Public Service
Electric and Gas
Company

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October 26, 1987
NLR-N87200

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

OPERATING LETTER
SALEM GENERATING STATION
UNIT NO. 1
DOCKET NO. 50-272

Attached is the operating letter for Salem Unit No. 1 for the IAEA surveillance interval of August 21, 1987 to September 21, 1987.

Sincerely,

Steven E Miltenberger
for CAM

Attachment

C Mr. D. C. Fischer
Licensing Project Manager

Mr. T. J. Kenny
Senior Resident Inspector

Mr. W. T. Russell, Administrator
Region I

Mr. C. Emeigh
Safeguards Material Licensing and
International Activities Branch
Office of Nuclear Material Safety & Safeguards

Mr. D. M. Scott, Chief
Bureau of Nuclear Engineering
Department of Environmental Protection
380 Scotch Road
Trenton, NJ 08628

A006
1/1

DOE/NRC FORM 740M
(12-81)
MANDATORY DATA COLLECTION
AUTHORIZED BY 10 CFR 30, 40, 50, 70, 75, 150, Public Laws 83-703, 93-438, 95-91

U.S. DEPARTMENT OF ENERGY
AND
U.S. NUCLEAR REGULATORY COMMISSION

CONCISE NOTE

Approved by OMB 038-R0477
Approved by OMB 3150-0057

1. NAME Public Service Electric & Gas Co.		2. ATTACHMENT TO a.☐DOE/NRC 741 b.☐DOE/NRC 742 c.☐DOE/NRC 742c				3. RIS XHF/UXHF		4. REPORTING PERIOD FROM 8/21/87 TO 9/21/87
STREET ADDRESS P.O. Box 236		5. TRANSACTION DATA						6. REPORTING DATE
CITY Hancocks Bridge	STATE NJ / ZIP CODE 08038	a. SHIPPER'S RIS XHF/ UXHF	b. RECEIVER'S RIS XHF/ UXHF	c. TRANS. NO. 25	d. CORR NO.	e. PC	f. AC M	g. DATA CODE 6
								7. LICENSE NUMBERS DPR70

8a. LINE NO.	b. ENTRY REFERENCE	c. TEXT OF CONCISE NOTE
1		Operating Letter Salem Unit #1
2		During the IAEA surveillance interval from
3		August 21st to September 21st, there were no
4		fuel transactions conducted in Unit 1 Fuel
5		Handling Building. The Fuel Handling Building
6		lighting breakers have been cautioned tagged
7		requiring Reactor Engineering notification
8		prior to operation. Reactor Engineering
9		received no notification during this period.
10		A filter was placed in the transfer pool on
11		September 17th. Power was reduced August 21st
12		to 80% for system stability and coastdown
13		concerns. Power coastdown began September 18th.
14		Cumulative cycle burnup through September 21st,
15		1987 16500.4 MWD/MTM; 1,472,215.8 MWD.

To the best of my knowledge and belief, the information given above and in any attached schedules is true, complete, and correct.

9. SIGNATURE *(See instructions for provisions regarding confidentiality.)*	10. TITLE	11. DATE
[signature]	General Manager - Salem Operations	10/7/87

Therefore, it can be concluded that the proposed change does not create the possibility for an accident different than any previously evaluated.

3. Does the proposed action reduce the margin of safety as defined in the basis for any Technical Specification?

RESPONSE

The operability of check valve V453 is not specifically addressed in the Technical Specifications. Although the valve would prevent backflow into the system during maintenance, there are other valves upstream of the subject valve, including MOV V452, which would normally be closed to provide redundant system isolation. Additionally, the operability of MOV V452 is specifically verified through the performance of Technical Specification Surveillance 4.7.1.2.b thereby assuring that system isolation is available. This surveillance further justifies the highly unlikely situation in which V452 could not be closed as discussed in Paragraph (1) above.

Therefore, it can be concluded that the proposed change does not reduce the margin of safety for any Technical Specification.

CONCLUSION

PSE&G therefore concludes, based upon the arguments presented in the above three paragraphs and in Attachment 3 that the proposed change does not involve any unreviewed safety question. Hence, the deletion of check valve V453 from the IST Program is justified.

ATTACHMENT 3

SAFETY EVALUATION ADDENDUM

The maximum flood level in Reactor Building Rooms 4209, 4211 and 4213 was previously calculated to be 1 foot in Bechtel Calculation 11-92(Q). The calculated flood level is the result of a postulated crack in a 36" service water pipe. The crack blowdown was modeled as orifice flow with the flow rate calculated as:

$$\dot{V}_c = C A_c \sqrt{\frac{2g(144)(\Delta p)}{\rho}}$$

where:

- C is the discharge coefficient which was assumed to be 1 for conservatism,
- A_c is the crack area (ft^2)
- g is gravitational acceleration, 32.17 ft/sec^2
- ρ is water density @ 33°F (minimum SSWS temperature) and atmospheric pressure 62.4 lb/ft^3
- Δp is the pressure loss across the crack, 50 psi

