# TEPCO's In-house Competition for Improving Radiation Protection Skills

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1. About our In-house Techniques and Skills Competition

   We periodically hold The In-house Techniques and Skills Competition for the maintenance and improvement of the technical skills of personnel in various fields, such as power transmission, power distribution and power generation. The FY2007 In-house Techniques and Skills Competition was carried out at the radiation control department of the nuclear power station. The In-house Techniques and Skills Competition aims at improvement in the capacity and motivation required for radiation control, and as it becomes an opportunity to publicize the techniques and skills of radiation control, the participating members can gain a new appreciation of the level of present techniques and skills and can aim at the sharing good practices.

2. Outline of the FY2007 In-house Techniques and Skills Competition

   We carried out the competition on April 10, 2008 at the Fukushima Daiichi Nuclear Power Station of the Tokyo Electric Power Co., Inc. A chamber that simulated the controlled area was installed in a skill training center on the premises of the Fukushima Daiichi Nuclear Power Station, and one type of event scenario in which the leakage of radioactive substances based on the experience of the Kashiwazaki–Kariwa Nuclear Power Station in the Niigata Chuetsu-oki Earthquake was prepared. Following the scenario, the participating teams responded to the event, and the secretariat examined and gave scores to each team. Each team was given 70 minutes to complete their tasks. Each team consisted of six persons on each team and three teams, one team participating from each nuclear power station that Tokyo Electric Power Co., Inc. possesses (the Fukushima Daiichi Nuclear Power Station, the Fukushima Daini Nuclear Power Station and the Kashiwazaki–Kariwa Nuclear Power Station).

3. Content of the Competition

   A scenario was prepared concerning a leakage event in a controlled area in which it was possible to examine the teams' recognition of abnormal states, assessment of the amount of leakage, instructions on protective measures for subsequent operations and cleanup. The flow of the competition is shown in Fig. 1.

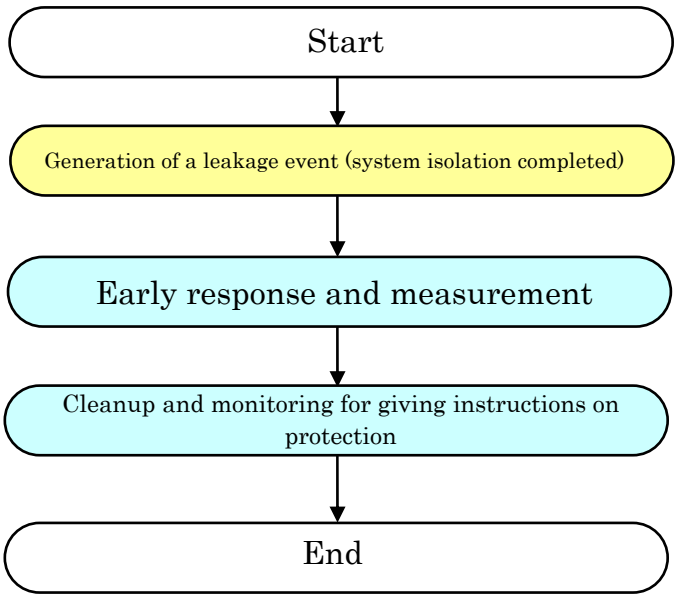

Fig. 1 Flow of Competition

(1) Examination Items

The techniques and skills required for the radiation control personnel are established as examination items from the three viewpoints of safety, quality and efficiency, and their achievement criteria were clearly set down in a measurable and observable form, turning them into the definitions of the examination items (refer to Table 1). In this manner, examination was performed objectively in such a way that individual differences might not occur.

(2) Scoring method

40 points, 30 points and 30 points were assigned respectively to the safety, quality and efficiency categories, respectively, and each team was scored with a demerit point system.

(3) Scenes from the competition

Response to the water leakage in the non-controlled area is shown in Fig. 2, and response to leakage in the simulated controlled area is shown in Fig. 3. The competition was held in a tense atmosphere as if it were real.

Table 1 Examination Items

| Needed Technique and Skill (Examination Item) | | Examination Criterion |
|---|---|---|
| Safety | Safety check before operation | Was the safety check (the content of the event, protective equipment, planned dosage and division of roles) before the operation carried out appropriately? |
| | Selection and wearing of protective clothes and equipment | Were protective cloth and protective equipment suitable for the on-site situation selected and worn? |
| | Management in special measure area | Was management (time management and the utilization of low dosage areas) in the special measure area able to be carried out? |
| | Prevention of bodily contamination | Were measures to prevent bodily contamination (changing procedure) able to be carried out? |
| Quality | Setup of partition | Was appropriate partition setup (setup to prevent the spread of the contaminated area) carried out before the commencement of field operations? |
| | Use of radiation measuring instruments | Were radiation measuring instruments correctly handled? |
| | Radiation measurement | Were various types of radiation measurements (sampling method, selection of measuring instruments, prevention of the spread of contamination) carried out correctly? |
| | Radioactivity assessment | Was the assessment of the amount of radioactivity, etc. carried out correctly? |
| | Prevention of the spread of contamination | Were the measures to prevent the spread of contamination able to be carried out? |
| | Report and communication | Were the teams able to report and communicate as required? |
| | Planning of protective measures | Was the planning of radiation protective measures for subsequent operations appropriate? |
| Efficiency | Dosage management | Total radiation exposure of each team member |
| | Time spent before assessment | Time spent before the assessment and report of the amount of radioactivity of the leaked water in a non-controlled area |
| | Response time | Duration time from the commencement of the competition to the end of response |

Fig. 2 Response in Non-Controlled Area

Fig. 3 Response in Simulated Controlled Area

4. Results of the Competition

The three teams received the same scores for the quality and safety examination items. The Fukushima Daini Nuclear Power Station Team (Fig. 4) received a high score for efficiency and won first prize.

Fig.4 Fukushima Daini Nuclear Power Station Team Winning First Prize

5. Looking Back on the Competition

With various people including those from municipalities and nuclear safety inspectors observing the competition, we were able to publicize the efforts of our radiation control department regarding water leaks. It seems that the appreciation of the level of techniques and skills for radiation control and motivation for capacity enhancement have been acquired. Each team had repeated drills in preparation for the competition, which has resulted in the enhancement of techniques and skills in a way greater than the competition itself. The tasks, etc. brought up in the review discussion shall be examined and utilized in practical business from now on.