

“Safety First KINS, trusted by the public”

Review & Inspection on EPR and Emergency drill

22. Jun. 2023.

Dept. of Nuclear Emergency Preparedness

Wanjoo Kim (k391kwj@kins.re.kr)



Contents

1

Review Procedure and Guide

2

Inspection Procedure & Guide

3

Exercise Procedure & Guide

4

Evaluation of Exercise

“Safety First KINS, trusted by the public”

Review Procedure and Guide

Legal framework for Review on REP

Act	Enforcement Decree	Enforcement Regulation
Article 20 (REP of Nuclear licensee) ~ a nuclear licensee shall formulate a emergency plan ~	Article 22(App. for Approval of REP) ~ containing each of the following ~ 1. EPZ 2. Organization and Responsibility 3. Response facilities and equipment 4. Emergencies classification 5. Initial response actions 6. Response actions 7. Restoration 8. Training and Exercise (drill) 9. Other matters necessary	Article 13, Table 3(Detailed Standards) Table 3] Detailed Standards for Formulation of Radiological Emergency Plans (Related with Article 13) - Matters pertaining to the radiological emergency planning zone of the relevant nuclear facilities Matters regarding which approval or approval of change has been obtained from the Nuclear Safety and Security Commission under Article 5 (2) of the Decree regarding the radiological emergency planning zone of the relevant nuclear facilities. - Matters pertaining to organizations and duties to brace for a radiological disaster, etc. (a) Installation and operation of an institution to brace for a radiological disaster, etc. under Article 21 (1) 2 of the Act (b) Staff, organization and duties thereof to take charge of affairs related with bracing for a radiological disaster, etc. under Article 21 (1) 6 of the Act (c) Staff, organization and duties thereof for operation of emergency response facilities including a main control room, technical support center, personnel support center and emergency operations facility under Article 25 (1) 5 of the Act (d) Other matters related with organizations and duties thereof to brace for a radiological disaster, etc. - Matters pertaining to securing radiological disaster response facilities and equipment under Article 35 (1) of the Act (a) Radiation or radioactivity monitoring facilities (b) Radiation protection equipment (c) Radioactivity decontamination facility and equipment (d) Facilities to monitor and assess the amount of radioactive materials released (e) Emergency response facilities including a main control room, technical support center, operation support center and emergency operations facilities (f) Facilities for emergency communication with related institutions and citizens (g) Emergency power supply facilities (h) Matters pertaining to detailed standards for each type of radiological emergencies, with the relevant nuclear facilities taken into account (a) Detailed standards of an alert - Detailed standards of a site area emergency - Detailed standards of a general emergency - Matters pertaining to response measures at an initial phase of accident (a) Emergency communication and coordination at an initial phase of accident (b) Matters related with filing an initial report to the Nuclear Safety and Security Commission and the metropolitan city mayor/provincial governor and city mayor/county chief/district chief of competent jurisdiction in the event of a radiological emergency under Article 21 (1) 1 of the Act (c) Affairs pertaining to emergency actions to prevent the spread of a radiological accident and radiological protection measures necessary to reduce radiation exposure of emergency action staff, etc. under Article 21 (1) 4 of the Act - Matters pertaining to activities to respond to a radiological disaster, etc. (a) Response measures by type of radiological emergencies (b) Report of the status of a radiological emergency and relevant response measures to the Nuclear Safety and Security Commission as well as the metropolitan city mayor/provincial governor and city mayor/county chief/district chief of competent jurisdiction in the event of such radiological emergency under Article 21 (1) 1 of the Act (c) Emergency communication system in the event of a radiological disaster, etc. (d) Disclosure of information on a radiological disaster, etc. that occurred (e) Accident analysis and radiological impact assessment (f) Protective measures for employees of a nuclear licensee and visitors to the site of nuclear facilities (g) Radioactive decontamination (h) Radiation or radioactivity monitoring (i) Support activities dispatch of emergency staff, provision of technical advisory services and making available radiation measuring apparatus upon request from the heads of the local emergency management center and designated institutions under Article 27 of the Act (j) Radiological emergency measures for those contaminated by radioactivity or exposed to radiation due to a radiological disaster within the site of nuclear facilities and the employees of a nuclear licensee contaminated by radioactivity or exposed to radiation - Matters pertaining to recovery from a radiological disaster, etc. - Matters pertaining to radiological emergency training and exercise Types, methods, etc. of radiological emergency training and exercise - Other matters acknowledged necessary by the nuclear licensee to prepare for
NSSC Notice	Main Contents	
[Radiation.03] Regulation on Radiological Emergency Preparedness for Nuclear Licensees	Chapter 1. General Provisions(Purpose, Definition, EPZ, General guidelines) Chapter 2. Emergency Organization and Duties(Organization and Duties, Cooperation with external agency) Chapter 3. Emergency Classification system.(ECS) Chapter 4. Emergency Response Facilities(MCR, TSC, OSC, EOF...) Chapter 5. Emergency Response Actions(Notification, Accident Analysis, Recovery...) Chapter 6. Maintenance of Emergency Response Capabilities(Training, Exercise...)	

