JANSI-EPG-01-Rev 1

Nuclear Emergency Preparedness Training Guidelines

August 2018

Japan Nuclear Safety Institute

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First Revision of the Nuclear Emergency Preparedness Guidelines

Nuclear power generation facilities are important infrastructures that support the affluence of the society. And, since the nuclear power generation system is an enormous and highly sophisticated system that meets the requirements of the society, it is characterized by the fact that the problems and accidents that could occur in connection with this system are diverse.

Ever since the Fukushima Daiichi Nuclear Power Station accident resulting from the Great East Japan Earthquake, the likelihood of various accidents occurring at the nuclear power facilities has been discussed throughout the country and safety measures have been taken.

However, no matter to what extent safety measures are taken, preparations must be made for measures presuming that accidents will occur. Moreover, along with sophistication of safety response, training for mastering those measures is gaining importance. Also, as the safety requirements of nuclear power facilities become more sophisticated and diverse, the training mechanism or technical requirements are becoming diverse and sophisticated as well.

With regards to sophistication of training, all the electric power companies and nuclear plant operators, who have nuclear power facilities conduct training every year and aspire to make it more sophisticated, and in addition, the state of training is shared through presentations by all power plants during the Nuclear Emergency Preparedness Training Presentation Session conducted by the Japan Nuclear Safety Institute (JANSI). Further, important matters with respect to training such as those included in the mid- to-long term training plan, etc. are reviewed by JANSI's Individual Problem Resolution Support WG.

In order to appropriately incorporate the results of these activities in the form of guidelines, a review committee was set up, which compiled these guidelines.

In these guidelines, although the basic concept of the initial version of the training guidelines has been followed, the training PDCA has been re-established as a mechanism for meeting social requirements and responding to new safety initiatives while systematically perceiving training and taking the PDCA beyond the level of fixing problems from the previous year.

In these guidelines, terminology has been clearly defined and the concepts have been described in an easy-to-understand manner so as to promote understanding of the guidelines. Moreover, good practices from each power plant are added as supplementary notes thereby making these guidelines easy to use.

These guidelines hope to cultivate better understanding regarding training in all electric power companies and nuclear plant operators, promote training across all companies and in addition to contribute towards making the trainings in each power plant more sophisticated and effective.

Finally, I would like to thank all members, who actively participated in the review and presented their latest initiatives during the establishment of these guidelines as well as the Secretarial Office for Nuclear Emergency Preparedness Training Guidelines First Revision Review Committee for its valuable efforts in the overall compilation of the guidelines.

August 2018

Nuclear Emergency Preparedness Training Guidelines First Revision Review Committee
Chairman Kazuhiko Noguchi

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(At the time of establishing first edition)

Foreword

In the wake of the criticality accident in the nuclear fuel fabrication facility in Japan in September 1999, efforts had been made to strengthen and enhance the nuclear emergency preparedness system. However, during the Tokyo Electric Power Company's Fukushima Daiichi Nuclear Disaster in March 2011, the emergency preparedness system didn't function and several problems were identified. The emergency preparedness system is being revised and restructured based on the international standards such as IAEA and the lessons learned from the disaster.

The operators are primarily responsible for this task. The nuclear operator emergency preparedness plan, the procedures, facilities and equipment for emergency response including measures to be taken in response to complex disasters or severe accidents are being upgraded.

Since the measures to be taken in response to an emergency situation in a nuclear facility cannot actually be experienced, and since unlike the facilities and equipment used for normal operation, there are very few opportunities to use the facilities and equipment lined up for being used in an emergency, training is important. That these facilities and equipment are functioning with absolute accuracy needs to be verified through training, and based on the training results efforts need to be made for improvement.

Training that would enhance the proficiency so that fundamental activities based on the emergency preparedness plan can function with absolute accuracy, and in addition, nurture judgment and applied skills for dealing with contingencies, is required. Also, training that gives due consideration to the collaboration with external institutions such as the national government and local municipality, is important.

While planning the training, the purpose of the training and the objectives to be achieved need to be clearly defined. In addition to designing the scope and method of training, evaluating the training and carrying out improvement activities based on the evaluation results with absolute certainty is imperative. The organization's overall systematic efforts are important.

These guidelines present the basic matters for reference while planning and implementing the training, and specify the procedure for training without providing scenarios in advance (scenario-blind training), which is considered to be effective in enhancing judgment and applied skills.

These guidelines have been established for the first time. Presently the emergency preparedness system throughout the country is being enhanced and strengthened. As this process progresses, it is anticipated that matters that need to be reflected in the guidelines

will come up. Also, based on the requests from the operators using them, the guidelines will need to be reviewed and revised in the future.

Finally, I would like to sincerely thank the academic experts, electric power companies, the research institutes and all other concerned entities for participating in the deliberations for establishing the guidelines.

January 2013

Nuclear Emergency Preparedness Training Guidelines Committee
Chairman Tamotsu Nomura

Nuclear Emergency Preparedness Training Guidelines

Revision History

Revision Time	Version	Revision reason	Remarks
January 2013	First edition		
August 2018	First Revision	Reflection of latest findings and training experience of the operators	

Nuclear Emergency Preparedness Guidelines First Revision Review Committee Member List

(In no particular order / Titles omitted / Affiliation at the time when the review committee was established)

position	name	belonging
Chairman	K.NOGUCHI	Yokohama National University
Vice chairman	H.KATAGIRI	(former) Japan Atomic Energy Agency
Member	K.MISHIMA	Institute of Nuclear Safety System
Member	F.YAMAZAKI	Institute of Scientific Approaches for Fire Safety & Disaster
Member	K.SASOU	Central Research Institute of Electric Power Industry
Member	S.ABE	Kansai University
Member	H.NODE	Tokyo Electric Power Company Holdings
Member	A.GOTOU	Chubu Electric Power Company
Member	A.ONOUE	Kansai Electric Power Company
Member	K.SHIRAISHI	The Japan Atomic Power Company
Member	T.YAMAZAKI	Japan Nuclear Fuel Limited
Member	Y.ISHIMORI	Japan Atomic Energy Agency Prototype Fast Breeder Reactor Monju
Member(Secretary)	M.TAKAI	Japan Nuclear Safety Institute
Office work	N.TSUCHIYA	Japan Nuclear Safety Institute

Nuclear Emergency Preparedness Guidelines First Revision WG Member List

position	name	belonging
Chairman	H.KATAGIRI	(former) Japan Atomic Energy Agency
Member	S.OGAWA	Hokkaido Electric Power Company
Member	Y.SUZUKI	Tohoku Electric Power Company
Member	T.TAKAHASHI	Tokyo Electric Power Company Holdings
Member	K.TABATA	Chubu Electric Power Company
Member	R.YAMADA	Hokuriku Electric Power Company
Member	A.ONOUE	Kansai Electric Power Company
Member	A.OISHI	The Chugoku Electric Power Company
Member	S.IKEDA	Shikoku Electric Power Company
Member	Y.KAWAZU	Kyushu Electric Power Company
Member	M.KAWANO	The Japan Atomic Power Company
Member	Y.UMEMURA	Electric Power Development Company
Member	T.NOTAGASHIRA	Japan Nuclear Fuel Limited
Member(Secretary)	M.TAKAI	Japan Nuclear Safety Institute
Office work	N.TSUCHIYA	Japan Nuclear Safety Institute

＊The members of the Revision WG participate in the discussions of the Revision Review Committee as regular participants

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Significance of the Guidelines

According to the “Nuclear Emergency Preparedness Training Guidelines Revision Review Committee” (hereinafter referred to as “Review Committee”) set up in the Japan Nuclear Safety Institute, these guidelines will contribute to ensuring the workability of the nuclear emergency preparedness training mainly conducted by nuclear operators.

These guidelines have been established by the Committee having specialized knowledge about nuclear emergency preparedness training through fair and appropriate deliberations based on the Committee’s bylaws. These guidelines consist of explanations for each item to be implemented as well as additional reference material to ensure correct understanding.

Further, although the Committee shall be accountable for the contents of the guidelines, it shall not take any responsibility for problems that could arise as a result of using these guidelines.

Also, the Japan Nuclear Safety Institute and the Committee do not approve and guarantee the contents and results of the nuclear emergency preparedness training conducted following these guidelines. The user of these guidelines must to be aware that the user shall be responsible for any problems, or for any compensation for violating third-party intellectual property rights resulting from activities based on these guidelines.

Nuclear Emergency Preparedness Training Guidelines

Table of Contents

Emergency Preparedness Training Related Document List

Introduction

In August 2010, based on the trend in the Western countries the nuclear operators of our country and the Japan Nuclear Technology Institute (hereinafter referred to as “JANTI”) planned to develop guidelines for implementing nuclear emergency preparedness training for maintaining and enhancing the capability to deal with nuclear disasters by ensuring that the nuclear emergency preparedness trainings are evaluated.

JANTI took up the task of perceiving the state of implementation of nuclear emergency preparedness trainings by the nuclear operators within Japan and overseas. By comparing with cases from the Western countries, the problems in the nuclear emergency preparedness trainings that were been implemented by the nuclear operators of our country became evident.

Halfway through this task, in March 2011, the Tokyo Electric Power Fukushima Daiichi Nuclear Disaster associated with the Great East Japan Earthquake occurred. The investigation by the Nuclear Accident Independent Investigation Commission (NAIIC) set up by the government and the National Diet of Japan presented several lessons to be learned by the nuclear operators as well. With respect to nuclear emergency preparedness, it was pointed out that there was lack of preparedness for severe accidents and complex disasters, and communication equipment and emergency preparedness facilities were inadequate.

After this disaster, it was realized that it is important to be prepared for nuclear disasters including complex disasters accompanying earthquake or tsunami, disasters occurring simultaneously at various locations, terrorism etc. on a regular basis, and conducting workable nuclear emergency preparedness trainings started becoming even more necessary.

In April 2012, JANTI (now known as Japan Nuclear Safety Institute from November 2012 onwards) set up the “Nuclear Emergency Preparedness Training Guidelines Committee” formed by committee members having specialized knowledge about nuclear emergency preparedness training. The Committee held intense discussions and established these guidelines.

These guidelines indicate the procedure and understanding required by the operators to

autonomously and effectively implement emergency preparedness training. Hence the fundamental items to be used as reference for implementing the PDCA cycle pertaining to training, in particular, have been presented.

As of September 2017, after 4 years since the initial edition was issued, each of the operators have been making efforts to improve effectiveness of the training using these guidelines as reference, based on case studies of power plants in Japan and overseas, or based on their own independent and original ideas. This time, the experiences and latest findings of such operators were closely examined, the “Basic approach” of the first compilation was valued and the guidelines were revised.

1. Purpose

・ The purpose of these guidelines is to present the concept and the procedure for the process of planning, implementing, evaluating and improving the nuclear emergency preparedness training. (Explanation 1-1)

2. Scope of application

・ These guidelines are applicable to the emergency preparedness training (same as emergency response training) conducted mainly by nuclear operators (hereinafter referred to as “operators”). (Explanation 2-1)

3. Definition

(1) Emergency Preparedness Training

・This refers to training conducted during normal times using the concerned organizations (personnel), facilities and equipment & materials, in order to prevent occurrence of nuclear disasters and to minimize their impact on life and property of the residents or the power plant staff.

(Note) Internationally, “Emergency Response Drill and Exercise” is often used in the same sense as “Nuclear Emergency Preparedness Training”.

Moreover, terms such as “emergency preparedness”, “emergency response” are generally used.

In Japan, terms such as “Nuclear Disaster”, “Nuclear Emergency Preparedness”, which are stipulated with respect to prevention of disasters in nuclear power facilities, in the Act on Special Measures Concerning Nuclear Emergency Preparedness, are used.

In the “Nuclear Power Plant Emergency Response Guidelines (JEAG4102-2015)” by the Japan Electric Association, in Section 3.11 there is a description about “Nuclear Emergency Preparedness training”. Since these guidelines are a detailed version of section 3.11 of those guidelines, these are referred to as “Nuclear Emergency Preparedness Training Guidelines”

They are applicable to training conducted during the period from the establishment of the organization to its dissolution.

