

Florida Power & Light Company, 6501 South Ocean Drive, Jensen Beach, FL 34957

August 27, 1997

L-97-221 10 CFR 50.73

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

Re: St. Lucie Units 1 and 2 Docket No. 50-335, 50-389 Reportable Event: 97-008 Date of Event: July 26, 1997 Inoperable Mechanical Fire Penetrations Outside Appendix R Design Bases

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

Very truly yours, J. A. Stall

Vice President St. Lucie Plant

JAS/KWF

Attachment

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an FPL Group company

cc: Regional Administrator, USNRC Region II Senior Resident Inspector, USNRC, St. Lucie Plant

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DESCRIPTION OF THE EVENT

On July 28, 1997, St. Lucie Units 1 and 2 were in Mode 1 at 100 percent power. FPL was investigating work backlogs and determined that corrective actions associated with fire protection barriers were still pending. NRC Information Notice (IN) 94-28 described situations where installed fire penetration seals did not directly correlate to the fire barrier qualification test configuration. The notice requested all licensees to review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. St. Lucie Plant evaluated the adequacy of the fire penetration seals at both units in January 1995. This evaluation showed that St. Lucie Plant had 365 mechanical penetration seals and that 218 of these seals are not directly bounded by test data. This includes 72 seals for Unit 1 and 146 seals for Unit 2. However, the evaluation did not establish if the discrepant fire penetration seals were operable.

FPL personnel performed an operability assessment for the 218 penetration seals that were not directly bounded by test data. Of this population, the operability assessment has shown that seven penetration seals in Unit 1 and eight penetration seals in Unit 2 are inoperable. These inoperable penetration seals have had Fire Breach Permits generated and posted in the area of the seal and are being monitored by the hourly roving fire watch as required by the Appendix "R" Fire Protection Program at St. Lucie.

CAUSE OF THE EVENT

The apparent cause of this event was due to weaknesses associated with the previous problem identification and corrective action procedure in place during the original IN 94-28 review. The St. Lucie STAR Program was subsequently replaced by the Condition Report (CR) process. An operability assessment on the condition of the 218 fire penetration seals was not performed under the STAR Program. Therefore, the importance of corrective actions specified by the original STAR was not recognized during the STAR to CR conversion. The CR procedure ensures that operability determinations are performed for potentially degraded Systems, Structures, and Components (SSCs), and provides positive tracking mechanisms for required corrective actions.

The apparent cause of installed mechanical fire penetration configurations not being bounded by tested configurations was due to the seal manufacturer not providing details documenting the reason for the selection and acceptability of each mechanical penetration seal. Deviations to the tested configuration were to be reviewed and certified at St. Lucie by the seal manufacturer during installation. However, no formal documentation on the deviations from tested configurations was provided.

ANALYSIS OF THE EVENT

This condition is reportable under 10 CFR 50.73(a)(2)(ii)(B) because the as found condition of 15 fire penetration seals does not meet the three hour fire barrier requirements. The fire barriers are discussed in the Unit 1 and Unit 2 FSARs, Chapter 9.5A. The principal design objective of the three hour fire barrier is to protect plant personnel, the general public, and the environment by ensuring that every fire penetration seal provides a passive three hour fire barrier between the various fire areas of the plant. The fire barrier does not perform any safety related function either during normal plant operation or during accident condition. The fire barrier is a passive device and is part of the plant fire protection system.

