

VIRGINIA ELECTRIC AND POWER COMPANY

RICHMOND, VIRGINIA 23261

September 18, 1980

JACK H. FERGUSON  
EXECUTIVE VICE PRESIDENT

Mr. Darrell G. Eisenhut, Director  
Division of Licensing  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Serial No. 718  
NO/FHT:ms  
Docket Nos. 50-280  
50-281  
50-338  
50-339  
License Nos. DPR-32  
DPR-37  
NPF-4  
NPF-7

Dear Mr. Eisenhut:

COMMENTS ON NUREG 0696

We have received your letter of August 1, 1980, soliciting comments on draft NUREG-0696, Functional Criteria for Emergency Response Facilities. Our in-depth review of NUREG-0696 has identified a number of areas of concern, and our comments are hereby forwarded in the attachment. We would appreciate the staff's careful review and consideration of these comments.

Our comments reflect an overall concern that many of the requirements cannot realistically be implemented on the time schedule envisioned. For example, it is not feasible for us to complete by June of 1981 a Technical Support Center that fully meets the requirements set forth in the NUREG. Furthermore, we feel that some of the requirements are unnecessary. For example, we do not believe a remote-sited Emergency Operations Facility (EOF) is needed to accomplish the stated functions of the EOF. We feel that a more effective approach is to establish an EOF at our Corporate Headquarters, which is the same location as our Corporate Emergency Response Center.

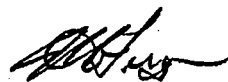
In the interest of establishing effective emergency response facilities on a timely but realistic schedule, we have developed a preliminary plan to meet the intent of the NUREG-0696 requirements. We would appreciate being able to meet with you at your convenience in early October to discuss our plan, and to receive your comments and suggestions.

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Please contact Mr. Eugene R. Smith, Jr., our Director - Safety Evaluation and Control, to arrange a mutually acceptable meeting time. His telephone number is (804) 771-3377.

Very truly yours,



J. H. Ferguson  
Executive Vice President  
Power

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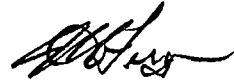
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ATTACHMENT

NUREG-0696: Functional Criteria for Emergency Response Facilities

General Comments

1. The Federal Register notice of August 15 indicated that the comment period expires September 29, 1980. Mr. Darrell Eisenhut's letter of August 1, 1980, to all applicants and licensees indicated that it is NRC's intent to publish NUREG-0696 in final form no later than October 1, 1980. We recognize the importance of moving expeditiously on this matter however, we do want to point out that there is only one day between the comment expiration period and the intended publication date of the document in final form. We recommend that the NRC fully consider the comments prior to final publication.
2. It does not appear feasible to complete the Technical Support Center (TSC) building by June 1981 and achieve full operational capability by April 1982. This is due to 1) delay in NRC finalization of functional and performance criteria, 2) long lead times for procurement of equipment 3) unavailability of equipment specified in draft criteria (i.e., seismic computers), 4) construction and instrumentation/outfitting cannot be accomplished in this time frame. To design and construct a comprehensive accident management Technical Support Center with an adequate complement of instrumentation and displays will take several years to meet all the requirements.

3. There is no basis for the Emergency Operations Facility (EOF) to be within 10 miles of the station. Our Emergency Exercise at North Anna showed that face-to-face contact between the EOF and TSC is not needed. The advantages of an EOF located some distance from the station are:

- 1) One EOF could serve multiple sites,
- 2) Distance is the best protection from any releases and a distant EOF should eliminate the need to evacuate the EOF to less well equipped quarters,
- 3) Equipment maintenance would be easier,
- 4) Security of the facility would be assured,
- 5) Continuous surveillance testing would be possible, and
- 6) It could be manned more rapidly in the event of an accident.

The Emergency Operations Facility actually is the assimilation of several functions involving radiological assessment, utility management, governmental organization interface, information dissemination and post accident recovery. Whereas it is important to locate some of these functions in close proximity to the plant and protect the people involved with them from potential radiation releases several of these functions are not time or distance critical. Separation of function, and therefore requirements, can yield greater facility flexibility to allow for site specific state and local government considerations.

