

Status of NRC Staff's Acceptance Review of the Turkey Point Digital Instrumentation and Controls License Amendment Request

September 13, 2022

Public Meeting

Purpose of Meeting

- Provide Florida Power & Light (FPL) status of ongoing NRC staff's LAR acceptance review
- Discuss Information Insufficiencies
 - Describe acceptance issues
 - Describe potential “review challenges”
 - Discuss other parts of LAR for NRC staff to gain a better understanding of request
- Communicate an opportunity to supplement the LAR prior to making an acceptance decision and its schedule

License Amendment Request

- FPL Submitted LAR on July 31, 2022
- Non-Proprietary copy available in NRC document management system ADAMS at Accession No. ML22213A045
- Proposed amendment would allow the use of digital instrumentation and controls for the reactor protection system, engineered safety features actuation system, nuclear instrumentation system along with other changes

Turkey Point LAR Acceptance Review Team

6 NRR Divisions, 10 Technical Branches, 20 Reviewers

- **NRR/DEX***
 - Richard Stattel*
 - David Rahn
 - Samir Darbali
 - Jack Zhao
 - Rossnyev Alvarado
 - Steve Wyman
 - Michael Breach
- **NRR/DRA**
 - Steven Alferink
 - Sean Meighan
- **NRR/DSS**
 - Chang Li
 - Hanry Wagage
 - Khadijah West
 - Summer Sun
 - Tarico Sweat
- **NRR/DORL**
 - Bhagwat Jain
 - Michael Marshall
- **NRR/DNRL**
 - Eric Reichelt
- **NRR/DRO**
 - Deanna Zhang
 - Greg Galletti
 - Justin Vazquez

* Lead 4

Overview of NRC Staff's Acceptance Review Process

- After receipt of an amendment request, the NRC determines whether the request contain sufficient technical information both in scope and depth for the NRC staff to complete the detailed technical review
- Current Acceptance review Status
 - FPL has provided significant information in many technical areas to support the digital modification
 - NRC staff have identified Sufficiency Items (missing information) and potential technical challenges in other areas
 - NRC staff plan to provide FPL an opportunity to supplement the LAR

Overview of NRC Staff's Acceptance Review

- Supplements for equipment qualification and control room change validation (HFE) during the LAR review was previously identified and expected
- Unexpected Missing Items (examples)
 - Schedule for providing six implementation items (promised information)
 - System Failure Modes and Effects Analysis not included in LAR
 - EQ test summary reports for revised Tricon equipment (not reviewed as part of the approved topical report)
- Many of the missing items are self-identified by FPL in the request, and expected to be available later as part of the FPL development process

NRC Staff's Acceptance Review - Path Forward

- FPL will need to provide specific description of and specific schedule for providing supplemental information
- FPL will need to docket these specific descriptions of supplemental information to be provided and schedules for submission in a timely manner to support an acceptance decision
- FPL will then need to provide the supplemental information in accordance with the schedule to support the review schedule and support an efficient review
- The staff will consider the FPL schedules for providing supplemental information to determine if the FPL requested completion date can be supported

- Five LAR Acceptance Issues –Information Insufficient in scope and depth
- Three Potential Review Challenges- Basis for making regulatory finding not clear
 - System Requirement Specification –Level of Detail
 - Peer to Peer Network Cross Channel Connectivity
 - Communication Interfaces to the DCS
- Four Discussion Topics – Gain better understanding of LAR
 - Test Access Point (TAP) Communications
 - Self Diagnostic Function Monitoring
 - Accident Dose Consequence analysis
 - Design Development Schedule

Technical Staff Presenters

- **I&C Systems Components, and Environmental Qualification**
 - Richard Stattel (Senior Electronics Engineer, NRR/DEX)
 - Rossnyev Alvarado (Electronics Engineer, NRR/DEX)
- **HFE Reviews** - Justin Vazquez (Reactor Operation Engineer, NRR/DRO)
- **Accident Dose Consequence Analysis**- Sean Meighan (Reactor Scientist, NRR/DRA)
- **VOP** -Greg Galletti (Senior Reactor Operation, NRR/DRO)

Digital I&C Project Managers

- **Bhagwat Jain** – Senior Project Manager, NRR/DORL
- **Michael Marshall** – Senior Project Manager, NRR/DORL

Acceptance Issue (1 of 5)

