MEDICAL REQUIREMENTS OF THE NUCLEAR REGULATORY COMMISSION AND FEDERAL EMERGENCY MANAGEMENT AGENCY REGARDING EMERGENCIES

Sheldon A. Schwartz

Since Three Mile Island, emergency planning and preparedness requirements have increased around and in nuclear power facilities. The Nuclear Regulatory Commission (NRC) decided that although a severe emergency is unlikely, such planning increases the safety of the public in the surrounding community.

ROLE OF FEDERAL AGENCIES

The NRC and the Federal Emergency Management Agency (FEMA), in a memorandum of understanding, agreed on areas of responsibility (Figure 1): The NRC is responsible for passing regulations and monitoring emergency planning and preparedness on-site, and the FEMA assists and evaluates emergency preparedness off-site. Other areas of responsibility with respect to operating plants and plants yet to be licensed were also agreed upon.

The regulations of both NRC and FEMA require utilities and local and state officials to meet 16 planning standards. For guidance, the NRC and FEMA published a joint document that serves as a checklist for emergency planning and preparedness. The popular citation for that document is NUREG 0654/FEMA REP 1.

The NRC regulations required plants to upgrade their plans by April 1981. After that date, the NRC reviewed the upgraded plans and went on-site for a two-week appraisal. During the succeeding year (April 1981 to April 1982), a full participation exercise at every operating nuclear power facility in the United States was held and evaluated by the NRC and FEMA.

In order to have an orderly transfer of functions from NRC to FEMA for the off-site emergency response planning, a steering committee was formed and cochaired by representatives of the two bodies. The committee meets every one to two months to consider policy, programs, and technical issues.

Another federal organization, the Federal Radiological Preparedness Coordinating Committee, is chaired by a representative from FEMA and consists of representatives from the NRC, Environmental Protection Agency, Department of Energy, Food and Drug Administration, Department of Agriculture, Health and Human Services, and others. This policymaking

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Deputy Director, Division of Emergency Preparedness, Office of Inspection and Envorcement, Nuclear Regulatory Commission, Washington, D.C.

group determines the federal response to a peacetime nuclear energy emergency. Subcommittees are currently working on instrumentation, training and education, and public affairs.

Since the accident at Three Mile Island, it was obvious that the federal community needed not only to upgrade the emergency planning preparedness on-site and off-site in the surrounding community, but also to get its own house in order. Thus, the federal government has established the Federal Radiological Emergency Response Plan to assign responsibilities for emergency response. In addition, the Department of Energy has a responsibility to establish a Federal Radiological Monitoring and Assessment Center near the site of an emergency, which analyzes all information from radiological monitoring in the field in order to recommend protective actions to be taken by the federal, state, and local governments.

EMERGENCY EXERCISES

A full-scale emergency exercise involving all federal agencies, state and local governments, and the licensee was held at the St. Lucie Nuclear Power Plant in Florida in 1984. At this exercise we activated the Federal Radiological Monitoring and Assessment Center, the Federal Response Center, and other response entities. This exercise simulated evacuation and relocation of the population.

A tabletop exercise to consider the preparedness at the Beaver Valley Nuclear Power Plant was conducted in June 1986, and participants included representatives from the federal agencies, Pennsylvania state officials, local governments, and the licensee. Another exercise is planned for June 1987. All of the nuclear power plants and all of the state and local governments have been involved in annual on-site exercises. A recent rule change now allows full participation with off-site individuals on a biennial basis.

EMERGENCY PLANNING SITES

In 1980, there was a significant upgrade of regulations (Figure 2) establishing a 10-mile plume exposure pathway planning zone and a 50-mile ingestion exposure pathway planning zone. Plans for the inner zone are concerned with public protective actions and those for the outer zone with interdiction of foodstuffs.

Licensees are required to establish emergency response centers. In addition to the control room where plant technical staff and management evaluate the event, make recommendations, and direct the response to ongoing events, other centers on-site determine appropriate response to an event. One of these centers, the technical support center, directs individuals to go to various places in or outside the facility to manipulate valves or whatever is necessary to put the plant in a safe condition.

Figure 1.

FEMA/NRC MEMORANDUM OF UNDERSTANDING
(1980 AND 1985)

NRC = ONSITE PLANNING (10 CFR 50.47)

FEMA = OFFSITE PLANNING (44 CFR 350)

STEERING COMMITTEE

Figure 2.

