Section 3 : Points of concern in conducting fire fighting and rescue activities for accidents at facilities that handle radioactive isotopes, etc. and during the transportation of radioactive substances, etc.

3 - 1 Points of concern in conducting general fire fighting and rescue activities at facilities that handle radioactive isotopes, etc.

Points of concern in conducting general fire fighting and rescue activities at facilities that handle radioactive isotopes (RI), etc. are the same as those of the activities at nuclear power facilities, etc.

As the Nuclear Disaster Law does not apply to disasters at RI handling facilities, the reporting on specified events or the declaration of a nuclear power emergency case is not made.

If a radioactive substance is mixed in with metal scrap, the following measures must be taken.

3 - 1 - 1 Measures to be taken if a radioactive substance is mixed in with metal scrap

If it is found that a radioactive substance is mixed in with metal scrap, measures must be immediately taken to secure safety, etc. Upon receiving a report from a business body, etc., the fire department must contact the relevant municipalities and prefectural governments, and exchange information with the Ministry of Education, Culture, Sports, Science and Technology. Following which, the fire department must take appropriate measures, as necessary, such as setting up a fire warning area, making announcements to residents, etc. according to the protocol described above.

3 - 2 Points of concern in conducting general fire fighting and rescue activities related to the transportation of nuclear fuel materials, etc.

General fire fighting and rescue activities related to the transportation of nuclear fuel materials, RI, etc. are basically the same as those performed at nuclear power facilities, etc. Therefore, only the points of concern that are different from those at nuclear power facilities are described herein.

As the Nuclear Disaster Law does not apply to disasters related to the transportation of RI, etc., the reporting on specified events or the declaration of a nuclear power emergency case is not made.

3 - 2 - 1 General rules

When it becomes clear that a disaster will not lead to a specified event, as a rule, the protocol will be shifted to that of normal fire fighting activities. However, if activities are performed in a position close to the transportation container, the protocol of clause 3-2-3 and the following clauses must be followed in order to protect rescue workers against radiation exposure.

3 - 2 - 2 Measures to deal with an accident in the initial stage (Measures to be taken by the nuclear power corporation in case of dangerous situations)

With regard to the measures to be taken in dangerous situations related to the transportation of nuclear fuel materials outside the nuclear facility, the relevant regulations are provided in the "Regulations concerning measures to be taken in case of dangerous situations related to the transportation of nuclear fuel materials outside the facility", and with regard to the measures to be taken in dangerous situations related to the transportation of RI, etc., the relevant regulations are provided in the "Regulations concerning measures to be taken in case of dangerous situations related to the transportation of radioactive isotopes, etc. outside the facility".

The main points of concern in those regulations are as follows:

- ○ If a fire occurs in a railway car, a tracked car, a trackless car, a cable car, a motor vehicle, a light vehicle, a ship or an aircraft which is used for the transportation of nuclear fuel materials or RI, etc. (hereinafter referred to as "nuclear fuel materials, etc."), or a fire may spread to such vehicles, immediately report the fire to the fire department officials while making efforts to fight the fire or prevent the spread of the fire.

3 - 2 - 3 Collecting information when receiving a report

When receiving a report on an accident such as a fire related to the transportation of nuclear fuel materials, etc., information must be collected on the following items.

When receiving a report, first decide whether or not the accident happened during the transportation of nuclear fuel materials, etc., and then collect information on the disaster site.

If the accident involves nuclear fuel materials, etc., information must be collected on the following items:

(1) Type of disaster (Fire, Rescue work, Emergency case, etc.)
(2) Place of disaster
(3) Existence or nonexistence of a leak of nuclear fuel materials, release of radiation, etc.
(4) Cargo (Existence of nuclear fuel materials)
(5) Type of cargo (Type L, Type A, Type B, Type IP), Contents (Type of nuclear material), Signs (White sign for Class 1, Yellow sign for Class 2, Yellow sign for Class 3), Transport index
(6) Name of the person who reported the accident and the person who is responsible for the transportation, or other experts; and the method of contact
(7) Name of the relevant business facility and the method of contact

In addition, when receiving a report, the fire department must check the situation of the measures taken by the nuclear power facility (or the facility handling RI, etc.) in respect to the items described below, and transfer such information from the facility to the fire fighting team.

○ The fire department must be ready to provide the fire fighting team, on its arrival at the site, with information on the outline of the accident, the degree of the radiation dose, and any other information required for setting up the warning area and radiation hazard area.

