PSE&G

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

Nuclear Department

September 26, 1984

Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Steven A. Varga, Chief
Operations Reactors Branch 1
Division of Licensing

Dear Mr. Varga:

GENERIC LETTER 84-15
PROPOSED STAFF ACTIONS TO IMPROVE AND MAINTAIN
DIESEL GENERATOR RELIABILITY
SALEM GENERATING STATION
DOCKET NOS. 50-272 AND 50-311

Pursuant to 10 CFR 50.54(f), PSE&G hereby submits its response to Generic Letter 84-15 concerning proposed actions to improve and maintain diesel generator reliability.

ITEM 1: REDUCTION IN NUMBER OF COLD FAST START SURVEILLANCE TESTS FOR DIESEL GENERATORS

The Emergency Diesel Generators at both Salem Units do not undergo cold fast starts for surveillance testing or other testing. The diesel generators, which are manufactured by Alco, are equipped with a prelubrication system which is always in service when the diesels are not running. If the prelubrication system is to be taken out of service for a period of more than twelve hours, it is required that the diesel be run for 15 minutes at idle or 10 minutes under load. This was done at the recommendation of Alco in order to ensure that the diesel's internal parts remain lubricated and also to ensure that the lube oil temperature does not fall too low. If this is not done, the diesel is declared inoperable and the appropriate action statement entered.

A056
1/1

ITEM 2: DIESEL GENERATOR RELIABILITY DATA

The diesel generator reliability data for both Salem Units is given in Table 1 (Attachment). The following is a synopsis of the data:

Diesels	**1A**	**1B**	**1C**	**2A**	**2B**	**2C**
# of Failures in Last 20 Valid Starts	0	1	1	0	1	0
Time Span	13mos	15mos	12mos	5mos	4mos	5mos
# of Failures in Last 100 Valid Starts*	2/63	2/57	4/69	0	5	1
Time Span	43mos	44mos	41mos	35mos	33mos	35mos
Reliability	**97%**	**96%**	**94%**	**100%**	**95%**	**99%**

*For Unit 1 Diesels, data is shown as #Failures/Total #Valid Starts to Date

ITEM 3: DIESEL GENERATOR RELIABILITY

In reviewing the proposed Performance Technical Specifications and their bases, it is clear that this system will give a more accurate indication of diesel generator reliability. There are several factors which lend themselves favorably to this conclusion. These are:

1) Maintaining diesel generator reliability records on a per diesel generator basis rather than a per nuclear unit basis. This will help to identify specific deficiencies of a particular diesel and will also serve to "weed out" any unreliable units.

2) The remedial action criteria are set up such that when a specific diesel is identified as being near the minimum desired reliability, corrective actions are taken to ensure that the reliability is improved with minimum effect on the other diesel generators for that nuclear unit.

3) The accelerated surveillance schedule will provide a mechanism to retain a good reliability status for a diesel in need of remedial action. As stated in Enclosure 3 of Generic Letter 84-15, "increasing the test frequency will allow for a more timely accumulation of additional test data upon which to base judgment of the reliability of the unit."

4) The goals of 0.95/demand being the minimum desired reliability and 0.90/demand being the minimum allowable reliability are realistic goals.

5) The extended time criteria for running the remaining operable diesels when an offsite circuit or another diesel is inoperable is beneficial. This will serve to prevent "overtesting" of diesel generators with good reliability records.

Concerning diesel generator inoperability limits, the 72-hour out-of-service time for a diesel generator cannot be lengthened without taking into consideration its effect on Technical Specification 3.0.5. As the purpose of this specification is to permit the action statements of systems, subsystems, trains, components, or devices to be consistent with the action statement of the associated electrical power source, raising the out-of-service time for a diesel generator would be inconsistent with this. If this were done, it would entail either raising the 72-hour limit for the systems, subsystems, trains, components, or devices powered by that electrical source, or redefining Technical Specification 3.0.5.

The current reliability programs for the diesels at Salem are as per the existing Technical Specifications.

Should you have any questions, please feel free to call us.

Sincerely,

E. A. Liden
Manager - Nuclear
Licensing and Regulation

Attachment

C Mr. Donald C. Fischer
Licensing Project Manager

Mr. James Linville
Senior Resident Inspector

STATE OF NEW JERSEY)
)
COUNTY OF SALEM)

ss: COUNTY OF SALEM

RICHARD A. UDERITZ, being duly sworn according to law deposes and says:

I am a Vice President of Public Service Electric and Gas Company, and as such, I find the matters set forth in our Response to Generic Letter 84-15, "Proposed Staff Action to Improve and Maintain Diesel Generator Reliability" dated September 26, 1984, are true to the best of my knowledge, information and belief.