Legal sentences for Review on REP

❖ ACT

- Article 20 (Radiological Emergency Plan of a Nuclear licensee)
- (1) In order to prepare for a possible radiological disaster, etc. at nuclear facilities, etc., **a nuclear licensee shall formulate a radiological emergency plan** as prescribe by the Presidential Decree, and **obtain approval** thereof from the **Commission prior to** commencement of the **use** of nuclear facilities, etc.....

Legal sentences for Review on REP

❖ **Enforcement (Presidential) Decree**

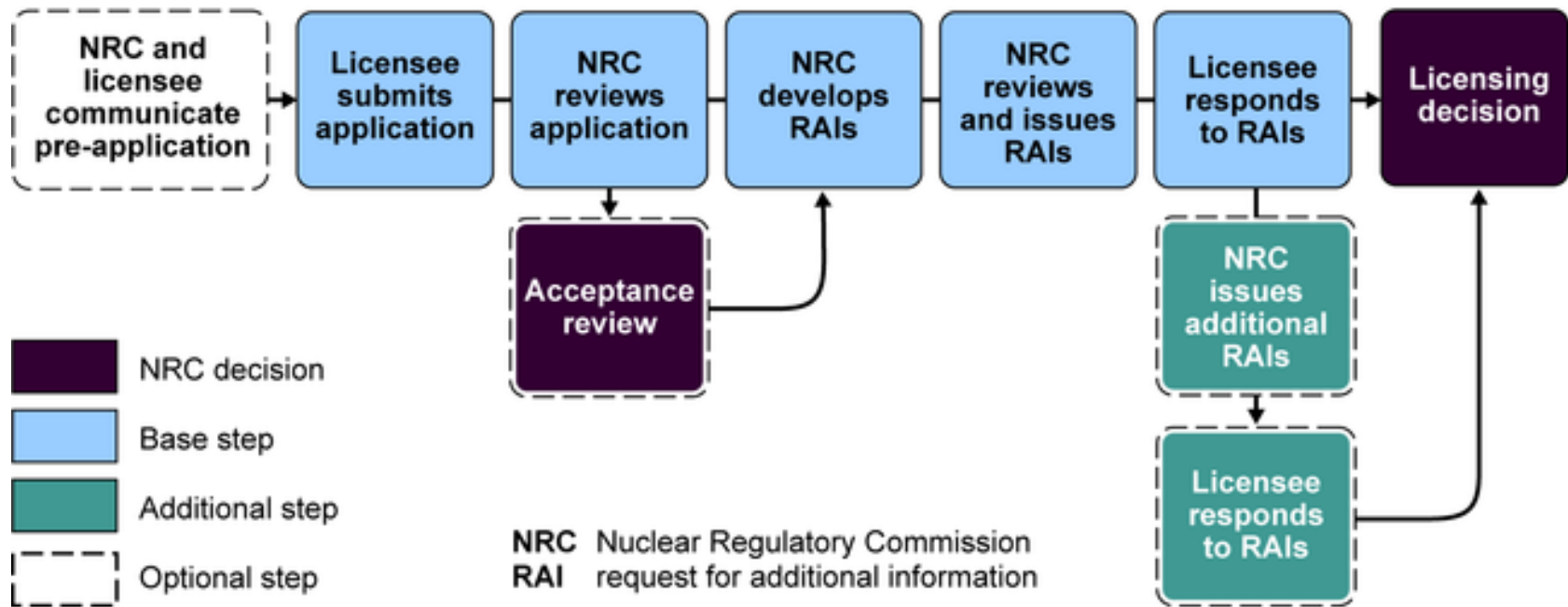
- Article 22 (Application for Approval of a Radiological Emergency Plan)
- (1) Pursuant Article 20 (1) of the Act, a nuclear licensee shall formulate a radiological emergency plan containing each of the followings and submit an application for approval thereof to the Commission

Legal sentences for Review on REP

- 1. Emergency Planning Zone**
- 2 Organization and Duty to brace for a radiological disaster**
- 3. Radiological disaster Response facilities and equipments**
- 4. Detailed standards for each type of Radiological Emergencies (Alert, Site area emergency, General emergency)**
- 5. Response measures at an initial phase of accident**
- 6. Activities to respond to a radiological disaster**
- 7. Recovery from disaster**
- 8. Training and Exercise types, methods**
- 9. Other matters acknowledged necessary by the licensee**