3 - 2 - 4 Measures to be taken when the fire fighting team is mobilized

The fire fighting team shall maintain a system for the detection of radiation in advance, so that they may start detection activities as soon as they arrive at the site. (Refer to clause 3-2-7 for the radiation detection activities after arrival at the site.)

3 - 2 - 5 Activities of the first team to arrive

a. The protocols for collecting information shall be as described in the following items.

If the responsible personnel of transportation or other experts are present at the site, immediately collect information from them.

For RI, etc., if the responsible personnel of transportation or other experts are not present at the site, collect information from the RI handling company of the shipper or consignee, the Japan Radioisotope Association, etc.

(1) It is compulsory for the transportation vehicle to carry the "document (document to be carried) describing the handling methods of nuclear fuel materials (RI, etc. are regarded as radioactive substances)" (excluding Type L), so where possible, make use of this document.

(2) The collection of information should be performed at a safe distance, according to information (for RI, etc., information on the contents) from the responsible personnel of transportation.

(3) In the case of a transportation vehicle carrying Type L cargo as a single object for transportation, the radiation dose of the contents is very small. Therefore, even if a fire occurs, in general the effect on human health and the environment caused by the contents of the cargo is minimal, as there is a significantly reduced possibility of radiation exposure or contamination during fire fighting activities.

In such cases, the following items of the cargo should be checked:

① Visually check any damage to the cargo (deformation, breakdown), insecure tie-downs, condition of the cargo.
② If a radiation measurement device is available, check if any leaks have occurred from the cargo.
③ If it is impossible to approach the cargo due to fire, etc., check the spatial radiation dose rate near the site and the surface concentration of contamination on the road.

a. The contents of the information to be collected are as follows.

(1) Properties of nuclear fuel materials
① Names of nuclear fuel materials
② Possibility of contamination or the spread of contamination

(2) Effects due to fire, etc.
① Any cracking of the transportation container, and its degree
② Position of the transportation container in the fire
③ Situation of detection, such as the strength of radiation, etc.
④ Possibility of effects on the surrounding area

3 - 2 - 6 Setting up a command headquarters at the site, and the items to be controlled

With regard to the setting up of a command headquarters at the site and the items to be controlled, the following points need to be considered

a. Standards for setting up a command headquarters at the site

In the event that contamination by nuclear fuel materials, etc. may spread to the surrounding area

b. Location for setting up the command headquarters at the site

The headquarters should be located an appropriate distance from the transportation container in order to minimize radiation exposure.

c. The responsible personnel of transportation or other experts should be included as members of the headquarters in order to seek advice and discuss fire fighting activities. (For RI, etc., this is limited to the case of Type B cargo.)

If experts are not present at the site, request the dispatch of personnel from relevant facilities located nearby For RI, etc., request the dispatch of personnel from relevant facilities located nearby or the Japan Radioisotope Association, etc.

d. Items to be controlled

In the command headquarters at the site, the following items should be performed after discussion with the responsible personnel of transportation or other experts.

(1) Collaboration with the responsible personnel of transportation or other experts
(2) Making requests to the responsible personnel of transportation or other experts

3 - 2 - 7 Radioactive ray detection activities

Concerning leaks of radioactive substances or radiation exposure as a result of accidents during the transportation of nuclear fuel materials, etc., radioactive ray detection activities are performed in order to control the safety of rescue workers and prevent the spread of radioactive contamination.

Radioactive ray detection activities shall be started upon arrival at the site and continued until the end of all fire fighting activities. In addition, for the detection of radiation from nuclear fuel materials, etc., it is necessary to take into account the standards for the specified events and the declaration of an emergency case, as set forth in the Nuclear Disaster Law.

Detection activities at the site shall be performed as follows:

(1) Through discussion with the responsible personnel of transportation and other experts, the specific policy for the detection activities shall be determined. In this case, positive collaboration with the transportation personnel should be maintained.

(2) To check the functions of the radioactive ray measurement device and the individual alarm dosemeter, always perform a test operation in advance.

(3) Place priority on the detection of radioactive rays in the most critical areas, of those areas required for fire fighting activities.

3 - 2 - 8 Setting up of the fire fighting warning area and the radiation hazard area

No. 1 : Setting up of the fire fighting warning area

Taking into account the opinions of the responsible personnel of transportation and other experts (for RI, etc., the personnel involved in transportation) concerning the radiation level and the possibilities of radioactive contamination, the fire fighting warning area shall be set up in order to secure the safety of residents, and the area for fire fighting activities at the site.