The crack area was calculated as:

$$A_c = \frac{1}{2} t_w \frac{1}{2} d$$ REF: (SRP 3.6.1, BTP ASB 3-1, APP.B)

where:

- t_w is the pipe wall thickness, 0.500 in
- d is the pipe inside diameter, 35 in

so, $A_c = 4.375 \; in^2 = 0.0304 \; ft^2$

and, $\dot{V}_c = 1(0.0304)\sqrt{\frac{2(32.17)(144)(50)}{62.4}}$

$= 2.619$ cfs

The volumetric flow rate was converted to gpm flow rate:

$Q_c = 1176$ gpm

It was assumed that three of eight floor drains in the area with 88.9 gpm capacity each were operable. So, the flood rate was computed as:

$Q_f = 1176 - (3)(88.9) = 909.3$ gpm, or

$\dot{V}_f = 121.6$ cfm

It was assumed that the flow ceased within 30 minutes. That is, operator response required actions outside the control room. Implied in the assumption is a single active failure of automatic isolation.

The flood volume was calculated to be:

$$V_f = (121.6)(30) = 3647 \text{ ft}^3$$

The floor area had been calculated as 4137 ft^2, so, the flood level is calculated to be:

$$h_f = \frac{3647 \text{ ft}^3}{4137 \text{ ft}^2} = 0.88 \text{ ft}$$

A safety margin of 15% was applied to determine a maximum flood level of:

$$h_f = 1.01 \text{ ft}$$

With check valve V453 inoperable, the following "worst case" scenario is considered.

A crack develops in the SSWS piping upstream of MOV V452 and downstream of the RACS heat exchanger isolation valves. The internal flooding source is isolated within 30 minutes which assumes an active failure of automatic isolation. However, an additional active failure of MOV V452 is considered which is not considered correctable in the short term.

The above referenced Bechtel calculation also considered a pipe crack in inlet piping to the shell side of RACS heat exchanger. Pertinent crack flow parameters were:

C = 1, for conservatism
A_c = 1.25E-2 ft^2
Δp = 101 psi
ρ = 61.7 lb/ft^3 (120°F RACS temperature, conservatively larger than SSWS maximum temperature)

The resultant flow out the crack was computed to be:

$\mathring{V}_c$ = 1.539 cfs, or
Q_c = 690.9 gpm

With the assumption of three effective floor drains, the flood rate was computed as:

$$
\begin{aligned}
Q_f &= Q_c - 3(Q_d) \\
&= 690.9 - 3(88.9) \\
&= 424.2 \text{ gpm, or} \\
\dot{V}_f &= 56.7 \text{ cfm}
\end{aligned}
$$

The flood volume for a 30 minute interval until isolation was calculated as:

$$
\begin{aligned}
V_f &= 30(\dot{V}_f) \\
&= (30)(56.7) \\
&= 1701 \text{ ft}^3
\end{aligned}
$$

The flood level was calculated to be:

$$h_f = \frac{1701 \text{ ft}^3}{4137 \text{ ft}^2} = 0.41 \text{ ft}$$

With a 15% safety margin, the maximum flood level was calculated to be:

$$h_f = 0.47 \text{ ft}$$

The Bechtel calculation results may be conservatively used as the internal source flood level in the considered scenario because the Δp across the crack in the calculation was 101 psi where as the maximum pressure in the pipe considered is 35 psig.

Following isolation of the internal source, the external source flood rate is calculated on the basis of the following parameter:

$$
\begin{aligned}
C &= 1, \text{ for conservatism} \\
A_c &= 1.25\text{E-}2 \text{ ft}^2 \\
\Delta p &= 15 \text{ psi (assumed)} \\
\rho &= 61.7 \text{ lb/ft}^3 \text{ for conservatism}
\end{aligned}
$$

The resultant flow out the crack is computed to be

$$\dot{V}_c = 1(0.0125)\sqrt{\frac{2(32.17)(144)(50)}{61.7}}$$

$$
\begin{aligned}
\dot{V}_c &= 0.593 \text{ cfs, or} \\
Q_c &= 266.3 \text{ gpm}
\end{aligned}
$$

which is slightly less than the drainage flow rate:

$$Q_d = 3(88.9) = 266.7 \text{ gpm}$$

in which case the rooms would drain down slowly.

The assumed pressure loss of 15 psi across the crack is compared to the gravitational head between the cooling tower basin and the presumed crack location:

$$\Delta z = 102 - 77 = 25 \text{ ft}$$

Assuming 95°F water:

$$\rho_{WATER} = 62.06 \text{ lb/ft}^3$$

The pressure is:

$$P = \rho_{WATER}(\Delta z)$$
$$= 62.06(25)$$
$$= 1552 \text{ psf} = 11 \text{ psi}$$

With a lower pressure external source, the draindown rate would increase.

So, it may be concluded that the flooding consequences from an external source are not as severe as that which was previously evaluated from an internal source.