

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8710070004 DOC. DATE: 87/10/01 NOTARIZED: NO DOCKET #  
 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250  
 50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251  
 AUTH. NAME: WOODY, C. O. AUTHOR AFFILIATION: Florida Power & Light Co.  
 RECIP. NAME: RECIPIENT AFFILIATION: Document Control Branch (Document Control Desk)

SUBJECT: Provides update to 870515 response to Generic Ltr 87-02,  
 "Verification of Seismic Adequacy of Mechanical & Electrical  
 Equipment in Operating Reactors."

DISTRIBUTION CODE: A048D COPIES RECEIVED: LTR 1 ENCL 0 SIZE: 4  
 TITLE: OR/Licensing Submittal: Equipment Qualification

NOTES:

	RECIPIENT		COPIES			RECIPIENT		COPIES	
	ID CODE/NAME		LTR	ENCL		ID CODE/NAME		LTR	ENCL
	PD2-2 LA		1	0		PD2-2 PD		1	0
	McDONALD, D		1	0				1	0
INTERNAL:	ARM/DAF/LFMB		1	0		GC		1	0
	NRR/DEST/ADE		1	0		NRR/DEST/MEB		1	0
	NRR/DEST/SCB		1	1		OGC/HDS2		1	1
	<u>REG FILE</u> 01		1	1		RES/DE/EIB		1	1
EXTERNAL:	LPDR		1	1		NRC PDR		1	1
	NSIC		1	1					

TOTAL NUMBER OF COPIES REQUIRED: LTR 14 ENCL 0



Vertical text on the left side.

Vertical text in the center.



L-87-401

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

Gentlemen:

Re: St. Lucie Unit 1  
Docket No. 50-335  
Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
Verification of Seismic Adequacy of Mechanical and Electrical  
Equipment in Operating Reactors (Generic Letter 87-02)  
Unresolved Safety Issue A-46

By letter number L-87-217 dated May 15, 1987, FPL provided the response requested by Generic Letter 87-02 and committed to provide an update by October 1, 1987. This letter provides the update.

FPL's May 15, 1987 letter spoke to the subjects of the A-46 Value-Impact Assessment, the use of probabilistic analytical techniques for determining seismic hazards and the relationship of A-46 with other pending NRC issues containing seismic components. These subjects will be expanded upon in this update.

A-46 requests a review of FPL's nuclear plants to determine the seismic adequacy of certain mechanical and electrical equipment to criteria contained in a "new model" (by comparison to non-nuclear plant seismic experiences or other test data instead of the basis used for the original licensing reviews). As a consequence, the NRC staff has determined that the review is a backfit as defined by 10 CFR50.109 and that any plant modifications resulting from the review are also backfits.

The request for the review is supported by a Value-Impact Analysis in NUREG 1211 which illustrates the consequences of a seismic failure of an electrical cabinet anchorage at the Byron plant. FPL has reviewed the analysis and has changed the following data to make the analysis site specific to FPL's St. Lucie Unit 1 and Turkey Point Units 3/4 plants. The frequency estimates in NUREG 1211 which are not site specific have not been changed and are being reviewed separately with the results to be provided at a later date. As one example, NUREG 1211 states that there is a 20% probability of core melt if one electrical cabinet required for safe shutdown is not available. The assumptions underlying this and the other generic frequency estimates are planned to receive further review.

8710070004 871001  
PDR ADDCK 05000250  
P PDR

*ADL 8  
1/0*



Comparison of Byron Data  
with  
St. Lucie Unit 1 and Turkey Point Units 3/4

<u>Data Item</u>	<u>Byron Data NUREG 1211</u>	<u>St. Lucie Unit 1</u>	<u>Turkey Point Units 3/4</u>
MW(E)	1120	850	760
P(i)	2.5E-4/R <sub>Y</sub>	7.5E-6/R <sub>Y</sub>	2.3E-6/R <sub>Y</sub>
R(D/CR)	5E+6	2E+6	7E+6
L	30	29	20

P(i), the probability of an initiating SSE, has been determined from the pre-release version of the SOG methodology developed under EPRI's Seismic Hazard Research Program for the Eastern USA.

R(D/CR), the conditional public dose, in man-rem, has been determined by CRAC 2 based on a WASH-1400 Category 2 type release, the fission product inventory of the respective reactors and the meteorology and population densities for the respective sites.

L, is the remaining reactor life for the respective sites.