US review procedures

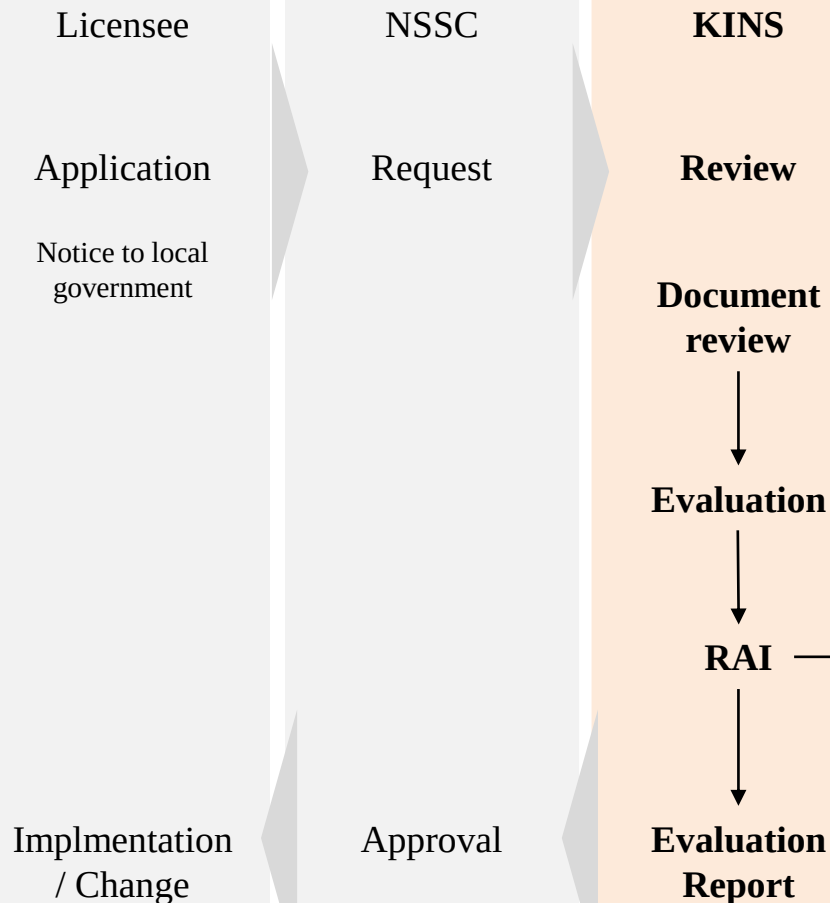
❖ The work of NRC is divided to NSSC and KINS



Source: GAO analysis of Nuclear Regulatory Commission information. | GAO-17-344

Review Procedure and Guide

Procedure(EP-11)



Guide (KINS/GE-R-010)

- I. Introduction
- II. Emergency plan
 - 1. Scope (area of review, review interfaces)**
 - 2. Standards and Acceptance criteria**
 - 1) EPZ
 - 2) Organization and Responsibility
 - 3) ERF and Equipment
 - 4) EAL
 - 5) Initial response actions
 - 6) response actions
 - 7) Recovery and Reentry
 - 8) Training and Exercise
 - 9) Others
 - 3. Review method**
 - 4. Evaluation Result(Documentation)**
- 5. Reference

Documentation

Form of Request for additional Information

① 제목	<i>Title</i>
②관리번호	<i>No. of RAI</i>
③관련 장절	<i>Section of a document related to this RAI</i>
④담당부서	<i>Department of review</i>
⑤검토자	<i>Reviewer name</i>
⑥검토요건	<i>Acceptance Criteria related to this RAI</i>
⑦검토결과	<i>Review result</i>
⑧불만족사항	<i>inquiries and request for additional information</i>
⑨구분/비고	<i>special comment</i>

Contents of Evaluation Report

- General information
 - ✓ Subject : facility, licensee, and documents submitted
 - ✓ Classification of review : change or new
 - ✓ Review period
 - ✓ Reviewers (Department, Name)
- Evaluation Result
 1. Areas of review : Documents and Section reviewed
 2. Requirements : Requirements applied for a evaluation
 3. Review opinion : Overall opinion and detailed evaluation results of each item(EPZ, Organization and Responsibility, Response facilities and equipment, ...)
 4. Review result: a summary of review
 5. Reference

“Safety First KINS, trusted by the public”

Inspection Procedure and Guide

Legal framework for Inspection on EPR

Act	Inspection Contents
Article 38 (Inspection) The Commission may inspect such matters as set forth in Article 21 and Articles 35 through 37 hereof with respect to a nuclear licensee:	Article 21(Obligation of a Licensee) ✓ Notification system, Emergency Facilities and Equipment, Providing information, EAL, ✓ Emergency response support and resource, Periodic review and distribution of emergency plans Article 35(Emergency Response Facilities) ✓ Radiation or radioactivity monitoring system, ✓ Radiation protection equipment ✓ Radioactivity Decontamination facilities and equipment ✓ Facilities to monitor and assess the release of radioactive materials ✓ Emergency response facilities ✓ Emergency communication and alarm systems with related ✓ Other facilities determined by the commission(NSSC) Article 36(Training) Article 37(Exercise)
NSSC Notice	Main Contents
(Radiation.21) Regulation on the Inspection for Radiological Emergency Preparedness of Nuclear Licensees	- Purpose, Definition - Inspection type and timing ✓ Preservice Inspection(Before the first operation of Facility) ✓ Periodic inspection(once per every year for NPP and every 2 year for other facilities) ✓ special inspection(when there is major modification of the E-plan) - Inspection method and scope

