

Public Service
Electric and Gas
Company

Louis F. Storz

Public Service Electric and Gas Company, P.O. Box 236, Hancocks Bridge, NJ 08038

609-339-5700

Senior Vice President - Nuclear Operations

APR 08 1996

LR-N96093

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Gentlemen:

**NRC BULLETIN 96-01: CONTROL ROD INSERTION PROBLEMS
SALEM GENERATING STATION UNIT NOS 1 AND 2
FACILITY OPERATING LICENSE NOS. DPR-70 AND DPR-75
DOCKET NOS. 50-272 AND 50-311**

Public Service Electric & Gas Company (PSE&G) has received Bulletin 96-01. The Salem units are in a shutdown and defueled condition which prevents the prompt completion of all of the Bulletin-requested actions. This letter provides as complete a response as possible under the given plant conditions and will be supplemented as described herein.

REQUIRED RESPONSE (1) With the reactors defueled, PSE&G cannot promptly certify the control rods operable. Our response to Requested Action 2, below, provides the basis for our determination that the control rods were operable for the past five years for both Salem Units. As a normal part of restart testing, Requested Action 3 will be implemented. A supplement to this response will be made within 30 days of completing Requested Action 3 that certifies initial control rod operability for the subsequent cycle.

Requested Action 1

- The Salem Operations Department was cognizant of the recent industry events outlined in NRC Bulletin 96-01, and initiated actions, in early March 1996, to incorporate training on those events into the restart training program.
- During restart training, operators will be briefed on the recent industry events and will receive training, including simulator drills, responding to an event in which the control rods do not fully insert on a reactor trip. Additionally, prior to restart, an information directive on recent industry rod insertion events will be provided to operations department personnel.

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Requested Action 2

- ° Based upon a historical review of all reactor trip data for the past five years and rod drop testing for the last fuel cycle, all control rods were operable up to the current plant shutdowns for both Salem units.
- ° Any new data obtained during plant restart testing per Requested Action 3 for the current outages, in conjunction with the data already available from Wolf Creek, South Texas, North Anna, and other industry experience, will be considered in making a supplemental determination of control rod operability prior to returning each Salem unit to power operation. A supplement to this letter will be provided within 30 days of completing Requested Action 3 that summarizes the data and verifies control rod operability.

Requested Action 3

- ° Control rod drop times and recoil data will be measured and evaluated during the current restart effort and also any subsequent outage during calendar year 1996 which is expected to extend for at least ten days, prior to entering Mode 2.
- ° Control rod drag forces for all rodded fuel assemblies will also be measured and evaluated during the current restart effort prior to entering Mode 5.

Requested Action 4

- ° For any reactor trip during calendar year 1996, PSE&G will verify that all control rods have promptly fully inserted. The verification will be performed through the formal Post-Trip Review process. The Post-Trip Review will also include the Sequence-of-Events as provided by the plant computer. This information will be used to assess the operability and performance trend of the rods.

REQUIRED RESPONSE (2) Based upon the preliminary loading pattern for Salem Unit 2, Cycle 10: Table 1 of this letter provides the fuel design type, materials in fuel rods, guide tubes, grids, spacers (sleeves), and the guide tube inner dimensions (above and below the dashpot). Attachment 1 shows the control rod locations. Attachments 2 and 3 depict the core map of rodded fuel assemblies indicating beginning and end of cycle assembly average burnup distributions respectively. Quarter-core control rod locations are circled for reference.



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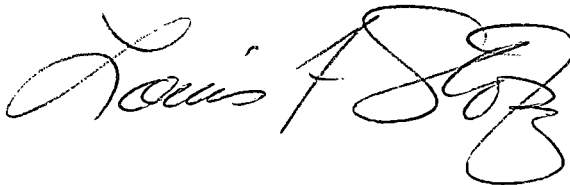
Since this loading information is preliminary, supplied burnup distributions and fuel inventory may change as the design is finalized. Should the final Salem Unit 2, Cycle 10 loading differ from the data provided herein, PSE&G will provide a supplemental response containing the new fuel inventory and corresponding burnup distributions prior to restart.