The contents of the training include severe accident response training as well. As

far as the training model is concerned, it includes not only comprehensive training but element training, etc.

In these guidelines, the concept of the term “Training” includes both (12) Drills and (13) Exercises.

(2) Regulatory requirements

- Items specified by the Regulatory Authority in laws and regulations, planning and policy documents, which need to be implemented as part of the emergency response operation.

(3) Purpose of Training

- Refers to the purpose of implementing training, the aim of training.

(4) Training Objective

- Refers to typical status of the expected results, the ultimate goal to be achieved.

(5) Comprehensive training

- An integrated training in which multiple organizations collaborate, combine multiple items and implement them as emergency preparedness training.

(6) Element Training

- Refers to training in which the training target is narrowed down to a single organization or a specific element (training item). It is also referred to as Individual Training.

(7) Scenario-blind Training

- Refers to training that is conducted without presenting the scenario to the players in advance. It is also referred to as Blind Training.

(8) Unannounced Training

- Refers to training that is conducted suddenly without letting the players know in advance about the training implementation schedule. In a broader sense, this also includes cases wherein information to the extent of the period during which training will be conducted, is provided to the players from the perspective of preventing accidents or confusion.

(9) Map training

- Refers to training in which the problems provided are discussed theoretically over the desk or using drawings. It is also referred to as Desk Training.

(10) Education

- Refers to activities undertaken with respect to personnel or groups of the nuclear emergency preparedness organization to enable them to learn and improve the knowledge, skills and attitude required for nuclear emergency preparedness operations.

(11) SAT (systematic approach to training) Techniques

- Refers to systematic education and training techniques recommended by the International Atomic Energy Agency (IAEA).

  (Note) This is a technique for ensuring the capability of technicians of the nuclear power plant by applying quality assurance to education and training, and is defined as “An approach of logically guiding the evolution and implementation of education and training right from verification of the capability to execute work to acquiring that capability, and furthermore the process up to evaluation after education and training”.

(12) Drill

- Refers to activities undertaken assuming an emergency situation to maintain and improve the required response capabilities of the personnel or functional teams of the nuclear emergency preparedness organization or the nuclear emergency preparedness organization as a whole.

  (Note) Since the purpose of these drills is to maintain and improve capabilities, if the players do not behave or take response actions that are believed to be desirable, the evaluator may stop the drill and provide educations or give suggestions. In the US, this type of training is defined as “Drill” and is differentiated from other trainings. The definition is provided in the US Regulation 10CFR50.47 (b) (14).

(13) Exercise

- Refers to activates conducted assuming an emergency situation to evaluate (test) the required response capabilities of personnel or functional teams of the nuclear emergency preparedness organization or of the nuclear emergency preparedness organization as a whole.

  (Note) Even if the player behaves incorrectly or takes incorrect actions, the evaluator must not stop the exercise and provide educations or suggestions. In the US, this type of training is defined as “Exercise” and is differentiated from other trainings. The definition is provided in the US Regulations 10CFR50.47 (b) (14).

(14) Training office

- The organization that takes care of review and coordination to ensure that the series of activities from planning the training to implementing, evaluating, and carrying out improvement activities progress effectively.

(15) Training control team

- Formed by controllers, this is an organization that is responsible for the progress, control and situation setting of the training.

(16) Controller (Member of the training control team)

- The general term used to refer to the person in charge of controlling the training,

classified broadly into the person in charge of controlling progress and the person in charge of situation setting.

(17) Players (Individuals being trained)

- Personnel that carries out emergency response operations in mock situations.

(18) Evaluation Team

- Refers to the organization that is formed by multiple evaluators, who have a common understanding with respect to training evaluation contents or training method, and which is primarily responsible for evaluation including evaluation on the day of training, identification of problems after training, etc.

(19) Basic scenario

- The general flow of events with regards to the accident and the response being dealt with in the training. This is one part of the training scenarios. There are other detailed scenarios as well.

(20) Detailed scenario

- After verifying the technical consistency, based on the basic scenario, the circumstances at the beginning of the training, the details of the development of major events in chronological order and the response from each player in chronological order are put together in the detailed scenario.

(21) Situation setting

- Providing information about situations during the training, which is necessary for the players to be able to determine concrete responses.

(22) Situation setting card

- The means for setting the situation for the players. A piece of paper with concrete information.

(23) Situation setting plan

- A chart in which the information about the situation to be set, its origin, its target recipient, setting method and timing is listed.

(24) Evaluation

- Verifying the extent to which the objectives defined while planning are achieved and pointing out the issues in the emergency response capabilities of the organization and personnel, and in planning and implementing the training.

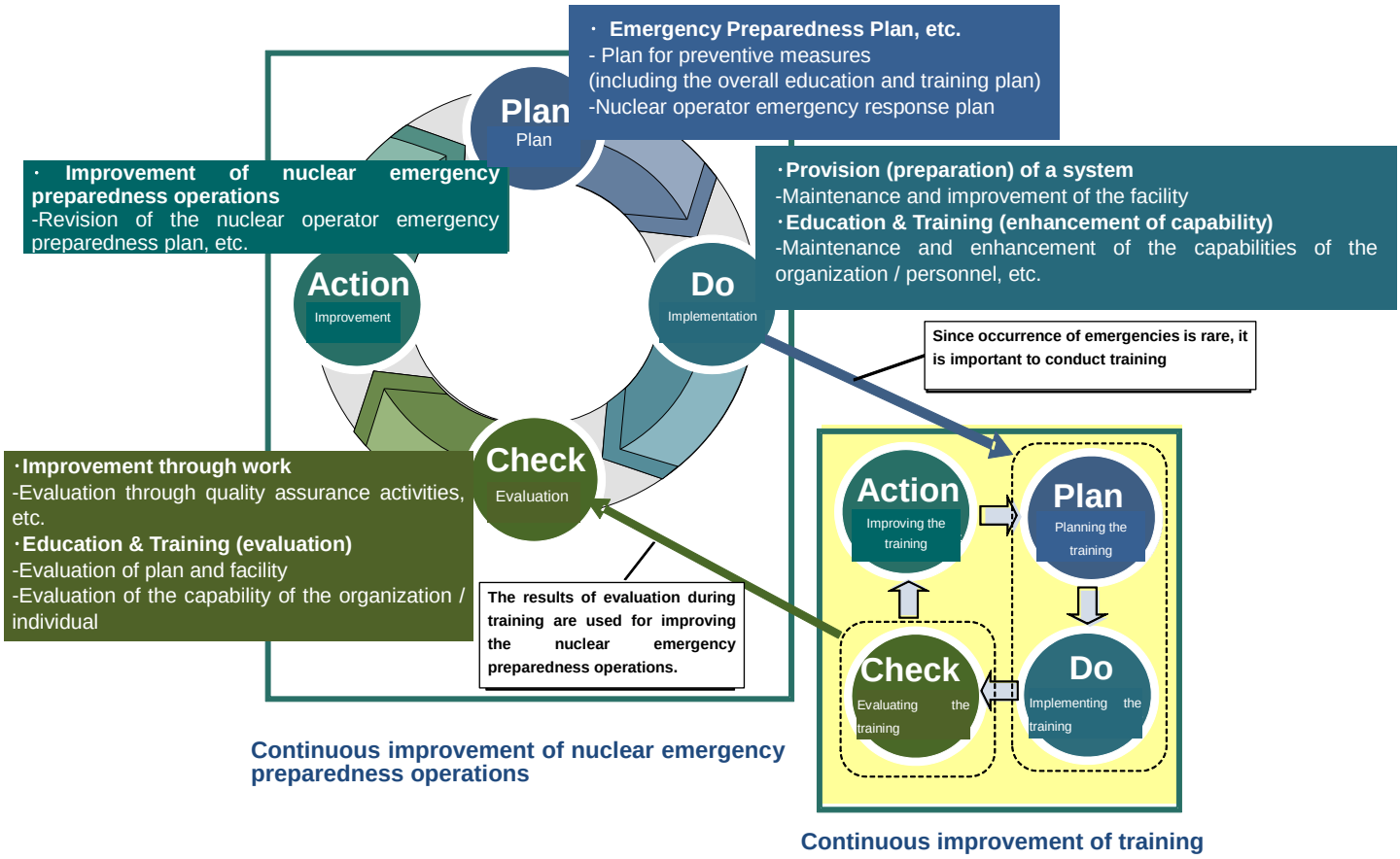
(25) Evaluation meeting

- A meeting held after the training has been implemented, in which the training office and the evaluation team participate and review the training results to discover issues.

4. The concept of implementing the training

4.1 PDCA cycle of the training

- The PDCA cycle of the training is implemented as shown in the yellow portion of Figure 4.1, and efforts are made to improve the training itself.
- The results of training evaluation are reflected in the PDCA cycle for nuclear emergency preparedness operations in order to improve them.



#1. These guidelines are applicable to “Continuous improvement of training” (yellow portion).
#2. The details of “Evaluation of Training” are according to Figure 4-3.

Figure 4-1 PDCA cycle for emergency preparedness operation and training

- Since the emergency preparedness plan changes depending on the regulatory requirements, social requests and organizational conditions, as shown in Figure 4-2, these changes need to be understood accurately and the operation needs to be reviewed on a regular basis.
- In order to be able to conduct training in preparation of emergencies on an ongoing basis during normal times, the commitment of the Management becomes necessary.

・Along with reviewing the emergency preparedness plan, it is necessary to verify whether or not emergency response capabilities (see Table 4-1) are as per requirements.
・The results of training are reflected in improvement of the training itself (1st PDCA cycle), in improvement of the emergency preparedness plan (2nd PDCA cycle) and furthermore in the management cycle of the Company Management.

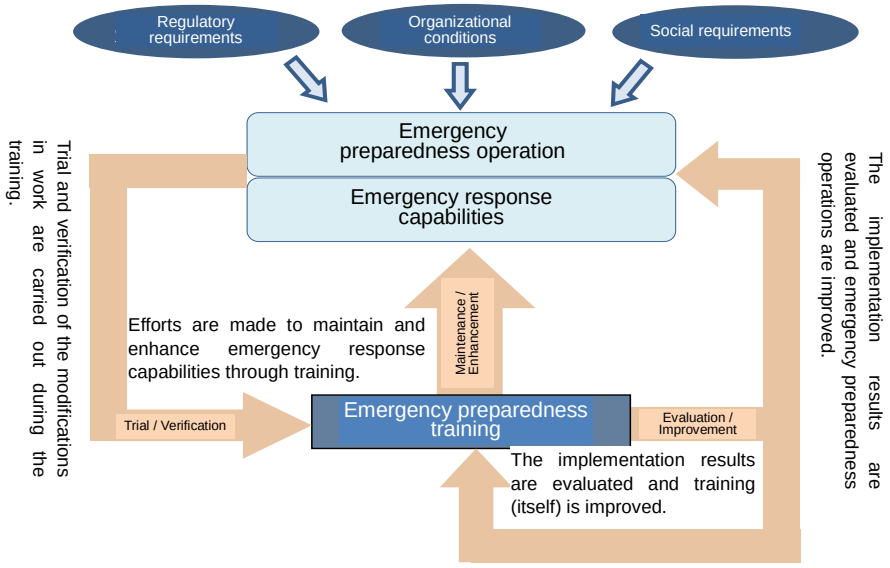


Figure 4-2　　Flow of improvement through emergency preparedness training

4.2　Evaluation of training results and improvement

・The training evaluation includes evaluating the emergency response capabilities as well as the training itself, and improvement of both.
・The items to be reviewed while evaluating the emergency response capabilities are classified as shown in Table 4-1.
・While evaluating the training itself, the contents indicated in Table 4-2 are included.
・The problems found through training are evaluated and analyzed as per the flow shown in Figure 4-3

