Consumers Power
POWERING MICHIGAN'S PROGRESS

Kenneth W Berry
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Nuclear Licensing

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July 31, 1987

Nuclear Regulatory Commission
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DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT -
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING
IE BULLETIN 85-03

The NRC letter of June 26, 1987 requested additional information with respect to our responses of September 4, 1986 and May 15, 1986 concerning IE Bulletin 85-03 "Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings". Enclosed are the requested responses.

Kenneth W Berry
Director, Nuclear Licensing

CC Administrator, Region III, NRC
NRC Resident Inspector - Palisades

Attachment

OC0787-0113-NL02

IE11
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CONSUMERS POWER COMPANY
Palisades Plant
Docket 50-255 - License DPR-20

RESPONSE TO IE BULLETIN

At the request of the Commission and pursuant to the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974, as amended, and the Commission's Rules and Regulations thereunder, Consumers Power Company submits our response to the NRC's June 26, 1987 request for additional information with respect to IE Bulletin 85-03. Consumers Power Company's response is dated July 31, 1987.

CONSUMERS POWER COMPANY

CONSUMERS POWER COMPANY

By J W Reynolds (Signed)
J W Reynolds, Executive Vice President
Energy Supply

Sworn and subscribed to before me this 31st day of July 1987.

Elaine E Buehrer (Signed) [SEAL]
Elaine E Buehrer, Notary Public
Jackson County, Michigan
My commission expires October 31, 1989

ATTACHMENT

Consumers Power Company
Palisades Plant
Docket 50-255

Attachment

July 31, 1987

3 Pages

ATT0787-0113-NL02

Question 1:

Unlisted MOV's, MO-3041, 3045, 3049 and 3052, in discharge lines of the safety injection tank system are shown normally open (fail as is) on Drawing M-203, Sheet 1, Revision 29. The possible problem that the system would be inoperable if the MOV's were left closed inadvertently, should be addressed. Based on the assumption of inadvertent equipment operations as required by Action Item A of the Bulletin, revise Attachment A, Page 3 of 13, of the response of May 15, 1986 to include these valves.

Response:

Prior to Plant startup (commencing critical approach), an Engineered Safeguards System checklist must be completed, checked and approved. This checklist directs Control Room operators to verify; at the control panel, that the valves are in the open position; to lock the key operators in the open posision; and remove the keys from the panel. The keys are then controlled by the Shift Supervisor. The circuit breakers associated with these valves are also verified to be locked in the open position. Therefore, this checklist eliminates the possibility of these valves being inadvertently left closed.

Attachment A will be revised as requested and will be submitted within an update to our May 15, 1986 correspondence. This update will be submitted by September 15, 1987.

Question 2:

Has water hammer due to valve closure been considered in the determination of pressure differentials? If not, please explain.

Response:

The differential pressure calculations for the valves identified by IE Bulletin 85-03 were provided by Combustion Engineering as part of an Owner's Group evaluation. Water hammer effects were neither considered nor included in the determination of the differential pressures. However, investigation of this phenomena indicate that:

1. The severity of water hammer is dependent on the operating speed of the valve (ie, the shorter the stroke time the more severe the water hammer).
2. The pressure wave resulting from water hammer travels at sonic velocities. Therefore, the transient is of short duration (several seconds).
3. The effects of the pressure wave resulting from water hammer will be reduced due to its energy being dampened out by elbows, tees, branch connections, changes in effective pipe diameter, expansion joints and the inherent flexibility of the system.

Our review of the system configuration, operating parameters and valve stroke times in conjunction with the above characteristics, indicate that water hammer is not a concern for these systems. This contention will be further substantiated during motor operator diagnostic testing. If during diagnostic testing there are no indications of valve damage which could have resulted from severe water hammer, the likelihood of past water hammer occurrences would be minimal.

Question 3:

Please expand the proposed program for Action Items B, C and D of the Bulletin to include the following details as a minimum:

a) commitment to a training program for setting switches, maintaining valve operators, using test equipment and interpreting test results.
b). commitment to justify continued operation of a valve determined to be inoperable, and
c) description of a method possible needed to extrapolate valve stem thrust measured at less than maximum differential pressure.

Response:

a) Consumers Power has been actively involved in providing training for its employees at the Palisades Plant with regard to the electrical and mechanical refurbishment/set-up of the Limitorque motor operators. To date, two mechanical refurbishments and two electrical wiring and switch setting courses have been completed, another mechanical refurbishment course is scheduled for August. Actual refurbishment/set-up of the motor operators will be performed by experienced Babcock & Wilcox engineers and field technicians. In conjunction with and under the direction of Babcock & Wilcox, Palisades' employees will gain additional experience as they assist in the refurbishment of the motor operators.

   MOVATS, Inc has been contracted to provide the testing apparatus and manpower to perform the diagnostic testing of the actuators. In addition, they will also interpret and provide results for each actuator tested. Future testing of the operators will also be contracted to industry recognized experts, since Palisades will not be purchasing the diagnostic testing equipment.

b) CPCo does not anticipate having valves in this category, since preliminary engineering studies indicate all valves and operators are of suitable design and construction for the intended purpose.

   However, if a situation should arise in which replacement parts cannot be obtained in a timely fashion, system operating requirements would be reviewed for normal and emergency situations to justify continued Plant operation.

c) Current plans are to test all valves identified by IE Bulletin 85-03 at maximum differential pressure. In the event testing at full differential pressure is not possible, the test will be run at reduced pressure. In this case, MOVATS' diagnostic equipment will be utilized and the total thrust signature will be analyzed to determine the thrust resulting from the valve itself (ie, packing loads, friction, gear efficiency, etc). Calculations will then be conducted to determine the thrust that would result from maximum differential pressure alone. The sum of the valve thrust and maximum differential pressure thrust shall be less than or equal to the thrust produced by the operator, thus ensuring operability of the valve at maximum differential pressure.

The calculation of thrust due to maximum differential pressure will be conducted by MOVATS using equations that have been verified by actual test data for a given size and type valve.

Question 4:

Please submit a date for planned completion of Action Item F of the Bulletin. The specified due date is January 15, 1988.

Response:

Currently, a maintenance outage in which IE Bulletin 85-03 program actions will be completed is scheduled to begin in October 1987. Final documentation verifying completion of the IE Bulletin 85-03 program at the Palisades Plant will be submitted to the NRC within 60 days of the program's completion, but not later than January 15, 1988.