



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

March 17, 2021

LICENSEE: Duke Energy Progress, LLC

FACILITY: H. B. Robinson Steam Electric Plant, Unit 2

SUBJECT: SUMMARY OF FEBRUARY 25, 2021, MEETING WITH DUKE ENERGY PROGRESS, LLC, REGARDING A PROPOSED RELIEF REQUEST CONCERNING CONTAINMENT INSPECTIONS OF LINERS AND MOISTURE BARRIERS FOR THE H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2 (EPID L-2021-LRM-0017)

On February 25, 2021, a Category one public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and Duke Energy Progress, LLC (Duke Energy), the licensee of the H. B. Robinson Steam Electric Plant (Robinson) via teleconference due the COVID-19 Public Health Emergency. The purpose of the meeting was to discuss a future relief request concerning containment liners and moisture barriers during the third In-Service Inspection Interval. The meeting notice and agenda, dated February 11, 2021, are available in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML21042B903. A list of attendees is provided as Enclosure 1.

The licensee presented information (see ADAMS Accession No. ML21053A047) which summarized the licensee's upcoming relief request addressing containment Inservice Inspection over the third inspection interval period of September 9, 2019 to September 8, 2020. The licensee also presented the relief request alternative to be considered in the future submittal, its technical and engineering basis and the proposed timeline for submittal.

During the presubmittal meeting, the NRC staff discussed the following questions and the licensee responded as follows;

1. The presentation states that if successive examinations are required in accordance with IWE-2420, "Successive Inspections," they may be limited to surfaces whose coatings have not been restored to protect against potential future degradation. Please describe the requirement of IWE-2420 for the successive examinations, and Duke Energy's proposed limited examinations.

Duke Energy responded that IWE-2420(b) states that when examination results detect flaws, areas of degradation, or conditions that require an engineering evaluation, in accordance with IWE-3000, "Acceptance Standards" or IWE-2500, "Examination and Pressure Test Requirements" (d), and the component is acceptable for continued service, the areas containing such flaws, areas of degradation or conditions shall be reexamined during the next inspection period, as listed in the schedule per IWE-2411, "Inspection Program," and in accordance with Table IWE-2500-1, "Examination Requirements" (E-C).

Specifically, liner panels at Robinson are recoated after examinations are complete when degraded. Duke Energy is seeking relief from the requirement to perform successive examinations in accordance with IWE-2420(b) on subject areas of the liner where coatings have been restored. Duke Energy will provide additional details of the previous examinations made and discuss the engineering justifications for the intended relief in the upcoming submittal.

2. In lieu of the acceptance standards required by IWE-3521, "Visual Examination," (a) which states that "pressure-retaining component corrosion or erosion that exceeds 10% of the nominal wall thickness," the presentation appears to present that Duke Energy -- for corrosion or erosion that exceeds 120% of the minimum wall thickness required by design -- shall require correction or evaluation to meet the requirements of IWE-3122 "Acceptance," prior to continued service. It is not clear in the presentation how the nominal wall thickness is established, and are the wall thicknesses shown in slide 7 of the presentation the nominal wall thickness?

Duke responded that per the Updated Final Safety Analysis Report, Chapter 3, "Design Criteria - Structures, Components, Equipment and Systems, Section 3.8, "Design of Category 1 Structures," ADAMS (ADAMS Accession No. ML20309A747), the containment liner is designed to serve as a leakproof membrane and is not relied upon for the structural integrity of the containment except for resisting tangential shears in the dome (note: the dome is accessible). Stress conditions in the liner under all conditions of the design have been analyzed to assure that the principle stresses do not exceed the yield or buckling stresses as provided in design stress criteria calculation for the containment dome. The calculation also documents that construction loads on the liner were also considered. Slide 7 does show the nominal wall thicknesses in the note and, in the upcoming submittal, it will fully describe the design analysis associated with the wall thicknesses discussed as shown in the presentation.

3. How was the minimum wall thickness required by design established and where are they documented?

Duke Energy responded that the stress condition factors considered in the original analysis calculation including elastic stability, 90% yield stress at the studs, 90% yield stress due to pressure, and 90% yield stress due to compression. A uniform plate thickness is evaluated to represent material losses, and the plate's function is compared to the above limits as documented in this original analysis calculation. Duke Energy will describe the plate thickness calculation, the factors considered and the related summary results of plate thickness analysis calculation in the upcoming submittal.

