

LICENSEE EVENT REPORT

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0	1	N	J	S	G	S	1	2	0	0	-	0	0	0	0	0	0	-	0	0	3	4	1	1	1	1	4			5			
7	8	LICENSEE CODE						14	15	LICENSE NUMBER										25	26	LICENSE TYPE					30	57	CAT	58			59

REPORT SOURCE: 01 L 6 0 5 0 0 0 2 7 2 7 0 6 0 2 8 3 8 0 6 1 5 8 3 9

60 61 DOCKET NUMBER 68 69 EVENT DATE 74 75 REPORT DATE 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 | On June 2, 1983, during normal operation, notification was received from Westinghouse
0 3 | Research Division of a potential unreviewed safety question. According to the notice,
0 4 | operation at full power following extended reduced power operation could result in in-
0 5 | creased power peaking in the bottom of the core and potentially exceed Technical Spec-
0 6 | ification limits for the Heat Flux Hot Channel Factor. Both units are potentially affect-
0 7 | ed, although neither is presently operating in the manner identified. The event possibly
0 8 | involves operation in a manner less conservative than assumed in transient and accident
7 8 9 analyses in accordance with Technical Specification 6.9.1.8h. 80

SYSTEM CODE 0 9		CAUSE CODE R C		CAUSE SUBCODE P		COMPONENT CODE A F U E L X X						COMP. SUBCODE Z		VALVE SUBCODE Z	
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
LER RO REPORT NUMBER 17		EVENT YEAR 8 3		SEQUENTIAL REPORT NO. 0 2 3		OCCURRENCE CODE 0 1		REPORT TYPE T		REVISION NO. 0					
23	24	25	26	27	28	29	30	31	32	ACTION TAKEN G		FUTURE ACTION X		EFFECT ON PLANT Z	
33	34	35	36	37	38	39	40	41	42	SHUTDOWN METHOD Z		HOURS 0 0 0 0		ATTACHMENT SUBMITTED Y	
43	44	45	46	47	48	49	50	51	52	NPRD-4 FORM SUB. Y		PRIME COMP. SUPPLIER N		COMPONENT MANUFACTURER W 1 2 0	
53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Immediate action was taken to preclude operation in the manner of concern. Procedures

1 1 will be implemented to augment Technical Specification requirements to insure that the

1 2 units are operated within specification limits. A Supplemental Report will be submitted

1 3 upon receipt of recommendations from the vendor and final resolution of the problem.

1	4	
7	8	9

FACILITY STATUS			% POWER			OTHER STATUS			METHOD OF DISCOVERY			DISCOVERY DESCRIPTION		
1	5	(28)	1	0	0	(29)	N/A			D	(31)	Vendor Notification		(32)
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

ACTIVITY CONTENT
RELEASED OF RELEASE

1 6 Z 33 34

7 8 9 10 11

AMOUNT OF ACTIVITY (35)

N/A

44

LOCATION OF RELEASE (36)

N/A

45 50

PERSONNEL EXPOSURES									
NUMBER			TYPE	DESCRIPTION					
1	7	0	0	0	(37)	Z	(38)	N/A	(39)

PERSONNEL INJURIES		NUMBER		DESCRIPTION	
1	8	0	0	0	40
		N/A			

1 9 7 8 9 10

LOSS OF OR DAMAGE TO FACILITY TYPE DESCRIPTION (43)

Z (42) N/A

8306270343 830615
PDR ADCK 05000272
S PDR

PUBLICATION		ISSUED		DESCRIPTION		NRC USE ONLY	
2	0	N	44	N/A			

NAME OF PREPARER R. Erahm

PHONE: (609) 339-4309



Public Service Electric and Gas Company P.O. Box E Hancocks Bridge, New Jersey 08038

Salem Generating Station

June 15, 1983

Mr. J. Allan
Acting Regional Administrator
USNRC
Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Allan

LICENSE NO. DPR-70
DOCKET NO. 50-272
REPORTABLE OCCURRENCE 83-023/01T

Pursuant to the requirements of Salem Generating Station Unit No. 1 Technical Specifications, Section 6.9.1.8h, we are submitting Licensee Event Report for Reportable Occurrence 83-023/01T. This report is required within fourteen (14) days of the occurrence.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "J. M. Zupko, Jr.", with a stylized flourish at the end.