In addition, according to the safety transportation manual for nuclear power corporations, an off-limits area of 100 meters for dealing with the accident must be secured on the road in order to protect against nuclear materials, etc. (This does not include RI.)

No. 2 : Setting up of the radiation hazard area, etc.

Setting up of the radiation hazard area

Where there is a possibility of radiation exposure or contamination by nuclear fuel materials, etc., in order to avoid the unnecessary radiation exposure of rescue workers as well as to avoid the unnecessary spread of radioactive contamination, a radiation hazard area should be set up according to the standards described below.

The area should be set up sufficiently wide to ensure that it does not need to be expanded to allow for increased safety later, considering the risk of contamination. The size of the area can always be reduced later if it is found to be larger than necessary.

(1) In the case of Type A or Type B transportation material, temporarily set the area to a 15m radius from the material.

(2) Set up the area after discussion with the responsible personnel of transportation or other experts.

If the personnel of the nuclear power facility (or the personnel of the RI handling facility) are not present at the site, designate the area after referring to items (2) and (4) of No. 2 a. of clause 2-1-8, as well as considering the expected diffusion of nuclear fuel materials, etc. in case of a fire.

3 - 2 - 9 Entering the radiation hazard area and emergency evacuation

No. 1 : Formation of the team

If a radiation hazard area has been set up, the commander shall organize an activity team according to the conditions, as described below:

○ The team should seek cooperation from the responsible personnel of transportation or other experts familiar with protection against radiation, etc.

No. 2 : Measures to be taken when entering the area

If it is necessary for the team to enter the radiation hazard area for fire fighting or rescue activities, the commander should perform the following items:

○ Confirmation of the radiation exposure management system (responsible personnel, etc.) and the method

The commander must check on the system and personnel for managing the exposure dose of the team members, the duration of activities, etc.

In this case, the commander should positively collaborate with the personnel of the nuclear power facility (or the personnel of the RI handling facility).

No. 3 : Emergency evacuation from the radiation hazard area

The rescue team commander must evacuate the team from the radiation hazard area in the event of the following situation:

○ The responsible personnel of transportation or other experts advise the evacuation of the area.

3 - 2 - 10 Contamination inspection & Decontamination

No. 1 : Contamination inspection

A contamination inspection must be performed on the fire fighting workers, as well as the equipment and materials involved, according to the following procedures:

a. Setting up of a contamination inspection site

Regarding the contamination inspection, discussion with the responsible personnel of transportation or other experts should be undertaken, and an inspection place should be established near the perimeter of the radiation hazard area, or in another nearby area suitable for preventing the spread of contamination

b. Personnel in charge of inspection

As a rule, the contamination inspection should be performed by the personnel of the nuclear power facility (or the personnel of the RI handling facility). Depending on the situation, assistance may be provided by rescue workers selected from among the team.

No. 2 : Decontamination

Decontamination must be performed according to the following guidelines:

a. General rules

(1) As a rule, decontamination work should be performed by the personnel of the nuclear power facility (or the personnel of the RI handling facility), upon request. This is because careful considerations are necessary to deal with different kinds of nuclear material, the form of contamination, and the disposal of waste fluid and materials caused by the decontamination treatment.

(2) If decontamination equipment is not available, consider other possible methods available at the site.

b. Decontamination of contaminated fire fighting equipment, etc.

Contaminated equipment should be handed over to the personnel of the nuclear power facility, etc. (or the personnel of the RI handling facility or Japan Radioisotope Association) and the appropriate treatment or disposal should be requested.

3 - 2 - 11 Fire extinguishing activities

No. 1 : Fire extinguishing activities

Fire extinguishing activities related to the transportation of nuclear fuel materials, etc. must be performed while securing the safety of rescue workers and avoiding the spread of contamination to residents. It is also necessary to carefully conduct fire fighting work depending on the situation and according to the following items:

a. Determining the most suitable activity site

In order to minimize radiation exposure, the activity site should be located an

appropriate distance from the transportation container.

b. Preventing diffusion of nuclear fuel materials

Spraying water on the transportation vehicle and cargo may cause the diffusion of nuclear fuel materials, etc., therefore it is necessary to understand the situation in collaboration with the responsible personnel of transportation or other experts. In consideration of the danger of diffusion, spraying water directly on the cargo must be conducted carefully.

c. Other Items

(1) If the transportation container is not near the flames, or if it can be confirmed that the transportation container is not damaged, the fire extinguishing activity may be performed in the same way as that used for normal vehicles.

