Official

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Virginia Electric and Power Company
ATTN: Mr. W. L. Stewart, Vice President,
Nuclear Operations
P. O. Box 26666
Richmond, VA 23261

Gentlemen:

SUBJECT: SITE VISIT FOR THE EMERGENCY RESPONSE DATA SYSTEM

This letter is to inform you of an emergency communications capability that the NRC is considering establishing with licensed nuclear power facilities and an upcoming site visit by an NRC contractor to obtain information on how such a system would interface with your Emergency Operations Facility.

The emergency communication capability being considered is called the Emergency Response Data System (ERDS). The ERDS concept has been determined by the NRC to be a design which best addresses the requirements of the NRC with minimal impact on the licensee. The development of the ERDS concept began with an assessment of what is the NRC's role in an emergency at a licensed nuclear facility. The Commission determined that the NRC's primary role is one of monitoring the licensee to assure that appropriate recommendations are made with respect to offsite protective actions. To fulfill this role, the NRC requires accurate, timely data on four types of parameters: (1) core and coolant system conditions must be known well enough to assess the extent or likelihood of core damage; (2) conditions inside the containment must be known well enough to assess the likelihood of its failure; (3) radioactivity release rates must be available promptly to assess the immediacy and degree of public danger; and (4) the data from the plant's meteorological tower is necessary to assess the distribution of potential or actual impact on the public. A list of the particular parameters considered necessary to these assessments is included as Enclosure 1.

Experience with the voice-only emergency communications link, currently utilized for data transmission, has demonstrated that excessive amounts of time are needed for the routine transmission of data and for verification or correction of data that appear questionable. Error rates have been excessive; initiations have been slow; frequency of updates have been unreliable. In addition, the current system creates an excessive drain on the time of valuable experts at the NRC and at the facility. When errors occur, they frequently create false issues which, at best, divert experts from the real problems for seriously long periods of time. At worst, incorrect data may cause the NRC to respond to offsite officials with inaccurate or outdated advice that results in the implementation of inappropriate protective actions.

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Several options were considered for upgrading the data acquisition capabilities at the Operations Center. The options included various means of acquiring the data: manually, automatically using existing systems, or automatically using new systems. Appropriate options for transmitting the data to the Operations Center were considered: electronically formatted data, image facsimile, or by voice through specially qualified communicators.

The criteria used to compare these options involve accuracy, reliability, timeliness, completeness, cost (in dollars and expert personnel), and backfitting requirements. The NRC determined that automatic transmission of selected parameters from licensees' existing electronic data systems is most capable of providing acceptably complete and reliable data on a timely basis at reasonable cost with the minimum potential for burdening the licensee in an emergency. Most licensees either already have developed or are developing electronic data systems for their emergency response facilities (ERFs). Because the role of the licensees' ERFs is similar to the role of the NRC during emergencies, the licensees' data systems already include most of the parameters desired by NRC. Those few parameters which are not included in any particular licensee's system can be communicated by voice over the Emergency Notification System (ENS), thus avoiding backfitting requirements on the licensee to include additional parameters on their electronic data systems. Data would be accepted in whatever format the licensee uses and reformatted at the Operations Center, as necessary. Because of the diversity of data systems utilized by the licensees, the best means for extracting the NRC's parameters from each system would be determined on a case-by-case basis. The licensees would have control over transmission and would use the system only during emergencies. This option is the Emergency Response Data System (ERDS). The design concept for the ERDS is outlined in Enclosure 2.

Previous discussions with several licensees and two tests of the ERDS concept which were conducted with Duke Power and Commonwealth Edison have indicated that the ERDS concept has the potential to significantly improve the NRC incident response function and our response relationship with licensees. Therefore, to determine more specifically the factors that would effect implementation of an ERDS we have initiated an effort to survey the equipment and facilities at licensees' sites and determine the hardware and software requirements of such a system. You should expect to be contacted in the near future by a member of this Regional office to arrange a site visit by an NRC Headquarters staff member accompanied by an NRC contractor to speak with you on this subject. The visit is an information gathering process. It is oriented toward determination of:

The availability of a particular set of PWR or BWR parameters in digital form.