J. M. Zupko, Jr.
General Manager -
Salem Operations

RF:ks

CC: Distribution

Report Number: 83-023/01T
Report Date: 06-15-83
Occurrence Date: 06-02-83
Facility: Salem Generating Station Unit 1
Public Service Electric & Gas Company
Hancock's Bridge. New Jersey 08038

IDENTIFICATION OF OCCURRENCE:

Power Distribution Limits - Heat Flux Hot Channel Factor -
Potentially Out-of-Specification.

CONDITIONS PRIOR TO OCCURRENCE:

Unit 1 - Mode 1 - Rx Power 100 % - Unit Load 1125 MWe.
Unit 2 - Mode 5 - Rx Power 0% - Unit Load 0%.

DESCRIPTION OF OCCURRENCE:

On June 2. 1983. during normal operation. notification was received from Westinghouse Research Division of a potential unreviewed safety question involving operation at full power following extended reduced power operation. According to the information received. continuous plant operation at less than 85% power for periods greater than 500 MWD/MTU. followed by a return to full power in the same cycle. could result in increased power peaking at the bottom of the core. This increase could potentially result in exceeding the Technical Specification limit for the Heat Flux Hot Channel Factor ($F_Q(Z)$). Both Salem Generating Station units are potentially affected. although during the present fuel cycle Unit 1 has not been operated in a pattern of concern. and Unit 2 is shutdown for refueling.

Prompt notification of the Resident NRC Inspector was performed on June 2. with written confirmation transmitted later that day. The Operations Department was informed of the potential problem and work immediately commenced on development of procedural changes to prohibit operation of the plant in a fashion leading to excessive values of $F_Q(Z)$.

APPARENT CAUSE OF OCCURRENCE:

Initial investigation of the problem by the PSE&G Nuclear Fuels Group revealed that the current reload safety evaluation (RSE) is based primarily on unrodded. full power depletions. In the RSE perturbation analysis of bounding operating conditions. peaking factors are compared to limits for an envelope around predicted axial flux difference (AFD) values. Subsequent plant operation is bounded by the RSE as long as the measured target flux condition is in good agreement with the predicted values.

Unrodded. low power operation, however. causes the axial flux to be significantly more positive than at full power. Continued operation at low power followed by a return to full power operation can

APPARENT CAUSE OF OCCURRENCE: (cont'd)

therefore result in a shift of the target flux position relative to that assumed in the RSE. If the shift is significant, the allowed plant operating AFD conditions may not be bounded by the reload analysis.

ANALYSIS OF OCCURRENCE:

The limits on heat flux and nuclear enthalpy hot channel factors ensure that the design limits on peak local power density and minimum DNBR are not exceeded and in the event of a LOCA the peak fuel clad temperature will not exceed the 2200°F ECCS acceptance criteria limit.

Based on the recently received information, existing Technical Specification requirements may not be sufficient to prevent exceeding the limit for $F_Q(Z)$. As noted, neither Salem core was operated in a manner outlined as being of concern, and measures were immediately taken to preclude such operation in the future. Due to the presence of an oversight in the methods used in the transient or accident analyses which could possibly result in operation in a manner less conservative than assumed in the analyses, the event is reportable in accordance with Technical Specification 6.9.1.8h.

CORRECTIVE ACTION:

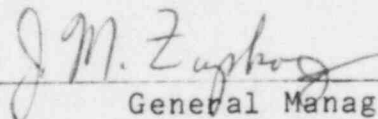
As noted, operation of Salem Unit 1 was continued, with immediate measures taken to insure that Technical Specification bases are met. Based on initial analysis of the problem, the requirements of the Technical Specifications will be augmented to include a direct verification that the measured target flux difference does not deviate significantly from that assumed in the RSE (values for Salem 1, Cycle 5 and Salem 2, Cycle 2 have been obtained from Westinghouse). Based on discussions with Westinghouse, deviations of 3% or less are within normal design tolerance and would not be considered significant. If the difference between measured and predicted target flux values exceeds 3%, then AFD limits will be administratively restricted to within 3% of the limits assumed in the RSE.

These measures, combined with existing Technical Specification requirements and procedural controls, will insure safe operation of the units. Finally, a License Change Request will be submitted as necessary upon receipt of information from Westinghouse for final resolution of the problem (anticipated August 1, 1983). A Supplemental Report will also be submitted at that time.

FAILURE DATA:

Not Applicable

Prepared By R. Frahm


General Manager -
Salem Operations

SORC Meeting No. 83-079