Table 4-1 Classification of emergency response capabilities

Category		Content
Organizational capabilities	System	The system of the organization conducting the nuclear emergency preparedness operation including its composition, role allocation, persons responsible for decision making, chain of command and educations, route for collecting and transmitting information.
	Plan	The material or information such as the plan or the manual specifying the contents, procedure and precise method for the nuclear emergency preparedness operation.
	Equipment	The main facility for implementing the activities, communication equipment, terminal for processing and sharing information, means for transportation required for the actual activities, hardware such as measuring devices and implements.
Capabilities of the personnel		The awareness of the constituent members of the nuclear emergency preparedness organization, about being responsible for knowledge, skills and duties in accordance with each role. (attitude)

Table 4-2 Evaluation contents of the training itself

Classification	Contents
Evaluation of the training itself	Organized plan (placement in the mid-to-long term training plan), selection of training methods and scenarios that are appropriate for verifying the training objectives, setting of clear evaluation criteria such that there is no disparity in how the evaluators determine propriety, provision of situations, review of the training (confirmation of the purpose of training and the training objectives)

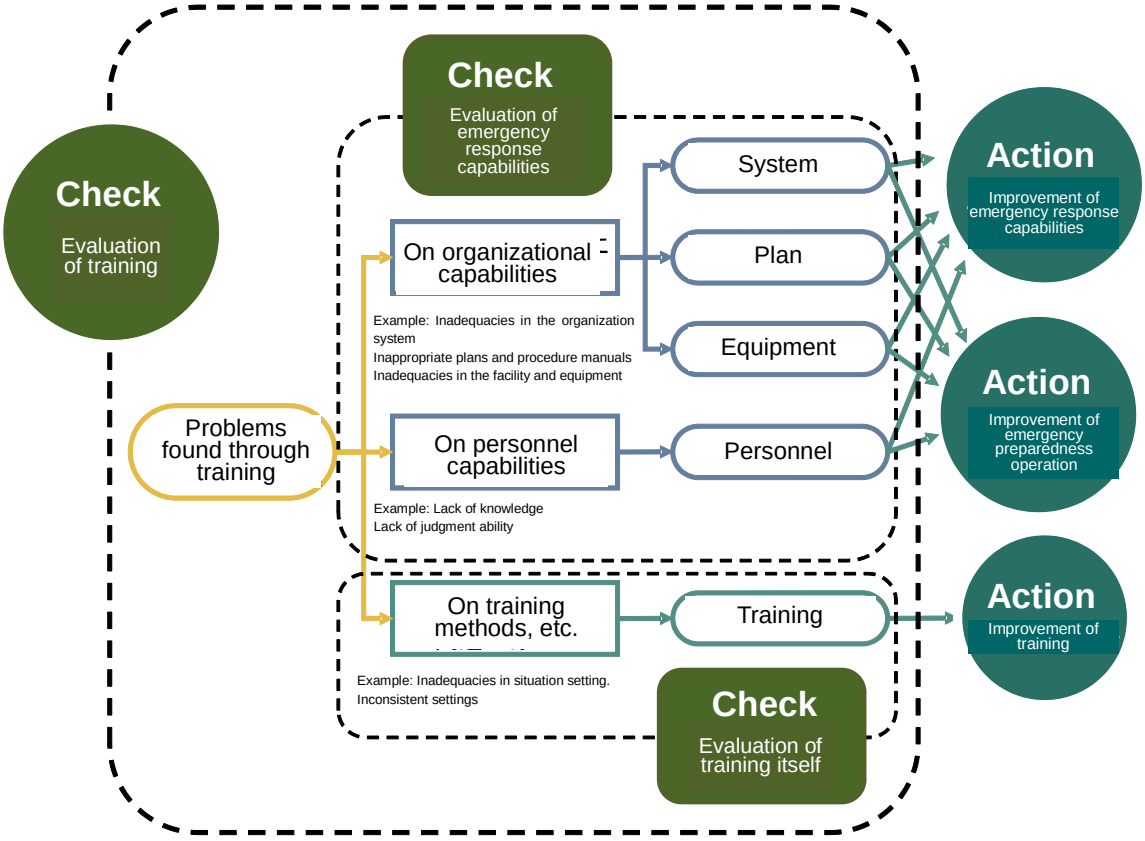


Figure 4-3 Training evaluation and analysis flow

4.3 Formulating a mid-to-long term training plan

- The mid-to-long term training plan is formulated using as reference the work flow indicated in Figure 4-4, and the examples of development of mid-to-long term training plans indicated in Figure 4-5.
- The training items are selected using a systematic method so that there is no polarization with respect to any specific training purpose or training item.
- The true aim is not to willfully ensure that all the training items selected systematically are implemented. Rather it is important to understand what has been and what hasn't been implemented as a training item.
- After understanding the current circumstances, considering the extent of impact on nuclear safety, response capability and current circumstances of the organization, etc. the training items, order of implementation and implementation frequency (period and training intervals) is finalized.
- In order to make efforts to cultivate nuclear emergency preparedness personnel and organization that are capable and practical from a mid-to-long term perspective, a training plan is formulated. (Explanation 4-1) (Annex A)
- The following items need to be considered while formulating the mid-to-long term training

plan.

- Training items are selected using a systematic approach. The selected items form the “trunk” of the training plan.
- Define the purpose of the training and training items
- While finalizing the order of implementation, for example, the Probabilistic Risk Assessment (PRA) technique is used.
- The implementation frequency is set depending on the purpose of training or the importance (of content). For items with an implementation cycle spanning over several years, it is ensured that the intervals between implementations are not too short or too long.
- Changes in the regulatory requirements, social requirements and organizational conditions are dealt with.

  Training items added as a result of these form the “branches and leaves” of the training plan.

  These are appended to the mid-to-long term plan that forms the “trunk”.

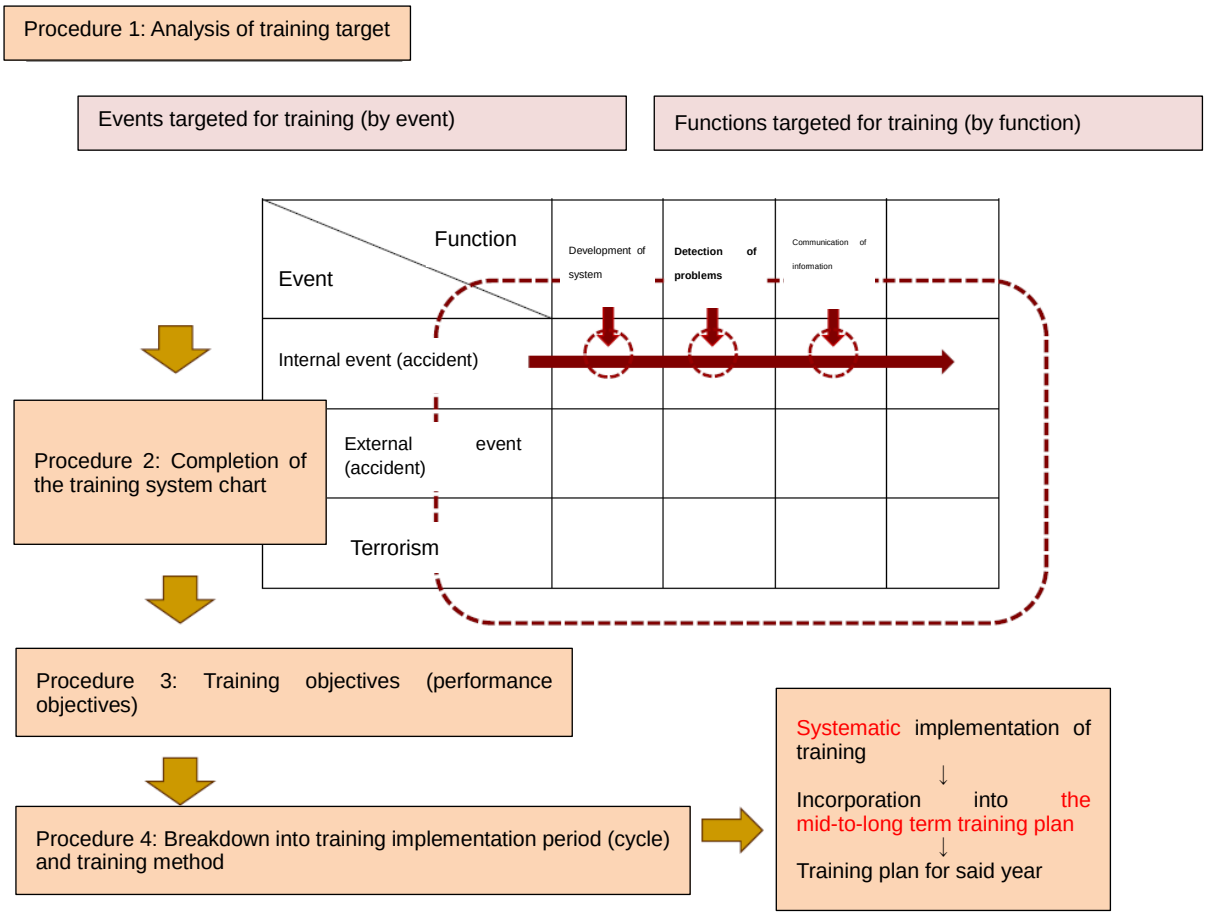


Figure 4-4 Sample Workflow for Systematically Developing the Training Plan

Event / Function			Development of system	Detections of problems	Communication of information	Implementation of measures	PR	Restoration measures
Class 1	Class 2	Class 3						
A1・Event resulting in discharge of radioactive substances	A1-①Severe accident of reactor in operation	Failure of reactor auxiliary cooling system function	A1	A1	A1	A1	A1	A1
A1・Event resulting in discharge of radioactive substances	A1-①Severe accident of reactor in operation	Failure of containment vessel heat removal function	B2	B2	B2	B2	B2	B2
A1・Event resulting in discharge of radioactive substances	A1-③ SFP	Water depletion due to siphon effect		C3	C3	C3		
A1・Event resulting in discharge of radioactive substances	A1-④Severe accident while the reactor is shutdown	Failure of decay heat removal function	C2	C2	C2	C2		
A2・Event not resulting in discharge of radioactive substances	A2-①Malfunction of equipment	Malfunction of monitoring post		D3	D3	D3		
A3・Operational error during normal times	A3-①Maintenance work error		◎	◎	◎	◎	◎	◎
B・External event	B3 Volcanic eruption			(D5)		(D5)		
D・Terrorism	D1 Disruption of facilities		A5	A5	A5	A5	A5	

(Explanation of the above symbols)

Type of training		Implemented in XX	Implemented in XX+1	Implemented in XX+2		Implemented in XX+5
Implemented as comprehensive training jointly with the government organizations	A	A1	A2	A3		A5
Implemented as comprehensive training jointly with the concerned internal organizations	B	B1	B2	B3		B5
Implemented as comprehensive training independently by the power station	C	C1	C2	C3		C5
Implemented as element training independently by the power station	D	D1	D2	D3		D5

Implemented as routine education & training and OJT	◎

Implemented as element training	（D5）
The training is repeated within the same year and ①, ②, ③ is the number indicating how many times the training has been implemented in said year.	A1①、A1②、A1③

Figure 4-5 Sample Development of “Mid-to-long Term Training Plan (Table)” from the “Training System Chart”

4.4 Formulating an annual training plan

- Considering that there may be cases when budgetary provisions are required for implementing training, a single year training plan for the next year is formulated based on the mid-to-long-term training plan.
- Since the training items that must be implemented in said year (next year) are already provided in the mid-to-long term training plan, the implementation period (date) is set and efforts are made to specify the purpose of training, training method, target trainees, etc. Using Table 4-3 as reference, a training method suitable for the purpose of training is selected. (Explanation 4-2)
- Taking changes in the regulatory requirements, social requirements and organizational conditions, etc. into consideration, training items planned to be implemented in said year can be changed. These can be changed even in the middle of said year.
- Status of improvement in response to results of past trainings (reflection) is checked.
- The Training Office makes a special note including the reason why training items were added or withdrawn from the training for said year.

