

CONF-9604136 -- 7

Planning and Preparedness for Radiological Emergencies at Nuclear Power Stations

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The Radiological Emergency Preparedness (REP) Program was created after the March 1979 accident at the Three Mile Island nuclear power station. The Federal Emergency Management Agency (FEMA) assists state and local governments in reviewing and evaluating state and local REP plans and preparedness for accidents at nuclear power plants, in partnership with the U.S. Nuclear Regulatory Commission (NRC), which evaluates safety and emergency preparedness at the power stations themselves. Argonne National Laboratory provides support and technical assistance to FEMA in evaluating nuclear power plant emergency response exercises, radiological emergency plans, and preparedness.

BACKGROUND AND ARGONNE'S ROLE

The Radiological Emergency Preparedness (REP) program was established after the Three Mile Island accident in 1979, to improve emergency preparedness in communities in which nuclear power plants are located. Executive and Congressional actions have outlined the REP program responsibilities of the Federal Emergency Management Agency (FEMA), which focus on off-site planning, and the U.S. Nuclear Regulatory Commission (NRC), which focus on planning at nuclear power station sites.

Utilities and state and local governments are also key players in the REP program. Jurisdictions within a 10-mile radius of a nuclear power plant are responsible for planning and preparing for a radiological emergency. (See Figure 1.) State and local (county or town) radiological emergency response plans are developed and submitted to FEMA for review and approval. Most jurisdictions now have approved plans, but FEMA continues to monitor the state of planning by reviewing periodic updates and major plan revisions. Argonne National Laboratory assists FEMA in these plan reviews.

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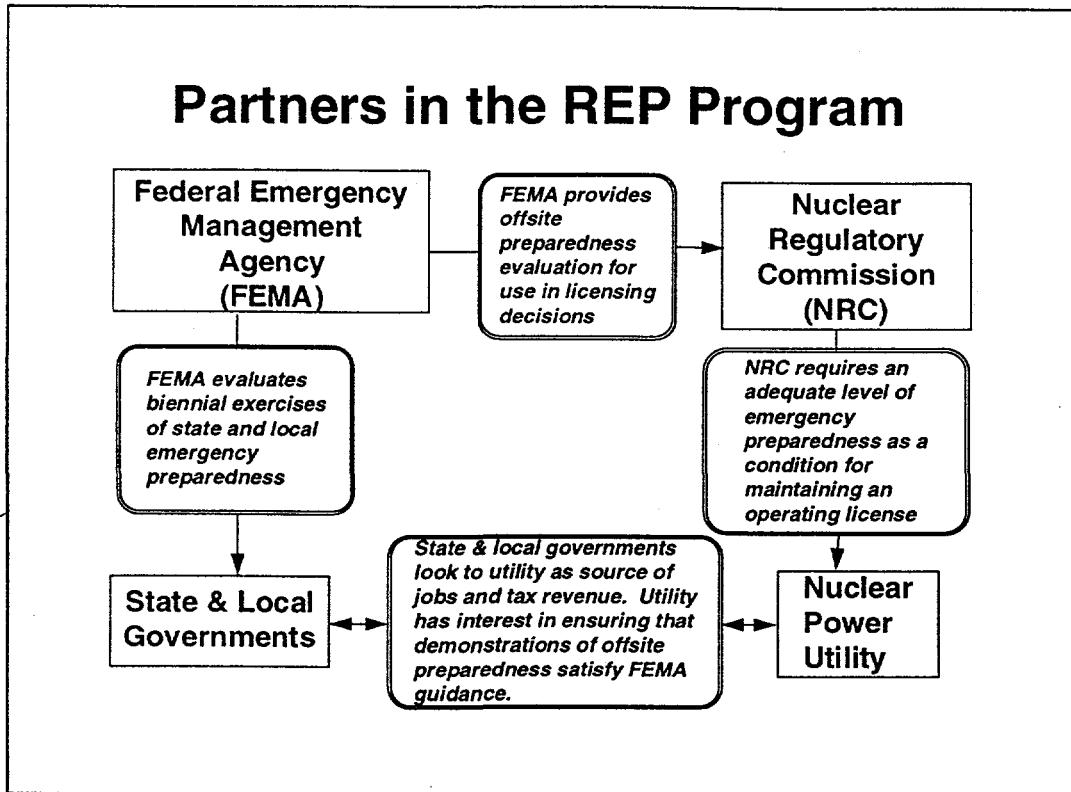


FIGURE 1 Partners in the REP Program

In addition, regular emergency response drills and exercises are conducted at each nuclear power station site. Every two years, each site holds a major joint exercise that involves response to an emergency scenario by both off-site (state and local) and utility personnel. FEMA and the NRC evaluate the exercise activities and rate the organizations on their response. Argonne provides numerous evaluators for these exercises and assists in preparing the exercise reports.

The primary guidance document for the REP program is NUREG-0654/FEMA-REP-1, Rev. 1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants* (1). It contains standards for developing REP plans and describes capabilities and functions to be included. It addresses a broad range of capabilities, including technical activities, such as radiological monitoring and instrumentation, and more general aspects of response, such as communications, public notification, and evacuation.

DEVELOPMENT OF THE REP PLANNING MANUAL

Soon after NUREG-0654 was published, questions of interpretation arose. FEMA issued a series of policy memoranda to address specific issues. These memoranda, in turn, were supplemented by letters from FEMA headquarters to regional personnel, advising them on handling specific issues on a case-by-case basis. As the list of policy vehicles grew longer, the need for a consolidated document became apparent. Argonne was tasked to create the *REP Planning Manual* (2), which was designed to consolidate and update the existing program planning guidance and to provide details and suggestions on complying with NUREG-0654. This document is written in simple, easy-to-understand language (not necessarily the norm for a government document).

The *REP Planning Manual* was published in final draft form in the *Federal Register* in October 1995. Numerous comments on the document have been received, and the Argonne team is now reviewing them. After consulting with FEMA and the Project Work Group (composed of representatives from states, FEMA regions, FEMA headquarters, and utilities), the Argonne team will revise the *REP Planning Manual* before it is issued in final form.

Although it is considered highly unlikely that a large accident with far-reaching radiological deposition (such as the accident at the Chernobyl plant in the former Soviet Union) could occur in the United States (because of the safer design standards of U.S. plants), it is nevertheless important to prepare for any radiological incident in a coherent, consistent manner. The *REP Planning Manual* will provide, for the first time, a definitive source for policy on preparing plans to respond to potential nuclear power plant accidents. It is intended for use by state, local, and private response organizations in developing and revising radiological emergency response plans in support of commercial nuclear power plants.

FUTURE DIRECTIONS

Argonne has been involved in the REP program since its inception, and it is expected that Argonne's role in the REP program will continue. Argonne provides expertise and support to FEMA in areas such as policy development and articulation, exercise evaluation, and reviews of radiological emergency response plans. Argonne also provides special expertise in areas such as medical response, law, health physics, alert systems, public information, and evacuation systems. The result is a higher level of protection of the public health and safety near commercial nuclear power stations.

ACKNOWLEDGMENTS

The authors wish to thank the other members of the *REP Planning Manual* project team, including Ken Lerner, Richard Converse, and Bill Gasper, for their hard work and perseverance. Without them, the project would not have been possible.

REFERENCES

1. *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*, NUREG-0654/FEMA-REP-1, Rev. 1, U.S. Nuclear Regulatory Commission and Federal Emergency Management Agency, Washington, D.C., November 1980.
2. *REP Planning Manual*, FEMA-REP-19, Federal Emergency Management Agency, Washington, D.C., September 1995, Final Draft.

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