

ON-SITE EMERGENCY PLAN FOR NUCLEAR POWER PLANT ACCIDENT

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Abstract

On-site Emergency Plan (EP) assumes more importance in the requirements aiming to secure the life of the employees. The nuclear emergency plan involves a protocol that addresses structures, activities, and procedures led to manage and decrease the effects of a nuclear emergency.

This paper presents how to secure and protect the employee of the nuclear power plant during an occurrence of accidents on site and the procedures that should follow during the accident. During the accident, the shift supervisor will lead the on-site emergency plan where he classifies the event, call emergency team, and notify Emergency Response Organization and the regulatory body. After that the Technician of radiation safety starts his mission as he prepares and recommends the protective measures, sending monitoring group, and estimate the dose. Also, the Mobile monitoring group surrounds the Nuclear power plant for estimation dose.

For the off-site emergency plan, it will be my future work to prepare an emergency plan including on-site and off-site emergency plan, what is the difference between them, and how to integrate them.

Introduction

On-site EP is the basic documentation for Employees Protection which lays emphasis on extraordinary events related to radiological hazard to power plant surroundings and the personnel. The emergency plan shall include organizations for emergencies including a combination of nuclear and non-nuclear hazards according to IAEA TEC-DOC 955 and updated 953.

After Sept. 11, 2001, the Nuclear Regulatory commission (NRC) re-examined nuclear plant emergency plans with a greater confirmation of the potential for terrorist effects, and the industry performed improvements to its EP programs based on that review.

Emergency plans continually develop. For example, modifications have included including lessons learned from Fukushima Daiichi accident 2011 in Japan. The plans can be executed during a wide range of security-related events or severe natural events.

as all the emergency plans focus on off-site further than on-site because they aim to protect the public and their foods and drinks, so we will concentrate on on-site, because if the on-site Emergency plan failed to protect the employee and the plant, it will be more severe to the public. So we prepare an on-site Emergency plan through Assessment of threats, define the responsibilities on-site, drill and exercises, and time to take action. So establishing capabilities for emergency preparedness and response is one of the important elements in the development of a national infrastructure

for a Nuclear power program. Emergency planning is an essential element of overall plant safety because this provides the last level of defense in depth for protecting the public, the environment, and property from a radiation accident.

Methodologies

We apply On-site emergency plan in order to secure and protect the employee, by following these steps:

- Classify event, if the alert is 1st degree or 2nd degree. This classification occurs by shift supervisor during ongoing of event,
- Call Emergency team immediately after classification by shift supervisor,
- Notify Emergency Response Organization (ERO) by shift supervisor during 15 min after classification,
- Notify the regulatory body after classification through the shift supervisor,
- Notify local authorities within 30 min after classification if it is 2nd degree by the shift supervisor.
- Protective measures immediately after classification if it is 2nd degree by technician of radiation safety,
- Within 30 min after classification, sending monitoring group by the technician of radiation safety,
- Estimate of doses Within 30 min after classification by technician of radiation safety,
- Surrounding of the plant within one hour for estimating of doses by Mobile monitoring group.

Table1 Main activities in On-site events

No	Activity	Classification of events		When	who
1	CLASSIFY event on the base of nuclear facility state and radiation situation	Alert (1st degree)	On-site emergency (2nd degree)	During ongoing of event	Shift supervisor
2	CALL EMERGENCY TEAM	√	√	Immediately after classification	Shift supervisor
3	NOTIFY ERO	√		Within 15 min. after classification	Shift supervisor
	Call ERO		√		
4	Notify Regulatory body	√	√	after classification – by phone	Shift supervisor

				Within 45 min. after classification By letter, by e-mail, ...	
5	NOTIFY local authorities		√	within 30 min after classification	Shift supervisor
6	protective measures		√	Immediately after classification	Technician of radiation safety
7	SEND monitoring group	√	√	Within 30 min after classification	Technician of radiation safety
8	ESTIMATION OF DOSES	√	√	Within 30 min after classification	Technician of radiation safety
			√	Surrounding of the plant within one hour	Mobile monitoring group

ERO: Emergency Response Organization.

1st Degree - "the alert state" - it is an event in progress or has happened, including actual or potential substantial degradation of the safety level.