Table 4-3 Sample “Training Format / Method” Suitable to the “Purpose of Training”

No.	Purpose of training	Training format / method
1	Checking cooperation with related organizations	Comprehensive training
2	Verifying the stipulated procedures	Open-scenario training
		Element training (training on operating various equipment, etc.)

3	Checking and improving judgment		Map training
			Scenario-blind training
4	Discovering and overcoming weaknesses	Discovering weaknesses	Scenario-blind training
			Unannounced training
		Overcoming weaknesses	(when the basics are properly provided) Element training, open-scenario training
			(when checking whether or not weaknesses have been overcome) Scenario-blind training

4.5 Education

- The operators systematically provide educations on the overall nuclear emergency preparedness operations and specialized educations required for each role in order to provide the required knowledge, skills and attitude to the trainees. (Explanation 4-3)
- The knowledge, skills and attitude required by the personnel are identified systematically using SAT techniques. Work analysis is carried out and knowledge, skills and attitude required for each operation (for each stage, such as bare minimum expectations at the initial stage, expectations from high level key personnel that one is supposed to aim for in the future, etc.) are identified. Further, they are linked with educations provided for those knowledge, skills and attitude.
- It is checked whether or not knowledge, skills and attitude related to nuclear emergency preparedness operations, which are required for the training and form its basis, have been acquired by the trainees through the courses, etc., before the training (or whether or not the trainees possess them up to an equivalent level).

4.6 Overall training workflow

- Figure 4-6 shows the overall workflow of the preliminary stage of training, activities on the day of training, and also the activities after the training. This serves as the Table of Contents corresponding to Chapter 5 onwards. After the training, the results of the training are reflected upon in view of the purpose of training or the training objectives, the results of this (problems that are identified and problem-solving measures) are incorporated properly in the training plan and the problem-solving measures are validated.
- Reflection on training on a case-by-case basis corresponds to “branches and leaves (minor parts)”. The basis of the training plan must be formulated from a mid-to-long term viewpoint that corresponds to the “trunk (main part)” of the training plan.

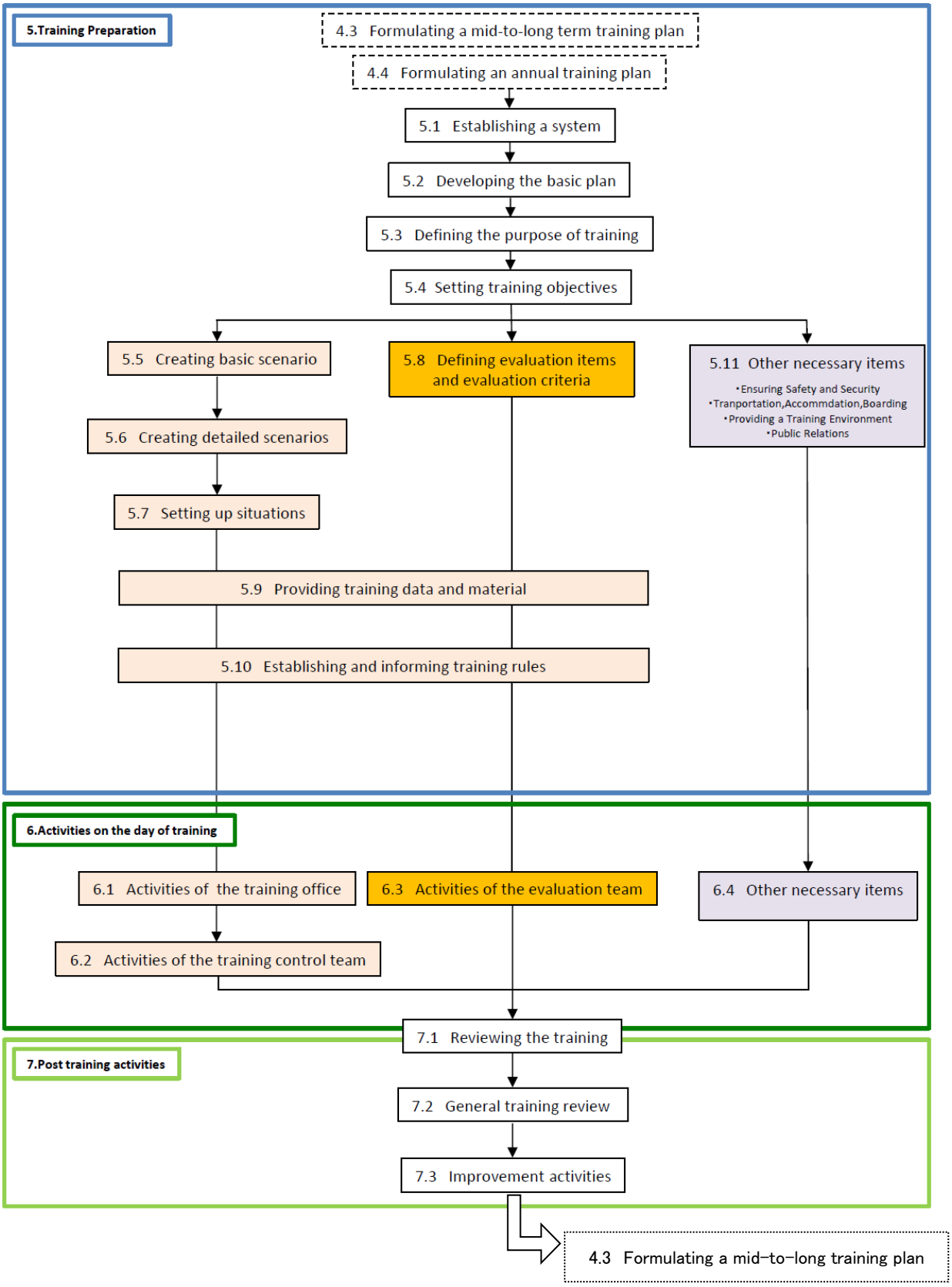


Figure 4-6 Overall Training Workflow

5. Training Preparations

5.1 Establishing a system

The departments responsible for emergency preparedness establish the system (Training Office, Training Control Team, and Evaluation Team) required for training management. (Annex B)

(1) Training office

- The department in charge of emergency preparedness can serve as a training office.
- Following are the functions of the training office. (Explanation 5-1)
  - Coordinating and finalizing training schedule, creating basic plan (schedule) till the training
  - Clarifying the purpose of training and setting training objectives
  - Creating scenarios and setting up situations
  - Defining evaluation items and evaluation criteria
  - Logistics
  - Publicity about training
  - Compiling and reporting training results

(2) Training control team

- The Training Office can concurrently carry out the duties of the Training Control Team as well.
- 1 member of the training control team is appointed as the leader.
- The training control team is responsible for controlling progress and setting scenarios (Explanation 5-2)
- A controller, who has specialized knowledge of the training areas and the training method, is appointed within the training control team.

(3) Evaluation team

- 1 member of the evaluation team is appointed as the leader.
- The members of the evaluation team are selected taking into consideration the following 3 characteristics, so as to be able to ensure a diversified evaluation perspective. (Explanation 5-3)
  - Employees of the same operator (for internal evaluation)
  - Employees of other operators (for peer review)
  - Experts familiar with training evaluation (as third-party evaluators)
- The area of responsibility of each evaluator is set so that they can check sufficient activities during the training.

5.2 Developing the basic plan (schedule)

- The training office defines the required tasks from planning of the training to preparing the training review paper.
- The training office fixes the duration for each task and develops the process. (Annex C)
- The following points are taken into consideration while developing the process.
  - Specifying the person in charge for each task.
  - Evaluating the duration required for preparation considering the scale of training.
  - Informing about collaborations with external organizations ahead of time.

5.3 Defining the purpose of the training

- The training office defines the purpose of the training. (Explanation 5-4)
- The following points are taken into consideration while defining the training objective.
  - Purposes are selected such that the purpose of training is not polarized.
  - Specifying the personnel being trained who need special attention.
  - Taking into account the issues and areas for improvement indicated in past trainings.
  - Taking into account the changes in regulatory requirements due to new laws and regulations and guidelines, social requirements and organizational conditions.
- Planning the training so that the training areas and training method correspond to the purpose of training. (Explanation 5-6)

5.4 Setting training objectives

- The training office sets the objectives depending on the purpose of training. (Explanation 5-7)
- The objectives should be such that can be achieved during the training.
- In order to evaluate the extent to which the objectives are achieved, the training office puts together the areas to be observed by the evaluators.
- The areas to be observed by the evaluators should be items that can be objectively perceived.

5.5 Creating basic scenario

- The training office develops the basic scenario
- The following items are included in the basic scenario
  - Setting the situation for the beginning of the training (Explanation 5-8)
  - Timeline of important events (Explanation 5-9)
  - Collaboration with external institutions (Explanation 5-10)
  - Outline of the response activities

5.6 Creating detailed scenarios

- The training office develops detailed scenarios based on the basic scenario. (Explanation 5-11)
- The detailed scenario verifies that the content is such that the purpose of the training is achieved.
- While creating the detailed scenarios, time progression or contents of each type of data are determined after taking into consideration that simulators etc. will be used.
- The following items are included in detailed scenarios
  - Technical explanation of the event
  - Timeline of the expected response from each player

5.7 Setting up situations

- The training office prepares a situation setting plan based on the detailed scenarios. (Annex D)
- The training office prepares situation setting cards based on the situation setting plan. (Explanation 5-12) (Annex E)
- The following items are taken into consideration while preparing the situation setting cards.
  - As a standard there is 1 situation setting card for each case.
  - Case name, provision time, provided by, provided for, provision method and provided information is clearly mentioned on the card.
  - Reference material for appended data is attached.
  - It is clearly indicated that the material is for training purposes so as to avoid any mistakes.

5.8 Defining evaluation items and evaluation criteria

(1) Defining evaluation items

- An “Evaluation Check sheet” is created for each organization to be evaluated. (Explanation 5-13) (Annex G)
- The following points are considered while creating the evaluation check sheet.
  - The purposes of said training are verified.
    For example, in trainings where the purpose is to “verify response capabilities in the summer”, the set-up (scenario) should simulate an environment with high temperatures to match the purpose of training.
  - The expectations (ideally expected scenario) of the organization to be evaluated are verified.

Expectation refers, for example in the case of the information analysis team, to requirements such as “XXX needs to be done”.

(2) Defining Evaluation Criteria

・Attention is paid to ensure that the criteria are objective and concrete and do not give rise to individual differences amongst the evaluators.

(Explanation 5-7)

・Either quantitative criteria are set for each evaluation item or specific criteria are set in terms of characteristics that can be observed by the evaluators with respect to qualitative factors such as whether the conduct of the players is good or bad.

・“Expectations (ideally expected scenario)” with respect to the conduct of the players are set and it is assumed that the person in questions is aware of these either on his/her own or because it has been pointed out to him/her.

5.9 Providing training data and material

・ The training office prepares data to simulate the conditions of the nuclear facility during the training with the help of a simulator. (Explanation 5-14)

・ The data to be prepared includes the following items.

- Conditions of the nuclear facility
- Conditions of radiation and contamination within the facility
- Conditions of radiological release outside of the facility and its monitoring

・ The training office prepares the following data for training purposes as may be necessary.

- Climatic conditions
- Information about social environment (status of tourists, etc. in the vicinity of the power station)
- Other information required for each training area

5.10 Establishing and informing training rules

・The training office establishes training rules that need to be followed while implementing training including response to be taken in case an accident actually occurs while implementing the training. (Explanation 5-15)

・Training rules are established for players, controllers and evaluators respectively.

・The rules for controllers include response in case of deviation from the scenario.

・Except for those rules that only persons concerned with the Training Office need to understand, the Training Office explains the training rules and shares their contents with all persons concerned with training prior to the training.

