REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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FACIL: 50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
AUTH. NAME AUTHOR AFFILIATION
MOHN, , S. E. Florida Power & Light Co.
WOODY, C. O. Florida Power & Light Co.
RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-012-02: on 851219, snubbers failed visual exams & functional testing, per Tech Spec 4.7.10. Caused by installation & design problems. All failed snubbers repaired, modified or replaced. Maint procedures upgraded. W/871124 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 10
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

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INTERNAL:	ACRS MICHELSON	1	1	ACRS MOELLER	2	2
	AEOD/DOA	1	1	AEOD/DSP/NAS	1	1
	AEOD/DSP/ROAB	2	2	AEOD/DSP/TPAB	1	1
	ARM/DCTS/DAB	1	1	DEDRO	1	1
	NRR/DEST/ADS	1	0	NRR/DEST/CEB	1	1
	NRR/DEST/ELB	1	1	NRR/DEST/ICSB	1	1
	NRR/DEST/MEB	1	1	NRR/DEST/MTB	1	1
	NRR/DEST/PSB	1	1	NRR/DEST/RSB	1	1
	NRR/DEST/SGB	1	1	NRR/DLPQ/HFB	1	1
	NRR/DLPQ/QAB	1	1	NRR/DOEA/EAB	1	1
	NRR/DREP/RAB	1	1	NRR/DREP/RPB	2	2
	NRR/DRIS/SIB	1	1	NRR/PMAS/ILRB	1	1
	REG FILE 02	1	1	RES DEPY GI	1	1
	RES TELFORD, J	1	1	RES/DE/EIB	1	1
	RGN2 FILE 01	1	1			
EXTERNAL:	EG&G GROH, M	5	5	H ST LOBBY WARD	1	1
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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
St. Lucie, Unit 1	0 5 0 0 0 3 3 5	1 OF 0 9

TITLE (4)
ISI SNUBBER INSPECTION FAILURES

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 NAMES	DOCKET NUMBER(S)
1 2	1 9	8 5	8 5	0 1 2	0 2	0 6	0 9	8 7		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)					
POWER LEVEL (10)	0 0 0	20.402(b)		20.405(c)		50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)		50.36(c)(1)	X	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)		50.36(c)(2)	X	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	X	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
S. E. Mohn - Technical Staff	AREA CODE 3 0 5 4 6 5 - 3 5 5 0

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	
B	A B	S N B	P 0 2 9	Yes		B	B P	S N B	P 0 2 9	Yes	
B	S J	S N B	P 0 2 9	Yes		B	C C	S N B	P 0 2 9	Yes	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

While the unit was shutdown for a scheduled refueling outage from October 20 to December 24, 1985, visual examinations and functional testing of snubbers were performed per Tech. Spec. 4.7.10. Some snubbers failed these tests.

The snubbers failed due to installation/maintenance errors and design problems.

This event is considered reportable under several categories due to the various systems affected. However, engineering evaluation indicated that no piping or components have been adversely affected by these failures.

All failed snubbers were repaired, modified or replaced. The snubber maintenance procedures and training is being upgraded. The PSA-0.25 (250 lb load) snubber internals were analyzed for proper hardness and were found to be within the tensile strength specifications. All PSA-0.25 (250 lb load) snubbers have been replaced with either PSA-0.25(350 lb load) or PSA-1.0 snubbers.