- **Issue:** Environmental Qualification Supplement / Revised Tricon Platform Components
- **Basis/Context:** a) The scope of the planned EQ supplement identified in the TABLE OF IMPLEMENTATION ITEMS DESCRIBED IN THE ENCLOSURE is unclear. It does not identify specific components for which EQ test summary reports will be provided or a planned date for submittal of these documents. Instead, it refers to an EQ Plan (Reference 5.162) for a list of reports to be provided in the supplement. however, the NRC does not have access to this reference therefore, we do not know what specific EQ summary reports will be provided in the supplement. B) The LAR identifies several Tricon Components that have been revised since the topical report was last approved by the NRC, the revised TR does not contain EQ test summary reports for these modified components.
- **Information Needed:** The EQ test summary reports should document the results of the qualification testing. The summary should compare the standards and test limits to which the equipment has been qualified and should compare the equipment qualification test limits to the licensee-established plant environmental conditions.

Acceptance Issue (2 of 5)

- **Issue:** System components not previously reviewed by NRC
- **Basis/Context:** Figures 2.1-1, 2.2-1, and 2.3-1 indicate that a significant number of new system components are New Scope - Not previously reviewed by NRC. As such, a large part of the modification does not meet the criteria for an alternate review process as defined in ISG-06, Section C.
- **Information Needed:** These portions of the application will therefore be reviewed under a Tier 3 like review process as defined in Section C.3.2.1 of ISG-06. The NRC staff therefore requires additional information as defined in ISG-06 Section D.9 and in Enclosure B for Tier 3 applications to complete its safety evaluation for these portions of the replacement RPS/ESFAS/NIS system.

Acceptance Issue (3 of 5)

- **Issue:** Human factors engineering (HFE) verification and validation (V&V) information
- **Basis/Context:** The implementation item addressing HFE V&V activities does not indicate what stage of validation testing is expected to be credited as providing the information needed for the NRC to make its safety determination. However, based on pre-submittal discussions, NRC staff were under the impression that final ISV results were not expected to be available prior to the point at which the NRC will need to have finalized its safety determination.
- **Information Needed:** The NRC staff needs clarification regarding what stage of validation is being credited, when credited validation testing is expected to be completed, and when the V&V results summary report (or an equivalent report) is expected to be submitted, as well as when any supporting documents referenced in the report will be available for NRC staff review. This information is needed to determine whether the staff can support FPL's requested completion schedule, as well as to support the planning of NRC audit activities.

Acceptance Issue (4 of 5)

- **Issue:** Availability of human factors engineering HFE results summary reports (or equivalent reports)
- **Basis/Context:** The process outlined in NUREG-0711 allows for applicants to address each of the HFE program elements by submitting implementation plans (IPs) as part of their initial submittal and then submitting a results summary report (RSR) when the work described in the IP has been completed. The submitted LAR includes the Human Factors Engineering Analysis IP and the Human System Interface Design IP as enclosures. However, the submittal does not indicate when the associated RSRs will be submitted for NRC staff review
- **Information Needed:** The NRC review staff need clarification regarding the RSRs (or equivalent reports) for each of the IPs will be submitted, as well as when any supporting documents referenced within the RSRs will be available for audit. This information is needed to determine whether the staff can support the FPL requested completion schedule.

Acceptance Issue (5 of 5)

- **Issue:** Completion dates for six implementation items and clarity with regards to information that will be docketed
- **Reference:** “Table of Implementation Items”, page 3 of the July 30, 2022, LAR Submittal Letter (L-2022-120)
- **Basis/Context:** The referenced implementation items will be needed to support the NRC review staff’s reasonable assurance findings.
- **Information Needed:** The NRC review staff need a description of specific information under each of the six implementation items that will be made available to the staff and a specific schedule for submitting that information on the docket. The implementation items schedule will be used to determine if the FPL requested date can be supported.

“Review Challenge”(1 of 3)

- **Issue:** Level of detail of system requirements specification
- **Basis/Context:** In the LAR discussion of IEEE 603 compliance, several of the licensee responses refer to Section 12 of the system requirements specification as a basis for compliance. However, the specific requirements within the system requirements specification only repeat the IEEE 603 criteria.
- The NRC staff cannot use a re-statement of regulatory criteria or a claim of compliance as a basis for determining if the system is compliant with these criteria. While it is understood that many of these required functions have not yet been implemented in the system design, the staff will require information on how these requirements are implemented in the system design in order to determine that the completed system design meets these requirements. Additional design implementation information will be necessary to support the NRC staff’s determination of regulatory compliance with IEEE 603.