2nd Degree - "On-site emergency" - it is a condition, leads to radioactive material release outside of buildings of the nuclear facility.

Results

The Plan provides for the onsite of nuclear power plant to verify the capability to respond to an incident requiring the response in the following areas:

- Adequacy of timing and content of EP Preparedness and methods,
- Emergency equipment and communications networks,
- Notification offsite.

The principle of Onsite emergency includes at least classification of events, organization of emergency response, warning and notification, connection to offsite, and training and drills.

Drills include activities such as coordination and management of emergency response, protective action

decision-making, plant system repair and corrective actions, and accident assessment.

Drills and exercise scenarios are developed to provide a method to test and evaluate the plant Emergency Program, and shall include, as appropriate:

- Basic objective of each drill and exercise,
- Date(s), time period(s), location(s), and participating organizations;
- Simulated events;
- Description of arrangements for and advance materials to be provided to official observers.

The following Employees Protection facilities shall be able to protect the NPP personnel in case of the event:

- Shelters, to provide partial protection from radioactive contamination and irradiation.
- Gathering Points, to concentrate Employees who are not considered to be directly applied to emergency response or accident mitigation for evacuation.
- Corporate Health Centre, for providing medical help in case of injuries or radiological accidents.

For the personnel of the nuclear facility shall be shelters and gathering points ready in the area NPP. Employees will be informed about place of sheltering through the training. Principle is - the place of sheltering is closest to their permanent workplace

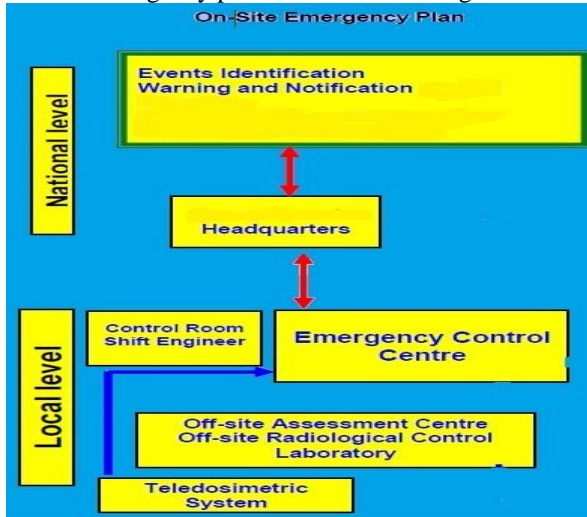
Table2 Time Objectives for Hazard Category I

Element	Facility
Classify the emergency	< 15 min
Notify local authorities after classification	< 30 min
Fully activate emergency organization	< 2 h
Notify potentially affected States through the IAEA	
Initiate mitigation actions	< 15 min
Activate Technical Support Centre	< 1 h
Recommend urgent protective actions for the public based on emergency classification	< 30 min
Make decisions on urgent protective actions	< 30 min
Initially warn and inform the public within the PAZ and UPZ of urgent protective actions required	
Conduct environmental monitoring near the facility	< 1 h
Conduct environmental monitoring within PAZ	-
Conduct environmental monitoring within UPZ	-

PAZ: Precautionary action zone

UPZ: Urgent protective action planning zone

On-site emergency plan: as described in fig. I:



Conclusion

The on-site plan specifies how plant personnel will respond to an incident on plant property, classify the event, notify state and local emergency response officials, and manage communications.

Exercise scenarios should be at least once every six years, an exercise is initiated during off-hours (between 6 pm and 4 am on a weekday or during a weekend).

The emergency response training program is provided to personnel who may be called upon to respond to an emergency. The training program includes practical drills. The instructor/evaluator immediately corrects any erroneous performance noted during these practical drills. Training is also provided to the plant Fire Brigade. This training is coordinated by the Nuclear Training Manager. Training is provided to security personnel based on each person's specific tasks.

When an event will be announced, start to perform protective measures for employees of nuclear facility and personnel in the area of the NPP. So Urgent protective measures for the personnel are recording and checking movement of persons on the nuclear facility area, gathering and sheltering of persons, iodine prophylaxis, and personal protection.

The Recovery Plan shall provide the general sequence of steps from On-site or Off-site emergency to stabilized and safe condition of NPP. The sequence shall be sufficiently flexible to enable it to be used more in existing or postulated conditions.

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