



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

June 26, 2023

LICENSEE: Duke Energy

FACILITIES: Shearon Harris Nuclear Power Plant, Unit 1

SUBJECT: SUMMARY OF APRIL 26, 2023, MEETING WITH DUKE ENERGY TO DISCUSS A SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1 PLANNED LICENSE AMENDMENT REQUEST RELATED TO TURBINE CONTROL SYSTEM AND REACTOR PROTECTION SYSTEM CIRCUITRY (EPID NO. L-2023-LRM-0027)

On April 26, 2023, a virtual observation public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Duke Energy (Duke, the licensee). The purpose of the meeting was to discuss a planned license amendment request (or LAR) to be submitted Under Risk-Informed Process for Evaluations (RIPE) related to Turbine Control System (TCS) and Reactor Protection System (RPS) circuitry for the Shearon Harris Nuclear Power Plant, Unit 1 (Harris). The meeting notice and agenda, dated April 13, 2023, are available in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML23103A036. A list of attendees is provided in the enclosure.

The licensee presented (ML23114A067) and discussed the following:

- Description of the issue
 - Licensee received a green non-cited violation:
 - Performance deficiency – failure to ensure independence between the TCS circuits and trains of RPS circuits.
- System Design and Operation:
 - RPS – generates signals that actuate a reactor trip.
 - Engineered Safety Features Actuation System (ESFAS) – generates signals that actuate engineered safety features.
 - TCS – non-safety related, controls valve position, speed and/or load of turbine.
- Current Licensing Basis:
 - Updated Final Safety Analysis Report (UFSAR), Section 8.3.1.2.30 – “Cables and conduits routed in non-Category I structures associated with safety related functions or anticipatory trips (i.e., turbine trip on reactor trip, reactor trip on turbine trip, loss of feedwater) are designed to meet Institute of Electrical and Electronics Engineers (IEEE)-Standard 279-1971 including redundancy, separation, and single failure criteria...”

- Application of RIPE Process:
 - Applicable guidance documents.
 - RIPE Process Criteria:
 - Technically acceptable Probabilistic Risk Assessment (PRA):
 - TSTF-505.
 - Integrated Decision-Making Panel (IDP).
 - Implementation of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.69.
 - PRA Analysis
 - PRA Model
 - Consistent with model utilized for Risk-Informed Completion Time (RICT) Program.
 - Includes high winds hazard.
 - Does not quantitatively assess seismic or external flooding hazards. based on meeting screening criteria.
 - Strategy
 - Quantitative Risk Assessment to calculate change in core damage frequency (CDF) and large early release frequency (LERF).
 - Single basic event to reflect a potential common cause event for the functions susceptible to impacts of the current circuitry configuration.
 - Hot short within the portion of the RPS and SSPS [Solid State Protection System] circuitry in proximity to the TCS circuitry is the surrogate failure mode.
 - The targets of interest from which to assess potential impacts to the associated cables are selected to be the 48 Volt SSPS power supplies utilized for the SSPS cabinets.
 - PRA Results meet the RIPE criteria for minimal safety impact.

NRC staff discussed the following:

- Question on the power supply and electrical connections of the TTS (TCS) and RPS.
- What would a hot short lead to?
- Are both reactor trip on turbine trip and turbine trip on reactor trip anticipatory?
 - Is the risk of both trips considered in the PRA model?
- Has an IDP been performed?
- How will defense-in-depth, safety margin, and performance monitoring, be addressed?
- How was the probability determined?
 - What is the basis for the creation of basic event?
- What is the importance of the 48V power supply in the PRA model?
- What would PRA numbers look like if not crediting manual actions or automatic diverse means?
- There is a statement on slide 5 of the licensee presentation that IEEE 279-1971 does not apply from actuating device to TCS.
 - Is this a statement that Duke is looking for the NRC to approve (and make conforming changes)?
- What is the relation between the low-risk numbers and where the IEEE separation begins and ends?

- How is safety function maintained with what remains of RPS, once failures postulated?
- Is the licensee in compliance with IEEE 279-1971 in current design basis, but UFSAR conflicts?
- Staff discussed the other licensing options, such as an exemption or alternative/relief from 10 CFR 50.55a.

There were seven members of the public in attendance.

There was one question from a member of the public related to if the licensee submits an exemption, should defense-in-depth and safety margins still be considered. The staff responded that the RIPE guidance has five questions that should be considered (which include deterministic aspects, such as defense-in-depth and safety margins).

Please direct any inquiries to me at 301-415-3867, or Michael.Mahoney@nrc.gov.

Sincerely,

/RA/

Michael Mahoney, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-400

Enclosure:
List of Attendees

cc: Listserv

LIST OF ATTENDEES

APRIL 26, 2023, PUBLIC MEETING WITH FLORIDA POWER AND LIGHT/NEXTERA

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

PLANNED LICENSE AMENDMENT REQUEST RELATED TO TURBINE CONTROL SYSTEM

AND REACTOR PROTECTION SYSTEM CIRCUITRY TO BE SUBMITTED UNDER THE

RISK-INFORMED PROCESS FOR EVALUATIONS

Name	Organization
Michael Mahoney	U.S. Nuclear Regulatory Commission (NRC)
John Hughey	NRC
Michelle Kickline	NRC
Ming Li	NRC
David Wrona	NRC
Micheal Waters	NRC
Antonios Zoulis	NRC
Matthew Fannon	NRC
Adam Wilson	NRC
Peter Boguszewski	NRC
Casey Smith	NRC
Meena Khanna	NRC
Eben Allen	NRC
Richard Stattel	NRC
Ed Miller	NRC
Dennis Earp	Duke Energy (Duke)
Andrew Lipetzky	Duke
Heather Szews	Duke
Brian Mayall	Duke
Ryan Treadway	Duke
Jordan Vaughn	Duke
Nick Martenelli	Duke
Brett Titus	Public - NEI
Andrew Mauer	Public - NEI
Maria Zamber	Public – Entergy (Waterford)
Tony Brown	Public
Jarrett Mack	Public - FPL
Bradley Dolan	Public
Andrea Maioli	Public

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ADAMS Accession Nos.:

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Meeting Notice: ML23103A036

Meeting Summary: ML23157A320

NRC-001

OFFICE	NRR/DORL/LPL2-2/PM	NRR/DORL/LPL2-2/LA	NRR/DORL/LPL2-2/BC
NAME	MMahoney	RButler	DWrona
DATE	06/26/2023	06/20/2023	06/26/2023

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