



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

Enclosure 1

March 9, 1982

50-324

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

THRU: D. B. Vassallo, Chief
Operating Reactors Branch #2, DL *MB*

FROM: J. A. Van Vliet, Project Manager
Operating Reactors Branch #2, DL

SUBJECT: Electrical Equipment Qualification Program
Justification for Interim Operation

RE: Brunswick Units 1 and 2

As directed by your February 4, 1982 memorandum, we have met with the Carolina Power & Light Company (CP&L) to assess the acceptability of its justification for interim operation of Brunswick Units 1 and 2. Following the meeting, we were able to conclude that CP&L had presented sufficient supplemental information to support its justification for continued interim safe operation.

By letter dated March 3, 1982 CP&L formally submitted the information needed to supplement its 90-day response.

J. A. Van Vliet
J. A. Van Vliet, Project Manager
Operating Reactors Branch #2, DL

cc: R. A. Clark

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Environmental Qualification Review
for Justification of Continued
Operation of Brunswick Steam
Electric Plant, Unit Nos. 1 and 2

1.0 Introduction

On June 3, 1981 we issued a Safety Evaluation (Reference 1) addressing environmental qualification of safety-related electrical equipment at Brunswick Steam Electric Plant, Unit Nos. 1 and 2. The safety evaluation identified, in part, equipment deficiencies for which the licensee was to either provide qualification information, or commit to an appropriate corrective action (requalification, replacement, etc.) If the licensee elected to commit to a corrective action, then the licensee was to provide a justification for continued operation until such corrective action could be completed. By letter dated September 16, 1981 (Reference 2) the licensee submitted its justification for continued operation. Our contractor for environmental qualification, Franklin Research Center, reviewed the licensee's justification and concluded that the licensee had not provided a technically sound rationale as a basis for continued plant operation (Reference 3). The licensee subsequently presented additional information supporting continued operation at a meeting on February 23, 1982 and in a submittal dated March 3, 1982 (Reference 4).

2.0 Evaluation

There are 37 items for which justification for continued operation is required. We reviewed each of these items to determine whether or not each item could be placed in any one of four previously determined acceptance categories. The four categories are:

- Category 1 - Redundant equipment is available to substitute for the unqualified equipment.
- Category 2 - Another system is capable of providing the required function of the system with unqualified equipment.
- Category 3 - The unqualified equipment will have performed its safety function prior to failure.
- Category 4 - The plant can be safely shut down in the absence of the unqualified equipment.

The results of this review are presented in the attached table. Twenty-five of the items were found to fit into one or more of the acceptance categories and, thus required no further review. Evaluation of the remaining items is described in the following paragraphs.

2.1 GE/Curtis Terminal Blocks (TER Items 51, 53)

The licensee has not provided test documentation which demonstrates that the terminal blocks can withstand loss-of-coolant accident (LOCA) high-energy-line-break (HELB) conditions. However, the licensee points out that documentation also does not exist which demonstrates that the blocks will fail, and that successful tests have been performed on four similar types of terminal blocks. The licensee also asserts that the terminal blocks would not be subject to direct impingement. Thus, the licensee concludes that continued operation is justified. We find the licensee's argument to be reasonable and thus, we agree with the licensee's conclusion.

2.2 ASCO Solenoid Valves (TER Items 2, 11)

These items are qualified to perform their safety functions with the exception of qualified life of the elastomer. Qualified life is a concern that can be characterized by the basic question of how long of a period of time (usually years) can a component remain in service before it loses its ability to perform a function. A qualified life deficiency generally means that the licensee has not adequately justified component replacement schedules. Since qualified life is the only deficiency for this item and since the licensee asserts that air leakage caused by elastomer degradation would be within the capacity of the air compressors, we find continued operation justified.

2.3 Limitorque Valve Operators (TER Items 14M, 14N, 14O, 18A, 18B)

The licensee asserts that qualification documentation is available for some limitorque valve operators and that the manufacturer's closely controlled design and manufacturing processes preclude significant variation among individual operators. In this regard, the manufacturer has stated that its actuators are generic. Additionally, an independent laboratory has assessed motor rewind material used for several motors and has found the material acceptable. Thus, the licensee concludes that continued operation is justified. We agree with the licensee's conclusion.