With the exception of the requirement to reach the Reactor site within 20 minutes, the Vepco central office meets or exceeds the functional requirements for the EOF.

If the EOF were in the central office, the equipment used for data reception and transmission would be under constant surveillance and protection by the office security force. The equipment would also be maintained in a controlled atmosphere. Periodic testing during working hours could be performed on a routine basis to insure system operability. Should a malfunction occur, resources for repairing the equipment would be readily available. Furthermore, we have a real concern for having two buildings, one at Surry and one at North Anna, sitting in remote locations that are susceptible to vandalism and that would be difficult to maintain.

4. It should not be necessary to provide separate sleeping quarters in the TSC. Incorporation of sleeping quarters would require considerable additional shielded space which is unwarranted because, during the critical phases of an emergency when releases are most likely to occur, it is unlikely that anyone would be sleeping. Provisions for sleeping quarters can be provided during the recovery phase by use of portable trailers, etc.
5. NUREG-0696 should allow the use of a single computer system to perform all of the emergency response facility functions (SPDS, TSC, EOF, NDL) and the plant computer functions. If a single system satisfies the requirements, including availability, then it should be acceptable.

6. The requirement for OBE seismic qualification of the SPDS is too restrictive. Although individual system components may be fully capable of being qualified to the OBE requirements, the problem arises in being able to specify and perform qualification testing without a significant impact upon delivery and installation schedule. While it is generally agreed that the SPDS is "important to safety" it only functions as an operator aid and is not necessary to mitigate the consequences of an accident.

Since requirements in NUREG 0696 dictate that the SPDS shall include at a minimum a digital computer system to provide the necessary logic and diversity for the various displays, the requirement for all existing licensees to obtain seismically qualified computer systems, install them, program them and test them by January 1982 is simply not feasible, particularly since only one vendor in the United States has ever offered a seismically qualified computer system (Interdata - now Perkin Elmer).

Either the seismic requirement should be removed from NUREG 0696 or the NRC should allow utilities to install a base SPDS consisting of a conventional hard-wired analog display board that is seismically qualified and only displays data associated with the normal plant operating mode. This base system could be installed by January 1982. The base system would be augmented by a non-seismic digital computer based SPDS that provides dedicated displays for every plant operating mode and also provides secondary displays and trending information for each mode obtainable by user call-up.



7. Commercially available computers typically have an advertised availability of 99.5% and when used in conjunction with available input/output devices and power supplies, overall availability of 99.0% is achieved. To meet the 99.9% availability requirement would require redundant computer systems, input/output devices and power sources. To statistically demonstrate an availability of 99.9% with a confidence level of 95% would require a test period of approximately 46 years.
8. The process of "verification and validation" of the design, development, qualification, and installation of the SPDS, TSC, EOF, and NDL should be consistent with the established quality assurance program of the Utility/A&E organization and the function of these emergency facilities.

With regard to the software development, we do not feel that the "validation and verification" procedures outlined by the IEEE/ANS draft standard P-742, Standard Criteria for the Application of Programmable Digital Computer Systems in Safety Systems of Nuclear Power Generating Stations, should apply to the SPDS, TSC, EOF, and NDL. We do feel that a well documented and structured software development process should be utilized and some level of "independent review" established; however, the definition of "independent review" should be consistent with established quality assurance programs for the utility and A&E organizations.

Should a utility elect to implement the emergency response facility data system with a digital computer system, we feel it is reasonable and prudent to apply some of the well established sensor checks and reasonableness checks on data to attempt to identify erroneous data. We feel it unnecessary and unwarranted to install redundant sensors validation. To do so would add significant complexity to the emergency response data systems and possibly compromise the design objective of high reliability.

9. Many efforts are proceeding with the specific intention of upgrading control room response capability. These include the addition of the Shift Technical Advisor to the operations staff, upgrading of shift staff training, development of symptom related responses to plant transients and control room man-machine interface enhancements. The overall goal of these efforts is to upgrade the operator assessment capability for all conditions that may arise. Therefore, it is reasonable that this can be done without requiring the SPDS to be a one hundred percent available, design basis accident qualified piece of equipment. In overall perspective, the SPDS can function as an excellent operator aid. However, with the other mentioned activities, SPDS non-operation, regardless of the cause, can not constitute serious degradation in the operator's ability to properly interpret plant response.

