

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL  
(TEMPORARY FORM)

CONTROL NO: 1025

FILE: \_\_\_\_\_

FROM: Florida Power & Light Co. Miami, Fla. 33101 R. E. Uhrig			DATE OF DOC 1-30-76	DATE REC'D 2-3-76	LTR XX	TWX	RPT	OTHER
TO: Mr. George Lear			ORIG 1 signed	CC	OTHER	SENT NRC PDR <u>XX</u>		SENT LOCAL PDR <u>XX</u>
CLASS	UNCLASS XXX	PROP INFO	INPUT	NO CYS REC'D 1		DOCKET NO: 50-250(251)		

DESCRIPTION: Ltr re our 5-27-75 ltr....  
furn information on the integrity of the  
main steam isolation valves under the dynamic  
loads associated with postulated steam line  
breaks with attachment & Figures 1-4....

ENCLOSURES:

~~Do Not Remove~~  
**ACKNOWLEDGED**

PLANT NAME: Turkey Pt. Units 3 & 4

SAFETY	FOR ACTION/INFORMATION	ENVIRO	DHL 2-5-76
ASSIGNED AD _____	ASSIGNED BRANCH CHIEF _____		
BRANCH CHIEF <u>LEAR (6)</u>	PROJECT MANAGER _____		
PROJECT MANAGER <u>ELLIOT</u>	LIC ASST. _____ W/ ACRS		
LIC. ASST. <u>PARRISH</u> W/ 16CYS ACRS			

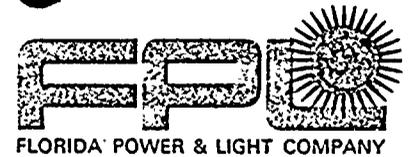
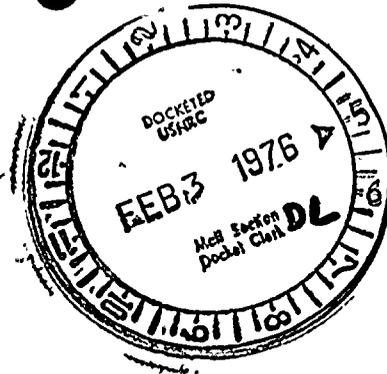
INTERNAL DISTRIBUTION

- |                           |                       |                           |  |
|---------------------------|-----------------------|---------------------------|--|
| <u>REG FILES (2)</u>      | <u>SYSTEMS SAFETY</u> | <u>PLANT SYSTEMS</u>      | <u>SITE SAFETY &amp; ENVIRO ANALYSIS</u> |
| <u>NRRC PDR (2)</u>       | HEINEMAN              | TEDESCO                   | DENTON MULLER.                           |
| SOELD                     | SCHROEDER             | BENAROYA                  |  |
| GOSSICK/STAFF             |                       | LAINAS                    | <u>ENVIRO TECH.</u>                      |
| I&E (2)                   | <u>ENGINEERING</u>    | IPPOLITO                  | ERNST                                    |
| MIPC                      | MACCARY               |                           | BALLARD                                  |
|                           | KNIGHT                | <u>OPERATING REACTORS</u> | SPANGLER                                 |
| <u>PROJECT MANAGEMENT</u> | SIHWEIL               | STELLO                    |  |
| BOYD                      | PAWLICKI              |                           | <u>SITE TECH.</u>                        |
| P. COLLINS                |                       | <u>OPERATING TECH.</u>    | GAMMILL                                  |
| HOUSTON                   | <u>REACTOR SAFETY</u> | EISENHUT                  | STEPP                                    |
| PETERSON                  | ROSS                  | SHAO                      | HULMAN                                   |
| MELTZ                     | NOVAK                 | BAER                      |  |
| HELTMES                   | ROSETOCZY             | SCHWENCER                 | <u>MISCELLANEOUS</u>                     |
|                           | CHECK                 | GRIMES                    |  |

EXTERNAL DISTRIBUTION

- |                              |                             |                     |
|------------------------------|-----------------------------|---------------------|
| <u>LOCAL PDR</u> Miami, Fla. | NATIONAL LAB _____ W/ CYS   | BROOKHAVEN NAT. LAB |
| <u>TIC</u>                   | REGION V-I&E-(WALNUT CREEK) | ULRIKSON (ORNL)     |
| <u>NSIC</u>                  | LA PDR                      |                     |
| ASLB                         | CONSULTANT'S                |                     |