“Review Challenge”(2 of 3)

- **Issue:** Peer to Peer Network Cross Channel Connectivity
- **Basis/Context:** The architecture of the peer-to-peer network includes communication interface connectivity to all Tricons in all channels and divisions of the RPS/ESFAS/NIS system and therefore cannot be used as a basis for meeting the independence criteria of IEEE 7-4.3.2 or ISG-4. Because of this, communications restrictions must be implemented in the application software of the system in order to establish compliance with channel and division independence criterion.
- While this method of establishing independence is not prohibited, it relies upon application software which has not yet been developed. Therefore, the NRC staff does not currently have information on the application design that can be used as a basis for a determination of compliance with the independence requirements of IEEE 603, Clause 5.6 and additional information will be needed when the software design implementation is performed.

“Review Challenge”(3 of 3)

- **Issue:** Communication Interfaces to the DCS
- **Basis/Context:** It is not clear how one-way data over the Tricon Communications Module (TCM) serial interfaces to the Distributed Control System (DCS) is implemented or enforced. The Tricon V10 SE Section 3.7.2.1 describes the use of a TAP for this type of communication which would provide one-way data flow enforcement however, no such device is included in the TCM serial communication interfaces to the Foxboro DCS.

Discussion Topic (1 of 4)

- **Topic:** Test access point TAP communications
- **Discussion:** Detailed design information for the Test Access Point (TAP) device is not provided in the LAR. If this device is different from the specific TAP that was evaluated during the Tricon V10 Platform topical report safety evaluation, then an additional evaluation of the TAP design will be necessary.
- The safety evaluation for the Tricon V10 TR includes the following application specific action item in Section 3.7.2.1 of the Tricon V10 SE:
 - *Verify that the Port Tap device model number is either PA-CU, or PAD-CU. Use of any other device to accomplish this function will require additional analysis.*

Discussion Topic (2 of 4)

- **Topic:** Self Diagnostic Function Monitoring
- **Discussion:** The NRC staff notes that an independent means of monitoring automatic self-diagnostics functions should be provided per BTP 7-17 guidance, however the LAR did not include a discussion of provisions to confirm the execution of the automatic self-diagnostic tests during plant operation.

Instead, the LAR discusses methods that can be used to determine system operability as an alternative to self-diagnostics when the self-diagnostics becomes unavailable.

Discussion Topic (3 of 4)

- **Topic:** Accident Dose Consequence Analysis
- **Discussion:** Detailed information associated with the initial conditions and assumptions for the Accident Dose Consequence Analysis are not provided in the LAR. Detailed information on what changes in the LAR are affecting the dose analysis are not clearly identified.
- Format for Accident Dose Consequence Analysis utilized in Turkey Point Alternate Source Term Implementation (ML092050277) provides convenient format for staff review and enhances regulatory efficiency in review. Table Format for initial conditions and assumptions utilized in ML22181B066 (attachment 11) provides additional useful templates for your consideration.
 - Guidance provided in RIS 2006-04 and RIS 2001-19 is useful
- Design Basis Accidents (e.g. 4.1.15 Steam Generator Tube Rupture) notes that "... the radiological dose limits of Regulatory Guide 1.183 [91] are met", does not affirmatively state that changes do not result in more than a minimal increase in the consequences of an accident previously evaluated, meeting the requirements of 10CFR 50.59.

Discussion Topic (4 of 4)