Due to the extended outage of Salem Unit 1, no loading pattern has been developed for Cycle 13. Similar information to that provided herein for Unit 2 will be submitted following confirmation of restart details for Salem Unit 1.

REQUIRED RESPONSE (3) PSE&G will comply with the reporting requirements of this item for Requested Actions 3 and 4 as applicable.

Should you have any questions regarding this response, we will be pleased to discuss them with you.

Sincerely,



Attachments (4)



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C Mr. T. T. Martin, Administrator - Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

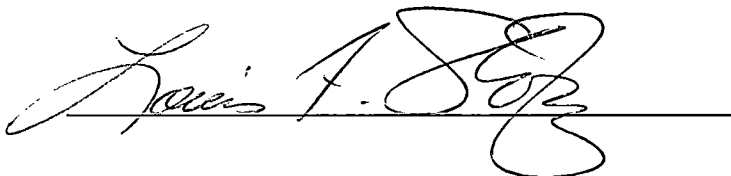
Mr. L. Olshan, Licensing Project Manager - Salem
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Mr. C. Marschall (X24)
USNRC Senior Resident Inspector - Salem

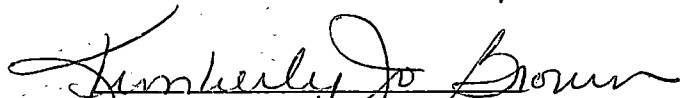
Mr. K. Tosch, Manager IV
NJ Department of Environmental Protection
Division of Environmental Quality
Bureau of Nuclear Engineering
CN 415 Trenton, NJ 08625

STATE OF NEW JERSEY)
)
COUNTY OF SALEM) SS.

L. F. Storz, being duly sworn according to law, deposes and says:
I am Senior Vice President - Nuclear Operations of Public Service
Electric and Gas Company, and as such, I find the matters set
forth in the above referenced letter, concerning the Salem
Generating Station, Unit Nos. 1 and 2, are true to the best of my
knowledge, information and belief.



