



in December 1979 and the longstanding memorandum of understanding between DHS/FEMA and the NRC, DHS/FEMA takes the lead in reviewing and assessing offsite planning and response and in assisting State and local governments, while the NRC reviews and assesses onsite planning and response. Using DHS/FEMA's input, the NRC then makes a determination regarding the overall state of emergency preparedness.

The NRC became aware of the flooding situation on October 12, 2005, by means of an e-mail from the licensee for Vermont Yankee. This e-mail forwarded a response from the State of New Hampshire that identified the flooding impacts and the availability of alternate routes as contingency actions should an emergency at Vermont Yankee create a need for a public evacuation. On October 18, 2005, the NRC learned through discussions with DHS/FEMA that it had concluded, based on information received from the State of New Hampshire, that all evacuation routes in New Hampshire and the roads to the reception center in Keene were open and accessible. It was also learned that only one of the many evacuation routes designated by the Vermont Yankee emergency planning was not available for a period of time during the flooding conditions and that an alternate accessible route was available.

Mr. James Shea, the NRC Petition Manager, in a telephone call on October 18, 2005, informed the Petitioner that his emergency request for temporary plant closure or de-rating was denied, based on the DHS/FEMA evaluation. In that telephone call, the Petitioner raised additional issues concerning whether DHS/FEMA and the State of New Hampshire have plans for an evacuation if an event were to occur at Vermont Yankee simultaneously with a natural disaster such as the recent flooding. Specifically, the Petitioner had concerns regarding how people would evacuate from the city of Keene and the town of Hinsdale if roads were flooded, and whether there are alternative assembly points and decontamination centers for people who

normally would evacuate through flooded areas. Finally, the Petitioner asked what the NRC is doing to ensure that contingency evacuation plans are in place.

## II. Discussion

### Background

Prior to issuing a license for a nuclear power plant, the NRC is required by statute and regulation to determine that there is reasonable assurance that the public health and safety is adequately protected. Although the NRC has stringent requirements related to facility siting, design, construction, and operation, adequate emergency preparedness is also a prudent, essential aspect of the protection of public health and safety. The NRC bases its determination regarding adequate preparedness on a review of the licensee's onsite preparedness and of DHS/FEMA's findings regarding the adequacy of the offsite preparedness. If, at any time, there is not reasonable assurance that adequate public protective measures can and will be implemented, corrective actions are required to return emergency preparedness to an acceptable level of effectiveness.

The Plume Exposure Pathway Emergency Planning Zone (EPZ) is the area within an approximate 10-mile radius surrounding the Vermont Yankee Nuclear Power Station. State and local offsite response organizations (OROs) have developed plans to implement protective measures for the people within this zone. Vermont communities within this EPZ include the towns of Brattleboro, Dummerston, Guilford, Halifax, and Vernon. Neighboring States have towns in this EPZ as well. Those towns in Massachusetts include Bernardston, Colrain, Gill, Greenfield, Leyden, Northfield and Warwick. The towns of Chesterfield, Hinsdale, Richmond, Winchester and the Westport section of Swanzey are in the New Hampshire portion of this EPZ. In the event of a serious accident at Vermont Yankee, State and local officials may

recommend to people residing within this EPZ to take protective actions such as sheltering-in-place or evacuation.

The State and local OROs have developed and maintain detailed plans and procedures for responding to an emergency at Vermont Yankee. These plans and procedures establish a staged response capability through a trained response organization, defined organizational roles, and the means and resources for implementing response functions, including communications, notification of the public, protective measures, reception centers, transportation resources, traffic and access control, and radiological monitoring. DHS/FEMA evaluates and approves these State and local ORO plans. Full-scale exercises involving the facility operator, State and local OROs, are evaluated by DHS/FEMA and the NRC, and are conducted biennially. DHS/FEMA has determined that there is reasonable assurance that appropriate public protective measures can and will be taken in the event of an emergency at Vermont Yankee.

Immediately upon becoming aware of an off-normal plant condition, the licensee is required to take action to assess the condition and, if warranted, declare one of four emergency classification levels. Upon declaration of an emergency, the licensee notifies State and local OROs of the emergency condition, thereby enabling the OROs to take actions in accordance with their emergency procedures. If the incident has resulted or could result in significant release of radioactive material, the licensee will make protective action recommendations (PARs) to the State and local government OROs. The State ORO's will consider the licensee's PAR and make a recommendation to the Governor, who will issue the State's recommendation to the public. The local OROs then implement the recommendation (e.g., sound sirens, issue emergency alert system (EAS) messages, establish traffic control points, establish reception centers, provide transportation for persons without transport, etc). The NRC monitors the

actions of the nuclear power plant to ensure that the licensee's response actions and PARs are appropriate.