In NUREG 1211 a probability of 1.0 is assigned to the failure of an equipment anchorage - a failure which is assumed to be averted by having performed the review (and presumably modified the anchorage). A prior implicit probability of 1.0 (not expressed) was that there was a deficiency to the criteria in the "new model" which, upon anchorage failure, could lead to core melt. It is also possible that the review could have disclosed no such deficiency in which case there could not be any reduction at all in seismic risk potential from having spent the money on the review. To illustrate, in FPL's case, in 1986, Sandia National Laboratories performed extensive seismic reviews of St. Lucie Unit 1 and Turkey Point Units 3/4, including equipment anchorages, as part of its Decay Heat Removal Study (USI A-45) for the NRC and determined that neither St. Lucie Unit 1 nor Turkey Point Units 3/4 would be expected to have any seismic concerns below .24g. This represents a minimum seismic margin of 240% SSE for St. Lucie Unit 1 and 160% SSE for Turkey Point Units 3/4. Since A-46 only requires that there be no seismic concerns at the level of the SSE it would appear that the probability of any of the plants having a deficiency at the SSE level which, upon failure could lead to core melt is extremely small and should be assigned a probability much less than the implicit probability of 1.0 in NUREG 1211.

Further, NUREG 1211, at Page 24 describes St. Lucie Unit 1 as an example of a "plant where few if any modifications would be required" and NUREG/CR-4762 (the Sandia Study) at Page C-22 describes Turkey Point as an example of a plant where "if the procedures in 10CFR100 Appendix A were applied -- a value of peak ground acceleration based on earthquake history of less than 0.10g would be obtained and hence the SSE would be set at the prescribed minimum of 0.10g." In point of fact, Sandia used a SSE of 0.06g at Turkey Point for the purposes of its study as compared to the 0.15g presently in the FSAR.



Retaining the implicit probability of 1.0 for the moment and using the site specific data previously provided, the seismic risk reduction potential for St. Lucie Unit 1 would be 11 man-rem if seismic risk were to be totally eliminated and for Turkey Point Units 3/4 it would be 8 man-rem. As a consequence, there could only be \$11,000 prudently justified for St. Lucie Unit 1 and \$8,000 prudently justified for Turkey Point Units 3/4 to perform the review and to fix all the deficiencies to the criteria in the "new model." As a practical matter, using an implicit probability much less than 1.0 and also subtracting the remaining risk in man-rem (because NUREG 1211 assumes an order of magnitude risk reduction, not a total risk reduction), would result in much lower net man-rem reductions and much lower prudently justified expenditures.

NUREG 1211 provides estimated cost impacts and FPL has also followed the A-46 trial review at the Zion plant earlier this year. For FPL to do the necessary procedural development and perform the reviews requested by A-46 it could cost FPL at least \$750,000 per plant, exclusive of the cost of fixing any deficiencies to the criteria in the "new model." It is also possible that worker dose received during these types of walkdowns could exceed the potentially averted off-site man-rem estimates discussed earlier.

Since we believe that FPL's plants now have an adequate level of seismic safety, any interpretation of the backfit rule would have to consider the costs associated with attempting to achieve a marginally higher level of safety. In the case of A-46, the value-impact ratio is less than one and it would be more prudent for FPL to allocate its finite resources to other ends than to A-46 as a single issue.

FPL's May 15, 1987 letter stated that it would like to address A-46 within the context of other current issues involving seismicity and in an integrated manner. Further research since that time has confirmed this belief and the following issues are proposed to be included in an integrated seismic program:

#### Unresolved Safety Issues

USI A-17	Systems Interactions
USI A-40	Seismic Design Basis
USI A-44	Station Blackout
USI A-45	Decay Heat Removal
USI A-46	Verification of Seismic Adequacy of Mechanical and Electrical Equipment

#### Other NRC Issues

- Eastern USA Seismicity
- Seismic Design Margins
- Severe Accident Policy
- Quantification of Safety Goals
- Beyond Design Basis Accidents  
in Spent Fuel Pools

All of the above issues contain seismic components and the philosophies, criteria and methods required for their solution should be consistent across the issues, particularly since the issues are not mutually exclusive.



2  
3  
4

4

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100

L-87-401

Page 4

FPL is proceeding with its plans to develop a cost-effective integrated seismic program to assure the NRC that the concerns expressed in A-46 and the other issues do not apply to FPL's plants and will provide an updated response by January 31, 1988.

Very truly yours,

  
C. O. Woody  
Group Vice President  
Nuclear Energy

COW/JRL/cn  
M/001

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