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919-362-2502

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Attn: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Shearon Harris Nuclear Power Plant, Unit 1  
Docket No. 50-400

Subject: Response to Request for Additional Information Regarding the Seismic Hazard Walkdowns Associated With Near-Term Task Force Recommendation 2.3, Seismic Walkdowns

References:

1. NRC Letter, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated March 12, 2012, ADAMS Accession No. ML12053A340
2. Electrical Power Research Institute (EPRI) *Seismic Walkdown Guidance, For Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic*, EPRI Report 1025286, dated 2012, ADAMS Accession No. ML12188A031
3. Duke Energy Letter, *Shearon Harris Nuclear Power Plant, Unit No. 1 Response to Recommendation 2.3 "Seismic Walkdown" of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated November 27, 2012
4. NRC Letter, *Request for Additional Information Associated with Near-Term Task Force Recommendation 2.3, Seismic Walkdowns* dated November 1, 2013, ADAMS Accession No. ML13304B418

Ladies and Gentlemen:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) staff issued a letter requesting information per Title 10 to the *Code of Federal Regulations*, Section 50.54(f) (i.e., Reference 1). The letter requested licensees to conduct seismic hazard walkdowns to verify current plant configuration with the current licensing basis (CLB).

Duke Energy Progress, Inc., (Duke Energy) conducted the requested walkdowns using the NRC endorsed, Electric Power Research Institute (EPRI) guidance (i.e., Reference 2). Duke Energy submitted the walkdown report for Shearon Harris Nuclear Power Plant (SHNPP) by letter dated November 27, 2012, (i.e., Reference 3). The NRC staff requested additional information related to the seismic walkdowns by letter dated November 1, 2013, (i.e., Reference 4). The Duke Energy response for SHNPP is enclosed.

This document contains no regulatory commitments.

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LIRL

If you have any questions regarding this submittal, please contact Dave Corlett, Regulatory Affairs Manager, at (919) 362-3137.

I declare under penalty of perjury that the foregoing is true and correct.  
Executed on November 26, 2013.

Sincerely,

A handwritten signature in black ink, appearing to read "Ernest J. Kapopoulos, Jr.", with a stylized flourish at the end.

Ernest J. Kapopoulos, Jr.

Enclosure: Shearon Harris Nuclear Power Plant Response to the NRC Request for Additional Information Regarding Seismic Walkdowns

cc: Mr. J. D. Austin, NRC Sr. Resident Inspector, HNP  
Mr. A. Hon, NRC Project Manager, HNP  
Mr. V. M. McCree, NRC Regional Administrator, Region II

U.S. Nuclear Regulatory Commission  
Enclosure to HNP-13-114

**Enclosure**

**Shearon Harris Nuclear Power Plant**

**Response to the NRC Request for Additional Information**

**Regarding Seismic Walkdowns**

**Shearon Harris Nuclear Power Plant**  
**Response to the NRC Request for Additional Information**  
**Regarding Seismic Walkdowns**

**NRC Question 1: Conduct of the walkdowns, determination of potentially adverse seismic conditions (PASCs), dispositioning of issues, and reporting**

As a result of the audits and walkdown report reviews, the NRC staff noted that licensees' interpretations of the seismic walkdown guidance varied, which resulted in meaningful differences in the process used to disposition identified issues and in the documentation that was provided to the NRC staff. In particular, the application of engineering judgment in determining what constituted a potentially adverse seismic condition (PASC), the threshold for conducting licensing basis evaluations (LBEs), and determining what information was to be reported to the NRC staff varied.

The NRC staff intended that conditions initially marked No (N) or Unknown (U) in the field by the seismic walkdown engineers (SWEs) for which an analysis or calculation was performed would be considered as PASCs and that an analysis or calculation constituted an LBE. The walkdown guidance allows for analysis as part of engineering judgment; however, the intent was to allow for only simple analyses that could be readily performed in support of engineering judgment. Further, the walkdown activities were intended to allow for transparency in the licensee's process to demonstrate that PASCs were appropriately identified, that they were addressed in an appropriate manner, and the basis documented such that the current condition of the plant was clearly consistent with the CLB with regard to seismic capability.

During the audits, the NRC staff identified examples of field observations that were deemed not to be PASCs. However, the basis for the determination was not clearly recorded. In some cases, the field checklists were amplified by noting that the basis was engineering judgment. During site audit discussions, the staff was able to trace the basis for the engineering judgments and found that in many cases they were appropriate. It is expected that these situations would not be included in the walkdown report.

There were other situations that a PASC and LBE were not reported; however, the NRC staff found during the audit that a calculation, analysis (more than just simple), or evaluation was conducted but informally. An example is a confirmatory calculation performed to demonstrate that six anchor bolts out of eight was not a seismically adverse condition. Another example would be an analysis to demonstrate that an existing, slightly short weld was as seismically sound as the prescribed weld length in the plant design documentation. The staff expected these types of conditions and evaluations to be captured in the licensee's normal plant processes (e.g., condition report or corrective action program (CAP)), and also reported in the walkdown report, since they were potentially adverse seismic conditions that required more than applying judgment or simple analysis to address.

The NRC staff also found that the process that was used to deal with a field observation that was deemed to be a PASC was also not completely described or captured in the report. In many cases, the licensee reported that an LBE was not performed. However, during the audits, it was clear that an LBE (or an equivalent determination method) was performed and used in

determining whether a PASC should be entered into the CAP. The staff expects that these conditions would be reported in the walkdown report.

On the whole, through the audits, the NRC staff found that it was able to conclude that the intent of the guidance was met when the licensee's overall process was completely explained, the information was updated to reflect the actual process, and results were updated. The self-assessments conducted by the licensees of the audited plants also identified the lapse in the description of the process used by the licensee to identify a PASC and disposition it.