EMERGENCY PLANNING REQUIREMENTS

- IN-DEPTH PLANNING
- PREDETERMINED CLASSES AND ACTIONS
- NOTIFICATIONS

We recognized also that the plant cannot operate as an island and needs a direct interface with individuals off-site. The emergency operating facility is located off-site, generally 10 to 20 miles away from the facility. At that location, state and local representatives and others responsible for putting the plant into safe condition gather to determine protective actions to be taken (eg, evacuation, controlled release of the pressure).

Relations with the press are critical in the sense of those involved being able to speak with "one voice" so that current factual information about the event can be released periodically. A joint information center is established somewhere near the facility to which all the press is directed for periodic briefings by individuals from the facility and state and local governments.

Other locations are also established by local communities, and an emergency operations center at the state capital will be used for all natural disasters. There are communication links between all of these locations on-line having direct ring-down systems.

Alert notification systems are in place around every nuclear power facility. At most locations, there are sirens to alert the public within the 10-mile emergency planning zone. People living within that zone receive information from the utility and state and local governments on what to do when they hear a siren. They are told to turn on the radio or television; the emergency broadcast system will report what is happening and recommend actions for public protection, for example, evacuation. Information packages distributed to communities within the 10-mile emergency planning zone divide the areas into sectors so that each individual knows what sector he or she lives in and what is the primary evacuation route.

ACTION LEVELS

A key feature of the new regulation is a time limit on establishment of emergency action levels by the licensee. If an event occurs, the licensee must evaluate its severity and then notify off-site officials within 15 minutes and recommend protective action. The off-site officials then have 15 minutes to decide whether to implement the recommended protective action or to implement another plan based on their own judgment. There will be much discussion among the licensee, the NRC, and state and local officials about the appropriate protective action based on the severity of the event and local conditions.

EMERGENCY CLASSIFICATIONS

There are four emergency classifications. In ascending order of severity there is (1) notification of an unusual event, which is a precursor classification and not an emergency; (2) the alert classification, which is used when there is an ongoing event, such as rapid failure of steam generator tubes with mixing from the primary to

secondary system; (3) the site area emergency classification, which is used when there is the potential for release but no release and no core damage has occurred; and (4) the general emergency classification, which is used when core damage is actual or imminent and there is a potential for loss of containment with off-site release.

MEDICAL SERVICE REQUIREMENTS

Under 10 CFR 50.47B(12) the licensee and state and local governments must arrange medical services for radiologically contaminated injured individuals.

In 1983, the NRC defined the term "contaminated injured individuals" to mean those contaminated and otherwise physically injured or exposed to dangerous levels of radiation (Figure 3). There are three categories of individuals, on-site or off-site, for whom arrangements are necessary (Figure 4).

On September 17, 1986, the NRC published its revised policy on medical service requirements. Under 10 CFR 50.47B(12) this requires preaccident arrangements beyond the maintenance of a list of treatment facilities, for individuals who might be severely exposed to dangerous levels of radiation following an accident at a nuclear power facility. The Commission policy has been embodied in a FEMA memorandum dated November 13, 1986 for implementation by state and local governments. The preaccident arrangements in this guidance memorandum (MS-1) are: (1) submission of a list of local or regional treatment facilities (primary and back-up), including data on ambulatory or nonambulatory capacity and special radiation capabilities; (2) establishment of written agreements with each treatment facility and provider of transportation; and (3) provision of training and performance of annual drills for personnel in treatment facilities who provide care for the contaminated injured individuals.

SUMMARY

In this short period of time, I have attempted to give you an overview of the status of the emergency planning and preparedness activities in the United States in support of nuclear power facilities, both on-site and off-site, and describe the federal capability. I have also attempted to outline the new NRC policy and the standards for providing medical care to contaminated injured individuals.

Figure 3. CONTAMINATED INJURED MEANS

1. CONTAMINATED AND OTHERWISE PHYSICALLY INJURED;

2. CONTAMINATED AND EXPOSED TO DANGEROUS LEVELS OF RADIATION; OR

3. EXPOSED TO DANGEROUS LEVELS OF RADIATION.

Figure 4. 1983 COMMISSION POLICY

1. 10 CFR 50.47(B)(12) APPLIED TO INDIVIDUALS BOTH ONSITE AND OFFSITE;

2. "CONTAMINATED INJURED" INCLUDES OFFSITE EXPOSED; AND

3. LIST OF LOCAL TREATMENT FACILITIES.