IE22 1/1

NRC Form 366B
(9 83)

LICENSEE EVENT REPORT (LER) FAILURE CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO 3150-0104
EXPIRES: 8/31/88

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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	
B	C B	S N B	P 0 2 9	YES		B	S B	S N B	P 0 2 9	YES	
A	S B	S N B	P 0 2 9	YES		A	A B	S N B	I 2 0 7	YES	
A	B E	S N B	P 0 2 9	YES		B	A B	S N B	I 2 0 7	YES .	
A	A B	S N B	P 0 2 9	YES							
X	A B	S N B	P 0 2 9	YES							
X	C B	S N B	P 0 2 9	YES							
X	W I	S N B	P 0 2 9	YES							
X	S B	S N B	P 0 2 9	YES							
X	C C	S N B	P 0 2 9	YES							
B	J B	S N B	P 0 2 9	YES							
B	W I	S N B	P 0 2 9	YES							
B	D A	S N B	P 0 2 9	YES							

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

DESCRIPTION OF EVENT:

St. Lucie Unit #1 was shut down for a scheduled refueling outage from October 20 to December 24, 1985. During this outage, visual examination and functional testing were conducted per Technical Specification 4.7.10 surveillance requirements. All examination and testing services were provided by a Qualified Vendor. Since this was the first snubber surveillance that was required to include the functional testing of Mechanical Shock Arrestors (MSA), the scope of the activities was increased beyond that required by the Technical Specification to include a nominal 100 percent of the subject population. The examination program at St. Lucie also includes a Limited Operability Test of mechanical snubbers which is conducted following the Visual Examination and consists of unpinning each snubber and manually (or with a suitable mechanical force multiplier) exercising the snubber through its full range of travel. Final inspections and repairs were completed on December 19, 1985.

As a result of the inspections, several failure mechanisms were discovered. A list of the failed snubbers is included in the Additional Information section of this report.

CAUSE OF EVENT:

During the visual inspection two generic and several specific deficiencies were discovered. Spherical bearings were found to be loose or displaced. The spherical bearing deficiencies were due to the generic problem discussed in the I&E Circular 81-05, "Self Aligning Rod End Bushings". Several other snubbers were found to have an oversized load pin hole in the pipe clamp or beam attachment. The hole size mismatch was due to a design error. Attachment parts incompatibility was not accounted for during a previous snubber changeout. The other specific failures listed in the enclosed tables were due to personnel errors during installation and maintenance, and environmental conditions.

The limited Operability Test revealed many snubbers which were frozen or incapable of free movement over their full range of travel. Nine of the failures resulted from the snubber having been overloaded while in service. Three other snubbers failed from exposure to the surrounding environment. Two were located in the steam trestle area and the third was by a leaking valve. The rest of the failures were due to installation/maintenance problems (two) or due to excessive grease caused by a manufacturing error (one).

During the Functional Testing many snubbers became frozen during or after the Load Test portion of the tests. All of these failures were of the PSA-0.25 (250 lb. lead) type snubbers. The cause of their failure is indeterminate. The snubber internals were analyzed and were found to be within the tensile strength specifications.

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

Six (6) ITT Grinnell snubbers failed the Functional Test. Two steam generator snubbers failed on lockup velocity criteria due to a clogged constant bleed bypass orifice in their control valves. The control valves were modified in accordance with the manufacturer's recommendations to correct the design problem for all susceptible snubbers. The other four were Reactor Coolant Pump (RCP) snubbers. Two needed slight adjustments and the other two had to be replaced due to internal damage. The cause of the internal damage is indeterminate, although previous maintenance is suspected.

Four Pacific Scientific mechanical snubbers failed to achieve the manufacturer's activation criteria of 0.02 g. The failures were all due to dirty capstans/capstan springs. The source of the dirt is suspected to be from the degradation of the snubbers' internal lubricant (Chevron U.S.A.,Inc., NRRG-159). In all cases the degradation of snubber performance was minimal. No further confirmatory information is available on this item and no further action is planned.

ANALYSIS OF EVENT:

This event is considered reportable under 10 CFR 50.73 (a)(2)(vii) due to potential inoperability of the snubbers and their affect on system operability. The consequence of inoperable snubbers is a potential overstress condition in the piping and components. The consequences would be more significant for a seismic event and could lead to damage of the piping and components.

In all cases where the snubber deficiencies had a potential for overstressing the piping and components, an engineering evaluation and stress analysis were conducted. In no cases, during normal operations, were the pipes or components adversely affected.

