UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 11, 2013

Mr. Mano Nazar
Executive Vice President and Chief Nuclear Officer
NextEra Energy
P. O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: TURKEY POINT NUCLEAR GENERATING UNIT NOS. 3 AND 4 - REQUEST FOR ADDITIONAL INFORMATION REGARDING OVERALL INTEGRATED PLAN FOR RELIABLE SPENT FUEL POOL INSTRUMENTATION (ORDER NO. EA-12-051) (TAC NOS. MF0988 AND MF0989)

Dear Mr. Nazar:

By letter dated February 26, 2013, Florida Power & Light Company (the licensee) submitted an overall integrated plan for Turkey Point Nuclear Generating Unit Nos. 3 and 4 in response to Order EA-12-051, which was an enclosure to the U.S. Nuclear Regulatory Commission (NRC) letter, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012.

The NRC staff reviewed the information provided by the licensee in its February 26, 2013, letter and needs additional information to complete the review. The enclosed document contains the NRC staff's specific request for additional information (RAI). As previously discussed with Mr. Bob Tomonto of your staff on July 3, 2013, the NRC is requesting a response to the RAI by July 31, 2013.

Please contact Audrey Klett at (301) 415-0489 if you have any questions.

Sincerely,

Farideh E. Saba

Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosure: Request for Additional Information

cc w/enclosure: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

OVERALL INTEGRATED PLAN IN RESPONE TO

ORDER EA-12-051, "RELIABLE SPENT FUEL POOL INSTRUMENTATION

FLORIDA POWER & LIGHT COMPANY

TURKEY POINT NUCLEAR GENERATING UNIT NOS. 3 AND 4

DOCKET NOS. 50-250 and 50-251

1.0 INTRODUCTION

By letter dated February 26, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML130720690), Florida Power & Light Company (the licensee) submitted an overall integrated plan (OIP) for Turkey Point Nuclear Generating Unit Nos. 3 and 4 (Turkey Point 3 and 4). The licensee submitted this OIP in response to Order EA-12-051, which was an enclosure to the U.S. Nuclear Regulatory Commission (NRC) letter, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012 (ADAMS Accession No. ML12054A679). Order EA-12-051 modified the Turkey Point 3 and 4 renewed facility operating licenses with regard to requirements for reliable spent fuel pool (SFP) instrumentation. The NRC staff endorsed Revision 1 of Nuclear Energy Institute (NEI) 12-02, "Industry Guidance for Compliance with NRC Order EA-12-051, to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated August 2012 (ADAMS Accession No. ML12240A307), with exceptions, as documented in Revision 0 of Interim Staff Guidance (ISG) 2012-03, "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," dated August 29, 2012 (ADAMS Accession No. ML12221A339).

The NRC staff reviewed the licensee's February 26, 2013, response and determined that the following request for additional information (RAI) is needed to complete its technical review. If any part of this information is not available within the response period for this RAI, the NRC requests the licensee to provide the date this information will be submitted.

2.0 LEVELS OF REQUIRED MONITORING

The OIP states, in part:

> "1. **Level adequate to support operation of the normal fuel pool cooling system –** Elevation 51'- 4". This elevation is derived from isometric drawings 5613-P-119- S/246920 (Unit 3) and 5614-P-119-S/246921 (Unit 4). [...]
>
> 2. **Level adequate to provide substantial radiation shielding for a person standing on the spent fuel pool operating deck** - Elevation 42'-11". This elevation is approximately 10' above the top of the fuel racks. This monitoring level ensures there is adequate water level to provide substantial radiation shielding for personnel to respond to Beyond-Design-Basis External Events and to initiate SFP makeup strategies.

3. **Level where fuel remains covered** - Elevation 32'-11". This level is the nominal level of the highest fuel rack."

RAI-1

Provide the following:

a) For Level 1, specify how the identified elevation represents the HIGHER of the two points described in the NEI 12-02 guidance for this level.

b) A clearly labeled sketch depicting the elevation view of the proposed typical mounting arrangement for the portions of instrument channel consisting of permanent measurement channel equipment (e.g., fixed level sensors and/or stilling wells, and mounting brackets). Indicate on this sketch the datum values representing Level 1, Level 2, and Level 3, as well as the top of the fuel racks. Indicate on this sketch the portion of the level sensor measurement range that is sensitive to measurement of the fuel pool level, with respect to the Level 1, Level 2, and Level 3 datum points.

