Progress Energy

Serial: NPD-NRC-2009-219
October 22, 2009

10CFR52.79

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

LEVY NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NOS. 52-029 AND 52-030
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 067 RELATED TO RAW WATER SYSTEM

Reference: Letter from Tanya Simms (NRC) to Garry Miller (PEF), dated September 21, 2009, "Request for Additional Information Letter No. 067 Related to SRP Section 09.02.01 for the Levy County Nuclear Plant Units 1 and 2 Combined License Application"

Ladies and Gentlemen:

Progress Energy Florida, Inc. (PEF) hereby submits our response to the Nuclear Regulatory Commission's (NRC) request for additional information provided in the referenced letter.

A response to the NRC request is addressed in the enclosure. The enclosure also identifies changes that will be made in a future revision of the Levy Nuclear Plant Units 1 and 2 application.

If you have any further questions, or need additional information, please contact Bob Kitchen at (919) 546-6992, or me at (727) 820-4481.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 22, 2009.

Sincerely,

John Elnitsky
Vice President
Nuclear Plant Development

Enclosure

cc : U.S. NRC Region II, Regional Administrator
Mr. Brian C. Anderson, U.S. NRC Project Manager

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NRO

Levy Nuclear Plant Units 1 and 2
Response to NRC Request for Additional Information Letter No. 067 Related to SRP Section 09.02.01 for the Combined License Application, dated September 21, 2009

NRC RAI #	Progress Energy RAI #	Progress Energy Response
09.02.01-6	L-0558	Response enclosed – see following pages

NRC Letter No.: LNP-RAI-LTR-067

NRC Letter Date: September 21, 2009

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 09.02.01-6

Text of NRC RAI:

The raw water system (RWS) is relied upon for achieving and maintaining cold shutdown conditions which is necessary for satisfying Technical Specification requirements. In accordance with NRC policy considerations for passive plant designs, non-safety related active systems that are relied upon for achieving and maintaining cold shutdown conditions (i.e., transitioning from Mode 4 to Mode 5) should be highly reliable and able to accommodate single active failures without a loss of the cooldown capability that is needed. The staff found that Section 9.2.11 of the Final Safety Analysis Report (FSAR) does not provide a clearly defined design basis with respect to the RWS cooldown function, and the reliability and capability of the RWS to perform this function for the most limiting situations were not adequately described and addressed. For example, the minimum RWS flow rate, water inventory, temperature limitations, and corresponding bases for providing SWS makeup for the two Levy County units were not described. Also, the suitability of RWS materials for the plant-specific application and measures being implemented to resolve vulnerabilities and degradation mechanisms to assure RWS functionality over time were not addressed. Consequently, Section 9.2.11 of the FSAR needs to be revised to properly describe and address the RWS design bases in this regard and to include design specifications that are necessary to ensure the reliability and capability of the RWS to perform its cooldown function.

As a following up to the applicant response to RAI 09.02.01-3 (LNP-RAI-LTR-052) the following question were developed since the staff was unable to determine if the raw waters system is considered highly reliable and able to accommodate single active failure.

- Provide clarification in the FSAR since Figure 10.4-201, "Circulating Water System and Raw Water System (Saltwater Subsystem)," indicates a cross-tie is available between Unit s 1 and 2. The saltwater subsystem cross-tie discussion should also appear in the FSAR along with a discussion on GDC 5, "Sharing of Structures, Systems, and Components".

- Provide clarification in the FSAR based on the RAI response, "the power supplies for the raw water well and booster pumps, discharge valves, and automatic strainer are powered from the normal ac power system and have a back-up power supply from the diesel generators." It appears by this sentence that the discharge valve and strainer have backup power; however, the FSAR text markup does not indicate that the discharge valve and strainer have backup power. The staff did note that RAI supplies markup of Figure 9.2-101, "Raw Water System," had added note 1 indicating backup power for the well pumps and discharge motor operated valve but not the strainer. Raw water components that are diesel backed should be discussed in Section 9.2.11 of the FSAR.

- Provide clarification in the FSAR the approximate water volume of the raw water storage tank or provide how many hours are available to supply water to the SWS cooling tower basin if both well pumps are not available to support cooldown.

