

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ENCLOSURE *P*



March 19, 1982

MEMORANDUM FOR: Thomas M. Novak, Assistant Director
for Operating Reactors, DL

FROM: Dennis M. Crutchfield, Chief
Operating Reactors Branch #5, DL

SUBJECT: BIG ROCK POINT - ENVIRONMENTAL QUALIFICATION OF ELECTRICAL
EQUIPMENT

Franklin Research Center's evaluation of Consumer Power Company's 90-day response to our May 28, 1981 SER concluded that the licensee has not completed its response to the deficiencies listed in the SER. FRC also recommended that the licensee provide a justification for interim plant operation for equipment with outstanding qualification deficiencies.

The licensee has committed to complete the responses to our SER by April 30, 1982. Also, we met with the licensee on February 19, 1982 and discussed the justification for continued operation presented in the 90-day response. As a result of this meeting, the licensee submitted a letter dated March 15, 1982 that provided additional bases for continued operation. Based on our review of this submittal, we conclude that interim operation can continue pending final resolution of this issue.

Dennis M. Crutchfield
Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
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APPENDIX D - REVIEW OF LICENSEE'S RESPONSE TO NRC EEQ
SER CONCERNING JUSTIFICATION FOR INTERIM OPERATION

1. BACKGROUND

The NRC Safety Evaluation Report (SER) concerning equipment environmental qualification (EEQ) states [118]:

"Subsection 4.2 identified deficiencies that must be resolved to establish the qualification of the equipment; the staff requires that the information lacking in this category be provided within 90 days of receipt of this SER. Within this period, the licensee should either provide documentation of the missing qualification information which demonstrates that such equipment meets the DOR guidelines or NUREG-0588 or commit to a corrective action (requalification, replacement, relocation, and so forth) consistent with the requirements to establish qualification by June 30, 1982. If the latter option is chosen; the licensee must provide justification for operation until such corrective action is complete."

On January 19, 1982, FRC representatives met with NRC Division of Licensing personnel at NRC offices to discuss the potential for FRC to assist the staff in the technical review of licensees' statements regarding justification for interim plant operation submitted in response to outstanding qualification deficiencies in the NRC EEQ SERs. The results of the meeting were as follows: (1) FRC was requested to proceed immediately with the technical review of licensees' justification for interim operation, (2) the format was established, and (3) the criteria for the review were established. These criteria are presented in Section 2 of this appendix.

On January 21, 1982, the NRC provided the following modification to Final Assignment 13 concerning this subject:

"The FRC review will consist of:

- o Review the licensee's justification of interim operation and provide FRC independent analysis which shows whether or not licensee provided technically sound rationale as a basis for justification for continued plant operation.

- o On January 27, 1982, FRC shall provide a list of those power reactors that have provided technically sound justification for continued operation. FRC shall also provide a list of those power reactors which have not provided technically sound justification for continued operation. In addition to the lists, FRC may provide any additional information which in FRC's judgment is necessary to support the conclusions regarding justification for continued operation."

On January 25, 1982, the NRC was provided with the completed review of the licensees' statements presented as a basis for justification for interim operation in response to the NRC EEQ SER.* On February 5, 1982, at the NRC's request, the NRC was provided with actual examples of licensees' responses to the NRC EEQ SER that provide adequate rationale as a basis for justification for interim operation.**

2. GENERAL DISCUSSION

In general, licensee-submitted justifications for interim operation are based on systems considerations, equipment operability evaluations, or failure-modes-and-effects analyses.

Systems considerations often involve the availability of backup equipment capable of performing the particular safety function of concern. The backup equipment is either environmentally qualified, unqualified but not exposed to a harsh environment at the same time as the primary equipment, or located so that it is unlikely that both the primary and backup equipment would be simultaneously exposed to a severe environment. In general, these systems discussions should consider (1) the possibility of a single-active failure

* C. J. Crane

Letter to R. A. Clark, NRC. Subject: Transmittal of FRC Review of Licensees' Responses to NRC EEQ SER Concerning Justification for Interim Operation
FRC, 25-Jan-82

** C. J. Crane

Letter to R. A. Clark, NRC. Subject: Transmittal of Actual Examples of Licensees' Responses to NRC EEQ SER Which Provide Adequate Rationale as a Basis for Justification of Interim Operation
FRC, 5-Feb-82

disabling the backup equipment, (2) any major differences in the characteristics of the primary and backup equipment (unless it is obvious that the equipment is essentially identical), (3) the possibility of electrical failure of the primary equipment causing an adverse effect on other safety-related equipment or power supplies, and (4) in the case of display instrumentation, the possibility of an operator being misled by the failed primary equipment. Where equipment has not been demonstrated to be qualified, some justifications discuss administrative procedures or revised operating procedures in effect. Depending upon the specific equipment involved, each of the above considerations need not be discussed in every instance, but, in general, a complete systems discussion would consider the above points.

Where equipment qualification evaluations were used, licensees generally (1) received additional information from manufacturers, (2) applied engineering judgment, (3) performed material analysis, and/or (4) used partial test data in support of the original qualification documentation. Where these evaluations were performed, the licensees determined that, although full qualification was not documented, there was sufficient evidence to suggest that the equipment would perform its intended safety function, thereby justifying interim operation until qualified equipment is installed.

Some licensees provided detailed failure-modes-and-effects analyses of electrical circuitry to demonstrate that, under all identified failure modes, the safety function of the equipment could still be accomplished.

Other justifications involved a combination of qualification information and systems information. For example, if a licensee has qualification information (such as a generic test report or other partial qualification documentation) that tends to confirm the ability of the equipment to remain operable for a specified period of time, justification for interim operation often was based upon a discussion of the required safety function being performed prior to the potential failure. This type of discussion often applies to equipment which performs a short-term trip or isolation function in the early stages of an accident.