3.0 INSTRUMENTATION DESIGN FEATURES

3.2 Arrangement

The OIP states, in part:

"The two SFP level instrument channels will be installed in diverse locations, arranged in a manner that provides reasonable protection of the level indication function against missiles that may result from damage to the structure over the SFP.

As indicated above, SFP level sensors will be installed in the North side of the Unit 3 SFP, and the South side of the Unit 4 SFP, with primary and backup channel sensors located as close to the opposite corners as practical to maintain maximum attainable separation. Sensor conditioning electronics and battery backup will be mounted in a remote location separated from the SFP by a reinforced concrete wall(s) which will provide suitable radiation shielding for the electronics. The equipment will be protected from all design basis external events."

RAI-2

Provide a clearly labeled sketch or marked-up plant drawing of the plan view of the SFP area, depicting the SFP inside dimensions, the planned locations/placement of the primary and back-up SFP level sensors, and the proposed routing of the cables that will extend from the sensors toward the location of the local electronics cabinets and read-out/display devices in the main control room or alternate accessible location.

3.3 Mounting

The OIP states, in part:

> "Mounting will be Seismic Class I. Installed equipment will be seismically qualified to withstand the maximum seismic ground motion considered in the design of the plant area in which it is installed."

RAI-3

Provide the following:

a) The design criteria that will be used to estimate the total loading on the mounting device(s), including static weight loads and dynamic loads. Describe the methodology that will be used to estimate the total loading, inclusive of design basis maximum seismic loads and the hydrodynamic loads that could result from pool sloshing or other effects that could accompany such seisrnic forces.

b) A description of the manner in which the level sensor (and stilling well, if appropriate) will be attached to the refueling floor and/or other support structures for each planned point of attachment of the probe assembly. Indicate in a schematic the portions of the level sensor that will serve as points of attachment for mechanical/mounting or electrical connections.

c) A description of the manner by which the mechanical connections will attach the level instrument to permanent SFP structures so as to support the level sensor assembly.

3.4 Qualification

The OIP states, in part:

> "Both channels will be reliable at temperature, humidity, and radiation levels consistent with the spent fuel pool water at saturation conditions for an extended period. Post event temperature at sensors located above the SFP is assumed to be 212°F. Post event humidity in the SFP Building is assumed to be 100% with condensing steam. Equipment will be qualified for expected conditions at the installed location assuming that normal power is unavailable and that the SFP has been at saturation for an extended period. Equipment located in the vicinity of the SFP will be qualified to withstand peak and total integrated dose radiation levels for its installed location assuming that post event SFP water level is equal to the upper level of fuel racks for an extended period of time.
> [...]
>
> The effects of postulated seismic events on installed instrument channel components (with the exception of battery chargers and replaceable batteries), will be verified to ensure that the equipment design and installation is robust. Applicable components of the instrument channels will be qualified by the manufacturer (or otherwise tested) for seismic effects at response levels commensurate with the equipment mounting location.

Instrument channel qualification will be based on the guidance provided in Sections 7, 8, 9, and 10 of IEEE [Institute of Electrical and Electronics Engineers] Standard 344-2004, *IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations,* [...] or a substantially similar industrial standard."

RAI-4

Provide the following:

a) A description of the specific method or combination of methods you intend to apply to demonstrate the reliability of the permanently installed equipment under Beyond-Design Basis (BDB) ambient temperature, humidity, shock, vibration, and radiation conditions.

b) A description of the testing and/or analyses that will be conducted to provide assurance that the equipment will perform reliably under the worst-case credible design basis loading at the location where the equipment will be mounted. Include a discussion of this seismic reliability demonstration as it applies to a) the level sensor mounted in the SFP area, and b) any control boxes, electronics, or read-out and retransmitting devices that will be employed to convey the level information from the level sensor to the plant operators or emergency responders.

c) A description of the specific method or combination of methods that will be used to confirm the reliability of the permanently installed equipment such that following a seismic event the instrument will maintain its required accuracy.

3.5 Independence

The OIP states, in part:

"The primary instrument channel will be redundant to and independent of the backup instrument channel. Independence will be obtained through separation of the sensors, indication, backup battery power supplies, associated cabling and channel power feeds."