10. NUREG-0696 indicates in several places that detailed guides for preparation of performance specifications will be published separately. We cannot continue to design systems for the sake of meeting the unrealistic schedules proposed by the NRC and then have the NRC publish further guidance after the designs have been finalized. Industry is capable of developing designs and products from functional requirements provided by the NRC, therefore this additional guidance is considered unnecessary.
  
11. We do not believe that a Limiting Condition of Operation (LCO) is required for the TSC or the EOF. Neither is needed for immediate accident mitigation and, therefore, should not be the subject of a LCO as is the case with safeguards equipment. If a statement in the Technical Specifications is required, then it should be given in Section 6, Administrative Controls.

## Specific Comments

1. Page 2, Section I-B.1. Safety Parameter Display System

The duplication of the SPDS in the EOF is unnecessary.

See our specific comment No. 5.

2. Page 4, Section I-C, Para. 1. Emergency Response Facility System  
Integration

The statement, "the design performance of the integrated system must meet the most stringent design performance requirements of any of its subsystems," is inconsistent with the previous statement, "all components and systems need not be designed to the same quality and reliability."

3. Page 4, Section I-C Emergency Response Facility System Integration states that "These signals shall be transmitted, processed and displayed independently of any equipment used for normal plant operations, such as the process computer. However . . . display."

We feel the use of a new distributed function process computer system should not be prohibited as long as the system meets all requirements placed on the data acquisition and display computer system for the SPDS, TSC, EOF and NDL within NUREG 0696 such as unavailability goal, isolation; and as long as no error in the plant computer hardware or software can propagate into the SPDS, TSC, EOF, and NDL hardware/software.

See our general comment No. 5.

4. Page 5, Section I-D, Para. 1 - Verification and Validation Criteria

See our general comment No. 8 on verification and validation.

5. Page 6, Section II-B SPDS Location

There is no need to have an SPDS display in the EOF. The SPDS is specifically designed to aid rapid assessment by the Control Room Staff so that they can determine what control actions may be required to maintain the plant in a safe condition. The EOF has no need for rapid assessment of in-plant parameters using an SPDS format because all plant parameters will be available in the EOF via the data link from the data collection system for the TSC, EOF and NDL.

6. Page 7, Section II-C SPDS Size

The second sentence states "The SPDS shall be readable from the operating station of the shift supervisor, control room senior reactor operator..". Dependent upon control room design these operating stations could be located in different areas of the control room. It is suggested that the words "from the operating stations of" be deleted from this sentence and replaced by the word "by".

7. Page 8, Section II-F SPDS Design Criteria

Para 1 - See our general comment No. 7 on unavailability goal.

8. Page 8, Section II-F - SPDS Design Criteria

See our general comment No. 6.

9. Page 8, Section II-F SPDS Design Criteria

See our general comment No. 10.

10. Page 9, Section III-A, Technical Support Center Function

There is no need for a Limiting Condition for Operation (LCO) for the TSC. See our general comment No. 11.

11. Page 10, Section III-B TSC Location

It is our position that the TSC shall be located within the owner controlled area, preferably within the security boundary. While we agree that "face-to-face" communication/interaction with control room personnel may be beneficial, if possible, during specific phases of an accident, the inflexibility of the two-minute walking distance requirement is not commensurate with the interface benefit and does not permit site specific factors to be considered. Location of the TSC within the owner controlled area with an approximate transportation distance of under 10 minutes to the control room should be acceptable commensurate with control room interaction benefit.

Also recommend deleting any requirement for "primary" and "habitable" TSC as this can unduly complicate emergency management.

12. Page 11, Section III-E TSC Structure

Para. 1 - To clarify the "well engineered" statement, add the following after the word "structure" in sentence 2:

"structure (designed to the Uniform Building Code)..."

13. Page 11, Section III-F TSC Habitability

Para. 1 - The last sentence should read, "Applicable radiological hazard criteria are specified...etc."