5.11 Other necessary items

(1) Ensuring Safety and Security

- Along with preventing the disruption of normal course of work, during training suspicious persons or vehicles are not allowed to enter.
- Measures are taken to differentiate players, persons concerned with the Training Office, visitors, members of the press, etc. with the help of an armband, bib, etc.
- During the training, vehicles or equipment and materials that are not used often during normal times are used, and in addition, visitors or members of the press, etc. who are not familiar with the environment within the premises enter the inside. Moreover, night assembly training or mid-winter training is carried out as well. Safety management is examined on a case-by-case basis and necessary measures are taken.
- Since unannounced trainings may be conducted as well, matters concerning security and safety management during training are stipulated in advance and are made thoroughly known to the concerned persons regularly. (Explanation 5-16)

(2) Transportation, Accommodation, Boarding

- Transportation, accommodation, boarding, impact on transportation associated with implementation of training, etc. are examined.

(3) Providing a Training Environment

- Measures to deal with waste generated during training, consideration of the surrounding environment, division of responsibility of routine work, etc. are examined.
- A training environment is provided such that the training participants can devote themselves to the training.

(4) Public Relations

- PR activities concerning the implementation of training, in the surrounding areas or through the media, are examined. (Section 6.4 Explanation 6-4)

6. Activities on the day of training

6.1 Activities of the training office

- Contacting the concerned personnel such as the players, controllers and evaluators and coordinating the tasks.

・The training office carries out activities such as improving the training environment, safety management, and ensuring security for managing training implementation.

(Section 6.4 Explanation 6-1）

6.2 Activities of the training control team

(1) Activities of the department in charge of managing progress

・ The department in charge of managing progress manages the temporal progress of training. (Explanation 6-2)

・Aborting the training immediately as per the training rules and informing the concerned personnel, if there are any contingencies such as earthquake or someone gets injured.

・If a situation that exceeds one's range of discretion occurs such as significant deviation from the scenario, etc., it is reported to the training control team leader, and educations are received.

(2) Activities of the department in charge of setting up situations

・ Setting up situations based on the situation setting plan.

・ Responding to questions from the players.

・ Reporting to the leader of the training control team and seeking advice, if one's discretion is abused while setting up situations.

6.3 Activities of the evaluation team

・The evaluator uses the "Observation Sheet" and records the observations. (Explanation 6-3) (Annex F)

・If the evaluators are unable to take down some information required for the evaluation during the training, the items shall be noted down as pending confirmation so that they can be confirmed during the review at the end of the training.

・The evaluators shall not interfere with the activities of the players while taking notes.

6.4 Other necessary items

・The Training Office implements the items arranged for in Section 5.11 (Explanation 6-1) These may be carried out with the support from persons responsible for general affairs or PR besides players, controllers and evaluators.

- Ensuring security
- Providing transportation, accommodation, boarding, etc. for the training participants.
- Providing a training environment (treatment of waste generated during training, consideration of the surrounding environment, etc.)
- Dealing with PR, media, visitors (Explanation 6-4)

7. Post-training activities

7.1 Reviewing the training

- The training office holds a review meeting with all the concerned personnel immediately after the training. (Explanation 7-1)
- The following points are taken into consideration during the meeting.
  - Sharing the overall impression while it is fresh in the memory.
  - The Training Office discloses the aim of the training, the idea behind developing the scenario, etc.
  - Verifying queries or doubts that had come up during the training.
  - Self-critical review of the training results against the training objectives.
  - Sharing good practices.
  - Taking this opportunity to give out questionnaires. (Explanation 7-2)

7.2 General training review

(1) Training evaluation

- The evaluators compile the training results with the help of the “Evaluation check sheet” based on the notes in the “Observation Sheet”.
- The training office puts together the items understood during the review after the training, the training results compiled by the evaluators and the results of the player questionnaires, for discussion during the evaluation meeting.
- The training office gathers the evaluators and holds an evaluation meeting.
- The following items are discussed during the evaluation meeting.
  - The evaluation result of the operation undertaken during the overall training.
  - Extent to which the training objectives were achieved.
  - Extent to which the purpose was achieved.
  - Areas of improvement
- While evaluating and analyzing the nuclear emergency preparedness capabilities, the training results are analyzed using the “Sample sheet for evaluating and analyzing capability” and compiled as per section 4.2. (Explanation 7-3) (Annex H)
- The training office compiles the evaluation results such as areas for improvement based on the result of the evaluation meeting.

(2) General training review paper

- The training office prepares the general training review paper
- The following items are included in the training review paper. (Annex I)
  - Purpose of training

- Personnel to be trained
- Training items
- Training objectives
- Evaluation results
- Improvement plan
- Materials (Scenario, Data, etc.) used for implementing training (Explanation 7-4)
- Results of the main activities undertaken during the training
- Prior explanation material for the concerned organizations

・ The training office informs the concerned personnel about the initiatives undertaken during the training using the training review paper.

7.3 Improvement activities

・ Each department and the department in charge of emergency preparedness work on proposed measures against the issues compiled by the training office, and develop an improvement plan. (Explanation 7-6)

・ The department in charge of emergency preparedness analyzes the issues related to the actual training, works on proposed measures and develops an improvement plan.

・ The following things are included in the improvement plan. (Explanation 7-7)
  - Implementation agent
  - Precise improvement details
  - Target date of completion

・ Each implementation agent implements improvement activities based on the improvement plan.

・ The department in charge of emergency preparedness tracks the improvement plan of each department and ensures that improvement activities are being undertaken. (Explanation 7-8)

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Explanation

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Explanation 1-1 Purpose of these guidelines

Promoting better understanding of the trainings and making appropriate improvements by implementing and evaluating effective trainings is important for maintaining and improving the emergency response capability.

We would like you to understand how the nuclear emergency preparedness capability can be effectively maintained and improved through trainings, and to make use of this understanding during the actual training. For example, it is effective to think about what the perspective for evaluation should be depending on the purpose of the training at the planning stage.

These guidelines explain the sequence of activities from effectively planning, implementing and evaluating the trainings for nuclear emergency preparedness, and improving based on the evaluation results. Basically, these guidelines explain about comprehensive emergency preparedness training at commercial nuclear power plants. However, while implementing element training, required sections can be selected from the procedure indicated in these guidelines, and used. The implementation procedures or information can be used as reference for trainings at power plants where the operation has been suspended or at nuclear fuel facilities, etc.

(The target readers of these guidelines)

Firstly, we are thinking of personnel from the departments responsible for implementation of training at the operator companies as readers. Further, players including the Management are expected to be readers as well. In order to implement training on an ongoing basis, commitment of the Management is indispensable. The nuclear emergency preparedness training will be considered as a part of the foundation of the nuclear safety pursuit and will be incorporated in the management cycle of the company management.

Explanation 2-1 Target trainings

These guidelines have been written down with nuclear emergency preparedness training (comprehensive emergency preparedness training) at commercial nuclear power plants in mind. This includes the support activities carried out at the Quick Response Center established at the Head Office or the coordination with the personnel temporarily dispatched to the Off-site Center. The guidelines are applicable to trainings implemented by the power generation operators.

Further, in the first edition of these guidelines, “emergency response training including nuclear emergency preparedness training” had been mentioned. However, as a result of

the investigation and examination conducted during the process of creating the revised version, as noted down in Section 3(1), nuclear emergency preparedness training and emergency response training are considered to be one and the same thing.

Explanation 4-1 Importance of developing mid-to-long term training plan

There are several operations that the operators carry out in response to emergencies. And since there are various persons in charge of each operation, it is not possible to test all operations in a single training session and use the result for maintaining and improving the response capability. Hence trainings with a combination of multiple emergency response operations are planned within a specified period of time and within the same period it is ensured that the necessary items from among the nuclear emergency preparedness operations can be verified.

It is important to develop the mid-to-long term training plan based on the past training performances and evaluation results, so as to ensure that purpose of the training and the training areas are not missed out. By mid-to-long term, we mean a 5 – 8-year cycle in the European and American cases.

The significance of formulating a training plan from the mid-to-long term perspective is to foster personnel, maintain and improve response capabilities on an ongoing basis from a mid-to-long term perspective rather than from a short-term perspective. It is not that we are making formality (method of formulating the training plan, cycle, etc.) an issue.

The operators have started activities of systematically identifying “items that can be included in the training”, items for which it would be desirable to implement training” while using, for example, the SAT technique that is recommended in the education and training domain, as reference. With respect to the training items that have been identified, it is vital to understand what items have been done and what have not been done, in view of the current conditions of each operator. And then, considering the importance or the order of priority, etc. (Table 4-1-1), those training items should be developed into a mid-to-long term training plan.

Table 4-1-1　Consideration of importance and order of priority

Importance and order of priority

Cases from the US

- Graded approach
  - Level A (utmost strictness required):
    - Understanding and classifying the emergency situation
    - Quick reporting
    - Recommending protective measures
    - Planned exposure
    - Off-site dose evaluation
  - Level B (strictness required)
  - Level C (lenient)
- Performance based emergency response
  - Application of Probabilistic Risk Assessment techniques to emergency response activities

  From amongst the EAL scenarios,
    - Those that have a high core damage probability
    - Those with a high cumulative, collective exposure dose

Explanation 4-2　Developing an annual plan from the mid-to-long term plan

Before the fiscal year changes, an annual plan for the year from April onwards is developed based on the mid-to-long term plan.

(The “Trunk” of the plan)

Based on the results of trainings implemented in the previous year (lessons), regulatory requirements, social demands and changes in the organizational status, the mid-to-long term plan can be adjusted and modified (“leaves and branches” of the plan) in the annual plan.

Once the purpose of training and the training objectives of the training to be implemented in said year are finalized, a training method suitable to its implementation (that fits the purpose of training) is selected.

For example, in trainings wherein the purpose is “to verify the capability of the leader to understand and judge the status of accident”, blind-scenario training method is appropriate rather than open-scenario training method.

Explanation 4-3 Educations related to nuclear emergency preparedness operations

The contents of educations related to emergency preparedness operations can be broadly classified into specialized knowledge and skills (generally termed as 'technical skills') that are identified by analyzing the work of the emergency preparedness organization, knowledge related to risk management, items belonging to the category of enlightenment and awareness about safety culture, etc. (generally termed as 'non-technical skills'), etc.

Educations have to be provided already at the point in time when the emergency preparedness organization system is established. In the US, there are instances when only the personnel that have been found to have predetermined knowledge and techniques are accepted as personnel for emergency preparedness organization (In these guidelines, the knowledge, skills, attitude, etc. required by the Nuclear emergency preparedness organization or its operation is believed to be the same as that required by the nuclear emergency response organization or its operation). If the competence of the personnel is to be managed within the framework of quality assurance, then it is better to manage the nuclear emergency preparedness operations within said framework as well. If it is difficult to collectively manage the education records of all the staff due to personnel reshuffling, it may be a good idea, for example, to arrange for a "Education & Training Record", just like the Radiation Control Record, in which the date of attendance of education & training, its contents, results, etc. for each staff member are recorded and which is handed over to each staff member.

The precise details of the educations for emergency response operations are illustrated in Table 4-3-1.

Table 4-3-1 Details of educations for emergency preparedness operations (Sample)

Item	Education details
Technical knowledge about the organization and the activities	・Act on Special Measures Concerning Nuclear Emergency Preparedness and other applicable laws and regulations ・Nuclear operator emergency preparedness plan ・The structure of the emergency response organization and the role allocation ・The composition of the emergency response personnel and their precise operations
Technical knowledge about the equipment and instruments	・Structure of the nuclear power equipment and the containers transporting radioactive material. ・The functions of equipment to be used in case of an emergency and their operation.

Item	Education details
	・Functioning of the off-site center and the technical support center.
Technical knowledge about radiation protection	・Fundamental knowledge about radiation ・The health hazards caused by radiation ・Radiation measurement and radiation protection ・Characteristics of the measuring instrument and the principle of measurement depending on the object to be measured ・Handling the measuring instruments ・Immediate attention in the case of radiation exposure
Promoting awareness	・The basic concept and mindset about safety (safety policy) ・Business management based on the safety policy ・Leadership ・Compliance ・Studying past cases ・Organizational safety culture
Knowledge about crisis management	・Concept of crisis management ・Concept of training, implementation and evaluation ・Risk communication

The precise method of education related to nuclear emergency preparedness operations are illustrated below. An appropriate education method should be selected considering the amount of knowledge and experience of the target personnel and the contents of education.

