



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

February 12, 2024

LICENSEE: Duke Energy

FACILITIES: Shearon Harris Nuclear Power Plant, Unit 1

SUBJECT: SUMMARY OF DECEMBER 11, 2023, MEETING WITH DUKE ENERGY TO DISCUSS A SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1 PLANNED EXEMPTION REQUEST RELATED TO TURBINE CONTROL SYSTEM AND REACTOR PROTECTION SYSTEM CIRCUITRY (EPID NO. L-2023-LRM-0104)

On December 11, 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 to be submitted under Risk-Informed Process for Evaluations (RIPE) related to the 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 November 21, 2023, are available in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML23325A076. A list of attendees is provided in the enclosure.

The licensee presented slides (ML23341A152) 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, 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):
 - Technical Specification Task Force Traveler (TSTF)-505, "Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b."
 - Integrated Decision-Making Panel (IDP).
 - Implementation of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.69, "Risk-informed categorization and treatment of structures, systems and components for nuclear power reactors."
 - PRA Analysis
 - PRA Model
 - Consistent with model utilized for Risk-Informed Completion Time 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 solid state protection system (SSPS) 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:

- How do you conclude that electromagnetic interference and radio frequency interference affects would demonstrate that no credible events would impact from components fulfilling their design basis functions?
- How many RPS/SSPS/ESFAS safety system channels are in Cabinet G that potentially be affected?
- Redundancy should be considered, and licensee should be able to show, under worst case conditions (even if proven not credible), still have ability to trip reactor and turbine.
- Does the IDP document contain discussion of diversity and redundancy related to losing ability to trip reactor and/or turbine?
- Is the focus of the exemption only Cabinet G and cables inside that cabinet which terminate at the same location?
- Would any cabling downstream of the Cabinet G be subject to the exemption request?
- After Cabinet G, are the cables in separate cable trays?
- Are you only using manual actions (to trip) for defense in depth purposes?
- Does your evaluation show that there are no credible events that would impact both cables in Cabinet G?

- Are there other measures in place if the automatic turbine trip may not be available under worst case conditions, even though evaluations may determine it is not credible?

There were four members of the public in attendance.

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 No. 50-400

Enclosure:
List of Attendees

cc: Listserv

LIST OF ATTENDEES

DECEMBER 11, 2023, PUBLIC MEETING WITH DUKE ENERGY

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

PLANNED EXEMPTION 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 Kichline	NRC
Ming Li	NRC
Antonios Zoulis	NRC
Demtrius Murray	NRC
Siva Lingham	NRC
Dennis Earp	Duke Energy (Duke)
Andrew Lipetzky	Duke
Ryan Treadway	Duke
Brian Mayall	Duke
Jennifer Varnedoe	Duke
Nick Burgess	Duke
Nick Martenelli	Duke
Roy Linthicum	Public - Constellation
Frank Hope	Public
Mary Miller	Public
Thomas Jaeger	Public

SUBJECT: SUMMARY OF DECEMBER 11, 2023, MEETING WITH DUKE ENERGY TO DISCUSS A SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1 PLANNED EXEMPTION REQUEST RELATED TO TURBINE CONTROL SYSTEM AND REACTOR PROTECTION SYSTEM CIRCUITRY (EPID NO. L-2023-LRM-0104) DATED FEBRUARY 12, 2024

DISTRIBUTION:

PUBLIC	RidsNrrPMShearonHarris Resource
LPL2-2 R/F	RidsNrrLAABaxter Resource
RidsACRS_MailCTR Resource	RidsRgn2MailCenter Resource
RidsNrrDorlLpl2-2 Resource	RidsNrrDorl Resource
RidsNrrDraApob Resource	RidsACRS_MailCTR Resource
RidsNrrDexEicb Resource	

ADAMS Accession Nos.:

Package: ML24011A162

Meeting Notice: ML23325A076

Meeting Summary: ML24011A165

NRC-001

OFFICE	NRR/DORL/LPL2-2/PM	NRR/DORL/LPL2-2/LA	NRR/DORL/LPL2-2/BC	NRR/DORL/LPL2-2/PM
NAME	MMahoney	ABaxter	DWrona	MMahoney
DATE	02/06/2024	02/06/2024	02/08/2024	02/12/2024

OFFICIAL RECORD COPY