In the specific cases where the snubber failed to activate in accordance with the acceptance standards, it was determined that since no seismic event occurred, neither the piping nor the components have been adversely affected. However, in the remote possibility that had a seismic event occurred, some of these snubbers could have failed to perform their intended function.

CORRECTIVE ACTIONS:

1. PC/M 172-185 has been performed to correct both the spherical bearings and the oversized attachment holes. The PC/M included the recommended actions from I&E Circular 81-05 to correct the spherical bearings. To correct the oversized attachment holes, a bushing was inserted in the larger hole to take up the slack.
2. Since the PSA-0.25 test failures only involved those snubbers with a 250 lb design load rating, the problem with those snubbers has been corrected by replacing all PSA-0.25 (250 lb. load) snubbers with either PSA-0.25 (350 lb. load) or PSA-1.0 snubbers.
3. Snubbers identified as having been subjected to service-induced overload were upgraded to a larger capacity (PSA-1).

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

4. The two snubbers in the steam trestle area have been replaced by another type of snubber which is less susceptible to damage from the environment.
5. The snubber by the leaking valve was replaced and the leaking valve repaired.
6. The St. Lucie plant is upgrading its program for various aspects of snubber inspection, testing, and maintenance.
7. The control valves of the all ITT Grinnell steam generator snubbers were modified, increasing the size of the constant bleed bypass orifice to 1/16" diameter. The control valves and check valves were rebuilt and retested, and found to be within specifications.
8. Two of the ITT Grinnell reactor coolant pump snubbers with indicated internal damage were replaced (1-019 and 1-020). The other two were adjusted and reinstalled (1-017 and 1-018).
9. Three of the four Pacific Scientific mechanical snubbers with dirty capstans/capstan springs were cleaned, the fourth one was replaced due to damage received during its removal.

ADDITIONAL INFORMATION:

1. LER 389-84-010 was the last LER of a previous similar event.

2. Failed snubbers:

Tag Number	Mfg./Cap.	System	Failure	Corrective Action
001	ITT Grinnell	AB	Control Valve	Valve Modified
002	ITT Grinnell	AB	Control Valve	Valve Modified
017	ITT Grinnell	AB	Exceeded Criteria	Snubber Adjusted
018	ITT Grinnell	AB	Exceeded Criteria	Snubber Adjusted
019	ITT Grinnell	AB	Internal Damage	Replaced
020	ITT Grinnell	AB	Internal Damage	Replaced
021	PSA-3	AB	Spherical Bearing	PC/M 172-185
022	PSA-3	AB	Spherical Bearing	PC/M 172-185
024	PSA-10	AB	Spherical Bearing	PC/M 172-185
028	PSA-10	AB	Spherical Bearing	PC/M 172-185
029	PSA-3	AB	Spherical Bearing	PC/M 172-185
031	PSA-3	AB	Spherical Bearing Failed Activation Criteria	PC/M 172-185 Cleaned Capstan
035	PSA-3	SB	Spherical Bearing Cracked	Bearing Replaced
048	PSA-10	SJ	Spherical Bearing	PC/M 172-185
049	PSA-10	SJ	Spherical Bearing	PC/M 172-185
055	PSA-3	BP	Spherical Bearing	PC/M 172-185
059	PSA-3	BP	Spherical Bearing	PC/M 172-185
060	PSA-3	BP	Spherical Bearing	PC/M 172-185
070	PSA-10	BP	Frozen	Replaced