Legal sentences for Inspection on REP

❖ ACT

- Article 38(Inspection)
 - (1) The **Commission may inspect** such matters on Article 21,35, 36, 37 with respect to a nuclear licensee
 - (2) The Commission may order the licensee to make rectification

Inspection contents

❖ACT

- Article 21(Obligation of a Licensee)
 - Report to NSSC, Local Gov. at emergency
 - Installation/Operation of an organization
 - Disclosure of information related to disaster
 - Emergency action to prevent the spread of accident
 - Provision of support to Local Gov. (staff, advice, measuring apparatus)
 - Procurement of manpower and organization for potential disaster
 - Other matters necessary

Inspection contents

❖ACT

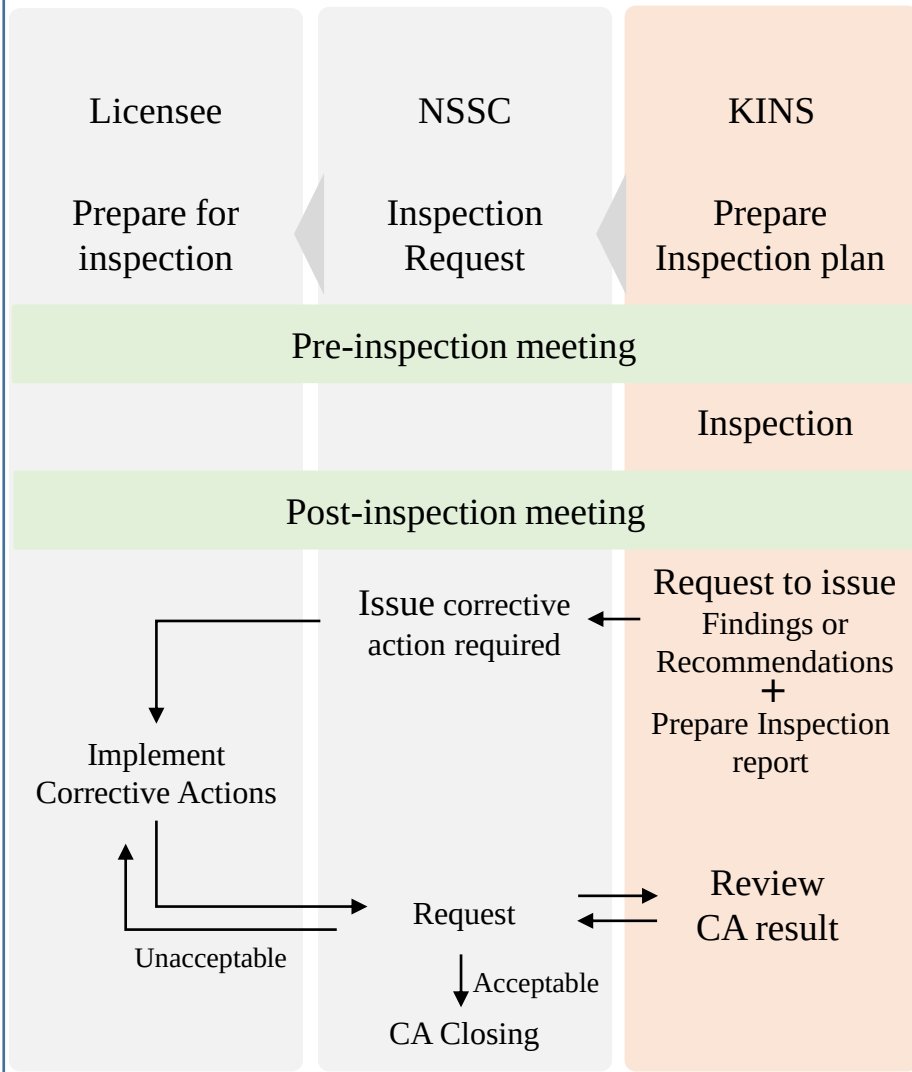
- Article 35(Radiological Disaster Response Facilities, etc.)
 - Radiation or radioactivity monitoring facilities
 - Radiation protection equipment
 - Radioactivity decon. Facilities and equipment
 - Facilities to monitor and assess the radioactive material released
 - MCR, TSC, OSC, EOF
 - Facilities for emergency communication and alarms