RAI-5

Provide the following:

a) A description of how the two channels of the proposed level measurement system in each pool meet this requirement so that the potential for a common cause event to adversely affect both channels is minimized to the extent practicable.

b) Further information describing the design and installation of each level measurement system, consisting of level sensor electronics, cabling, and readout devices. Address how independence of these components of the primary and back-up channels is achieved through the application of independent power sources, physical and spatial separation, independence of signals sent to the location(s) of the read-out devices, and the independence of the displays.

3.6 Power Supplies

The OIP states, in part:

> "Both channels will be powered from dedicated batteries and local battery chargers. The battery chargers for both channels will normally be powered from separate sources of 120V AC power. Minimum battery life of 72 hours will be provided. The battery systems will include provision for battery replacement should the battery charger be unavailable following the event. Spare batteries will be readily available. In the event of a loss of normal power the battery chargers could be connected to another suitable power source."

RAI-6

Provide the following:

a) A description of the electrical AC power sources and capacities for the primary and backup channels.

b) If the level measurement channels are to be powered through a battery system (either directly or through an uninterruptible power supply), please provide the design criteria that will be applied to size the battery in a manner that ensures, with margin, that the channel will be available to run reliably and continuously following the onset of the BDB event for the minimum duration needed, consistent with the plant mitigation strategies for BDB external events (Order EA-12-049).

3.7 Accuracy

The OIP states, in part:

> "Instrument channels will be designed such that they will maintain their design accuracy following a power interruption or change in power source without recalibration.
>
> Accuracy will consider SFP conditions, e.g., saturated water, steam environment, or concentrated borated water. Additionally, instrument accuracy will be sufficient to allow trained personnel to determine when the actual level exceeds the specified lower level of each indicating range (levels 1, 2 and 3) without conflicting or ambiguous indication. The accuracy will be within the resolution requirements of Figure 1of NEI 12-02."

RAI-7

Provide the following:

a) An estimate of the expected instrument channel accuracy performance (e.g., in percentage of span) under both a) normal SFP level conditions (approximately Level 1 or higher) and b) at the BDB conditions (i.e., radiation, temperature, humidity, post-seismic and post-shock conditions) that would be present if the SFP level were at the Level 2 and Level 3 datum points.

b) A description of the methodology that will be used for determining the maximum allowed deviation from the instrument channel design accuracy that will be employed under normal operating conditions as an acceptance criterion for a calibration procedure to flag to operators and to technicians that the channel requires adjustment to within the normal condition design accuracy.

3.8 Testing

The OIP states, in part:

"Instrument channel design will provide for routine testing and calibration consistent with Order EA-12-051 and the guidance in NEI 12-02. Details will be determined during the engineering and design phase. Instrument channel testing and calibration will be performed using existing plant work control processes."

RAI-8

Provide the following:

a) A description of the capability and provisions the proposed level sensing equipment will have to enable periodic testing and calibration, including how this capability enables the equipment to be tested in situ.

b) A description of how such testing and calibration will enable the conduct of regular channel checks of each independent channel against the other, and against any other permanently-installed SFP level instrumentation.

c) A description of how calibration tests and functional checks will be performed and the frequency at which they will be conducted. Discuss how these surveillances will be incorporated into the plant surveillance program.

d) A description of what preventative maintenance tasks are required to be performed during normal operation, and the planned maximum surveillance interval that is necessary to ensure that the channels are fully conditioned to accurately and reliably perform their functions when needed.

3.9 Display

The OIP states, in part:

"The design will include remote indication that will be accessible during post event conditions. The location will ensure that it meets the following criteria:

- promptly accessible to the appropriate plant staff giving appropriate consideration to various drain down scenarios,
- outside of the area surrounding the SFP floor, e.g., an appropriate distance from the radiological sources resulting from an event impacting the SFP,
- inside a structure providing protection against adverse weather, and

- outside of any very high radiation areas or LOCKED HIGH RAD AREA during normal operation."

RAI-9

Provide the following:

a) The specific location for the primary and backup instrument channel display.

b) Since both the primary and backup display locations are not in the main control room, please provide justification for prompt accessibility to displays including primary and alternate route evaluation, habitability at display location(s), continual resource availability for personnel responsible to promptly read displays, and provisions for communications with decision makers for the various SFP drain-down scenarios and external events.

c) The reasons justifying why the locations selected will enable the information from these instruments to be considered "promptly accessible." Include consideration of various drain-down scenarios.