Tag Number	Mfg./Cap.	System	Failure	Corrective Action
074	PSA-3	BP	Spherical Bearing Failed Activation Criteria	PC/M 172-185 Cleaned Capstan
085	PSA-10		Misaligned/Loose Clamp	Repositioned/Tightened Clamp
097	PSA-3	CC	Spherical Bearing Failed Activation Criteria	PC/M 172-185 Cleaned Capstan
106	PSA-3	CB	Spherical Bearing	PC/M 172-185
117	PSA-0.25	AB	Frozen	Replaced
121	PSA-0.25	AB	Oversized Hole	PC/M 172-185
122	PSA-0.25	CB	Oversized Hole	PC/M 172-185
124	PSA-0.25	CB	Frozen	Replaced
128	PSA-0.25	JB	Frozen	Replaced
129	PSA-0.25	AB	Frozen	Replaced
131	PSA-0.25	CB	Frozen	Replaced
132	PSA-0.25	CB	Frozen	Replaced
133	PSA-0.25	JB	Frozen	Replaced
137	PSA-0.25	CB	Frozen	Replaced
141	PSA-0.25	CB	Frozen	Replaced
143	PSA-0.25	WI	Frozen	Replaced
144	PSA-0.25	AB	Frozen	Replaced
145	PSA-0.25	CB	Frozen	Replaced
148	PSA-1	AB	Spherical Bearing	PC/M 172-185
154	PSA-0.25	JB	Frozen	Replaced
155	PSA-0.25	CB	Frozen	Replaced
160	PSA-0.25	CB	Frozen Oversized Hole	Replaced PC/M 172-185

Tag Number	Mfg./Cap.	System	Failure	Corrective Action
161	PSA-0.25	AB	Frozen	Replaced
168	PSA-0.25	AB	Frozen	Replaced
169	PSA-0.25	AB	Frozen	Replaced
173	PSA-0.25	CB	Frozen	Replaced
180	PSA-0.25	AB	Misaligned/Loose Clamp	Repositioned/ Tightened Clamp
185	PSA-0.25	CB	Frozen	Replaced
186	PSA-0.25	WI	Frozen	Replaced
188	PSA-0.25	AB	Frozen	Replaced
191	PSA-0.25	CB	Spherical Bearing Broken and Dislodged	Bearing Replaced/ PC/M 172-185
192	PSA-0.25	WI	Frozen	Replaced
194	PSA-0.25	SB	Frozen	Replaced
195	PSA-0.25	DA	Frozen	Replaced
196	PSA-0.25	SB	Frozen	Replaced
202	PSA-3	CC	Spherical Bearing	PC/M 172-185
218	PSA-0.25	WI	Frozen	Replaced
219	PSA-0.25	CB	Frozen	Replaced
225	PSA-0.5	AB	Misaligned/Loose Clamp	Repositioned/ Tightened Clamp
227	PSA-0.25	AB	Frozen	Replaced
228	PSA-0.25	AB	Misaligned/Loose Clamp	Repositioned/ Tightened Clamp
229	PSA-0.25	AB	Misaligned/Loose Clamp	Repositioned/
230	PSA-0.25	AB	Misaligned/Loose Clamp	Repositioned/ Tightened Clamp

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

Tag Number	Mfg./Cap.	System	Failure	Corrective Action
231	PSA-0.25	AB	Frozen	Replaced
234	PSA-0.25	AB	Improper Load Stud Installed	Appropriate Load Stud Installed
235	PSA-0.25	AB	Frozen	Replaced
236	PSA-0.25	BP	Frozen	Replaced
240	PSA-3	AB	Failed Activation Criteria/Frozen	Replaced

P. O. BOX 14000, JUNO BEACH, FL 33408-0420

FPL

NOVEMBER 24 1987

L-87-490
10 CFR 50.73

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Re: St. Lucie Unit 1
Docket No. 50-335
Reportable Event: 85-12 Revision 2
Date of Event: December 19, 1987
ISI Snubber Inspection Failures

The attached Licensee Event Report revision is being submitted pursuant to the requirements of 10 CFR 50.73 to provide an update of the subject event.

Very truly yours,

J. A. Le Mastry

C. O. Woody
Executive Vice President

COW/GRM/gp

cc: Dr. J. Nelson Grace, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

IE22
1/1

GRM5/062/1