

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>Turkey Point Unit 4</b>	DOCKET NUMBER (2) 0   5   0   0   0   2   5   1   1	PAGE (3) 1 OF 02
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TITLE (4)  
**HAGAN Summator Module**

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	0	15	8	4	8	4	0	2	4	0	0	1	1	0	7	8	4	Turkey Point Unit 3	0   5   0   0   0   2   5   0
									N/A		0   5   0   0   0								

OPERATING MODE (9) **N**

POWER LEVEL (10) **100**

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)
20.406(a)(1)(i)	50.38(c)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	73.71(c)
20.406(a)(1)(ii)	50.38(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.406(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.406(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME <b>Randall D. Hart, Licensing Engineer</b>	TELEPHONE NUMBER
	AREA CODE: <b>305</b>   NUMBER: <b>245-2910</b>

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
B	JCCAP	P	H015	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (if yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On September 7, 1984, while Unit 4 was at 100% power, the Tave and ΔT summator module NM412D was found defective during routine surveillance and the defective module was replaced. This particular failure mode has been noted on other W15D 7100 process controls summators with limits (P/N 4111084-002 and P/N 4111084-004). These summators when used in the X10 or X100 scale have a tendency to break into sustained oscillations (lock-up). These oscillations usually occur when the input is driven high or when the summator input experiences a spike. Plant Management determined on October 15, 1984, that the lock-up problem was reportable as a generic defect. The safety function of the Tave and ΔT summator in question was part of a redundant system that remained operable. More detail is provided in the attached text. Our Engineering staff is evaluating a module upgrade to eliminate the problem. The health and safety of the public were not affected. Similar occurrences: None.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Turkey Point Unit 4	DOCKET NUMBER (2)  0 5 0 0 0 2 5 1	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 4	- 0 2 4	- 0 0	0 2	OF 0 2

TEXT (If more space is required, use additional NRC Form 365A's) (17)

On September 7, 1984, while Unit 4 was at 100% power, the Tave and  $\Delta T$  summator module NM412D was found defective during routine surveillance and the defective module was replaced. This particular failure mode has been noted on other W15D 7100 process controls summators with limits (P/N 4111084-002 and P/N 4111084-004). The summators when used in the gain X10 or X100 position have a tendency to break into sustained oscillations (lock-up). These oscillations usually occur when the input is driven high or when the summator input experiences a spike.

After considerable circuit design evaluation, capacitor C4 (P/N 181 424-008 capacitor of 10 microfarads, 6 volts) was upgraded to a larger capacitance. A capacitor valued at 35 microfarads and rated at 25 volts was chosen for performance and also physical size considerations. To obtain operational data, capacitor C4 was upgraded on four summators, all of which suffered from the "lock-up" problem. In all cases, upgrading C4 to the new value eliminated the "lock-up" problem, with no adverse effect upon any of the summator's other operating characteristics.

Input and output recorder graphs were taken for each summator before the modification and after the modification. In each case, a lock-up situation was attempted by spiking the input signal. In each case, the before modification graph shows the summator output breaking into a spontaneous oscillations as a result of the input spike. In all cases, the after modification graph shows the oscillation dampening in approximately one and one half cycles, and thereafter, achieving stability.

Bode plots of a summator depicting before and after modification frequency responses show no significant change in the performance of the summator, in either the X1 or the X10 gain switch positions. A dynamic response test also showed no significant change in response time of the summator.

Proper evaluation will be performed to ensure that the component change will not result in adverse consequences. The other nuclear plants in Florida Power and Light's system will be made aware of the potential problem. An entry will be made in the INPO Network to make other nuclear facilities aware of the potential problem.



November 7, 1984

L-84-319

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

Gentlemen:

Re: Reportable Event 84-24  
Turkey Point Unit 4  
Date of Event: October 15, 1984  
Hagan Summator Module

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

Very truly yours,

A handwritten signature in cursive script, appearing to read "J. W. Williams, Jr.", is written over the typed name.

J. W. Williams, Jr.  
Group Vice President  
Nuclear Energy

JWW/PLP/js

Attachment

cc: J. P. O'Reilly, Region II, USNRC  
Harold F. Reis, Esquire  
File 933.1 TP  
PNS-LI-84-398-1

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