❖ ACT

- Article 36(Radiological Emergency Training)
 - Education
- Article 37(Radiological Emergency Exercise)

Inspection Procedure and Guide

Procedure(EP-12)



Guide(KINS/GE-R-011)

I. General

1. Purpose, Legal basis, scope
2. General inspection procedure and method
3. Inspection finding classification

II. Inspection Guide

1. General(*scope, legal basis, requirement*)
2. Inspection contents and method
 - 1) Obligations of a Nuclear Licensee
 - 2) Emergency Response Facilities
 - 3) Radiological Emergency Training
 - 4) Radiological Emergency Exercise
3. Acceptance criteria
4. Attachment (Inspection table)
5. Reference

Documentation

Inspection Plan

1. Inspection Purpose
2. Inspection Schedule
 - 1) Period/subject
 - 2) Composition of Inspection team
 - 3) Pre-Inspection meeting date/place
 - 3) Post-Inspection meeting date/place
3. Inspectors by item

attachment : detailed schedule

Inspection finding form

1. Management No.
2. Inspection Type
3. Inspected Institution
4. Inspector
5. Inspection date
6. Classification of Findings
7. Contents of findings
8. Basis for Findings
9. Corrective action required
10. Special notes related findings

Inspection result report

- General Information
 - ✓ object
 - ✓ method
 - ✓ period,
 - ✓ Inspectors
- Inspection Opinion
 - ✓ General Inspection result
 - ✓ Inspection result by item
- Inspection Result
 - ✓ summary of inspection
 - ✓ summary of Findings

attachment : Inspection Findings form

정기검사전례서

한울원자력본부
방사능방재분야 정기검사

(기간 : 2022.04.18 ~ 2022.05.06)

2022.03

한국원자력안전기술원
KINS KOREAN INSTITUTE OF NUCLEAR SAFETY

1. 목적
○ 원자력시설 등의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.
2. 목적
○ 원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.
3. 목적
○ 원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.

○ 목적
○ 원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.

○ 목적
○ 원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.

[별지 제1호서식]

원자력안전법(제40조제1항) 제2항			
연월일	검사종류	검사대상	검사결과
2022.04.18	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.19	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.20	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.21	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.22	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.23	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.24	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.25	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.26	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.27	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.28	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.29	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.30	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.01	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.02	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.03	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.04	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.05	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.06	정기검사	한울원자력본부 방사능방재분야	합격

한국원자력안전기술원(주)에 의해 작성된 문서이며, 무단으로 복제, 배포, 전파, 또는 기타 방법으로 공개될 경우 법적 책임을 지게 됩니다.

원자력안전법(제40조제1항) 제2항			
연월일	검사종류	검사대상	검사결과
2022.04.18	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.19	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.20	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.21	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.22	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.23	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.24	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.25	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.26	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.27	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.28	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.29	정기검사	한울원자력본부 방사능방재분야	합격
2022.04.30	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.01	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.02	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.03	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.04	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.05	정기검사	한울원자력본부 방사능방재분야	합격
2022.05.06	정기검사	한울원자력본부 방사능방재분야	합격

검사종류: 정기검사

검사대상: 방사능방재분야

검사결과: 합격

원자력안전법(제40조제1항) 제2항
정기검사전례서

(기간 : 2021.07.05 ~ 2021.08.06)

2021. 03

한국원자력안전기술원
KINS KOREAN INSTITUTE OF NUCLEAR SAFETY

원자력안전법(제40조제1항) 제2항
정기검사전례서

(기간 : 2021.07.05 ~ 2021.08.06)

2021. 03

한국원자력안전기술원
KINS KOREAN INSTITUTE OF NUCLEAR SAFETY

구분	항목	내용
1. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	
2. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	
3. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	
4. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	
5. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	
6. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	
7. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	
8. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	
9. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	
10. 목적	원자력시설의 안전 및 방사능 방재대책(이하 "방사능방재") 제2조, 제3조 및 제4조 제2항 제2호를 준수하기 위하여 정기검사를 실시한다.	

“Safety First KINS, trusted by the public”

Exercise Procedure and Guide

Regulatory Framework for Exercise in Korea

- The Regulatory Framework for nuclear emergency exercise in Korea is established as follows.
it provides appropriate governmental, legal and regulatory frameworks

Act	Fundamental principles of nuclear security and EPR regulation “Act on Physical Protection and Radiological Emergency” - Article 37(Radiation Emergency Exercises)
Enforcement Decree	Particulars entrusted by the Act - Enforcement Decree of the Act on Physical Protection and Radiological Emergency - Article 35(Emergency Exercise)
Enforcement regulation	Particulars entrusted by the and/or Decree and necessary for their enforcement “Enforcement Regulation of the Act on Physical Protection and Radiological Emergency” - Article 21(Emergency Exercise)
NSSC Notice	Details on technical standards, procedures of formats as delegated by the Act, Decree and/or Regulation “Regulation on Radiological Emergency Preparedness for Nuclear Licensees”(Radiation. 03) Article 21