- Lecture (classroom lecture)
- Reviewing problems
- Observation
- Self-learning
- E-learning

Persons who take up the position as personnel of the emergency response organization are supposed to possess the prescribed capabilities at the time of taking up the position. Since these guidelines are ‘guidelines’ for improving the effectiveness of the nuclear emergency preparedness trainings (irrespective of whether those are element trainings or comprehensive trainings) conducted by assembling persons with the prescribed capabilities, details about instructing the personnel have not been described here.

Explanation 5-1 Setting up a team for each function

The training office sets up teams with specific roles as required.

In the case of scenario-blind trainings, since it is necessary to take care not to let the training players know about the scenario beforehand, teams for developing scenarios independent of the players are set up. Since technical knowledge about each field is required for developing the scenarios, the department in charge of emergency preparedness alone does not take care of this task but seeks co-operation from personnel or experts belonging to all departments.

If the training is to be implemented publicly, a team in charge of publicity is set up in order to appropriately convey the initiatives including the purpose of the training to the local community and local government who are important stakeholders.

Under the direction of the Training Office, each team works together right from the initial stage of formulating the training plan. For example, the evaluation team should participate from the planning stage of the training and take part in setting the purpose of training and the training objectives. Further, if third-party evaluators (Explanation 5-3) are invited, the Training Office provides explanation about the purpose of training, the training objectives and the scenarios to the third-party evaluators by the day on which training is to be implemented, and ensures that they accurately understand the significance and aim of the training. Also, it is a good idea to explain about “expectations” (expected from the evaluator while carrying out evaluation) as well.

Explanation 5-2 Role of the training control team

The role of the leader of the training control team and each person in charge is indicated in Table 5-2-1.

Table 5-2-1 Role of the training control team

Category	Role
Leader	• Responsible for decision making (regulating the progress, aborting the training, etc.) while controlling the training
Person in charge of managing progress	• Verifies and manages the progress of the training • Advises the leader to changes the plan to provide information based on the situation, to take the decision to abort the training if an emergency situation actually arises, etc.

Person in charge of situation setting	• The person in charge of setting external situations provides information by creating a mock set up of concerned institutions, and deals with questions from the personnel being trained. • The person in charge of setting facility situations communicates the data including the occurrence of main events to the players using a simulator, etc.

Explanation 5-3 Types of evaluators

Evaluators are mainly of the following types. When selecting evaluators, the respective characteristics of the evaluators should be taken into consideration to ensure diversity of perspectives.

· Internal evaluators

These are evaluators who are personnel of the operators implementing the training. These evaluators have full knowledge of the contents of the operations and it is easier to secure them. However, on the other hand, as evaluators it is difficult for them to evaluate objectively compared to third party evaluation.

· Peer review evaluators

These are evaluators who are personnel of operators other than the operators implementing the training. Evaluation from the perspective of another organization can be obtained and at the same time this method is effective in that the evaluators themselves get an opportunity to learn through the evaluation. Meanwhile, the objectivity of the evaluators is low as compared to third party evaluators and developing the framework for securing the evaluators is a challenge.

· Third-party evaluators

These are external experts (academic experts, experts from Fire and Disaster Management Agency, National Police Agency or the Self-Defense Forces, experts from the manufacturing and engineering companies, research institutes and consulting companies, etc.) who become evaluators. Third-party evaluators are expected to objectively evaluate with diverse perspectives from an external fair standpoint. Meanwhile, it is necessary to consider that these evaluators are not as familiar with the contents of the operations as the internal evaluators, and that it is difficult to secure third-party evaluators since there are limited personnel resources suitable for evaluating trainings.

Explanation 5-4 Defining the purpose of training

The purpose of the training becomes the guideline for effectively planning, implementing and evaluating the training, and hence it is important to clearly define it. The purpose of training is illustrated in Table 5-4-1.

Evaluation and steadily implementing improvement activities based on it are integral to trainings. Hence, the training objectives depending on the purpose of training and items are clearly set at the planning stage, and the targeted personnel and method of training is selected.

Table 5-4-1 Purpose of the training (Example)

Purpose of the training	Training details
Identifying the category and magnitude of the accident	Determining and classifying the Emergency Activity Level (EAL)
Testing and improving overall activities	Setting up various mock operations related to nuclear emergency preparedness in which several organizations and institutions participate
Testing and improving the leadership ability of the organization	Leading the organization in deciding the course of action, instructing the personnel and understanding the situation to be dealt with
Testing and improving distinct elements	Conduct training for the organization or personnel for each individual activity
Testing and improving the ability to collaborate internally	Coordinating with related departments while carrying out cross-departmental operations in the initial response phase.
Verifying collaboration with external organizations	Collaborate amongst organizations including the national and local governments, relevant external organizations such as relevant emergency response organizations and subcontracting firms
Testing and improving the information transmission capability	Transmitting information obtained from the nuclear facility to relevant institutions accurately
Testing and improving the ability to publicize through media	Communication of information through mass media such as through press conferences, etc., simulating an actual press conference such as handling tough questions, facing the camera, etc. that would make it feel real.
Testing and improving the decision making capability of top management	Organizational decision-making and gathering information and providing instructions necessary for the same.
Testing and improving the corporate function of supporting the plants they operate	The head-office should quickly and accurately understand inadequacies in on-site response and provide required support
Testing the implementation details	Securing emergency response personnel, setting up the environment, hand-over, etc. for the long-term

of long-term response	
Discovering and resolving new issues	Investigating newly set situations. Dealing with any unexamined issues.
Testing and improving the capability to deal with other constraints	Dealing under restricted conditions such as equipment being partially out of service or limited number of personnel being available. This includes response actions in case there are limiting conditions due to human acts such as terrorism, etc. during a complex disaster.

Explanation 5-5 Things to consider while establishing the purpose

The purpose of training is set along with selection of the training objectives, while referring to Table 5-4-1, etc. of Explanation 5-4. With respect to purpose of training as well, it is ensured that there is no polarization from the mid-to-long term perspective.

From the perspective of ensuring that “there is not polarization”, in addition to verification of response to complex disasters such as fire, earthquake and tsunami, etc., verification of response to human acts such as airplane collision, terrorism (sabotage activities), etc. is included as well. With respect to events that have a low probability of occurrence (for which measures are not adequately examined in advance), it would be good to implement training with the purpose of doing everything in one’s power to take response actions after the event has occurred.

The purpose of training is closely related to the training items.

Explanation 5-6 Selecting the training method

A training method that is suitable for verifying the purpose of training or the training objectives (evaluation of achievement level, whether or not the purpose was achieved, what stage has been reached as against the goal) is selected.

While selecting the training methods, following are the 3 main areas to be selected. The respective options are illustrated from Table 5-6-1 through 5-6-3.

- Extent of physical activities
- Extent of providing scenarios
- Method for publicizing the training implementation

Table 5-6-1 Extent of physical activities

Form of training	Method of training and effect
Map training	In this form of training, the response to the situation provided is studied in a classroom setting. Hence the capability of judgment and response to the provided problems can be verified and problems can be sorted out. And, since it is possible to have trainings going beyond time and space restrictions, the problems involved in long-term emergency response can be reviewed as well.
Field training	In this form of training, the actual emergency response operation is simulated and carried out. Through activities that are almost like the actual response, one can get familiarized to actual action and the response capacity can be verified. However, the cost involved in preparing for the training and coordinating it is quite high. Field training includes comprehensive training and element training.

Table 5-6-2 Extent of providing scenarios

Form of training	Method of training and effect
Lecture type	Prepare speeches and proceed with lots of pre-planned activities. There are almost no elements that need to be judged as part of training activities. This type of training mainly focuses on educations.
Open-scenario	The players are provided with scenarios in advance. The players proceed with the training following the scenarios. The sequence of response activities can be understood and one can familiarize oneself to the basic techniques (fixed actions can be learned).
Scenario-blind	In this type of training the players are not provided with scenarios. The players determine the response based on “situations” provided in the form of cards during the training. This training helps in verifying and improving the response capability of the organization and personnel, by practicing to judge and respond to emergency situations.

Table 5-6-3 Method of publicizing the training implementation

Form of training	Method of training and effect
Trainings which are announced well in advance	Making the time and date of training known beforehand and then implementing training. If a large training in which collaboration of multiple institutions is simulated is to be implemented, generally the information about the training is made known in advance. The trainees or target organizations are able to properly participate in the training (training participants can be known in advance).
Unannounced trainings	Implementing the training without announcing in advance about the date and time of training. This training is implemented for activities pertaining to moving away from normal times to emergency situations, such as notifying about the event or initial meeting, etc. With this type of training, the hands-on capability to respond to unexpected crisis situations can be improved.

Depending on the purpose of training, a combination of the best methods from the abovementioned training formats is selected based on the characteristics and effects. In Table 5-6-4, training formats that are believed to be suitable in accordance with the training purpose have been presented.

Table 5-6-4　Selection of Training Method (Sample)

No.	Purpose of Training	Explanation	Training format (model)
1	Training that is conducted to enhance the reliability of the activities that must be implemented with respect to events that have a high frequency of occurrence	Training that makes one master the basic procedures	Field training, Open-scenario training
2	Training that is conducted to enhance the reliability of activities that must be implemented with respect to events that have a low frequency of occurrence (severe accident, etc.)	Training that verifies the response procedures, i.e. what must be done: Although individual response manuals have been provided, since the frequency of occurrence is low, assumption	Field training / Map training, Open-scenario training / Scenario-blind training, Announced /

		training in preparation of emergencies should be carried out during normal times. Response and judgment may be required as the occasion may demand	Unannounced
3	Training for making the trainees handles a variety of circumstances appropriately.	Decision-making capability verification training: Although a general manual has been provided, response and judgment capabilities as the occasion may demand are verified with respect to a “variety of circumstances”.	Field training / Map training, Open-scenario Scenario-blind training
4	Training for strengthening the collaboration with multiple organizations	Collaboration with related organizations	Field training, Open-scenario / Scenario-blind, Announced / Unannounced

Explanation 5-7　Setting training objectives

Details of setting objectives, such as in what circumstances should it be evaluated that the objective has been achieved, must be specifically described.

(Training objectives)

As defined in Section 3(4), training objectives refer to “typical circumstances of expected results”

It is determining the status of the training objectives, whether or not it has been achieved. The nuclear power generation operators have translated the term “Performance Objectives” that appears in foreign documents as “*Performance Mokuhyo*”. Moreover, the term “Performance Criteria” is understood as something that “provides a depth and width while evaluating each objective”.

(Evaluation criteria)）

If the training objectives are sub-divided by training items and are made more specific, the training objectives could become the evaluation criteria. Generally, since training objectives are many times abstract, quantitative evaluation criteria are established for each evaluation item. Moreover, for qualitative evaluation such as determining whether or not the conduct of the player was good or bad, objective and specific criteria are established so that there is no individual differences among the evaluators. For conduct of players or items that are expressed as judgment, it is better to have something that can be observed. What kind of conduct should be considered as good should, for example, be established as 'expectations', these should be disclosed to the players and they should be aware of them.

In particular,

- Quantitative criteria refers to "less than 15 minutes from determining the event to completion of external communication"
- Objective and specific criteria refers to not "whether the hand-over between the leader and the person to be acting in his place is taking place appropriately", but "use of techniques such as 3-way communication" and "Communication of the problem being discussed at the Emergency Response Center and the leader's opinion".

(Sophistication of training contents)

Table 5-7-1 presents training items that have been put together from the "functional aspect" of the nuclear emergency preparedness organization (these are referred to as "function wise training items") and the "main training contents" for each item.

While improving and enhancing the nuclear emergency preparedness operations, it is important to make the training contents (can be referred to as "scenarios" as well) more sophisticated in phases.