Subscribed and Sworn to before me
this 8th day of April, 1996


Notary Public of New Jersey

My Commission expires on _____

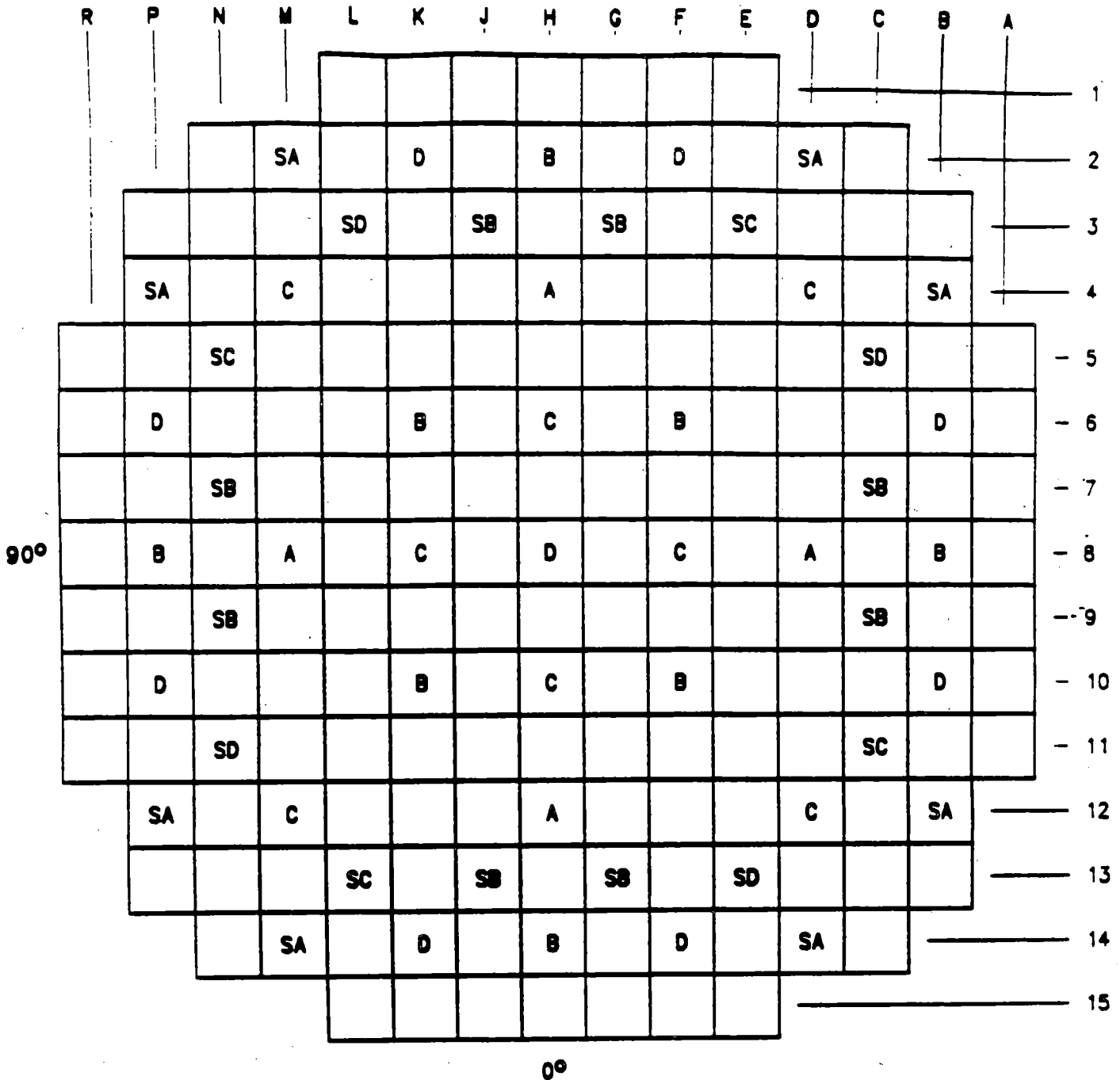
KIMBERLY JO BROWN
NOTARY PUBLIC OF NEW JERSEY
~~My Commission Expires April 21, 1996~~

TABLE 1
DESIGN FEATURES FOR PRELIMINARY
SALEM UNIT 2 CYCLE 10 LOADING PATTERN

Region	# RCCA	Design	Materials Fuel/ Guide Tubes	Grids	Spacers (Sleeves)	Guide Tube I.D. (in.) Above Dashpot/ Below Dashpot
7A	1	Westinghouse Standard	Zircaloy-4/ Zircaloy-4	Inconel	Stainless Steel (SS)	.450/.397
9A	8	Westinghouse Vantage 5H	Zircaloy-4/ Zircaloy-4	top/ bottom: Inconel Mid: Zircaloy-4	top/bottom: SS Mid: Zircaloy-4	.442/.397
10A	16	Westinghouse Vantage 5H	Zircaloy-4/ Zircaloy-4	top/ bottom: Inconel Mid: Zircaloy-4	top/bottom: SS Mid: Zircaloy-4	.442/.397
10B	12	Westinghouse Vantage 5H	Zircaloy-4/ Zircaloy-4	top/ bottom: Inconel Mid: Zircaloy-4	top/bottom: SS Mid: Zircaloy-4	.442/.397
11A	8	Westinghouse Vantage +	Zirlo/ Zirlo	top/ bottom: Inconel Mid: Zirlo	top/bottom: SS Mid: Zirlo	.442/.397
12	4	Westinghouse Vantage 5H	Zircaloy-4/ Zircaloy-4	top/ bottom: Inconel Mid: Zircaloy-4	top/bottom: SS Mid: Zircaloy-4	.442/.397
15XA	4	Westinghouse Vantage +	Zirlo/ Zirlo	top/ bottom: Inconel Mid: Zirlo	top/bottom: SS Mid: Zirlo	.442/.397

