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Public Service Electric and Gas Company 80 Park Place Newark, N.J. 07101 Phone 201/430-7000

October 29, 1979

Mr. Darrell G. Eisenhut, Acting Director
Division of Operating Reactors
Office of Nuclear Reactor Regulation
USNRC
Washington, DC 20555

Dear Mr. Eisenhut:

SALEM GENERATING STATION
UNIT NOS. 1 AND 2
MULTIPLE EQUIPMENT FAILURES AND SURVEILLANCE
TESTING ERRORS

A review of the items requested in your letter of September 21, 1979, has been conducted with the following results:

The subject of common-mode failure analyses and considerations has often been discussed in the industry. The application of these analyses have generally been limited to the effects of common environmental exposure on equipment required to provide protection against plant design basis events. Examples of this include earthquake and high-energy line breaks. There has never been a requirement to provide diverse equipment within a generic class of equipment such as solenoid valves, control relays or diesel-generators. Clearly, the simultaneous common failure of diesel-generators during a design basis event could seriously impact the results of that event at any nuclear plant. It has been the practice of the industry to specify equipment for unique requirements of the plant and to select equipment which best meets those requirements.

The example "common-mode failure" of solenoid valves cited in your request appears to be a case of simultaneous random failures which did not affect the safety function of the equipment since the alternate logic train properly achieved the safety function by redundant equipment operation. Comparable results would have been achieved if the incident had involved a total failure of one logic train instead of the solenoid valve failures. Such a failure could be caused by loss of a single power supply.

During the design evolution of safety-related systems at Salem, common-cause induced failures were considered consistent with licensing requirements. The postulation of multiple failures of identical equipment due to unspecified common-mode failures (e.g. same manufacturer) was not considered to be necessary.



Approved
10/31/79

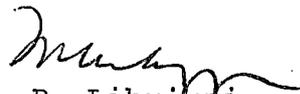
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It is concluded that the Salem design provides adequate assurance that realistic common-mode failures cannot negate the criteria assumed in the plant's accident analyses nor can they lead to an overall reduction in system reliability.

While the potential for operator error is always present in some measure, significant effort to avoid situations which could lead to a challenge of Salem's reactor protection and safeguards equipment has been made. Test procedures were reviewed for clarity and correctness prior to implementation and are updated to ensure their compatibility with any changes to equipment or logic circuitry. Notes and cautionary statements are interjected in the procedures at critical steps to emphasize areas requiring special attention and there are, at the beginning of each procedure, check-off points requiring the signature of duty senior licensed operator and the duty control room licensed operator to ensure that they are aware of the particular testing about to be performed and that it will not jeopardize plant operation. Only technicians who have completed specific equipment qualification courses are permitted to work on those pieces of equipment. Licensed plant operators and supervisors receive, in the course of their day-to-day operation, repeated emphasis on following all procedures exactly. That it is incumbent upon them, as licensed operators, to be aware of the importance of periodic surveillance testing, the special care which must be taken during that testing, and the undesirability of causing unnecessary thermal stress cycles on the reactor and its support systems is also routine knowledge but has been reinforced by a memo circulated to each licensed operator.

If you have any further questions on this matter, we will be pleased to discuss them with you.

Sincerely,



F. P. Librizzi
General Manager -
Electric Production