While the nuclear emergency preparedness organization has just been formed, it is impossible to meet the ideal goals (the ultimate goal, expectations) right from the first training. Under such circumstances, immediate goals are set for the time being and whether or not those goals are achieved is verified. Goals that are set in such cases must be referred to as "Immediate goal" (minimum requirement) or "Goal for this training".

Table 5-7-1 Function-wise training items and their contents (Sample)

Function-wise training item	Training activities

Determining specific events	・Detecting plant status, gathering information, assessing the situation ・Determination of specific event (EAL judgment)
Sharing of information with external institutions	・Creating a communication report ・Communication with related organizations within and outside the company
Setting up the head office and meetings	・ Assembly of the constituent members of the organization such as the Headquarters, etc. ・Setting up and starting up organizations such as each Headquarters ・Dispatching personnel to the site ・Checking the equipment and materials at the assembly location (Head office, site, etc.), checking whether or not they are starting up and operational, connection for teleconference.
Monitoring	・Measuring the radiation and radioactivity within and outside the site environ ・Estimating the extent of impact of radioactivity
Evacuation guidance	・Restricting access inside the premises ・Making the workers, etc. in the premises familiar with evacuation, and providing guidance ・Providing evacuation guidance to visitors, etc.
Nuclear Disaster related Medicine	・Rescuing the injured ・ Checking the status of contamination, preventing spread of contamination ・Wound contamination response measures, first-aid treatment for internal exposure to radiation ・Transportation outside the controlled areas ・Coordination with the healthcare facility
Accident convergence	・Accident convergence
Post-accident measures	・Long-term protective measures ・Suspension of protective measures, restoration measures, economic measures, PR

(Relationship between the Training Office, the evaluation team and the evaluators)

The Training Office should lead the training control team and the evaluation team and should prepare for the training. The evaluation team should participate in setting the training objectives as well.

Explanation 5-8 Setting up the circumstances at the beginning of the training

The following things are taken into consideration while setting up the circumstances at the beginning of the training.

- Information about the operating condition and maintenance condition of the facility and equipment.
- The circumstances (initiating events such as station blackout, internal environment such as high radiation environment) or accident events up to the beginning of the training.
- Information about the organization such as personnel distribution.
- Day and time slot (holiday, night time, sight-seeing season, snow season etc.)
- External environment such as roads, climate, social environment etc.

Generally, a scenario that gradually develops from the initiating event is used. However, at times it is required to respond to events when the actual cause for the event is not known. It is important to plan the training from a perspective of thinking about how to respond to an event irrespective of the initiating event, as well. A scenario, in which the result of the damage caused by say “a blackout” forms the circumstances at the beginning of the training, can also be considered.

Explanation 5-9 Timeline of the main events

The progression of time in the training is established in the basic scenario.

In order to implement the training efficiently, if the setting is changed from the actual simulated event progression to something different, such as constricting the time progression etc., everyone including the players needs to be thoroughly aware of it.

Further, with respect to activities for which it is important to understand the time actually required, such as personnel meetings or initial response, it is important to implement the training with the actual time progression without constricting the time progression.

Explanation 5-10 Collaborating with external institutions

In the case of trainings that are implemented with operators alone as well, it is important to be conscious of the relation with external institutions and the relation with subcontractors.

Collaboration with external institutions is important for accident response in which

firefighting activities by the fire department in radiation controlled areas are required or for safety measures for the local residents for which external response is required. The role of the concerned organization within and outside the power plant needs to be verified and reflected in the scenario. Also, if the operations have been outsourced to subcontractors, the scenario should be developed while taking into consideration that the organization needs to be handled as a whole including the external personnel of the subcontracting company.

Explanation 5-11 Creating detailed scenarios

The key point in the basic scenario is developed and precise details are established to create detailed scenarios. The created detailed scenario is verified thoroughly to ensure that there is no inconsistency from the standpoint of each player. The content of the training scenario is revised every time the training is implemented to ensure that settings for the previous trainings are not repeated.

Explanation 5-12 Making it feel real

The environment is set so that the activities are felt like real, depending on the purpose of the training. For example, the circumstances of an actual disaster can be simulated. It is important to experience tough situations through trainings in order to be able to calmly judge in actual tough situations in which information and time are restricted. Hence, we need to consider methods for providing situations more effectively by coming up with various means of providing situations, and not just using situation setting cards.

However, in order to make sure that the players don't find themselves in a dangerous situation during the training, a lot of attention needs to be paid to safety during the training, including the travel upon being called up.

Explanation 5-13 Creating the evaluation check sheet

In these guidelines, an evaluation check sheet has been presented as Annex G.

(Related to Explanation 5-7)

For example, in the guidelines of IAEA, etc. items pertaining to emergency response operation, which need to be evaluated and verified, and expectations with respect to each of the items, has been specified in advance using a systematic method, and from among

these items, the items that can be evaluated and verified during said training (in other words, items from the training plan of each power plant, which are planned to be evaluated and verified during said training) and evaluation criteria pertaining to those items are the contents of the check sheet (at the end of the document / reference material)

Explanation 5-14 Training data and material

In order to simulate conditions during the training, it is desirable to create data using a simulator, etc. The data should not be limited to numerical data but should include charts, pictures and textual data as well.

Explanation 5-15 Rules during training

Rules pertaining to the activity area during the training (if the activity area is to be restricted), prohibited items, measures to be taken if an accident / malfunction actually occurs (training suspension criteria), measures to be taken in case of deviation from the scenario, measures to be taken in case a scenario is partially skipped, dealing with visitors or the press, etc. are laid down.

Explanation 5-16 Ensuring Security

Ensuring security may be included in the “training items” since it is an activity that is necessary in the event of an actual emergency as well. In case of activities that are training specific such as dealing with visitors, etc. it is a good idea to determine the method of implementation apart from the routine activities. (Related to “Rules during training” of Explanation 5-15

Explanation 6-1 Precautions taken the Training Office

The training office takes the following points into consideration while developing the training environment. However, if these items will be implemented as training items, the activities that will be undertaken by the office and those that will be undertaken by the players as part of the training need to be clearly differentiated.

- Verification of transportation, accommodation and boarding

  Reviewing the transportation and accommodation of the personnel participating in the training, considering how transportation associated with implementing the training is affected. In the case of prolonged trainings, meals during the trainings need to be considered as well.
- Procuring the material for training

  Verifying the materials and equipment required for conducting the trainings and for the activities of the players, and procuring them as may be required.
- Developing the training environment

  Developing an environment that would enable to participants to focus on the training, including taking measures against the waste material generated during the training, taking the surrounding environment into consideration, sharing the burden of routine work etc.
- Safety management

  In addition to the vehicles or materials and equipment being used during the training, since the personnel involved in the training or visitors are moving around, safety needs to be managed to prevent accidents.
- Ensuring security

  There is a possibility of people or vehicles moving in and out of the power plant or office premises where the training is being implemented, for the training or for routine tasks. In order to avoid confusion with routine tasks and to ensure that suspicious persons or vehicles don't intrude taking advantage of the training, those who are involved in training are differentiated with the help of arm bands, bibs, emblems, etc. Moreover, sign boards are put up at the training venue to clearly indicate that it is a training venue.

Explanation 6-2 Precautions taken by the Progress Manager

The person responsible for progress synchronizes the watches of all the participants as required before starting the training. In particular, during trainings wherein the actual time and the training time differ, it is important that the appropriate time is conveyed to the participants by the Progress Manager. It is a good idea to set up a "Training Watch" indicating the time used for the training, in the Emergency Response Center (Equivalent to the "Technical Support Center" in the US).

Explanation 6-3 Precautions taken by the evaluators

The evaluators must not hinder the activities of the players. During the training (exercise) for evaluating response capabilities, the evaluators must not intervene even if there is incorrect conduct. During training (drill) for the purpose of enhancing capabilities, suitable intervention or temporary suspension of training is allowed.

During the training, circumstances could develop rapidly. It is important for the evaluators to focus on observing the conduct and judgment of the players under those circumstances as well. It is undesirable to spend time on filling out extensive check sheets. The evaluators should be familiar with the observation items from the evaluation check sheet beforehand and should take notes from the necessary perspective. It is a good idea to use, for example, an “Observation Sheet” (Annex F), etc. to take notes. Based on those notes, evaluation is carried out using the evaluation check sheet after the training is complete.

Explanation 6-4 Importance of PR during training

There is tremendous social concern about the safety of nuclear power facilities. Conveying appropriate information about emergency response efforts during the training is an important implication of training as well.

Especially, it is important to provide information about the method of implementing safety measures and the method of conveying information regarding it. This information is proactively conveyed through trainings.

However, since there is a chance that the media or visitors would superficially determine whether or not the training is good or bad without understanding the purpose of the training, it is important to thoroughly explain the outline or the purpose of the training, so that they can have a better understanding about it.

Since the emergency vehicles or personnel gather together and carry out activities at the training venue during the training, it is necessary to inform the concerned institutions and neighboring areas about it in advance.

(Dealing with the media)

It is important to make the media persons follow the training coverage rules (areas where coverage is allowed, prohibition of interviews with the players, etc.). It is a good idea to make them familiar with the coverage rules, etc. either during the preliminary guidance or during the reception on the day of the event. Moreover, it is a good idea to deploy knowledgeable commentators (explainers) amongst the media persons (amongst the visitors as well) to help understand everything related to the training.

Explanation 7-1 Review meeting

Following are the different sizes of the meeting.

- For each organization (respectively for each of players, controller, evaluators) that was considered as the activity unit.
- Entire organization that worked together
- All players and the entire training planning team

After the smaller meetings, the larger meetings take place. It should be a flexible setting so as to enable effective exchange of opinions.

During the review, keeping the purposes and objectives of said training in mind, opinions are expressed about whether or not the purposes and objectives were met.

Moreover, during the organization-wide review meeting, one should try to avoid expressing opinions about whether or not one's own conduct as a player was satisfactory.

It is a good idea to conduct the review meeting right after the training when things are still fresh in the memory. Meanwhile, right after the training, one's remarks could be a result of one's thoughts not being adequately organized or not having a good understanding of the overall flow or the relationship with other teams, etc. It is a good idea to collect additional points that were noticed or correction of remarks made, after a certain period of time.

Explanation 7-2 Questionnaires

Carrying out questionnaire surveys among the players after the training is completed is an effective evaluation and analysis method.

The questionnaires for the players verify the self-assessment of the objectives defined, and gather opinions regarding the method and contents of the training.

The contents of the questionnaire are illustrated below.

- Did you have a clear understanding of the objectives in advance?
- Were you able to undertake activities to achieve the objectives?
- What are the good points and issues about the activities?
- What are the areas for improvement in the plan and the manual?
- What are the areas for improvement in the facility and equipment?
- What are the issues with the preparation for the training?

・ What are the issues with the content or method of training?

Explanation 7-3 Evaluation and analysis of capability

Since the emergency response capability is evaluated and analyzed by classifying it into various elements such as system, plan, equipment and personnel, a form should be prepared with all the perspectives for analysis listed down for each element respectively.

It is important that the evaluation team completely understands these contents before taking notes about the training.

(Understanding the trend of response capability)

There is a need to understand the trend of response capability (whether the capability has been enhanced or deteriorated) of the emergency response organization. The concept of understanding the trend is indicated in Figure 7-3-1, Table 7-3-1.

Training items are identified using a systematic technique. In Figure 7-3-1, nuclear emergency preparedness operations are plotted with “events” on the x-axis and “Functions” on the y-axis. The point of intersection of the x-y axes is the “Training Items”. For example, “Training on all actions from the launch of Emergency Response Organization up to restoration assuming that a Station Blackout (SBO) (event) has occurred due to an earthquake / tsunami”.

At the point of intersection of the x-y axes, the z axis direction shows the “Goal (Capability)” and “Expectations”, etc. for each training item.

