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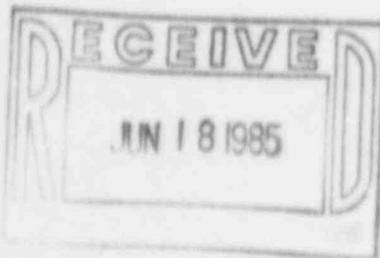
June 11, 1985
Fort St. Vrain
Unit No. 1
P-85197

Regional Administrator
Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Attn: Mr. E. H. Johnson

Docket No. 50-267

SUBJECT: 10CFR50.49, Environmental
Qualification of Electrical
Equipment Important to
Safety for Nuclear Power
Plants



REFERENCES: 1) NRC Letter dated
01/28/85, Johnson to
Lee (G-85041)
2) PSC Letter dated
03/25/85, Lee to
Johnson (P-85103)
3) PSC Letter dated
03/28/85, Warembourg
to Johnson (P-85112)
4) NRC Letter dated
05/07/85, Johnson
to Lee (G-85178)

Dear Mr. Johnson:

In response to your most recent inquiry (Reference 4) regarding environmental qualifications of electrical equipment important to safety, we continue to maintain our position (as stated in Reference 2 and 3) of full compliance with the requirements of 10CFR50.49 as these requirements are interpreted to apply to the Fort St. Vrain HTGR. Our mutual efforts concerning the seismic/environmental issues, as outlined in Reference 2, began in 1977 and have continued in terms of ongoing correspondence and meetings to the present time, including NRC recognition, in Amendment 18 of our operating license (Letter Denise to Fuller dated October 28, 1977), of the four (4) minute steam line isolation.

We recognize, however, that based on our April 3, 1985 meeting with the NRC staff that there are some issues of concern involving the

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four (4) minute operator response time, aging requirements and operability times.

Immediately following the April 3, 1985 meeting we began evaluating the various issues concerning the four (4) minute response time including consideration to the following:

- 1) Additional validation tests that could be conducted to support the response time,
- 2) Re-evaluation of the steam leak, qualification curves, etc. to evaluate the methods and conservatism in the methods of obtaining qualification curves,
- 3) Evaluation of alternative methods that might be employed to enhance operator response.

In evaluating Item 1 above with our human factors expert, we came to the conclusion that short of having a simulator, there was no reasonable means of testing operator response that would represent an improvement over that which we already presented to you. We have no historical operator response times associated with steam related leaks. Although we have many instances where operators have responded to situations within four (4) minutes, we have no direct correlation to isolating steam leaks.

With reference to Item 2 above, we have re-evaluations in progress on the steam leak accidents and the resulting environments. Based on preliminary results, it does appear that some unnecessary conservatism has been built into our calculation models, but we do not feel that these conservatisms will offer much in terms of the four (4) minute response issue.

Item 3 appears to be the only feasible means of addressing concerns that have been raised. Subsequent to the April 3, 1985 meeting, we began work on evaluating various means of detecting steam leaks and are developing design concepts. There are many technical issues that must be resolved to provide a reliable system. We have not resolved the issues sufficiently at this time to permit selection of a specific system. Please be assured that we are actively pursuing the design and installation of such a system and we will get information to you as soon as possible on the system and our schedule.

Based on our April 3, 1985 discussion on aging, we have been able to improve our aging study schedule from the Reference 3 commitment date of November 30, 1985 to an expedited date of August 30, 1985. Work is underway and is progressing satisfactorily.

Concerning operability time, it should be noted that we do not have a containment and as such we expect the harsh environmental conditions to dissipate rather rapidly. We are, however, evaluating operability

times for specific equipment to ensure that equipment qualifications are adequate for the operating conditions.

In addition to the above, each of your concerns as presented in Reference 4 are addressed in the Attachment to this letter.

Any questions should be directed to Mr. M. H. Holmes at (303) 571-8409.

Very truly yours,

D. W. Warembourg
D. W. Warembourg, Manager
Nuclear Engineering Division

DWW/SM:pa

Attachment

Attachment to P-85197

Responses to NRC concerns raised
in letter dated May 7, 1985,
Johnson to Lee, (G-85178).

NRC Concern No. 1

The licensee has not adequately demonstrated the ability of the operators to respond as required. The staff stated that the licensee would have to demonstrate (through simulation or historical data) that the operators could respond correctly to these events in the required time, when presented with a wide variety of accident situations. Any such validation would have to be conducted under as close to actual operative conditions as possible, and include cognitive as well as the operative response times that were provided in the licensee's submittal of March 28, 1985. In the absence of such demonstrated performance, the staff could only accept operator action starting at 10 minutes, with 1 minute for each subsequent action, which is based on current industry-validated information.

PSC Response to Concern No. 1

A report included as Attachment A to our March 28, 1985 submittal (Reference 3), identified the alarms and operator responses associated with postulated steam line ruptures. The report concluded that it was possible to isolate steam line ruptures within 4 minutes.

PSC also conducted task analysis walkthroughs of the various steam line rupture scenarios using licensed reactor operators in the FSV control room mock-up. These walkthroughs were witnessed by our human factors expert, and affirmed the ability of the operator to correctly identify and isolate steam line breaks within 4 minutes, using existing instrumentation.

Since Fort St. Vrain does not have a simulator with which to further validate operator response to steam line rupture accidents, we propose an alternate course of action.

We propose the installation of a steam line rupture detection system for the Turbine Building. This system will utilize alarms and discrete instrumentation to accurately identify the specific location of the leak. Concise procedures will provide the necessary operator actions for isolation of the leak.

With this detailed diagnostic system and improved procedures, PSC is confident that our operators can easily respond and terminate a steam line break within 4 minutes.

NRC Concern No. 2

The staff also noted that the licensee has not fully evaluated alternative approaches to this problem. The staff concludes that the licensee should make a full evaluation of the systems required to fully automate the isolation of all steam rupture within the time required to assure continued equipment operability.

PSC Response to Concern No. 2

PSC considers the control room operator to be an integral part of the safety systems at FSV. We are highly confident that with the proposed steam line rupture detection system and concise procedures described in our Response to Concern No. 1, our operators will be able to terminate steam leaks within 4 minutes. Nonetheless, automatic isolation will be evaluated in conjunction with the development of our steam line rupture detection system.

NRC Concern No. 3

The staff recommends that PSC expedite the evaluation of aging effects for the affected equipment, which is presently underway.

PSC Response to Concern No. 3

We have contacted our aging qualification contractor and have requested acceleration of the aging program. We have been assured that this is possible.

In order to expedite the program, two of the phases, identified in our March 28, 1985 submittal (Reference 3) as part of our multi-phase program, will be combined. The establishment of aging data files and identification of age sensitive components will be done simultaneously. This will be complete by August 30, 1985.

In order to ensure control over potential age sensitive components, engineering guidelines which provide methods of qualification for new equipment and replacement parts have been established. Additionally, methods to incorporate the aging data into our maintenance programs are being pursued.

NRC Concern No. 4

Operability times need to be established in order to determine the necessary qualification conditions.

PSC Response to Concern No. 4

Given the condition of the steam line break accident, the fact that we do not have containment, and the fact that we will have continuous environmental volume interchange, we expect the harsh environment to dissipate rather rapidly.

We have, however, begun a study to establish operability times for specific safety related electrical equipment to ensure that the existing qualification records envelope the environmental conditions the equipment could experience during a steam line break.