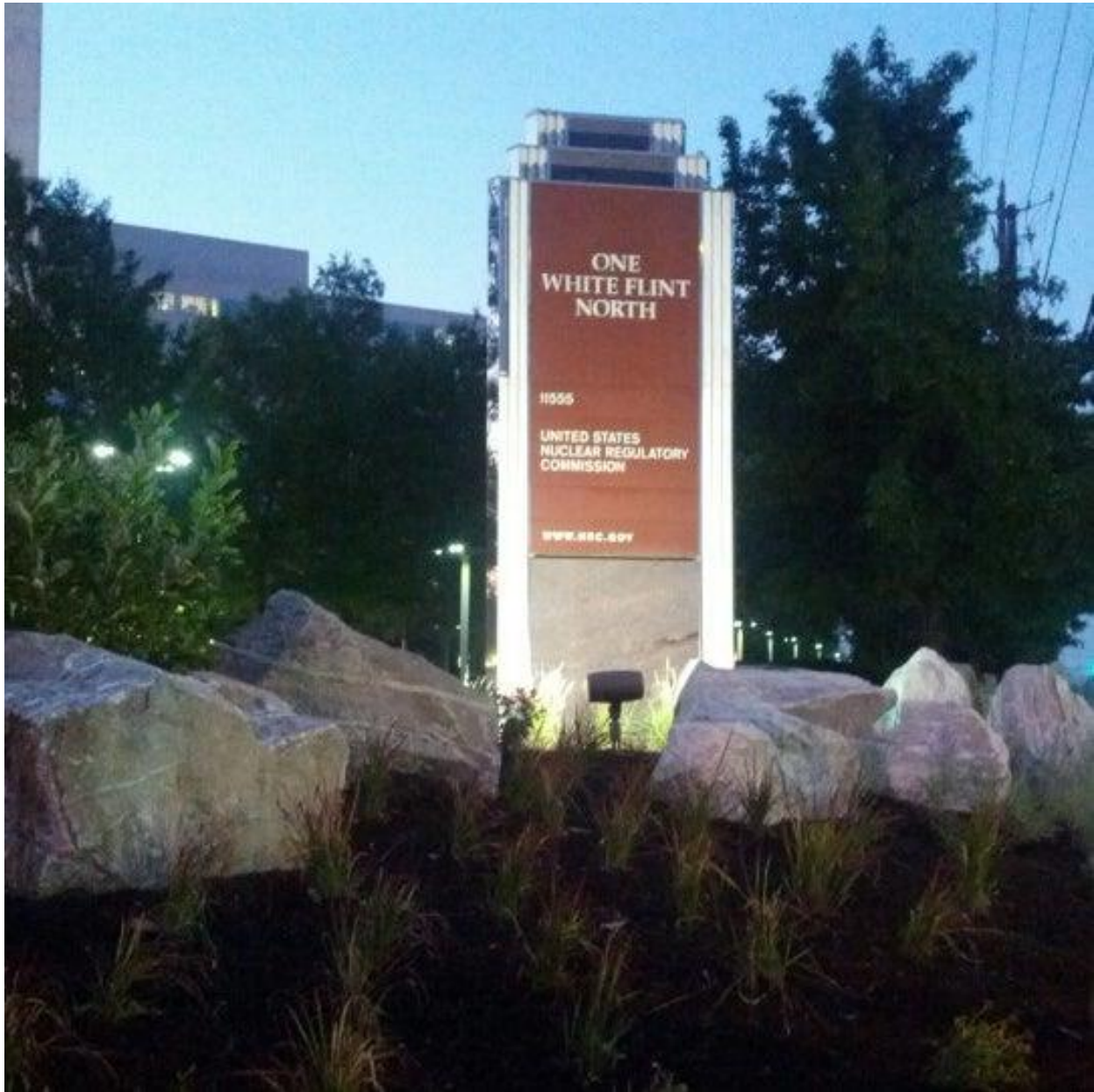
- **Topic:** Development schedule
- **Discussion:** The NRC notes that Licensee VOP implementation activities and products are generally described in the VOP summary, but details regarding scheduling of these activities and availability of documented evidence of the activities' completion and other products have not been provided. This information is needed by the staff to prepare for planned audit activities during the LAR review.

NRC Staff's Acceptance Review – Next Step

- The NRC staff plan to issue an opportunity to supplement letter to FPL by September 16, 2022.
- FPL will be asked to respond with supplemental information by October 5, 2022.
- The NRC staff plan to issue its decision to FPL by October 13, 2022.

NRC Staff's Review - Path Forward

- The NRC staff will be giving FPL an opportunity to supplement the license amendment request prior to making an acceptance decision
- The NRC staff will be using the guidance for both the alternate review process and Tier 3 in digital I&C ISG-06, as appropriate
- To meet its requested completion date, FPL will need to docket the information to address the acceptance issues identified by the staff in a timely manner



Acronyms and Initialisms

ADAMS – Agencywide Documents Access and Management System

ARP – Alternate Review Process

BTP – Branch Technical Position

DEX – Division of Engineering and External Hazards

DRA – Division of Risk Assessment

DSS – Division of Safety Systems

DORL – Division of Operating Reactor Licensing

DNRL – Division of New Reactor and Renewal Licenses

DRO – Division of Reactor Oversight

ESFAS – Engineered Safety Features Actuation System

FPL – Florida Power & Light Company

HFE – Human Factors Engineering

IP – Implementation Plan

ISG – Interim Staff Guidance

IEEE – Institute of Electrical and Electronics Engineers

ISV – Integrated System Validation

LAR – License Amendment Request

NIS – Nuclear Instrumentation System

NRR – Office of Nuclear Reactor Regulation

RPS – Reactor Protection System

RSR – Results Summary Report

Tier 3 – Review Process for New DI&C Platform or Components not Previously Approved via a Topical Report

V&V – Verification and Validation

VOP – Vendor Oversight Plan