Florida
Power
CORPORATION
Crystal River Unit 3
Docket No. 50-302

January 18, 1995
3F0195-01

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

Subject: NRC Inspection Report No. 50-302/94-26

Dear Sir:

Florida Power Corporation (FPC) provides the following additional information as requested in the subject inspection report. FPC believes the Service Water System Operational Performance Assessment (SWSOPA) conducted by our personnel was both thorough and comprehensive. It served to heighten our awareness of the condition of Crystal River Unit 3's (CR-3) cooling water systems.

As we discussed in our December 16, 1994 telecon with Region II personnel, FPC has completed actions to assure that the raw water pits are clean. Based on the cleaning in Spring 1994 and December 1994, we have begun trending the buildup of foreign material in the pits. Pit inspections ("A" just completed and "B" scheduled for June 1995) will provide us with additional information to continue our evaluation of pit conditions. We are confident that the heat exchangers served by the CR-3 Nuclear Service Seawater (RW) System will remain operable in the future because of the periodic cleaning of the Nuclear Service Closed Cycle Cooling Water (SW) System heat exchangers and the periodic cleaning of the raw water pits.

I have directed key managers to become involved in both the overall and specific corrective action activities. This SWSOPA management assessment team has established action plans to resolve those concerns identified through the self-assessment process. FPC would like to meet with NRC representatives to discuss the details of our ongoing actions.

IE01
1/1

DETERMINATION OF OPERABILITY

We have interpreted the NRC request for submittal of past and present analyses supporting operability on CR-3 cooling water systems to mean those evaluations performed in accordance with FPC's Nuclear Operations Directive (NOD) 14, "Evaluating Operability and Determining Safety Function Status," since January 1, 1990. This date was selected to correspond with the time frame for heightened industry awareness of problems in service water systems brought about by the issuance of Generic Letter 89-13. The SWSOPA drew upon the plant quality records to establish those areas of examination within the cooling water systems where potential operability concerns existed. As requested, we are submitting, as attachments, the NOD-14 Operability Evaluations which have been performed on SWSOPA related equipment and activities. These evaluations all conclude that the identified equipment is operable.

FPC agrees our process for determining operability needs to be enhanced. In particular, we should have done a better assessment of the impact of macrofouling on CR-3's heat exchangers served by seawater. We are revising CP-111, "Initiation and Processing of Precursor Cards and Problem Reports," to provide the personnel responsible for making operability determinations with better guidance. This will improve management involvement, increase accountability, and provide better means for tracking/trending adverse performance.

In some situations, FPC has encountered difficulties making operability decisions because we had to rely excessively on judgement alone due to unavailability or difficulty in locating/retrieving calculations with the level of detail necessary to address these situations. To resolve this deficiency, FPC is re-evaluating those areas where personnel must make critical judgement decisions to determine if additional calculations are required. If necessary, these additional calculations will be developed and placed in our document retrieval system.

We have also not consistently evaluated the impact of component failures on overall system ability to handle design basis accidents. To remedy this deficiency, FPC management is assessing the level of knowledge in the various departments on the use of Probabilistic Safety Assessment (PSA), Enhanced design Basis Documents (EDBD), FSAR Chapter 14, and other material in evaluating component failure on overall plant safety. We will establish appropriate training for designated nuclear personnel.

CHECK VALVE RWV-36

A concern was identified associated with the potential for check valve RWV-36 not closing during a loss of offsite power/loss of coolant accident. The diversion of flow by the failure of RWV-36 to close was not modeled in the original CR-3 Individual Plant Examination (IPE). The failure mode was added to the current CR-3 PSA/IPE model. The model was requantified considering the impact of RWV-36 failing to close using failure data that is specific to CR-3 (3.08×10^{-4} per demand). The addition of the RWV-36 failure-to-close event resulted in a negligible ($<1 \times 10^{-8}$/yr) increase in the CR-3 core damage frequency. FPC

evaluated the impact of an increase in the failure probability of this valve to 0.1, over 300 times greater than the CR-3 generic check valve failure probability. It results in a 3.2% increase in core damage frequency (from 1.13 x 10^{-5} per year to 1.166 x 10^{-5} per year). If we compare this increased core damage frequency to the screening criteria in the draft NEI PSA Applications Guide, it would be categorized as a non-risk significant change.

