medical institutions in the vicinity of nuclear installations treat patients transferred there from shelters or nuclear installations, and practice decontamination and emergency treatment.

It should be taken note of that, in emergency, many residents may visit medical institutions or shelters and seek unnecessary medical treatment out of mental uneasiness.

(2) Subsequent medical treatment system for radiation exposure

After initial medical treatment, patients with residual contamination or with considerable damage are to be transferred to medical institutions for subsequent medical treatment, which includes whole body decontamination by shower, medical treatment for contaminated wound, and measurement of contamination and dosage. It also includes treatment for partially or severely exposed patients.

(3) Special medical treatment system for radiation exposure

Following subsequent medical treatment, patients with severe exposure from external or internal radiation are to be transferred to medical institutions for special medical treatment. Medical institutions attached to national universities are recommendable for their special interdisciplinary expertise.

Local medical institutions for special medical treatment obtain cooperation from local radiation protection institutions in measuring dosage and providing radiation protection.

Local medical institutions for special medical treatment, in cooperation with the National Institute of Radiological Sciences, practice treatment of patients, long term medical check, etc. Local medical institutions for special medical treatment, together with institutions for initial and subsequent medical treatment, constitute effective local medical treatment system for radiation exposure, and are responsible for coordination of transfer of patients, technological cooperation, etc. among local institutions.

The National Institute of Radiological Science is the central institute of special medical treatment, practices highly professional decontamination and medical treatment in cooperation with other institutions with high expertise, and gives assistance and advice to other institutions. The National Institute of Radiological Science is one of the local medical institutions for special medical treatment, also.