

Atomic Industrial Forum, Inc.
7101 Wisconsin Avenue
Washington, D.C. 20014
Telephone: (301) 654-9260
TWX 7108249602 ATOMIC FOR DC

DOCKET NUMBER PR 50
PROPOSED RULE (45FR54708)

September 29, 1980



10

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Docketing and Service Branch

Dear Sir:

In the Federal Register of August 15, 1980 (45 F.R. 54708) the NRC staff solicited comments on the document NUREG-0696, "Functional Criteria for Emergency Facilities" and the proposed implementation schedule on page 54709 of the Federal Register notice.

The Atomic Industrial Forum's Safety Parameter Integration Subcommittee of the Policy Committee on Nuclear Regulation has reviewed NUREG-0696 and offers the attached comments for your consideration.

Sincerely,

Stephen H. Howell
Chairman

Enclosure

Acknowledged by card. 9/30/80

8010220

204

2-4-1, PT 50

Comments on NUREG-0696
"Functional Criteria for Emergency 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 1 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. All References to Regulatory Guide 1.97 (Instrumentation to assess and follow the course of an accident, etc.) should be qualified. Reg Guide 1.97 is not final yet nor is the scope consistent with the functional criteria for these emergency facilities. The parameter sets for the emergency facilities should be based on the function of each facility. Our committee has recommended to the Advisory Committee on Reactor Safeguards (ACRS) that a systematic approach be used to establish the data requirements for emergency facilities. This approach, in contrast to Reg Guide 1.97, integrates the consideration of human factors engineering, the need for and importance of the information, and the function for which the information is going to be used. The ACRS did not endorse Reg Guide 1.97 in its present form and recommended that additional effort be made to resolve some of the rather major differences in the approach between the NRC staff and industry.

3. NUREG-0696 should not prohibit 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 requirement, including availability, then we see no technical justification for requiring separate, dedicated systems.

4. The requirement for OBE seismic qualification of the SPDS is not warranted based upon its intended function. While it is generally agreed the SPDS is "important to safety" in that it provides enhanced information and functions as an aid to the operator, the SPDS is not necessary to mitigate the consequences of an accident. In the event of the failure of the SPDS, adequate Class 1E instrumentation will be available for the control room operator. Further, this seismic requirement will significantly affect the schedule for incorporating the SPDS into operating plants-which subordinates the desire of both the NRC and industry for timely implementation.

Among the most reliable and widely used computer equipment is that provided by the major computer vendors. These vendors do not offer seismically qualified equipment as a normal product line.

The requirement to remain functional through a seismic event will impose an additional non-Class IE electrical load on the Class IE power source. This additional load might require some plants to install a new, seismically qualified, UPS system to meet the requirements of NUREG-0696. If available capacity exists from a Class IE power source, special isolation devices must be procured to allow non-Class IE equipment to be powered from a Class IE power source.

5. Availability should be defined with respect to function (purpose) of the SPDS, TSC, etc. Unavailability should not mean loss of a single input parameter but loss of the function of each Emergency Response Facility.

Design availability (or unavailability) should be defined using standard manufacturers data such as Mean Time Between Failures and Mean Time To Repair and should be based upon actual historical or generic data.

Commercially available computers typically have an advertised availability of 99.5% and when used with the available input/output devices and power supplies overall availability of 99.0% is achievable. To meet the 99.9% availability (10^{-5} unavailability) is unrealistic since to achieve this level of availability would require the use of redundant computer systems, input/output devices and power sources. The use of redundant computers with failover schemes would require unnecessarily complicated software structures to achieve the overall availability and this increased complexity of system software would serve to lower the overall system availability. Further, it is not practical to demonstrate statistically through operating history or system tests an availability of 99.9% since to do so at a 95% confidence level would require a test period of approximately 400,000 hours.

6. It was mentioned at one of the regional workshops that all signals which supply an input to the SPDS should be isolated, including non-Class IE signals. Since the system will not be designed to meet Class IE requirements, isolation of non-IE inputs should not be required.

7. 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 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 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 or to utilize overly complex mathematical modeling for such sensor validation. To do so would add significant complexity to the emergency response data systems and possibly compromise the design objective of high reliability.

8. 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 of the normal control room staff for all conditions that may arise. Therefore, it is reasonable that this can be done without requiring the SPDS to be a 99.9% available 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.

9. NUREG-0696 indicated in several places that detailed guides for preparation of performance specifications will be published separately. Industry is capable of developing designs and products from functional requirements provided by the NRC, therefore this additional guidance is considered unnecessary.

10. Many licensees have in good faith attempted to be responsive to earlier NRC requirements/guidelines, on locations and habitability of the Technical Support Center and Emergency Off-site Facility. They have constructed buildings and developed facilities and plans that are quite appropriate and applicable for their specific locale. We urge that the document be flexible enough to accommodate a variety of approaches on these issues.

11. Schedule

Regarding the implementation schedule in the Federal Register notice and in Mr. Eisenhut's letter August 1, 1980, the fourth, fifth and sixth line items (equipment/interface specification, building construction/modification, and hardware procurement) are unrealistic considering they occur prior to completion of NRC review and approval of conceptual design. Those licensees who responsibly and responsively sought to implement NURG-0578 requirements by January 1, 1981 in this area only to see the requirements change and escalate by the issuance of NUREG-0696 will be reluctant to commit to any course of action without explicit approval by NRC. Therefore, the end date of April 1982 for full operations capability will be difficult to meet by many licensees.