- Provide clarification in the FSAR the booster pump controls or interlocks with the raw water storage tanks relate to pump trips or pump automatic starts, for example pump trips on low water level. Provide a discussion on net positive suction head requirements relevant to pump performance and tank level.

- Provide clarification in the FSAR the material to be used in the raw water system. American Society of Mechanical Engineering (ASME) B31.1, "Power Piping," and high-density polyethylene (HDPE) were discussed in the RAI; however, it was not discussed in the text of the FSAR.

PGN RAI ID #: L-0558

PGN Response to NRC RAI:

The responses below refer directly to the bullet items in the RAI:

Saltwater Subsystem Cross-Tie Discussion

It is correct that FSAR Figure 10.4-201 describes the circulating water system and the saltwater subsystem of the raw water system (RWS). The diagram indicates a cross-tie exists between Units 1 and 2. However, as noted in Subsection 9.2.11.2.1 of the FSAR, the RWS is shown in Figures 9.2-201 (freshwater subsystem) and 10.4-201 (saltwater subsystem). Subsection 9.2.11 of the FSAR states that the saltwater subsystem supplies strained water from the Cross Florida Barge Canal for makeup to the circulating water mechanical draft cooling tower basins. The RWS freshwater subsystem supplies strained and filtered groundwater for makeup to three plant systems and to the service water cooling tower basins. Please note that there is no cross-tie between the two units for the RWS freshwater subsystem.

As noted in the response to RAI 09.02.01-2, the functions of the RWS other than SWS makeup do not have a direct interface with any other system identified with the AP1000 which is safety-related, designated for Regulatory Treatment of Non-Safety Systems (RTNSS), or designated as AP1000 Class D.

Criterion 5 of 10 CFR 50, Appendix A, states that structures, systems, and components important to safety shall not be shared among nuclear power units unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units. Because only the freshwater subsystem of RWS has a direct interface with any system that is safety-related, RTNSS, or designated as AP1000 Class D, and because the freshwater subsystem of RWS has no cross-tie between units, including a discussion of the RWS system cross-tie in the FSAR is not required.

Power Supplies

The comment on the response to RAI 09.02.01-3 (LNP-RAI-LTR-052) is noted. The strainer is designed to fail "as-is" under loss of power and does not need a back-up power supply. There is also a bypass line around the strainer with a normally closed manual valve that can be operated in the unlikely event the strainer becomes fouled during loss of normal

power. A differential pressure transmitter is installed across the strainer and will alert operators if the strainer becomes fouled.

As noted in the response to RAI 09.02.01-3 (LNP-RAI-LTR-052), the entire FSAR Subsection 9.2.11 is being revised. Subsection 9.2.11.2.2.1 of the revised FSAR (under Valves) states the RWS makeup water pump discharge valves have a backup power feed from the diesel generators. A clarification will be made to the revised FSAR Subsection 9.2.11.2.2.1 (under Automatic Self-Cleaning Strainer) that the strainer is designed to fail as-is during loss of normal ac power.

Raw Water Storage Capability

As noted in FSAR Subsection 9.2.11.2.2.1 (under Raw Water Well Pumps), two 100 percent capacity well pumps for each unit are supplied. Only one of those pumps is designed to operate at a time. Both pumps can be manually loaded onto the standby diesel generator bus although only one can be loaded at a time. Thus, sufficient redundancy is provided in the system design to reasonably expect at least one of the well pumps will be available to supply makeup water in the event of a loss of normal ac power. For this reason, it is not necessary to postulate impacts to the SWS cooling tower basin supply if both well pumps are not available to support cooldown.

Minimum dimensions for the raw water storage tank are provided in FSAR Subsection 9.2.11.2.2.1 (under Raw Water Storage Tank).

Booster Pump Controls or Interlocks

There are no automatic booster pump controls or interlocks associated with the raw water storage tank level. As noted in FSAR Subsection 9.2.11.6.1, a level control system in the tank provides automatic start and stop control for the raw water well pumps. Normally, one well pump is in operation. The level control system starts the second well pump at very low tank levels and stops the pump when 50 percent level is established in the tank. Because the capacity of the well pumps is approximately double that of the booster pumps, filling of the storage tank by the well pumps occurs more quickly than emptying the tank by the booster pumps.

