

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

February 27, 1997

NRC INFORMATION NOTICE 97-05: OFFSITE NOTIFICATION CAPABILITIES

Addressees

All holders of operating licenses or construction permits for nuclear power reactors and test and research reactors.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to inform addressees of the potential for severe natural events to disrupt communication systems that the addressees would use to inform offsite governmental authorities of emergency conditions. The NRC is also issuing this information notice to inform addressees of measures that some power reactor licensees have adopted to ensure that offsite communication capabilities remain reliable during and after severe natural events to which their sites are susceptible. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Background

On August 24, 1992, Hurricane Andrew struck south Florida and caused extensive onsite and offsite damage near the Turkey Point site. An NRC/industry team reviewed the damage that the hurricane caused the nuclear units and the utility's actions to prepare for the storm and recover from it. The team also developed lessons learned that might benefit other nuclear reactor facilities. The findings of this team were compiled in NUREG-1474, "Effect of Hurricane Andrew on the Turkey Point Nuclear Generating Station from August 20-30, 1992," (Reference 1).

As part of an NRC task action plan to resolve the generic issues identified in the NRC/industry team report, the NRC staff reviewed the existing requirements and guidance pertaining to normal and backup offsite communication system design capabilities for hurricanes. The objectives of this review were to consider the adequacy of the guidance for other external events and to issue any revised guidance or requirements that might be needed. The staff concluded that the existing requirements and guidance were adequate for licensees to maintain reliable communication capabilities.

The staff also obtained information on the reliability of offsite communication systems at selected sites. The NRC developed Temporary Instruction (TI) 2515/131, "Licensee Offsite

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Communication Capabilities" (Reference 2), which contained questions to be asked by inspectors about the capabilities of the offsite notification systems to survive severe natural events.

Description of Circumstances

NRC inspectors implemented the TI at 17 separate reactor sites in all 4 regions. The sites varied in the particular external events to which they were prone. Consequently, they varied in the systems used to minimize their vulnerability to these events. The inspectors noted two conditions at a number of plants that could result in a sustained loss of communications after a severe natural event. These conditions are described below:

Communication Circuit Routing

Of the 17 sites inspected, 9 had wiring schemes that routed more than one communication circuit through common conduits or equipment rooms that were not designed to withstand all possible external (or internal) hazards. At some of the sites, cabling arrangements were such that a single communication room on site contained necessary components for all of the external communication circuits.

Communication Contingency Procedures

The NRC asked licensees whether they had contingency procedures for rapidly restoring the capability to communicate with offsite agencies after its loss as a result of a catastrophic natural disaster. At 7 of the 17 sites inspected, no formally written contingency procedures existed. At the other 10 sites, procedures or plans varied widely in their level of detail. These ranged from callout lists for communication technicians to formal letters of agreement with local communication companies that were contained in full-blown disaster recovery plans.

Discussion

Communication Circuit Routing

The routing of all or most of the communication circuits through common conduits or equipment rooms raises the possibility of those circuits being lost in the event of a single failure within those conduits or rooms. Appendix A to Part 50 of Title 10 of the Code of Federal Regulations requires independence and diversity of systems important to safety, but these criteria are not applied to communication systems that do not interface with the reactor plant. It is possible, therefore, to have offsite communication systems that meet the regulatory requirements but that could not survive natural or man-made hazards. If these circuits were all located in a single room or building that was destroyed by fire, hurricane, tornado, or earthquake, it would be possible to lose all offsite communication capability. If the offsite termini of these systems were similarly configured, such an event at these locations would also interrupt all emergency messages transmitted over these circuits.

At least one licensee viewed this condition as serious enough to consider obtaining a self-contained microwave antenna communication system that would be independent of its other communication systems and therefore not be susceptible to common mode failure. This portable system would be used to transmit emergency messages to an adjacent power reactor site for relay to the offsite authorities in the event all other systems were disabled.

Several licensees have obtained satellite communication equipment that enables them to maintain communication capabilities after severe natural events such as hurricanes, tornados, and floods. Such systems do not rely on ground-based transmission, but instead orbiting satellites are used to relay messages to remote networks. They will likely be one of the only systems that would be operational immediately after a severe event such as a major hurricane or earthquake. Some satellite systems are highly portable and self-contained, so that they can be deployed from a secure location for immediate use.

Communication Contingency Procedures

It is highly probable that a severe disaster that directly affects a reactor site, as Hurricane Andrew did at Turkey Point, will disable all offsite communication capability for some finite period of time. One lesson learned from the Hurricane Andrew disaster was the need to be able to restore this capability as quickly as possible.

As mentioned above, the contingency procedures adopted by the plants ranged from callout lists for communication technicians to formal disaster recovery plans. For plants relying on callout procedures for communication technicians, a suitable method for notifying those technicians is required in case electronic communication capability is completely lost. These plans or procedures are of greatest value when they have been validated under conditions likely to exist after a severe natural event. For example, if personnel likely to be available on site during and after such an event are trained on the plans or procedures, they can implement them quickly.

Part of the ability to quickly restore lost communication capability involves the stocking of spare parts on site for replacement of storm-, wind-, or water-damaged equipment. Although it is clearly not feasible for the licensee to be able to repair damaged commercial telephone systems anywhere along the transmission lines, damaged radio or microwave systems can be repaired almost wholly on site. The TI results showed that at seven of the sites, spare antennae and cabling were available to repair radio or microwave systems. At some of these seven sites, these parts were stored in structures that were not qualified to withstand the external events that could be encountered. If these spare parts could be stored in qualified structures and installed by knowledgeable personnel who are already on site, the downtime for these systems could be minimized.

Related Generic Communication

NRC Information Notice 93-53, "Effect of Hurricane Andrew on Turkey Point Nuclear Generating Station and Lessons Learned," July 20, 1993.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.



Thomas T. Martin, Director
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

References

1. NUREG-1474, "Effect of Hurricane Andrew on the Turkey Point Nuclear Generating Station from August 20-30, 1992," March 1993.
2. Temporary Instruction 2515/131, "Licensee Offsite Communication Capabilities," January 18, 1996.

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**LIST OF RECENTLY ISSUED
 NRC INFORMATION NOTICES**

Information Notice No.	Subject	Date of Issuance	Issued to
97-04	Implementation of a New Constraint on Radioactive Air Effluents	02/24/97	All materials, fuel cycle, and non-power reactor licensees
97-03	Defacing of Labels to Comply with 10 CFR 20.190(b)	02/20/97	All material licensees involved with disposal of medical waste
97-02	Cracks Found in Jet Pump Riser Assembly Elbows at Boiling Water Reactors	02/06/97	All holders of OLs or CPs for boiling water nuclear power reactors models 3, 4, 5 and 6, except those licenses that have been amended to possession-only status
97-01	Improper Electrical Grounding Results in Simultaneous Fires in the Control Room and the Safe-Shutdown Equipment Room	01/08/97	All holders of OLs or CPs for nuclear power reactors
96-72	Undetected Failure that May Occur During Patient Treatments with Teletherapy Devices	12/24/96	All teletherapy licensees
96-71	Licensee Response to Indications of Tampering, Vandalism, or Malicious Mischief	12/27/96	All holders of OLs or CPs for nuclear power reactors

OL = Operating License
 CP = Construction Permit

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original signed by
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