A realistic schedule for installation of the SPDS, NDL etc. would require 2 1/2 years after finalization of NRC requirements. (Note that this estimate is significantly more optimistic than the four year schedule indicated in the NSAC report TSA 80-361.) The specification development, request for proposal process and vendor selection would take a minimum of 9 months. System construction, software development, system testing and installation and training would require 21 months. This schedule is based on an ambitious best effort approach utilizing off-the-shelf equipment integrated into a sophisticated data acquisition, processing and display system. Construction of new emergency facilities for the performance of the required functions can be completed within this time frame for most utilities, but specific schedules should be developed with each utility.

For the NRC approval process to proceed on schedule, the functional requirements must be finalized before utilities can develop conceptual designs. Other complications, such as seismic requirements and human factors considerations may negatively impact on the above schedule.

Specific Comments

1. page 2, para 1. Safety Parameter Display System
The duplication of the SPDS in the EOF is not required by the functions to be performed in the EOF. The EOF is to be staffed by corporate level management personnel for management of the overall emergency response, the management of recovery operations, and coordination of radiological assessments. The SPDS will be in the control room and the TSC and will be available to the recovery manager in his discussions with control room and TSC personnel; however, it is not expected that such detailed technical information will be required independently by the recovery manager in the very broad management decisions he must make. Further, the transmission of SPDS data to the EOF increases the potential for contradictory assessments and confusion.
2. page 4, para 2. Nuclear Data Link
We believe it is unwise and impractical for the NRC or any organization to attempt to direct operations remotely.
3. page 4, sec C. Emergency Response Facility System Integration
para 1-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".
4. para 4, sec C para 2 - Recommend rewriting this paragraph. See our general comment no. 2 on Reg Guide 1.97 and general comment no. 3 on use of a single computer system.
5. page 5, sec D. Verification and Validation Criteria
para 1 - See our general comment no. 7 on verification and validation
6. para 3 - Recommend deleting this paragraph on limiting condition of operation as it is covered under each individual facility.
7. page 6, sec B. SPDS Location
para 1 - The duplication of the SPDS in the EOF is unnecessary. See our specific comment no. 1.

8. page 7, sec C SPDS Size

This section states that the SPDS size "... to be compatible with the existing space in the control area." It is further stated that the SPDS display "...shall be readable from the operating stations of the shift supervisor, control room senior reactor operator, shift technical advisor, and at least one reactor operator." It is very likely that these two requirements are inconsistent in all generating stations. We suggest that the second sentence be modified as follows: "the SPDS display shall be readily available to the shift supervisor, control room senior reactor operator, shift technical advisor, and at least one reactor operator."

9. page 8, sec F. SPDS Design Criteria

para 1- See our general comments no. 5 and no. 2 on unavailability goal and Reg Guide 1.97.

10. para 3 - See our general comment no. 4 on SPDS seismic design and qualification. Recommend deleting OBE requirement.

11. page 9, para 4 - Recommend deleting this paragraph. Interactive terminal and display capabilities between various facilities is an unrealistic requirement. Interactive capabilities between the computer and the facility are possible.

12. page 10, sec 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.

13. page 11, sec. D TSC Size

para 1 - The last sentence states, "A separate space in the TSC shall be provided for private NRC consultations." Recommend deleting this convenience requirement as it adds unnecessary cost to the TSC and restricts the possible locations of the TSC in some plants.

14. page 11, sec E. TSC Structure

para 1 - to clarify the "well engineered" statement add the following after the word criteria in sentence 2:
"criteria (designed to the uniform Building Code for its seismic area),..."

15. page 11, sec F. TSC Habitability
para 1 - The last sentence should read, "Applicable radiological hazard criteria are specified...etc."
16. page 12, para 2 - 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."
17. page 12, para 3 - Recommend first sentence to read:
"Provisions for the TSC functions to be accomplished in other locations shall be made...etc."
18. page 12, sec H. TSC Instrumentation and Power Supplies
para 2 - See general comment on unavailability.
In sentence 4, recommend inserting word "stored" in front of "data".
19. page 13, sec I. TSC Technical Data and Data Systems
para 1 - See general comment no. 2 on R.G. 1.97
20. para 2 - See general comment no. 3 about independent processor and computer.
21. page 14, para 1 - See general comment no. 5 concerning unavailability.
22. page 15, sec IV B. EOF Location
The emergency operators 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 time or distance critical. Separation of functions, and therefore requirements, can yield greater facility flexibility to allow for site specific state and local government considerations.

The restriction to contain all EOF functions within 10 miles should be an approximate guideline limited to the radiological assessment and utility management functions. The specific 20 minute ground travel time consideration is not necessary in terms of the function requirements of the EOF. Face-to-face interactions with the TSC and those people performing EOF functions will largely involve planned actions. Therefore, commensurate with the value of this interface as compared with other interfaces, a relaxation of this time restriction of 20 minutes to a guideline of approximately 30 minutes is appropriate.

23. page 17, sec F. EOF Habitability
para 1: The last sentence should read "Applicable radiological hazards criteria..."
24. para 2 - Change first sentence to read as follows:
"The EOF ventilation system shall function in a manner comparable to the control room and TSC ventilation system if required by the evaluation results of Standard Review Plan 6.4".
25. page 18, para 1 - In first sentence recommend deleting the word "permanent".
26. page 19, sec H EOF Instrumentation and Power Supplies.
In first sentence insert the word "stored" before "data"
27. Page 19, sec I EOF Technical Data and Data System
para 1 a) See general comments #2 and #5.
 b) The EOF data system need not be as time restrictive as that of the TSC. Alternatives, such as telecommunications systems, to meet data requirement to support the EOF functions should be acceptable. 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 then the unavailability of its power supply must be much less than .001.
28. Page 20, sec B. NDL Description
para 2 See general comment 2 about Regulatory Guide 1.97.
29. Page 21, para C.
A one second time tagging of data is inappropriate for the function of off site information.