

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL: 50-389 St. Lucie Plant, Unit 2, Florida Power & Light Co.
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 RECIP. NAME: EISENHUT, D.G. RECIPIENT AFFILIATION: Division of Licensing

DOCKET #
05000389

SUBJECT: Forwards summary of calculations performed to determine flood level inside containment, in response to NRC request for addl info re util 830510 ltr.

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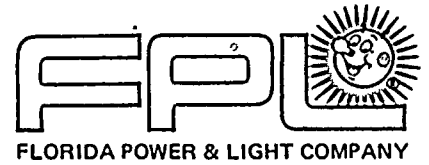
THE UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D. C.

OFFICE OF THE ASSISTANT SECRETARY FOR LAND MANAGEMENT
WASHINGTON, D. C.

REPORT OF THE ASSISTANT SECRETARY FOR LAND MANAGEMENT
ON THE PROGRESS OF THE BUREAU OF LAND MANAGEMENT
DURING THE YEAR 1942

1943

Item	Quantity	Value	Notes
1	100	100.00	...
2	200	200.00	...
3	300	300.00	...
4	400	400.00	...
5	500	500.00	...
6	600	600.00	...
7	700	700.00	...
8	800	800.00	...
9	900	900.00	...
10	1000	1000.00	...
11	1100	1100.00	...
12	1200	1200.00	...
13	1300	1300.00	...
14	1400	1400.00	...
15	1500	1500.00	...
16	1600	1600.00	...
17	1700	1700.00	...
18	1800	1800.00	...
19	1900	1900.00	...
20	2000	2000.00	...



May 25, 1983
L-83-328

Office of Nuclear Reactor Regulations
Attention: Mr. Darrell G. Eisenhut, Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Eisenhut:

Re: St. Lucie Unit No. 2
Docket No. 50-389.
Containment Flooding Calculation

In response to a verbal request for additional information regarding our letter L-83-286 dated May 10, 1983, attached please find a summary of the calculations performed to determine the flood level inside containment. This response should close out this issue.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/RJS/cab

Attachment

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CONTAINMENT FLOODING CALCULATION SUMMARY

Ebasco has reviewed a previously performed Containment Flooding Analysis to verify that modifications to the Hydrogen Purge Exhaust Check Valve to prevent flooding of this valve are unnecessary. The Hydrogen Purge Exhaust Check Valve is located at elevation 26'-0" with the bottom of the valve disc at elevation 25'-7". The flood level stated in FSAR Section 7.5.3.2 is 26'-0". This conservative flood level was a reported value from an analysis done in compliance with the criteria of NUREG-0737 item II.F.1, Attachment 5 "Containment Water Level Monitoring" to give the range for the Containment Level Monitor. The analysis summarized here is to determine a conservative but more realistic value for the calculated maximum water level.

The analysis was done in two parts. The first part determined the free volume in the containment while the second part is a conservative estimate of the water available to flood the containment in the event of an accident.

The containment free volumes were calculated by taking the total volume and subtracting the volume of the equipment present.

Table 1 shows the free volume of each area below elevation 18.

Table 2 shows the free volume below 24' and above 18'.

Above elevation 24' it was conservatively assumed that the volume increased at a constant rate of 11343 ft³ per ft of elevation.

Figure 1 shows the containment free volume versus elevation.

The inventory of water available for flooding the Containment is a conservative total based on the maximum quantity of fluids from the Reactor Vessel, Steam Generator, Pressurizer, Safety Injection Tanks and the Hydrazine Tank. The volume of fluid contributed by each vessel is shown on Table 3.

The entire inventory of the Primary Coolant in the Reactor Vessel, Reactor Coolant Piping, Steam Generator, Pressurizer and Pressurizer Surge Line (except a small amount of water in the Reactor Vessel, consistent with accident analyses in Chapter 15 of the FSAR) was assumed to spill onto the floor. The Pressurizer was conservatively assumed to be water solid at the time of the accident.

All the Safety Injection Tanks were conservatively assumed to be at their maximum Technical Specification level (Tech Spec 3.5.1).

In addition, a conservative maximum inventory of the Boric Acid Make-Up Tanks, Refueling Water Tank and the Hydrazine Storage Tank was added to the containment. The Refueling Water Storage Tank was conservatively assumed to be at the overflow level. This is 7,300 gallons above the high level alarm and 67,000 gallons above the Tech Spec limit.

The conclusion of this reanalysis is that the actual maximum calculated flood level inside containment is elevation 25'-3" as shown in Figure 1, not elevation 26'0" reported for NUREG-0737, item D.F.1. This actual level is below the 25'-7" at the bottom of the Hydrogen Purge Exhaust Check Valve, therefore no modifications are necessary.

TABLE 1
CONTAINMENT FREE VOLUME BELOW EL 18-0 FT

<u>Vol Index</u>	<u>Description</u>	<u>Free Volume</u> Ft ³
1	Containment Sump	1431
2	Reactor Cavity	4807
3	Electrical Tunnel	5560
4	Elec. Tunnel Access.	1732
5	Blowout Tunnel	2207
6	R. Drain Tank Pit	1600
7	ECCS Pump Suction	143
8	Trenches #1 to 6	2289
9	Annular Trenches	6226
10	Stairways	199
11	Regen HX Cubical	78
12	Eq & Fl Drains	<u>82</u>
	Total Below El. 18	26359

TABLE - 2

CONTAINMENT FREE VOLUME BETWEEN EL. 18 FT and 24 FT

Vol Index	Description	Free Volume - Ft ³					
		@El 19 ft	@El 20 ft	@El 21 ft	@El 22	@El 23 ft	@El 24 ft
2	Reactor Cavity	144	144	144	144	144	104
6	R Drain Tank Pit	187	187	187	187	187	-
9	Annular Trenches	1313	1313	1313	1105	853	-
10	Stairways	26	33	40	44	52	-
11	Regen HX Cubical	43	43	43	43	43	-
12	Eq & Fl Drains	1	1	1	1	1	-
13	Reactor Fl above EL 18	5178	5178	5178	5730	6284	12848
14	Trenches #7&9	-	16	48	48	48	-
15	2nd Shield Wall	-811	-811	-811	-811	-811	-811
16	Shield Wall	-142	-142	-142	-142	-142	-142
17	SG Support Pads	-420	-420	-420	-420	-420	-105
18	Press. Support Pad	-171	-171	-171	-171	-171	-171
19	RCP Bottom Stops	-171	-171	- 61	-61	- 56	-48
20	Equipment Pads & Curbs	- 67	-	-	-	-	-225
Total cu. ft		5109	5200	5349	5697	6012	11343
Cumulative Total		31468	36668	42017	47714	53726	65069

TABLE 3

Water Inventory and Flood Level

I) Containment Vol.

- a) Containment free vol @ EL 24' = 65,069 FT³
- b) Containment free vol @ EL 25' = 76,412 FT³
- c) Containment free vol @ EL 26' = 87,755 FT³

II) Calc. 2 Water Inventory & Flood Level

- a) From Refueling Water Tank = 64770 cu ft
- b) Reactor Vessel = 1695
- c) R.C. Pumps = 448
- d) Steam Generators = 3245
- e) Pressurizer = 800
- f) R.C. Piping = 1081
- g) Safety Injection Tanks = 6224
- h) Boric Acid Makeup Tanks = 883
- i) Hydrazine Tank = 90

Total Inventory = 79245 cu ft

Flood Level

Intropolation between EL 24' & 25' for 79245 cu ft of water gives a flood level at EL 25.25 ft.

FIG. 1 CONTAINMENT WATER LEVEL VS WATER VOLUME

