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In the event of any differences in interpretation of this guide, the Finnish version shall take precedence over this translation.

# NUCLEAR POWER PLANT EMERGENCY PLANS

CONTENTS



## 1. GENERAL

Power companies and authorities shall be prepared against accident conditions at nuclear power plants. This requires plans in which the actions to be taken by the power companies and by the authorities in accident conditions are determined beforehand in a detailed manner. The preparedness required in the plans is achieved with properly planned and executed training. The preparedness is ascertained and maintained with regular exercises.

The duties of the rescue service authorities are defined in the general guide issued by the Ministry of the Interior for the preparation of a rescue plan concerning nuclear power plants (see reference). The purpose of the rescue service arrangements is to mitigate the consequences of

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an accident and to prevent and restrict further damages. Under accident conditions it is important that the various authorities and the power companies can work together flexibly. The duties and responsibility of the authorities in the rescue service are determined by the stipulations and regulations concerning the general duties of the authorities in question. This means that each administrative sector is responsible for the development of the rescue service in its own field of activity. A detailed rescue service plan is prepared for an area that extends up to a distance of about 20 kilometres from the power plant. General rescue plans in an area extending up to about 100 kilometres from the power plant are inspected taking into account special features caused by the nuclear power plant.

The general guides issued by the Ministry of the Interior determine the duties of the Institute of Radiation Protection as an expert body participating in the rescue service. According to the guides, the Institute

- summons the expert group of radiation control
- sends to the accident site a movable radiation measurement station, which performs external radiation measurements and activity measurements needed for the rapid assessment of the situation
- puts its laboratory on the alert and, when necessary, sends experts to the accident site and to management groups.

The Institute of Radiation Protection acts as the authority controlling the safety of nuclear power. Under accident conditions the Institute

- sets up an office group, which reviews the proposals given by the power company for actions at the plant and makes preparations for the necessary decisions

- sends to the plant site a plant group, which follows the actions at the plant and takes care of communication between the office group and the plant
- performs radiation measurements that are necessary from the point of view of safety.

## 2. SCOPE

This guide presents general requirements concerning the preparations that the operators of nuclear power plants shall make to provide against accidents.

## 3. NUCLEAR POWER PLANT EMERGENCY PLAN

The operators of nuclear power plants take care of the safety arrangements at the plant site and in its vicinity. Nuclear power plants shall have an emergency organization and an emergency plan of their own for accident conditions. Emergency planning shall be closely connected with the rescue service plans prepared by the authorities. The emergency plans shall have the acceptance of the Institute of Radiation Protection and they shall be sent to the rescue service authorities for information.

A preliminary description of the emergency plan shall be given in the construction permit phase. The final emergency plan shall be presented during the operating license review.

The emergency plans of nuclear power plants shall include at least the following items:

- classification of accident conditions and description of type accidents
- description of the emergency organization

- alarm and communications arrangements
- plans relative to the restriction of the accident
- protection and assistance actions for the protection of the personnel
- description of the emergency equipment
- maintaining preparedness (training and exercises).

Modifications to be made to the emergency plan shall be submitted to the IRP for approval. Changes caused by the updating of the emergency plan shall be sent to the IRP for information.

## 4. RELEASE AND ENVIRONMENTAL MEASUREMENTS IN ACCIDENT CONDITIONS

The operator of the nuclear power plant shall in all accident conditions be prepared to evaluate the amounts and compositions of releases induced during the accident and to make predictions concerning their behaviour. For this purpose, the operator shall plan measurement programmes that will be implemented both inside the plant and in its vicinity in order to find out all exceptional releases as reliably as possible. In addition, the operator of the nuclear power plant shall be prepared to make measurements in the vicinity of the plant with the purpose of helping the rescue service authorities in charting the dispersion of radioactive substances and the need for actions intended for the protection of the population.

Besides the continuous measurement of radioactive releases at the nuclear power plant, there shall be a preparedness to measure exceptional releases of radioactive substances at all pertinent release rates. These requirements are more closely dealt with in Guides YVL 7.6 and YVL 7.11.

The nuclear power plant shall have the equipment of at least two measurement patrols in a state of continuous

availability and properly located. Each measurement patrol shall be able to measure exposure rate at all intensities that can prevail in the environment from the value 1 $\mu$Sv/h (0.1 mR/h) upwards. Each measurement patrol shall have a car at its disposal and they shall be in contact with the emergency chief at the power plant by means of a radio telephone or at least a car phone. At least one measurement patrol shall be able to take samples and to measure them in order to determine the concentrations of radioactive substances in the air. There shall also be available a sufficient number of integrating and/or registering dosemeters to be placed into the environment. As part of the emergency plan, there shall be a measurement plan for conducting measurements in the vicinity of the plant. Local conditions shall be taken into account in preparing the plan, which shall also indicate the level of personnel preparedness, the schedule for the actions to be taken, the amounts and types of measuring equipment reserved for the purpose, and personal protective devices.

## 5.
## MAINTAINING PREPAREDNESS

The emergency plan shall be exercised in practice before the loading of each nuclear power plant unit. During the operation of the plant, exercises of the emergency plan shall be conducted at least once every year.

## 6.
## RECOMMENDATIONS, REFERENCES

General guide for preparing a rescue service plan concerning nuclear power plants, Ministry of the Interior, Rescue Department, 8.7.1976.

Emergency Planning and Preparedness for Nuclear Power Reactors, Regulatory Guide 1.101, U.S. Nuclear Regulatory Commission, October 1981, Revision 2

An Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants, WASH-1400 (NUREG-75/014), U.S. Nuclear Regulatory Commission, October 1975.