

July 16, 1984

Docket No. 50-333

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Mr. J. P. Bayne
Executive Vice President,
Nuclear Generation
Power Authority of the State
of New York
123 Main Street
White Plains, New York 10601

Dear Mr. Bayne:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - MPA F-55 (TMI II.K.3.28)
"QUALIFICATION OF ADS ACCUMULATORS" PER 10 CFR 50.54(f)

During the course of our review, your facility was identified as a plant that either did not have sufficient accumulator capacity to ensure that the ADS valves can operate to provide emergency cooling system operation for 100 days following an accident or one for which adequate justification was not provided as to why the accumulator design is acceptable if the 100 day function is not met (see position - II.K.3.28 - NUREG-0737 dated November 1980). Since you have not provided an adequate response addressing the above stated item, we request, pursuant to 10 CFR 50.54(f), that you provide the information listed in Enclosure 1. A response to this request is required under oath or affirmation within 45 days of receipt of this letter.

We will consider your response in determining whether to modify or suspend your license.

The information requested in this letter affects fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by/

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

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Enclosures:

- 1. Request for Additional Information
- 2. Preliminary Assessment

cc w/enclosures:

See next page

*Please see previous concurrence page.

DL:ORB#2	DL:ORB#2	DL:ORB#2	DL:AD-OR	OELD	DL:ORB
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Power Authority of the State of New York
James A. FitzPatrick Nuclear Power Plant

cc:

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REQUEST FOR ADDITIONAL INFORMATIONJAMES A. FITZPATRICK NUCLEAR POWER PLANT-DOCKET NO.50-333MULTI-PLANT ACTION F-55 ORTMIII.K.3.28
VERIFY QUALIFICATION OF ACCUMULATOR ON ADS VALVES

- 1) Your letter of February 17, 1984 indicated that the accumulator system was capable of actuating the ADS valves for periods of up to 4-1/3 hours following an accident. Based on the requirements of NUREG-0737 Item II.k.3.28, it is necessary to demonstrate that the ADS valves, accumulators, and associated equipment and instrumentation meet the requirements specified in the plant FSAR and are capable of performing their functions during and following exposure to hostile environments, taking no credit for non-safety-related equipment or instrumentation. Additionally, air (or nitrogen) leakage through the valves must be accounted for to assure that enough inventory of compressed gas is available to cycle the ADS valves. If this cannot be demonstrated, it must be shown that the accumulator design is still acceptable. If reliance on back-up systems to recharge the accumulators is necessary for long term operation, (for instance, feed and bleed if shutdown cooling model of RHR not available) clarify if the back-up system is environmentally and seismically qualified or that compensating measures are provided for long term operation (ie. procedures for manual action, additional air or nitrogen on hand, hardware for connections readily available or installed, bases that sufficient time exists for the required manual actions). Since this system is a part of the emergency core cooling system, it must function for the long-term period of 100 days following an accident or justification be provided for the time specified for long term operation.

You are requested to address in detail (a) how you meet this long-term capability requirement of 100 days following an accident or (b) the justification as to why 4-1/3 hours or less is sufficient long-term capability for your plant, or (c) provide a commitment and schedule for upgrading to the 100 day long-term capability requirement.

- 2) To insure that an acceptable leakage test is always current, please specify the interval for this periodic test. To be acceptable to the staff, the interval between tests should not exceed the interval between refueling outages. A statement indicating that a leakage test is performed once per operating cycle is not specific enough. A statement that specifies a particular point in the operating cycle such as "preceding every startup following a refueling outage," or a statement such as "the leakage test will be performed at least once every 20 months*" is considered acceptable.
- 3) Your letter of February 17, 1984 indicates that the existing ADS check valves are to be replaced because their environmental qualification cannot be confirmed. You are requested to confirm that the replacement valves are environmentally qualified.

* Twenty months is used as an example; actual period depends on normal refueling cycle plus margin.

PRELIMINARY ASSESSMENTJAMES A. FITZPATRICK NUCLEAR POWER PLANT--DOCKET NO.50-333MULTI-PLANT ACTIONF-55
VERIFY QUALIFICATION OF ACCUMULATOR ON ADS VALVES1.0 Background

Safety analysis reports claim that air or nitrogen accumulators for the automatic depressurization system (ADS) valves are provided with sufficient capacity to cycle the valves open five times at design pressures. GE has also stated that the emergency core cooling (ECC) systems are designed to withstand a hostile environment and still perform their function for 100 days following an accident. Licensees and applicants must demonstrate that the ADS valves, accumulators, and associated equipment and instrumentation meet the requirements specified in the plant's FSAR and are capable of performing their functions during and following exposure to hostile environments, taking no credit for non-safety-related equipment or instrumentation. Additionally, air (or nitrogen) leakage through valves must be accounted for in order to assure that enough inventory of compressed air is available to cycle the ADS valves. If this cannot be demonstrated, it must be shown that the accumulator design is still acceptable.