“Ideal Goals (ultimate goals to be achieved)” are set as “Expectations”, etc. It is good to set “Immediate Goals” as well. (In the latter case), even if the period is broken down in smaller parts and training plans are formulated in stages for achieving the “Immediate Goals”, it is of vital importance to clearly specify the ultimate goals to be achieved and share the milestones on the path of attaining those goals.

(Related to Explanation 5-7, Explanation 5-13)

During “Training evaluation” the items that can be verified are clearly specified for each training and it is evaluated whether or not those items have been achieved (extent of achievement of goals). A method for understanding the trend of response capability is to track the ratio of the number of evaluation items with respect to which the target level has been reached (rate of achievement) with the total number of items to be evaluated selected for each training.

Moreover, another method is to use the ROP (Reactor Oversight Process) technique from the US as reference, select characteristics that can be quantitatively evaluated as the items to be evaluated substituting response capability, establish performance indicators (PI)

and track the changes in each PI.

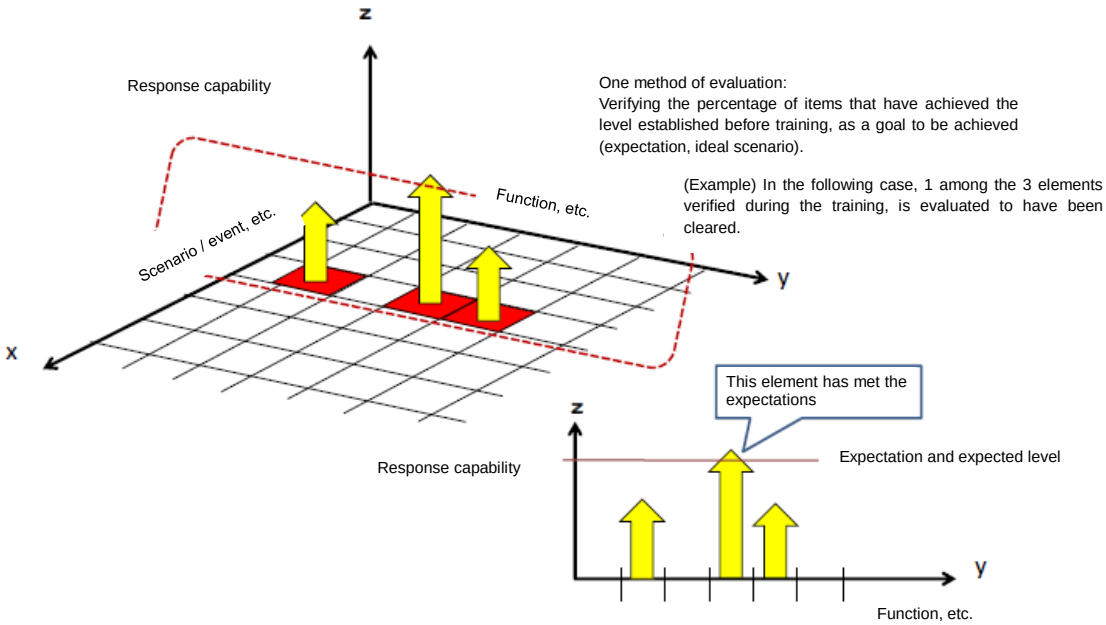

Figure 7-3-1　Understanding the trend of response capability (Sample 1)

Table 7-3-1　Understanding the trend of response capability (Sample 2)

	Evaluation item (sample)	Remarks (sample)
①Performance indicator	Rate of participation of the main members of the Emergency Response Center in the training	Rate of participation of the leader, person acting in place of leader, group leader, person acting in place of group leader in said training. Persons in leadership positions are supposed to keep gaining more experience. Having abundant experience is a plus. It is a plus in terms of the workplace environment as well.
	Precise determination and classification of EALtraining	Precise classification within 15 minutes of achieving the determined level
	Communication of EAL to the public	Completion of communication to the public within 15 minutes of determining the EAL.
	Availability of means of communication with the public	Availability of equipment after the previous evaluation. Higher the availability the better.
②Rate of achievement of expectation	Expectations defined for each functional group	For each function, items that “must happen” are specifically listed. For example, how many items from among the 10 expectations are at a “passing level”

(Evaluation of comprehensive training and evaluation of element training

Comprehensive training is implemented most of the times for the purpose of verifying the entire process right from initial response to restoration, or for the purpose of verifying the collaboration between each organization. In order to verify the entire process scenarios such as leaving out time periods when there is little movement (called as “skip”) or

hastening the time progress is adopted. Moreover, since the number of organizations or personnel participating in comprehensive training is large, it turns out to be large scale and becomes difficult to be implemented frequently. Hence, if the purpose is to appropriately implement skill level evaluation of an individual or a group, element training is more suitable. In order to evaluate the emergency response capability, it is a good idea to comprehensively evaluate the results of comprehensive training and element training as shown in Figure 7-3-2.

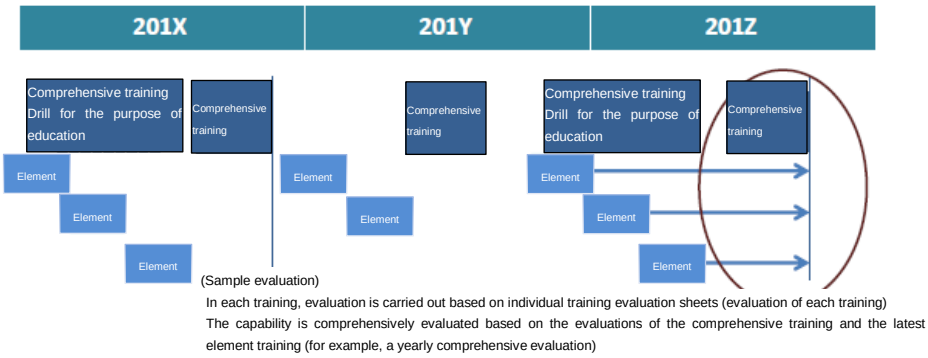

Figure 7-3-2 Evaluation of comprehensive training and evaluation of element training

Explanation 7-4 Utilization of the material for the training

The material used for the training is organized and utilized for improving the training itself or for gradually upgrading it. The training scenarios are classified based on the contents or the degree of difficulty for reference while developing training plans in the future. A collaborative approach such as sharing training scenarios with other nuclear facilities as well as utilizing scenarios used by other nuclear facilities in trainings for new issues is important.

Explanation 7-5 Informing the training participants

For continuous improvement, it is important to inform the participants of the training about the evaluation results and also improvement results. By providing feedback about the improvement results, the participants are able to verify the implications of participating in the training, and can result in increased awareness.

Explanation 7-6 Improvement involving multiple departments

Normally, the department responsible for the task indicated as an issue examines the improvement measures. However, if the issue involves multiple departments, the department responsible for emergency preparedness takes care of co-ordination for examining improvement measures.

Explanation 7-7 Improvements

It is important to define the precise areas for improvement. While formulating the improvement plan, importance, difficulty, etc. are considered comprehensively and the implementation period (scheduled completion date) is established. In order to carry out proper improvement, the priority is clearly specified as well. The perspective of improvement is illustrated below.

(The training itself)

・Implementation method, contents (scenario), resources of the training itself

・Actions taken by the training control team (providing situations)

(Nuclear Emergency Preparedness Operations)

・Nuclear Emergency Response Organization

・Emergency preparedness operation plan

・Fixtures, equipment and material

・Education and training plan

(Company Management)

・Emergency Response System and Facilities, Logistical Support Center Functioning, Branch Office Functioning, etc.

Explanation 7-8 Verifying the improvement results

The effectiveness of the areas for which improvement has been completed is tested in the next training, and it is verified that there is positive improvement. Moreover, improvement is promoted by regularly checking whether or not there will be a major delay beyond the day on which improvement is scheduled to be completed. It is a good idea to manage this through the internal CAP program (Corrective Action Program).

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Emergency Preparedness Training Related Document List

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【ISO、JIS】

① Training Guidelines

ISO22398:2013　Societal security -- Guidelines for exercises

https://www.iso.org/standard/50294.html

JIS Q 22398:2014 Societal security -- Guidelines for exercises（JIS version of the ISO22398:2013）

http://kikakurui.com/q/Q22398-2014-01.html

② Evaluation of emergency response capabilities

ISO22325:2016　Guidelines for emergency management capability assessment

https://www.iso.org/standard/50062.html

【IAEA】

③ IAEA Safety Standards Preparedness and Response for a Nuclear or Radiological Emergency General Safety Requirements No. GSR Part 7 （Nov. 2015）

This document is a revised version of GS-R-2 (Document ④). When GS-R-2 was revised, the development and knowledge obtained after FY 2002, when this document was published, were incorporated in it. The lessons learned from the response to the accident that occurred at TEPCO's Fukushima Daiichi Nuclear Power Station while the revision work was underway, the ICRP recommendations, etc. have been taken into consideration. In GSG-2 (Document ⑤) and GS-G-2.1, the requirements stipulated in GS-R-2 (Document ④) have been described in detail and recommendations and guidance with respect to implementation are provided. As of FY 2018, GSG-2 (Document ⑤) and GS-G-2.1 are valid. These serve as the grounds (criteria) for the review conducted by the OSART from IAEA. These can be acquired from the IAEA website.

④ IAEA Safety Standards Series

Preparedness & Response for a Nuclear or Radiological Emergency

Safety Requirements No.GS-R-2 (2002） (Former JNES Japanese Edition – July 2009)

This can be acquired from the Nuclear Regulation Authority JAPAN website.

⑤ IAEA Safety Standards Series

Criteria for use in Preparedness & response for a Nuclear or Radiological Emergency

General Safety Guide No. GSG-2 (July 2011) (Former JNES Japanese Edition – Jan 2012)

This can be acquired from the Nuclear Regulation Authority JAPAN website.

⑥ IAEA, EPR-EXERCISE 2005, "Preparation, Conduct and Evaluation of Exercises to Test Preparedness for a Nuclear or Radiological Emergency"

This indicates the criteria for evaluating emergency preparedness operations. These guidelines refer to that point of view.

From the IAEA website:

https://www-pub.iaea.org/MTCD/Publications/PDF/Exercise2005_web.pdf

【Industry】

⑦ Japan Electric Association: Guidelines for Emergency Measures for Nuclear Power Plants (JEAG4102-2015)

Section "3.11 Nuclear Emergency Preparedness Training" has a description about emergency preparedness training.

(Note) In order to verify that these guidelines are appropriate from an international perspective, as implementation guidelines for the nuclear emergency preparedness training carried out by power generation operators in Japan, related documents from within Japan and overseas have been extensively investigated in addition to the abovementioned documents.

While revising these guidelines, only the point of view mentioned in the documents that were investigated was used as reference, examination and discussions were carried out during the JANSI Nuclear Emergency Preparedness Training Guidelines (Revision) Review Committee Meeting, and efforts were made to ensure that the contents are suitable as guidelines for operators in Japan.

The guidelines are developed in such a way that using only these would help in the emergency preparedness training of each company. However, for deeper learning it is recommended to read through the abovementioned documents.

Annex

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（Annex A-I don’t place them here）

Reference Material

Sample Evaluation of an Emergency Response Organization

Sample Evaluation of an Emergency Response Operation

[The significance of this reference material]

- This document is an example of evaluation criteria for evaluating emergency response operations extracted from IAEA documents*. The expressions have been partially revised to make it suitable for reference within Japan.
- It is necessary to keep in mind that this document is a general document about the emergency response operation and is not a comprehensive one.
- This document can serve as reference while comprehensively consolidating the preliminary evaluation content for operations specified in the emergency preparedness plan by each operator.

*Reference Material: IAEA, EPR-EXERCISE 2005, “Preparation, Conduct and Evaluation of Exercises to Test Preparedness for a Nuclear or Radiological Emergency”

（Reference material doesn’t place it here）

(Precautions)
The original guidelines are in Japanese.
The original guidelines have been translated into English. However, please note that specific nuances of the original document may not have been expressed well enough in the English version. Please use the English version as reference to get an idea of the overall concept (outline).

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