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ANAL	YSIS OF THE EVENT (cont'd)								
The 218 fire penetration seals that were not directly bounded by test data fell into four general categories: i) the penetrating item is larger than the tested configuration; ii) the seal had more than one penetrating item passing through it and no testing, applicable to this seal material, was conducted with more than one pipe penetrating the seal; iii) some seals did not have conclusive test data exactly per ASTM E-119 requirements; and iv) some seals exceeded the design limitations of operating temperature and or pipe movement.									
Operat	bility was established by evaluating the field con	ditions agains	st the following guidelines:						
1.	If the design temperature or movement exceed seal was visually examined via walkdown. If the no degradation due to shrinkage or pipe moven	s the allowab he seal was vi nent, the seal	le design data on the seal drawing the isually acceptable on both sides, that I is operable if all other criteria are me	e is, t.					
2.	If the normal operating conditions has the pipe filled with water, and the maximum temperature of the pipe could not increase above the boiling point of water at a relatively low pressure, the heat flux from a fire to the seal or pipe to the other side of the barrier would be low due to the water acting as a heat sink. Therefore, under these conditions the seal is operable with respect to the fire barrier requirements due to the conduction and convection properties of basic heat transfer. However, seals with piping filled with water where the piping temperature/pipe movement exceeds the design limitations of the seal for normal or intermediate operation are considered inoperable.								
3.	For seals that do not fall into the above two categories, the rules developed from Tech-Sil, Inc. (Promotec) Document Number TS-TP-0081, Test Report #TS-TP-0081, "Fire and Hose Stream Test for #TS-MS-0080-A Self-Supporting High Density Silicone Gel," Test Date 9/11/81, will be applied.								
4.	Since penetration seals that have a multiple number of small instrumentation tubes penetrating them are partially grouted and usually transverse thicker than normal barriers, they do not readily fall under the same category as other penetration seals and because an instrumentation tube is small (< 2") they are operable.								
5.	Test Report #TS-TP-0048-C, "Fire and Hose Sta MS-0045-B Silicone Elastomer," shows that a 2 for M-1 type seals. Therefore, for the M-1 seal thickness are operable.	ream Test of a 2" pipe with a I design all 2"	a Single Penetration Sealed with #TS- a 6" seal passed the ASTM E-119 test ' and smaller penetrants with a 6" sea	- ting al					
6.	For insulated pipes, the insulation will tend to s insulated pipe will not be subject to being inope	shield the seal erable due to	I from the fire and therefore, any design temperature limitations.						
Fifteen inopera	a fire penetration seals did not fall into one of the able.	e above six gi	uidelines so they were considered						

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TEXT Iff more space is required, use additional copies of NRC Form 366A	17 (17)	•							
SAFETY_SIGNIFICANCE									
The 15 inoperable fire penetration seals were evaluated and determined to be not safety significant. Although the as-found condition of these fire penetration seals was not in accordance with the tested configurations, and would probably not meet a three hour fire rating, the installation does provide some resistance to fire propagation. Fire protection defense in depth provides an integrated means for mitigating the consequences of a fire, such as the existing smoke detection systems, automatic water fire suppression systems, hose stations, administrative programs that control combustible loading, and operator actions. In addition, the location of the inoperable fire seals did not change the route of the existing roving fire									
is concluded that the health and safety of the public w	as not advers	sely affected by this event.							
CORRECTIVE ACTIONS									
 The 15 inoperable penetration seals have had F of the seal and are monitored by the existing h "R" Fire Protection Program at St. Lucie. 	The 15 inoperable penetration seals have had Fire Breach Permits generated and posted in the area of the seal and are monitored by the existing hourly roving fire watch as required by the Appendix "R" Fire Protection Program at St. Lucie.								
2. Generic Letter 86-10 mechanical fire penetration mechanical seals that are not bounded by teste	2. Generic Letter 86-10 mechanical fire penetration evaluations will be performed for the 218 mechanical seals that are not bounded by tested configurations.								
3. The inoperable mechanical fire penetrations will be modified to meet the three hour fire barrier criteria.									
ADDITIONAL INFORMATION									
Eailed_Components_Identified									
Manufacturer: Promatec, Inc. (formerly Tech-Sil) Equipment: Elastomer Seals									
Previous Similar Events									
LER 50-389/97-004-0 described a condition where St. Lucie Unit 2 double sided cable tray fire stops were not installed in accordance with the design drawings.									

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