ATTACHMENT 1

SALEM UNIT 2



BANK IDENTIFIER	NUMBER OF LOCATIONS
A	4
B	8
C	8
D	9

BANK IDENTIFIER	NUMBER OF LOCATIONS
SA	8
SB	8
SC	4
SD	4

Control and Shutdown Bank Locations

ATTACHMENT 2

PRELIMINARY SALEM UNIT 2 CYCLE 10 Beginning of Cycle 10 (BOC) Assembly Average Burnups (GWD/MTU)

R	P	N	M	L	K	J	H	G	F	E	D	C	B	A	
				10B	10B	11A	11B	11A	10B	10B					1
				21.448	20.986	3.767	2.862	3.778	21.041	21.419					
		9A	10A	15XA	11A	11A	15XA	11A	11A	15XA	10A	9A			2
		29.767	21.75	0	3.906	3.871	0	3.868	3.903	0	21.715	29.775			
	9A	10B	11B	10B	15XB	9A	10A	9A	15XB	10B	11B	10B	9A		3
	29.747	19.446	3.431	21.568	0	25.649	16.827	25.714	0	21.584	3.418	19.384	29.856		
	10A	11B	10B	11A	12	11A	10A	11A	12	11A	10B	11B	10A		4
	21.764	3.419	19.62	4.078	27.678	2.789	22.202	2.789	27.822	4.077	19.717	3.42	21.738		
10B	15XA	10B	11A	15XA	12	12	11A	12	12	15XA	11A	10B	15XA	10B	5
21.448	0	21.566	4.081	0	23.155	27.092	3.736	26.759	23.099	0	4.08	21.477	0	21.419	
10B	11A	15XB	12	12	12	11A	10A	11A	12	12	12	15XB	11A	10B	6
21.143	3.889	0	27.964	23.231	25.95	3.585	21.89	3.587	25.983	23.127	27.879	0	3.887	20.949	
11A	11A	9A	11A	12	11A	10A	15XA	10A	11A	10A	11A	9A	11A	11A	7
3.764	3.88	25.734	2.789	26.884	3.606	20.571	0	20.545	3.59	27.092	2.792	25.715	3.879	3.765	
11B	15XA	10A	10A	11A	10A	15XA	7A	15XA	10A	11A	10A	10A	15XA	11B	8
2.853	0	16.84	22.241	3.717	21.934	0	35.324	0	21.983	3.718	22.236	16.794	0	2.852	
11A	11A	9A	11A	12	11A	10A	15XA	10A	11A	12	11A	9A	11A	11A	9
3.758	3.88	25.778	2.8	26.824	3.594	20.567	0	20.603	3.591	27.051	2.79	25.676	3.882	3.771	
10B	11A	15XB	12	12	12	11A	10A	11A	12	12	12	15XB	11A	10B	10
20.999	3.885	0	27.677	23.284	25.847	3.59	21.875	3.592	25.877	23.059	27.815	0	3.895	21.019	
10B	15XA	10B	11A	15XA	12	10A	11A	10A	12	15XA	11A	10B	15XA	10B	11
21.466	0	21.506	4.077	0	23.186	27.055	3.738	26.998	23.258	0	4.091	21.508	0	21.465	
10A	11B	10B	11A	12	11A	10A	10A	11A	12	11A	10B	11B	10A		12
21.775	3.423	19.643	4.075	27.75	2.793	22.222	2.789	27.837	4.077	19.629	3.424	21.77			
9A	10B	11B	10B	15XB	9A	10A	9A	15XB	10B	11B	10B	9A			13
29.78	19.414	3.417	21.568	0	25.738	16.763	25.742	0	21.524	3.422	19.388	29.602			
	9A	10A	15XA	11A	11A	15XA	11A	11A	15XA	10A	9A				14
	29.729	21.681	0	3.913	3.868	0	3.871	3.897	0	21.745	29.701				
			10B	10B	11A	11B	11A	10B	10B						15
			21.466	20.952	3.768	2.862	3.774	21.157	21.465						

