



**PSEG**

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038-0236

**Nuclear Business Unit**

DEC 02 1996

LR-N96391

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Gentlemen:

**LER 272/96-027-00**  
**SALEM GENERATING STATION - UNIT 1**  
**FACILITY OPERATING LICENSE NO. DPR-70**  
**DOCKET NO. 50-272**

This Licensee Event Report entitled "Diesel Watt Meter Inaccuracies Not Accounted for in Surveillance Testing" is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(i)(B).

Sincerely,

David F. Garchow  
General Manager -  
Salem Operations

Attachment

SORC Mtg. 96-169

BJT/

C Distribution  
LER File 3.7

9612100006 961202  
PDR ADOCK 05000272  
S PDR

The power is in your hands.

**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

<b>FACILITY NAME (1)</b> SALEM GENERATING STATION UNIT 1	<b>DOCKET NUMBER (2)</b> 05000272	<b>PAGE (3)</b> 1 OF 4
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**TITLE (4)**  
Diesel Watt Meter Inaccuracies Not Accounted for in Surveillance Testing

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	31	96	96	027	00	12	02	96	Salem, Unit 2	05000311
									FACILITY NAME	DOCKET NUMBER

<b>OPERATING MODE (9)</b> N	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b>	20.2201(b)	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)	50.73(a)(2)(viii)
<b>POWER LEVEL (10)</b> 000		20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	<b>OTHER</b>
		20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)	
<b>NAME</b> Brian Thomas, Licensing Engineer	<b>TELEPHONE NUMBER (Include Area Code)</b> 609-339-2022

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<b>YES</b> (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	<b>NO</b>	<input type="checkbox"/>				

**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)**

During a review of Emergency Diesel Generator (EDG) instrument inaccuracies, on October 31, 1996, the review determined that the inaccuracies of the EDG watt meter used for recording surveillance test data did not ensure that the EDG remained within the Technical Specification (TS) surveillance band.

The apparent cause is attributed to the lack of consideration of all aspects of the watt meter inaccuracy when the load bands were developed for the TS changes. A contributing cause was the lack of detailed instructions to load the EDG in the center of the TS surveillance load band.

Higher accuracy Maintenance and Test Equipment (M&TE) will be used to measure the EDG kw values. EDG surveillance procedures will be revised prior to their next performance to include the use of the higher accuracy M&TE and provide an acceptance band in the surveillance procedure to ensure that the kw values remain with the TS loading bands.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), any condition prohibited by the plant's Technical Specifications.

**LICENSEE EVENT REPORT (LER)**  
**TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
SALEM GENERATING STATION UNIT 1	05000272	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		96	- 027	- 00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor

Emergency Diesel Generators {EK/-}\*

\* Energy Industry Identification System (EIIS) codes and component function identifier codes appear as {SS/CCC}

CONDITIONS PRIOR TO OCCURRENCE

At the time of identification, Salem Units 1 and 2 were shutdown and defueled.

DESCRIPTION OF OCCURRENCE

During a review of Emergency Diesel Generator (EDG) instrument inaccuracies, on October 31, 1996, the review determined that the inaccuracies of the EDG watt meter used for recording surveillance test data did not ensure that the EDG loading remained within the Technical Specification surveillance band. The Salem Unit 1 and Unit 2 Technical Specifications (TS) for EDG loading are as follows:

TS 4.8.1.1.2.a.2 states that on a monthly or weekly frequency (depending upon the number of diesel failures in the past 20 valid tests):

"....verifying the generator is synchronized, gradually loaded to 2500-2600 kw, and operates at a load of 2500-2600 kw for greater than or equal to 60 minutes."

TS 4.8.1.1.2.c states that at least once per 6 months:

"...The generator shall be synchronized to its emergency bus, loaded to 2500-2600 kw in less than or equal to 60 seconds, and operate at a load of 2500-2600 kw for at least 60 minutes."

TS 4.8.1.1.2.d.7 states that at least once per 18 months during shutdown:

"Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to 2760-2860 kw. During the remaining 22 hours of this test, the diesel generator shall be loaded to 2500 - 2600 kw. The steady state voltage and frequency shall be maintained at  $\geq 3950$  and  $\leq 4580$  volts and  $60 \pm 1.2$  Hz during this test."

The load bands for the EDG surveillances were incorporated into the Unit 1 and Unit 2 TS by amendments 148 and 126, respectively. These amendments were issued by the NRC on November 30, 1993. The 100 kw band that was included in the TS was proposed by PSE&G in License Change Request (LCR) 87-07. The 100 kw band was based on the EDG watt meter having an inaccuracy of 1% of full

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**TEXT (If more space is required, use additional copies of NRC Form 366A) (17)**

DESCRIPTION OF OCCURRENCE (cont'd)

scale ( $\pm$  40 kw) with the operators instructed to place the EDG at the midpoint of the band. However, the surveillance tests procedures did not provide any specific instructions to the operators to place the EDG in the midpoint of the band. The surveillance test procedures require the operator to load the diesel to within the TS loading band.

Although the TS loading band took into account the inaccuracy of the watt meter itself, the loading band did not take into account the additional inaccuracy associated with the readability of the meter and the sensing instrumentation [Potential Transformers (PTs) and Current Transformers (CTs)]. This additional inaccuracy brought the total EDG watt meter inaccuracy to  $\pm$  65 kw. With the EDG set at the midpoint of the loading band, there is no assurance that the actual kw value would be within the TS loading band. A review of past surveillance data revealed that the actual kw values could not be demonstrated to remain with the TS loading band.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), any condition prohibited by the plant's Technical Specifications.

APPARENT CAUSE OF OCCURRENCE

The apparent cause is attributed to the lack of consideration of all aspects of the watt meter inaccuracy when the load bands were developed for the TS changes. A contributing cause was the lack of detailed instructions to load the EDG in the center of the load band.

PRIOR SIMILAR OCCURRENCES

A review of Salem Unit 1 and 2 LERs for the past two years did not reveal any LERs submitted due to failure to consider instrument inaccuracies when recording surveillance test data from installed plant equipment.

SAFETY CONSEQUENCES AND IMPLICATIONS

Public Service Electric and Gas (PSE&G) contacted the vendor of the EDGs (Coltec Industries). The vendor agreed that use of the installed watt meter would ensure that the EDG was within its design ratings. Although the EDG actual kw readings did not comply with the surveillance requirements of the TS, the EDGs are capable of performing their design function. Based on the above, there was no impact to health and safety of the public.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CORRECTIVE ACTIONS

1. Higher accuracy Maintenance and Test Equipment (M&TE) will be used to measure the EDG kw values. EDG surveillance procedures will be revised prior to their next performance to include the use of the higher accuracy M&TE and provide an acceptance band in the surveillance procedure to ensure that the kw values remain within the TS loading bands.