*[Handwritten signature]*

**Regulatory Docket File**

January 30, 1976  
L-76-39

Director of Nuclear Reactor Regulation  
ATTN: Mr. George Lear, Chief  
Operating Reactors Branch No. 3  
Division of Operating Reactors  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Lear:

Re: Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
Main Steam Isolation Valves

Your letter of May 27, 1975 requested information concerning the integrity of the Turkey Point Units 3 and 4 main steam isolation valves under the dynamic loads associated with postulated steam line breaks. Our letters L-75-237 of July 3, 1975 and L-75-524 of October 28, 1975, progressively reported the status of our investigations. The evaluation of the Turkey Point main steam isolation valves and main steam line check valves is now complete and the information requested is provided in an Attachment to this letter.

Analyses have been performed using the "worst case" approach. The trip valve analysis assumed a double-ended pipe break at the check valve outlet. The check valve analysis assumed a similar break at the trip valve inlet. Any other postulated pipe break would be further from the valves and would therefore result in a lower disc velocity and impact energy. The analyses also considered the use of the various steam pressures and steam flows which would be representative of different power levels. A power level of about 53% was finally used in the analyses because it yielded the most conservative results. In all cases, the values assumed for material physical properties were the most limiting. The actual physical properties can be expected to be less limiting.

Both pre-impact and post-impact analyses were performed.

Pre-impact

The pre-impact analysis considered the centrifugal forces acting on the tail link and rockshaft. It was found that



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these forces cause the tail link and rockshaft to deflect in the radial direction. In addition, there will be sufficient radial deflection to permit the valve disc to contact the valve body just before the disc impacts with the valve seat. Calculations indicate that the disc will rebound slightly after contact with the body and continue on to impact the seat and effect valve closure. Evaluation of the pre-impact analysis indicates that contact between the valve disc and valve body does not result in loss of function of the disc or body.

#### Post-impact

The post-impact analysis conservatively assumed that no energy loss occurs during pre-impact contact between the valve disc and valve body even though such contact can be expected to result in some loss of disc kinetic energy. The analysis dealt primarily with the forces and strains generated in the disc, seat, and tail link hub by the impact of the disc on the seat. The post-impact strains occurring in the valve are all less than the minimum ultimate strain capacity for the respective materials involved. The effect on the valve is that the disc and seat will undergo some plastic deformation in the impact areas but will still close to effectively shut off steam flow.

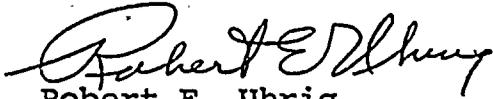
To provide an increased margin of safety, we plan to modify the valves as described in the Attachment. The modifications will be similar to those made on our St. Lucie Unit No. 1. With these modifications, the potential deflection in the rockshaft and tail link is reduced to .25 in. The maximum tail link strain occurs in the tail link hub and is less than 20% of the minimum ultimate strain capacity of the material. The strains in the modified disc and seat are greatly reduced with the maximum strain occurring in an element of the check valve disc. The maximum strain in the check valve is 60% of the strain capacity of the disc material. Also, the use of a larger operating air cylinder will greatly reduce the strains in the air operated trip valve because the velocity of the trip valve disc will be significantly reduced.

A cyclic fatigue analysis of the modified valve internals has been performed and has demonstrated that a satisfactory number of spurious closures during 100% power operation can be accommodated. The modified valves have been found to be satisfactory under all conditions analyzed, and will provide a significantly increased performance margin.

Director of Nuclear Reactor Regulation  
Page Three  
January 30, 1976

A discussion of the modification schedule is presented in the Attachment. In summary, Unit 3 modifications are planned for the Fall 1976 refueling outage and Unit 4 modifications are planned for no later than the Spring 1977 refueling outage.

Very truly yours,



Robert E. Uhrig  
Vice President

MAS/cpc

cc: Jack R. Newman, Esquire