3. PLANT-SPECIFIC REVIEW

As a result of the review, this plant was evaluated and the results documented on the "Summary of Review of Licensee's 90-Day Response" form reproduced below:

"EQUIPMENT ENVIRONMENTAL QUALIFICATION (EEQ)
Review of Licensees' Resolution of Outstanding Issues
From NRC Equipment Environmental Qualification
Safety Evaluation Reports

SUMMARY OF REVIEW
OF LICENSEE 90-DAY RESPONSE

Utility: Consumers Power Company
Plant Name: Big Rock Point
NRC Docket No. 50-155
NRC TAC No. 42515
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 465

References:

- a. D. P. Hoffman
Letter to D. M. Crutchfield, NRC. Subject: Big Rock Point Plant -
Environmental Qualification of Safety-Related Electrical Equipment -
Response to 6/1/81 letter and SER
Consumers Power Co. 03-Sep-81
- b. Office of Nuclear Reactor Regulation
Safety Evaluation Report for Big Rock Point Nuclear Power Station
Environmental Qualification of Safety-Related
Electrical Equipment
NRC, 01-Jun-81
- c. D. P. Hoffman (CPC)
Letter to D. M. Crutchfield (NRC) with Attached Report, Environmental
Qualification of Safety-Related Electrical Equipment,
Big Rock Point Nuclear Plant
Consumers Power Co., 31-Oct-80

- d. D. P. Hoffman
Letter to D. M. Crutchfield, NRC. Subject: Revisions to October 31, 1980 response "Environmental Qualification of Safety Related Electrical Equipment - Big Rock Point Plant"
Consumers Power Co., 30-Jan-81
- e. T. Bordine
Letter to D. M. Crutchfield, NRC. Subject: Big Rock Point: Environmental Qualification of Safety-Related Electrical Equipment; Request for Additional Time
Consumers Power Co., 17-Dec-81

The Licensee has not fully responded to the NRC SER; however, the Licensee has submitted some technical information in Reference a in response to the NRC SER [b] on environmental qualification. FRC has reviewed these documents [a,b].

Consumers Power Company submitted to the NRC a report entitled "Environmental Qualification of Safety-Related Electrical Equipment" on October 30, 1980 [c]. The report was revised by Consumers Power Company on January 30, 1981 [d]. The Licensee stated that the revisions were necessary due to discrepancies noted between the submitted data obtained from file documentation and data obtained by engineers during an equipment walkdown inspection conducted during the November 1980 to January 1981 refueling outage. On February 13, 1981, the NRC transmitted by letter a preliminary evaluation of the Equipment Qualification Report to Consumers Power Company. The evaluation was a draft of what was later to become an SER on the subject. Consumers Power Company replied on March 2, 1981.

The SER in its final form was transmitted to Consumers Power Company on May 28, 1981 [b]. A revision to the SER was issued on June 23, 1981. Accompanying the SER was a Technical Evaluation Report (TER) dated May 15, 1981. The TER contained considerably more detail than the SER.

Consumers Power Company responded to the NRC SER on September 3, 1981 [a]. The Licensee stated that:

'In general, these answers have been supplied by revising the 1980 Equipment Qualification Report. Where a commitment has been made to replace the equipment, the questions from the TER have not been addressed as qualification is no longer an issue. Justification for continued operation has not been changed. Consumers Power Company feels that the

arguments presented previously are sufficient to justify continued operation until the equipment is replaced. Furthermore, it was assumed that the questions of the TER and the codes in the SER were directed only to qualification and not justification for continued operation.'

Furthermore, the Licensee stated that:

'Although the draft version of the SER received with the February 13, 1981 letter raised questions regarding qualification, the nature of the questions was not clear. With receipt of the details of the TER along with the final SER, further investigation of the qualification resumed. This left little time to prepare the answers to all of the questions of the TER by the September 3, 1981 date for reply. However, Consumers Power Company considers it important to prepare a complete response to the SER and is accordingly adding resources to work on equipment qualification. This will permit the preparation of further submittals to provide detailed answers.

Consumers Power Company intends to prepare two additional submittals on equipment qualification as follow-up to the current submittal:

1. By approximately January 5, 1981, submittal pages will be revised to reply to all questions contained in Section 4 of the TER except for questions relating to aging and to equipment that is being replaced.
2. By approximately April 5, 1982, an additional submittal will address the aging problem in detail.'

On December 17, 1981, the Licensee requested a time extension from January 5, 1982 to April 30, 1982 to complete the response to the NRC SER [e].

FRC has reviewed Reference a and concludes that (1) the Licensee has not completed its response to the qualification deficiencies stated in the SER, and (2) the Licensee has addressed approximately 50% of the equipment items listed in the SER (and TER) and has stated, in most cases, that the equipment is qualified to perform its safety function. It is recommended that the Licensee complete its response to the SER and provide a justification for interim plant operation for equipment with outstanding qualification deficiencies."

4. SUBSEQUENT REVIEW

As a result of FRC's review of the Licensee's 90-day response, described in Section 3 above, a meeting was held between the NRC staff and certain Licensee personnel. Following the meeting, the Licensee submitted Reference 126, in which additional information justifying interim operation was submitted for each equipment item not documented as environmentally qualified.

Evaluation

An evaluation has been conducted of the information provided by the Licensee in Reference 126, regarding justification for interim operation. After reviewing the technical basis of the Licensee's justification for continued operation for each item, it is concluded that the Licensee has provided sufficient technical basis to support justification for interim operation.