4. The presentation states that "Over the last two intervals more than 400 insulation panels have been removed at various locations and elevations to facilitate inspections resulting in all liner plate wall thicknesses greater than the minimum thickness required by design." During that period did Duke Energy utilize IWE-3521(a) as the acceptance standard, or was the acceptance standard used during that In-service Inspection period that "all liner plate wall thicknesses greater than the minimum thickness required by design"?

Duke Energy responded that for the previous interval IWE-3510 "Standards for Examination Category E-A, Containment Surfaces," was applicable for acceptance of inspections.

5. Duke Energy's slide presentation proposes that "120% of the minimum wall thickness required by design" is the new engineering platform. Please discuss the basis for this new wall thickness standard.

Duke Energy answered that the containment metallic liner is not a pressure vessel and that a value significantly less than the nominal wall thickness is required to maintain the liner design function of providing a leak-tight barrier. In the upcoming docketed submittal Duke Energy will fully justify the parameters selected and the engineering basis for wall thicknesses related to the relief request.

6. Please describe the liner corrosion condition in the area of those 400 previously-removed insulation panels.

Duke Energy answered that, in general, for the panels that were removed, areas of corrosion as well as localized pitting have been found, all of which were recoated after inspection. When pitting was found it occurred over a small area. Additionally, for these panels discussed, a structural integrity test alongside an Integrated Leak Rate Test was performed in November 2020 which documented proper liner function which will be detailed and described in the relief request.

7. The presentation states that "... [Robinson] Unit 2 containment is a post-tensioned concrete containment vessel with a A36 metallic liner. Significantly less than 90% of the liner thickness is required in order to maintain the liner design function of providing a leak-tight barrier." It is unclear in the presentation what specific level, by percentage, of wall thickness provides a leak tight barrier. Please also discuss the percentage that is adequate and the justification for that value.

Duke Energy responded that the statement in the presentation is intended to convey that 50-64% of the nominal wall thickness is sufficient for full function, as documented and justified within the containment systems calculation analysis which will be described in the relief request.

8. Additional NRC staff inquiries addressed:
 - a. the method of selection of panels to be inspected in the proposed alternative,
 - b. inspection results and relevant operating experience of components during previous component exam periods, and
 - c. the necessity for the licensee to ensure appropriate technical information is provided in the upcoming proposed alternative.

Duke Energy will consider and evaluate the questions, and the technical and licensing comments presented by the NRC staff and, as appropriate, include adequate and sufficient material for the NRC staff to complete the technical review of the future relief request.

Members of the public were not in attendance. Public Meeting Feedback forms were not received.

Please direct any inquiries to me at 301-415-5136, or John.Klos@nrc.gov.

/RA/

John Klos, Project Manager
Plant Licensing Branch LPL2-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No(s). 50-261

Enclosure:
List of Attendees

cc: Listserv

LIST OF ATTENDEES

FEBRUARY 25, 2021
MEETING WITH DUKE ENERGY PROGRESS, LLC
REGARDING A PROPOSED RELIEF REQUEST CONCERNING
CONTAINMENT INSPECTIONS OF LINERS AND MOISTURE BARRIERS
FOR THE H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2
(EPID L-2021-LRM-0017)

<u>ATTENDEE</u>	<u>REPRESENTING</u>
John Klos	NRC
John Ma	NRC
Angelo Stubbs	NRC
Alissa NeuHausen	NRC
Mark Pyne	Duke Energy
Angela Staller	Duke Energy
Austin Keller	Duke Energy
Winston Stewart	Duke Energy
Megan Watkins	Duke Energy
Art Zaremba	Duke Energy
Chet Sigmon	Duke Energy

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CONCERNING CONTAINMENT INSPECTIONS OF LINERS AND MOISTURE
BARRIERS FOR THE H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2
(EPID L-2021-LRM-0017) DATED MARCH 17, 2021

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LBetancourt, NRR

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AStubbs, NRR

ANeuHausen, NRR

RSkokowski, NRR

MMcCoppin, OEDO

ADAMS Accession Nos.:

Meeting Notice: ML21042B903

Meeting Summary: ML21068A417

Handouts: ML21053A047

OFFICE	NRR/DORL/LPL2-2/PM	NRR/DORL/LPL2-2/LA	NRR/DORL/LPL2-2/BC	NRR/DORL/LPL/2-2/PM
NAME	John Klos	Rhonda Butler	Undine Shoop	John Klos
DATE	3/9/2021	3/11/2021	3/16/2021	3/17/2021

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