NRR-PMDAPEm Resource

From: BARILLAS, MARTHA C
Sent: Friday, June 24, 2016 2:49 PM
To: 'Arthur.Zaremba@duke-energy.com'; Duc, Joshua Brian (Joshua.Duc@duke-energy.com)
Cc: GALVIN, DENNIS J; ORF, TRACY J
Subject: Duke Energy Harris Robinson LAR CASMO5_SIMULATE3 Audit Plan.docx
Attachments: CASMO5_SIMULATE3 Audit Plan.docx

Mr. Zaremba,

By letter dated August 19, 2015, Duke Energy Progress, Inc. (Duke Energy), the licensee for Shearon Harris Nuclear Power Plant, Unit 1 (Harris), and H.B. Robinson Steam Electric Plant, Unit 2 (Robinson), requested changes to the Harris and Robinson Technical Specifications (TS). Specifically, Duke Energy requested NRC review and approval of DPC-NE-1008-P, Revision 0, "Nuclear Design Methodology Using CASMO-5/SIMULATE-3 for Westinghouse Reactors," and adoption of this methodology into the Harris and Robinson TS lists of Core Operating Limits Report (COLR) references in TS 5.6.5.b and 6.9.1.6.2, respectively. The proposed TS revisions and methodology report would allow Duke Energy to perform reactor physics calculations as part of the core reload design process at Harris and Robinson, replacing the analyses currently performed by the fuel vendor.

The U.S. Nuclear Regulatory Commission (NRC) staff has proposed to conduct a regulatory audit at this point in the review process in an effort to increase review efficiency.

The proposed dates are July 12-13, 2016. The audit plan is attached to this email.

If you have any questions, please contact me at Martha.Barillas@nrc.gov or (301) 415-2760.

Thank you,

Martha Barillas
Project Manager
Shearon Harris Nuclear Power Plant, Unit 1
NRR/DORL/Licensing Branch II-2
US Nuclear Regulatory Commission
301-415-2760

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From: BARILLAS, MARTHA C

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Recipients:
"GALVIN, DENNIS J" <Dennis.Galvin@nrc.gov>
Tracking Status: None
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Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
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REGULATORY AUDIT SUPPORTING NRC REVIEW OF DPC-NE-1008-P,
"NUCLEAR DESIGN METHODOLOGY USING
CASMO-5/SIMULATE-3 FOR WESTINGHOUSE REACTORS"
CAC NOS. MF6648 AND MF6649

BACKGROUND

By letter dated August 19, 2015[1], Duke Energy Progress, Inc. (Duke Energy), the licensee for Shearon Harris Nuclear Power Plant, Unit 1 (Harris), and H.B. Robinson Steam Electric Plant, Unit 2 (Robinson), requested changes to the Harris and Robinson Technical Specifications (TS). Specifically, Duke Energy requested NRC review and approval of DPC-NE-1008-P, Revision 0, "Nuclear Design Methodology Using CASMO-5/SIMULATE-3 for Westinghouse Reactors,"[2] and adoption of this methodology into the Harris and Robinson TS lists of Core Operating Limits Report (COLR) references in TS 5.6.5.b and 6.9.1.6.2, respectively. The proposed TS revisions and methodology report would allow Duke Energy to perform reactor physics calculations as part of the core reload design process at Harris and Robinson, replacing the analyses currently performed by the fuel vendor.

The U.S. Nuclear Regulatory Commission (NRC) staff has proposed to conduct a regulatory audit at this point in the review process in an effort to increase review efficiency. The proposed audit will help the NRC staff to better understand the DPC-NE-1008-P methodology through interaction with Duke Energy's technical experts and will help to focus the staff's requests for additional information (RAIs) on those questions where docketed information is needed to complete the review.

The proposed audit will be held in accordance with the Office of Nuclear Reactor Regulation (NRR) procedure as described in LIC-111, "Regulatory Audits."

REGULATORY AUDIT SCOPE

The NRC staff would like Duke Energy to make available appropriate staff with detailed knowledge of DPC-NE-1008-P and the CASMO-5/SIMULATE-3 code system it employs.

Discussion at the audit is expected to focus on the following subjects:

- CASMO-5, particularly:
  - The differences between CASMO-5 and CASMO-4
  - Some details of CASMO-5, including but not limited to
    - The Dancoff factor calculation
    - The transport calculation, especially the boundary conditions and quadrature/ray-tracing routines
    - The burnup calculation
  - The available capabilities of CASMO-5 that Duke Energy plans to use

[1] Agencywide Documents Access and Management System (ADAMS) Accession No. ML15236A044.
[2] ADAMS Accession No. ML15236A044

    - The models that are used when CASMO-5 is paired with SIMULATE-3 rather than SIMULATE-5
- The interface between CASMO-5 and SIMULATE-3 using CMS-LINK
- The preparation of inputs for CASMO-5 and SIMULATE-3
- The operational benchmarks provided in DPC-NE-1008-P
- The colorset calculations used in DPC-NE-1008-P to benchmark the CASMO-5 to SIMULATE-3 pin-power reconstruction uncertainty

The NRC staff does not expect Duke Energy to prepare presentations on these subjects; rather, Duke Energy should be prepared with the appropriate subject matter experts and any materials that would be useful for discussion.

TEAM AND REVIEW ASSIGNMENTS

Martha Barillas, Project Manager (NRR/DORL/LPL2-2)
Reed Anzalone, Lead Technical Reviewer (NRR/DSS/SNPB)

- Responsible for overall technical review; focused on the methodology, interfaces between codes, and verification, validation, and benchmarking of the code system

Daniel Beacon, Technical Reviewer (NRR/DSS/SNPB)

- Supporting detailed evaluation of CASMO-5

LOGISTICS

Audit Dates: Tuesday, July 12, 2016 – Wednesday, July 13, 2015.

Audit Location: Duke Energy offices in Charlotte, NC.

Duke Energy should provide a conference room with a white board for discussions, as well as printed copies of the following reports:

- DPC-NE-1008-P, “Nuclear Design Methodology Using CASMO-5/SIMULATE-3 for Westinghouse Reactors”
- DPC-NE-1005-P-A, Revision 1, “Nuclear Design Methodology Using CASMO-4/SIMULATE-3 MOX”
- SSP-14-P01/012-R, “CASMO5 PWR Methods and Validation Report”
- SSP-08/405, Revision 3, “CASMO5 A Fuel Assembly Burnup Program Methodology Manual”

Duke Energy should also provide any other documentation that may aid discussion.

DELIVERABLES

A regulatory audit summary will be provided within 90 days of the completion of the audit.