



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

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January 22, 1980

Docket No. 50-334

Mr. C. N. Dunn, Vice President  
Operations Division  
Duquesne Light Company  
435 Sixth Avenue  
Pittsburgh, Pennsylvania 15219

Dear Mr. Dunn:

On November 15, 1979, Duquesne Light Company responded to our request of October 11, 1979 on NRC requirements for the auxiliary feedwater systems at the Beaver Valley Power Station, Unit No. 1. Enclosed is our request for additional information and positions resulting from our review of your November 15 submittal.

The open items in the enclosure must be resolved in a manner acceptable to the staff before the auxiliary feedwater system safety evaluation report can be issued.

It is requested that you provide your response to our request within 30 days so that we can proceed with our review.

Sincerely,

A handwritten signature in cursive script, appearing to read "A. Schwencer".

A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors

Enclosure:  
As Stated

cc: w/enclosure  
See next page

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Mr. C. N. Dunn  
Duquesne Light Company

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January 22, 1980

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A. Short Term Recommendations

1. Recommendation GS-3

We do not require further information from the licensee on this recommendation. This is based on our understanding (1) that NRC has reviewed the issue of the potential feedwater flow instability (water hammer), and a license amendment will be issued to delete the license condition of AFW flow limitation from the Beaver Valley Operating license prior to startup from the present shutdown and (2) that the licensee will restore AFW system flow to the minimum flow required by the FSAR.

2. Recommendation GS-4

The licensee's response is acceptable.

3. Recommendation GS-6

The licensee's response is acceptable.

4. Recommendation GS-7

The licensee's response to our recommendation GS-7 is not satisfactory. The licensee states that the AFW automatic initiation system signals and circuitry meet safety grade. We require that the licensee provide information that describes how the AFW automatic initiation system design meets either (1) safety grade per the provisions of IEEE 279 for the long term (1/1/81) or (2) each of the control grade functional criteria in NUREG 0578 (2.1.7a) and the clarifications to NUREG 0578 in the October 30, 1979 NRC (H. Denton) letter to all operating

plants for the short term (1/1/80). The information should be sufficiently descriptive to permit independent technical review of the information and a conclusion that each of the criteria are met.

To demonstrate conformance with criteria 1, 2, 5 and 7, specific descriptive information (reference to specific FSAR sections is acceptable) supported by electrical drawings, such as schematic or elementary wiring diagrams should be submitted.

For power supply criteria 4 and 6, the licensee should submit a table or a detailed power distribution one-line diagram indicating power supply channels for each component. To demonstrate testability criterion 3, the licensee should submit a summary description of the functional test procedures along with the existing or proposed test interval (e.g. Standard Technical Specification surveillance requirements for typical engineered safety feature systems).

5. NRC Short Term Plant Specific Recommendation No. 5

The licensee's response is acceptable provided that the proposed Technical Specifications specify a 31 day test frequency for the normally closed manually operated suction valves from the river water system to the AFWS.

6. NRC Short Term Plant Specific Recommendation No. 6

The licensee's response is acceptable.

7. NRC Short Term Plant Specific Recommendation No. 7

The licensee's response is not satisfactory. We require that the licensee provide the results of his review of the present alignment of the AFW system discharge block valves for the normal, transient and accident conditions for staff's review indicating any valve alignment modification before returning the station to power operation.

Also, the licensee has not responded to our request for information (Enclosure 2 to NRC letter dated October 11, 1979) related to AFW system flow adequacy for plant transients and accidents. The licensee should commit to respond to this item.

8. Additional Short Term Recommendations

1. The licensee's response to this recommendation is not satisfactory. We require the licensee to provide the following: 1) Confirm that the Beaver Valley Station existing design consists of redundant condensate storage tank level indications as well as redundant level alarms inside the control room. 2) Verify that the above level indications and alarms are redundant all the way from the detectors at the condensate storage tank to the readouts and alarms inside the control room. Power supplies for the level indication and alarms should be redundant. Since the condensate storage tank is seismic Category I water source, the entire water level indication and alarm system should in the long term (1/1/80) be designed to safety grade requirements including the use of Class 1E circuitry and power supplies. In the short term, use of non-Class 1E circuitry and power supplies are acceptable provided one power train has a

- back-up battery source. 3) Verify that the additional low-low level alarm will be redundant and the setpoints will allow at least 20 minutes for operator action, assuming that the largest capacity AFW pump is operating.
2. The licensee's response to this recommendation is acceptable provided the licensee commits to follow the provisions of the revised Additional Short Term Recommendation No. 2 attached.
  3. The licensee's response to this recommendation is not satisfactory.

We require information of a similar nature to that described in GS-7 above to demonstrate conformance with the 2.1.7.b criteria and clarifications to NUREG 0578 in the October 30, 1979 NRC (H. Denton) letter to all operating plants; namely, single failure testability, power supply and indication accuracy (reference to specific FSAR sections is acceptable).

4. The licensee's response is acceptable.

C. Long Term Recommendation

1. Recommendation GL-5

The licensee does not address this item in his response. If the licensee can demonstrate in his response to our short term recommendation No. 4 (GS-7) that the existing AFW automatic initiation system meets safety grade requirements, then this recommendation would not apply to Beaver Valley Station.



2. NRC Long Term Plant Specific Recommendation No. 2

The licensee does not address this item in his response. We require that licensee provide the results of an analysis to address our concerns in this item and the analysis should be consistent with his AFWS flow design basis that the licensee should provide for NRC review per Enclosure 2.

Revision to Recommendation No. 2 of "Additional Short Term Recommendations" Regarding Auxiliary Feedwater Pump Endurance Test

The licensee should perform an endurance test on all AFW system pumps. The test should continue for at least 48 hours after achieving the following test conditions:

- Pump/driver operating at rated speed  
and
- Pump developing rated discharge pressure and flow or some higher pressure at a reduced flow but not exceeding the pump vendor's maximum permitted discharge pressure value for a 48-hour test
- For turbine drivers, steam temperature should be as close to normal operating steam temperature as practicable but in no case should the temperature be less than 400°F.

Following the 48-hour pump run, the pumps should be shut down and allowed to cool down until pump temperatures reduce to within 20°F of their values at the start of the 48-hour test and at least 8 hours have elapsed.

Following the cool down, the pumps should be restarted and run for one hour. Test acceptance criteria should include demonstrating that the pumps remain within design limits with respect to bearing/bearing oil temperatures and vibration and that ambient pump room conditions (temperature, humidity) do not exceed environmental qualification limits for safety-related equipment in the room.

The licensee should provide a summary of the conditions and results of the tests. The summary should include the following. 1) A brief description of the test method (including flow schematic diagram) and how the test



was instrumented (i.e., where and how bearing temperatures were measured).

2) A discussion of how the test conditions (pump flow, head, speed and steam temperature) compare to design operating conditions. 3) Plots of bearing/bearing oil temperature vs. time for each bearing of each AFW pump/driver demonstrating that temperature design limits were not exceeded. 4) A plot of pump room ambient temperature and humidity vs. time demonstrating that the pump room ambient conditions do not exceed environmental qualification limits for safety-related equipment in the room. 5) A statement confirming that the pump vibration did not exceed allowable limits during tests.