RICHARD A. UDERITZ

Subscribed and sworn to before me
this 28th day of September, 1984

Deloris Hadden
Notary Public of New Jersey

DELORIS HADDEN
A Notary Public of New Jersey
My Commission Expires Jan. 23, 1985

My Commission expires on

TABLE 1
DIESEL GENERATOR RELIABILITY DATA

	UNIT 1			UNIT 2		
	1A	1B	1C	2A	2B	2C
1	SAT	SAT	SAT	SAT	SAT	SAT
2	SAT	SAT	SAT	SAT	SAT	SAT
3	SAT	SAT	SAT	SAT	UNSAT	SAT
4	UNSAT	SAT	SAT	SAT	SAT	SAT
5	SAT	UNSAT	SAT	UNSAT	SAT	SAT
6	SAT	SAT	SAT	SAT	SAT	SAT
7	SAT	SAT	SAT	UNSAT	SAT	SAT
8	SAT	SAT	SAT	SAT	SAT	SAT
9	SAT	SAT	SAT	SAT	SAT	SAT
10	SAT	SAT	SAT	SAT	SAT	SAT
11	SAT	SAT	SAT	SAT	SAT	SAT
12	SAT	SAT	SAT	SAT	SAT	SAT
13	SAT	SAT	SAT	SAT	SAT	SAT
14	SAT	SAT	SAT	SAT	SAT	SAT
15	SAT	SAT	SAT	SAT	UNSAT	SAT
16	SAT	SAT	SAT	SAT	SAT	SAT
17	SAT	SAT	SAT	SAT	SAT	SAT
18	SAT	SAT	SAT	SAT	UNSAT	SAT
19	SAT	SAT	SAT	SAT	SAT	SAT
20	SAT	SAT	SAT	SAT	SAT	SAT
21	SAT	SAT	SAT	SAT	SAT	SAT
22	SAT	SAT	SAT	SAT	SAT	SAT
23	SAT	SAT	SAT	SAT	UNSAT	SAT
24	SAT	SAT	SAT	SAT	SAT	SAT
25	SAT	SAT	SAT	SAT	UNSAT	SAT
26	SAT	SAT	SAT	SAT	SAT	SAT
27	SAT	SAT	SAT	SAT	SAT	SAT
28	SAT	SAT	SAT	SAT	SAT	SAT
29	SAT	SAT	UNSAT	SAT	SAT	SAT
30	SAT	SAT	SAT	SAT	SAT	SAT
31	SAT	SAT	SAT	SAT	SAT	SAT
32	UNSAT	SAT	SAT	SAT	SAT	SAT
33	SAT	SAT	UNSAT	SAT	SAT	SAT
34	SAT	SAT	SAT	SAT	SAT	SAT
35	SAT	SAT	SAT	SAT	SAT	SAT
36	SAT	SAT	SAT	SAT	SAT	SAT
37	SAT	SAT	SAT	UNSAT	SAT	SAT
38	SAT	SAT	SAT	SAT	SAT	SAT
39	SAT	SAT	UNSAT	SAT	SAT	SAT
40	SAT	SAT	SAT	SAT	SAT	SAT
41	SAT	SAT	SAT	SAT	SAT	SAT
42	SAT	SAT	SAT	SAT	SAT	SAT
43	SAT	SAT	SAT	SAT	SAT	SAT
44	SAT	SAT	SAT	SAT	SAT	SAT
45	SAT	SAT	SAT	SAT	SAT	SAT

TABLE 1
DIESEL GENERATOR RELIABILITY DATA

	UNIT 1			UNIT 2		
	1A	1B	1C	2A	2B	2C
46	SAT	SAT	SAT	SAT	SAT	SAT
47	SAT	SAT	SAT	SAT	SAT	SAT
48	SAT	SAT	SAT	SAT	SAT	SAT
49	SAT	SAT	SAT	SAT	SAT	SAT
50	SAT	UNSAT	SAT	SAT	SAT	SAT
51	SAT	SAT	SAT	SAT	SAT	SAT
52	SAT	SAT	SAT	SAT	SAT	SAT
53	SAT	SAT	SAT	SAT	SAT	SAT
54	SAT	SAT	UNSAT	SAT	SAT	SAT
55	SAT	SAT	SAT	SAT	SAT	SAT
56	SAT	SAT	SAT	SAT	SAT	SAT
57	SAT	SAT	SAT	SAT	SAT	SAT
58	SAT		SAT	SAT	SAT	SAT
59	SAT		SAT	SAT	SAT	SAT
60	SAT		SAT	SAT	SAT	SAT
61	SAT		SAT	SAT	SAT	SAT
62	SAT		SAT	SAT	SAT	SAT
63	SAT		SAT	SAT	SAT	SAT
64			SAT	SAT	SAT	SAT
65			SAT	SAT	SAT	SAT
66			SAT	SAT	SAT	SAT
67			SAT	SAT	SAT	SAT
68			SAT	SAT	SAT	SAT
69			SAT	SAT	SAT	SAT
70				SAT	SAT	SAT
71				SAT	SAT	SAT
72				SAT	SAT	SAT
73				SAT	SAT	SAT
74				SAT	SAT	SAT
75				SAT	SAT	SAT
76				SAT	SAT	SAT
77				SAT	SAT	SAT
78				SAT	SAT	SAT
79				SAT	SAT	SAT
80				SAT	SAT	SAT
81				SAT	SAT	SAT
82				SAT	SAT	SAT
83				SAT	SAT	SAT
84				SAT	SAT	SAT
85				SAT	SAT	SAT
86				SAT	SAT	SAT
87				SAT	SAT	SAT
88				SAT	SAT	SAT
89				SAT	SAT	UNSAT
90				SAT	SAT	SAT