NSSC

KINS

- | | |
|---------------------------------|---|
| Guide for review and inspection | <ul style="list-style-type: none">Nuclear Operator’s Emergency Exercise Evaluation Procedure (EP-13)Guideline for Evaluation of Radiological Emergency Exercise (KINS/GT-N028) |
|---------------------------------|---|

Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Obligation of National, local government & Licensees

Act, Article 37 (Radiation Emergency Exercises)

(1) The NSSC shall, every years, implement a radiation emergency exercises in which relevant central administrative agencies shall participate, as prescribed by Presidential Decree.

▷ **Unified Exercises : every year** (*NSSC, Central & Local government, Nuclear Licensees(one site) & KINS etc*)

(2) Each Prefecture(=Prefecture) Governor or the head of each City(county)(=City or county) having jurisdiction over all or part of a radiation emergency plan zone shall implement a radiation emergency Exercises, as prescribed by Presidential Decree.

▷ **Joint Exercises : every 2 year** (*each local(Prefecture) government*)

▷ **Local Drill (Public Protective Action Drill) : every year** (*each local government & city (or county)*)

(3) Each nuclear licensee shall formulate a radiation emergency Exercises plan, as prescribed by Ordinance of the Prime Minister, and implement it after obtaining approval therefor from the NSSC.

▷ **Full Participated Exercises : every year** (each two Units) (Based on the NPP)

※ Usually, one Power Plant is consisted with 2 Units

▷ **Drill : every quarter** (each two Units) (Based on the NPP)

Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Evaluation of emergency exercises & FEEDBACK

Act, Article 37 (Radiation Emergency Exercises)

(4) Each **Prefecture Governor and the head of each City**(County) having jurisdiction over all or part of a radiation emergency plan zone shall implement a radiation emergency drill under paragraph (2) and each **nuclear licensee** shall implement a radiation emergency drill under paragraph (3) and **report the results** thereof to the NSSC.

(5) The NSSC may evaluate a radiation emergency exercise implemented pursuant to paragraphs (2) and (3). In this case, when evaluating the exercise under paragraph (2), the evaluation shall be conducted jointly with the Minister of Public Administration and Security, as prescribed by Decree.

(6) Where deemed necessary upon a radiation emergency exercise under paragraph (1) and assessment under the latter part of paragraph (4), the NSSC may request or order the relevant Prefecture Governors, heads of the relevant City(County), heads of designated institutions, and nuclear licensees to take necessary measures, such as the supplementation of their emergency plan. In such cases, the Prefecture Governors, etc. in receipt of such request or order shall fulfill it and report the results* thereof to the NSSC.



Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Plan and notice of emergency exercises

Decree, Article 35 (Emergency Exercise)

(1) The **NSSC** shall **formulate** a radiation **emergency exercise plan** necessary for conducting radiation emergency exercises under Article 37 (1) of the Act.

(2) When the **NSSC** formulates a radiation emergency exercise plan pursuant to paragraph (1), it shall give **notice** thereof or instructions thereon, to the heads of related central administrative agencies who shall participate in the radiation emergency exercise; the Prefecture Governor and the head of the City(county) having jurisdiction over all or part of the relevant radiation emergency planning zone; the heads of the designated institutions; and relevant nuclear licensees.

Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Requirement of licensee's annual exercises plan

Enforcement regulation, Article 21 (Formulation of Radiological Emergency Exercise Plans)

(1) In accordance with Article 37 (3) of the Act, a nuclear licensee shall formulate a radiological emergency exercise plan for the following year, submit such plan to the NSSC by November 30 of each year and obtain approval thereof.

(2) The radiological emergency exercise plan as provided in the foregoing Paragraph (1) shall contain each of the following in connection with exercise:

1. Basic direction;

2. Type of exercise;

3. Purpose, details, methods, schedule and participants of radiological emergency exercises by type as provided in the foregoing Subparagraph 2;

4. Matters related with control and assessment of radiological emergency exercises by type as provided in the foregoing Subparagraph 2; and

5. Other matters that the nuclear licensee acknowledges as being necessary to conduct a radiological emergency exercise.

(3) Necessary matters in connection with radiological emergency exercises including the types and methods of radiological emergency exercises conducted by each nuclear licensee shall be determined and publicly notified by the NSSC.



Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Requirement of licensees' emergency exercises (method & type, cycle)

NSSC Notice(2019-15) "Regulations on Radiation Emergency Measures for Nuclear Operators"

Article 21 (Emergency Exercises and Drill)

- ① The initial and periodic emergency exercises, which tests the effectiveness of the nuclear emergency plan and the ability of each emergency organization to prepare for a radiological disaster, shall be described.
- ② **Types of exercises for each nuclear operator** pursuant to Article 21 (3) of the Enforcement Regulation are listed in Attached Table 2. (Next page)

Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Requirement of licensees' emergency exercises (method & type, cycle)

NSSC Notice(2019-15) "Regulations on Radiation Emergency Measures for Nuclear Operators" Table 2

nuclear operator except small scale nuclear operator NPP, Research reactor , Spent fuel storage facilities, etc. I,II category facility (based on IAEA standard)	1. Initial exercise: Prior to the start of use of nuclear facilities (prior to the initial rated thermal power of 5%), <u>full participant(or Joint) exercises shall be conducted.</u> In this case, nuclear licensee constructing nuclear facilities at the new site shall conduct joint exercises. 2. Drill: At least once every quarter for each emergency organization for one or two units (site for spent fuel storage and processing facilities), <u>emergency drill shall be conducted.</u> 3. Full participation exercise: All emergency organizations(TSC, OSC, EOF, etc.) shall participate and conduct emergency exercise at least <u>once a year</u> by one or two units (by site in the case of spent nuclear fuel storage and processing facilities). 4. Joint exercise: To conduct a emergency exercise by assuming an accident of the degree that residents of the radiation emergency plan area must evacuate or evacuate at least once every two years for each site according to the provisions of Article 35 (3) of the Decree. <u>(with local gov.)</u> 5. United exercise (National Exercise): Conduct emergency exercise assuming an accident to the extent that residents of the radiation emergency plan area must evacuate and evacuate in accordance with emergency exercise plan instructed in accordance with the provisions of Article 35, Paragraph 2 of the Decree.
---	---

Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Requirement of licensees' emergency exercises (method & type, cycle)

NSSC Notice(2019-15) "Regulations on Radiation Emergency Measures for Nuclear Operators" Table 2

Small scale nuclear operator	1. Initial exercise: Prior to the start of use of nuclear facilities , a emergency exercise involving all emergency organizations shall be conducted.
RW disposal facility, RI using facility	2. Drill: At least half of year for each emergency organization, <u>emergency drill shall be conducted</u>
(above 18.5 PBq), etc. III category facility (based on IAEA standard)	3. Full participation exercise: Conduct a emergency exercise in which <u>all emergency organizations participate at least once every two years</u> . In this case, if nuclear operators other than small-scale nuclear operators are located on the same site, it may be conducted together with radioactive disaster exercises in subparagraph 3 or 4 of the column of nuclear operators other than small-scale nuclear operators.

Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Requirement of licensees' emergency exercises (exercise plan & accident scenarios)

NSSC Notice(2019-15) "Regulations on Radiation Emergency Measures for Nuclear Operators"

Article 21 (Emergency Exercises and Drill)

③ A emergency drill plan shall be described to reflect the matters in each of the following subparagraphs.

1. Full participation exercise, joint exercise, and united exercise shall assume an emergency situation to the extent that residents of the EPZ can evacuate and evacuate under various meteorological conditions due to the radioactive release into the environment.
2. Plans and scenarios for conducting joint and united exercise shall be prepared in consultation with the local government having jurisdiction over the EPZ.
3. In the joint exercise and joint exercise plan, the role or duty of the external emergency countermeasure agency participating in the emergency exercise shall be described.
4. The exercise plan shall include the mobilization of people and materials from external disaster prevention countermeasure organizations and partner organizations to demonstrate the ability to cope with accident scenarios, and all major elements of the emergency plan and response organization shall be tested at least once every five years.

Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Requirement of licensees' emergency exercises (exercise plan & accident scenarios)

NSSC Notice(2019-15) "Regulations on Radiation Emergency Measures for Nuclear Operators"

Article 21 (Emergency Exercises and Drill)

- ③ 5. Drill shall enable testing, development, and maintenance of specific technologies such as accident evaluation, repair and restoration, communication, firefighting, medical care, environmental and radiation monitoring and evaluation, etc.
- 6. In the emergency exercise plan, the following items shall be inspected and the results evaluated, and methods for correcting and supplementing the deficiencies and vulnerabilities shall be described.
 - a) Matters concerning the suitability of the radiation emergency plan and its implementation procedures
 - b) Matters concerning nuclear disaster response facilities, etc.
 - c) Matters concerning the state of knowledge of missions and emergency response capabilities of emergency personnel
- ④ As in Attached Table 3, the plan for emergency exercise by sector and the timing of submission of the results of implementation shall be described



Act, Enforcement Decree & Enforcement Regulation about Nuclear Emergency Exercises & Drill

Requirement of licensees' emergency exercises (submission to regulatory body)

NSSC Notice(2019-15) "Regulations on Radiation Emergency Measures for Nuclear Operators"