4.0 PROGRAM FEATURES

4.2 Procedures

The OIP states, in part:

> "Procedures will be developed using guidelines and vendor instructions to address the maintenance, operation, and abnormal response issues associated with the new SFP instrumentation.
>
> Procedures will address a strategy to ensure SFP water level addition is initiated at an appropriate time consistent with implementation of NEI 12-06, *Diverse and Flexible Coping Strategies (FLEX) Implementation Guide* [...]."

RAI-10

Provide the following:

a) A list of the operating (both normal and abnormal response) procedures, calibration/test procedures, maintenance procedures, and inspection procedures that will be developed for use of the SFP instrumentation in a manner that addresses the order requirements.

b) A brief description of the specific technical objectives to be achieved within each procedure. If your plan incorporates the use of portable spent fuel level monitoring components, please include a description of the objectives to be achieved with regard to the storage location and provisions for installation of the portable components when needed.

4.3 Testing and Calibration

The OIP states, in part:

> "Processes will be established and maintained for scheduling and implementing necessary testing and calibration of the primary and backup spent fuel pool level instrument channels to maintain the instrument channels at the design accuracy. Testing and calibration of the instrumentation will be consistent with vendor recommendations and any other documented basis. Calibration will be specific to the mounted instrument and the monitor."

RAI-11

Provide the following:

a) Further information describing the maintenance and testing program the licensee will establish and implement to ensure that regular testing and calibration is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. Include a description of your plans for ensuring that necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment.

b) A description of how the guidance in Section 4.3 of NEI 12-02 regarding compensatory actions for one or both non-functioning channels will be addressed.

c) A description of the compensatory actions to be taken in the event that one of the instrument channels cannot be restored to functional status within 90 days.

July 11, 2013

Mr. Mano Nazar
Executive Vice President and Chief Nuclear Officer
NextEra Energy
P. O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: TURKEY POINT NUCLEAR GENERATING UNIT NOS. 3 AND 4 - REQUEST FOR ADDITIONAL INFORMATION REGARDING OVERALL INTEGRATED PLAN FOR RELIABLE SPENT FUEL POOL INSTRUMENTATION (ORDER NO. EA-12-051) (TAC NOS. MF0988 AND MF0989)

Dear Mr. Nazar:

By letter dated February 26, 2013, Florida Power & Light Company (the licensee) submitted an overall integrated plan for Turkey Point Nuclear Generating Unit Nos. 3 and 4 in response to Order EA-12-051, which was an enclosure to the U.S. Nuclear Regulatory Commission (NRC) letter, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012.

The NRC staff reviewed the information provided by the licensee in its February 26, 2013, letter and needs additional information to complete the review. The enclosed document contains the NRC staff's specific request for additional information (RAI). As previously discussed with Mr. Bob Tomonto of your staff on July 3, 2013, the NRC is requesting a response to the RAI by July 31, 2013.

Please contact Audrey Klett at (301) 415-0489 if you have any questions.

Sincerely,
/RA/
Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosure: Request for Additional Information

cc w/enclosure: Distribution via Listserv

DISTRIBUTION:

PUBLIC	DRahn	RidsAcrsAcnw_MailCTR
LPL2-2 r/f	MMitchell	RidsNrrDorlDpr
RidsNrrDorlLpl2-2	JEvans	RidsRgn2MailCenter
RidsNrrPMTurkeyPoint	BPurnell	RidsNrrDssSbpb
RidsNrrLABClayton	CRoque-Cruz	RidsNrrDeEicb
MWaterman		

ADAMS Accession No.: ML13191A134 ***by memorandum**

OFFICE	LPLII-2	LPLII-/PM	LPLII-2/LA	DE/EICB/BC	DSS/SBPB/BC	LPLII-2/BC(A)	LPLII-2/PM
NAME	AKlett	FSaba	BClayton	JThorp*	GCasto*	JPoole	FSaba
DATE	07/11/13	07/11/13	07/11/13	06/26/13	06/27/13	07/11/13	07/11/13

OFFICIAL RECORD COPY