The verification and validation method, if any.

Characterization of the available data feed point(s).

Access will be needed to documentation and knowledgeable individuals typically from Instrumentation and Control, technical, telecommunications, and computer systems cadres within the plant staff. Please contact Mr. Bill Sartor with the

Region II Emergency Preparedness Section at (404) 331-6152 and provide him with a licensee contact to assist in the scheduling of site visits. NRC Headquarters has indicated that site visits will be initiated during early 1986 and should be completed within four months.

Should you have questions regarding the site visits, please contact Mr. Sartor. Should you have any questions on the ERDS concept in general, please contact Mr. Ken Perkins with the Incident Response Branch at NRC Headquarters, telephone (301) 492-7361.

Sincerely,

Roger D. Walker, Director
Division of Reactor Projects

Enclosures:
1. PWR and BWR Parameters
2. ERDS Design Concept

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ENCLOSURE 1

PWR PARAMETER LISTS

Primary Coolant System	Pressure
	Temperatures - hot leg
	Temperatures - cold leg
	Temperatures - core exit thermocouples
	Subcooling margin
	Pressurizer level
	RCS charging/makeup flow
	Reactor vessel level (when available)
	Reactor coolant flow
	Neutron flux - startup range
Secondary Coolant System	Steam generator levels
	Main feedwater flows
	Auxiliary/Emergency feedwater flows
Safety Injection	High pressure safety injection flows
	Low pressure safety injection flows
	Safety injection flows (Westinghouse)
	Borated water storage tank level
Containment	Containment pressure
	Containment temperatures
	Hydrogen concentration
	Containment sump levels
Radiation Monitoring System	Reactor coolant radioactivity
	Containment radiation level
	Condenser air removal radiation level
	Effluent radiation monitors
	Process radiation monitor levels
Meteorological	Wind speed
	Wind direction
	Atmospheric stability

BWR PARAMETER LISTS

Reactor Coolant System	Reactor Pressure
	Reactor vessel level
	Feedwater flow
	Neutron flux-startup range

Safety Injection	RCIC flow HPCI/HPCS flow Core spray flow LPCI flow Condensate storage tank level
Containment	Drywell pressure Drywell temperature Hydrogen & Oxygen Concentration Drywell sump level Suppression pool temperature Suppression pool level
Radiation Monitoring System	Reactor coolant radioactivity level Primary containment radiation level Condenser off-gas radiation levels Effluent radiation monitor Process radiation levels
Meteorological	Wind speed Wind direction Atmospheric stability

ENCLOSURE 2

EMERGENCY RESPONSE DATA SYSTEM (ERDS)
DESIGN CONCEPT

Data Acquisition

Parameter inputs to ERDS would be obtained from an existing computer system (e.g., SPDS, plant computer, EOF data systems, etc.) at the plant.

Data Transmission

Data will be transmitted to the NRC Operations Center by modem to commercial telephone line or a dedicated line maintained by NRC (e.g. ENS).

Data Collection

A processing system maintained by the NRC will receive the data stream by modem. The system will be designed to receive all varied data streams and to reformat the data into a consistent format. The reformatted data will be output to CRTs and printer.

Parameter List

The parameter list would include those parameters necessary to ensure that appropriate protective action is being taken with respect to offsite recommendations. The list would be limited to those parameters involving plant status, radiological and meteorological conditions.

Licensees will not be required to backfit their systems to include additional parameters to provide data on NRC's parameter list. Data that is not available from the electronic data stream can be provided by voice over existing phone lines.

Transmission Frequency

The updating frequency of the licensees' system will determine transmission frequency to NRC. If more frequent updates are required than those provided electronically by a particular licensee, the increased frequency will be accomplished (for a very limited subset of parameters) by voice over existing telephone lines.

Control

The licensee will have complete control over data transmission. ERDS would be "switched on" by the licensee in the early stage of a declared emergency.