The reason that the effect on the CR-3 core damage frequency of RWV-36 failing to close is minimal is the fact that CR-3 has a very diverse and redundant set of cooling water systems. The failure of RWV-36 to close results in the emergency raw water pumps, RWP-2A and RWP-2B, running in a "recirculation mode" back through the idle normal service pump, RWP-1, effectively rendering the SW System inoperable; however, the presence of the Decay Heat Closed Cycle Cooling (DC) System makes the impact of this failure less severe. Two of the three makeup (HPI) pumps can be cooled by the DC system, and both decay heat removal (LPI) pumps are cooled by the DC system. The raw water pumps which support the DC system, RWP-3A and RWP-3B, are unaffected by the RWV-36 failure. The inherent redundancy associated with this design of the cooling water function at CR-3 significantly reduces the effect of the RWV-36 failure. Therefore, FPC judges the impact on plant safety of this potential failure to be minimal.

SERVICE WATER BLOCKAGE and REACTOR BUILDING HEAT EXCHANGERS REPORTING

FPC will submit voluntary Licensee Event Reports (LER) [LER 94-013 and LER 94-014] on the Nuclear Services Closed Cycle Cooling System heat exchangers (SWHE) and the Reactor Building heat exchangers (RBCU). The basis for this decision to submit a LER on the SWHEs is that we are unable to determine whether every past incident of partially clogged or plugged heat exchanger tubes could have resulted in unsatisfactory operation of the heat exchanger. It is possible that CR-3 could have operated outside the design basis for the cooling water systems. We now have an analytical basis for determining whether or not a SW heat exchanger will perform its function based upon the percentage of blocked tubes versus the ultimate heat sink (UHS) temperature. This FPC calculation, "Allowable SWHE Blockage vs UHS Temperature," M94-0056, Revision 0 is attached. A revision to this calculation is in process to reflect verified flow rates and it will contain a family of curves representing various cleanliness factors. Based upon this calculation, we have developed instructions which direct when additional SWHEs are to be cleaned if the one being cleaned is found with debris exceeding a predetermined limit. The amount of debris and the temperature of the Gulf of Mexico water (CR-3's UHS) determine when additional SWHEs are cleaned.

The voluntary LER on the RBCUs also involves a possible situation where CR-3 could have been outside its design basis. For LOCA mitigation scenarios, the CR-3 Improved Technical Specifications (ITS) requires two RBCUs in service during Modes 1 through 4. However, in certain scenarios involving a LOCA without a loss-of-offsite power (LOOP), three RBCUs could have been aligned to operate upon receipt of an ES signal. Two RBCUs are normally aligned for LOCA mitigation, the third RBCU could already be running in slow speed and does not trip because there is no LOOP. Also, the emergency operating procedures directed the operators to

align all RBCUs during post-LOCA cooldown. Consequently, the thermal/hydraulic performance of the SW System is not known for all situations. Since the SW System is balanced for two RBCUs in the ES mode of operation, we could not readily evaluate the possible accident thermal/hydraulic combinations and conclusively determine whether or not CR-3 was outside its design basis. Therefore, FPC elected to immediately correct the situation and submit the voluntary LER.

The delay in the submittal beyond the 20 days requested in the inspection report was approved by Region II in a December 22, 1994 telecon between Mr. W.G. Rogers, NRC and Mr. J.W. Tunstill, FPC.

Sincerely,

Gary Boldt

G. L. Boldt
Vice President
Nuclear Production

GLB/JWT

Attachments

xc: Regional Administrator, Region II
Senior Resident Inspector
NRR Project Manager