



**Florida
Power**
CORPORATION

September 15, 1988
3F0988-11

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

Attention: S. A. Varga

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
Long Term Emergency Diesel Generator Loading

Dear Sir:

In a letter dated July 22, 1988 (3F0788-18), Florida Power Corporation (FPC) described a study which had been initiated to evaluate long term emergency diesel generator loading under post accident conditions. The study was undertaken as a result of NRC concerns that the evaluated loads for the first 30 minutes of some accident scenarios may not be bounding for the longer term.

The study has been completed and a summary is attached. As the summary shows, the long term emergency diesel generator loads for all accident conditions are within the 2000 hour rating of 3000 kw. This is true for the existing plant configuration as well as for the configuration to be implemented during the next refueling outage.

Should there be any questions, please contact this office.

Sincerely,

Rolf C. Widell
Director
Nuclear Operations Site Support

AEF/RCW:

Attachment

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xc: Dr. J. Nelson Grace
Regional Administrator, Region II

Mr. Peter Holmes-Ray
Senior Resident Inspector

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DIESEL GENERATOR "A" & "B"
7 DAY EXTENDED LOADS

The Emergency Diesel Generator (EDG) loading submittal of February 29, 1988 covered the automatic loading for the first 30 minutes. This submittal represents the loading from 30 minutes to seven days.

Tables 1 and 2 of this document tabulate the "A" EDG 30 minute to seven day extended time loads including both the automatically applied loads and the manually applied loads with "B" EDG failure. The loads remain within the 2000 hour 3000 KW rating of the diesel generator for both existing conditions and after the installation of the Refuel VII modifications.

Tables 3 and 4 of this document tabulate the "B" EDG 30 minute to seven day extended time loads including both the automatically applied loads and the manually applied loads with "A" EDG failure. The loads remain within the 2000 hour 3000 KW rating of the diesel generator for both existing conditions and after the installation of the Refuel VII modifications.

Failure of the steam driven Emergency Feedwater Pump (EFP-2) results in sharing of loads between "A" and "B" EDG's. Therefore, the "B" EDG failure will bound all scenarios for the "A" EDG loading projected for seven days. Before the Refuel VII modifications the maximum "A" EDG loading with "B" EDG failure is 2924 KW and occurs during steam line break outside the Reactor Building. After the Refuel VII modifications the maximum "A" EDG loading with "B" EDG failure is 2879 KW and occurs during the 0.07 sq. ft. and 0.04 sq. ft. Intermediate Break LOCAs.

The failure of motor driven Emergency Feedwater Pump (EFP-1) does not affect the loading of "B" EDG because EFP-2 is steam driven. Therefore, the "A" EDG failure will bound all scenarios for the "B" EDG loading projected for seven days. Before the Refuel VII modifications the maximum "B" EDG loading with "A" EDG failure is 2939 KW and occurs during the 0.07 sq. ft. and 0.04 sq. ft. Intermediate Break LOCAs. After the Refuel VII modifications the maximum "B" EDG loading with "A" EDG failure is 2895 KW and occurs during the 0.07 sq. ft. and 0.04 sq. ft. Intermediate Break LOCAs.

The time interval tabulations provide approximate timing when the load changes occur.

EDG-3A LOADING WITH EDG-3B FAILURE
WITH PLANNED MODIFICATIONS INSTALLED
TABLE 1

Large Break LOCA - 14.4 Sq.-Ft.						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2726.4	2319.4	2360.4	2180.4		
Int. Break LOCA - 0.5 Sq.-Ft.						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2726.4	2319.4	2360.4	2180.4		
Int. Break LOCA - 0.07 Sq.-Ft.						
Time After Break	30m	1h	3h	1d	1d - 7d	
Total Power (kw)	2879.4	2654.4	2790.1	2180.4	2180.4	
Int. Break LOCA - 0.04 Sq.-Ft.						
Time After Break	30m	33m	1h	3h	1d	1d - 7d
Total Power (kw)	2682.4	2879.4	2654.4	2790.1	2180.4	2180.4
Small Break LOCA - 0.01 Sq.-Ft.						
Time After Break	30m	1h	10.5h	1d	1d - 7d	
Total Power (kw)	2705.9	2457.4	2610.1	2180.4	2180.4	
Steam Line Break Inside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2718.4	2876.4	2180.4	2180.4		
Steam Line Break Outside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2784.4	2876.4	2180.4	2180.4		
Feedwater Line Break Inside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2718.4	2876.4	2180.4	2180.4		
OTSG Tube Rupture						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2783.4	2876.4	2180.4	2180.4		

