CENTRAL FILES

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Vice President
Production

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March 12, 1981

Mr. Boyce H. Grier, Director
U.S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Grier:

NRC IE BULLETIN 81-01
SURVEILLANCE OF MECHANICAL SNUBBERS
UNITS NO. 1 AND 2
SALEM GENERATING STATION
DOCKET NOS. 50-272 AND 50-311

While conducting the inspection of the accessible RHR pump motor snubbers in accordance with the subject bulletin, a failure was found which necessitated the inspection, within 30 days, of inaccessible INC snubbers. During a recent outage, the plant was put in Mode 5, cold shutdown, and the inaccessible INC snubbers were inspected. The following are the results of these inspections:

1. All International Nuclear Safeguards, Inc. mechanical snubbers have been tested in accordance with the Bulletin requirements with the following results.

Type/Size	Number Tested	Remarks
MSVA2	40	6 Failed
MSVA2A	6	2 Failed
MSVA3	3	
MSVA4	10	

Failed Snubbers:

Type/Size	Serial Number	Location	Cause of Failure
MSVA2	4261	#11 RHR Pump Motor (South)	Failed Manual Stroke Test
MSVA2	4210	#12 RHR Pump Motor (East)	" "
MSVA2	3279	#22 RHR Pump Motor (East)	" "
MSVA2	1702	#21 RHR Pump Motor (East)	" "
MSVA2	3312R	#21 RHR Pump Motor (South)	" "
MSVA2	969	Spare	" "
MSVA2A	1909	Spare	" "
MSVA2A	5055	Spare	" "

2. A schedule for an inspection program covering mechanical snubbers produced by other manufacturers is as follows:

   Unit 1 - 1981 Refueling Outage - currently scheduled for September 1981.

   Unit 2 - The visual and manual test is in progress. The inspection will be completed prior to unit startup. Projected completion date is March 23, 1981.

A description of the visual examinations and tests performed is as follows:

1. The visual examinations were performed in accordance with Maintenance Procedure M17B, which includes as a minimum a check for all snubbers to be free of debris, fasteners tight, no rust, no distortion, and no cracks in welds or base metal.

2. A manual test over the range of the stroke has been performed on all INC snubbers in the following manner:

   a. Applying hand force, move the snubber until it is evident there is no more travel. This has been observed by noting the travel indicator rod throughout the entire travel scale located on the forward or telescoping end of the snubber.

   b. Repeat the stroke test application in the opposite direction as was done in Step 1.

   c. Failure of the snubber to move freely in either direction was considered cause for rejection and was reported to the Engineering Department for corrective action, recommendations and system operability evaluation.

3. An operational activation and drag force test was performed on a representative sample of the installed snubbers and all spares as outlined in Bulletin Step 1.b, Actions to be Taken by Licensees of Operating Reactors, as follows:

   a. Activation of the locking feature of INC snubbers was achieved with the application of an extremely rapid manual force. Force was applied in both the tension and compression modes while the snubber was observed to monitor lock-up. Failure of the snubber to lock-up due to the applied force in either tension or compression was considered cause for rejection.

b. The snubber was activated slowly with a strain gage attached. The minimum forces required to induce movement in both tension and compression were recorded and compared with the following acceptance criteria:

Size	Maximum Drag Force (lbs.)
MSVA-1	10
MSVA-2	25
MSVA-3	50
MSVA-4	100

A preliminary evaluation of the cause of failure indicates that there is fatigue of snubber internals, resulting from normal mechanical vibration associated with the RHR Pump motor. A metallurgical analysis of the failed components will be conducted by the Public Service Energy Lab to confirm this evaluation.

The stress calculations for the RHR Pump motors were reviewed; the RHR Pump motors are adequately supported at their base for gravity loads. The snubbers on the RHR Pump motors were installed for extra stability during a seismic event. As part of the evaluation, separate analyses were performed excluding the effects of the locked snubbers identified in the dynamic analysis run to evaluate effects on seismic stress. These analyses indicated that the system is operable and that its continued operation would not be impaired.

As a corrective action the Engineering Department has recommended that the existing snubbers installed on the RHR Pump motors in Units 1 and 2 be replaced with strut restraints. This would be a design improvement over the existing acceptable design. By June 1, 1981, the new strut restraints will be in place or a reinspection of a representative sample of the RHR Pump motor snubbers will be conducted.

Sincerely,

E. Schneider

CC Director, Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

STATE OF NEW JERSEY)
) SS: COUNTY OF ESSEX
COUNTY OF ESSEX)

FREDERICK W. SCHNEIDER, 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 dated March 12, 1981, to the NRC's IE Bulletin 81-01 titled "Surveillance of Mechanical Snubbers" are true to the best of my knowledge, information, and belief.

Frederick W. Schneider
FREDERICK W. SCHNEIDER

Subscribed and sworn to before me
this 13TH day of March, 1981

Janne E. Maccioca
Notary Public of New Jersey
My Commission expires on Oct. 1, 1983