Nuclear power plants are required to be designed to withstand external events such as hurricanes, tornadoes, earthquakes, tsunamis, and flooding, as appropriate to the site. As long as the plant is operating within the conditions of its license and technical specifications, there is no safety reason for the plant to shutdown during such external events. Accordingly, licensees are not required to shut down their plants solely because of temporary effects of severe weather or flooding offsite.

The local ORO plans are required by DHS/FEMA to demonstrate the capability to contend with unexpected events which may impede an evacuation route. This capability was demonstrated when the State of New Hampshire was able to develop alternate routes when one of the evacuation route bridges was damaged by the flooding during the weekend of October 8 and 9, 2005. This route was subsequently repaired shortly after the flooding subsided. Although normally intended to address situations such as vehicle failures or accidents, these contingency provisions provide a basis to address conditions such as flooded roads or impassible bridges, should they occur simultaneously with a radiological emergency at Vermont Yankee.

#### Staff's Response to the Petitioner's Letter

The Petitioner's emergency request of October 11, 2005, to shut down or de-rate Vermont Yankee was denied based on the DHS/FEMA evaluation, regarding provisions for alternate evacuation routing if an evacuation had become necessary while primary evacuation routes were impassible, and because safe operation of Vermont Yankee was not threatened by flooding.

Nuclear power plants are engineered to incorporate design features that provide layers of protection against failure, referred to as defense-in-depth. Emergency plans are one such defense-in-depth measure. Emergency plans come into play only in the rare circumstance that engineered design features and human capacity to take corrective action have both failed to avert a serious event. Emergency preparedness is a risk-management tool, and protective actions are appropriate only if the risk to the public would be reduced by those actions. If evacuation would place the public at significant risk of harm, State OROs are expected to consider recommending sheltering-in-place rather than evacuation.

Staff's Response to other concerns from the Petitioner

During the October 18, 2005, telephone call, the Petitioner expressed the following concerns related to emergency evacuation planning for Vermont Yankee:

**A. The Petitioner requested information regarding how DHS/FEMA and the State of New Hampshire coordinate evacuation plans.**

The State and local OROs develop emergency plans and, in the event of an emergency, implement those plans. DHS/FEMA's role is to assist OROs with the development of those plans and to evaluate the adequacy of the plans. During an emergency event, DHS/FEMA's role is to provide support to the State and local OROs in implementing their plans. Command and control of the response remains with the State and local OROs, as directed by the Governor in each State. This is appropriate, given the sovereign nature of each State and the first-responder role of each State and of the local OROs. DHS/FEMA does not have a first-responder role and would provide support only as requested by the State.

In EPZs with multiple States, each State provides for the safety of its residents. The implementation of protective measures is, by necessity, coordinated. For example, sirens close to the boundaries of each State can be heard in the adjacent State. EAS messages are broadcast on radio stations that can be heard in all States. The pre-designated primary evacuation routes are generally established in a manner that minimizes the need for evacuees from one State to enter another State. Coordination of evacuation routes need to occur only if the planning calls for the residents in one State to enter another State. Traffic control points maintain this routing. Coordination would occur if alternate evacuation routes needed to be identified as a contingency, as was done when the State of New Hampshire sought to identify an alternative evacuation route for Hinsdale that would direct evacuees west on Route 119 into Brattleboro, Vermont.