TABLE 1
DIESEL GENERATOR RELIABILITY DATA

	UNIT 1			UNIT 2		
	1A	1B	1C	2A	2B	2C
91				SAT	SAT	SAT
92				SAT	SAT	SAT
93				SAT	UNSAT	SAT
94				SAT	SAT	SAT
95				SAT	SAT	SAT
96				SAT	SAT	SAT
97				SAT	SAT	SAT
98				SAT	SAT	SAT
99				SAT	UNSAT	SAT
100				SAT	SAT	SAT
101				SAT	SAT	SAT
102				SAT	SAT	SAT
103				SAT	SAT	SAT
104				SAT	SAT	SAT
105				SAT	UNSAT	SAT
106				SAT	SAT	SAT
107				SAT	SAT	SAT
108				SAT	UNSAT	SAT
109				SAT	SAT	SAT
110				SAT	SAT	SAT
111				SAT	SAT	SAT
112				SAT	SAT	SAT
113				SAT	SAT	SAT
114				SAT	SAT	SAT
115				SAT	SAT	SAT
116				SAT	SAT	SAT
117				SAT	SAT	SAT
118				SAT	SAT	SAT
119				SAT	SAT	SAT
120				SAT	SAT	SAT
121				SAT	SAT	SAT
122				SAT	SAT	SAT
123				SAT	SAT	SAT
124				SAT	SAT	SAT
125				SAT	SAT	SAT
126				SAT	SAT	SAT
127				SAT	SAT	SAT
128				SAT	SAT	SAT
129				SAT	SAT	SAT
130				SAT	SAT	SAT
131				SAT	SAT	SAT
132				SAT	SAT	SAT
133				SAT	SAT	SAT
134				SAT	SAT	SAT
135				SAT	UNSAT	SAT

TABLE 1
DIESEL GENERATOR RELIABILITY DATA

	UNIT 1			UNIT 2		
	1A	1B	1C	2A	2B	2C
136				SAT	SAT	SAT
137				SAT	SAT	SAT
138				SAT	SAT	SAT
139				SAT	SAT	SAT
140				SAT	SAT	SAT
141				SAT	SAT	
142					SAT	
143					SAT	
144					SAT	
145					SAT	
146					SAT	
147					SAT	
148					SAT	
149					SAT	
150						

DIESEL GENERATOR VALID FAILURE HISTORY

Diesel	Start No.	Date	Reason for Failure
2B	3	12/30/80	Camshaft Failure
1A	4	03/14/81	Governor Control Oil Low
1B	5	05/20/81	Water Jacket Leak
2A	5	01/17/81	Turbo Boost Problem
2A	7	03/12/81	Loss of Lube Oil due to loose Crankcase Inspection Cover
2B	15	06/25/81	Failed to achieve 900 rpm in 10 seconds
2B	18	07/01/81	Failed to achieve 900 rpm in 10 seconds
2B	23	07/13/81	Failed to achieve 900 rpm in 10 seconds
2B	25	07/15/81	Failed to achieve 900 rpm in 10 seconds
1C	29	12/29/82	Cooler Outlet Valve Malfunction
1A	32	02/10/83	High Jacket Water Temperature
1C	33	01/30/83	High Lube Oil Temperature
2A	37	08/14/81	Failed to achieve 900 rpm in 10 seconds
1C	39	04/28/83	High Jacket Water Temperature
1B	50	12/23/83	Jacket Water Leak
1C	54	10/18/83	High Lube Oil Temperature
2C	89	11/18/83	Failed to achieve 900 rpm
2B	93	09/07/83	Cooler Inlet Valve Malfunction
2B	99	11/07/83	Failed to Load
2B	105	12/07/83	Voltage Regulator Failure
2B	108	12/31/83	Fuel Oil Leak Requiring Manual Shutdown
2B	135	03/18/84	Phase B Bus Differential