In addition, a redundant level transmitter on the raw water storage tank will provide continuous level indication and input to a low level alarm in the main control room. The low level alarm setpoints for the diverse level instrumentation ensure the operators are informed of an abnormal low level before the minimum NPSH requirements for the booster pumps are reached. This will allow plant operators to promptly detect low level in the tank and initiate corrective action as needed. This description will be added to the FSAR.

System Materials

The FSAR will be revised to reflect the use of high-density polyethylene piping in the buried portions of the RWS system.

Associated LNP COL Application Revisions:

The following changes will be made to the LNP FSAR in a future revision:

1. Revise FSAR Subsection 9.2.11.2.2.1 from:

"**Automatic Self-Cleaning Strainer**

An automatic self-cleaning strainer is located in the common discharge line from the raw water well pumps. Automatic valves facilitate cleaning the strainers by backwashing the strainer. Backwash from the strainer is discharged to the wastewater retention basin. The strainer backwash flow is not permitted if the raw water storage tank level is less than 75 percent. Power to the strainers is provided from the normal ac power system."

To read:

"**Automatic Self-Cleaning Strainer**

An automatic self-cleaning strainer is located in the common discharge line from the raw water well pumps. Automatic valves facilitate cleaning the strainers by backwashing the strainer. Backwash from the strainer is discharged to the wastewater retention basin. The strainer backwash flow is not permitted if the raw water storage tank level is less than 75 percent. Power to the strainer is provided from the normal ac power system. In the event of a loss of normal ac power, the strainer is designed to fail "as-is"."

2. Revise FSAR Subsection 9.2.11.6.1 from:

"9.2.11.6.1 Freshwater Subsystem

Level controls on the raw water storage tank control the starting and stopping of the raw water well pumps. Normally one pump is operated, but the level control will start a second well water pump at very low tank levels and shut the second pump down when a medium level is established in the tank.

Automatic backwash controls are provided with the self-cleaning strainers and the media filters.

Local pressure indicators are provided on each pump discharge to monitor pressure. Information is used by the control room to identify component failures and initiate actions. Pressure controls on the raw water booster pump discharges control the recirculation valves.

Power actuated valves are provided with valve position indication instrumentation.

Flow transmitters are provided on the inlet to the media filters to identify conditions affecting the operation of the components."

To read:

"9.2.11.6.1 Freshwater Subsystem

Level controls on the raw water storage tank control the starting and stopping of the raw water well pumps. Normally one pump is operated, but the level control will start a second well water pump at very low tank levels and shut the second pump down when a medium level is established in the tank. Redundant level transmitters on the raw water storage tank provide continuous level indication and input to low level alarms in the main control room. The low level alarms for the diverse level instrumentation provide control room indication of an abnormal low level in the raw water storage tank before the minimum NPSH requirements for the booster pumps are reached.

Automatic backwash controls are provided with the self-cleaning strainer and the media filters.

Local pressure indicators are provided on each pump discharge to monitor pressure. Information is used by the control room to identify component failures and initiate actions. Pressure controls on the raw water booster pump discharges control the recirculation valves.

Power actuated valves are provided with valve position indication instrumentation.

Flow transmitters are provided on the inlet to the media filters to identify conditions affecting the operation of the components."

3. Revise FSAR Subsection 9.2.11.2.2.1 from:

"**Piping**

The discharges of the RWS pumps are routed to a common header for each unit. Discharge check valves on the RWS pumps limit reverse flow in the piping if pumps are tripped and restarted and the subsequent transient effects. The piping is designated to accommodate transient effects that may be generated by normal starting and stopping of pumps, opening and closing of valves, or other normal operating events. Air release valves are provided in the raw water well pump discharge piping to vent air on pump start."

To read:

"**Piping**

The discharges of the RWS pumps are routed to a common header for each unit. Discharge check valves on the RWS pumps limit reverse flow in the piping if pumps are tripped and restarted and the subsequent transient effects. The piping is designated to accommodate transient effects that may be generated by normal starting and stopping of pumps, opening and closing of valves, or other normal operating events. Air release valves are provided in the raw water well pump discharge piping to vent air on pump start. Buried portions of the piping are constructed of high-density polyethylene piping."

Attachments/Enclosures:

None.