



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

January 22, 1973

Docket No. 50-219

Jersey Central Power & Light Company
ATTN: Mr. R. H. Sims, Vice President
Madison Avenue at Punch Bowl Road
Morristown, New Jersey 07960

Gentlemen:

Tests of drywell vacuum breakers in some BWR plants have demonstrated that these devices failed to perform properly. In addition, technical specifications for operability checks and leakage surveillance have been inadequate to assure that the vacuum breakers will not compromise the function of the suppression pool and will fulfill their function as an engineered safety system.

As a result of this experience, it is requested that the following actions regarding the drywell vacuum breakers be taken for your nuclear power station:

Immediate Action:

1. Check the position of each vacuum breaker by direct visual inspection, if possible, or by position indicators.
2. Close those vacuum breakers that are open. If the position cannot be ascertained to be closed, take immediate remedial action to assure closure.

Within 60 days provide the Commission with a report that includes:

1. Manufacturer, model number, ratings, and modifications, if any, of the vacuum breakers.
2. Installed assembly drawing, including testing equipment.
3. Materials used in the vacuum breakers, including seals, seats, bearings, lubricant, body and operating parts.
4. Capability of parts and their design life in the most severe suppression chamber operational transient and accident environments. Discuss possible deleterious effects of chemicals present during the surface preparation and application of the suppression chamber

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coating and of nitrogen on vacuum breaker system materials. Advise what tests have been performed on the vacuum breakers and their position indication system in a simulated accident environment.

5. For the tests performed on each vacuum breaker system, provide a brief description of acceptance criteria and test results, including:
 - a. Preoperation and periodic surveillance tests.
 - b. Other tests and reasons for the tests.
6. A description of corrective action taken to remedy any failure of the vacuum breakers, including a discussion of the cause of the failure.
7. A description of the station procedures or checks used to assure that the vacuum breakers:
 - a. Function properly prior to startup.
 - b. Are closed after completion of prestartup functional checks.
 - c. Are maintained properly.
8. A curve showing total allowable drywell to torus bypass area, in terms of equivalent orifice area, as a function of various primary system break areas for containment design and test pressures and indicate the fraction of this total bypass area that is allowable for the vacuum breakers. Show the limiting condition of operation for vacuum breaker bypass area on this graph.
9. A discussion, based on the information provided in item 8, of the allowable distance in inches the vacuum breaker can be off its seat and the degrees away from the closed position with the pivot point as the apex.
10. The flow vs area characteristics of the vacuum breaker and a curve showing vacuum breaker bypass area vs degrees the vacuum breaker is open from closed to full open.

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11. An analysis of the capability of the drywell sprays and the suppression chamber sprays to accommodate primary system break areas, including a curve of break areas vs total bypass area within sprays' capability. Include a discussion of the availability of sprays, considering interlocks, during a LOCA.
12. Additional equipment and systems and/or modifications to existing equipment and systems proposed to assure that malfunction of vacuum breakers can be detected reliably and appropriate action can be taken. This includes consideration of position indicators and alarms in the control room, and their design criteria.
13. Proposed technical specifications for limiting condition of operation and surveillance requirements with bases regarding the drywell vacuum breakers.

During the next refueling outage:

1. Perform the following tests and submit the results to the Commission in the subsequent semiannual report:
 - a. Pressurize the drywell to an appropriate pressure above the suppression chamber pressure and determine the leakage rate to the suppression chamber over a sufficient period of time to assure reliability of leakage data, compensating for temperature difference. If the leakage rate exceeds the allowable, as determined in item 8 of the 60-day report, take the appropriate corrective measures and retest until the total leakage rate is acceptable.
 - b. Test each vacuum breaker to assure that it will open with a specified suppression chamber pressure above drywell pressure to prevent drywell failure due to external pressure.

Three signed originals and thirty-seven copies of your submittals are required.

Sincerely,

Robert J. Schemel

Robert J. Schemel, Chief
Operating Reactors Branch #1
Directorate of Licensing

cc: See next page

Jersey Central Power & Light
Company

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cc: George F. Trowbridge, Esquire
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