

Implementation of Construction Work for Emergency Response Center and Installation of Fire Protection Equipment

1. Emergency Response Center

(1) Overview of requirements in new standards and status of study of conformity

The requirements for the Emergency Response Center are specified by regulations including “Regulations concerning Standards for the Position and Structure of and Equipment used in Nuclear Reactors employed in Power Generation and Auxiliary Facilities” and “Regulations concerning Technical Standards for Nuclear Reactors employed in Power Generation and Auxiliary Facilities.”

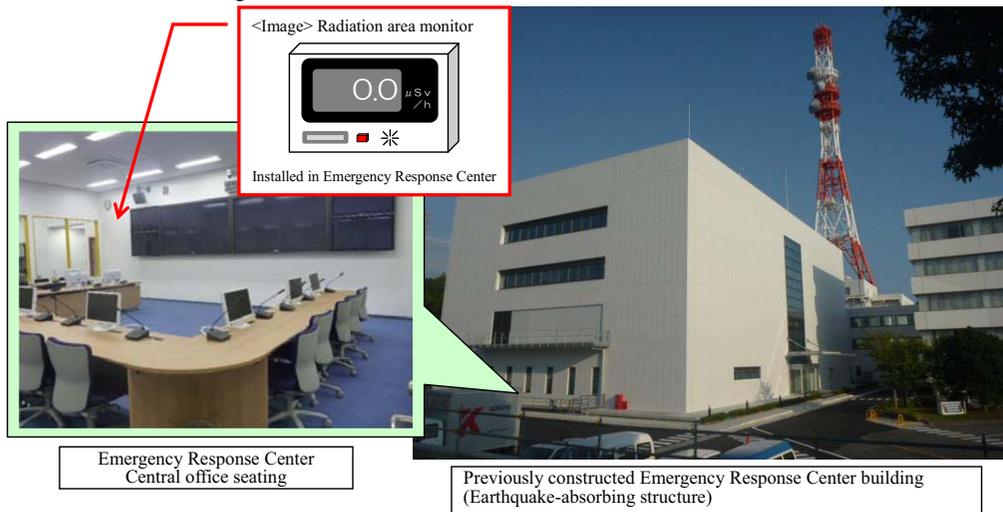
Chubu Electric began operating a seismically isolated Emergency Response Center in 2010, and is now conducting a detailed study of the conformity of this facility with the new regulations, as per the table below.

| | Overview of requirements | Overview of status of equipment and countermeasure items under study |
|--|---|---|
| Livability | Adequate shielding design and ventilation design, with the prevention of the effective dose to which emergency response personnel are exposed from exceeding 100mSv in seven days as the criterion for judgment Installation of equipment (radiation area monitors) for the measurement of the dose equivalent rate in the Emergency Response Center | ○Radiation area monitors are not installed and installation work will therefore be conducted ○We project that it will be necessary to enhance shielding measures (thicken existing building walls, etc.) and improve the ventilation system to enable replacement of filters while the Emergency Response Center is in use in order to satisfy criteria for effective dose, and we are therefore examining detailed specifications, etc. |
| Earthquakes /Tsunami | No effect from standard seismic motion or standard tsunami | We predict that existing facilities will satisfy requirements, but we are conducting further verifications based on consideration of standard seismic motion and the standard tsunami |
| Common factors | Ensuring that the Emergency Response Center and the Reactor Control Room do not lose functions simultaneously due to common factors | We predict that existing facilities will satisfy the requirements, but we are presently conducting detailed studies |
| Understanding of type of accident | Accurate grasp of nature of accident, etc., preparation of necessary communications and other equipment | We predict that existing facilities will satisfy the requirements, but we are presently conducting detailed studies |
| Power supply | Availability of multiple or diversified power sources | We predict that existing facilities will satisfy the requirements, but we are presently conducting detailed studies |
| Prevention of importation of contamination | Provision of partitioned areas, etc. for changing clothes, etc. to prevent importation of contamination from outside | We predict that existing facilities will satisfy the requirements, but we are presently conducting detailed studies |
| Oximeters | Installation of oximeters of sufficient precision to accurately determine whether oxygen levels will impede activities | Oximeters have not yet been installed, and installation work will therefore be conducted |

(2) Installation of radiation area monitors and oximeters

As indicated in the table above, we are studying the necessary additional measures based on the new standards, and we have decided to commence with the installation of essential measurement equipment, consisting of oximeters and area monitors to measure the indoor radiation levels. We are seeking to finish this work within 2013.

Figure 1 Installation of radiation area monitors and oximeters



2. Fire protection equipment

(1) Overview of requirements of new standards and status of study of conformity

The “Regulations concerning Standards for the Position and Structure of and Equipment used in Nuclear Reactors employed in Power Generation and Auxiliary Facilities,” and the “Standards for Examination of Fire Protection in Nuclear Reactors employed in Power Generation and Auxiliary Facilities,” which provides detailed stipulations based on the former, specify fire protection from the perspectives of prevention of fires, detection and extinguishing of fires, and mitigation of impact of fires in order to ensure that the safety of nuclear facilities is not threatened by fire.

Chubu Electric has always worked to ensure safety by implementing a variety of measures in the areas of prevention of fires, detection and extinguishing of fires, and mitigation of impact of fires, but the new standards specify items for which even higher reliability must be ensured, and we are therefore engaged in conducting detailed studies as per the table below.

| | Overview of requirements | Status of equipment and overview of items under examination |
|--------------------------------------|--|---|
| Prevention of fires | Measures to prevent leaks from equipment containing combustible or inflammable substances, measures to prevent spread of leaks, etc. | In addition to leak prevention measures such as welding the pipes of pumps and other equipment containing lubricating oil, we have put in place measures to ensure that leaks do not spread, for example through the installation of preventive barriers. We are now examining measures to increase reliability, for example by installing barriers at the base of certain equipment in order to minimize the spread of leaks. |
| Detection and extinguishing of fires | With regard to equipment with functions related to the shutdown or cooling of the reactors, etc., design to ensure limitation of fire impact, early detection of fires, and effective fire extinguishing | We have installed fire detection and fire extinguishing equipment including fire detectors, fire extinguishers, and sprinklers, and we are currently examining the following measures in order to realize the necessary increases in reliability: (Fire detection equipment) ○Close inspection and, as necessary, modification of status of installation of fire detection equipment based on the perspective shown at left ○Early detection of fire, for example through the use of different types of detector (Fire extinguishing equipment) ○Further installation of fixed fire extinguishing equipment to ensure that fire extinguishing efforts are conducted smoothly |
| Mitigation of impact of fires | Multiple devices are installed to shut reactors down in a disaster; these systems must be separated, for example through the use of dividing walls able to maintain function for at least three hours, in order to ensure that they are not simultaneously damaged due to a disaster | With regard to system separation, we are conducting combustion tests on auxiliary equipment, panel boards, etc. in order to determine that there is no effect on other systems, and we will study methods of system separation specified by the new standards |

(2) Installation of fire detection equipment

As indicated in the table above, based on the new standards, we are conducting detailed studies in order to increase the reliability of fire protection countermeasures, and as part of this process we have decided to install fire detectors in the areas in which cables essential to the safety of Units No. 3 and 4 are installed. We are seeking to finish this work within 2013.

Fig. 2 Work to install fire detection equipment

Schematic diagram of system (example of Hamaoka Unit 4)