2.4 GE Motor Control Centers (TER Item 19)

The licensee asserts that physically similar motor control centers containing components of similar material makeup have been successfully tested, including newer vintages of the installed units. The licensee considers these tests to be generally applicable to the installed units, and thus considers continued operation to be justified. We agree with the licensee's conclusion.

2.5 AMP Special Industries Terminal Lugs (TER Item 49)

It has been previously determined that AMP terminal lugs with nylon sleeves are unqualified. However, an interim modification can be performed to prevent electrical failure. The licensee asserts that all essential terminations within the primary containment have been inspected and modified as necessary. The licensee further asserts that environmental and radiation testing demonstrate that terminal lugs in the reactor building will perform satisfactorily during and following peak accident conditions. Thus, the licensee concludes continued operation is justified. We agree with the licensee.

2.6 Pennwalt Heat Shrink Insulation (TER Item 68)

The licensee asserts that Pennwalt heat shrink is qualified insulating material, but will be replaced due to other replacement work. Thus, we conclude continued operation is justified.

3.0 Summary

Based upon the evaluation described above, and as documented in Reference 5, we find continued operation to be justified for Brunswick Units 1 and 2.

References

1. NRC letter dated June 3, 1981. T.A. Ippolito to J. A. Jones, Subject: Environmental Qualification of Safety-related Electrical Equipment.
2. CP&L letter dated September 16, 1981, E. E. Utley to T. A. Ippolito, Subject: Environmental Qualification of Safety-related Electrical Equipment.
3. FRC memorandum dated January 25, 1982, C. J. Crane to R. A. Clark, Subject: FRC review of Licensee's responses to NRC EEQ SER concerning justification for interim operation.
4. CP&L letter dated March 3, 1982, S. R. Zimmerman to D. B. Vassallo, Subject: Environmental Qualification.
5. NRC letter dated March 9, 1982, D. B. Vassallo to J. A. Jones, Subject: Environmental Qualification of safety-related Electrical Equipment for Nuclear Power Plants.

Environmental Qualification Categorization Review
Brunswick Steam Electric Plant, Unit Nos. 1 & 2

<u>TER ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>REMARKS</u>
5A, 5B	Containment Air Monitors	Category 4
7, 9, 42	Bailey Level & Pressure Transmitters	CAC-PT-1257-2 (Plant ID#)-Category 1 CAC-LT-2601, CAC-LT-2602-Category 4
51, 53	GE/Curtis Terminal Blocks	No Category
2, 11	ASCO Solenoid Valves	No Category
8, 24	Barton Switches	Category 4
10A, 10B	Limit Switches	Category 4
12		Category 4
14M 14N, 14O 18A, 18B	Gate Valve Operators	No Category
15	GE Radiation Detectors	Category 3
19	GE Motor Control Centers	No Category
20C, 40	GE Control Switches and Relays	Category 3
25	Tuthill Motors	Category 2, Category 4
26, 33	GE Flow & Pressure Transmitters	E41-FT-N008-Category 2, Category 4 C32-PT-N005A, 5B-Category 2 E11-PDT-N002A, 2B-Category 4
27	Robert Shaw Level Switches	Category 3
29	Fenwal Temperature Switches	Main Steam Leak Detection-Category 3 HPCI/RCIC Steam Leak Detection-Category 2
34	AVCO Solenoid Valves	Category 3
44	Agastat Timer Relay	Category 1

<u>TER ITEM</u> <u>NUMBER</u>	<u>DESCRIPTION</u>	<u>REMARKS</u>
45, 46, 47	Johnson Services Thermostats, Solenoids, Switches	Category 3
49	AMP Special Industries Terminal Lugs	No Category
54	Amphenol Connectors	Category 4
55	Pyle National Connectors	Category 1
68	Pennwalt Heat Shrink Insulation	No. Category