Article 21 (Emergency Exercises and Drill) Table 3 summary

- 1) Full participation exercise plan shall be submitted **before 1 Month** of the exercise date
- 2) United & Joint exercise plan shall be submitted **before 3 Month** of the exercise date
- 3) Exercise(or Drill) result (report) shall be submitted **after 3 weeks** of the exercise(or Drill) date
- 4) Correction measures for the issue identified during exercise(or Drill) shall be submitted **after 3 Month** of the exercise (or Drill) date

“Safety First KINS, trusted by the public”

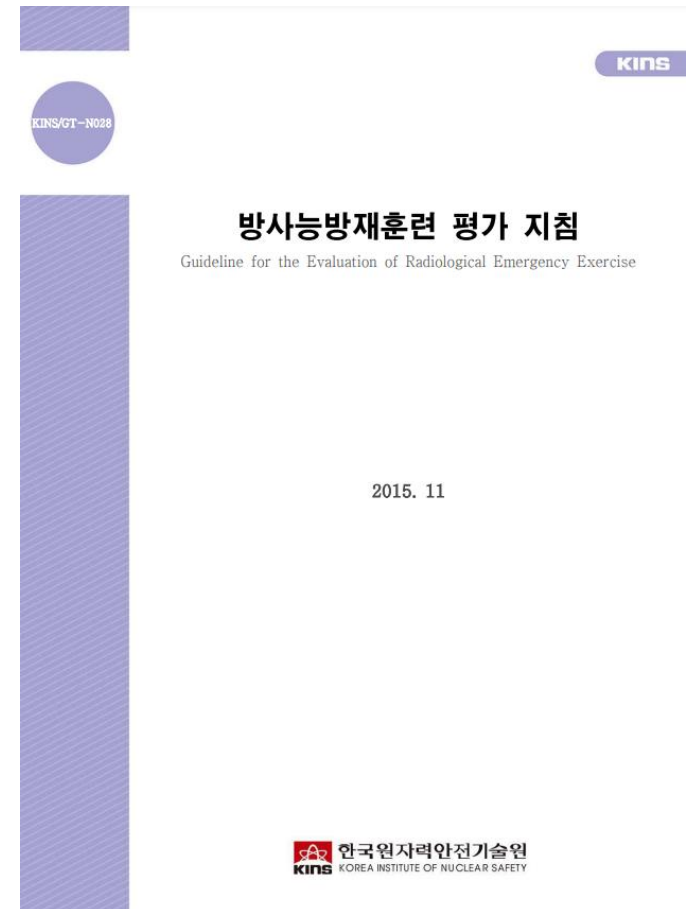
Evaluation of Nuclear Operator’s Emergency Exercises

Evaluation of Nuclear Operator's Emergency Exercises

Guideline for Evaluation of Radiological Emergency Exercise (KINS/GT-N028)

Evaluation Items

1. Accident assessment and response measures (for MCR)
 - a) Emergency notification and communication
 - b) Initial emergency organization conversion
 - c) Accident response and emergency classification
 - d) Analyzing and responding to abnormal operating conditions
2. Emergency technical support (for Technical Support Center)
 - a) Accident evaluation and classification
 - b) Emergency notification and communication
 - c) Source-term evaluation according to accident situation
 - d) Recommendation for Urgent Protective Action for Public
 - e) On-site personnel protection measures
 - f) Accident expansion prevention and countermeasures





Evaluation of Nuclear Operator's Emergency Exercises

Guideline for Evaluation of Radiological Emergency Exercise (KINS/GT-N028)

Evaluation Items

3. Accident impact assessment and Recommendation Public Protective Action (for Emergency Operation Facility)
 - a) Emergency notification and communication
 - b) Measurement and evaluation of radiation inside and outside the site
 - c) Evaluate exposure dose and recommend measures to protect public
 - d) Personal protective measures
 - e) Operation of virtual response organization
4. Environmental radiation monitoring and evaluation (for Environmental Laboratory)
 - a) Environmental radiation monitoring activities in case of nuclear emergency



Evaluation of Nuclear Operator's Emergency Exercises

Guideline for Evaluation of Radiological Emergency Exercise (KINS/GT-N028)

Evaluation Items

5. Accident operation support/Radiation monitoring and evaluation/Fire, medical, relief, etc. (for Operating Support Center)
 - a) Establishment and execution of emergency maintenance plan
 - b) Radiation level measurement
 - c) Radiation safety management in case of emergency
 - d) Personal exposure dose assessment and record keeping
 - e) Plan for reducing exposure dose of emergency maintenance workers
 - f) Evacuation of workers in the management area
 - g) Medical relief for overexposure and contaminated patients
 - h) Fire response measures in the management area, etc.
6. etc.
 - a) Interest and participation in exercise
 - b) Training scenarios and messages
 - c) Training progress and control
 - d) Emergency response facilities and equipment



FY2015, HANBIT UNITED(NATIONAL) NUCLEAR EMERGENCY EXERCISE

QnA

THANK YOU