However, if the activity is performed in a position close to the container, it is necessary to be careful against radiation exposure and to follow causes 2-1-9 and 2-1-10.

(2) In order to move nuclear fuel materials, etc., a request must be made to the responsible personnel of transportation or other experts (or the personnel of the RI handling facility), except in an emergency.

No. 2 : Investigation of the cause of the fire

In conducting the investigation of the cause of a fire involving nuclear fuel materials, etc., the required investigation should be performed while paying attention to potential contamination or radiation exposure, and with the cooperation of the responsible personnel of transportation or other experts. (In the case of RI, etc., Type B materials should be handled with the cooperation of the abovementioned personnel.)

In the event of accidents related to nuclear fuel materials, etc., the investigation must be conducted immediately as it is harmful to leave such materials for a long time. After the completion of the investigation, a request must be made to the responsible personnel of the nuclear power facility (or the personnel of the RI handling facility) to remove such materials to a safe place.

In the case of the removal of the materials from the accident site, national government officials shall be dispatched in order to check the material and the method of transportation, as necessary.

3 - 2 - 12 Emergency rescue work

In emergency rescue work related to the transportation of nuclear fuel materials, etc , priority shall always be given to saving human life. Therefore, proper observation and all necessary first-aid must be performed on victims, following which, victims must be immediately transported to a medical facility. In doing so, the following items should be followed:

(1) Before loading victims into an ambulance, in consideration of the possibility of contamination from radioactive substances, the victim's body should be covered with a blanket or sheet, etc. to prevent contact with other people or materials.

(2) For the transportation of victims, a request should be made to the responsible person of transportation or other expert to accompany the rescue team; so that he/she may give an appropriate explanation or advice on radiation to the doctor of the regional emergency medical facility that receives the victims. (In the case of the transportation of RI, etc., Type B the same rule shall apply. For other types of RI, etc., an appropriate person to give advice should accompany the team.)

In this case, they should also be requested to take the equipment required for the prevention of contamination and for decontamination.

(3) Protective clothing and the emergency rescue equipment subject to possible contamination should be sealed in the specified container in order to prevent secondary contamination. In addition, request the responsible personnel of the nuclear facility (in the case of RI, etc., request the RI handling facility or Japan Radioisotope Association) to conduct the appropriate storage or treatment.

3 - 2 - 13 Evacuation guidance, etc.

Evacuation guidance should be issued if an accident such as a fire related to the transportation of nuclear fuel materials, etc. may affect residents near the site or if residents must evacuate the area.

For your reference, even if a leak of nuclear fuel materials, etc. occurs, in general there is only a slight possibility of a large-scale leak requiring evacuation guidance. In most cases, it is sufficient to evacuate the fire fighting warning area or prohibit or restrict entrance to such an area.

3 - 2 - 14 Completion of measures for an accident

To complete the measures for an accident, national government officials or experts should confirm that no contamination exists, as necessary.

3 - 2 - 15 Activities where a specified event is reported (related to Article 10 of the Nuclear Disaster Law)

If a specified event is reported, the fire department will be requested to perform activities in close contact with the relevant authorities based on the regional disaster prevention plan, if such a plan is provided If no such plan is provided, the fire department must perform activities according to the Disaster Prevention Basic Plan.

The rescue team mobilized to the site should take measures in accordance with the policies of clauses 3-2-3 to 3-2-14 described above.

If the accident leads to a specified event, it shall be reported to the head of the municipality by the personnel in charge of the management of nuclear power disaster prevention.

If an accident occurs due to a fire, it shall be reported to the local fire department based on the Nuclear Reactor Regulation Law.

3 - 2 - 16 Activities where a declaration of a nuclear power emergency case is made (related to Article 15 of the Nuclear Disaster Law)

If a declaration of a nuclear power emergency case is made and the fire department conducts activities in an area to provide initial measures against emergency cases as designated by the declaration, the fire department must take into consideration the contents of the declaration and conduct activities according to the regional disaster prevention plans of the relevant municipalities, if such plans are provided. If no such plans are provided, the fire department must perform activities according to the Disaster Prevention Basic Plan.

In addition, if the fire department (fire fighting workers) is involved in any evacuation activities, the rules of clause 3-2-13 must be followed.

If an accident occurs due to a fire, it shall be reported to the local fire department based on the Nuclear Reactor Regulation Law.