Therefore, in order to clarify the process that was followed, please provide a description of the overall process used by the licensee (and its contractors) to evaluate observations identified in the field by the SWEs. The process should include how a field observation was determined to be a PASC or not and how the bases for determinations were recorded. Once a determination was made that an observation was a PASC, describe the process for creating a condition report (or other tracking mechanism), performing the LBE (or other determination method), and the resultant action, such as entering it into the CAP, or documenting the result and basis.

Also, in order to confirm that the reported information supports concluding that the plant meets the CLB, please follow one of the following three acceptable alternatives:

- (a) Provide a supplement to the table or text from the original walkdown report, if needed, to include similar conditions as the above examples and situations and for conditions for which a calculation, analysis (if more than a simple analysis), or evaluation was used for a determination. The supplement should include a short description of each condition, how it was dispositioned and the basis for the disposition, as follows: 1) for each condition that was entered into the CAP, provide the CAP reference number, initiation date, and (if known) the planned completion date, or 2) for all other conditions, provide the result of the LBE (or other determination method), the basis for the result, and how (or where) the result was captured in the plant's documentation or existing plant process.
- (b) Following the plant's standard procedures, confirm that a new CAP entry has been made to verify if appropriate actions were taken when reporting and dispositioning identified PASCs (including conditions for which a calculation, analysis (if more than a simple analysis), or evaluation was used for a determination). The eventual CAP closeout, including the process followed and actions taken, should be in sufficient detail to enable NRC resident inspectors to follow up.
- (c) If no new conditions are identified for addition to the supplement or the CAP entry mentioned above is deemed not necessary, provide a statement of confirmation that all potentially seismic adverse conditions (including conditions for which a calculation, analysis (if more than a simple analysis), or evaluation was used for a determination) identified during the walkdowns and walk-bys were addressed and included in the report to the NRC.

#### **Response to Question 1:**

This response is in accordance with NRC Question 1(c). There are no new Potentially Adverse Seismic Conditions (PASC) to report because all PASC items were addressed and included in the prior submittal (i.e., Reference 3).

Any condition that was a potential adverse seismic condition (PASC) was further evaluated for its ability to meet its seismic design basis requirements and put into the plant Corrective Action Program (CAP), if necessary.

The SWEs used engineering judgment, based on their experience and training, to identify PASCs. Walkdown results are documented on the Seismic Walkdown Checklists, and area walk-bys on Area Walk-By Checklists.

The seismic walkdowns focused on identifying PASCs for the SSCs listed on the SWEL using criteria for adverse anchorage conditions, adverse seismic spatial interactions, or other adverse seismic conditions as described in Section 4 of EPRI Seismic Walkdown Guidance, EPRI 1025286 (i.e., Reference 2).

The key examination factors for area walk-bys included: anchorage conditions, significantly degraded equipment in the area, a visual assessment of cable/conduit raceways and HVAC ducting, housekeeping items that could cause adverse seismic interaction, seismically induced fire and flooding/spray interactions. These inspections are further described in the report submitted on November 27, 2012, (i.e., Reference 3).

When conditions were identified during the inspection that were not readily determined as acceptable, they were documented along with an evaluation of the condition using available design information and based on the SWEs experience. SSCs may have been determined to be a PASC at the time of the inspection and noted as such on the checklist, or the condition may have been documented and further discussion completed before determining if it was a PASC. Non-PASC conditions found during the inspections are those evaluated and determined to not affect the ability of the item to perform its intended safety function during or after design basis ground motion as noted in the Current Licensing Basis. All items were readily evaluated to meet that criterion and none were entered into the CAP for resolution of non-conforming conditions. Therefore, no licensing basis evaluations were performed.

Non-PASC evaluations are included on the Seismic Walkdown Checklists or Area Walk-by Checklists. These evaluations typically credit engineering judgment by the Seismic Walkdown Engineer team or existing analyses where a condition was previously evaluated to comply with design basis requirements.

## **NRC Question 2: Conduct of the Peer Review Process**

As a result of the walkdown report reviews, the NRC staff noted that some descriptions of the peer reviewers and the peer review process that was followed were varied and, in some cases, unclear. In some cases, the staff could not confirm details of the process, such as if the entire process was reviewed by the peer review team, who were the peer reviewers, what was the role of each peer reviewer, and how the reviews affected the work, if at all, described in the walkdown guidance.

Therefore, in order to clarify the peer review process that was actually used, please confirm whether the following information on the peer review process was provided in the original submittal, and if not, provide the following.

- (a) Confirmation that the activities described in the walkdown guidance on page 6-1 were assessed as part of the peer review process.
- (b) A complete summary of the peer review process and activities. Details should include confirmation that any individual involved in performing any given walkdown activity was not a peer reviewer for that same activity. If there were cases in which peer reviewers reviewed their own work, please justify how this is in accordance with the objectives of the peer review efforts.

Also, if there are differences from the original submittal, please provide a description of the above information. If there are differences in the review areas or the manner in which the peer reviews were conducted, describe the actual process that was used.

**Response to Question 2:**

The information requested is contained in Reference 3. The submittal included a separate peer review report organized to emphasize activities identified in Section 6 (Page 6-1) of Reference 2 and was provided as Attachment 8 of Reference 3. A complete summary of peer review activities is contained in that Attachment 8. As described in Section 3 of Reference 3, the Peer Review Team had no duties regarding other seismic walkdown-related activities.

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**References:**

1. NRC Letter, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated March 12, 2012, ADAMS Accession No. ML12053A340
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4. NRC Letter, *Request for Additional Information Associated with Near-Term Task Force Recommendation 2.3, Seismic Walkdowns* dated November 1, 2013, ADAMS Accession No. ML13304B418