EDG-3A LOADING WITH EDG-3B FAILURE
PRESENT PLANT CONFIGURATION
TABLE 2

Large Break LOCA - 14.4 Sq.-Ft.						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2726.4	2319.4	2360.4	2180.4		
Int. Break LOCA - 0.5 Sq.-Ft.						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2726.4	2319.4	2360.4	2180.4		
Int. Break LOCA - 0.07 Sq.-Ft.						
Time After Break	30m	1h	3h	1d	1d - 7d	
Total Power (kw)	2584.4	2794.4	2790.1	2180.4	2180.4	
Int. Break LOCA - 0.04 Sq.-Ft.						
Time After Break	30m	33m	1h	3h	1d	1d - 7d
Total Power (kw)	2822.4	2584.4	2794.4	2790.1	2180.4	2180.4
Small Break LOCA - 0.01 Sq. Ft.						
Time After Break	30m	1h	10.5h	1d	1d - 7d	
Total Power (kw)	2845.9	2597.4	2610.1	2180.4	2180.4	
Steam Line Break Inside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2858.4	2532.4	2180.4	2180.4		
Steam Line Break Outside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2924.4	2532.4	2180.4	2180.4		
Feedwater Line Break Inside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2858.4	2532.4	2180.4	2180.4		
OTSG Tube Rupture						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2923.4	2532.4	2180.4	2180.4		

EDG-3B LOADING WITH EDG-3A FAILURE
WITH PLANNED MODIFICATIONS INSTALLED
TABLE 3

Large Break LOCA - 14.4 Sq.-Ft.						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2830.8	2423.8	2464.8	2284.8		
Int. Break LOCA - 0.5 Sq.-Ft.						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2830.8	2423.8	2464.8	2284.8		
Int. Break LOCA - 0.07 Sq.-Ft.						
Time After Break	30m	1h	3h	1d	1d - 7d	
Total Power (kw)	2548.8	2758.8	2894.5	2284.8	2284.8	
Int. Break LOCA - 0.04 Sq.-Ft.						
Time After Break	30m	33m	1h	3h	1d	1d - 7d
Total Power (kw)	2351.8	2548.8	2758.8	2894.5	2284.8	2284.8
Small Break LOCA - 0.01 Sq.-Ft.						
Time After Break	30m	1h	10.5h	1d	1d - 7d	
Total Power (kw)	2351.8	2561.8	2714.5	2284.8	2284.8	
Steam Line Break Inside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2286.8	2496.8	2284.8	2284.8		
Steam Line Break Outside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2286.8	2496.8	2284.8	2284.8		
Feedwater Line Break Inside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2286.8	2496.8	2284.8	2284.8		
OTSG Tube Rupture						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2491.8	2636.8	2284.8	2284.8		

EDG-3B LOADING WITH EDG-3A FAILURE
PRESENT PLANT CONFIGURATION
TABLE 4

Large Break LOCA - 14.4 Sq.-Ft.						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2870.9	2463.9	2504.9	2324.9		
Int. Break LOCA - 0.5 Sq.-Ft.						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2870.9	2463.9	2504.9	2324.9		
Int. Break LOCA - 0.07 Sq.-Ft.						
Time After Break	30m	1h	3h	1d	1d - 7d	
Total Power (kw)	2728.9	2938.9	2934.6	2324.9	2324.9	
Int. Break LOCA - 0.04 Sq.-Ft.						
Time After Break	30m	33m	1h	3h	1d	1d - 7d
Total Power (kw)	2531.9	2728.9	2938.9	2934.6	2324.9	2324.9
Small Break LOCA - 0.01 Sq.-Ft.						
Time After Break	30m	1h	10.5h	1d	1d - 7d	
Total Power (kw)	2531.9	2741.9	2754.6	2324.9	2324.9	
Steam Line Break Inside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2466.9	2676.9	2324.9	2324.9		
Steam Line Break Outside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2466.9	2676.9	2324.9	2324.9		
Feedwater Line Break Inside RB						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2466.9	2676.9	2324.9	2324.9		
OTSG Tube Rupture						
Time After Break	30m	1h	1d	1d - 7d		
Total Power (kw)	2531.9	2676.9	2324.9	2324.9		