14. Page 12, Section III-F, Para. 3 - TSC Habitability

Recommend replacing the paragraph with: To ensure adequate radiological protection of TSC personnel, radiation monitoring instrumentation and equipment shall be available at the TSC to be placed into service when the TSC is manned. This instrumentation may be fixed or portable and must be capable of measuring dose rates and airborne radioactivity concentrations in the TSC. Means to distinguish the presence or absence of radiodines shall be provided. In the case of the dose rate instrumentation, it shall include alarms with the ability to be set to provide early warning to personnel of adverse conditions that may effect the habitability of the TSC.

15. Page 12, Section III-F, Para. 4 - TSC Habitability

Recommend changing the first sentence to read: "Provisions for the TSC functions to be accomplished in other locations shall be made...etc."

16. Page 12 and 13, Section III-H TSC Instrumentation and Power Supplies

Para. 2 - See general comment No. 7 on unavailability. In line 4, recommend inserting word "stored" in front of "data"

17. Page 13, Section III-I TSC Technical Data and Data System, states that

"Signals from sensors providing data of variables specified in Reg Guide 1.97 shall be input directly into the data acquisition processor(s) for the SPDS, TSC, EOF, and NDL. These signals shall not be transmitted through a plant process computer prior to input into the emergency facilities data processor(s)."

See our specific comment No. 3 and general comment No. 5.

18. Page 14, Section III-I, Para. 4 - TSC Technical Data and Data System,  
See general comment No. 7 concerning unavailability.
19. Page 15, Section IV-A, EOF Function -  
There is no need for a LCO for the EOF. See our general comment No. 11.
20. Page 17, Section IV-F. EOF Habitability  
Para. 1 - The last sentence should read "Applicable radiological hazards  
criteria..."
21. Page 17, Section IV-F, Para. 2., EOF Habitability  
Change first sentence to read as follows: "The EOF ventilation system  
shall function in a manner comparable to the control room and TSC venti-  
lation system if required by the evaluation results of Standard Review  
Plan 6.4."
22. Page 18, Section IV-F, Para. 3., EOF Habitability  
In the first sentence we recommend deleting the word "permanent."
23. Page 18, Section IV-G EOF Communications - states "The alternate EOF need  
not be. . . to the plant."

This sentence is the first mention of an alternate EOF in NUREG 0696 and appears out of context. We feel the possibility exists that reference to an alternate EOF was inadvertently left in this draft of the document.



24. Page 19, Section IV-H EOF Instrumentation and Power Supplies - states  
"Should a loss of EOF power occur . . . to an alternate EOF facility."

This is the only other place in NUREG 0696 where reference is made to an alternate EOF. Our specific comment No. 21 also applies here.

25. Page 19, Section IV-H EOF Instrumentation and Power Supplies  
In the first sentence insert the word "stored" before "data."

26. Page 19, Section IV-I, EOF Technical Data and Data System, - states  
"Signals from sensors providing data for variables specified in Reg Guide 1.97 shall be input directly into the data acquisition processor serving the EOF with no previous signal processing by a plant process computer."  
Direct transmission capabilities between various facilities is an unrealistic requirement. Interactive capabilities between the computer and the facility are possible.

27. Page 19, Section IV-I, Para. 1. EOF Technical Data and Data System  
The EOF data system need not be as time restrictive as that of the TSC. Duplication of the SPDS and unavailability of .001 are not necessary and should be deleted. If the EOF data system is to have an unavailability of .001, its power supply unavailability must be much less than .001. This requirement necessitates a UPS at the EOF which is in addition to the UPS at the SPDS/TSC data system facility.

28. Page 20, Section V-B-a, NDL Description, - states "The license shall provide the same data as the variables listed in Reg. Guide 1.97."

We feel this is impractical since some of the data does not facilitate real-time data transmission. An example of this is boron concentration. This value cannot be automatically updated periodically by scanning sensors. Rather, a sample of RC inventory is taken manually, as required, by plant chemists from which they then determine boron concentration. We feel a subset of Reg. Guide 1.97 parameters should be utilized on the NDL.