ATTACHMENT 3

PRELIMINARY SALEM UNIT 2 CYCLE 10 End of Cycle 10 (EOC) Assembly Average Burnups (GWD/MTU)

R	P	N	M	L	K	J	H	G	F	E	D	C	B	A	
				10B	10B	11A	11B	11A	10B	10B					1
				29.378	32.316	19.381	20.237	19.384	32.359	29.343					
		9A	10A	15XA	11A	11A	15XA	11A	11A	15XA	10A	9A			2
		34.866	32.871	19.174	25.525	25.89	23.296	25.877	25.51	19.16	32.826	34.871			
	9A	10B	11B	10B	15XB	9A	10A	9A	15XB	10B	11B	10B	9A		3
	34.845	33.081	23.867	41.899	22.886	44.105	37.216	44.145	22.86	41.891	23.838	33.027	34.948		
	10A	11B	10B	11A	12	11A	10A	11A	12	11A	10B	11B	10A		4
	32.868	23.841	40.903	26.713	44.828	24.277	41.45	24.273	44.932	26.691	40.974	23.86	32.863		
10B	15XA	10B	11A	15XA	12	12	11A	12	12	15XA	11A	10B	15XA	10B	5
29.365	19.155	41.873	26.689	21.988	40.996	44.773	25.404	44.503	40.936	21.997	26.703	41.828	19.181	29.354	
10B	11A	15XB	12	12	12	11A	10A	11A	12	12	12	15XB	11A	10B	6
32.444	25.49	22.843	45.025	41.015	43.317	24.95	41.363	24.944	43.352	40.964	44.977	22.873	25.51	32.288	
11A	11A	9A	11A	12	11A	10A	15XA	10A	11A	10A	11A	9A	11A	11A	7
19.369	25.88	44.147	24.245	44.582	24.944	40.106	21.161	40.086	24.944	44.759	24.253	44.148	25.892	19.381	
11B	15XA	10A	10A	11A	10A	15XA	7A	15XA	10A	11A	10A	10A	15XA	11B	8
20.229	23.291	37.212	41.473	25.387	41.397	21.155	51.269	21.143	41.417	25.354	41.462	37.187	23.296	20.223	
11A	11A	9A	11A	12	11A	10A	15XA	10A	11A	12	11A	9A	11A	11A	9
19.376	25.894	44.201	24.29	44.57	24.979	40.106	21.154	40.124	24.919	44.713	24.255	44.117	25.893	19.382	
10B	11A	15XB	12	12	12	11A	10A	11A	12	12	12	15XB	11A	10B	10
32.331	25.515	22.889	44.831	41.116	43.247	24.934	41.348	24.961	43.266	40.895	44.93	22.875	25.513	32.346	
10B	15XA	10B	11A	15XA	12	10A	11A	10A	12	15XA	11A	10B	15XA	10B	11
29.397	19.186	41.862	26.725	22.004	40.997	44.719	25.389	44.693	41.075	22.001	26.72	41.849	19.173	29.389	
10A	11B	10B	11A	12	11A	10A	10A	11A	12	11A	10B	11B	10A		12
32.902	23.878	40.937	26.708	44.877	24.263	41.46	24.263	44.946	26.712	40.922	23.867	32.886			
9A	10B	11B	10B	15XB	9A	10A	9A	15XB	10B	11B	10B	9A			13
34.882	33.068	23.86	41.895	22.875	44.168	37.163	44.171	22.872	41.867	23.873	33.049	34.716			
9A	10A	15XA	11A	11A	15XA	11A	11A	15XA	10A	9A					14
34.836	32.81	19.176	25.532	25.884	23.299	25.882	25.511	19.174	32.874	34.81					
			10B	10B	11A	11B	11A	10B	10B						15
			29.395	32.292	19.385	20.238	19.381	32.461	29.387						