The commitment to satisfy the requirement of II.K.3.28 for the Fitzpatrick Nuclear Power Plant is discussed in the licensee's submittals dated January 18, 1980, April 1, 1982, and their response to the request for additional information dated February 17, 1984 which repeats all of the information contained in the earlier letters.

2.0 Discussion

There are seven relief valves in the Fitzpatrick ADS, each with its own accumulator and check valve. The accumulators are approximately one gallon in volume, and the check valves are redundant (i.e., two (2) in series). They are soft seated check valves and will be replaced with qualified valves, since the present valves do not have documentation attesting to their seismic and environmental qualification. The accumulators are normally supplied from the Containment Atmosphere Dilution System (N2), which is safety grade. A back up supply of air is available (through valving) from the instrument air system. The licensee's submittals do not indicate whether or not the instrument air system is safety grade, or safety rated. The ADS at Fitzpatrick was originally designed to provide two actuations at 70% of drywell design pressure within a short time (hours) after loss of pneumatic supply.

3.0 Demonstration of Qualification3.1 Number of Actuations

The licensee has determined the number of actuations that the accumulators will provide at normal and at 70% of drywell pressure. He has also defined the time period for which this capability exists depending on the starting pressure and assumed leakage rate. For a starting pressure of 110 psig

(normal system pressure), the accumulators will provide two actions at 70% of drywell pressure within 200 minutes (approx. 3-1/3 hours). For normal drywell pressure, this time period is increased to 260 minutes (approx. 4-1/3 hours).

3.2 Leakage Criteria

The licensee's letter of February 17, 1984 cites a leakage criteria of 0.12 SCFH past the check valves which will insure the capability outlined in Section 3.1 above. The leakage test described (pressure decay) actually includes leakage from all components of the ADS from the check valves to the relief valve. Seismic events and harsh environments should not cause an increase in leakage rate according to the licensee, since a seismic review has shown the increase in stress to be negligible (less than 1/10 of the allowable), and the electrical components have been qualified under the ongoing environmental qualification program.

3.3 Periodic Leak Testing

The licensee has not established a specific interval for the "periodic leak tests" described in his letter of February 17, 1984. He has accomplished a number of tests on the ADS with the presently installed check valves, and plans to continue these tests on an "as required" basis. The test itself consists of a pressure decay after temperature stabilization, with pressure measured at the relief valve actuator.

3.4 Seismic and Environmental Qualification

The licensee's letter of January 8, 1980 stated that a review of the Fitzpatrick ADS has indicated that the ADS would withstand a seismic event without damage. The licensee's architect and engineers (A & E), also analyzed two of the seven systems and the results indicate that the stresses due to a seismic event are below 1/10 of the maximum allowed stress. The electrical components of the ADS accumulator system (relief valve pilot solenoid valves) have been qualified for a harsh environment as part of the licensee's environmental qualification program. The check valves presently installed will be replaced with qualified valves.

4.0 Evaluation

4.1 The licensee has defined and verified the number of times the ADS valves are capable of cycling using only the accumulators, and the length of time the accumulators are capable of performing their functions following the loss of pneumatic supply. The staff finds this capability acceptable for the indicated time period only (up to 4-1/3 hours in this case). Long-term capability (up to 100 days) has not been demonstrated.

4.2 A basis for the allowable leakage criteria was provided. Although it would be more conservative to assume an increased leakage rate after a seismic event or an accident; the licensee has examined the effects of these events on the leakage rate and concluded that there will be no increase in the leakage

rate. The effect of the possible additional leakage would be to reduce the times indicated in Section 4.1 above.

4.3 The licensee has conducted leak tests on the ADS system. From his description of the tests (pressure decay method) in his letter of February 17, 1984, the staff finds the method used to be acceptable, but the interval cited is not acceptable to the staff. The licensee should define the interval for the periodic leak tests in an unambiguous manner. The staff recommends that when Technical Specifications are issued with regard to this action, that the surveillance requirements be defined clearly in order to assure that an acceptable leakage test is always current. This would be accomplished by specifying that a leakage test will be performed during each refueling cycle or at least once every 24 months.

4.4 The licensee has provided statements acceptable to the staff confirming the following:

- a. That the ADS valves, accumulators, and piping out to but exclusive of the check valves are seismically and environmentally qualified.
- b. That the accumulators and associated equipment exclusive of the check valves are capable of performing their functions during and following an accident while taking no credit for non-safety related equipment and instrumentation.

The licensee should provide confirmatory statements regarding the new check valves once they are installed.

5.0 Conclusions

On the basis of the evaluations given in Sections 4.1, 4.3 and 4.4, the staff finds that the licensee has failed to demonstrate the qualification of the ADS accumulator systems for either the long-term (up to 100 days) or the short-term requirements. Short-term requirements may be met after installation of the new check valves with accompanying confirmation of their qualification.