**B. The Petitioner requested details on how Keene and Hinsdale would be evacuated during a flood condition coincident with a Vermont Yankee event.**

In the unlikely occurrence of a flood coincident with an emergency at Vermont Yankee, the States and local OROs within the EPZ would implement their respective emergency plans and take the actions proscribed therein. If the event caused the licensee to make a PAR, the State and local OROs would consider and implement the PAR as described in their emergency plans. In the event that the flood was severe enough to block the primary evacuation routes from Hinsdale, alternative routes would be identified and implemented. The State and local ORO plans do not pre-designate alternative evacuation routes. However, these plans provide an adequate basis from which to identify alternative routes as conditions require. EAS messages, public information messages via news media, and staged traffic control points would re-direct evacuees as necessary. As discussed previously, if an evacuation would place the

public at significant risk of harm, State OROs are expected to consider recommending sheltering-in-place rather than evacuation

For the flooding of October 8 and 9, 2005, the impassible evacuation routes from Hinsdale were Route 119 east of the junction with Route 63, and Route 63 north of the junction with Route 119. The State identified alternative routing via Route 119 west and north, crossing the river at Brattleboro, Vermont; and via Route 63 south to Northfield, Massachusetts (or then back into New Hampshire via Route 10). Although this routing may not be as optimum as the primary routing, the routing is a reasonable alternative given the low probability of severe flooding coincident with an emergency at Vermont Yankee that would warrant offsite protective actions.

The City of Keene is outside the EPZ and would not be expected to evacuate due to an emergency at Vermont Yankee. Evacuation solely in response to flooding is at the discretion and direction of city officials and is not a regulatory responsibility of the NRC.

**C. The Petitioner requested details on alternate assembly and decontamination facilities when routes are affected by floods.**

The State and local ORO emergency plans identify reception centers which serve as locations to monitor, decontaminate as necessary, and register evacuees. The emergency plans and procedures provide for trained personnel to perform these functions and equipment necessary to perform these functions, all of which can be readily relocated to an alternate facility if necessary. These plans do not pre-designate alternative reception centers. However, these plans provide an adequate basis to enable the local OROs to identify alternative facilities as conditions require. EAS messages, public information messages via news media, and staged traffic control points would re-direct evacuees as necessary. This reliance on ad hoc identification of alternatives is reasonable given the low probability of severe flooding coincident with an emergency at Vermont Yankee severe enough to warrant offsite protective actions.



**D. The Petitioner requested details on what the NRC is doing to ensure that contingency planning is in place to address the potential of an event at Vermont Yankee coupled with a natural disaster such as flooding.**

Nuclear power plant emergency preparedness emphasizes prudent risk-reduction measures. The basic principle of the NRC and DHS/FEMA regulations is that there should be core planning coupled with sufficient planning flexibility to develop ad hoc responses to those very serious low probability accidents which could affect the public. DHS/FEMA has determined that the State and local ORO emergency plans provide reasonable assurance that public protective measures can and will be taken in the event of an emergency at Vermont Yankee, and that these plans provide a basis for implementing ad hoc contingency measures when the pre-planned measures are impeded for any reason. The State of New Hampshire adequately demonstrated this capability with regard to the flooding of October 8 and 9, 2005.

The NRC and DHS/FEMA have developed a procedure to address the offsite emergency preparedness readiness in the wake of a significant natural disaster. This procedure has been used following hurricanes when storm-caused damage to infrastructure raised concerns regarding the ability of State and local OROs to implement protective actions for the public. However, this procedure would not have been implemented in the wake of the flooding of October 8 and 9, 2005, since the impact was not widespread and since State and local OROs were capable of readily identifying alternate evacuation routes.

III. Conclusion

NRC regulations require nuclear power plants to be designed and operated to reasonably assure the public health and safety. The NRC also requires its nuclear power plant licensees to establish and implement acceptable emergency plans. The Vermont Yankee emergency plans have action levels that require the State and the NRC to be notified such that the State emergency plans can be activated in a timely manner to protect the population in the

EPZ. The State OROs would implement protective actions in accordance with their emergency procedures.

During the recent flooding in New Hampshire, the State had established and coordinated potential alternate evacuation routes in the event of an accident at Vermont Yankee. In addition, safe operation of the station was not threatened by the flooding. Accordingly, the NRC staff concluded that there was no threat to the public health and safety, and that shutting down or de-rating the station was not warranted. Therefore, the Petitioner's emergency request was denied.

As provided in 10 CFR 2.206(c), a copy of this Director's Decision will be filed with the Secretary of the Commission for the Commission to review. As provided for by this regulation, the decision will constitute the final action of the Commission 25 days after the date of the decision unless the Commission, on its own motion, institutes a review of the decision within that time.

Dated at Rockville, Maryland, this XX day of XX 2005.

FOR THE NUCLEAR REGULATORY COMMISSION

J. E. Dyer, Director  
Office of Nuclear Reactor Regulation